



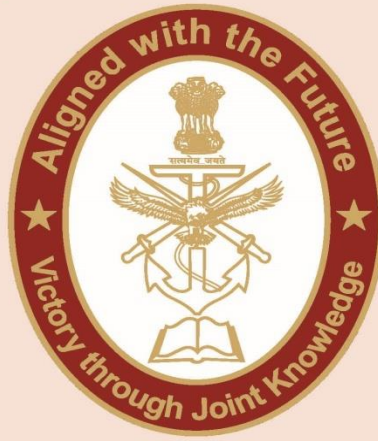
CENJOWS

WEB ARTICLE

CHANGING CONTOURS OF WARFARE

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There is a famous saying articulated by Greek Philosopher Heraclitus¹ way back in 535 BC which states that 'change' is the only constant. It is equally true for the nature of warfare as well. In fact, with current geo-political landscape and emerging technologies, the rate of change in the domain of warfare is alarmingly high and continues to emerge higher every passing day. The change is not only due to the peculiarities of warfare alone but there are multiple related factors as well which contribute to the manifestation of warfare. These related factors are also undergoing transformational changes and thus having cascading effects on various contours of warfare. Earlier, the warfare was predominantly related to the military operations between adversaries, however, its scope has become very wide as it exists today. The scope will keep further widening as we go ahead in time as capability creation in any field has related expansion of conflict domain as well.

Changing contours of warfare² have multiple facets, and the following issues need to be examined-

- ❖ Emerging Trends in Warfare.
- ❖ Important Domains of Warfare.
- ❖ Emerging Trends in the Weapon Systems.

EMERGING TRENDS IN WARFARE

The warfare has already moved out of the conventional domain substantially. It is much beyond the military conflicts and continues almost at all times in some way or the other. Some of the emerging trends in warfare are covered as under:

- **In Peace and in War.** There is no time when warfare is not being conducted between adversaries by themselves or through their affiliated supporters /groups. At different timelines, methodology of warfare undergoes a change. While during actual conflicts, focus may be more through physical warfighting employing troops/equipment but it may focus on disruption of networks / other resources during peacetime. Depending on the nature of the relationship, a grey zone of 'No War No Peace³ (NWNP)' has also come up which is being experienced by India in context with Pakistan. This term will be applicable in context with China as well if Line of Actual Control (LAC) incursions by China are not resolved in an early time frame. NWNP conditions also impose substantial cost on the adversaries especially on those which are targeted and don't respond in the same coin.
- **With Friends and Foes.** Emerging trends indicate that warfare is not restricted only to the adversaries now. It has extended to potential adversaries of the future as well even if it is a friend at the current time. The majority of the nations in the world conduct themselves based on national interests. Since national interests are dynamic in nature, inter-state relations also keep changing. Nations keep collecting information even from a friendly country so that it can be potentially used in future. Countries employ multiple sources towards this which may include their embassy staff, think tanks, business persons, industry organisations, visits, students and planted sources including disgruntled / greedy persons in the target country. Since there are a variety of sources, countries can employ multiple covert means with potential adversaries/friends whereas they can employ overt well as covert means with declared adversaries.
- **By State and Non-State Actors.** The earlier trends of warfare being executed by state actors⁴ alone have also undergone a major change. Non state actors are also becoming an important instrument of current day warfare. These may be utilised with the support of State or even without the support of the state. Non state actors being employed by Pakistan with state support for continuing proxy war in J&K is one such example. Non state actors may belong to the state who is supporting them. These could be also from the adversary state and

can be supported for dissipating the growth and progress of the adversary. China utilising some of the outfits from North East against India is another variation of employment of the Non-State Actors. These instruments of warfare could be utilised during peace, NWNP and war in varying intensity and the format.

- **Varying Resources.** The emerging warfare attempts to impact every strength of the opponent besides exploiting the weaknesses/ fault lines. Even this continues during peace, NWNP and war. Support being extended to Maoists by China is one such example. The resources of the adversary whether located within the Geographical boundary of the state or outside are targeted or put under surveillance for information gathering for targeting as per time of own choosing. In addition to the hardcore military abilities, all aspects of Comprehensive National Power (CNP) are targeted including the image of the opponent in the comity of the nations.
- **From Nowhere.** While opposing nations make direct/indirect contributions to the emerging trends in warfare, Lone Wolves ⁶ may also contribute in the effort of a particular state from nowhere as these lone wolves are not directly related to the state concerned but may further the cause having adverse impacts on the target adversary.

Emerging trends in warfare are far too many and only few aspects have been covered. A better picture will emerge once the important domains of warfare are covered along with the trends in the warfighting equipment. The bottom line remains that there are multiple changes- some connected, some disconnected, some controlled, some uncontrollable and some uncontrolled. The nature of warfare has got enmeshed in every walk of life all 365 days a year.

