

# NON-LETHAL WEAPONS AS PART OF THE REVOLUTION IN MILITARY AFFAIRS

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**Abstract:** *The history of war is marked by rational use of technology to increase the lethal force of weapons. In the 21st century we are observing a turning point in the dynamic development of weapon technology, strategies, policies, organizational structure, etc., known as "Revolution in Military Affairs" (RMA). One of the decisive features of this revolution is the reduction of casualties and collateral damage. The purpose of this paper is to examine the role of non-lethal weapons (NLWs) in current and future conflicts in terms of the most popular theories of RMA and the modern visions on the 21<sup>st</sup> century wars.*

**Keywords:** NON-LETHAL WEAPONS (NLWs), REVOLUTION IN MILITARY AFFAIRS (RMA)

*"A Revolution in Military Affairs (RMA) is a major change in the nature of warfare brought about by the innovative application of new technologies which, combined with dramatic changes in military doctrine and operational and organizational concepts, fundamentally alters the character and conduct of military operations." – Andrew Marshall*

## Introduction

The history of war is marked by the rational application of technologies aiming to increase the lethal force of weapons. However, the present-day reality and the modern technological and military organizational development during the last several decades led to rethinking the future of war.

It is well known that the nature of the war and the outcome of it are determined to the greatest extent by the level of weapon technology. These technologies have undergone significant changes in recent years - unprecedented accuracy of weapons delivery, surveillance and intelligence systems providing extremely detailed information and systems which allow for the rapid use of this information. "Such changes in the quantity and quality of weapons of war are considered by policy and academic circles as revolutionary and transformative". [1] The Revolution in Military Affairs (RMA) concept is based on the assumption that technological innovation process has the ability to form revolutions in military affairs in which technology is the main factor for transforming the basic rules of war.

Regardless of the discussions about what exactly constitutes a "revolution in military affairs", there is agreement that a technological push alone is not enough to bring about a real RMA. "It should be stressed that how warfare is conducted is not based solely on technology at the disposal of the belligerents" [1] - rather "there is a dialogue among what technology permits, what politics requires, and what society allows". [2]

Many analysts consider that revolution in warfare is taking place when the society is transformed, evoking changes at every level of its military structures and breaking the balance of military power in the world. "Change in the nature of warfare can also arise from major shifts in political-economic-societal structures, such as the rise of the nation-state or industrialization. When the resultant shifts, whatever their cause, prove fundamental, a "revolution in military affairs" (RMA) occurs". [3]

"The concept of a "RMA" has become such a pervasive topic of discussion among security experts that it has now acquired the shorthand of its initials - RMA - as representation of a wide range of loosely connected ideas and approaches in security policy. There is controversy over whether there has been, is now, or will be a RMA, or what constitutes a change in security that might deserve such a name. [4] Many analysts are convinced that a revolution generated by both technology and a dramatically altered geopolitical environment is taking place today, others support the

position that changes now occurring are significant and essentially growing but still insufficient to provoke a RMA.

An inevitable consequence of both technological advances and new geopolitical, economic and social environment is the development and use of non-lethal weapons (NLWs). At present, when the avoiding civilian casualties and minimizing collateral damages in armed conflicts are being to become mandatory, NLWs are considered as part of the RMA which have the potential to dramatically reshape the nature of warfare.

## Most popular theories of RMA

According to the theoreticians, the revolutions in military affairs are not a new phenomenon - the history has documented several such revolutions.

The beginning of current thinking on military revolutions was set in Russia in the early 1980s by the Soviet marshal Nikolai Ogarkov who predicted a "military technical revolution" that would drastically increase the capabilities and lethality of conventional weapons.

At the end of the Cold War various scientists and military organizations (mainly in the United States) created theories of understanding and describing ongoing conflicts and those that could be expected in the future.

The PMA theories are generally based on two main approaches. The first is mainly focused on changes in states and the role of organized military in the use of force. It is based on global political, social and economic factors requiring a very different type of military and organizational structure to apply force in the future. The second approach puts emphasis on the evolution of weapons technology, information technology, military organization and military doctrine among advanced powers. "It identifies the basic combination of required force assets, namely: Command, Control, Communications, Computers, Combat Systems, Intelligence, Target Acquisition and Reconnaissance (C5ISTAR). This approach also incorporates other sophisticated technologies such as unmanned aerial vehicles, nanotechnology, robotics, and biotechnology". [5]

Based on the hypothesis that dramatic changes in society and technology over the last 50 years will inevitably lead to another military transformation, the existing literature offers different models of explaining the relationship between technology, the military, and the society, that creates transformations in military affairs.

