IDSA Monograph Series
No. 12 January 2013

Operational Lessons of the Wars of 21st Century

P K Gautam

INSTITUTE FOR DEFENCE
STUDIES & ANALYSES

IDSA Monograph Series
No. 12 January 2013

Operational Lessons of the Wars of 21st Century

P K Gautam

idsa
INSTITUTE FOR DEFENCE
STUDIES & ANALYSES

ISBN: 978-93-82169-11-6

Disclaimer: It is certified that views expressed and suggestions made in this Monograph have been made by the author in her personal capacity and do not have any official endorsement.

First Published: January 2013

Price: Rs. 225/-

Published by: Institute for Defence Studies and Analyses
No.1, Development Enclave, Rao Tula Ram Marg, Delhi Cantt., New Delhi - 110 010
Tel. (91-11) 2671-7983
Fax.(91-11) 2615 4191
E-mail: contactus@idsa.in
Website: http://www.idsa.in

Layout & Cover by: Vaijayanti Patankar

Printed at: M/S A. M. Offsetters
A-57, Sector-10, Noida-201 301 (U.P.)
Mob: 09810888667
E-mail: amoffsetters@gmail.com

Contents

INTRODUCTION

The era of long duration force on force and conventional wars between countries is over. There are a number of current surveys on the trends in war. According to The Stockholm International Peace Research Institute (SIPRI) there has been a drop in the frequency of inter-state wars. During the period 2000-09 only three conflicts were recorded between states: Eritrea-Ethiopia; India-Pakistan; and Iraq versus the US and its allies. The remaining 27 conflicts recorded for the period were all fought within states.[1] Even if we include the Russo-Georgian conflict of 2008 and the Israel-Hezbollah conflict in Lebanon in 2006 as inter-state, the trends do not change much. Only two of the conflicts active in the period 2001-2010 were fought between states: India and Pakistan (Kashmir) and Iraq versus the US and its allies.[2] SIPRI has reported that for the seventh consecutive year, no inter-state conflict was active in 2010.[3]

As regards insurgencies and civil wars, the World Bank's *World Development Report on Conflict, Security and Development* shows that major civil conflicts (over 1,000 battle deaths per year) increased during post-colonial and Cold War eras peaking in the late 1980s and early 1990s. Since 1991-92, there have been 21 active civil wars. The number has fallen to 10 each year since 2002. The Report also points out that

---

1 See Lotta Harbom and Peter Wallensteen, "Appendix 2A. Patterns of Major Armed Conflicts, 2000-09", *SIPRI Year Book 2010*, Oxford University Press, Oxford, 2010, pp.61-76.

2 See Lotta Themner and Peter Wallensteen, "Appendix 2A. Patterns of Major Armed Conflicts, 2001-10", *SIPRI Year Book 2011*, Oxford University Press, Oxford, 2010, p.61.

3 Ibid.

despite a tripling in the number of states and doubling of population in the last 60 years, the percentage of countries involved in major conflicts (inter-state or civil) has not increased, and there has been a decline since 1992.[4] *The Human Security Report 2005* noted that, the factors that account for the diminution in the incidence of war since 1980 were: increase in democracies, increase in economic interdependence and decline in economic utility of war. Other possibilities being nuclear weapons, claimed advantages of bipolar/unipolar structure of international relations, a widespread reaction to the excesses of two world wars, and change through non-violent means.[5] The conclusion five years after the *Human Security Report* project since its first publication in 2005 shows that most of the deadliest conflicts involve Islamist insurgents and wars have become "intractable"- i.e., more difficult to bring to an end.[6] Robert Jervis has pointed out two contradictory trends. On the one hand as incidences of international and civil wars decline, on the other, the US, and to a lesser extent, Britain and France, have been involved in many military adventures since the end of the Cold War. Panama, the Gulf Wars, Haiti, Bosnia, Kosovo, Afghanistan, Iraq, and Libya are a few examples. The reason cited is that, the US is the sole superpower which is no longer deterred.[7] At many places such as in Iraq and Afghanistan inter-state wars in the initial stages got converted to counterinsurgency by the occupying force.

---

[4] See *World Development Report 2011: Conflict, Security, and Development*, World Bank, Washington DC, 2011, Box 1.1, p.52.

[5] See ," Introduction", in Vaughan Lowe, Adam Roberts, Jennifer Welsh and Dominik Zaum (eds), *The United Nations Security Council and War and Practices Since 1945*, Oxford University Press, Oxford, 2008, pp.45-48.

[6] http://hsrgroup.org/press-room/latest-news/latest-news-view/10-12-02/Canadian_Study_Reports_New_Threats_to_Global_Security_but_Reveals_Encouraging_Long-Term_Trends.aspx (accessed May 22, 2012).

[7] See Robert Jervis, "Force in Our Times", *International Relations*, 25 (4), December 2011, pp.403-425.

Why Study Wars?

While these are some analyses of the wars, one thing is clear. As incidences of war decline, there is an ongoing growth of the visual, print, mobile communications and the internet. This amplifies what is being observed. There are thus multiple interpretations of events related to the war. Empirical data and evidence on wars (now very few) are like a laboratory for study. Militaries need to observe and analyse these 'rare' events in the same way as astronomers observe an eclipse. Surely, each nation picks up many lessons and insights to learn and what not to learn or ignore. But these also depend on how a country and its society see war and its future.

Militaries and nations need to keep abreast by keenly observing wars that are current or have just concluded. The operational lessons must be critically examined after being extracted. After their examination they need to be related to the context in which a military is operating. While the Indian military may have a good experience of counterinsurgency, it is limited to small unit actions, with a policy of not resorting to heavy weapons as the operations are against own people in almost all cases. The Pakistani military also has now been exposed to intense counterinsurgency operations. The scope and intensity is probably more than that experienced by the Indian military. The People's Liberation Army (PLA) of China comparatively has the least combat experience at present times. The navies of all the three countries are now honing (as a spin off) their skills in anti-piracy operations in the Arabian Sea since 2008. This is much like peace time training and fleet exercises. Unlike land and air, naval engagements are extremely rare now. This could be one indirect and most cost-effective way for the navies to gain experience which they would not have acquired if these missions were not undertaken.

In the case of the Western powers, troops have had not only one, but repeated tenures in combat zones. Air power has been active since the 1990s and naval forces in support ever

since. The theatres of war have seen the employment and exponential growth of various weapons of war like Unmanned Aerial Vehicles (UAVs) and surface and air-delivered firepower including new generations of precision-guided munitions and special forces. Operational experience of militaries in combat is very high. In the recent case of Libya, pilots have been known to have flown a large number of sorties in the actions which commenced in March 2011. A former Canadian military attaché from the cavalry felt that combat experience of the Canadian military in Afghanistan (Canada did not participate in Iraq) has rejuvenated the soldierly skills, the impact of which will be felt for at least another 20 years by the troops.[8] In another unique change in the European context, the Norwegian armed forces have transformed from an invasion defence-based concept, grounded in conscription, towards a more flexible expeditionary force-based defence one.[9] Informal discussions with Norwegian scholars in various IDSA-PRIO bilaterals also shows that, in Norway the military's role is highly appreciated and their military has lived up to its expectation of effectiveness in its operations in Afghanistan as a North Atlantic Treaty Organisation (NATO) member. The challenge for all militaries is, how in peace time, with shrinking budgets and limited live training, field firing, and manoeuvre areas, does a military train to remain effective, ready and relevant. The classic method to remain abreast is to study wars ongoing elsewhere.[10] No such institutional programmes

---

[8] Conversation with the author on March 22, 2011.

[9] Anders McD Sookermany, "The Embodied Soldier: Towards a New Epistemological Foundation of Soldiering Skills in the (Post) Modernized Norwegian Armed Forces", *Armed Forces and Society*, 37(3), July 2011, pp.469-493.

[10] Some reasons as to why the Chinese want to study about non-Chinese wars are - the PLA has not fought an actual war since 1979, it had no experience in the changing face of war. See Andrew Scobell, David Lai and Roy Kamphausen (eds) , *Chinese Lessons from Other Peoples' Wars*, Lancer, New Delhi, 2012.

exist in Indian think tanks or universities. Lessons and insights however, keep getting reported and written about in journal articles or books but they lack coherence and summation.[11] This monograph is one attempt to examine the operational lessons of wars being conducted in recent times for policy suggestions.

Framework of the Study

This monograph is focused on operational lessons of war and not on political or strategic ones or those which amplify various conceptions of international relations, though some overlaps will be found.

After discerning the trends on warfare, the monograph examines select wars of the 21st century. It comments on the wars in Afghanistan (2001-ongoing) and Iraq (2003-10). As there are many commonalities in both these wars, it would draw lessons from these in one set. Thereafter, the monograph examines Lebanon (Israel-Hezbollah 2006), (Russia-Georgia 2008), the new concept of cyber war, and Libya. The key highlights after being extracted from these wars will be distilled into a summary of lessons.

Here, it is interesting to note that one British author with a military background who wrote a chapter on the war in Iraq in 2003, cautioned that, "It is too early to give any considered judgment as to the detailed success or failure for instance with regards to equipment and tactics. Indeed, it will be at least 30 years before historians will be able to give complete objective verdicts based on access to official sources."[12] Thus, this is

---

[11] In defence-related think tanks in India limited work exists on this aspect. One rare work is Lt Gen Naresh Chand, "Operation Iraqi Freedom", *CLAWS Journal*, Summer 2008, pp.123-133.

[12] Michael Codner, "An Initial Assessment of the Combat Phase", in Jonathan Eyal (ed), *War in Iraq: Combat and Consequences*, Whitehall Paper 59, The Royal United Services Institute for Defence and Security Studies, London, 2003, pp. 17-18.

not the final word and many more scholars and institutions need to debate on this aspect.

Nature and Character of War

It is clarified that in the understanding of the author, the nature of war is unchanging while its character changes with time and technology.[13] In military writing, nature and change of war are being used very loosely. Fear, chance, passion, fog and uncertainty are in the nature of war. It is no surprise that, ancient classics on nature of war by Kautilya, Sun Tzu and Clausewitz are read by strategists and military leaders alike. The character of war is what changes and is the object of inquiry. The wars of the 21st century show common trends in change in character such as the pivotal role of technology under the all-encompassing rubric of Revolution in Military Affairs (RMA). Another is the use of digital and information and communication technology by the belligerents both as weapons of precision, improvisation, or of spread of information or as means of strategic communications. The third is, many wars are being waged between states and non-state actors (terrorists/insurgents, non-state armed groups, etc). War amongst the people is a very common strand which captures the character of contemporary wars. Yet, the high-end spectrum of state-versus-state wars continues to be a currency of dissuasion and deterrence. It may be premature to write its obituary. The only possibility is that inter-state wars have become rare and the institution of last resort. This demands their intense study.

---

[13] For an excellent project on the changing character of war done by Oxford University over a five-year period see Hew Strachan and Sibylle Scheipers (eds), *The Changing Character of War* , Oxford University Press, Oxford, 2011. It needs to be pointed out that the work has not included the rich experience of non-Western societies like China and India which has also been observed by Jeremy Black in his review. See *Journal of Military History*, 76(1), January 2012. However, as most of the current operations included in this monograph are being led by the US, NATO, Russia and Israel, it is all the more important to study live experience of others in detail.

1 AFGHANISTAN (2001- TILL DATE) AND IRAQ (2003-10)

Afghanistan - Overview

Sufficient literature has been generated on the war in Afghanistan, which is also perceived as the US-led war on terror. The war has seen two phases. The first phase from 2001 to 2006 was when air power was used with Special Forces and indigenous groups. The second phase was the expansion and deployment of the NATO and the International Security Assistance Force (ISAF). In 2009 an additional 33,000 troops were inducted as a "surge" to combat heightened Taliban activity. In June 2011, the US decided to end the "surge" and to withdraw its forces from Afghanistan by the end of 2014. At that moment the US had roughly 100,000 troops in Afghanistan.[14] At the NATO summit in Chicago, held in May 2012, it was agreed that NATO and ISAF are to pull out of Afghanistan by 2014. The transformed Afghan National Army (ANA) will take over the security task, though the countries will remain engaged; the role of Pakistan was considered to be the key to peace and security.[15] What is important to note is that, this has been the longest ongoing military campaign in modern history. Till October 2012 in the 11 year-old conflict, the US military had suffered 2,000 fatal casualties, and the coalition troops 1,190. According to the United Nations (UN), 13,431 civilians were killed in the Afghan conflict between 2007, when the UN

---

[14] Adrian R. Lewis, *The American Culture of War: The History of U.S. Military Force from World War II to Operation Enduring Freedom*, Second Edition, Routledge, New York and London, , 2012, p.420.

[15] Anita Joshua, "NATO to handhold Afghanistan post-2014 pullout", *The Hindu*, May 22, 2012.

began keeping statistics at the end of August 2012.[16] A new trend has begun recently called "Green over Blue" wherein some soldiers of the ANA have killed the US troops. Although, it may appear that Al Qaeda has been eliminated, it has only been swept to other countries. The war has also lead to the resurgence of Taliban. Why no military victory or favourable political outcome has been achieved is a very complex issue. One reason is that, the 'enemy' was underestimated and secondly, the US and its allies though may be masters of post-heroic war with remote bombing, they could never reconcile to the realities of close fights and contact battles which counterinsurgency demands.

Initially, in order to destroy Al Qaeda in Afghanistan and to topple the Taliban regime that was hosting them quickly, three options were thought of. First was cruise missile on Al Qaeda camps, second a large bombing campaign and third an invasion. The cruise missile option was not followed as in 1998 retaliation on bombing of embassies in Tanzania and Kenya had not worked. The option of bombing was dropped due to the absence of lucrative targets. The military's idea of a full-scale invasion was unattractive because it involved assembling a massive force over a period of time.[17] Finally, the Central Intelligence Agency (CIA) inspired 'Afghan Model' of inserted Special Forces teams was adopted with the assistance of the Northern Alliance Force of 20,000 fighters which defeated the Taliban army thrice its size. The idea was, backed by US air power and money, to bomb and buy the Taliban out of power.[18] As noted, the most unique aspect of the war was the 'Afghan model' of Special Forces

---

[16] "U.S. Military Deaths in Afghanistan hit 2,000", *The Hindu*, October 1, 2012.

[17] Theo Farrell, "Review Essay: A Good War Gone Wrong", *RUSI Journal*, 156(5), pp.60-64.

[18] Ibid.

directing a variety of remote firepower including a quantum growth of unmanned and armed aerial vehicles. From the intellectual writings of the US Marine Corps, the idea of 'the strategic corporal' was born. [19] As a fallout ideas of a 'tactical general and strategic corporal' were also generated. This meant that non-commissioned officers have an important role to play as generals in an era of "three block war"– a scenario in which military forces would have to deal with a spectrum of challenges simultaneously ranging from conventional war, counterinsurgency against guerrillas and humanitarian aid. What the war did was to force a rethinking on force organisation or restructuring the military to counter terror and counterinsurgency missions. This bias has not gone away in the thinking of the US.

Iraq - Overview

The strategic objective of Operation Iraqi Freedom included the end of Saddam Hussein's regime; the elimination of Weapons of Mass Destruction (WMD); the capture or driving out terrorists who had found refuge in Iraq; and the securing of Iraqi oil fields and resources.[20] At the operational level, the US led war on Iraq has seen two phases. The first was during the conduct of the military campaign till the end of April 2003. This is the high-end spectrum and the main focus of this work. The second was the post-campaign period of counterinsurgency.

---

[19] Gen. Charles C. Krulak, "The Strategic Corporal: Leadership in the Three Block War", *Marines Magazine*, January 1999 at http://www.au.af.mil/au/awc/awcgate/usmc/strategic_corporal.htm(accessed May 22, 2012) , Williamson Murray, *Military Adaptation in War: With Fear of Change*, Cambridge University Press, New York, 2011, p.13 and Brain McAllister Linn, " The U.S. Armed Forces' View of War", *Daedalus*, 140(3), 2011, pp.33-44.

[20] Dr. Milan Vego, "Learning from Victory", *Proceedings*, August 2003, pp.32-36.

The Preparatory Stage

Civil-military perception over the force structure or "transformation" and the operational design which was likely to succeed in the campaign was an important issue.[21] There was a difference of opinion over the question of light versus heavy ground forces and use of air power. Civilians led by the Defense Secretary Donald Rumsfeld and his advisers wanted to build on the lessons of Afghanistan by sending a much smaller force and starting air and ground operations simultaneously.[22] The military brass under the leadership of General Tommy Franks, the Combatant Commander of the US Central Command, had bid for sending a large force, akin to that used in Desert Storm, and paving their way with a two-week air campaign. A compromise was reached closer to Rumsfeld's "transformational" model.

Rapid Dominance and Shock and Awe

The concept of operations was to be based on gaining rapid dominance by shock and awe. The phrase was evolutionary and drawn from the title of a book written in 1996 for the US National Defense University (NDU).[23] It suggested a confluence of strategy, technology and innovation for a revolutionary change by shaping the will of the enemy. Rapid dominance must control the operational environment and through the dominance control what the adversary perceives, understands and knows as well as control or regulate what is

---

[21] "Military transformation: The Janus-faced war", *The Economist*, April 26, 2003, p.30.

[22] Max Boot, "The New American Way of War", *Foreign Affairs*, July-August 2003, pp.41-58.

[23] Harlan K. Ullman and James Wade, Jr. with L.A. "Bud" Edney, Fred M. Franks, Charles A. Horner, Jonathan T. Howe and Keith Brendley, *Shock and Awe: Achieving Rapid Dominance*, National Defense University, Washington, November 1996.

not perceived, understood or known.[24] The term was interpreted as effects based operation meaning a devastating aerial bombardment followed by an armoured blitzkrieg. The focus was more on rapid effects of a few weapons rather than slow attrition using many in order to get into the decision cycle of enemy.[25] The term due to media hype was used very profusely (and loosely) and is here to stay. After the initial phase of the war, one of the authors Dr Harlem Ullman clarified that the operation was one of the most tightly controlled and overseen targeting campaign in history. To generate shock and awe sufficient to change behaviour, four criteria were essential. These were 1) Total knowledge including thought process and motivators of the enemy: 2) Rapidity in hours/days as against weeks: 3) Brilliance in execution: 4) Control of environment. To translate shock and awe into a strategy was "rapid dominance". The example he gave of shock and awe was at the tactical level when the Iraqi army melted away when it found precision destruction of its camouflaged (or what it thought to be camouflaged) equipment even in bad weather and poor visibility. With high-end technology and an enormous military advantage this experiment was bound to have the desired effect. The author gave a rough estimate that the coalition power in 2003 was 10 times greater than 1991. [26]

Major Highlights of the War in Iraq

Speed of advance was the defining feature of the operational idea and Baghdad was expected to be contacted after 25-30 days. The military campaign began on March 20, 2003. Unlike the 1991 Gulf War, this time, air and ground

---

[24] Timothy Garden, "Iraq: the military campaign", *International Affairs*, 79(44), July 2003, p.703.

