

REVOLUTIONS IN MILITARY AFFAIRS (RMA) **AN APPRISAL**

A military revolution in the fullest sense occurs only – when entire society transforms itself ,forcing its armed services to change at every level simultaneously-----from technology and cultures to organizations, strategy, tactics, training, doctrine and logistics . When that happens, the relationship of economy and society is transformed.

- Tofflers ¹

INTRODUCTION

In the wake of the overwhelming victory of coalition forces in Operation Desert Storm a good deal of discussion took place whether the world had witnessed a Revolution in Military Affairs(RMA). However, the concepts of an RMA itself, its constituent elements and the timing of its occurrence remain subject of continuing debate.

Revolutions in Military Affairs are not a new phenomenon. Throughout history advances in technology and strategy have revolutionized the way wars are fought. A RMA results when a nation seizes an opportunity to transform its military doctrine, training, organization, equipment, tactics, operations and strategy in a coherent pattern in order to wage war in a novel and more effective manner.

The current term "Revolution in Military Affairs (RMA)" has evolved from an earlier term "Military Technical Revolution(MTR)" used by Soviet military theorists. A MTR is a technological event or events which alter the course of military history. The pace of technological change is accelerating and challenging the military to adopt and absorb new innovations, particularly in regard to information gathering , processing and distribution. The battle space has expanded into five dimensions - space, air, land, sea and subsurface. It is more dynamic and relies on greater maneuverability and faster communication. The current RMA is characterized by four types of changes :-

- * Extremely precise, stand off strikes.
- * Dramatically improved command, control and intelligence.
- * Information Warfare.
- * Nonlethality.

- But with or without a new RMA these characteristics will continue to evolve and define military technology and operations.

MTR - The Roots of Present RMA.

Whatever the specific characters of present RMA now under consideration, it builds heavily on concepts first put forward in the late 1970s and early 1980s in the series of papers by Marshal N.V Ogarkov, Chief of Staff of Soviet Army including his seminal 1982 paper. Ogarkov worried about how to conduct decisive operations in the European Theater of War, a theater that was exceptionally dense with heavily armoured mechanized forces, and over watched by theater nuclear forces on both sides. Operational concepts such as the Independent Air Operation, the Operation Maneuver Group (OMG), and the high intensity battle flowed directly from his strategic appreciation that tempo and striking power were essential for solution of the problem. He and his colleagues identified many of the critical operational/tactical elements now being discussed for the new RMA; but perhaps most importantly, he correctly understood that a revolution was in the making. In the Soviet case, the idea for the RMA clearly preceded the technical capabilities to implement and exploit the concept. This example reinforces the important understanding that a revolution should start with the strategic problem, not the technologies or military instruments -- a classically Marxist deterministic approach in which doctrine is derived from the geopolitical conditions.

Ogarkov's real concern, however, was that, by the early 1980s, the United States may have solved his strategic problem by synthesizing the four constituent elements of an RMA that have been previously noted (technologies, evolving military systems, operational innovation and organizational adaptation) into a whole that was more powerful than the parts. In particular, he pointed to future U.S technical capabilities to exploit the revolution as well as the limitations on the Soviets' own technical capabilities. In Ogarkov's terms, the most impressive capability demonstrated by the United States during the Gulf War was probably the striking of both the enemy's strategic center of gravity and the enemy's operational forces, in order to produce decisive results, the very capability he had feared that the United States would be able to turn against the Soviets in the European Theatre of War.

WHAT IS A RMA ?²

Much has been written recently regarding the current RMA, which is often viewed as "A military technical revolution combining [technical advances in] surveillance, C3I [command, control, communication, and intelligence] and precision munitions [with new] operational concepts, including information warfare, continuous and rapid joint operations (faster than the adversary), and holding the entire theater at risk (i.e. no sanctuary for the enemy, even deep in his own battlespace)."