IMPORTANT DOMAINS OF WARFARE

Changing contours of warfare have given multiple facets of warfare unfolding themselves. The era of physical conflict alone being the professed form of warfare has somewhat vanished albeit conventional war fighting still remains an important ingredient of emerging warfare. A look at some of the emerging domains of warfare has been covered as under:

Kinetic Warfare. This form of warfare still remains relevant and will remain so in days to come especially when the conflict is in overt space and is being fought almost openly. It is beside the point that it is getting clubbed with other domains of warfare as well which are more cost effective both in

terms of human lives and national resources. Even kinetic warfare ⁷ is undergoing substantial changes some details of which are as under:

- **Duration of War.** Short and Swift wars were becoming a norm in case of conventional kinetic wars especially post Gulf war. While countries started re-aligning their war fighting philosophies to short and swift wars, the Russia - Ukraine war has now thrown a new dynamics. The duration of war whether localised or otherwise is less likely to be short and swift. In fact, in most probabilities, these are likely to be long drawn as is emerging in Russia - Ukraine war inching close to a year shortly. This is more important when the adversaries are asymmetric in their force levels, one is nuclear capable and the other is non-nuclear. The countries especially like India have to be ready for long drawn conflicts as the area of conflict is in mountainous regions.
- **Long Range Weapons.** The emerging trends relate to the employment of long range weapons. These help in localising the conflict as physical crossing by regular troops has altogether different connotations. Long range weapons also assist not only targeting the frontline troops but also the resources located in the depth as well. Long range vectors capable of moving with hypersonic speeds and carrying smart & precision Warheads are the preferred mode of war fighting and this trend will continue to grow even in the days to come.
- **Varying Intensity.** The kinetic warfare is also being conducted with varying intensity. At times, these are done to impress upon the adversary to accept the national will of the attacking country while at times it is done as part of a warfighting strategy. Since wars / conflicts can come to abrupt ends at times, the countries need to remain in advantageous positions at the end of each operating cycle. The adage- One may lose a battle but must win the war - has reducing significance now. The method and option to calibrate intensity of conflict does provide windows which can either be used for resolution of the conflict or for the next round of onslaught.
- **With and Without.** The era of warfare being unleashed by itself is over. It will always be accompanied by some facet of non-kinetic warfare. The pattern therefore will always remain as 'with' and not 'without'.

Non-Kinetic Warfare. Some important facets of kinetic warfare have been covered. Kinetic warfare ⁸ remains relatively simple to comprehend as it has been in vogue from time immemorial. As against this, non-kinetic warfare is

the most important emerging way of war fighting. In addition, it has wide ranging multiplicity of domains. With passage of time, more domains are getting added and it is therefore essential to continue focussing on these domains. Even while doing cost benefit analysis, non-kinetic warfare constituents provide much better pay offs as compared to kinetic warfare. While the domains of this kind of warfare are far too many, some important ones are covered below:

- **Cyber Warfare.** With increased computerisation, automation and development of networks, this has become a major challenge. This not only targets the defence forces but also all other constituents of CNP of the opponent. Banks, financial institutions, health infrastructure, power grids and all other national resources are subjected to this warfare both during peace and war. The attacks are launched both overtly as well as covertly. Attack on AIIMS New Delhi is one such example in the recent past. Cyber threats have become more potent and effective tools to undermine an adversary's national security and CNP. No of advanced countries put malware which are either time sensitive or event sensitive. Cyber attacks affect nuclear assets, space assets, missile systems, energy networks and the economy alike. With technology of Internet of Things (IOT) now on the verge of sweeping the networks, potency of cyber warfare will further increase.
- **Information Warfare (IW).** While information warfare primarily relates to controlling access to own information by the adversary as well as gaining access to adversary's information. Multiple domains of non-contact warfare are also utilised for this purpose. With advances in technology, the potency of IW has increased as well as decreased at the same time. This has been comprehensively utilised in ongoing Russia - Ukraine war⁹ and will continue to be part of emerging warfare albeit with increased potency.
- **Psychological Warfare (PsyW).** While this has been part of warfighting for quite some time, it is gaining more traction in the emerging warfare. Various constituents of non-contact warfare contribute to each other in substantial ways. Psy W is also aided by cyber W, IW and other forms of warfare to target the opponent's mind. It has out of proportion results in case it reaches the target audience in the planned manner. It is a regular process and needs to be built up in a systematic manner.
- **Propaganda.** This is relatively an old domain but also an emerging field and remains an important constituent of IW, Psy W and other

forms of non-contact warfare. The means adopted could be from the resources utilised for kinetic warfare at times. Its impact is increasing with every passing day. It is applied both during peace and war. It is intended to enhance one's own credibility and undermine the credibility of the adversary.

- **Electronic Warfare (EW).** This is also an emerging and potent field for future conflicts. EW is always being employed for defensive as well as offensive purposes. The EW spectrum has its own susceptibilities and strength, which can be utilised for gaining the information as well as denying the same to the adversary. Tools of EW are frequently used in the majority of other forms of NCW.
- **Fourth Generation Warfare (4GW).** 4GW is also commonly utilised in the emerging profile of warfare. 5th and 6th generation warfares have also come to the fore with their attendant implications.
- **Additional Variations of Warfare Domain.** As highlighted, there are multiple emerging domains. These include¹⁰ non-linear warfare (applicable to contact warfare as well), unconventional warfare, economic warfare, hyper warfare, sub conventional warfare, tolerance warfare and many more.