[25] *The Military Balance 2003-04*, London, IISS, 2003, pp.101-102.

[26] Dr Harlan Ullman, "Shock and Awe Revisited", *RUSI Journal*, June 2003, 148(3), pp.10-14.

operations were launched simultaneously. According to William R. Hawkin, a month of air strikes might have triggered a world-wide political outcry, with demands for renewed negotiations, a cease-fire, and no regime change.[27] The occupation of Iraq was complete without finding any WMD. Widespread looting and damage to public infrastructure then began with sporadic hit and run encounters as expected from guerrillas. Slowly seeds of insurgency began to sprout with "terrorist" incidences on the occupation forces. On May 1, 2003, President Bush declared the end of major military operations.

Air Power

The primary mission included suppression and destruction of Iraqi air defence system, regime leadership and communication nodes simultaneously. As compared to 1991, the target selection was different. Bridges on the major routes were spared to ensure mobility of ground troops. Electric utilities were undamaged, probably as a concern for long term humanitarian problems.[28]

Smart Munitions

The use of precision munitions as expected had shown an increase. Smart weaponry grew from 0.2 per cent (Vietnam), 8 per cent (1991), 35 per cent (Kosovo in 1999), 60 per cent (Afghanistan in 2001) to nearly 70 per cent.[29] A total of 29,199 surface and air-launched cruise missiles, air delivered precision-guided bombs and free fall dumb bombs were used in 2003.[30] 68 per cent were precision-guided which included Joint Direct Attack Munitions (JDAMS) which is a kit

---

27 William R., Hawks, "Iraq: Heavy Forces and Decisive Warfare", *Parameters*, Autumn 2003, p.67.

28 no. 24, pp.707-708.

29 no. 22, pp.41-58.

30 no. 24, p.708.

($18,000 to $ 20,000)[31] and much cheaper than a $ 1 million Tomahawk cruise missile. Based on the Global Positioning System (GPS) guidance,[32] the JDAMS converts a dumb bomb into a smart one capable of all-weather performance at all altitudes.[33] In Afghanistan, 7,000 JDAMS were used and in Iraq 6,500.[34]

Employment of Air Power in Support of Ground Troops

A paradoxical outcome of the war was the revival of Close Air Support (CAS) by the fixed wing aircraft-to-ground troops. Proponents of air power in the US Air Force had considered strategic air superiority missions as the drivers for success in the 1991 operations, Kosovo in 1999 and Afghanistan in 2001. The ageing A-10 Warthog was the only aircraft left for CAS missions with the US Air Force. In the later days of the operations while nearing Baghdad, CAS again proved to be indispensable. The rebirth of tactical bombing for ground attack may again lead to a set of debates in the US on the Army's universal crib of being denied air effort. Max Boot has recommended the Congress needs to repeal the law that prevents the US Army from fielding any fixed wing aviation and suggests take over of A-10 to supplement the Army's helicopters.[35] Surely the Indian Air Force and the

---

31 Cost by Timothy Garden, note 24 quoted as $ 18,000 per bomb and by Max Boot, as $ 20,000 each.

32 GPS guidance leapfrogs and reduces the old techniques of Terrain Contour Matching (TERCOM) or Digital Scene Matching (DSMAC) and avoids the barriers of maps derived from highly classified overhead recce satellites, and sophisticated mapping infrastructure. Even the cruise missile has since been upgraded with GPS receivers. See Dennis M. Gormley, "Dealing with the Threat of Cruise Missiles", Adelphi Paper 339, IlSS, London, 2001.

33 no. 22, p.53.

34 Barry R. Posen, "Command of the Commons: The Military Foundation of US Hegemony", *International Security*, 28 (1), 2003, p.16, note 41.

35 no. 22, p.57.

Army need to analyze this trend for greater flexibility and better jointmanship. The institutional capability of employing air power for close air support missions must never be lost sight of. As the war showed, in absence of enemy air, there was no need to mount air defence or counter air missions. Thus, air power was used to attack strategic targets and then swing for tactical ground support. But, swinging and flexibility is also a function of type of aircraft acquisition. This is the nuts and bolts of the meaning of air power being "flexible". Drawing a similar lesson, even the PLA is now achieving a capability of on-call close air support which it lacked. For real time fire support it is incorporating the same battlefield command, control, and communications technology as used in precision strikes.[36]

Unmanned Aerial Vehicles (UAVs) and Aerial Surveillance Systems and Space Assets

Employment of UAVs at all levels for reconnaissance, surveillance, target acquisition and other missions was phenomenal. By 2011, use of remotely piloted aerial vehicles or drones became routine in targeting Al Qaeda leadership in the tribal belt along the Afghanistan- Pakistan border. [37] Two drivers are now clear on the future of UAVs. The first is the costs. It has been shown that behind each machine is a team of 150 or more personnel, repairing, maintaining the plane, and analyzing the immense quantity of data. For the US it costs US $ 5 billion to operate the service's global

---

[36] Martin Andrew, " The Influence of U.S. Counterinsurgency Operations in Afghanistan on the People's Liberation Army" , in Andrew Scobell, David Lai and Roy Kamphausen (eds.) , *Chinese Lessons from Other Peoples' Wars*, Lancer, New Delhi, 2012, p. 251.

[37] These drones are mostly operated by the Central Intelligence Agency (CIA). In Pakistan, according to the US officials, strikes from Predators and Reapers operated by CIA have killed over 2,000 militants till October 2011. See Scott Shane, "Coming Soon: Drone Arms Race", *The Times of India*, October 10, 2011.

airborne surveillance network.[38] The second is the new capability of UAVs to have made conventional forces highly vulnerable. It is argued that UAVs can now be used against tanks, artillery gun positions, intelligence assets and even aircraft carriers. Militaries would need to radically change conventional force structures.[39]

In space assets, by 2001 the US had 100 military and 150 commercial satellites. This was nearly half the world's total. More than 50 satellites supported land, sea, and air operations in every aspect of the campaign, besides the 28 GPS satellite constellations which provided accuracy of 3.08 metres for navigation.[40] In technical terms, during the invasion of Afghanistan in 2001, the US military used via communications satellites, some 700 megabytes per second of bandwidth, up from about 99 megabytes per second used during the 1991 US operations in Iraq.[41] Both the Gulf Wars have demonstrated the immense potential of the military application of space. As aptly summed up by K. Kasturirangan:

> "The important thing to note that no weapons were used in space but the power of space assets was used to direct, control and coordinate tactical war on ground."[42]

---

38 Scott Shane and Thom Shanker, "Obama's 'low-cost', people- friendly war", *The New York Times News Service,* reproduced in *The Hindu*, October 3, 2011.

39 Stuart S. Yeh, "A Failure of Imagination: Unmanned Aerial Vehicles and International Security", *Comparative Strategy,* 30 (3), July-August 2011, pp.229-241.

40 "High Ground Over Iraq-Performance of GPS", *Aviation Week and Space Technology*, June 9, 2003.

41 Deepak Sharma, *Space Capabilities and India's Defence Communications Up to 2022 and Beyond*, IDSA Occasional Paper no.15, November 2010, p.17.

42 K. Kasturirangan, "The Emerging World Space Order", in Ajey Lele and Gunjan Singh (eds.), *Space Security and Global Cooperation*, New Delhi, IDSA/Academic Foundation, 2009, p.30.

Surface Delivered Fire Power[43]

Surface-delivered indirect firepower continued to provide fire missions in all stages of the battle like close support, counter fire and degradation. The US Army Field Artillery (one corps artillery, two divisional artilleries, three field artillery brigades and 11 field artillery battalions), US Marine Corps artillery of five battalions, three battalions of the UK, and additional artillery was deployed boldly. Except the AS 90, all equipment had taken part in the First Gulf War. These being Multiple Launch Rocket System (MLRS), Army Tactical Missile System (ATACMS), M109A6 Paladin Self-Propelled (155 mm) Howitzer, 155 mm M 198 Howitzer and M118 105 mm Light Gun of the Marines. In Afghanistan most casualties to the US troops were due to mortars; and infantry mortars lived up to their reputation in 2003. The Advanced Sound Ranging System (ASR) was a new innovation.

Revival of the Tank and Infantry

The main battle tank proved its worth in spearheading the advance and bouncing positions. The indispensable role of infantry was again demonstrated, more so in the tough grind of contact battle. Since the 1991 Gulf War, RMA and precision munitions strikes had clouded the role of the infantry – to close in and destroy the enemy. This false cloud soon lifted. In a recent study in trends emanating from the West on combat capabilities since the year 2001, it has been realized that there is a decisive role of the tanks, and there is a an inescapable need for boots on the ground or an 'infantry renaissance'.[44] It is clear lesson that the Indian Army needs to

---

[43] Interview of Major General Jonathan BA Bailey, Royal Artillery, "Firepower in the Third Dimension - A Joint and Coalition Future", *Field Artillery*, July-August 2003 and Major General Michael D. Maples, Chief of Field Artillery, "Operation Iraqi Freedom", *Field Artillery* September- October 2003.

[44] "Combat and Capability: Military Trends Since 9/11", *The Military Balance 2012*, Routledge, IISS, London, 2012, pp.18-26.

sustain its superb infantry to outstanding performance demanded in contact battle.

Naval Support

The primary function of the Navy was to support ground operations. Half the coalition aircrafts came from five naval aircraft carriers deployed in the Mediterranean and the Persian Gulf.[45] The F-14s and F-18s ground attack aircraft had short range and limited bomb loads and thus it has been pointed out that like the Air Force, the US Navy also needs to concentrate on CAS missions.[46]

Casualties due to Friendly Fire

As in 1991, fratricide took a heavy toll. More casualties during the war took place as a result of friendly fire due to mistaken identities and over- reliance on automation and the "fog of war". These included a US Army Patriot missiles downing a UK Tornado fighter and a US Navy's F/A-18, US Air Force F16 attacking a US Army Patriot Radar System, air strikes against the US special forces with the Kurdish militia, A-10 strike on tanks of UK and exchange of fire between US Marines and armoured formations.[47]

Post-campaign period in Iraq (from May 2003 onwards) – Insurgency and Asymmetric War Begins

The end of initial military operations did not mean that the fighting had ended. Events become unexpected if they are not visualised in advance. In this war, the spirit and response of the Iraqi people was underestimated or wrongly assumed for a stereotypical behaviour. The US-led force was not

---

[45] no. 22, p.58.

[46] Ibid.

[47] John G. Roos, "What has US Learnt? Early lessons from Iraqi Freedom", *Armed Forces Journal*, May 2003, pp. 24-30.

welcomed as liberators. First, there was a breakdown of law and order which could not be controlled. Then indications of the birth of a classic insurgency began to gain momentum. Suicide attacks and ambushes on the occupation forces kept on increasing. It was realized rather late that winning the war is not enough, but winning the peace in the end state that was elusive. The invaders fell short in the governance of the country and post-war stability operations.[48] The Iraqis, the Islamist Arabs and AI Qaeda elements in the region were bound to wage an asymmetric war The Iraqi military having melted away, with tons of high explosives and much of infantry weapons around in caches, it was not difficult to see the pattern that emerged. Soft targets became routine, hard military targets were not spared the moment the guard was down.

Exit Strategy in Iraq

It is not the purpose of this monograph to narrate the seven years of counterinsurgency. One opinion is that, militarily the war in Iraq ended in 2008, although political conflict amongst Sunnis, Sh'ites and Kurds will continue for decades. The period 2003 to 2008 had two fronts. In the west was the Sunni province of Anbar which was under the sway of Al Qaeda and the front to the east at Baghdad. By mid-2006, the coalition was losing at both fronts. By 2007, the tide of war began flowing in favour of the coalition forces due to two events. The first was the Sunni Awakening in Anbar which was a critical enabler. There was a tribal rebellion against the Al Qaeda. The second was the surge by the US forces in Baghdad.[49] Learning from past history of counterinsurgency

---

[48] Nadia Schadlow, "War and the Art of Governance", *Parameters*, Autumn, 2003, pp. 85-94. The US appointed retired General Jay Garner who was soon replaced by Paul Bremmer as the head of Coalition Provisional Authority.

[49] Bing West. "Counterinsurgency Lessons from Iraq", *Military Review*, 89 (2), March- April 2009, pp. 2-12.

by the imperial and colonial forces, much of the focus was on manuals on how to fight insurgents.[50] Both the army and marines had a mindset of a kinetic, decisive battle. But, they turned it around in three years; the key Counter-Insurgency (COIN) ingredients being forbearance in dealing with the people, partnering from bottoms up and perseverance like patrolling in heat, dust and in an environment full of Improvised Explosive Devices (IEDs).[51] Finally, August 31, 2010 marked the official end of Operation Iraqi Freedom. The decision to keep some American troops on a support role to advise and assist the Iraqi forces [52] has since been changed. Not all the 40,000 remaining troops were withdrawn by end of 2011 with some positioned in the Gulf Security Council (GCC) countries.[53] In 2012, bombing and terrorist activities have engulfed Iraq as it is believed that Al Qaeda is slowly resurging in the security vacuum created by a weak government in Baghdad and departure of the US military.[54] Like Iran, the Iraq and Iran-backed Shia allies fear the threat, a Sunni Islamist-controlled Syria across the border would pose.[55] There is a Sunni Arab revival in Iraq backed by Turkey, the Arab world and the Kurds.[56]

---

[50] See Olof Kronvall, *Finally Eating Soup with a Knife?: A Historical Perspective in the US Army's 2006 Counterinsurgency Doctrine*, Oslo Files on Defense and Security, 05/2007, Norwegian Institute for Defence Studies (IFS), 2007.

[51] Bing West, no. 49, pp.2-12.

[52] "Iraq's Uncertain Future: The Reckoning", *The Economist*, August 28, 2010, pp.35-36.

[53] Atul Aneja, "American Exit from Iraq 'golden' victory", *The Hindu*, October 31, 2011. GCC countries are Saudi Arabia, Kuwait, Bahrain, Qatar, The United Arab Emirates, and Oman. *The Military Balance 2012* shows December 2011 as the date for the US withdrawal from Iraq while retaining key bases, the US embassy and military contracts. See *The Military Balance 2012*, Routledge, IISS, London, 2012, p.5.

[54] "Iraq Violence Kills 103 in One Day", *The Hindu*, July 24, 2012.

[55] Ranj Alaaldin, "Iraq Suffers from Its Chaotic Foreign Policy", *Guardian Newspaper Limited*, reproduced in *The Hindu*, October 17, 2012.

[56] Ibid.

Lessons from Afghanistan and Iraq

These wars employing high technology and communication technology have spawned the idea of informationalisation of warfare. This has led to a worldwide recognition of technology and jointness. One very popular example cited across nations is that reliance on informationalised weapons is increasing. While only 8 per cent of weapons used in first Gulf War were precision munitions, in the second Gulf War, this had risen to over 90 per cent, with over 7,000 precision-guided munitions (PGMs) fired in the first week alone. [57] The wars in Afghanistan and Iraq also gave a new role to air power. Noted historian on air power Jasjit Singh, shows the process, which started during the Vietnam War, and reached its highest point so far in Afghanistan and Iraq, that the capability of making long range air-to-ground strikes, Beyond Visual Range (BVR) accurate and all-weather, has finally arrived. This has reduced the number of weapons required to neutralise a target as well as the chances of losses of the strike force. This has tremendously enhanced the capability of the Air Force.[58]

It is realized that the role of information has shifted from the tactical and operational level to the strategic. Informationalised warfare is marked by the struggle of stratagems, of policy, of morale, of thought, and of psychology. The Chinese have taken it very seriously. The idea of information which is similar to what is also called strategic communication have led to the PLA's concept of "three warfares"– psychological warfare, public opinion warfare, and legal warfare.[59]

---

[57] Dean Cheng, "Chinese Lessons from Gulf Wars", in Andrew Scobell, David Lai and Roy Kamphausen (eds.) , *Chinese Lessons from Other Peoples' Wars*, Lancer, New Delhi, 2012, pp.153-199.

[58] Jasjit Singh, "Air Dominance and the Future of Air Power", *Air Power Journal*, 5 (2), 2010, pp.20-21.

[59] Dean Cheng, no. 57.

Psychological warfare is defined as conflict in the spiritual and psychological realm and is aimed at broader civilian and military populations. The second strand which compliments psychological warfare is about 'informationisation' of public opinion warfare. It refers to use of various mass information channels, including the internet. It is linked to issues of values. The Chinese in 2008 created the Ministry of National Defence Press Affairs Office (also known as Ministry of National Defence Information Office) for this purpose. The third leg is legal warfare encompassing use of both domestic and international law, as well as the laws of armed conflict to garner international and domestic support by presenting oneself as the more just or virtuous side in legal terms.

Leaving aside strategic and political issues, the high point of these wars is that all progressive militaries in their quest for modernization cannot ignore battlefield fire support, interdiction, the importance of low collateral damage, helicopters, unmanned aerial vehicles and fixed-wing close air support in the conduct of conventional operations.[60]

The insurgency portion of the wars in Afghanistan and Iraq saw a great deal of faith on relearning the art and craft of counterinsurgency. It has been argued that according to the proponents of counterinsurgency, the first three years of the Iraq War were disastrous because the US Army ignored the lessons of counterinsurgency from Malaya and Vietnam. By 2006, experts had produced a new counterinsurgency doctrinal manual.

In the US military the allure of counterinsurgency persists. Professor Gian P Gentile points out that many elites and opinion makers have come to believe in the promise of

---

[60] Martin Andrew, " The influence of US Counterinsurgency Operations in Afghanistan ", in Andrew Scobell, David Lai and Roy Kamphausen (eds.), no. 57, pp.237.

counterinsurgency as though it was a religion and the US is now burdened with the cult of counterinsurgency.[61]

This, then needs to be taken into account when the organizational and doctrinal foundation of the Indian military is deliberated. So much is the influence and impact of literature from the West that there is a risk that mimicking proposals for primary mission for counterinsurgency or counter-terrorism may take deep roots and the skills and capacity to wage a successful conventional war gets diminished.[62]

Perhaps the counterinsurgency stage is one which may provide a list of lessons that must be analyzed. It has been said that while there may be a tremendous resonance in the situation facing both the US and Indian armies in counterinsurgency, the basic difference lies in the use of minimum force in counterinsurgency operations by the Indian military. This earns it more respect and recognition with the local population. [63] Another fundamental difference is that, unlike the US and its allies and NATO, the Indian military is not an occupying colonial /foreign force but is only engaging misguided countrymen.