The most popular theories of the RMA are briefly discussed below in order to highlight the role they attach to non-lethal weapons in the context of modern and forthcoming armed conflicts.

### Theory of "Fourth-Generation Warfare" (4GW)

This (the most popular) theory was developed by William S. Lind and several Army and US Corps officers in 1989 and re-evaluated in 1994. According to it, the basis of any subsequent generation of war is either technological (introduction of new

technologies) or ideological. The theory assumes that generations do not replace one another but overlap and even coincide.

The beginning of the first generation war is considered to be 1648 when the Westphalian Peace Treaty was signed, which ended the European religious wars that began after the Reformation. This generation, as well as the second one (since 1815), is based on technology, while the third (since 1918) is based on ideas.

Fourth generation wars are defined as either related to ideas or technology. According to critics such a division leads to an inaccurate way of modeling wars. "In this context, military revolutions are perceived as tactical, potentially operational, innovations in combat operations that give decisive advantage to the one who first adapts to them. For this reason, the current military revolution can be regarded as comparable in scope to that which took place in the 1920s and 30s of the 20th century". [6]

Upcoming 4GWs are supposed to be firmly based on ideas, especially non-western. "Terrorism that surrounds traditional military forces and targets directly the civilian population of a nation is perceived as a major component of this war". [7] Viewing the terrorism as a component of the 4GW, this author claims that the army requires armaments and training with NLWs and puts an example of a real anti-terrorist operation illustrating the "viability of non-lethal weapons and the requirement of introducing them as weapons for fourth-generation wars".

To clarify the understanding of his own theory, and in the spirit of the concept of non-lethality, Lind pointed out that "One of the key success factors in 4GW may be "losing to win" [sometimes to win you first have to lose]. "Part of the reason the wars in Afghanistan and Iraq are not succeeding is that our initial invasion destroyed the state, creating a happy hunting ground for Fourth Generation forces. In a world where the state is in decline, if you destroy a state, it is very difficult to recreate it". [8]

#### *Theory of "Third-Wave War"*

This theory (1993) belongs to the famous American futurist Alvin Toffler, exploring the human progress related to society and war as a development of three waves ("super-civilizations") over the course of history. According to this theory, a military revolution arises only when a new civilization arises, challenging the old one; when the whole society is transformed, forcing its armed forces to change at every level at the same time - from technology and culture to organization, tactics, doctrine and logistics. According to this theory, when this happens, the military's relationship with the economy and society is transformed, and the balance of power on Earth is ruined.

The first wave (after 8000 BCE) was mostly agricultural, so wars are leading to conquest and retention of territories. The second wave (after 1690) was industrial - with a war focusing mainly on weakening the enemy, in order to spend its capacity to feed, dress and equip the army.

The third (current) wave is based on knowledge and reflects an information age in which the war seeks to destroy the enemy's means of gathering, processing, storing and disseminating information. According to this perception, the influence of the RMA we are now witnessing is considered as significant as that of the French Revolution of the late 18th century.

Precision-guided munitions, robots, non-lethal technologies, target-oriented weapons and computer viruses are considered as the Third Wave War attributes. [1, 6]

#### *Theory of "Fourth-Epoch War"*

The theory was published in 1994 by Robert Bunker and is based on the division of Western civilization into four eras. Each epoch is composed of one or more energy cycles, reflecting a corresponding warfare model based on the experimental and institutionalized use of a given form of energy (e.g., human, animal, machine, engine, post-engine). According to it "the current RPMA [Revolution in Political and Military Affairs] represents an inter-epochal military revolution that will place the survival of the current

dominant polity form, the nation-state, in considerable doubt and, as a result, will ultimately give rise to a postmodern form of political community. This military revolution, now only in its early stages, is viewed as being equal in magnitude to that of the European Renaissance". [6]

This theory assumes that two initial war models based on post-mechanical energy sources are being developed: western (high technology war) and non-western (a mix of terrorism and low-intensity conflicts), largely resembling the idea-based 4GW. [6] It takes into account the growing urbanization of developing countries around the world, leading to a reduction in the technological superiority of the West due to the limiting urban environment and the need to distinguish between fighters and civilians.

The theory recognizes that both tactical and operational changes, along with changes in the economic, political, social and military structure, will occur. The current RMA is perceived as equivalent to the European Renaissance. Therefore, a change in the energy base of Western civilization, along with the accompanying change in the essence of the political-military force and the deinstitutionalization of the political violence (i.e. the loss of the national state monopoly in the war), is envisaged. As a result, corresponding increase in military actors (as terrorists, guerrilla parties, local military leaders, private armies, drug cartels, and multinational corporations) are expected, questioning the political legitimacy and hence the survival of the nation state.