There are close linkages in various domains of emerging warfare. Invariably these are utilised concurrently based on the aims and the plans of the country concerned. Some or majority of these domains are utilised both during peace and war while some of them are used in a more pronounced manner during the war. Not only this, there are close linkages between Contact as well as non-contact warfare as well.

EMERGING TRENDS IN THE WEAPON SYSTEMS

While there are multiple emerging trends in warfare including emerging domains, there have been major emerging trends observed in the conduct of warfare as far as use of weapons and other warlike stores are concerned. There is a very wide canvas on this facet, however, some important emerging trends are covered below:

- **Anti Satellite (ASAT) Weapon Systems.** Space needs to be conflict free for the good of humanity as this space is being utilised for movement of satellites of varying categories in various orbits. Some leading counties including China have developed ASAT ¹¹ weapons or are developing these. The countries which are capable of launching Satellites are also capable of using them for ASAT purposes. In

addition to the current form of ASAT weapons, melting technology for the satellites is the new technology being developed for the purpose. Though ASAT weapons have not been deliberately tried on other nation's satellites, the possibility will keep increasing in the coming days. This could be another layer of conflict escalation between conventional conflicts and nuclear threshold.

- **Rocket - Missile Systems.** There is increasing use of such systems. Long range rockets with varying kinds of warheads capable of even self-acquiring of the targets and assured destruction are gaining more traction. Missile systems are also undergoing major changes in terms of ranges and accuracy besides use of hypersonic missiles and accuracy to avoid detection and enhanced SSKP. HIMARS and some other rocket systems are being used in the Russia- Ukraine war. Increasing use of long range missiles has already taken place in this conflict and these are raining on Ukraine from the Russian side every passing day. Major world powers including China are focussing on this field in a substantial manner. Chinese have made substantial progress in this field. It remains a cause of Indian concern specially progress made in the direction of hypersonic missiles. Cruise missiles are also getting increased attention.
- **Air Defence Missiles.** Air Defence missiles are also taking primacy in the battlefield. These are spread in various ranges and height coverages, utilising varying types of sensors for tracking as well as for terminal engagement. Countries are looking at comprehensive missile systems like Patriot, S-400 and others which can negate all types of aerial threats. While these missiles. systems are gaining increased traction, shoulder fired missile systems are gaining increased traction, there are more thrusts on shoulder fired missile systems of Stinger category which not only changed the Afghan war outcome for USA besides making substantial impacts in Russia - Ukraine war. These category of missiles are equally needed for India as well in substantial Nos to checkmate the adversary's threats.
- **Tanks.** There appeared favourable as well as counter news with respect to the utility of tanks in modern day war fighting. While some analysts feel that the era of tanks is over, others' highlighted Russia's employment of tanks was faulty but nothing against tanks as such. Light tanks and alternate employment will remain relevant in Indian conditions. It can carry surveillance means as well as various formulations of drones in the battlefield in addition to its intrinsic mobility based firepower.

- **Anti-Tank Missiles.** Utilisation of these systems are also giving good dividends which got demonstrated in the Russia - Ukraine war. These will keep growing and increasing use will be seen in the contact battles as we move ahead in time. These are also required by India in adequate Nos.
- **Aircraft.** While the air power and naval power are getting increasingly used for prosecution of war, the aircraft on one hand are in demand for their increased ranges, air to air refuelling capabilities, destructive warheads, precision strikes as well as stealth features but on the other hand, increasing usage of drones are limiting the use of aircraft at least to some extent. These will remain an important instrument in all future wars as well though mission configuration and targeting may undergo substantial changes.
- **Drones.** UAVs / RPVs / Drones have emerged as the most potent weapons in modern day warfare. These have multiple uses. These can be used for sustenance as well as for surveillance. These can carry munitions as well as these can be used as weapons by themselves. Each country has realised their importance and these are being produced/ acquired in a big way for their cost effectiveness as well as multifarious utilisation. With drones, issues of counter drones have also come to the fore, both in hardkill as well as softkill domain. Swarm drones are also emerging as important tools of war fighting. It is expected that these will become the mainstay of war fighting in coming days. These can also be used during peace, NWNP and war.

In addition to above, many more weapon platforms are in the reckoning. Cluster munitions, thermobaric weapons and a host of other advances are making the battlefields exposed to something never seen before.

SUMMARY

It is obvious that the contours of warfare are changing. The pace of change is predominantly being dictated by emerging technologies as well as going in for those options which are most cost effective and preserve the loss of human lives. The use of weapons will also depend on the array of weapons held by the adversaries and seriousness of the conflict. The group and security agreements will also play their own dynamics in addition to the nuclear profile of the countries to the conflict. Economic capacities will also have substantial impact in the manner the war will be prosecuted between the adversaries.

End Notes

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