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Revolution in Military Affairs: The United States and Its Big Competitors¹

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Abstract

The term “Revolution in Military Affairs” (RMA) has been one of the most significant areas of study for international relations scholars during the last seventy years. Its interpretation is debatable. This paper, after approaching the matter theoretically, seeks to underline the main weaknesses of the American RMA along with their implications against the efforts of its main competitors, Russia, and China. The two, in the age of information technology, try to undermine their competitor’s advantages and manage to accomplish their own breakthrough in the field, with each displaying its own unique approach to the matter. Going full circle, some recommendations are suggested for the United States at the end.

Keywords: Revolution in Military Affairs; Military Revolution; USA; Russia; China; Technology; Technological Innovation; Military Doctrines

Introduction

The term revolution in military affairs has attracted many scholars to formulate their own views on the matter (Neuneck & Alwardt, 2008). First, soviet scholars, mainly in the 70s and 80s, saw through the new circumstances in the general environment of cold war competition. They reported that the so-called military-technical revolution was a discontinuity from traditional ways of warfare and changes were visible through technological innovation and doctrinal alterations (Adamsky, 2008).

In today's world of constant technological innovation, after the cold war and a period of unipolarity where the United States used to lead in every sector, the major powers are being involved in a constant antagonistic environment on the matter of who is going to gain or keep the technological and military edge. More specifically, Russia and China try to undermine the RMA that was established by the US at the end of the previous century and under the realist approach, in an anarchic world order, and via the mechanism of balance of power, hope to emerge themselves as revolutionaries in the field (Work, 2016). This happens through reinterpreting the phenomenon of war using new technologies, doctrines, and paradigms.

This paper tries to point out the weaknesses of the US and the distortions observed while exploring those efforts of its adversaries referred previously. It also dives into the matter of how they impact the position of the US and tries to point out what the US can do in order to adapt to the new state of affairs.

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Methodological Approaches Concerning RMA

Krepinevich (2002) noted that military revolution consists of technical changes, systems developments, operational innovation, and organizational adaptations. Toffler (1993) added to the previous the changes in tactics, doctrines, rules, and equipment. Hundley (1999: 9) perceives the RMA as “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”.

A common thing among scholars which should be noted was the appearance and use of different terms such as Military-Technical Revolution, Military Revolution and Revolution in Military Affairs when everyone virtually was referring to the same thing. Knox and Murray (2001), whose theoretical approaches will be widely used in this paper, set out to clarify the field. They made a distinction between Military Revolution and Revolution in Military Affairs, perceiving the Military Revolution as a much rarer and more general phenomenon consisting of fundamental changes in the way a war is fought but also in the fabric of the society itself. On the other hand, an RMA usually follows a Military revolution and its revolutionary changes in society, tactics, organization, and technology. These changes usually lead to perfections of the previous changes made during the Military Revolution and a new conceptualization of war (Knox & Murray, 2001). Rogers (2000) also makes that distinction, but he argues that an RMA precedes a Military revolution.

Besides the above, on a more practical note it should be indicated that technological innovation certainly serves as a prerequisite for an RMA, but as history confirms is not enough. As Kak (2000) points out, organizational, tactical as well as doctrinal changes need to occur as well for an RMA to be considered successful.

Secondly, the aspect of time needs to be taken into account. Time seems to determine or to limit the range of the revolution as well as the immediate reaction of the adversary which will cancel out the temporary advantage of the enemy. Distinguished individuals also view time as an important variable, pointing out that RMA is not instant, but it is a process or an ongoing endeavor (Owens, 1998; Sloan, 2002; Rumsfeld, 2002).

Finally, there is another debate among scholars regarding the level of capabilities of the adversary. According to Knox and Murray (2001), for an RMA to manifest, there needs to be an enemy, not only technologically inferior but generally more incapable. On the contrary, Watts (2011) supports that a state's level of progress, in his case the USA, needs to be evaluated against a capable enemy having similar capabilities. If we accept Watts' view, the value of the so-called American RMA of the 90s

and 2000s with the Gulf war and the wars in Iraq and Afghanistan is severely degraded. Therefore, our analysis is based on a wider frame closer to Knox's and Murray's proposal.