War disciplines militaries: it forces them to refine, and sometimes revise, their tactics, techniques and technologies, or risk defeat in battle.[64] What is worth probing further is the

---

[61] Gian P. Gentile, "Beneficial War: The Conceit of US Counterinsurgency", *Harvard International Review*, 2011, pp.12-16.

[62] Dean Cheng, no. 57.

[63] Concluding Remarks of the Chairperson Lt Gen V.G. Patankar, during talk delivered by Capt Barret Bradstreet of US Marine Corps on "US Military Experience in Iraq", on August 24, 2010 at the Centre for Land Warfare Studies, New Delhi, at http://www.claws.in/index.php?action=master&task=634&u_id=36

[64] Theo Farrell, "Improving in War: Military Adaptation and the Helmand Province, Afghanistan, 2006-2009", *Journal of Strategic Studies*, 33 (4), August 2010, pp.567-594.

theory of how learning occurs. Basing himself on the experience of British army in Helmand province of Afghanistan, Theo Farrell has developed a theory of military adaptation which is defined as the change in tactics, techniques or existing technologies to improve operational performance. In contrast, military innovation is understood to be a major change that is institutionalized in a new doctrine, a new organizational structure, and/or a new technology.[65] He argues that yet there is no theory of how militaries improve in war. He then attempts to develop a theory of military adaptation, which applies to the British campaign in Helmand from 2006 to 2009. Drawing on a wealth of primary sources (military plans, post- operation reports and interviews), he shows how British brigades adapted different ways of using combat power to try and defeat the Taliban from 2006-07, and how from late 2007, British brigades have adapted a new population-centric approach that has focused more on influence operations and non-kinetic activities.

Unlike the US experiences which is well documented and in the public debate, not much work has been devoted to the rich and varied Indian experience. Thus, Arpita Anant after field work[66] argues that the Indian experience of counterinsurgency has received scant attention from the scholarly community which led Sumit Ganguly and David P. Fidler to put together a volume entitled *India and Counterinsurgency: Lessons Learned*.[67]

Arpita Anant also refers to Rajesh Rajagopalan's work which criticizes the Indian Army's counterinsurgency practice as

---

[65] Ibid, pp. 567-594.

[66] Arpita Anant, *Counterinsurgency and 'Op Sadbhavana' in Jammu and Kashmir*, IDSA Occasional Paper no.19, 2011, pp.5-6.

[67] Sumit Ganguly and David P. Fidler, "Introduction" in Sumit Ganguly and David P. Fidler (eds.), *India and Counterinsurgency: Lessons Learned*, Routledge, London 2009.

suffering from a conventional war bias, that stems from its structure and organizational culture, which for a long time prevented any doctrinal innovation in its counterinsurgency operations.[68] According to her, while such critiques of the Indian counterinsurgency practice since independence are invaluable in enhancing our understanding of the strengths and weaknesses of counterinsurgency, they ignore a fundamental principle that was adopted at the height of counterinsurgency operations: This was the principle of minimal use of force and the recognition of people as the centre of gravity in any counter insurgency operation. It needs to be accepted that very little academic work has been done on India's counterinsurgency in open sources. In a comparative perspective, the Indian Army's counterinsurgency practices need to be appreciated and have a much ancient pedigree on what is being handed out in Afghanistan by Western forces. Perhaps, the Indian military's *Operation Sadbhavana* model of development in conflict zones in Jammu & Kashmir is a good example of successful adaptation and operational learning. *Operation Sadhbhavana*, which was put in place several years before the counterinsurgency doctrine was formalised, appears to have been a logical culmination of several discrete but significant developments in the evolution of the Indian Army's counterinsurgency practice. First among these was the Army's experience in the Northeast and the implementation of people-centric programmes under *Operation Samaritan.* Some Army officers therefore came to the valley having internalised the idea that counterinsurgency is primarily a political endeavour and that the role of the military ought to be secondary and supportive.[69]

---

[68] Rajesh Rajagopalan, *Fighting Like a Guerrilla: The Indian Army and Counterinsurgency*, New Delhi, Routledge, 2008.

[69] Arpita Anant, no. 66, p.11.

Unlike in the case of the UK where civilian professors and academics carry out a deep study of modern war and frequently visit the war zone to suggest improvement by military,[70] no such practice exists in India. Probably it is felt that it is not required. A former Army commander in a book review in the mainstream military journal of the United Service Institution of India, challenges the notion of the 'conventional war bias' put forth by an academic in the counterinsurgency doctrine. The reviewer's argument is that, as the Indian Army has to contend with threats from adversaries on its western and northern borders, thus it cannot shift its entire focus on counterinsurgency operations. Besides, in the Indian context, the use of minimum force is *sine quo non*; both these factors impinge upon the ability to conduct counterinsurgency operations. He recommends the work by the Indian academic only for intellectual pursuits and mentions that such works have limited relevance to counterinsurgency operations in our environment.[71]

Surely, there is a mismatch in academic work, policy studies and military operations. One lesson is the need for more study of counterinsurgency by Indian academics with archival sources and field work. For this modern war studies needs to be encouraged as a discipline of study in Indian universities with matching human resource developed for it.[72]

---

[70] Professor Theo Farrell, "British Military Transformation and the War in Afghanistan", IDSA National Strategy Project (INSP) lecture series, April 13, 2011 at http://idsa.in/nationalstrategy/lectures-abstracts.html#TheoFarrell

[71] Lieutenant-General Arvind Sharma, "Short Review of Recent Books" , *Fighting Like A Guerrilla : The Indian Army and Counterinsurgency* by Rajesh Rajagopalan, Routledge, New Delhi, 2008, *USI Journal*, July-September 2008, pp.420-421.

[72] P.K. Gautam, *The Need for Renaissance of Military History and Modern War Studies in India* , IDSA Occasional Paper no. 21, November 2011 at http://idsa.in/occasionalpapers/TheNeedforRenaissanceofMilitaryHistoryandModernWarStudiesinIndia

As regards training and education, Major-General Mungo Melvin (Retd) highlighted that military strategy has not been taught adequately, if at all in British military institutions until recently, and the specific skills of military appreciation have been largely ignored. The subject was entirely absent from curriculum of the Royal College of Defence Studies until Autumn of 2010.[73] This contrasts with an impression in India which assumes that probably military education of the West is always by default of a high order and needs to be copied. Mungo Melvin deflates this brand idea further when he reiterates the UK should strive to educate them how to think strategically, and not what to think.[74]

The Perils of Strategic NCO and Tactical General

The idea 'tactical general and strategic corporal' now stands discredited. With the insensitiveness shown in burning the Koran in a base which was being wound up followed by a soldier running amok and murdering 16 Afghan civilians, the hearts and minds of counterinsurgency have traveled back in a time machine. At one end of the spectrum bordering on arrogance and hubris is the demonstration of how even NCOs can now conduct decisive battles of firepower. This is a decentralization cum democratization of the conduct of war. On the other end is the stark reality that officers must be in charge to command the men in battle and control them with the tools of iron military discipline. War crimes cannot be swept under the carpet. Incidences such as the Abu Ghraib prisoner abuse in Iraq in 2004-05 are seared in the public memory. No military can ever be proud of such behaviour. It is known that Calvin Gibbs, a staff sergeant in the US Army's Fifth Styker Brigade, had recruited other soldiers to

---

[73] Mungo Melvin, "Learning the Strategic Lessons from Afghanistan", *RUSI Journal*, 157(2), April-May 2012, pp.56-61.

[74] Ibid.

kill civilians, mutilate them and take their fingers, teeth and other body parts as trophies of "savages". In other instances, the US soldiers are reported to have first killed their victims and then created the appearance of the victims having being armed enemy fighters.

So what is the lesson? First, in the much desired flat and non-hierarchical organization characterised by better technology and communications, the leadership's role cannot be made to appear to be outside the loop, thus justifying loss of influence over the behaviour of troops. Network-centric Warfare, RMA, etc. cannot be made excuses for such unbecoming acts. Officers have to lead by example. The job may be much harder due to wider dispersion and small teams working without officers. But what this demands is better selection and training of troops, and most importantly a high standard of military disciple and a deep internalisation of the general principles of the law of armed conflict (military necessity, distinction, proportionality, limitation, humanity and good faith). One regulation of the Law On Armed Conflict (LOAC) is to ensure discipline in combat. It is obvious that terrorists, insurgents and militants are non-state actors and they need not follow the Geneva conventions. But, this does not mean that soldiers undertaking counterinsurgency duty become psychopathic murderers. Every member of the Armed Forces is by virtue of the State's ratification of the Geneva Convention subject to the LOAC. Acts such as wilful killing, torture, or inhuman treatment of any person is regarded as grave breaches.

The second lesson is how officers in command try and understand the people in a foreign land. Rather than giving long-winded and complicated justifications for brutal behaviour, it is better if these acts make the officer cadre more sensitive and accountable. Cultural and religious understanding is of extreme importance. In a war amongst the people, no military force can be successful in wining the peace if the soldiers show a hatred for the locals. It is possible

that books such as the *Clash of Civilizations* by Samuel Huntington which predicted more violence with and within Islamic nations become bestsellers for the wrong reasons. It needs to be appreciated that Adam Oler, a serving officer in the US Judge Advocate General Branch, has attempted to fill the gap by writing articles in professional US military journals like *Parameters* and *Joint Force Quarterly* making the case for educating military leaders on the history of Islam. His conclusions are that, there is no Islamic way of war.[75] Yet paradoxically, anti-Islamic courses for the US military were suspended only in April 2012. It is quite strange that, this was being taught at Joint Forces Staff College in Norfolk, Virginia.[76]

Militaries need to be more sensitive and cautious towards the culture and religion of the people. But the main tool of a professional military is discipline and the duty (*dharma*) to obey the laws of combat and war. By outsourcing and allowing deviant and un-soldierly behaviour, battles may be won but not wars. Strategic NCO is well understood for the application of precision and long- range distant firepower. But for the moral and disciplined manifestation of a professional military, the General cannot outsource his strategic functions and duties to other ranks. Officers must own up to be officers. They need to be involved both at the strategic and tactical levels. War is a too serious a business to be left to the NCOs.

---

[75] Adam Oler, "An Islamic Way of War?", *Joint Force Quarterly*, Issue 61, 2nd Quarter, 2011, pp.81-88 and " A Critical But Missing Piece: Educating Our Professional Military on the History of Islam", *Parameters*,.41 (1), Spring 2011, pp.71-85.

[76] "Pentagon ends anti- Islamic Officers' Course", *Hindustan Times*, May 5, 2012

Human Terrain Mapping /Weaponisation of Anthropology

The resurgent emphasis on culture has identified the discipline of anthropology as a resource for the US military.[77] American anthropologists are at odds over the involvement of some of them in the Human Terrain Teams (HTTs) in Iraq and Afghanistan.[78] This has led to a continued debate on the moral aspect. The idea has been opposed by American Anthropological Association (AAA). It has been argued that the disciple was a "handmaiden of colonial governments" and a "child of western imperialism".[79] The Network of Concerned Anthropologists (NCA) argues that, academic research would be used to the killing and maiming of innocents, and to incite internecine violence within war-torn states.[80]

Stereotypical thinking abounds on people of West Asia. It is no surprise that an American scholar in a commentary in the IDSA journal, when listing out points in the long-time accepted wisdom about Iraq, was insensitive enough to mention that "Iraqis are all brutal and violent people."[81] This type of anthropological stereotyping by some Western countries has its roots in eugenics. Historian Niall Ferguson has shown how during World War I the colonial French were of the bizarre opinion that African soldiers (from Senegal) will feel less fear and suffer less pain due to underdeveloped

---

77 Josef Teboho Ansorge, "Spirits of War: A Field Manual", *International Political Sociology*, 4 (4), December 2010, pp. 362-379.

78 Geraint Hughes, "The Cold War and Counter-Insurgency, *Diplomacy & Statecraft*, 22 (1), March 2011, pp.142-163.

79 Josef Teboho Ansorge, no. 77, p. 372.

80 Geraint Hughes, no. 78, p.156.

81 Max Singer, "The Strange Unwillingness to Notice Iraq's Reality", *Strategic Analysis*, 34 (4), July 2010, p. 477.

nervous system. [82] In the case of India, Nicholas B. Dirks in his section for anthropology and the Army shows how by the 1890s, the martial race theory was codified in a series of official "recruiting handbooks" for different classes of the Indian Army to suit colonial purposes.[83] A trace of the entwined worldview of Malthus and Darwin has been known to influence the thinking of the Victorian elite not only for evolution of species but also for ordering of society. As shown by Madhusree Mukerjee, the criminal disregard to the millions of the deaths of the Bengal famine of 1942 by the then British Prime Minister Churchill was as a result of this type of racial thinking. In keeping with the early 20th century notion of eugenics, Churchill's advisor Frederick Alexander Lindemann or Professor Lord Chewell had asserted that 20 per cent of white people and 80 per cent of coloured were immune to mustard gas.[84] In one way this could be like human terrain projects of that time and all such actions need to be condemned.

Patrick Porter from King's College London has argued that Orientalism, the fascination of eastern ways of war, is also a history of Western anxieties, ranging from fear to envy to self-criticism.[85] Porter shows the absurdity of how Montgomery McFate (leading architect of the Human Terrain System) is confident that cultures exist as coherent and

---

82 Niall Ferguson, *Civilization: The West and the Rest*, Allen Lane /Penguin Group, London, 2011, p.181.

83 Nicholas B. Dirks, *Castes of Mind: Colonialism and the Making of Modern India*, Princeton University Press, Princeton and Oxford, 2001, pp.177-179.

84 Madhusree Mukerjee, *Churchills' Secret War: The British Empire and the Ravaging of India During World War II*, Tranquebar Press, New Delhi, 2010, p. 206 and pp.218-219

85 Patrick Porter, *Military Orientalism: Eastern War Through Western Eyes*, Hurst & Company, London, 2009, p.18.

separate things.[86] These 'Iraq Cultural Smart Cards' have reduced humans to economic, ethnic and tribal landscapes. It falsely partitions the world when it defines the theatre of anthropologised war as a tribal zone and a mono-culture of blood feuds.[87] Porter's core argument is that Western vision is flawed.

For the Indian military, engaged in counterinsurgency as a nation-building exercise, it is an important professional duty of commanders to learn about the society and culture that they are operating in their own country. This knowledge has to come via the institution of democratic education and values. It will be highly improper to imitate the US and get into this business of anthropology via its weaponization to know our own disparate people. Here, the objection in the US by anthropologist from the academy needs to be applauded as they rightly argue that it sullies the image of the discipline of anthropology by colluding with the military.[88] This makes it imperative that study of local culture where troops are deployed in the border region needs to formalized by wider military education.

Inadequacies of RMA for Land Battle

It needs to be appreciated that the most worthwhile criticism of RMA or for treating fourth generation warfare (4GW) as something new (whilst it was not) flowed via the ink of historians or political scientists who approached the subject

---

[86] Ibid, p.60.

[87] Ibid, p.194.

[88] This argument against HTS is from Dan G. Cox, "Human Terrain Systems and the Moral Prosecution for Warfare", *Parameters*, 41 (3), Autumn 2011, pp.19-31. It goes to the credit of Dan Cox in making a very logical case for HTS for knowledge of culture by foreign troops as a reason of *jus in bello*.

via the craft and tools of a historian.[89] This can be contrasted with the fever in academic writing and military journals on the revolution which has dawned since mid-1990s. The lesson that emerges is that, one needs to do critical thinking rather than getting carried away by new ideas. In short, there is an acknowledgment that militaries should continually evolve rather than necessarily seek revolutionary capability enhancements.[90]

Most authors located the inadequacies in the so-called RMA by events in Iraq and Afghanistan.[91] "We were seduced by technology".[92] Many in the US prior to the war believed (wrongly) that emerging technologies would completely transform wars. New communications, information, surveillance, and precision strike technologies would permit technologically advanced military forces to wage war rapidly, decisively, and effectively. [93]

The expectations by most US senior military commanders of the 1990s that RMA-based technologies would provide a silver bullet and disperse the fog of war and change its nature, was never realised. Williamson Murray, Professor Emeritus of History at the Ohio State University explains:

---

[89] See Williamson Murray, "History, War and the Future", *Orbis*, 52 (4) 2008, pp.54-563; Timoty J. Junio, "Military History and Fourth Generation Warfare", *The Journal of Strategic Studies*, 32 (2), April 2009, pp.243-269; Jeremy Black, "The Revolution in Military Affairs: the Historians Perspective", *The RUSI Journal*, 154 (2), April 2009, pp. 98-102.

[90] Editor's Foreword, *The Military Balance 2010*, Routledge, IISS, London, February 2010, p.5.

[91] Adam Roberts, "Doctrine and Reality in Afghanistan", *Survival*, 51(1), February- March 2009, pp.30-60.

[92] H.R. McMaster, *US Army, Naval War College Review*, 2011, 64 (1), pp.7-17.

[93] Ibid.

> "The experience of Afghanistan and Iraq has dissipated the fog of willful ignorance about the fundamental nature of war, not to mention of historical experience."[94]

A 2011 publication from the prestigious American Academy of Arts & Sciences now acknowledges that the RMA of 1991 gave the US military a major advantage over other militaries, but these technologies have not been effective in dealing with urban insurgencies or the global war on terror.[95]

A study of the belligerents is also necessary. General John Abizaid, former commander of the US Central Command responsible for operations in the Gulf and Central Asia, was truthful enough to admit that, "the enemy is better networked than we are."[96] This capacity of the enemy (insurgents) to perform with innovation has been rightly called the "Other RMA" by one scholar.[97] The key lesson is that, there are many interpretations of RMA. Defence planners need to be very clear when using such terms. Terms like RMA, network centricity and information and communication technologies need to be seen in context. One interpretation of RMA which is apt is in the realm of space is:

> The emerging contours of Revolution in Military Affairs (RMA), based on network-centric planning and integration of Information and Communication

---

[94] Williamson Murray, *Military Adaptation in War: With Fear of Change*, Cambridge University Press, New York, 2011, p.315

[95] William Perry, "Foreword", Special issue on The Modern American Military, *Daedalus*, 2011, p.7.

[96] As quoted in Antoine Bousquet," Chaoplexic warfare or the future of military organization", *International Affairs*, 84 (5), September 2008, pp. 916.