"Advanced technology warfare represents the rise of new military technologies such as precision guided weapons, information warfare, nonlethal weaponry, robotic war-fighting units, and directed-energy weaponry." [6] This theory sees the introduction of NLWs on the battlefield as significant as the introduction of gunpowder at the time of the European Renaissance.

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From the way these theories (as well as other popular theories of RMA) attempt to explain the transforming nature of war, it can be seen that they all support the general view that both the present and the future war are unconventional in nature. In addition, as mentioned in [6], all theoreticians are trying to explain the new face of the war in which efforts are made to circumvent the power of the enemy.

As these theories precede the formal adoption of the non-lethal policy by the USA, it may be presumed that they may have contributed to a somewhat (and perhaps to a significant) extent to the doctrine formulation and acceptance.

### ***Contemporary views on the role of non-lethal weapons in the RMA***

The most contemporary theorist agree that while military revolutions are uncontrollable events driven by their own inertia, the revolutions in military affairs are periods of invention and progress and result from will and efforts to transform the war. They also share the view that the ultimate goal of a RMA is to develop new means to gain advantage over an enemy.

It is generally accepted that the current RMA is characterized by four types of changes: extremely precise, stand-off strikes; dramatically improved command, control, and intelligence; information warfare; and non-lethality. The most theories admit that the reduction of casualties and incidental damage associated with military operation is determining feature of the current RMA. To a certain extent this aim can be achieved by precise conventional strikes. According to [5] "even more radical change may be possible through non-lethality". Presenting a comprehensive model of the RMA, based on previous RMA research, which considers the political, strategic and military situation and technological development at the beginning of the second decade of the 21st century, [9] claims that „nonlethal weapons have a potential to lie at the core of the next RMA“.

Some specialists consider that in the context of modern military operations the use of non-lethal weapons can have a strategic multiplier effect by avoiding incidental damages to property and

infrastructure, minimizing civilian casualties, overcoming the negative perception of the state armies, limiting the opportunities of the enemy propaganda and minimizing the cost of continuous infrastructure reconstruction.

After the attacks of 11 September 2001 new concepts describing the war characteristics in the current geopolitical environment were created using terms such as "hybrid war", "hybrid challenges", "asymmetric war", "combined warfare", "unlimited war", "low intensity conflicts", etc. Regardless of some new elements introduced by these concepts it seems that they are essentially not differ from the pioneering theories of RMA in their views that the modern war will be non-conventional in nature.

Most present-day wars have become irregular or asymmetric conflicts between states and non-state actors. The environment in which the military forces will operate in the future, and in which the adaptive "opponents will continually seek new opportunities", according to [10] will be extremely dynamic as a consequence of:

- Expansion of information systems networks (social, economic, political, military) increasing the opportunities for competition, respectively the influence of some regional forces;
- Globalization trends which will lead to rise of new forces, population changes, competition for natural resources, impact on governance, global sense of insecurity, emerging and disappearing coalitions, alliances, partnerships and new national and transnational actors, which will induce changes in the international strategic environment;
- More and more frequent military operations (which may include both resolving humanitarian crisis and conducting war operations) on urban and other complex terrains.

The wars which result of such environment "are not high-technology duels between conventional forces, but struggles that pit governments and their allies against opponents that fight along religious and cultural lines and use their own internal divisions and populations as weapons". [11]

The real RMA, according to [11], is forcing modern states to use the advances in military technology to concentrate on minimizing civilian casualties and collateral damage rather than destroying the enemy. In some cases it creates military laws designed for very different types of combat against political and propaganda arsenal owned by non-state actors and states that use asymmetric means of fighting. The abilities to selectively attack the enemy with minimal civilian casualties and incidental damage should be improved in the direction of better integration between military and civil approaches to war and should be focused more on the strategic goals than on tactical victories.

The non-lethal capabilities and the new methods of employing the force can significantly change the conduct of warfare and crisis resolving. "While the nature of war will remain a violent clash of wills between states or armed groups pursuing advantageous political ends, the conduct of future warfare will include combinations of conventional and unconventional, lethal and nonlethal, and military and nonmilitary actions and operations, all of which add to the increasing complexity of the future security environment". [10] This document recognizes the need of full spectrum force which is able to minimize noncombatant fatalities, permanent injury, and undesired damage to property and environment; maintain force protection, reinforcing deterrence; and expand the range of options available to commanders. "All of these imperatives demonstrate a clear need for nonlethal weapons, even in conjunction with lethal weapons, to achieve a decisive outcome". [10] However in fact, a small number of NLWs involving new technologies are widely deployed in military forces and the available non-lethal capabilities have limited application in the military operations.