A RMA involves a paradigm shift in the nature and conduct of military operations which :-

* Either renders obsolete or irrelevant one or more core competencies of a dominant player.

* Or creates one or more new core competencies, in some new dimension of warfare.

* Or both.

HISTORY OF RMA.

History showed that one who recognizes the advent of a military revolution and employs it to the fullest extent enjoys a significant advantage, perhaps overwhelming in some cases, over an adversary who has failed to do so. In all past revolutions, technological innovation combined with new doctrine and organization resulted in a significant leverage in conducting wars.

There are several interpretations of the exact number and constituent elements of earlier revolution in military affairs. A representative illustration is provided by Krepinevich³ which outlines ten such RMAs since fourteenth century :-

- The Infantry Revolution in which foot soldiers achieved a dominant role (over cavalry).
- The Artillery Revolution.
- The Revolution of Sail and Shot, in which naval vessels transformed into sail-powered gunnery platforms.
- The Fortress Revolution, in which fortifications adapted to artillery appeared.
- The Gunpowder Revolution, in which firearms for foot soldiers evolved.
- The Napoleonic Revolution in logistics and organization.
- The Land Warfare Revolution in firepower, transportation, and communication.
- The Naval Revolution of steam, iron , and submarine.
- The Nuclear Revolution.

CHARACTERSTICS OF RMAs⁴

Based on the historical record, notable characteristics of RMAs are :

* RMAs are rarely brought by dominant players. Because they are not motivated to make the necessary doctrinal or organizational changes. For example, during the period between the First and Second World Wars, the French and British Infantry and Artillery forces, the dominant European players in land warfare at the end of World War I, did not develop the Blitzkrieg concept of tank warfare, and the British navy, one of the dominant players in sea warfare, did not develop the concept of carrier warfare.

* RMAs frequently bestow an enormous and immediate military advantage on the first nation to exploit them in combat. Examples are the use of the machine gun by the British against the Zulus in 1879, the use of the Blitzkrieg by the German army against the Poles in 1939 and the British and French in 1940 and, most recently, the use of stealth aircraft and precision-guided munitions by the United States against the Iraqis in 1991.

* RMAs are often adopted and fully exploited first by someone other than the nation inventing the new technology because that nation's military failed to make the necessary doctrinal or organizational changes. For example, even though the key inventors of the machine gun were all Americans, machine guns were first used in a decisive fashion by European armies against native forces in Africa in the 1870s-1890s. Similarly, the British invented the tank. Although they first employed it in combat during the Battle of the Somme on September 15, 1916 and later at the Battle of Cambrai on November 20, 1917, they did not understand how to fully exploit its capabilities. The Germans first showed this in 1939-1940.

* RMAs are not always technology driven. For example, American combat tactics during the Revolutionary War (i.e. engaging an opponent from behind cover rather than in formation out in the open) brought about a revolutionary change in land combat without any change in the weapon technologies involved.

* Technology-driven RMAs are usually brought about by combination of technologies, rather than individual technologies. More precisely, technology driven RMAs are usually brought about by weapons or systems exploiting combinations of technologies. Examples include the Blitzkrieg, which was enabled by the combination of three technologies the tank, the two way tactical radio, and the dive bomber.

* Not all technology-driven RMAs involve weapons. For example, the coming of the railroad to Europe and America in the 1830s-1850s led to a revolution in strategic mobility. The French first demonstrated this when they moved 2,50,000 men at hitherto unheard of speed to the front in northern Italy to engage the Austrians during the War of 1859.

* All successful technology-driven RMAs appear to have three components: technology, doctrine, and organization. Technology is not enough to produce a

RMA. It must be combined with doctrine (i.e. an agreed-upon concept for the employment of the new weapon or system) and organization (i.e. a military force structure crafted to exploit the new weapon or system). For example, the Blitzkrieg RMA resulted from the combination of the tank, two way radio, and dive-bomber technologies, an operational concept in which highly mobile armoured forces broke through enemy lines and rapidly penetrated to the rear, and a force structure (the panzer division) that concentrated the available tanks into a few specialized divisions.