[97] Itai Brun, "While You're Busy Making Plans- The' Other RMA", *The Journal of Strategic Studies*, 33 (4), August 2010, pp. 535-565.

Technologies (ICT), are increasingly dependent on outer space capabilities.[98]

Asymmetric Warfare, Suicide Bombers and Technology

The word 'asymmetric' has multiple interpretations. One most well known and understood is the umbrella term 'asymmetric warfare' that includes insurgents and terrorist campaigns that Western militaries were forced to contend with in the course of external inventions.[99] Asymmetrical wars for Western countries were wars of choice.[100] Guerrilla warfare has historically been the tactics of the weak. They also use asymmetric tactics. Here asymmetry has special connotations for the insurgents. These operations in the 21st century show the capacity of the Taliban and the Al Qaeda fighters to employ tactics making full use of improvisation of available technology. Besides, with the smart use of information technology and improvised devices, one phenomenon that has emerged is suicide bombers as precision guided munition. That youth, including women, are motivated (or brainwashed) to lay down their lives, is a very uncomfortable observation. What then could be the difference in the citation of a soldier who gets the highest gallantry award posthumously? Both the suicide bomber and the soldier have laid down their lives for a cause. The lesson is in the realisation how societies have now evolved where suicide bombing is routine. Thus, religion and asymmetric warfare have taken an ugly turn as is borne out by suicide bombing incidences in Iraq, Afghanistan and Pakistan. All efforts need to be made to contain and mitigate this.

---

98 *Space Security – Need for a Proactive Approach: Report of the IDSA- India Pugwash Society Working Group on Space Security*, Academic Foundation, New Delhi, 2009, p.17.

99 S. Kalyanaraman, "Asymmetric Warfare: A View from India", *Strategic Analysis*, 36 (2), March 2012, pp.193-197.

100 Ibid, pp. 193-197.

Another variation of asymmetry is what the Chinese term as seeking out vulnerabilities inherent in enemy's superior strength and employing countermeasures or *sashoujian* - assassin's mace (low-cost quick fix substitutes to enhance military capability).[101] One thing clearly stands out in the wars being surveyed is that almost all are asymmetrical. This is also manifest in Lebanon war of 2006 when Israel engaged with the non-state armed group Hezbollah, or the giant Russia assaulting the tiny state of Georgia in 2008. In the realm of cyber warfare the analogy of asymmetry is well captured. Computer networks manipulated or degraded by cyber worms (like Special Forces) can cause kinetic impacts to heavy duty industrial processes relying on networks. Small is then also asymmetric.

The Russian Federation likewise is also keen to develop asymmetric responses with features of such technologies like: (1) have a disruptive effect on new Western technologies, (2) be developed in areas where the domestic military industry has particular advantage, and (3) be much cheaper to develop and produce than Western technologies.[102]

Interrogating Clausewitz

But what of the mantras of Clausewitz which need to be chanted even today to sound very profound? Adrian R. Lewis' work on American culture of war and the future of warfare finally puts an end to the theory of Clausewitz which relates war to the trinity of the government, army and the people thus:

> "The most significant development in the conduct of war in the twentieth century was elimination of the American

---

[101] June Teufel Dreyer, "People's Liberation Army Lessons from Foreign Conflicts: The Air War in Kosovo", in Andrew Scobell, David Lai and Roy Kamphausen (eds.) , *Chinese Lessons from Other Peoples' Wars*, Lancer, New Delhi, , 2012, pp. 33-73.

[102] Tor Bukkvoll, "Iron Cannot Fight – The Role of Technology in Current Russian Military Theory", *The Journal of Strategic Studies*, 34(5), October 2011, p. 690.

> people from the conduct of wars of the US..... The modern nation-state – the birth of which Clausewitz observed – no longer exists." [103]

The above quote sums up one important view based on the wars that the US is engaged in for over a decade. The lesson is at the intellectual level. Referring to or studying philosophers of war without context needs to be avoided. Why this is important is because, soon, for the first time, the Indian Army is embarking on the study of philosophers of war. It has introduced operational art in the military history syllabus for the annual Staff College competitive examination.[104] Von Clausewitz's *On War* is to be studied for the examination in 2013.[105] Superficial reading of Clausewitz may do more harm. It is possible that to sound profound Clausewitzian ideas are made into mantras. What is not well known probably is that, this has already been debated and studied extensively in the past. The danger is

---

[103] Adrian R. Lewis, *The American Culture of War: The History of U.S. Military Force from World War II to Operation Enduring Freedom*, Second Edition, Routledge, New York/ and London, 2012, p.486.

[104] Rather than calling this study as those of philosophers of war, the term used is 'operational art', which has a totally different connotations based on Russian theories of war in the inter war period and culminating in the rich literature that now exits on the three level of wars – tactical, operational and strategic. In my conversation with a serving military officer he opined that irrespective of the title of the subject, inclusion of the study will compel both students and those who set papers and evaluate the examination (meaning senior officers including generals) will now begin to be conversant with the philosophers of war.

[105] The translators or editors have not been mentioned. It is presumed that the most popular version available in India will be prescribed by which I mean *On War*, Carl Von Clausewitz, edited and translated by Michael Howard and Peter Paret, London, Everyman's Library, 1993. Other philosophers of wars being: BH. Liddell Hart's *Strategy: The Indirect Approach* for the recently concluded examination in 2012, *Arthasastra* by Chanakya (only books IX, X, and XI) for 2014 and Sun Tzu's *Art of War* for 2015.

that, these may erroneously be accepted as something new by the new breed of students without having any idea of the extensive debates on his work by European and Western scholars. I need to explain: A powerful imagery exists in scholarly imagination of Clausewitz in a negative manner. Appalled by the bloodshed and futile loss of lives during the First World War, Basel Liddell Hart called him the Mahdi of Mass and Violence. British military historian John Keegan and Israeli theorist of war Martin Van Creveld are 'anti-Clausewtizians' as well.[106] Peace research pioneer Anatol Rapoprt likewise in introducing *On War* divides philosophies of war as the *political*, the *eschatological*, and the *cataclysmic*. He places Clausewitz in the *political* category. [107]Anotol then terms the Neo-Clausewitzians as bizarre figures. He argues that, "In the name of realism they perpetuate an obsolete collective state of mind which has brought humanity to the brink of disaster."[108] No less than Major General J.F.C. Fuller, the 'manouever war' and 'principles of war' theorist, refers to volumes and pages of the English edition of *On War* to show how the understanding of Clausewitz has problems.[109] Fuller in his study points out that Clausewitz at page 287 scoffs at the old idea of 'war without spilling blood', calls it 'a real business for Brahmins' and Fuller further expands that Clausewitz considers that to introduce into philosophies of war, a principle of moderation would be an absurdity and therefore let us not hear Generals who conquest without

---

[106] See John Keegan, *A History of Warfare* (1993) and Martin Van Creveld, *Transformation of War* (1991).

[107] *Carl Von Clausewitz: On War*, edited and Introduced by Anatol Rapoport, Penguin Classics, London, 1982, p.13.

[108] Ibid, p.80.

[109] Major General J.F.C. Fuller, *The Conduct of War 1798-1961: A Study of French, Industrial, and Russian Revolution on War and Its Conduct*, Natraj Publishers, Dehradun, (First published 1961), First India Edition, 2003, pp.61-62. Fuller refers to volumes and pages of the English edition of *On War*, revised by Colonel F.N. Maude, and published in 1908.

bloodshed.[110] Fuller's penetrating insights show that "many of his (Clausewitz's) followers were completely flummoxed and fell victims to his apotheosis of violence". [111]

Although, Fuller argued that "Clausewitz's outstanding contribution to military theory is his insistence on the relationship of war and policy", he minces no words to mention that:

> "But of all Clausewitz's blind shots, the blindness was that he never grasped that the true aim of war is peace and not victory; therefore that peace should be the ruling idea of policy, and victory only the means toward its achievement".[112]

Suffice to say that even Clausewitz's work was never completed and his ideas are accepted wrongly as gospel truths by many scholars.

---

[110] Major General J.F.C. Fuller, Ibid. Reference to the use of term 'Brahmin' in the English edition of *On War*, revised by Colonel F.N. Maude, and published in 1908 are given by Fuller as Book I, p.287. It is clear that by Brahim it is meant intellect. Fuller like Sun Tzu is arguing that winning wars without bloodshed is the acme of skill.

[111] Major General J.F.C. Fuller, Ibid, p.62.

[112] Ibid, p.76.

2 LEBANON (ISRAEL – HEZBOLLAH 2006)

Events leading to War

Till 1968 as a result of Israeli-Lebanese armistice established 20 years earlier, the border was quiet. The situation changed from 1968 when the Palestine Liberation Organisation (PLO) began establishing itself in Lebanon. The period was of artillery strikes and raids. Large parts of Lebanon came under Syrian domination. In June 1982, six Israeli Divisions invaded Lebanon. The Israeli Defence Forces (IDF) got embroiled in counterinsurgency operations against various Lebanese militia including from the mid-1980s – the Hezbollah (a political party and also a militia from the Shia community of southern Lebanon). After 18 years of occupation, in May 2000 Israel withdrew across the international border. By then, the Hezbollah had established itself firmly in Southern Lebanon. The Hezbollah's objective remained to continue the resistance. It sought release of Palestinian and Lebanese prisoners, it strived to liberate Shaba farm, a small piece of territory under Israeli control, claimed by the Hezbollah to be Lebanese territory, and for the Hezbollah to show resistance to Israel to justify its own existence in the eyes of its supporters and the Arab world.[113] In July 2006, Hezbollah abducted two Israeli soldiers on the Israel-Lebanon border. Israel reacted to this provocation by a large-scale reprisal. The situation spiralled into a war lasting 34 days.

A Brief History of Past Military Lessons of Arab Israeli Wars

Since the middle of the 20th century, the Arab-Israeli wars have thrown up a number of military lessons. The most

---

[113] Martin van Creveld, "Israel's Lebanese War: A Preliminary Assessment", *RUSI Journal*, October 2006, pp.40-43.

spectacular was a textbook pre-emptive counter air strike in 1967 by the Israeli Air Force (IAF), which destroyed or made non-operational the entire Egyptian Air Force. This demonstrated the need for gaining mastery of the air as a prelude to spectacular ground operations. At sea, a Styx missile fired by an Egyptian missile boat on the Israeli destroyer *Eliat* validated the idea of anti-ship missiles.

The 1973 Arab-Israeli War again demonstrated a few new lessons. The first was that a determined attacker can breach any obstacle. The Egyptian Army surprised the token Israeli defenders on the Bar Lev line, proving that no defence can stop a committed attacker. Later, in attempts to link up with troops on the canal, Israelis learnt yet another lesson. They charged with only tanks without accompanying mechanised infantry, neglecting to neutralise the anti-tank screen by artillery firepower, and consequently paid a heavy price in tank losses. This war also proved that artillery firepower and combined arms teams must operate together. Thus, were sown the seeds of the Merkava tank with the capacity to carry infantry inside the hull. The Egyptians also ushered in the age of Surface-to-Air Missile (SAM) warfare, and learning from the IAF's pre-emptive use of air power in 1967, were successful in downing about 40 Israeli jets in the first two days of the Yom Kippur War.

The next lesson was the demonstration of how to win a war in the fourth dimension, that is, the electromagnetic spectrum. In the 1982 operations in the Bekka Valley, the Israelis were successful in destroying Syrian radars and aircraft through innovative tactics of Suppression of Air Defence (SEAD) by using air-to-surface missiles, ground-based fire power, electronic warfare, the use of RPVs and drones, and command and control of air space by Airborne Early Warning and Control System (AWACS). The Israelis came to be recognised as masters in the technology, art and science of UAVs. As shown earlier, all subsequent military operations like the US-led invasion of Afghanistan or Iraq as well as

targeted killings have been facilitated by the creative use of UAVs.

Lessons the Israelis Now Learnt

An important lesson that emerges is that, rather than jointmanship, core competence is more important. The war showed that air power alone cannot assure victory. The Israeli Military Chief Lt. Gen. Dan Halutz was an air force man and it could be said that being an airman he must have appreciated that air power would suffice. But, that did not happen. Having failed to destroy the Hezbollah by air power, a ground offensive was launched. Here, another lesson emerged, which is fundamental to land warfare: more important and rudimentary than jointmanship is the need to understand the employment of armour and infantry. Tanks are not suited for urban combat. The nature of fighting in this conflict was manpower-intensive - the real stuff infantry is capable of dealing with. This realisation of the need for boots on the ground came very late. It was no surprise when Maj Gen Udi Adam, the northern army commander from an armoured background, was replaced by Maj Gen Moshe Kaplinsky of the infantry on August 8.

On the question of fighting and martial spirits of the belligerents; anecdotal accounts of the 1960s and 1970s record how Israeli tourists on holiday in the Himalayas had voluntarily rushed back to their country when war had broken out. Today, however, not all Israeli youth looking for spiritual solace in Dharamshala, for instance, would like to return to fight a war they may not consider as vital as the previous ones. [114]

---

[114] Some of the lessons featured in my IDSA web commentary of August 19, 2006 at http://www.idsa.in/idsastrategiccomments/MilitaryLessonsoftheIsraelHezbollahWarinLebanon_PKGautam_190806

William F. Owen argues that one defining characteristic of the war was not any actual aspect of the conduct of the war but the very poor level of analysis that followed it. [115] First is that, the conflict had nothing to do with counterinsurgency, it makes no sense to gift the Hezbollah with ideas such as "swarming" or "intelligence preparation of battlefield". It is pointed out that the latter is nothing but what is called "eye for ground". Having an understanding of terrain is essential to all soldiers and inherent to their profession. It should not be a distinct process.[116] Importantly, Owen shows that the Hezbollah's effective use of technology has been greatly overstated. The question then is how did they inflict the damage that they did? The vast majority of problems for IDF can be traced back to un-proven concepts and post-modern command ideas that proliferated in the IDF in the late 1990s and early 2000s. Chief amongst them was 'Effect Based Operations' and 'Systemic Operation Design'. These ideas failed the test of fire. IDF did learn lessons. It took firm remedial action to enforce a strict back-to-basic campaign. As a result, mission verbs like "capture" and "destroy" have regained primacy over those that suggested "rendering the enemy incoherent". Simplicity has once again become virtue.[117] Martin van Creveld urged for reforms with better training of, and better equipment for, the reserve force.[118] Creveld further argues that "traditionally Israeli officers have not been among the most studious in the world. Plainspoken and sometimes blunt, they have gained promotion not by writing papers but by hunting Arabs and killing or capturing them. This time things were different." In his criticism of

---

[115] William F. Owen, "Back to Basics: What the British Army Should Learn from 2nd Lebanon War", *The British Army Review*, No. 15, Winter 2010/2011, pp.89-92.

[116] Ibid.

[117] Ibid.

[118] Martin van Creveld, "Israel's Lebanese War: A Preliminary Assessment", *RUSI Journal*, October 2006, pp.40-43.

waffling or what he calls verbal confusion, Creveld mentions that the deputy chief of intelligence, instead of looking for facts, sees his mission as "providing decision makers with a narrative." [119]

The cardinal lesson picked up by Creveld was that, in order to clear up the verbal confusion, there is a need to reform officer training and education, particularly at the medium and senior levels where plans are made and orders issued.

The simple lesson is that, there is probably no substitute to short, clear and simple orders.

Another addiction and bad habit was a considerable reliance on plasma computer screens. This negatively impacted Israeli ground commanders, who failed to look beyond their screens and see the ground situation. This affliction has been rightly called the "plasma effect".[120] But more serious is the Israeli habit of imitating the US military thinking. By reading mainly the US literature, as pointed out by Avi Kober, the Israeli defence forces underwent a superficial intellectualisation with a tendency to imitate the US military thinking in an absorptive, rather than competitive, form.[121] One reason for this is that not sufficient investment has been made in intellectual aspect of the military profession. The intimate strategic partnership with the US has exposed the IDF to American military thinking and has pushed the IDF towards the emulation of ready, off-the-shelf American doctrines.[122]

---

[119] Martin Van Creveld, *The Changing Face of War*, Ballantine Books, New York, 2008, epilogue, p. 274.

[120] Col Yossi Turgeman, Defence Advisor, Israeli Embassy, "Conflict in Lebanon", Talk delivered at the United Service Institution of India, April 11, 2007. Also see Avi Kober, "The Israeli Defense Forces in the Second Lebanon War: Why the Poor Performance?,*The Journal of Strategic Studies*, 31 (1), February 2008, pp. 3-40.

[121] Avi Kober, no. 120, pp. 3-40.

[122] Avi Kober, "What Happened to Israeli Military Thought?", *Journal of Strategic Studies*, 34(5), October 2011, pp.707-732.

It led to the weakening of the tradition of battlefield decisions. As also noted by Owen, complex terms began to be used at cost of simplicity – like 'Swarmed, multi-dimensional, simultaneous attack' in orders issued by a division commander at the expense of a simple and straightforward definition of objectives and missions.[123] According to Colonel (now Brigadier General) H.R. McMaster of the US Army, prior to the 2006 war against the Hezbollah, Israeli strategic thought and defence-planning was infected with some of the worst strains of RMA-related thinking.[124] It implied over-reliance on stand-off weapons over physical movement and software over hardware. A former chief termed this fixation as "addictive and obscured thinking".[125]

One comprehensive work has analysed the performance at the political, strategic, operational and tactical levels.[126]At the political level, the combination of political misconception with regard to the international reaction, an inexperienced political leadership, over- dependence on military advice and the poor quality of advice led to two major mistakes. The first was lack of clear definition of the war's political and military goal. The second was an outcome of the first. As there were no clear war goals, there was no well- defined strategy for the war's next stages, in particular how to bring it to an end.

At the military level, this time, as the initiative was with the IDF, strategic intelligence was not the source of the problem.

---

123 Avi Kober, no. 121.

124 H.R. McMaster, "Learning from Contemporary Conflicts to Prepare for Future War", *Orbis*, 52 (4), 2008, pp. 564-584.

125 Ibid.

126 Uri Bar-Joseph, "The Hubris of Initial Victory: The IDF and the Second Lebanon War", in Clive Jones and Sergio Catignani (Eds), *Israel and Hizbollah: An Asymmetric Conflict in Historical and Comparative Perspective*, Routledge, London and New York, 2010, pp.147-162.