The analyses show that initiation of a modern RMA, which includes the concept of non-lethality, depends on the presence and interaction of several key factors.

Technological progress had played a vital role in almost any RMA in the past. Although many military experts and official documents formally recognize that NLWs have a potential for

successful use within the full spectrum of military operations, it seems that not everyone in the military circles is truly convinced of the NLWs effectiveness at the battlefield. Some unrealistic operational requirements of the military towards NLWs (placed in view of the own forces protection), especially concerning the range, raise the bar so high that almost none of the existing NLWs can jump over at the current stage of development and even if further significant improvement of the delivery systems is achieved. Given that non-lethal technologies reach a level of development that meets the military requirements, they still could play the role of catalyst, but could not in itself initiate a RMA.

Another stand out key factor is the way of thinking based on a framework of doctrines, concepts and strategic culture. Using the model presented in [9], the same author has analyzed the current status of NLWs within militaries in [13]. Although the common opinion that a conventional war is unlikely to happen in the future, the author has found that the military continue to prepare for such a war and "the main emphasis is on traditional lethal weapons". Despite the fact that "military industries around the globe have already clearly demonstrated the ability to integrate non-lethality with and within lethal systems" [13], "due to the erroneous perceptions of NLW's inapplicability on the traditional battlefield, militaries deny their integration with existing weapon platforms and employ very limited capabilities from the law enforcement field. As long as this situation continues, the full potential of NLW will remain unexploited and the RMA of NLWs will be delayed". [14] But there are still reasons for optimism in this respect: "Military organizations begin to understand that the achievement of a comprehensive victory demands support from the local population; and therefore, harming civilians, in most cases, will increase their involvement against the military and delay the successful end of operations". [13]

The third key factor is the political will without which no RMA can be realized. Analyzing the future of the NLWs military employment [13] notes that "Political leadership is not stressed enough (domestically or internationally) to demand fundamental changes from their military organizations. Consequently, under insignificant political pressure, military organizations choose to adopt their existing capabilities (precision strikes, selective weapon systems, strict the rules of engagement, etc.), rather than employ NLWs". The author concludes that the future of the NLWs in military operations is not entirely in the power of politicians, but without politic pressure the process of the NLWs adoption can be very long one.

In turn, the pressure that the politicians would eventually exert on the military depends on the pressure exerted by the society on the politicians. Claims that "the preservation of human life is a commonly accepted fundamental value of the 21st century, especially in the western societies", look implausible. Indeed, the efforts of the humanists have led to significant progress in this respect. Although violence is repulsive and unacceptable to any normal person, facts show that for most people, even in these societies, such aspiration in practice does not extend beyond their own and their relative (and, possibly their compatriots) lives. Obviously, the man has to go a long way until he truly adopts the idea that the lives of others are just as valuable as his. In order to trigger the processes related to the emergence of the next RMA, a revolution (or at least significant evolution) in the human way of thinking must first happen.

## CONCLUSION

The theories concerning the current Revolution in Military Affairs has been the focus of academics and military analysts, trying to define the role of technology in transforming military affairs during the past three decades. [11]

Part of debates is related to the issue whether a RMA is taking place at present or a RMA is forthcoming. According to some, now this question "seems to be largely an issue of semantics, especially after the launch of an all-out war on terrorism, which is likely to remain the most salient transformation of military affairs for some years to come, if not decades into the future". [4]

In the earlier debates concerning the NLWs a number of theorists, military leaders and strategists have come to an agreement that in the next decades the political and military value of emerging non-lethal capabilities will outweigh that of lethal weapons, and that NLWs promise a real technological breakthrough for the military strategy and the war in the 21<sup>st</sup> century. However, it seems that the initial enthusiasm in this regard has cooled in recent years.

Some analysts believe that the current revolution in military affairs seems to have at least two stages. According to [5], in the drive to limit casualties, the first stage will be application of standoff platforms, stealth, precision, information dominance, and missile defense. The second may be robotics, non-lethality, psychotechnology, and cyberdefense.

Unfortunately, it may be that the expectation that NLWs will lead to a revolution in military affairs in the foreseeable future is too optimistic and premature. Considering the factors on which the use of non-lethal weapons in current and future armed conflicts depends, it is difficult to disagree with the conclusion made in some analyzes, that at this stage NLWs have no feasible future in this respect. Humanists should not only continue to make efforts, but also have to increase repeatedly the efforts to change the nature of war through non-lethality, albeit in the second phase of the modern revolution in military affairs.

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