The “American” RMA

As Shimko (2010) indicates, the American RMA started to manifest itself after the 90s with “Operation Desert Storm” during the Gulf war and continued unraveling with the war in Kosovo, reaching its peak with the second war in Iraq and Afghanistan at the beginning of the century. During these events, despite the abolishment of Soviet Union's threat, there were a lot of new but unclear threats. Therefore, the United States shifted towards a capabilities-based model of defense. This is when new technologies like stealth and precision guided munitions thrived, and new operational concepts were developed. It was the beginning of the so-called, network centric warfare, information operations and wider developments of the C4ISR (Pretorius, 2011). A new RMA emerged against weaker enemies. The US followed principles like Sun Tzu's, “disarming the adversary before battle” (Platias & Koliopoulos, 2015), “decapitation”, “shock and awe”, “rapid dominance”, and “overwhelming force” (Ullman & Wade, 2017). These only made the RMA seem more “revolutionary” against a weaker enemy like Knox and Murray predicted.

The US actions were based on the ‘third offset strategy’, and the joint vision 2010 and 2020, which describe how a war should be fought. They center around principles like dominant maneuver, precision engagement, full dimensional protection, focused logistics, dominant battlespace awareness, improving information systems, precision, stealth, and information superiority. Many things seem to be changing but a continuity compared to the Cold War past, and at the same time, the central characteristic of these strategies, is the concentration around the qualitative technological advantage of the US in an effort to computerize war (Shalikhshvili, 1996; Shelton, 2000; Work, 2016).

All these seem functional on paper and in fact have served the United States well for the part they were considered the only major power in the international arena but here is where problems start to arise.

There are those such as Gholz and Sapolsky (2021) who believe that the US is way ahead of any potential competitors. They claim that due to a special mix of factors the US technological edge will stay intact.

Posing a more conservative and worrying view though, there are those such as Borse (2018) who suggest that the US way of warfare needs altering. Furthermore, avid proponents of the RMA dream of the war fog elimination through technological advancements, whereas critics, suggest that the

nature of warfare will never change, while sophisticated and complex systems are sensitive and make room for failure (Neuneck & Alwardt, 2008; Borse, 2018).

Explaining the matter further, the main distortions that we referred to at the beginning, are related with the extensive use of tech in warfare. Technology itself though, does not make up the RMA alone, and likewise, here is not itself the problem. The issue lies in the way the US uses technological innovation and on the lack of imagination or stimuli to compete on the same level with its enemies. According to Freedman (2017), weapons focusing on brute force, size, and high technology, are proven impractical and are expensive to maintain, develop and manufacture. On the other hand, smaller, more maneuverable weapon systems are cheaper and at the same time more efficient and replaceable. The US seems to be focused on the first ones. Washington, as Borse (2018) points out, concentrates in the wrong areas. It spends an immense number of resources modernizing old platforms, otherwise known as legacy systems, instead of creating new kill chains. The US therefore needs to concentrate less on with what or who is fighting and more on how it is fighting.

An excellent example is stealth technology which provides low observable signature on aircrafts or even in the navy. The Joint strike fighter program, an immensely expensive one, and its main advantages, could possibly be rendered obsolete by advancements in satellite technology or in sensors and surface-to-air missile systems (Watts, 2011; Borse, 2018).

Additionally, the US fails to follow the progress of other powers like China and Russia in other sectors. As general Joseph Dunford puts it, “In just a few years, if we don't change the trajectory, we'll lose our qualitative and quantitative competitive advantage” (Garamone, 2017). Borse (2018) also notes that due to the advances of other states, the uniqueness of the US technological advantage will fail. As Prabhakar has also noted, the US is not yet comfortable operating in the cyber and information domain (Pellerin, 2016).

