

# The Application of Non-Kinetic Effects in Modern Warfare

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## Abstract

*Over the past two decades, non-kinetic effects have become core to the warfare undertaken by democratic countries. International security and human rights issues are now prominently at the forefront of international discourse, and these political areas have influenced profoundly military applications of force. Accordingly, the strategic environment of warfare has shifted; military strategists are now forced to avoid lethality in warfare wherever possible. In contrast, asymmetric enemies, like international terrorist groups, have tended to show their military power. In this new paradigm, the United States and its allies are shifting military doctrines away from traditional concepts such as overwhelming force or air superiority and are seeking new ways to protect international peace without avoidable casualties and collateral damage. This study argues that non-kinetic effects-based operations will shape these new strategies in the next era of international security and human rights.*

**Keywords:** *Non-kinetic Effects, Modern Warfare, Clausewitz, Asymmetric Warfare, Effect-based Operations*

## I. Introduction

Military futurists and strategists are primarily interested in identifying the characteristics of future wars. Students in military academies concentrate on this subject and conduct long discussions to identify the new concepts of war. These studies ultimately contribute to doctrines, plans and programs of development, and the structure of armed forces. This is not simply a thought experiment as identifying the trends of modern warfare correctly will afford states the valuable time needed to prepare and develop their capabilities.

American specialists are some of the most active in this field, vibrantly discussing fourth-generation warfare or the next “revolution in military affairs,”<sup>1)</sup> which are interrelated with information technology. However, both concepts cannot be generalized to be incorporated into the international system because each country exists within its own unique conditions. For example, notions that are predicated on dominant power plans sustained by information technologies cannot be as readily applied to most of the actors in the international system which are one or two levels below, and they can conduct warfare only following more traditional methods such as the Clausewitz paradigm: “victory through destruction.”<sup>2)</sup> Two main groups may be identified in this contemporary context: dominant power leaders who hold sophisticated military measures and those who are only equipped with conventional weapons/capabilities. We can see properties immanent for the full spectrum of “military revolutions,” characteristics for pre-industrial or industrial war and war in the information age. The cases of Kosovo, the Persian Gulf, and Afghanistan may be good examples. The NATO or the coalition forces led by the United States were equipped with some of the most advanced technologies, and they often fought against troops that were sometimes equipped with primitive or legacy weaponry and equipment. It is difficult to predict far in advance the developments in military affairs as theatres are broad and new technologies can reshape and have done the entire battlefield. However, as R&D and production now take place over decades, most of the military scenario for the first half of the new century is in large part decided – at least in terms of the main capabilities that will be utilized. Nuclear weapons may be expected to remain a means for deterrence and play a non-kinetic role like during the Cold War when this may be expected to prevent destructive wars. The characteristics of conflict will depend on the actors who will be involved and their non-nuclear

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1) Michael Muolo. “Challenges in Modern Warfare.” *ISSUP Bulletin*, Institute for Strategic Studies, University of Pretoria, 2015, 3-4.

2) “The very concept of war will permit us to make the following unequivocal statements: The destruction of the enemy forces is the overriding principle of war, and, so far as positive action is concerned the principal way to achieve our object. Such destruction can usually be accomplished only by fighting.” Carl von Clausewitz, *On War*, Princeton, NJ, Princeton University Press, 2018.

military capabilities. At present, the United States dominates military affairs over the other players on the international stage, and they dictate many of the rules and dimensions of ongoing conflicts. Due to the United States and its major allies' overwhelming superiority, near-term conflicts with the engagement of Western countries will be expressed in the forms of asymmetric and limited war. However, the characteristics of conventional warfare may be reasonably assumed to be preserved especially in the relationships among the underdeveloped countries. However, dominant forms of military operations will be political – military interventions conducted by western states, which will be threaded their national interests, international security, or human rights.

Thus, the application of kinetic power or force in military operations will be limited under asymmetric warfare. In addition, the dominant power must adapt to more diverse non-kinetic measures, which will include non-lethal weaponry and information technologies that may allow them to achieve their goals whilst avoiding unintended casualties and politically costly collateral damage.