The northern front was given insufficient attention for preparation for war. The entire focus had been on the conflict with Palestinians.[127] The general staff was conformist and a culture of 'group-think' by air force dominated top leadership.[128] Israel's inexperienced political leadership was ill-advised by a Chief of Staff who understood too little of ground warfare and believed too much in air power.[129]

At the operational level the performance of the IDF was a far cry from its past performance. It lacked the improvisation skills at the operational and tactical level which had led to victory after initial reverses in the past. There was also conceptual and coordination gaps between army commanders. [130]

At the tactical level, in the past (like 1973 War of Yom Kippur), a high level of professionalism and motivation especially by the armoured corps had turned defeat into victory in spite of failures at the political, strategic and operational levels. This time the IDF soldiers lacked high standards of training and for this reason could not save Israel from the mistakes at higher level. [131]

Lessons

Artillery Lessons

Martin Van Creveld mentions:

> "In more than a month's fighting, the IDF using some of the most sophisticated fire controls available to any army anywhere fired no fewer than 170,000 artillery rounds.

---

[127] Ibid, p. 152.

[128] Ibid, p. 155.

[129] Ibid, p. 155.

[130] Ibid, pp. 156-157.

[131] Ibid, p. 157.

> This was twice as in October 1973 war. With the difference that, at that time, the opponent had consisted of three Arab armies (Egyptians, Syrian and Iraqi) with half a million men and more than four thousand tanks." [132]

The operational lesson is that, ammunition expenditure by itself may be a wrong way to analyse a war. What is more important is the impact. How many targets were hit and how much ammunition was wasted is an area which needs more study. With guns with faster rate of fire and targets tucked away in urban and semi-urban terrain, the trend may be that ammunition expenditure will be very heavy.

Hezbollah Artillery: This needs to be studied. Innovation on old trucks as disposable rocket launchers is one way they used rockets. One needs to be careful in not learning wrong lessons of both sides – that is targeting civilians.

Other General Lessons

Back to Basics: Issues such as back to basics, use of simpler glossary of military terms, perils of over reliance on technology, lack of training, poor civil military relations and poor selection of higher military leadership are those that cannot be ignored. The exuberance on jointmanship should not be at the cost of combined arms training.

Intellectual Capacity: IDF commanders have shown a lack of intellectualism.[133] The Winograd Commission's final report on the 2006 war reaffirms this existence of 'bad anti-intellectual tendency' among IDF senior commanders.[134] One important reason was that the Israeli universities' offer of

---

[132] Martin Van Creveld, no. 119, p. 271.

[133] The exception being Israel Tal and Ariel Sharon, See Avi Kober, no. 122.

[134] As quoted by Avi Kober, no. 122.

degrees in academic programmes had become a degree industry which excluded military thought.[135] On the other extreme there was also false intellectualism and pretence. Avi Kober alludes to the post-modern ideas that proliferated amongst the IDF senior commanders through the Operational Theory Research Institute (OTRI) which provided a fare of imitated, ready and off-the-shelf Soviet-inspired American operational thinking.[136] Here, it is appropriate to say that as in the case of the IDF, the Indian military may also get carried away by the process of superficial intellectualism and imported ideas. One reason for lack of an intellectual capacity is the incapacity to discern change, to wit change in the character of war. Scholarship from the new and emerging field of innovation studies shows that the IDF struggled to innovate before the 2006 war. As Israel's early adversaries were primarily conventional, the Israeli leaders created a simple doctrine: strike first, seize initiative and drive the fight into enemy territory. This was premised on decisive ground manoeuvre to confound unimaginative Arab armies while achieving quick decisions.[137] Dag Henriksen further argues that Israel's decision to go to war was not based on a through in-depth analysis of the specific situation at hand, but rather rooted in its strategic outlook cultivated in the decades preceding the war.[138] This Israeli experience thus provides a clear pointer to the need of

---

[135] Ibid, p. 713.

[136] Ibid, pp. 717-718.

[137] Lazar Berman, "Capturing Contemporary Innovation: Studying IDF Innovation Against Hamas and Hizballah", *The Journal of Strategic Studies*, 35(1), February 2012, pp.121-147.

[138] Dag Henriksen, "Deterrence by Default? Israel's Military Strategy in the 2006 War against Hizballah", *The Journal of Strategic Studies*, 35(1), February 2012, pp. 95-120.

more focus on innovation studies and fostering an original intellectual climate.[139]

Has the Indian military been able to provide the climate and incentives for intellectual growth? No clear evidence is available. Most of the literature of military training establishments is not accessible barring the open access journals. If military-oriented think tanks are a rough barometer of research which is directly linked to intellectual progress then the picture is not encouraging. As regards think tanks, one well regarded and old-time scholar of the Indian military, notices that the IDSA struggles to make itself relevant and the United Service Institution (USI) of India is not a modern research institute.[140]

---

[139] Also see set of three articles in *Small Wars & Insurgencies*, 23 (2), May 2012, viz., Jonathan Levinson, "Rubber Match: A Third Lebanon War", *Small Wars & Insurgencies*, 23(2), May 2012, pp.307-329; Pierre C. Pahlavi and Eric Ouellet, "Institutional Analysis and Irregular Warfare: Israel Defense Forces During the 33- Day War of 2006", *Small Wars & Insurgencies*, 23 (1), March 2012 pp.32-55 and Niccolo Petrelli, " The Missing Dimension: IDF Special Operation Forces and Strategy in the Second Lebanon War, *Small Wars & Insurgencies*, 23 (1), March 2012, pp.56-73.

[140] Stephen P. Cohen and Sunil Dasgupta, *Arming Without Aiming: India's Military Modernization*, Penguin/Viking, New Delhi, 2010, pp.144-145.

3 The Russo- Georgia War (2008): Russia's Kargil[141]

In August 2008, Georgian military forces launched an attack on South Ossetia in an attempt to bring the territory fully under Georgian political control. Russia responded with a counter-invasion of South Ossetia and an attack on Georgian forces in Abkhazia and Georgian territory. After five days of fighting a ceasefire agreement was reached. Russian forces pulled out except from South Ossetia and Abkhazia which they recognised as independent territories. [142] In a study by the Moscow-based Centre for Analysis of Strategies and Technologies (CAST) – in terms of its nature, conduct, and duration, it has been said that the Russo-Georgia War closely resembled the circumstances and outcome of the Arab- Israeli War of 1967.[143] Just like Israel, Russia accepted a Georgian first-strike, then responded strongly and routed Georgia in just five days. Additionally, as was the case with Israel, which seized Golan Heights, Russia seized and retained and then granted independence to Abkhazia and South Ossetia.[144]

---

[141] I borrow this apt Kargil analogy from the prolific Vladimir Radyuhin's, "Georgia Continue to Pose 'Direct and immediate threat'" , *The Hindu*, February 2, 2010.

[142] Gregory P. Lannon, "Russia's New Look Army Reforms and Russian Foreign Policy", *Journal of Slavic Military Studies*, 24 (1), January- March 2011, p.27.

[143] David M. Glantz, Foreword, in Ruslan Pukhov (ed.), *The Tanks of August* , Centre for Analysis of Strategies and Technologies, Moscow, 2010, p.7.

[144] Ibid. Russia formally recognised independence of both the territories. Nicaragua, Venezuela and Nauru are the only UN members to follow Russia's example. Belarus and Cuba have indicated that they may do so. See Bridget Coggins, "Friends in High Places: International Politics and the Emergence of States from Secessionism", *International Organizations*, 65(3), Summer 2011, pp.433-467.

Normally it is the defeated who take lessons very seriously to reform and revive. Seldom do the victors undertake drastic reforms. They tend to bask in the intoxication of their victory. But when they undertake deep reforms they need to be noted as unique.[145] The case of the Russian Federation is in this unique category. As a laboratory, one can compare the Russian attack on Georgia in a five-day war in August 2008, to the Sino-Vietnamese War of 1979. Like the Chinese attack on Vietnam in 1979 which gave it a 'bloody nose' , but also triggered military modernisation; the attack by Russia on Georgia also led to deep and radical reforms. Scholars had pointed out that the Russian military organisation found itself out of balance in three main areas of reforms, viz.,:(a) Military technology and doctrine; (b)Threat perception and geopolitical change and (c) Transformation of society.[146]

In one of the early analyses of the war by the International Institute for Strategic Studies (IISS), some conclusions were: (a) Russia miscalculated Georgian air defence and lost seven aircraft. Russia failed to execute SEAD. Russian pilots had never learnt disabling Air Defence (AD) systems as it was not required during operations in Chechnya; (b) There was no night vision or night fighting capability which the

---

[145] Russia has forced out of Abkhazia and South Ossetia all observers from the UN or OSCE. On the third anniversary of the invasion in August 2011, Russian media brought out reports quoting various statements of the Prime Minster. In essence the main purpose of 2008 invasion was to dismantle or destroy Georgia's military machine. But that was not achieved, as Georgian army retreated quickly. Despite years of preparation, Russia's invasion was chaotic and disorganised, with only 15 Georgian soldiers taken as prisoners of wars. The generals who were initially lauded as heroes were unceremoniously dismissed afterwards. See "2008 Russia- Georgia War Revisited" *The Current Digest of Russian Press*, 63 (32), August 8-14, 2011, Pavel Felgengaver, *Novya Gazeta*, August 10, 2011, p.6.

[146] Caroline Vendil Pallin, *Russian Military Reforms: A Failed Exercise in Defence Decision Making*, Routledge London/New York, 2009, p.61.

Georgians had; and (c) Tactical command, control, communication, computers, intelligence, surveillance and reconnaissance (Tac C[4]ISR) was poor. [147] But perhaps the most "educative" flaw pointed out was that there was no change in doctrine or lessons learnt from operations of 21st century in Iraq or Afghanistan. Finally, it was argued that if use of cyber weapons to shut down key government and media sites were believed to be true then this form of asymmetric warfare was judged to be a part of Russian military doctrine.[148] In one way this war demonstrated the risk and havoc cyber attacks can do to the cyber-dependent infrastructure of a society (covered in section on cyber war).

The tone for reforms was set with the document "The Future Look of the Russian Federation Armed Forces and Top-Priority Measures for its Formations in 2009-2020".[149] The reforms addressed the question of conscription[150], discarding old equipment, doing away with reserve formations by replacing them with fully manned ones, improve command and control, doing away with the division in the chain of command. Brigades are to operate directly under an equivalent of army (corps equivalent) which in turn will be part of a Military District (Theatre or Command), disbandment of all air divisions and replacement with four strategic commands. The reform also had a target of having

---

147 "Russia", *Military Balance 2010*, London, International Institute for Strategic Studies, 2010 , pp.211-212.

148 Ibid, p. 212. Cyber war is covered in chapter 4.

149 Gregory P. Lannon, "Russia's New Look Army Reforms and Russian Foreign Policy", *Journal of Slavic Military Studies*, 24 (1), January- March 2011, pp. 26-54.

150 Real fiscal conditions limit the implementation of many reforms, including a shift to a more contractual and voluntary form of recruitment. Harsh conditions and sometimes criminal climate in the military serve as a real deterrent to attract qualified soldiers. See Jason P. Gresh, "The Realities of Russian Military Conscription", *Journal of Slavic Military Studies*, 24 (2), April- June 2011, pp. 185-216.

modern equipment inventory of 30 per cent by 2015 and 70 per cent by 2020. Due to financial crisis and slow domestic production, for the first time Russian Armed Forces considered procurement of foreign produced equipment like UAV from Israel and *Mistral*-class amphibious assault ship (Landing Helicopter Dock- LPD) from France.[151]

What is clear is that, with the adoption of the brigade structure and the end of cadre units, the pre-revolutionary and Soviet system of a military force based on large-scale mobilisation has ended, with the stress now on transitioning to lean forces capable of being held (at least in theory) at high readiness.[152]

The Journal of Slavic Studies has indicated the new look army's need to resort to asymmetric tactics, techniques and procedures against more capable armies.[153] It is admitted that Russian forces will be incapable of engaging either NATO or People's Republic of China (PRC). This is an admission that the new force structure is primarily constructed to deal with low capability, low mass and low technology threats. Bias is for the "Southern" countries.[154] Most importantly from July 6, 2010, four joint strategic commands based on four geographically-based regions have been established. All military units stationed in the territory of joint strategic command, including navy, air force and air defence units –

---

[151] "Russia", *Military Balance 2010*, , International Institute for Strategic Studies, London, 2010, ch. 4, pp.211-216. Also see Rajorshi Roy, " The Strategic Implication of the Franco- Russian Mistral Deal", *IDSA Issue Brief*, September 19, 2-011 at http://www.idsa.in/issuebrief/TheStrategicImplicationsoftheFrancoRussianMistralDeal

[152] "Russia", *Military Balance 2011*, International Institute for Strategic Studies, London, 2011, ch. 5, p.173.

[153] Gregory P. Lannon, "Russia's New Look Army Reforms and Russian Foreign Policy", *Journal of Slavic Military Studies*, 24 (1), January-March 2011, p. 45, note 72.

[154] Ibid, p. 26.

excepting strategic missile forces and space forces- are under the direct control of these commands.[155] Current thinking suggests that seeing the failure of the so-called soft power, Russia may revert to hard power to exert regional influence.[156]

Lessons

It has been demonstrated that for radical reforms to begin, the political leadership has to have a clear idea of desired ends and a capacity to call the shots. The reforms in Russia have changed the civil-military relations with a greater role for civilians in financial matters and reduction of the military in the top decision-making processes like finance. This contrasts with the Indian case, where the reverse is being pressed for by the military –a greater role of military in civil-military relations (CMR). Scholars studying CMR in India and the debates of integrating the ministry of defence and having a Chief of Defence Staff, need to understand this unique transformation in Russia. Another related matter is the drastic pruning down of top-heavy ranks in the military and trimming of officers in the headquarters. This reduction which is nothing but a revenue budget exercise, is also worth a deeper analysis. With proliferation of ranks in the military mostly as a competitive venture (for pay, perks, protocol and status) with civil services, in India jobs earlier performed by captains/majors are now being done by Lt Colonels: jobs of Majors/Lt Cols by Colonels: jobs of Colonels by Brigadiers and so on till General rank. This has some traces of Parkinson's Law in action.[157]

---

[155] "Russia", *Military Balance 2011*, International Institute for Strategic Studies, London, 2011, ch. 5, p. 174.

[156] Thomas Grove, "Russia Feeds on Addiction to Arms as Soft Power Fails", *The Asian Age* (Mumbai), October 12, 2011.

[157] Parkinson's Law is a satirical dictum that "work expands to fill the time available for its completion". See *The New Encyclopaedia Britannica*, Micropedia, Ready Reference, Chicago, University of Chicago, 1985, p.160. Another interpretation is bureaucracies keep expanding over time. This can be extended to show how rank structure expands over time.

Although, the Vikram Singh reforms for cadre upgradation and Sixth Pay Commission recommendations are justified from a moral point of view due to an uneven relative deprivation in comparison to the civil ranks; but purely from a military effectiveness perspective, this top-heavy structure may not be sustainable in the long run. Lt Gen Gautam Banerjee has argued that the army is now burdened with top-heavy organisation that in no way helps in its mandate of war-fighting. This self-inflicted damage is further exacerbated when the upgrade of appointments, instead of fostering better military vision and competence, leads to higher ranks downgrading their skills and usurping the role of subordinates. A Havildar is just as efficient as a Naik of yesteryears and Generals have started thinking and acting just as Colonels did in the past. [158]

In the light of evidence of a bloated top-heavy structure as in the case of Russia, this issue deserves a wider and transparent study in Indian context. Finding better emoluments within same rank structure and a second career at the middle levels could be one solution. [159]

At the tactical level, close air support by the air force to the army and basic training including SEAD and electronic warfare operations must not be forgotten. This 'forgetting' episode happened as the Russian air force was engaged in prolonged counterinsurgency. In the seven aircraft losses, six succumbed to friendly fire.[160]

---

[158] Gautam Banerjee, "Indian Army: Demilitarisation and Civilianisation", *Indian Defence Review*, 26(3), July-September 2011, pp.88-94.

[159] Ibid, p. 91.

[160] Vladimir Radyuhin's, "Georgia Continue to Pose 'Direct and immediate threat'", *The Hindu*, February 2, 2010. The news item is based on *The Tanks of August*, Centre for Analysis of Strategies and Technologies (CAST), Moscow.

Failure and obsolescence of communication (the 58th Army Commander of Russian Federation communicated during combat using satellite phone borrowed from journalists since communication between units was unavailable), non-availability of satellite targeting support to artillery thereby preventing the use of Precision-Guided Munitions(PGM), and absence of Global Navigation Satellite System (GLONASS) receivers led to situations when troops went into battle using World War-II era compasses and maps. The case study of maps and communications has direct relevance to the Indian experience. The Indian Peace Keeping Force (IPKF) went into Sri Lanka without military maps and in Brass Tacks–IV, there were no proper maps available of the scale(one square being equal to a kilometre or million maps) required by military units and formations of the exercise area. Even in Kargil in 1999, the media had better communications at places than the military.

The long recognised weakness of Russian military has been network-centric warfare. The 2008 War confirmed it again.[161]

What is the state of Tactical C3I in the Indian Army? A former Director-General of Information Systems of the Indian Army has warned that implementations of Tactical Command, Control, Communications and Information (Tactical C3I) have been facing excruciating delays with stiff résistance from certain quarters with narrow vested interests of intra-army regiments and corps. He recommends a review on how to treat information and a drastic top-down change. Some issues in need of urgent reform suggested are reforms in the Engineer Survey to serve the military by way of use of the Geographic Information System (GIS), placing Project Management Organisation (PMO) such as Future Infantry

---

[161] Tor Bukkvoll, "Iron Cannot Fight- The Role of Technology in Current Russian Military Theory", *The Journal of Strategic Studies*, 34(5), October 2011, pp.681-706.

Soldier as a System (F-INSAS) and also putting it under the Battlefield Management System (BMS). [162]

What needs to be further studied is the degree of networking at the tactical, operational and strategic levels. In the contact battle possible under tactical timeframe and distances, not all functions need to be networked to a very high degree of sophistication. In gunnery, for surface-delivered firepower for instance, it is much more important to have good technical/ballistic capacity with guns, mortars, rockets and missiles, and robust sensor to shooter links rather than complex and complicated networking for tactical fire planning.

The former head of Information Systems suggests the need to urgently review how the army wants to treat information with top-down change.[163] This is a good framework to look at reform at the tactical level and one need not wait for another military conflict to get motivated to undertake reforms.

---

[162] P.C. Katoch (Retd), "Informationising of the Indian Army: Need for Internal Reforms", *CLAWS Journal*, Winter 2010, pp.9-18.

[163] Ibid, p.18.