Going back to the third offset strategy, which is central for US thinking, it is seen as a way to maintain conventional deterrence through technological superiority. It goes beyond precision guided systems and stealth but focuses on the incorporation of artificial intelligence into an already computerized battle logic (Work, 2016). Basically, it is a plan to account for US weaknesses in a traditional level of warfare (Bitzinger, 2017). As Martinage (2014) and Dombrowsky (2015) underline, besides the advancements mentioned, as the US is losing its monopoly on C4ISR, it is becoming increasingly vulnerable to long range strikes, space, cyber, and modern air defense systems. From the above we conclude that time is accounting for the ongoing loss of the American edge. Its adversaries have

realized the changes occurring in the field and have gone as far as to develop their own systems capable of diminishing the US advantages.

Besides the Third offset strategy, power projection remains a problem despite US RMA accomplishments. Limitations of army use are observed due to advances in sensor technologies. Aircraft carriers are becoming increasingly vulnerable to Anti Access Area Denial systems developed by China and Russia. Also, as Watts (2011) observes, drone technologies are increasingly dependent on the space and cyber domains. The former might not have posed any problems when fighting against terrorists, but according to Wortzel (2008), an adversary such as China could easily disrupt these domains. Moreover, aside from the fact that space enables the current US RMA, it is at the same time seen as an element that increases vulnerability (Pretorius, 2011). Besides, US capabilities have not been yet tested in an all-out war and under no circumstances could it be suggested that the US would easily win a potential war with China and/or Russia due to its technological advantages or its ongoing RMA (Bitzinger, 2017).

Competition ramping up

At the same time, as US Deputy Secretary of Defense, Bob Work points out, two main competitors of the US, Russia and China, continue to evolve their own systems, their own doctrines, and make their own organizational changes, contributing to the ongoing weakening of the US advantage and making their own technological and conceptual breakthroughs.

As Deni (2018) points out, Russia continues to advance alarmingly in both conventional and nuclear capabilities. Russia's modernization of the armed forces has been slow but nonetheless successful (Deni, 2018). The springboard for those developments occurred after the realization of the US advances during the Gulf War and its own shortcomings after the Chechen War and the war in Georgia. At the time, having limited capabilities, advances in information operations, the so-called sixth generation warfare, and no-contact warfare, reflected the uncertainty of Russia against NATO forces. As Palmer (2015) explains, these advances could possibly be characterized as a Russian RMA.

A combination of factors makes the former a possibility. Firstly Russia, since the 90s has been concentrating on diminishing the strategic advantages of its opponent (Fitzgerald, 1994). According to Cheung (2021), Russia has invested heavily in deploying advanced systems. Emphasis has been given on A2/AD systems and on long range precision munitions. Furthermore, there is a large gap concerning thinking. Russia has focused traditionally, and focuses today, on shaping the strategic environment and not so much on the tactical level. Therefore, it doesn't come as a surprise that Russians see the importance of AI under a unique prism. Unlike the West, they don't only incorporate

AI and new technologies on existing systems as a supportive feature. They see it as an independent tool of war waging (Thornton & Miron, 2020).

This is where revolutionary thinking comes in. Russia has recently adopted new military doctrines focused on non-kinetic measures for ensuring victory. In that framework of defense preemption, revolutionary thinking appears in the way Russia uses information as a weapon. Using information to disrupt and spread misinformation is nothing new, but under the Gerasimov doctrine, Russia has proceeded one step further, elevating those asymmetric means to a tool of destruction. Russia virtually plans to use hard power in conjunction with information warfare, Cyber-attacks, and AI to such an extent as a way of delegitimizing every information coming out of enemy official bodies, creating mass events of confusion and mistrust. The result of such an attack could render the state and its institutions completely dysfunctional in the events of a war (Rumer, 2019; Thornton & Miron, 2020).