* There are probably as many “failed” RMAs as successful RMAs. Some comparatively recent examples include the nuclear powered military aircraft, the electromagnetic gun, and the thus far unfruitful attempts to develop High-Energy Laser (HEL) weapons for use in military combat. The German army began experimenting with tanks in the early 1920s; it took them almost two decades to create the Blitzkrieg. So the “revolution” in revolutions in military

affairs does not mean the change will occur rapidly – sometimes it will, often it won’t-but ultimately it will be profound.

* The military utility of an RMA is frequently controversial and in doubt until the moment it is proven in battle. The British did not begin to realize the combat value of the machine gun until they used it with devastating force against the Zulus at Ulundi in 1879.

* In at least one case, the German development of the Blitzkrieg, the doctrinal rethinking took place largely before the RMA experiments. Under the leadership of General Hans Von Seeckt between 1919 and 1926, the German army developed a doctrine of mobile, maneuver warfare that emphasized combined arms and independent action by commanding officers at all levels; it was designed to regain primacy for the offense (in contrast to the defense dominance of World War I). This doctrinal development was largely complete by 1926 when Von Seeckt stepped down as head of the German army. Over the next ten years, the Germans proceeded to develop the devices/systems (the tank, two-way tactical radio, and dive bomber) and force structure (the panzer division) to bring this doctrine to fulfillment in the Blitzkrieg.

* Military institutions must be willing to develop a vision of how war may change in the future, or they are incapable of developing RMAs.

* Acceptance of new ideas by (at least some) senior military leaders and by (at least part of) the military bureaucracy is essential to the successful development of RMAs by existing military institutions. The potential for civilian or outside leadership to impose a new vision of future war (i.e., the vision of an RMA) on a reluctant military service whose heart remains committed to existing ways of fighting is, at best, limited.

* Institutional processes for exploring, testing, and refining conceptions of

future war – i.e. for conducting experiments and assessing their results-are essential to the development of RMAs. (The German army and the U.S. Navy's aviation community had such processes during the 1918-1939 period : the British and French armies did not.)

WHAT DOES IT TAKE TO BRING ABOUT A SUCCESSFUL RMA?

What does it take for a military organization to bring about an RMA of its own, rather than merely responding to an RMA being developed by someone else? History suggests that all of the following items are probably necessary and one must have :-

- A fertile set of enabling technologies.
- Unmet military challenges.
- Focus on a definite “thing” or a short list of “things”.
- Ultimately challenge someone’s core competency.
- A receptive organizational climate that :-
 - * Fosters a continually refined vision of how war may change.
 - * Encourages vigorous debate regarding the future of the organization.
- Support from the top. senior officers with traditional credentials willing to sponsor new ways of doing things.
- New promotion pathways for junior officers practicing a new way of war.
- Mechanisms for experimentation to discover, learn, test and demonstrate.
- Some way of responding positively to the results of successful experiments in terms of doctrinal changes, acquisition programs, and force structure modifications.

BLITZKRIEG. The relative importance of war against an enemy command, control and communications increased with the advent of mechanized warfare. In World War II, the German Blitzkrieg doctrine in some ways a forerunner of cyberwar made the disruption of enemy communications and control an explicit goal at both the tactical and strategic levels. For example, the availability of radios in all of its tanks provided Germany with a tactical-force multiplier in its long war with the Soviet Union whose tanks through more numerous and better built provided radios only for commanders. See the memoirs of Heinz Guderian Panzer Leader (NewYork: Ballantine Books 1972)

and Von Mellenthin, Panzer Battles (New York Ballantine Books 1976). These works are replete with examples of how radio communication allowed German armor to concentrate fire until a target was destroyed, then shift to a new target. In particular, fire would be initially concentrated on enemy tanks flying command pendants, as the Germans were aware of the radio deficiencies of their foes. Though the Russians were heavily victimized by communication inferiority even France, with its superior numbers of heavier armed tanks suffered in 1940 because, while all armor had radios, only command vehicles could transmit. The French also suffered because they deployed their tanks evenly along the front instead of counter concentrating them. Finally, it is interesting to note that Guderian began his career as a communication officer.