4 The Ubiquitous Cyber War

One significant change which no one doubts is the rise of cyber power. Twenty-first century wars, both overt and covert, have seen the rise of the cyber weapon. The IDSA Task Force Report on the subject compares its evolution on similar lines, when air power was born during the Italo-Turkish war of 1911. It shows a similarity: like the use of the airplane for civilian purposes came before their military use and argues that it is only a matter of time, like air power a hundred years ago, before cyberspace becomes an independent theatre of war.[164] The perceptive strategic thinker, Michael Howard alludes to limited effectiveness of American style RMA that wrongly claims to guarantee victory to the side that achieved dominance in intelligence and communication. With the advent of cyber war, according to his wisdom, the adversary can be disarmed before he has even begun to fight. This introduces a dimension that may render even nuclear deterrence out of date.[165]

As societies and militaries get networked and wired they become vulnerable to failure of electricity and electronics-based systems. A survey in India reveals that many younger professionals regard the internet as important as food, air and water.[166] At the same time, because of low priory to security, India leads the world in spam e-mails with a global

---

[164] *India's Cyber Security Challenge*, IDSA Task Force Report, March 2012, p. 9.

[165] Michael Howard, "The Transformation of Strategy", *RUSI Journal*, 156(4), August/September 2011, pp. 12-16.

[166] The survey was done by Cisco Connected World Technology Report. See "Internet as important as food, air and water: Survey", *The Hindu*, September 25, 2011.

share of 10 per cent of junk mail.[167] It is the increasing vulnerability of a risk society. Though, not a shooting-hard kill-kinetic war, this 'self inflicted cyber war' is now well embedded in public conscience. Critical infrastructure becomes more critical as almost all operations are now controlled by computer networks. It demands new risk governance at the technical, system and societal layers.[168] From the cyber security point of view, the Microsoft Security Intelligence Report shows that the computer infection rate is rising in India due to use of old and pirated software.[169] To consider all such reports as publicity and salesmanship may not be prudent. Even US drones such as Predator and Reaper were reported to be infected by a mysterious virus.[170]

Besides all this, attacks are getting more sophisticated and purposeful. The current reactive approach to protecting devices through virus identification is unsustainable. [171]

It is clear that North Korea and Afghanistan will have the least impact of cyber war – as they do not have an elaborate electronic network. The first lesson is that practical and imaginative redundancies need to be in-built in the architecture – both civil, critical infrastructure and for defence

---

167 The report is by security firm Sophos which shows that new users are not taking measures to block the malware infections that turn their PCs into spam-spewing zombies. See Hasan Suroor, "India Leads World in Spam e- mail", *The Hindu*, February 24, 2012.

168 Andrian V. Gheorghe, "State of Critical Infrastructure", in Ajey Lele and Namrata Goswami (eds.), *Asia 2030: Trends, Scenarios and Alternatives*, Academic Foundation, New Delhi, 2011, pp.83-104.

169 Sandeep Joshi," Computer Infection Rate Rising in India: Microsoft", *The Hindu*, October 13, 2011.

170 Narayan Lakshman, "US Drones infected by mysteries virus", *The Hindu*, October 9, 2011. The report quotes *Wired.com* magazine.

171 Interaction with Enrique Salem, Chief Executive Officer of Symantec, February 24, 2010, at http://www.idsa.in/event/TheInformation SecurityAgenda.

needs. In the defence, strategic systems need a higher priority but tactical systems also need to be attended to.

Below some recorded episodes of cyberwar have been included:

Some Episodes from Recent History of Cyberwar

Bursting of Soviet Oil Pipeline by Logic Bomb in 1982

The Supervisory Control and Data Acquisition System (SCADA) is a software for networks of devices that control the operation of machines such as valves, pumps, generators, transformers and robotic arms.[172] Russia lacked commercial and industrial technologies of automated pump and valve control for its oil and gas industry. Russians stole it from a Canadian firm. In the system the Central Intelligence Agency (CIA) -- who had an inkling of it being stolen – inserted a malicious code into the software. Later, in one segment of the pipeline, the software caused the pump at one end to pump at its maximum rate and the valve at the other end to close. The pressure resulted in the biggest non-nuclear explosion ever recorded.[173]

Blocking of Global Positioning System (GPS)

According to media reports, the Indian security establishment had set its sights on GLONASS[174] after it conducted a post-mortem of the US invasion of Iraq. It found that the US had blocked GPS signals to Iraq and then inserted erroneous

---

[172] Glossary, Richard A. Clarke and Robert K. Knake, *Cyber War: The Next Threat to National Security and What to Do About It*, HarperCollins, New York, , 2010, p.289.

[173] Richard A. Clarke and Robert K. Knake, ibid and Alexander Klimburg, "Mobilising Cyber Power" , *Survival*, 53(1), February- March 2011, p.42.

[174] The Russian GLONASS is an alternative to the US controlled GPS.

signals that left Saddam's generals virtually blind as far as beyond visual range, sighting and targeting was concerned.[175]

Israeli Air Force Attack on Syrian Nuclear Facility September 2007

As the Israelis did in 1982 to Syrian forces in Lebanon, something similar is reported to have taken place on September 6, 2007. Israeli jets destroyed a Syrian nuclear facility (nuclear weapon plant) which was being constructed with the help of North Korea. Syrian air defence failed miserably. The attack was preceded by stealthy UAVs which intentionally returned a digital packet of 'Trojan horse' on the Russian-made radar beam of Syrian air defence. This made the radars useless. Another conjecture is that, the Russian computer code got compromised by Israeli agents or an Israeli agent spliced the fibre optic cable of air defence network and inserted the programme. [176]

Estonia 2007 and Georgia 2008

Literature from the West gives an impression that the cyber incidences in Estonia and Georgia were acts of cyber war through Russia's cyber war doctrine. Botnets[177] harnessed by Russian criminals disrupted Estonia's national network in May 2007. Botnets played a key role during the 2008 Russia-Georgia War. With Distributed Denial of Service (DDoS), it created an information vacuum that paralysed Georgia's civil

---

[175] Snadeep Dikshit, "India Strikes Deal with Russia on GLONASS", *The Hindu*, December 19, 2011.

[176] Richard A. Clarke and Robert K. Knake, no.172, pp.1-32.

[177] A network of computers that have been forced to operate on the command of an unauthorised remote user without the knowledge of their owners or operators. They are like "robot" computers. Botnets are used to conduct floods of messages such as in Distributed Denial of Service (DDoS).

administration.[178] Scholars from the Canada Centre for Global Security Studies at the Munk School of Global Affairs, University of Toronto, using technical data analysis and in-country field-based contextual research, show that cyberspace was used in the Russia-Georgia war in 2008.[179] The constitutive elements of cyberspace can be broken down into four levels: physical infrastructure or the foundational level (machines- the routes, cables, cell-phone towers, and satellites that establish the mechanical and electric, magnetic, and Optical Lines of Communications [OLC]), the code level (logical instructions and software that operate communication traffic), the regulatory level (norms, rules, laws, and the principles that govern cyberspace), and the sphere of ideas (through which videos, images, sounds and text circulate) this is also the level of 'strategic communication'.[180] All four levels/elements of cyberspace were present and leveraged during the conflict between Russia and Georgia. Military information operations, strategic communications, and computer network attacks and exploitation were employed. In assessing attribution, which is the most difficult and challenging part, the authors played out scenarios under heads of: scenario 1- deliberate and planned action; scenario 2 - tacit state encouragement and scenario 3 - cyclones in cyberspace. It was found that DDoS against Georgian websites and servers was itself constituted across over 60 countries. A majority of the hijacked computers (597) used in the DDoS against Georgia were located in the US with 526 in Russia. This was confusing. The third scenario began with the premise that civilians have voluntarily engaged in warfare activities without the approval

---

[178] James P. Farwell, "Stuxnet and the Future of Cyber War", *Survival*, 53(1), February-March 2011, pp. 26.

[179] Ronald J. Deibert, Rafal Rohozinski and Masashi Crete- Nishihata, "Cyclones in Cyberspace: Information Shaping and Denial in the 2008 Russia- Georgia War", *Security Dialogue*, 43(1), February 2012, pp. 3-24.

[180] Ibid, pp. 5-6.

or direction of the state throughout the history of armed conflict. Here, collective action is easier and faster in cyberspace than in other physical domain. Scenario 3 signals the emergence of a new factor in cyberspace operations – the capacity for groups other than belligerents to generate significant effect in and through cyberspace. Due to the unpredictable nature of such outside participation – global in scope, random in distribution – can lead to chaotic outcomes, much like the trajectory and phase of a cyclone.[181] The tendencies which emerge are that, rather than providing a high degree of transparency in cyberspace, the opposite may more likely be, as states and non-state actors aggressively pursue military objectives to shape, control, and suppress the realm of ideas.[182]

Attack on power Dam in Brazil in November 2009

An anonymous attack on computers of a power dam in Brazil in November 2009 left a score of cities and their 60 million residents without public transport and power.[183]

Chinese Hackers

(a) Chinese hackers are reported to be behind a significant number of high-profile cyber attacks on the US, EU and India.[184] The PLA has integrated cyber-warfare units in its field army from 2003. But China cannot be faulted. Even the US has raised a cyber command. But what is important to note is the blame game. China accuses the US of waging online warfare against Iran by recruiting a "hacker" brigade and manipulating social media such as

---

[181] Ibid, pp. 12-18.

[182] Ibid.

[183] S.I. Bazylev, I.N. Dylevsky, S.A. Kamov and A.N. Petrunin, "The Russian Armed Forces in Information Environment: Principles, Rules, and Confidence Building Measures", *Military Thought*, 21(2), 2012, pp.10-15.

[184] Alexander Klimburg, "Mobilising Cyber Power", *Survival*, 53(1), February-March 2011, pp.44-45.

Twitter and You Tube to stir anti-government agitation.[185] In August 2011, days after being linked to a massive global hacking campaign, China blamed India and the US for targeting it in thousands of cyber attacks over the past year. [186]

(b) ***Attack on Central Tibetan Administration of 2009.*** The cyberspace is also being used menacingly. In China, posts on the web relating to Tibet, democracy, religion and politics in general are censored or removed by 30,000 public sensors within a day or two of publication.[187] In 2009 Canadian researchers uncovered 'Ghostnet'. This programme had the capability to remotely turn on a computer's camera and microphone without alerting the user and export the images and sound silently back to servers in China. Top targets of the programme were offices related to non-governmental organisations working on Tibetan issue.[188]

Stuxnet (June 2010)[189]

It has been called a military grade cyber missile which launched an all-out cyber strike against the Iranian nuclear programme at the Natanz facility in June 2010.[190] The fire and forget type of programme could target 'air gapped' systems (not connected to public internet).It employed the Siemen's default password access-related system. It hunted

---

185 Simon Tisdall, "Cyberwar is 'rapidly growing threat' ", *Guardian Newspaper Limited*, 2010, reproduced in *The Hindu*, February 5, 2010.

186 Anath Krishnan and Deepa Kurup, "China Blames US and India for Cyber Attacks", *The Hindu*, August 8, 2011.

187 Alexander Klimburg, no. 184, pp. 44-45.

188 Richard A. Clarke and Robert K. Knake, no. 172, p. 59.

189 Other worst cyber attacks were Titan Rain in 2004 and Moonlight Maze in 1998.

190 James P. Farwell, "Stuxnet and the Future of Cyber War", *Survival*, 53 (1), February-March 2011, pp.23-40.

down frequency-converter devices and alternated the frequency of electric current that powers the centrifuge. An Indian satellite was also reported to have been affected by Stuxnet.[191] Russian authors, basing their assessment on American and German experts, show that Stuxnet knocked out 10 per cent of all enrichment centrifuges (around 1,000 of them), throwing Iran's nuclear programme back by two years.[192] It is reported that the US and Israel developed the Stuxnet and Flame in collaboration and tested the prototype on the replica of Iran's P-1 centrifuges.

War in Libya in 2011 and Suggestions for Syria

Carne Ross in his book *Leaderless Revolution* had suggested non-violent means of mounting a cyber-attack on Colonel Gaddafi's infrastructural facilities. He suggests the use of a Stuxnet type of computer worm (which had wreaked havoc with Iran's nuclear programme) and further suggested that this method be used on Syria.[193] *The New York Times* carried an article which showed how the US debated whether to open the attack on Libya with a cyber offensive, the goal being to break through the firewall of the Libyan government's computer network to severe military communication links and prevent the early warning radars from gathering information for a response. This option was dropped and conventional aircraft, cruise missiles and drones were used. The fear was that, a cyber attack might set a precedent for other nations, in particular China and Russia, to carry out such offensives of their own.[194]

---

191 Ibid, p. 34.

192 S.I. Bazylev, I.N. Dylevsky, S.A. Kamov and A.N. Petrunin, no.183, pp.10-15.

193 As quoted by Jonathan Freeland, "What you can do to oust Tyrants", *Guardian Newspapers Limited* reproduced in *The Hindu*, September 1, 2011.

194 Eric Schmitt and Thom Shanker, "U.S. Debated Cyber warfare in Attack Plan on Libya", *New York Times News Service* reproduced in *The Hindu*, October 19, 2011.

Attack on Iran's Oil Sector in 2012

A virus is reported to have hit computers running Iran's oil sector at the Kharg Island terminal. Though this did not attract much public attention, Iran is said to have taken precautions after the Stuxnet attack of 2010.[195] Media reports of May 2012 allude to a Russian anti-virus computer firm Kaspersky Lab reporting the discovery of the virus 'Flame' which carries out cyber espionage on Iran.[196] Media reports suggest that, Flame is 20 to 40 times larger than Stuxnet and the waves of crippling computer attacks on Iran were sanctioned by the US President.[197]

The Future

The problem is now well recognised. "The next generation of threats will undoubtedly emerge out of cyber security."[198] But unlike soldiers who know how to protect themselves from splinters in bunkers and avoid enemy fire by an eye for ground, cyber defence is too technical, complex and top-down for being understood by the average soldier in the field. Victims or targets may not even realise that they are under attack – as the Syrian air defence radar blinding example showed. How would one know if the ballistic software of a missile has been tampered with a silent cyber intrusion? Take the case of shipping. Single cargo ships are much bigger, with almost as much carrying capacity as the convoys of an earlier

---

[195] "Iran Oil Sector hit by 'cyber attack' ", *The Hindu*, February 24, 2012.

[196] "Cyber 'Superweapon' targets Iran", *The Hindu*, May 30, 2012. As is usual Iran is claimed to have a suitable anti-virus programme against 'Flame'.

[197] Narayan Lakshman, "US Unleashed Stuxnet worm on Iran: Leak", *The Hindu*, June 2, 2012. Also see Nicole Perlroth, "Researchers Narrow Down 'Flame' Origin", *New York Times News Service* reproduced in *The Hindu*, June 1, 2012.

[198] Remarks of the Indian Minister of Defence of October 2010 at a speech at National Defence College, New Delhi as quoted by *Military Balance 2011*, London, International Institute for Strategic Studies, 2011, pp.29-30.

era. Today shipping is a part of a complex intermodal goods distribution like containers whose computerised logistic system is likely to be the victim of cyber attacks. This demands better port security.[199]

Attacks may be network-exploitation attacks such as logic bombs. Attribution is the most difficult part. It has been argued that computer-network exploitation attacks are easier to attribute than others as data is 'exfiltrated' (travel back to perpetrator) and hence more readily traceable. [200] DoS attacks are more difficult to attribute than network – exploitation attack. However, as explained by the President and CEO of Symantec Corporation, the recent attacks on Google were an eye opener with regard to their sophistication and organisation. Substantial amounts of data were moved with military precision, with teams leading the infiltration, other teams moving the information, and yet another covering the tracks. These same capabilities could also be used for cyber attacks. [201]

Proactive defensive measures need to be institutionalised. The Indian Computer Emergency Response Team (CERT-IN) regularly reports defacing of web sites. Like terrorism, India is supposed to be a victim. This knowledge has been provided not by the target country, but Canadian investigators.[202] But

---

[199] Geoffrey Till, *Sea Power: A Guide for Twenty- First Century*, Frank Cass, London/Portland, 2004, p.315.

[200] Alexander Klimburg, "Mobilising Cyber Power", *Survival*, 53 (1), February-March 2011, pp. 44-42.

[201] Interaction with Enrique Salem, Chief Executive Officer of Symantec, February 24, 2010, at http://www.idsa.in/event/TheInformation SecurityAgenda

[202] John Markoff and David Barboza, "Shadow in the Cloud" Investigating Cyber Espionage 2.0", The Munk School of Global Affairs at the University of Toronto, Canada as reported in the *The Hindu*. See Aparna Vishwanathan, "Coping with Online Threats", *The Hindu*, September 8, 2010.

just internet security is not enough. Security needs to go down to combat net radio and other weapon-related data and communication links for command, control and intelligence. It has also been reported that important documents relating to Project Shakti (artillery combat command and control system) and Pechora surface-to-air missile system have been stolen. Deployment details of artillery in Assam and air bases have been hacked and exfiltrated.[203]

At the grassroots level all ranks must be educated and disciplined to understand how malicious data can jump 'air gaps' and can enter even secure computer networks as a result of poor security consciousness and practices like unchecked use of pen drives or CDs in both open access and secure computers. Some other vital technical issues being: develop early warning system, greater cooperation between industries and governments, have redundancies in initial architecture, train to work through cyber war, do not put all eggs in cyber basket at strategic, operational and tactical level. For defence networks measures like complete ownership of network by the defence agencies, total network security, procurement of network equipment from reliable source, multilayer communication with matching redundancy for critical systems, computer security and encryption procedures.[204]

Back up, alternative means of communications and redundancy perhaps is the most important lesson which must be thought of in the beginning of any new project and retrofitted on existing systems.

---

[203] Sai Manish, " India is a Sitting Duck in the Cyber Battlefield" , Centre for Land Warfare Studies (CLAWS), Article no. 2010 of November 24, 2011 at http://www.claws.in/index.php?action=master&task=1011&u_id=173

[204] Deepak Sharma, "China's Cyber Warfare Capabilities and India's Concerns", *Journal of Defence Studies*, 5(2), April 2011, p. 72.

Literature on cyber security is increasing as is the proliferation of computer users. India is most vulnerable with one out of 10 spam mails being from India. Even the infiltration of Indian cyber zone in the case of Chinese Ghost net was identified by foreign nationals.[205] One important aspect is that the problem should not be over-hyped out of proportion.[206] It is pointed out rightly that, purely as a military mandate it is impossible as military by itself cannot defend the country as it is not a space where troops and tanks can be deployed.[207] Scholars from the private sector where the bulk of networks exist outside the government point out the bias exists towards the defence and security dimension of cyber, whereas cyber space is as much a space for social values and economic growth.[208]

International Law and Relations

Is use of a cyber weapon a use of force? Because of its 'newness', international law is still struggling to provide a

---

[205] Dominic Karunesudas, "Stuxnet or Flame: This War is Cyber", *Defence & Technolgy*, 11 (92), September- October 2012, pp.50-52.

