Revolution in Military Affairs and India's Role

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Abstract
Warfare is one of mankind's most ancient activity. Since the beginning of dawn, our species have waged war. War has been closely impacted by changes in commerce, science, industry and society often evolving them in return. In the past 500 years, inventions like the crossbow, musket, artillery, airplanes etc. have brought in an evolution in the way war has been fought. These changes have over the years resulted in combat becoming less personal and less direct. The role played by gunpowder, air power, tanks, nuclear weapons etc. have impacted all aspects of military -organisation, training, battles, logistics etc. The concept of a revolution in military affairs is hence nothing new, yet the latest revolution is perhaps the most remarkable of all.

Introduction

RMA states that in certain periods of history due to technological, social or economic progress, warfare too changes its nature.
The idea of a possible revolution in military affairs (RMA) initially occurred in the late 20th century in the Soviet Union. The Cold War had resulted in a détente between the two blocs, the USSR and USA. Nuclear weapons were deterrent enough to dissuade the other side from attacking, yet not practical enough to be put in regular use for proxy wars or covert operations. Similarly, conventional weapons too had reached their potential limits in terms of development. The military was in need for a new avenue which could result in its weapons being more lethal and precise. The answer lay in the ongoing development in technology which resulted in the computer revolution in the late 70's.
In 1970, after development of the first microprocessor for use in F-14 Tomcat (Bassett 2007), U.S. Army General William Westmoreland testified before Congress and said:

> "On the battlefield of the future, enemy forces will be located, tracked, and targeted almost instantaneously through the use of data links, computer assisted intelligence evaluation, and automated fire control. With first round kill probabilities approaching certainty, and with surveillance devices that can continually track the enemy, the need for large forces to fix the opposition physically will be less important. . .An improved communicative system . . . would permit commanders to be continually aware of the entire battlefield panorama down to squad and platoon level. . .Today, machines and technology are permitting economy of manpower on the battlefield. . .But the future offers even more possibilities for economy. I am confident the American people expect this country to take full advantage of its technology -- to welcome and applaud the developments that will replace wherever possible the man with the machine. . . . With cooperative effort, no more than 10 years should separate us from the automated battlefield" (Din 1988)

This can be seen as the earliest testimony to the change being brought about in warfare due to the information technology revolution. Soon after, the deployment of Precision Guided Munitions (PGM's) under Project Assault Breaker and their effectiveness took the world by surprise. The

United States had been unable to destroy the Thanh Hoa bridge across the Song Ma river using conventional bombs despite having conducted 800+ sorties and attacks from 1965-72. (McManamon, Kamerman and Huffaker 2010) Ultimately in 1972, the bridge was destroyed using PGMs by F-4 aircrafts. Such developments also drew the attention of military leaders worldwide. Similarly, the military victory of the Israelis over their numerically superior opponents during the Yom Kippur War in 1973 (Yaakov Katz 2017)was attributed to technologically superior anti-aircraft, unmanned aircrafts anti-tank weapons most of them incorporating sensors and integrated circuits. This victory caused even Israel's allies like the United States to take notice of the evolving nature of warfare. The Soviets too realised the need for incorporating information technology into military purposes as evident by numerous writings around the time by Soviet military leaders. The Pentagon adopted the "offset strategy" during the late 70's as it was believed that a quantitative superiority in technology would effectively counter the quantitative numerical advantage that the Soviets enjoyed (Tomes 2006). During the same time period, the United States shifted its strategic focus from East Asia to Europe which eventually led to the adoption of the Air-Land Battle doctrine in 1982. (Tomes 2006) These changes eventually impacted USSR military doctrine too. In the Soviet Union, Marshall Nikolai Ogarkov began to talk about a military technological revolution (MTR) wherein he predicted the increasing use of computers and electronics in warfare. (FitzGerald 1986) He attempted to transform the Soviet military along the lines of information technology. However, due to budget constraints during the final years of the USSR leading to its eventual fall and a lack of political as well as military will meant that many of the proposed reforms remained unimplemented. At around the same time in the United States, the Soviet literature in turn was being studied by a small think tank under the Department of Defence, the Office of Net Assessment led by Andrew W. Marshall. (Sloan 2002) Marshall was known to be an advocate of this technological revolution which according to him would eventually lead to the demise of traditional service bound military forces. By the 1990's this technological revolution entered yet another phase during the Gulf War in 1991. The war displayed the advantage of having real time data links with ground forces as American forces were effectively able to track and monitor enemy forces live and engage them on their own terms. At the same time, the collapse of the Soviet Union meant that with the absence of a principal adversary posing a high level threat, the size, structure and configuration of armed forces had to be re-examined and largely altered. New emphasis was placed on cooperation and integration among different branches of armed forces, both nationally and internationally. The notion of asymmetrical warfare also emerged as a potential danger. The strategic significance of military infosphere, embracing all dimensions of the `virtual and vertical' battlespace, has been broadly accepted. RMA was also a preferred way to reduce manpower as defence budgets grew more constrictive. In 1993, the Office of Net Assessment declared the Soviet notion of a military technological revolution as too narrow and widened it to effectively include the realms of command, control, communication, computers and surveillance. Andrew F. Krepinevich working for the think-tank explained RMA thus as:

> "What is a military revolution? It is what occurs when the application of new technologies into a significant number of military systems combines with innovative operational concepts and organizational adaptation in a way that fundamentally alters the character and conduct of conflict. It does so by producing a dramatic increase—often an order of magnitude or greater—in the combat potential and military effectiveness of armed forces." (Krepinevich 1994)

American experimentation with RMA continued subsequently during the Kosovo conflict (1999), Operation Enduring Freedom (2001) and Operation Iraqi Freedom (2003). By the dawn of the 21st century the idea of RMA had proliferated worldwide with countries like Russia, China and India taking note of the developments and seeking to utilise similar capabilities. RMA has also expanded warfare into the realm of space. (Sloan 2002) In military terms, the technological advantage was harnessed to develop surveillance, stealth, precision munitions, and communication tools to reduce the Clausewitzian concept of "Fog of War". Such developments have further led to war becoming more lethal and precise while at the same time making it lesser direct and lesser personal.

Elements of RMA

It has been argued that while elements of RMA can be widely varying, they all share a common concept- advances in computational power, a reduction in the physical size of the components and lower costs would eventually help spread the use of technology download to the root level. An important factor for such is the Moore's Law which states that computers would increase in computational power every 18 months yet be cheaper in cost by half. (Swanson 2015) Initially, the U.S. military sponsored the earliest research into electronic digital computers and the Pentagon was the biggest customer of computer goods until about the 1970s. Soon, computers got cheaper and smaller as they proliferated in businesses and then into consumer households. This explosion in the market for computer technology shifted the focus of innovation for military purposes to business and consumer technology. This also created a new environment for military planners and researchers—now, it's now common for military technologies to absorb advanced technologies from the commercial sector instead of the other way around. Many of these factors combine together in the military context; as prices fall for information technology components that are increasingly capable, weapons like munitions that use these components can become both more deadly and more numerous. Similarly, as communications networks become both more ubiquitous and more sophisticated, spanning both terrestrial and space elements, military command and control can do more and in more places.
This has spurred a series of parallel developments in the conduct of warfare. A few of these include-

DEVELOPMENT OF PRECISION MUNITIONS

Amongst the most noteworthy developments is the creation of agile, lower-cost weapons in the form of precision weapons. Development on such munitions started during the Vietnam War but evolved into more precise systems over the decades. Such systems are often guided by GPS thus increasing their accuracy and destructive power by multiple times. Precision-guided munitions have enabled the application of "precision force," which refers more generally to the use of deadly violence with greater speed, range, and accuracy.
Another factor to drive the development of such munitions has been the argument that conventional weapon platforms like manned aircrafts, ships etc. would eventually be phased out in favour of smaller, unmanned platforms that can neutralise the enemy from greater distances. At the same time, such developments allow military forces to reduce civilian casualties and in turn minimise collateral damage. Attempts have even been made to transform conventional "dumb" bombs into "smart" ammunition by adding various technological features like inertial guidance and GPS oriented communication systems into them. Such developments allow a force to destroy targets using fewer bombs putting fewer crews at risk and reducing operation times.