Which in Earlier - Technology or Doctrine ? In today's Information age the chicken - egg question concerning doctrine and technology will be difficult to answer "Decision on doctrine --- became a precondition and guidance for integrating the research and development of new technologies" One example in how development of mechanized warfare doctrine led to the creation of self propelled, protected artillery capable of keeping up with the movement of armour units. On the other hand if doctrine dominates technology the technical advantage may be overlooked causing a quiet evolution rather than a revolution. Some of the worst failures in warfare have come about not so much from an unwillingness to adopt new technologies as from a persistence in clinging to elder doctrines and then adjusting the new technologies to doctrine. Most European armies on the eve of World War I possessed doctrines emphasizing offensive maneuver and rapid decisive battle that barely acknowledged the new technologies represented by a host of modern weapons ranging from artillery to the machine gun. The pitfalls of doctrine following a technology - dependent strategic concept can be studied in the creation of the US "Pentomic" Army in the late 1950s. The US Army's Pentomic division concept intended to employ tactical nuclear weapons and exploit advances they made possible, was abandoned in 1961 when it became clear that nuclear weapons were likely to be used on the battlefield and that

dependence on them therefore actually decreased the likely effectiveness of the new units.⁵

History also demonstrates that doctrinal and technological surprise is ephemeral at best. The doctrine of Blitzkrieg was combined with mass manufacture of anti-armour weaponry. And such counter measures over the years have generally ended attempts to find technological panaceas in the form of wonder weapons.

Organization. Military organizations are conservative in nature and slow to change. Williamson Murray states "Throughout history, military organizations have attempted to learn from experience. For the most part, however, they have ended to extract from their experience as well as the experiences of others only what supported their preconceived notions. In fact, existing doctrine has in most cases become a barrier to adaptation and improvement".⁶

Maj Gen JFC Fuller rightly points out. " The highest inventive genius must be

sought not so much amongst those who invent new weapons as among those who devise new fighting organizations".⁷ However, creating new organizations orientations has never been easy. Brig J P Kiszley expands this view "Without originally, let alone genius, the new technology will merely be grafted on to existing organizations and doctrines in a way designed to cause the least inconvenience and least unpleasantness in peacetime. The risk of having operated on this principles on the past are as nothing to the dangers of doing so in the future".⁸

Leadership. The importance of leadership has been summarized 30 years ago by Michael Howard in his report on Service Colleges to the British Ministry of Defence :-

" There will always be a prime need for the fighting leader in the armed forces ; but ... today the junior fighting leader often need to exercise a considerable degree of independent and informed judgement ... while the demands made on his seniors find little parallel in any civil profession. To fit officers for so testing a carrier ... it is as necessary to extend their intellectual powers as it is to strengthen their moral powers and their capacity for physical endurance".

Today the critical requirement is the ability and willingness of relatively junior officers who are now in the field to think about the future. As younger people, most recently out of various training establishments they are likely to be in close touch with new and emerging technologies which have potential military applications. They are aware of operational and organizational problems that they must deal with daily and hence prime clients for possible solution. Also they will be the senior leaders who must win the wars later.⁹

The technology is there for anybody to exploit. However, it requires encouragement of innovative thinking about the relevant question. It would not be out of place to narrate the following incident.

Innovative Thinking. Stationed at Camp Meade, Maryland just after World War I Dwight Eisenhower and Gorge Patton both began writing articles for military journals describing their experiments utilizing new doctrine for the employment of tanks, " Then I was called before the Chief of Infantry ", Eisenhower latter recalled." I was told that my ideas were not only wrong but dangerous and that henceforth I would keep them to myself. Particularly I was not to publish anything incompatible with solid infantry doctrine. If I did, I would be hauled before a court-martial." ¹⁰

Unfortunately all military organizations remain hierarchical and conservative and innovative thinking is not much encouraged. It remains true till date.