[206] Thomas Rid, Reader in War Studies at King's College London and author of *Cyber War Will Not Take Place* is the most prominent in this discourse. He calls Richard Clarke's book *Cyber War: The Next Threat to National Security and What to Do About It* alarmist and argues that though it may facilitate traditional and classic sabotage, espionage and subversion, he doubts a standalone cyber war capacity of kinetic impacts. See Thomas Rid, "Cyber War Will Not Take Place, *Journal of Strategic Studies*, 35 (1), February 2012, pp.1-5 and "Think Again: Cyber war" , *Foreign Policy*, March/April 2012, pp.80-84.

[207] Myriam Dunn Cavelty, "The Militarisation of Cyber Security as a Source of Global Tension", ch.5, in Daniel Mockli (ed), *Strategic Trends 2012: Key Development in Global Affairs*, Center for Security, Zurich, Switzerland, 2012, pp.103-124.

[208] Felix Mohan, CISO, Airtel, unpublished presentation at the book launch of IDSA Task Force Report *India's Cyber Security Challenge* on May 16, 2012 at http://idsa.in/event/IndiasCyberSecurityChallenge

framework for it.[209] Interestingly, there are arguments that in some cases the advent of cyber warfare capabilities may decrease the likelihood of war. On the other hand, the use of computer network attacks as a brute force weapon will become increasingly frequent. It reasons that, although Stuxnet manifests cyber warfare's potential to become a useful brute force measure, no example of irrefutably effective coercive Computer Network Attack (CNA) exists. [210]

As suggested by the IDSA Task Force there is an urgent need for the government to adopt a policy. HQ Integrated Defence Staff should be the nodal agency for preparing the country for cyber warfare in all dimensions by raising a cyber command. [211] But just by creating cyber command for defence or offence may be necessary but not sufficient. The entire domain of cyber cannot be treated separately as hard kill electronic weapons like non-nuclear Electro- Magnetic Pulse (EMP) producing bombs and issues of protection of air gaps would need to be taken into account. Rather, all forms of IW (Information Warfare) like command and control, intelligence, electronic, psychological, hacker and cyber warfare will need to be comprehensively catered for at strategic, operational and tactical levels.

---

[209] Stephanie Meulenbelt, "The 'Worm' as a Weapon of Mass Destruction", *RUSI Journal*, 157(2), April- May 2012, pp. 62-67.

[210] Adam P. Liff, "Cyberwar: A New 'Absolute Weapon'? The Proliferation of Cyberwarfare Capabilities and Interstate War", *Journal of Strategic Studies*, 35(3), June 2012, pp. 401-428.

[211] *India's Cyber Security Challenge*, IDSA Task Force Report, March 2012, p.34 and 57. The US Air Force has the 24th Air Force at Lackland Air Force Base in San Antonio, Texas, while the US Navy activated a new 10th Fleet based at Fort Meade, Maryland to deal with cyber security. See W. Alexander Vacca, "Military Culture and Cyber Security", *Survival*, 53 (6), December 2011-January 2012, pp. 159-176.

Redundancy or back up is of vital importance and must be robust. All systems would need to have alternative ways of ensuring that command and control is exercised even when the node or the ' head' gets disrupted by command and control warfare by enemy employing 'hard' (ammunition) and 'soft' (electronic) options. This is one of the vital factors in designing architecture and both vertical and horizontal redundancy or backup needs to be incorporated in the planning stage including budgetary forecast. [212]

[212] P.K. Gautam, "National Perspective on Information Warfare", unpublished entry to USI Gold Medal Essay Competition, 1997, p. 17.

5 Libya (March to October 2011) and Later

In March 2011, Britain and France led an international mission to halt Gaddafi's crackdown against Libyans rising up against the so-called despotic 42-year rule. *Operation Unified Protector* undertaken by NATO countries (Belgium, Canada, Denmark, France, Italy, the Netherlands, Norway, Spain, the UK, the US) had three missions. First, it was the policing arm of the air embargo. Second, was patrolling of no-fly zone and the third was protecting civilians.[213] The United Nations Security Council (UNSC) Resolution 1973 (in which Russia and China abstained) authorized the protection of civilian, but specifically ruled out use of ground forces and the alliance according to *The Economist,* in effect became the insurgent's air arm.[214] Out of 28 NATO members, 14 committed military assets. The US supported the mission[215] but refused to participate in the ground attacks (the US used cruise missiles, provided air-to-air refuelling and electronic warfare capability for combat jets).[216] Nine NATO members deployed aircraft to attack ground targets. France and Britain alone deployed attack helicopters.[217] American

---

[213] Ivo H. Daalder and James G. Stavridis, "NATO's Victory in Libya", *Foreign Affairs*, 91 (2), March/April 2012, pp. 2-7.

[214] "NATO after Libya: A Troubling Victory", *The Economist*, September 3, 2011, pp. 53-54.

[215] Popularly called leading from the rear.

[216] At http://www.theindependent.co.zw/international/32210-nato-lessons-from-libya.html

[217] Ground attack sorties were flown by France, Britain, America (initial phases only), Belgium, Denmark, Norway, Italy and Canada. Non-NATO Sweden and Jordan flew air patrols enforcing the no-fly zone, while Qatar and United Arab Emirates (UAE) joined strike sorties. See "NATO after Libya: A Troubling Victory", *The Economist*, September 3, 2011, pp.53-54.

electronic warfare aircraft gave support most of the time as "guardian angels".[218] UNSC Resolution 1973 will stand out in history as it marked the first military implementation of the Responsibility to Protect (R2P) doctrine. [219]

According to Secretary General of NATO, its sea and air mission were the first major military engagements undertaken since the global financial crisis. With reduced defence budgets such a response was in doubt. The speed scale and sustained pace of execution of *Operation Unified Protector* told a different story. [220] The Secretary General has argued that the mission in Libya revealed three important truths about military intervention. The first truth was that, to those who claimed that Afghanistan was NATO's last out-of -area mission, it has shown that unpredictability is the very essence of security. It also proved that in addition to frontline capabilities such as fighter bomber and warships, enablers such as surveillance and refuelling aircraft including drones are critical parts of any modern operation and third lesson has revealed that NATO allies do not lack military capability.[221]

Michael Clarke, the Director of the Royal United Services Institute (RUSI), London argued that supporting disorganised

---

[218] "NATO after Libya: A Troubling Victory", *The Economist*, September 3, 2011, pp. 53-54.

[219] The controversial R2P has come a long way since it was ratified at the 2005 World Summit. For its progress see Keerthi Sampath Kumar, *Libya and R2P: A Year After UNSCR 1973*, IDSA Issue Brief, May 23, 2012 at http://www.idsa.in/system/files/IB_LibyaUNSCR.pdf (accessed May 29, 2012). The S. Rajaratnam School of International Studies (RSIS) in Singapore in the RSIS Centre for Non-Traditional Security now includes R2P in Asia as one topic of research at http://www.rsis.edu.sg/research/Conflict_NTS.html (accessed February 16, 2012).

[220] Anders Fogh Rasmussen, "NATO After Libya: The Atlantic Alliance in Austere Times", *Foreign Affairs*, July/August 2011, pp.2-6.

[221] Ibid.

and poorly equipped rebel forces against a well armed and ruthless regime requires improvisation and flexibility. He also mentioned that if NATO's European members are to draw the right lessons from Libya, they must strive to make their forces more "organically independent" by putting more resources into "enablers" like airborne tankers over fast jets.

These arguments are valid. But what these operations by NATO demonstrate is the capacity of effective stand-off coercion and military action. Although, both the Chinese and Indian military may claim to be masters of the close battle or of contact zone, it is unlikely that such capabilities of force projection by the NATO can be acquired overnight. There is a lot of truth in what the Chinese mentioned more than a decade ago – "China is strong in close warfare: the enemy is strong in distant warfare".[222] The military action by NATO indicates that post-heroic warfare in this case of force projection cannot be written off so soon. This is the first lesson.

The last and contested demonstration of air power was in the 78-day bombing campaign of Kosovo by NATO in the 1990s. The air campaign "Operation Allied Force" committed over 900 aircraft. More than 37,000 sorties were flown of which 14,000 were strike missions and 37 per cent of the 23,000 bombs and missile were precision-guided munitions (PGMs).[223] The jury so to speak is still out to pass judgement whether the success was only due to air power or other variables such as withdrawal of Russian support had a part to play. But now in the case of Libya, the second lesson is that, air power finally has delivered. Purely from a military

---

[222] Major General Wang Pufeng, "The Challenges of Information Warfare", in Michael Pillsbury (ed.), *Chinese View of Future Warfare*, Lancers Publishers and Distributors, New Delhi, 1998, pp. 317-326.

[223] Air Commodore K.B. Menon, "Air to Surface Weapons", *Indian Defence Review*, 26 (4), October-December 2011, pp.25-32.

point of view, the war has been unique. In air power– from March to September 2011, NATO conducted 22,000 sorties, including over 8,000 strike missions. The bombing campaign has claimed to be a unique and unprecedented precision of the alliance's air strikes.[224] France and the UK flew over 40 per cent sorties, destroying more than two-third of overall targets.[225] An important subset or the third lesson is that the ground action was undertaken by Libyan forces that had rebelled against government forces. As more details become available, the story of the ground campaign will become clear. Here, it must be stated that human intelligence and regional knowledge of the rifts in Libyan society were used to NATO's advantage. American "shock and awe" tactics were ruled out and learning from Iraq, civil infrastructure was left intact and collateral damage kept to the minimum. [226]

Lessons

Aim of War is Peace and Lesson for Syria

Events such as killing of the American ambassador in September 2012 in Libya are evidence that after the so-called success of the "Libyan Revolution" the country has become the hub for Al- Qaeda-linked terror groups in North Africa and West Asia.[227] Militias based on tribal loyalties now pose a big threat. It is now clear that the unfolding of events in Libya indicates that dubious forces initially supported by

---

[224] *The Hindu*, September 9, 2011. Besides, the operational experience of fighter pilots will be of a very high order. Details of how the Libyan air defence was neutralised are also not in open access and need to be studied.

[225] Ivo H. Daalder and James G. Stavridis, no. 213.

[226] "NATO after Libya: A Troubling Victory", *The Economist*, September 3, 2011, pp. 53-54.

[227] Atul Aneja, "In Benghazi, the Folly of Regime Change", *The Hindu*, September 14, 2012.

and armed by the US have turned on it.[228] Like in Iraq or in Afghanistan, a civil war is in the offing in Libya. The Libya government has not taken human rights seriously. The International Criminal Court (ICC) has not taken any initiative. The UNSC Resolution 1970 gives the ICC jurisdiction over the Libyan theatre at least during the conflict phase; it has utterly failed to honour these obligations.[229] Thus, this is a lesson for Syria so that the events are not repeated.

Two more unique lessons stand out. The first is about military appreciation. The second is about R2P.

An Emerging Format of Military Appreciation of Force Projection

Gaps in capabilities of the NATO have been identified. These include the capacity to engage mobile targets, planning of joint operations in parallel with fast-paced political decision-making, supporting targeting process with legal advice, timely and reliable information on operations developments to the public, and neglect of essential tools for military campaigns by NATO on matters like Intelligence, Surveillance and Reconnaissance (ISR), precision targeting, aerial refuelling despite of two decades of experience.[230] There are, however, dangers of using this as precedence at the political level to wage wars of choice. It is unlikely that, similar conditions will be presented in future. Evidence shows that they have not worked in Afghanistan. This does not mean that air power, PGMs and allied technology of enablers have no role. Rather, for force projection, militaries can ill afford

---

[228] Suhasini Haidar, "Facing an Inconvenient Truth", *The Hindu*, September 9, 2012.

[229] Vijay Prashad, "Victor's Justice Bedevils the New Libya", *The Hindu*, October 31, 2012.

[230] Ivo H. Daalder and James G. Stavridis, no. 213.

to ignore this capability. [231] The efficacy of a purely Afghan model also is under scrutiny. Like in a military appreciation, two models or courses of actions are being considered, under which the Afghan model is effective, based on air power being the main component. The two schools are the balance of technology and the balance of skill.[232] It has been shown that NATO airpower in Libya did not make close combat redundant. The cumulative attrition effect of precision air power enabled a rebel victory on the ground. The protracted nature of the conflict provided sufficient time for rebels to become skilled. Precision air power does not make close combat superfluous.[233] Further, using this as an *a-priori* theoretical framework, the authors suggest caution against Syria. Some key reasons or factors given are: In military capacity it is argued that the sheer size of Syrian ground forces would imply a longer attrition campaign than Libya. Strong Syrian air defence would require longer preparatory bombardment. Syrian rebels' limited territorial control implied that they lacked strategic depth and there was limited evidence regarding the Syrian rebels' skill levels.[234]

Responsibility to Protect (R2P)

India's position has been that, the "responsibility to protect" (R2P) concept that Western air strikes on Libya were a complete violation of the UNSC Resolution number 1973. While this concept grew out of genocide and ethnic cleansing

---

[231] The high cost of importing all such weapon systems without an indigenous base will continue to sap foreign exchange. It is outside the scope of this monograph to comment on the politics of military industrial complexes except to urge better defence research, development and production.

[232] Erica D. Borghard and Costantino Pischedda, "Allies and Airpower in Libya", *Parameters*, 2012, pp. 63-74.

[233] Ibid.

[234] Ibid.

in Rwanda and Srebrenica in the 1990s, it was perhaps because of the lack of oil there that important members of the international community decided not to act in both places.[235] R2P then will continue to be an important issue in use of military force, of which Libya stood out as the first R2P war. This will demand new understanding by the military of the use of force and the logic of intervention and sovereignty.

[235] Sandeep Dikshit," Westen air strikes on Libya violate UNSC resolution, says India", *The Hindu*, September 7, 2012.

6 Summary of Lessons

Besides the lessons from each war, now it is possible to summarise common lessons that stand out for study and scrutiny.

Military Application of Space

In all the wars no weapons were used in space but the power of space assets was used to direct, control and coordinate tactical war on the ground. The future potential of military application of space is immense. Steps need to be initiated to make speedier progress.

Air Power and Smart Weapons

The process, which started during the Vietnam war, reached its highest point so far in Afghanistan and Iraq – that the capability of making long range air-to ground strikes BVR accurate and all- weather, has finally arrived. New thinking of air power and force projection needs to be done including the role of enablers such as airborne tankers, drones and surveillance. Basic training including SEAD and electronic warfare operations must not be forgotten.

Close Air Support

For greater flexibility and better jointmanship, the institutional capability of employing air power for close air support missions must never be lost sight of.

UAVs

Costs and emerging new capability of UAVs demand that militaries may need to change conventional force structures. In October 2012, non-state actor Hezbollah is reported to have sent an Iran-supplied drone from Lebanon over Israeli

airspace to film the Diamona nuclear reactor in southern Israel.[236] Now UAVs need to be considered as major problems of air defence and its 'newness' needs to be grasped.

Contact Battle/Close Fight

In all the wars close fight and contact warfare has not been given up. There is a decisive role of the tanks, and there is a an inescapable need for boots on ground or an 'infantry renaissance'. While force projection capacity by air power such as that was demonstrated over Kosovo by NATO in 1999 and Libya in 2011 needs to be acquired for deterrence, the Indian Army needs to sustain its superb fighting arms to outstanding performance demanded in contact battle. This does not mean that a blanket sanction be given to disregard human casualties. The lesson of Libya (no military casualties suffered by NATO) shows that, projection of force by projectiles also needs to be mastered.

Human Terrain Mapping / Weaponisation of Anthropology

Stereotypical thinking about people like the 'Iraq Cultural Smart Cards' have reduced humans to economic, ethnic and tribal landscapes. It falsely partitions the world when it defines the theatre of anthropologised war as a tribal zone and a mono-culture of blood feuds. This flawed core argument from the West needs to be condemned.

Mission Verbs and Simplicity in Glossary of Military Terms

It is fashion to use new terms to describe old phenomena. When the lesson is that, there was a need for more boots on

---

[236] Jonathan Marcus, "Drone sent by Hezbollah, Thinks Israel", BBC News / *The New York Times* reproduced in *The Hindu*, October 12, 2012.

the ground, authors such as John Arquilla[237] insist that conflict can be made cheaper, smaller and smarter by cutting defence spending and a moratorium on all legacies like systems. Academic interest must be encouraged to follow debates in foreign countries, but borrowing and aping these terms and ideas out of context may do more harm than good. 'Swarming' is being used very loosely. In the South Asian context, it will be a folly to think that all warfare will be against networked terrorists. The existing military term 'multidimensional' rather than 'swarming; attacks in any case explains it better.

Issues such as back-to- basics, use of simpler glossary of military terms, over-reliance on technology in pure close fight infantry and armour action, lack of training, cannot be ignored. Mission verbs like "capture" and "destroy" are more useful. Simplicity has once again become a virtue.

Cyber War

Trends in cyber offensive capability need to be watched. Capabilities matter and offensive capacities need to be developed to send signals to deter adversaries.

There is a need to systematically develop early warning system, greater cooperation between industries and governments, have redundancies in initial architecture, train to work through cyber war, do not put all eggs in cyber basket at strategic, operational and tactical levels. Some defence networks measures being: complete ownership of network by the defence agencies, total network security, procurement of network equipment from reliable sources, multilayer communications with matching redundancy for critical systems, computer security and encryption procedures.

---

[237] John Arquilla, "The New Rules of War", *Foreign Policy*, March-April 2010, pp. 60-67.

Redundancy

Back up, alternative means of communications and redundancy perhaps is the most important lesson which must be thought of in the beginning of any new project and retrofitted on existing systems. At the grassroots level, all ranks must be educated and disciplined to understand how malicious data can jump 'air gaps' and can enter even the most secure computer networks as a result of poor security consciousness and practices like unchecked use of pen drives or CDs in both open access and secure computers.

A Central Organisation to Oversee RMA, Transformation and Network-Centric Warfare

Tactical Command, Control,Communications and Information

Tactical Command, Control, Communications and Information (Tac C3I) has been facing excruciating delays with stiff résistance from certain quarters with narrow vested interests of intra-army regiments and corps. A review on how to treat information and a drastic top-down change is required. The system also must be sensitive to cyberwar.