DEVELOPMENT OF STEALTH WEAPONS AND DRONES

Another significant development was made in the area of stealth technology. While stealth doesn't completely render a platform invisible, it significantly reduces the radar cross section observed. Stealth allows an aircraft to penetrate deeper into enemy territory and deliver PGMs. Drones and unmanned aerial vehicles have substantially lower signature levels or can be effectively kept under observable radar hence allowing them to play a huge role in reconnaissance and surveillance roles. Since the U.S. rolled out its first stealth fighter, the F-117 Nighthawk, stealth technology has evolved and been adapted for everything from helicopters to drones and even ships. Yet, stealth has its limitations too as continual advances are made in detection capabilities too. It's widely acknowledged that current stealth technology would be obsolete in a decade due to advances in visual, infrared and thermal detection. Such "low-observable technologies" are currently pursued by all major powers like Russia, India, USA etc. with each having started work on stealth platforms like aircrafts, helicopters, ships etc. Currently the United States and China are the only two states to have deployed. Drones too have changed the battlefield as it's now possible to inflict damages on enemy assets without risking any human manpower to the effect. Drones are comparatively new and many air forces are restructuring their doctrines on how to deal with them.

ESTABILISHING NETWORK CENTRIC WARFARE CAPABILITIES

It is the capability of new military innovations to reduce discrepancies between the ground soldier and the higher command that could change the way wars are fought. Sensors in satellites, manned aircraft, or Unmanned Aerial Vehicles (UAVs) can now monitor virtually everything that is going on in a particular battle area, dramatically improving battlespace awareness. The net result is the potential for commanders to have complete, real-time knowledge of the disposition of all enemy and friendly forces. The evolution of the GPS has also resulted in a better space based sensor capabilities. However, to relay this information correctly and quickly to authorities, which has led to the development of advanced command, control, communications, computers and intelligence processing (c4i) systems. Such systems not only process data but also relay responses in real time. It reduces the time taken for surveillance-synthesis-assessment-command-strike loop from a few hours earlier to a matter of a few minutes allowing a commander to control a battle as it develops each moment. Indeed, The argument of some proponents of the RMA is that new technologies will help "lift the fog of war"—this is a title of a book by retired U.S. Admiral William A. Owens—and allow a military power like the United States to command a battlefield like a chess game in which all the enemy's pieces are visible and vulnerable, and all the friendly pieces are visible and commendable.

ESTABILISHING JOINT COMMANDS

Many experts believes that the RMA would lead to Joint forces. The traditional form of national militaries has been to divide them into service branches such as the army, navy, air force with each developing its own traditions, doctrines and strategies but also cooperating with other branches when needed. However, the information processing and data collection capabilities of new technologies makes possible a level of coordination among service assets inconceivable in earlier eras of combat. Hence, the need for a joint-service commands for "data fusion" from all service elements into a single command allowing better management is necessary. While “jointness” refers to increased operational integration among the various components of the armed services, “combined” operations involve the military services working in coalition with their counterparts from other countries. This trend towards joint and combined operations will place a premium on measures among services and militaries to ensure interoperability – defined as the ability of systems, units, and forces to provide services to and accept services from other systems, units, or forces and to use these services to enable them to operate effectively together.

India and RMA

RMA caught the attention of Indian military planners during the 1990’s due to America’s overwhelming victory in the Gulf war as evident by the numerous articles in journals and various papers published during the decade. In 1999, the United States National Intelligence Council had conducted a study wherein it predicted that India would be amongst the nations which would try to emulate the US type change in warfare and apply it to its own context. (Rogers 1999) However, a program to undertake comprehensive transition from an industrial age army, trained, equipped and postured to undertake conventional offensive and defensive operations to an informative age army capable of fighting high intensity conflicts is yet to be undertaken. However, India needs to adapt features of the revolution and model them on local needs. It was not until 2004 that the Indian army also incorporated RMA officially as part of its doctrine. The then Chief of the Army Staff Gen. N. C. Vij stated that “Like all other major armed forces, the Indian Army is considerably influenced by RMA.”. (Indian Army Doctrine 2004) Since then, multiple efforts have been made to incorporate RMA more actively into the armed forces. This delay can be explained due to the following reasons-

(1) Even as much changed in the Western practice of warfare, India’s primary security challenges remained the same: defending Indian Territory by conventionally deterring Pakistan and dissuading China. (Anand n.d.)Being a status quo power, India’s strategic culture has always prioritized defence over offense. A survey of India's immediate and strategic neighbourhood highlights the varied types of conflicts/violence which the nation is likely to face.

Such threats include- Limited conventional conflicts and border wars against traditional enemies, insurgencies, ethnic and sectarian violence, narcotics/drug wars, religious fundamentalism, illegal immigration, terrorism (local and international variety), conflicts which may arise due to big power rivalries, proliferation of nuclear weapons, WMD falling in the hands of terrorists, wars to secure resource areas, and piracy and terrorism at sea, on land and in the air etc.
The notion of an RMA, therefore, didn't fit very well in India's military posture, at least for the political decision-makers. Moreover, for the political leaders, India had fared well in all its military campaigns since its defeat in the Sino-Indian war of 1962, so there was no real need to re-examine the basic tenets of India's warfighting doctrine or strategy.