Even though there are no signs that a pure Chinese RMA is taking place, China is rapidly modernizing its armed forces and investing in new technologies. In its effort to undermine US presence, China's priority is to catch up with the US and the rest technologically advanced powers. As General Zang Zen notes, "If the PLA could not foresee the development trends, it would lack behind" (Ji, 1999).

As stated by Liao (2020), China's realization for the need of conducting its own RMA appeared after the Gulf war, the war of Kosovo and the Taiwan strait crisis, where the advantages of its future competitors and its own weaknesses were made clearer. Therefore, after 1991, Chinese officials were making references to the future of war with high technology, the multidimensional war, electronic war, and precision missile wars. Concurrently, the PLA was learning RMA from the US and buying equipment from Russia (Ji, 1999; Defense Intelligence Agency, 2019). After all, militaries learn from each other, emulate each other and a significant degree of convergence on weapons systems is observed between great powers (Goldman & Mahnken, 2004; Resende-Santos, 1996; Waltz, 1979).

New concepts of war have been adopted since 1993, and some aspects of incorporating the existing RMA were visible since 1999 (Ji, 1999; Liao, 2020). More recently, China has concentrated on the need of winning local informationized wars, via investing massively on quantum technologies, and taking advantage of other new tech such as big data, cloud computing and AI (Kania, 2021). China is already on the path of modernization, via the adoption of new structures and doctrines, the changes observed on the command-and-control levels, and the restructuring of its defense industry. A satisfying C4ISR system has been created under the doctrine of Yitihua which endorses the already existing western idea of Joint operations and C4ISR integration (Ding, 2008).

China is fueling these changes with its substantial economic growth. Its capabilities have already surpassed those of its close neighbors and according to Bonds et al. (2017), will, in the near future, probably reach, qualitatively and quantitatively, the top powers worldwide.

China has not yet finalized any significant doctrine and is in the process of innovation but there are some interesting specific aspects and changes that undermine the American superiority, worth mentioning. China has integrated all new defense systems and is constantly perfecting its C4ISR capabilities, establishing A2/AD regimes in its near abroad. The concept of A2/AD is used to make sense of China's capacity to challenge US preeminence. It's a strategy widely used by both China and Russia that can defeat or deter a technologically superior adversary and undermine its capabilities in its area of action (Bitzinger, 2017; Loo, 2017; Raska; 2017). China is also keen on making, such as the United States, a system of systems with plans to integrate every big new technology to make something unique (Kania, 2021).

Given the existence of some internal limitations, Ding (2008) highlights that China's effort has been focused on asymmetry. According to Guangrong (in Kania, 2021) there is a focus around cyber warfare and on how establishing algorithmic superiority could determine the outcome of a war. Also, on the matter, a new AI development plan which hopes to fuse civil and military capabilities has been created (Webster, et al, 2017)

Besides everything else though, the most important aspect of China's progress is the fact that China has the advantage of having fewer legacy weapons to invest upon, unlike the US, and focuses primarily on the development of new technologies and next generation systems (Kania, 2021).

Conclusion and recommendations

Considering everything mentioned above, the American RMA has in a large degree, from its adoption, been undermined by some of its most powerful competitors by the sheer fact that they are gradually catching up and that the US sees the aspect of technology in a paradoxical way. Russia and China, two states that have the means and resources to do so, have, for practical reasons or the rift in imagination, gained some edge that gives the clearance to doubt the US supremacy. Undoubtedly, the US influence and power is in fact strong, but those developments make for some compelling arguments in favor of a most uncertain outcome in the possible event of a major conflict.

Focusing on the US, the technologically advanced systems may not have matured enough and even if they have, they pose the danger of being fragile and unreliable while being prone to the enemy "putting sand in their gears".

Expectations from new technologies should be lowered, and their deification should be decreased. The United States should continue the research for making their RMA efficient against all adversaries but at the same time it should be given attention to the fact that the enemy can still give an adequate battle with both old and new means, especially if it is a state, and in the prospect of the enemy fighting new technologies, with better integrated new technologies.

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