Three years ago (in 2009), I suggested that for 'deep battle' or 'delivery of fires in depth', or battle in cyber space and information, the need for all-emerging technologies is essential and vital under RMA. Like the National Knowledge Commission, there needs to be a central organisation, preferably under the Ministry of Defence, that is made responsible and accountable for analysis of all aspects of RMA and its derivatives like transformation.[238] Besides, I have argued in *The Need for Renaissance of Military History and*

---

[238] P.K. Gautam, "Trends in Thinking About Warfare", *Strategic Analysis*, 33(6), November 2009, pp.849-860.

Modern War Studies in India that modern war studies are absent in the Indian university system, and no human resource is being nurtured to understand this rapidly evolving change in the character of war. [239]

Not much has happened on this score. There is also a need to review this suggestion in the light of incapacity of the Ministry of Defence to handle such issues as bureaucrats are without knowledge of military matters. Cohen and Dasgupta further point out that the bulk of the civil bureaucracy is focused on arms procurement.[240] Presently, this boat is drifting away. I had also suggested that India- centric theory of war should include weapon systems, warfare and war-fighting through the NDU. [241]

Striking a Balance between Conventional and Irregular Warfare

To be over-influenced by current US-led military experience in Iraq and Afghanistan, and to argue terrorism or insurgency as the new form of warfare does not relate to the Indian experience. This should not lead to a drift away from the basic focus on conventional or force on force capacity. Time-tested rotation of units from peace to field and operational areas and in counterinsurgency roles has stood the test of time. Reorientation of units for a new role is a better option than to reorganise it for a purely CI role. The task of dealing with Left-Wing Extremists needs to be carried out by the police and paramilitary forces that need to be trained and equipped for it accordingly. The Army in CI should be the last resort or in regions abutting the international border.

---

[239] P.K. Gautam, *The Need for Renaissance of Military History and Modern War Studies in India*, IDSA Occasional Paper No. 21, November 2011.

[240] Stephen P. Cohen and Sunil Dasgupta, *Arming Without Aiming: India's Military Modernization*, Penguin/Viking ,New Delhi, 2010, p.5.

[241] P.K. Gautam, no. 238, p. 857.

Minimum versus Proportional Force

The wars in Afghanistan and Iraq have demonstrated that, high-handed use of heavy weapons breeds more insurgents. Indian military officers and scholars take pride in the Indian model of minimum force. The least or no use of fire power was the core argument put forth by Lt Gen Prakash Menon when he showed the basic difference from the Western expeditionary campaign and the Indian experience.[242] Some former military officers are arguing that the idea of a minimum force has not delivered and the Indian military needs to think of proportional force.[243] The arguments put forth to justify proportional force is to first brand the term 'minimum force' a colonial legacy. The second argument is that the level of violence encountered has escalated and the insurgents and terrorists have become highly militarised.[244] Proponents take the examples of use of force by Americans in Iraq and Afghanistan, Russians in Chechnya, Sri Lanka, China and Pakistan implying them to be 'good practices'. Basing the Chinese threat in Tibet as a reason to raise more army units and formations (five divisions worth in instance case) it also suggested that, dual purpose forces which can deal both with external and internal dimensions could be 'bloodied" initially in regions such as Chattisgarh, Jharkhand, Odisha before their committal to the Himalayan border.[245] It is presumed that counterinsurgency operations in Sri Lanka, Iraq or

---

[242] Prakash Menon, "Sub Conventional Wars: A Strategic Perspective", paper presented on November 24, 2009 during Indian Army-CLAWS seminar on Changing Nature of Conflict: Trends and Responses, New Delhi, November 23-24, 2009.

[243] Discussion at the Centre for Land Warfare Studies during a seminar on Lessons Leant from Afghanistan, on June 23, 2011.

[244] R.K. Nanavatty, "Joint Civil Military Doctrine for Internal Armed Conflict", *Defence and Security Alert*, 3 (5), February 2012, pp.12-16.

[245] Defence and Security Analysis (DSA) Research Team, "Internal Security Doctrine: Urgent Need for Review" , *Defence and Security Alert*, 2 (2), November 2011, pp.46-49.

Afghanistan may have influenced this sort of thinking. This is a dangerous idea. What is the understanding of minimum or proportional force? Even without the use of heavy weapons or air power a military using small arms and bayonets can inflict casualties including to innocent civilians which cannot be termed minimum. The term minimum is based on perception and inference. As is pointed out by an anonymous referee, if the Maoists/Naxalites militarise to a higher level of fighting capacity by way of raising battalions with better arms, the concept of transition from minimum to proportional force is justified. Here, it needs to be clarified that, even in this case the use of troops and weapons needs to be the minimum. In the case of India, the counterinsurgency operation is a long-drawn process including deep-rooted social and economic reasons of inequality, neglect of governance and absence of delivery. To that end, the policy of not resorting to heavy weapons in counterinsurgency must not be changed. By changing terms from minimum to proportional, commanders and staff at the tactical level may further employ heavy weapons on their own countrymen. Further, can an army use counterinsurgency as a training aid of battle inoculation to 'bloody' it by killing its own people? Surely not. This sort of thinking goes against the strength of India's counterinsurgency doctrine of national integration and winning heart and minds.

This policy debate is not new. Indian scholars have emphasised on the doctrines and the political solutions, and not on restructuring or overhauling the army for counter-insurgency.[246] It is important to recognise that insurgencies

---

[246] Sankaran Kalyanaraman, "The Indian Way in Counterinsurgency", *The Review of International Affairs*, 2 (3), 2003, pp. 85-100; Namrata Goswami, "India's counterinsurgency experience: the 'trust and nurture' strategy", *Small Wars & Insurgencies*, 20 (1), March 2009, pp. 66-86; Arpita Anant, "Counterinsurgency and '*Op Sadbhavana*' in Jammu and Kashmir", IDSA Occasional Paper No.19, 2011.

in India are still a result of nation-building of a complex pluralistic society. It is a challenge to win hearts and minds. This cannot be said about the militaries operating in Iraq and Afghanistan. The follies of military operations in Iraq and Afghanistan need to be carefully studied with a focus on the manpower-intensive nature of counterinsurgency, as the Indian Chief of the Army Staff put it: "Iraq, Afghanistan, and the 'Israel-Lebanon' wars, have reiterated the necessity of 'boots on the ground'".[247]

India believes that the primary responsibility for promoting and protection of human rights lie with the state. Accordingly, India has voted for resolution against Sri Lanka in February 2012 by the UN Human Rights Council, indicating that the international community disproves of the manner in which the final stage of counterinsurgency was waged by Sri Lankan security forces in May 2009.

Responsibility to Protect

The changing character of war clearly shows that the war and society school or war amongst people has now come to stay in the present times. This is an era of human rights and importantly the use or misuse of the concept of R2P. Since the end of Cold War, a broad international consensus has emerged around the principle called 'responsibility to protect' (R2P). This principle was developed by the International Commission on Intervention and State Sovereignty in 2001. The R2P holds that, states have a responsibility to protect their citizens from genocide and mass atrocities and the international community has a duty to help states fulfil their responsibilities and use various measures to protect

---

[247] Deepak Kapoor, "Changing Global Security Environment with Specific Reference to our Region and its Impact on the Indian Army", *IDSA National Security Lecture Series*, July 3, 2008, at http://www.idsa.in/speeches_at_idsa/NationalSecurityLectureDeepakKapoorNext.htm

populations when their own state are manifestly failing to do so.[248] In 2005, the World Summit negotiations saw the creation of the Human Rights Council (HRC).The final document at the Summit contained an unambiguous acceptance of state responsibility to protect its own population from genocide, war crimes, ethnic cleansing and crime against humanity. The UNSC Resolution 1674 (2006) contains the first official Security Council reference to 'responsibility to protect' where it reaffirmed the provisions of paragraphs 138 and 139 of the 2005 Summit Outcome document. Thereafter, in 2009, through Resolution 1894, the members-states expressed their continued commitment to R2P. [249] The principle Concept of R2P was evoked by Russia on the assault on Georgia, though most members of the international community thought it was a misuse.[250]

Thus, wars of the 21st century demand that a better understanding of new concepts be covered in training and educational curriculum of officials and also the academic community needs to make it an area of study.

---

[248] Alex J. Bellamy, " Humanitarian Intervention" in Alan Collins(ed), *Contemporary Security Studies*, Second Edition, Oxford University Press, 2010, pp.359-377.

[249] Keerthi Sampath Kumar, "State Sovereignty to Sovereignty of Individuals: Evolution of R2P", *Strategic Analysis*, 35(6), November 2011, pp. 966-972.

[250] Alex J. Bellamy, no.248, p.367; Matthew Sussex, "Twenty Years After the Fall: Continuity and Change in Russian Foreign and Security Policy", *Global Change, Peace & Security*, 24(2), June 2012, pp.203-217 and Matt Killingsworth, "Understanding Order and Violence in Post-Soviet Space: The Chechen and Russo- Georgia Wars", *Global Change, Peace & Security*, 24 (2), June 2012, pp.219-233. Also see Alexander Astrov (ed.), *The Great Power (mis)Management: The Russia- Georgian War and Its Implications for Global Political Order*, Surrey, Ashgate, 2011.

Continuity, Change and the Principles of War

Historians stress that, it is not possible to identify change if there is lack of historical awareness which enables the recognition of continuity.[251] This is not to say that the historian's role is to stress the lack of change: that would be to misunderstand the real challenges for the historical profession and to condone much that is lazy strategic thought. It has been further shown that, whatever may be the academic background, change and newness are not the same, and that change can be a reversal to something which existed before.[252] Another way to conceptualise the relationship between change and continuity is to distinguish between three aspects of change and continuity:

1. The empirical manifestation (what has changed and in what form the change occurred),

2. Their conceptual 'fabrication' (how our conceptual approaches to and narratives about war impact on our perception of change and continuity), and

3. Their political implications (how political power and interests influence and are influenced by perceptions of change and continuity in the practice of war).[253]

But with what background or reference point does one study the change? For the planning and conduct, the principles of war have been distilled. The principles evolve over time. If required some may be discarded or revised or some new ones introduced.

---

[251] "Introduction", Hew Strachan and Sibylle Scheipers (eds.), *The Changing Character of War*, Oxford University Press, Oxford, 2011, pp.1-24.

[252] Ibid.

[253] Ibid.

In India, there is a lively debate on adding, modifying, or deleting the principles of war as the character of war changes.[254] The 10 original principles of war are selection and maintenance of aim, concentration of force, administration, surprise, economy of effort, offensive action, flexibility, cooperation, security, and maintenance of morale. Intelligence is the 11th, added separately by the navy and the army recently. *The Basic Doctrine of the Indian Air Force* has added four more to the list – deception and surprise, flexibility and managing change, synergy, synchronisation and cooperation and, generation and sustenance of a favourable asymmetry.[255]

Vinod Kumar makes a case for inclusion of four more – politico military synergy, asymmetry, air and space control and simplicity. Ashwin Kumar suggests adding two – legitimacy and restrain, and tempo. P.K. Mallick recommends seminars and brainstorming to decide separate principles of war for counterinsurgency operations and review of the traditional ones.

Thus, to start with, a frame of reference, the principles of war may be one useful tool. There is a need to balance the established principles of war against the changing trends in warfare. The wars covered in this monograph can easily be analysed simply from the perspective of the 10 enduring principles.

---

[254] See *Indian Maritime Doctrine*, *INBR8*, New Delhi, Integrated Headquarters, Ministry of Defence, 2009, ch.4, Principles of War, *Indian Army Doctrine*, HQ Army Training Command, Shimla, October 2004, p. 24;P.K. Mallick, *Principles of War: Time for Relook*, Centre for Land Warfare Studies (CLAWS), Manekshaw Paper, No.12, 2009; Ashwin Arvind, "Principles of War– Need for Re-evaluation in Context of India Experience", *The Journal of the United Service Institution of India*, , January-March 2009, pp.5- 20; Vinod Kumar, "An Analysis of Principles of War", *The War College Journal*, Winter 2011, pp.13-20.

[255] As quoted by Ashwin Arvind, Ibid., p. 6.

Intelligence

In war, the side which gets surprised in the beginning blames intelligence failure as one of the reasons for the setback. Till recently, intelligence was not a principle of war for the Indian Army. Now the Joint doctrine of the Indian Armed Forces, the navy and the army has made intelligence the 11th principle of war.[256] How has this been arrived at by a military in peace? Surely counterinsurgency by itself cannot be a driver of this insertion. It is obviously based on the war experience of the 21st century of other countries and probably seeing various intelligence failures. But as has been argued: it is the analysis of intelligence that is at fault. While arguing it in academic journals is encouraging, but to insert it in an official document without any collegiate effort or wider debate by the HQ Army Training Command and the Navy ignoring the other services and Army HQ (AHQ is mandated to issue General Staff pamphlets) is fraught with the danger of intellectual casualness. Good decisions on security demand good intelligence. Intelligence is something which improves decision by decreasing ignorance. The surest guarantee of disappointment is unrealistic expectations. Policymakers increasingly expect intelligence to be predictive.[257] This raises yet another question. It has been argued that history in support of principles is a lazy approach to the applicatory method where judgements are attempted to be trained by the principles of war. This leads to a reckless ransacking of history for evidence to support *a-priori* positions.[258] So, when

---

[256] *Indian Maritime Doctrine,* no. 254 and *Indian Army Doctrine*, no. 254..

[257] Richard J. Aldrich, Book Review, David Omand's *Securing the State*, Columbia University Press, *Times Literary Supplement*, Nos. 5621 and 5622, December 24 and 31, 2010, p.31.

[258] Eliot A. Cohen and John Gooch, *Military Misfortunes: the Anatomy of Failure in War*, The Free Press, New York, 1990, pp. 37-38.

the great debate is the warrior ethos for military commanders on 'how to think' and not 'what to think', the lesson that is clear is that much more work on this idea is needed.

It must be realised that principles of war are also pedagogical tools to teach young minds such as officer cadets. Adding more and more principles with fancy flowery names may do more harm than good.

Education of the Military Officers: Reading Material and New Topics

Professional and comprehensive study of modern war must be initiated by the academia. Reading material needs to be of a very high order and must be selected with deliberation and care. For the topics and reading material of military history for competitive and promotion examinations, the Indian Army brings out a five-year plan in advance. The syllabus for five years till 2015 is available. Appreciably, the Iraq War 2003 had been included for the staff college examination for 2011 and the Gulf Wars between 1991 and2003 for the examination in 2014. For promotion examination, none of the modern wars of the 21st century are prescribed outside India. Till they reach the age /service of writing competitive examinations, officers will have no clue about these wars. Those who do not write the staff college competitive examination will continue to serve as historically illiterate. Another issue is of reading material. Only two outdated prescribed books have been listed - Anthony H. Cordesman, *The Iraq War: Strategy, Tactics and Military Lessons* and Brig. Gen. Robert H. Scales Jr. , *Certain Victory: The US Army in Gulf War*. The latter book in the Joint Force Quarterly (*JFQ*) of the US (Issue 61, 2nd Quarter, 2011, p.117) has been reviewed as 'biased secondary source' by Stephen A. Borque. This falls short of deeper and serious study of modern wars by future staff college aspiring officers where the demand is to develop thinking skills of 'how' to think and not just 'what' to think.

The study of contemporary wars needs to be taken up more dynamically. For this, as far as the military institutions and officers are concerned, rather than some seminars or talks in military garrisons on the current wars of 21st century, officers in units/formations and instructors/faculty in training establishments must be motivated to analyse these modern conflicts. These modern wars should then form part of the syllabus for various courses of instruction as dissertations. The topic should feature in detail in promotion and competitive examinations and officers' private collections. Concepts of R2P need to be mainstreamed in training and education of military officers, civil servants and diplomats.

Conclusion

This monograph is a rough and preliminary history of current wars. Some key lessons that emerged from the wars in the 21st century were compiled and sorted. The few lessons highlighted are in no case the final ones. Many more or different ideas may have been missed out or not discerned. What is important is that, militaries need to be learning organisations. The process of learning has to be superior, critical, thorough, timely and institutionalised without sacrificing originality.

Choice to wage war is a political matter. This choice translates into the prosecution of war which is an operational matter. Use of force will continue to be a driver of state power. There is a need for an ongoing and sustained professional study of inter-state wars from the operational and military dimension. From a study of the operational dimensions of war, relevant lessons and insights can be discerned. The study of lessons also depends on how a country and its society see war and its future. In a welcome trend of reduction of wars, it is incumbent to record and analyse in order to observe the change in the character of war.

Military capabilities matter. Countries and regions where wars have taken place have one important attribute- battle and operational experience. The monograph examines 21st century wars in Afghanistan, Iraq, Lebanon, Georgia and Libya. New trend of cyber war is also included. Key highlights have been extracted and distilled into lessons to be learnt.

About the Author

Joined IDSA as Research Fellow in 2005. Over 29 years of military service and veteran of 1971 war in Bangladesh and Operation Meghdoot (Siachen). Some publications on military topics include *Operation Bangladesh* (New Delhi, Manas Publishers, 2007), *Composition and Regimental System of the Indian Army: Continuity and Change* (Delhi, IDSA/ Shipra Publications, 2008), "Changing Geographic Factors in Planning and Conduct of Indian Military Operations", *Strategic Analysis*, Vol.32, No.2, March 2008, "Trends in Thinking about Warfare" , *Strategic Analysis*, Vol.33, No.6, November 2009, "Ways of Warfare and Strategic Culture", *Defense & Security Analysis*, Vol.25, No.4, December 2009, "Issues and Steps in Force Modernisation", *Centre for Land Warfare Studies Journal*, Winter 2010, *Renaissance of Military History* and *Modern War Studies in India*, IDSA Occasional Paper Number 21, November 2011, "Back to the Basics: Foot and Hoof Mobility in the Mountains", IDSA Policy Brief, 2011 (co-authored with Virander Kumar), "Learning Lessons and Revisiting Myths from Kameng", *Journal of Defence Studies*, Vol.6, No.3, October 2012, and "Relevance of Kautilya's *Arthasastra*", *Strategic Analysis*, Vol.37, No.1, January-February 2013. A Monograph "One Hundred Years of Kautilya's *Arthasastra*" is forthcoming.

Currently researching on indigenous historical knowledge with focus on "Strategic Vocabulary on the Art of War: An Interpretation of Kautilya's *Arthasastra*"

Institute for Defence Studies and Analyses

No.1, Development Enclave, Rao Tula Ram Marg,
Delhi Cantt., New Delhi - 110 010
Tel.: (91-11) 2671-7983 Fax: (91-11) 2615 4191
E-mail: contactus@idsa.in Website: http://www.idsa.in