RMA and Information Revolution

Previous revolution in military affairs have primarily served to enhance the

combat power of military forces by improving the effectiveness of its constituent elements i.e. mass, mobility, reach and firepower. Although today's Information Revolution is not a revolution in military affairs, Per se, it is the foundation on which one can be built.

The rapid changes in computer and communications combined with drastic cost reduction of both have already caused revolutionary changes in large corporate business that have not been seen earlier. These changes should produce fundamental changes in military ranging from hierarchy and span of control to centralization and response time.

Information Age Imperatives¹¹

So what can we do ? Part of the solution lies in restructuring our security organizations and forces for the Information Age.

- We must identify, build and train in advance the interagency and coalition teams needed to operate in the new security environment.
- The Military must recognize that new information technology continues to blur the distinction between tactical, operational and strategic decisions. Thanks to Sky News and CNN, a young officer's or NCO's decision in the field will be shown live to millions around the world.
- We must train that individual to make the right decision and give him or her the autonomy to act accordingly.
- The armed forces must integrate our high technology system throughout the force, and indeed, the entire interagency and coalition team . We can no longer afford non-interoperable, service -specific, "stovepiped" systems.
- We must avoid wasting our limited finance on unnecessary military specifications when state-of-the-art commercial off-the-shelf specifications more than satisfy requirements at a fraction of the cost of building " MILSPEC" systems.

Today's RMA Activities.

Among specific concepts proposed and being tried out as the kernel of RMA are:-

- Long Range Precision fires.
- Information Warfare.

- **System of Systems.** Proposed by Admiral William A Owens, Former Vice Chairman, Joint Chiefs of Staff , USA. Idea is to combine vast assembly of intelligence collection , surveillance and reconnaissance (ISR) ; advanced command, control , communication , computers and intelligence processing (C⁴I) and precision weapon systems resulting in whole with capabilities much grater than the sum of the parts. Ground soldiers are particularly dubious about this. They wonder whether any technology can disperse the fog of war and ask what will happen when an opponent attempts to conceal its force or attacks the information systems that observe it.¹²
- **Network Centric Warfare.** It employs three grids i.e Information Grid , Sensor Grid and an Engagement Grid to enable operational objectives.
- Co-operative Engagement Capability.

CONCLUSION

It is important to recognize at the outset that many aspects of war will not change even if the RMA occurs. Most of the determinants of success in war, from courage and willpower to small-unit initiative and cool decision making under fire, have little if anything to do with technology or scientific phenomenon, its human aspects will always predominate.

Secondly, we must not believe that new concepts or capabilities will negate the fundamental nature of war. Friction together with fog, ambiguity, chance, and uncertainty will dominate future battle fields as it has in the past. Friction will not disappear in the next century, it is a fact of life.

Another group of observer sees the preoccupation with RMA and Third Wave Warfare as missing the basic points : The structure of international relations is rapidly changing and with it a return to first not Third Wave Conflict. They feel that " The future will be a reprise of World War II in the fancy dress of high technology". It is, in short , a linear extension of the past into the future , one in which the military's view of technological marvels offers a vision of war with which Patton himself would have felt right at home."¹³

Although technology is important it is only a tool . If we connect it to a clear understanding of the past and present, we can perhaps push our current capabilities into the future in an intelligent fashion and thus be on the leading edge of the next RMA.

Technological advances has offered advantages to one side or other at various time since the dawn of history. Just as importantly professional soldiers must retain their professional perspectives and avoid becoming enchanted with technology they

would do well to remember that while technologically sophisticated weapons can help secure victory, technology in itself cannot win wars. Ultimately wars are won or lost in the minds of soldiers and their leaders.

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