(2) The Indian military are extensively dependent on manpower-intensive counter-insurgency operations. The demands for manpower, especially in policing troubled frontiers of Kashmir and the North-East, has always conflicted with the need to make the force smaller and lethal by incorporating elements of ongoing technological revolution. For example, in the late 1990s, when the Indian military was considering cutting force levels to create funds for modernization, it had to instead increase manpower and added six light infantry divisions (Bakshi 2010) to tackle insurgency in Kashmir. In fact, many in the military were arguing that tasking the defence forces to deal with the entire spectrum of conflicts ranging from high-intensity conventional wars to counterinsurgency and internal conflicts as well as peacekeeping operations, "adds complexity to moving towards building an RMA enabled military." The implementation of Model 4-B in the late 1990s aimed at modernising all 350 battalions of the army for to gain proficiency in counter-insurgency operations.

(3) Resources for modernizing the military were at a premium. In the first decade after the end of the Cold War, India's defence budget shrank from 3.17% of the GDP to 1.49% of the GDP. Most of the defence budget is consumed by non-capital expenditure (nearly 66%) such as salaries and pensions etc.; there is a lack of available funds for modernization. All these factors hindered India's adaptation to the changing nature of warfare. Resources which could help develop the IT infrastructure in the defence sector are lacking or heavily regulated. (Behera 2017)

Why does India need RMA?
India has effectively relinquished it's conventional as well as nuclear superiority against Pakistan. Pakistan had begun work on its nuclear weapon as early as 1972. However, it was only until 1999 that it conducted a series of nuclear tests nicknamed Chaghai in response to India's earlier Pokhran tests in 1998. Indian research into developing thorium based nuclear reactors had been delayed multiple times and a new nuclear weapon is not a guarantee of deterrence against Pakistan. Since then both the nations have effectively developed into nuclear triad states being able to launch nuclear weapons from all three platforms land, air and sea. Pakistan has also developed Tactical Nuclear Weapons to counter the risk it faces in terms of conventional Indian forces overwhelming it. (Kapoor 2012) This has made Pakistan undertake operations which covertly threaten the security of the nation. The misadventure began with the Kargil conflict, developed into occasional cross border attacks since 2003.It has also targeted civic areas with attacks on the Parliament, Akshardham, Mumbai etc. Of late they seem to be targeting military facilities as evident by attacks in Uri, Pathankot etc.

During these developments our lack of RMA has been laid bare again and again. During the Kargil conflict, Indian military was denied use of the GPS system by the United States which took the lofty approach of trying to persuade both warring parties to end the conflict. (Subrahmanyam 1999) The attack on Parliament in 2001 led to the launch of Operation Parakram. The Operation aimed at throwing the might of the Indian conventional forces against Pakistan as India deployed half a million troops on its borders with Pakistan. Yet, the snail-paced operation failed as it was unable to deter Pakistan, which had been alerted and had amassed its own forces alerted by the slow build up on the Indian side. (Sood and Sawhney 2003) This Operation also cost 1874 casualties of which 798 were fatal. The financial cost of such an operation was $2 billion with no battles being fought. Similarly, Pakistan had surprised

the international community as it quickly mobilized and deployed its troops when tensions between the two countries reached an all-time high after the Mumbai attacks in 2008. During both these occasions international diplomatic pressure had meant that India had to refrain from attacking and seek non-coercive measures instead.

India's RMA setup

Since 2004, India has integrated the RMA into its doctrine and developed multiple systems to support the same. It had also implemented a more ambitious plan titled "Force Structure 2015," aimed at transforming the service into a "lean, mobile and technologically oriented force" through induction of Network Centric and Electronic Warfare capabilities in the next fifteen years. For better integration and cooperation amongst the staff, the Headquarters Integrated Defence Staff (HQ-IDS) headed by the Chief of Integrated Staff to the Chairman, Chiefs of Staff Committee was set-up in October 2001. (Annual Report 2001–02 2002) A number of joint doctrines were released subsequently: Joint Doctrines for Defence Forces in 2007; Joint Doctrine for Amphibious Operations in 2008, and Doctrine for Joint Employment of Special Forces 2008. (Sahgal and Anand n.d.)Since then more than ten joint doctrines on areas such psychological operations, sub-conventional warfare and space have been promulgated.

In 2004, it setup the Director General Information Systems in an attempt to meet modern day challenges. In 2007, the HQ-IDS launched the Joint Space Defence Vision 2020 to create a single point contact for all space related activities of the tri-services. (Annual Report 2004–05 2005) This initiated development of multiple levels of command, control and information systems: Army Strategic Operational Informational Dissemination System (ASTROIDS) for communications between command headquarters and operational commands; Tactical Command Control Communication and Information System (TACC3I) for field formations and Command Information Decision Support System (CIDSS) for communications between corps and divisional commanders. These systems are designed to enable collecting, collating, filtering, processing, formatting all levels in a field force. Additional systems such as Battlefield Surveillance System (BSS) are being employed to "enable commanders to take decisions within a time frame" which will "provide the decisive edge between victory and defeat." Artillery Combat Command and Control Systems (ACCCS) required for "automating the operational aspects of artillery functions from crops down to the battery" and Situational Awareness and Tactical Handheld Information (SATHI) that included Geographical Information System, Global Positioning System and wireless networking for the infantry especially in Counter Insurgency Operations are also being planned. (Annual Report 2004–05 2005) India also realised it could not rely upon America for providing technology during wartime as evident during the Kargil conflict when the United States refused access to the GPS. To prevent such an occurrence from happening again, India launched the GSAT series of multi-band military communications satellite and is in the process of deploying the SANJAYA series of satellites. Yet, a few of its more ambitious projects are yet to take shape. An example would be that of the F-Insas. The aim was to equip the Indian soldier with a rifle system equipped with night vision capability, thermal, chemical and biological sensors, clothing for combat in a Nuclear, Biological, Chemical (NBC) environment, helmets integrated with heads-up display, palm top GPS systems for greater transparency. (Future Infantry: Unravelling the Indian Army's F-INSAS Programme 2012) Currently, the program has ground to a halt with none of its systems having been deployed in active service.

The Way Forward

DEVELOPMENT OF NATIVE OS AND MICROPROCESSOR

The modern day information technology revolution is driven by the microprocessor. Currently all available microprocessors and their architectures are developed in the West. In order for others to utilise them for commercial or military use, one has to pay the companies a fee in order acquire intellectual property rights license and utilise the same. This makes a nation solely dependent on 3-4 manufacturers in the world for further developments. Other states seem to have realised the same and have begun work on producing independent microprocessors and architectures. The Russians have started work on ELBRUS line of microprocessors as have the Chinese with their Loongson line of CPUs. It's worth noting that quite a few Western companies

doesn't actually manufacture their own CPUs which are manufactured by companies located in Taiwan or Mainland China. There are other big foundries which make CPUs and SoCs for other companies that design the parts. However, India currently lack both a foundry which could facilitate such an undertaking as well as a private enterprise for which the microprocessors are being manufactured for. This also makes systems more secure as conventional exploits might not work across all architectures. Similarly, the development of a native Operating system is needed as it prevents the payment of license fee, reduces risk from piracy. Also, a new operating system can be developed to work with new hardware allowing greater freedom to innovate. While Loongson has to still catch up with Intel and other western semiconductor manufacturers ,but due to the Snowden leaks that proved that US corporation manufactured hardware products have NSA back doors in them has sent shockwaves to governments and major non-US industrial conglomerates. (CIA 2017)

FORMATION OF INTEGRATED THEATRE COMMANDS

The formation of Integrated Theatre Commands (ITCs) should be of primary concern for the efficient conduct of military operations. As of now, each service is divided into a number of operational commands, led by of the individual service. In the total of 17 commands, with seven led by the army and air force and three by the Navy, yet, there are only two integrated command structures in the Indian military at present: the Strategic Forces Command (SFC) responsible for India's strategic nuclear forces and the Andaman and Nicobar Command for the defence of the islands of Andaman and Nicobar. (Sahgal and Anand n.d.)There is not a single point of command and control wherein all the individual commands of the three forces meet to formulate a plan of action. The need for Integrated Theatre Commands at the regional level yet, due to bickering within the political-military setup, such a plan has not really been materialised. Currently, government is in the process of issuing new "statutory rules and orders which allow an officer from any one service can now "exercise direct command" over personnel from the other two services, who are all governed by different acts and rules, in tri-service organisations. However, these will only be applicable for the strategically-located Andaman and Nicobar Command (ANC). The need to have ITCs at each command is therefore of crucial importance and should be worked upon without delay.

INSUFFICIENT FUNDING OF R&D

Another issues which the armed forces currently face is the lack of research and development work being undertaken either within the Ministry of Defence or by the private sector due to multiple factors. In 2017, the Army vice-chief slams ordnance factories for lack of R&D. Since 1991, India's share of GDP for R&D purposes has remained at a constant 0.9%.Meanwhile China has moved from 0.7% in 1991 to 2.1% in 2017. India remains amongst the biggest arms exporters of the world dependent on other nations to fulfil its needs. The lack of R&D has resulted in 68% of the arms currently in active service to be effectively described as "vintage" due to lack of replacements. The government has set up the Technological Development Fund (TDF) in 2017 to provide upto $1.5 mn, but such an initiative is not likely to result in any technological development. The reason for the same is that research and development in India is reliant on government grants or funding, yet the financial resources for the same remain deficient. The TDF currently only supports micro, small and medium-sized defence enterprises (MSME), which are unlikely to be able to meet the requirements of the Armed forces to match both quantity and quality (Sputnik (2017). Also, $1.5mn is too small an amount and the TDF might not be able to fund all projects. The need is to bring in even greater funds for R&D by either greater funding the ministry of Defence directly or by funding apt government agencies which could develop dual use technology for civilian or military purposes. Indian reliance on "Make in India" is not a guarantee that other nations would share technology with other states. For example, recently South Korea wanted the technical know-how of how to develop an active electronically scanned array radar, cutting edge electronic warfare systems, an infrared search and track system and an electro-optical targeting system, which it requested its long-time ally USA to provide under transfer of technology only to be met with denial from the Americans. The U.S. also refused to help South Korea with a sensor fusion engine to tie all of those systems together into a single coherent picture for the pilot—all the keys needed to develop a modern fighter. Even though the U.S. was willing to transfer twenty-one other less important but vital

technologies needed to build the KF-X—it's just unwilling to transfer the crown jewels of American technology to anyone. Indeed, much of the technology for the indigenous KF-X will come from the United States—including its General Electric F414 afterburning turbofan engines. Hence, it's only natural that next generation technology is tightly controlled by nations pioneering the research development and utilisation who'll be unwilling to transfer the same. Indonesian Vice Minister of Foreign Affairs Abdurrahman Mohammad Fachir co-chaired the First Meeting of High Working Level Strategic Dialogue (HWLSD) with South Korean Vice Minister of Foreign Affairs Lim Sung-nam in Jakarta and said to reporters, "The U.S. has refused to grant export license for the key technologies that have been delaying the program in many ways."

The Indian military still is focused on manpower dependent operations instead of being remodelled into a smaller, faster more deadlier forces as most other armed forces around the world have done. China had in 2015 similarly announced its intention to cut down its army by 300,000 in a bid to modernise its military seeking to make it more technologically capable and remodel its forces structurally to achieve the same. Similarly, during the same time period, the Russians also cut down on their manpower by 40,000. On the other hand the Indian Army alone comprises of nearly 1.3million active personnel and nearly 800,000 reserves. This further hampers India's goals to achieve RMA as it condemns an army to utilise funds towards the upkeep of manpower and their equipment instead of utilising them to upgrade or develop technical components of the military. (Anand n.d.) India ought to reduce its manpower by at least 100,000 soldiers and begin transforming its force into a smaller yet more lethal one aided by electronic warfare capabilities that allow it to deter conventional neighbours as well as carry out high intensity warfare.

Conclusion

The following conclusions can be drawn from the above (1) The debate on the changing manner of warfare has led to RMA receiving serious attention across the globe as well as in Indian strategic circles with the reasons, components and consequences of the current RMA being debated at length by military planners worldwide (2) It was the experiences of Kargil and Operation Parakarm made the Indian military realize the opportunities offered by the RMA as well as their own shortfalls. Since then, it is clear that the RMA has been a proponent of India's defence modernization plans, influencing doctrinal debates, and with efforts being made to infuse integration and jointness among various services and higher defence restructuration. (3) It still needs to be developed upon as there seems to be a rivalry between the three services in developing and procuring equipment. Also, a lack of strong political and bureaucratic will have ensured that the pace of adaptation to the changing nature of warfare is extremely slow and inefficient. Hence, although India appears to be listening to the Western debate on warfare keenly, it seems unlikely to adopt the principle proactively. India seems to have launched a lot of potential projects but the outcomes from the same remain to be seen.

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