This paper will argue that non-kinetic effects are set to take a more central role in modern warfare, as carried out by the dominant powers. This is because they are faced with new kinds of challenges – asymmetric warfare and globalization in both security and military capabilities – and importantly these challenges have grown in magnitude to the point where existing doctrines are failing. The characteristics of military affairs during the Cold War, posturing and proxy wars, have receded in the first quarter of the 21<sup>st</sup> century and are generally expected to continue to do so. However, the countries that remain strongly against the United States, such as North Korea or Iran, will stay strongly motivated to acquire and bolster a capability for Weapons of Mass Destruction (WMDs) and, in particular, nuclear weapons. At the same time, previously distant theatres of warfare will become only more tied to the domestic political realities of the states deploying forces. International awareness of conflict has grown steadily and global communication networks are deepening, especially in poorer and previously unconnected areas. In 2021, this contributed to a cascading effect of new pressures that overwhelmed and reshaped entirely the military operations conducted by the United States in Afghanistan within a matter of weeks. This study will demonstrate that non-kinetic weapons are emerging as important instruments in addressing both new and persistent military challenges and establish that dominant states will conduct other non-kinetic operations with a focus on the elements of information technology that will influence people.

## II. The Characteristics of Modern Warfare

### *i. Evolutions in the Centre of Gravity*

The expression of warfare has varied over the history of human conflict. In accordance with the technological development of weapons systems in the 21<sup>st</sup> century, warfare has changed decisively and military power has pivoted around the largest leaps forwards in military technology. In the previous generations of warfare, the decisive factor was kinetic weaponry. The smoothbore musket (from the 18<sup>th</sup> century) was employed on a linear battlefield and low trained soldiers. In the late 1800s, rifled muskets, breechloaders, barbed wire, machine guns, and indirect fire were employed similarly but to a much more destructive effect. This caused a revolution in tactics, where the focus was placed on the base of the firepower and troop movement; however, the battlefield had remained linear. World War II solidified the third generation of warfare with increased firepower and three warfare environments - ground, sea, and air.<sup>3)</sup> Contemporary revolutionary advances in the precision of weapon systems and information technology allowed the use of a single weapons platform, such as aircraft, to destroy multiple targets with great confidence of success. It has become fundamental to 21<sup>st</sup>-century warfare that “precision engagement” is one of the main operational concepts<sup>4)</sup> for the highly developed states. At the beginning of the new century, the United States and its allies have achieved superiority in Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) technologies so that they can operate against any potential enemy while commanding and controlling space. New satellite technology supplemented aircraft and surface intelligence systems, delivering new levels and types of information. Precision weaponry now enhances the viability of small quantities of kinetic ammunition, which strike intended targets and reduce collateral damage and incidental injury for non-combatants. Advanced technologies allow the development of new planning guidance and concepts such as effect-based operations which allow the use of larger-scale measures, from non-kinetic arsenals.

### *ii. Adapting to New Challenges*

The contemporary world is under a system of joint vessels. Events on one side of our planet can influence the other regions and continents. Globalization goes forward step by step and involves itself in new areas of human life. Futurologists

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3) Michael Muolo. “Challenges in Modern Warfare.” *ISSUP Bulletin*, Institute for Strategic Studies, University of Pretoria, 2015, 3-4.

4) Joint Chiefs of Staff. 2000. “Joint Vision 2020. America’s Military: Preparing for Tomorrow.” Washington, D.C.: National Defense University, Institute for National Strategic Studies. <http://www.dtic.mil/dtic/tr/fulltext/u2/a526044.pdf> (accessed April 14, 2021).

seek to formulate visions, projections, and predictions about the development of politics, economics, science, and our lives while military strategists think about the nature of future conflicts in the post-Cold War era and the Information Age. In 1965, Bernard Fall expressed that the world is living in “the Century of Small Wars.”<sup>5)</sup> Indeed, since World War II, the world has experienced enormous military conflicts between political blocs, democracy, and communism. Others have defined the newest concepts of 4<sup>th</sup> generation warfare for its accommodation of non-state actors such as transnational terrorist organizations and concentrated on direct psychological influences on the will to fight. In the future, asymmetric adversaries may strive for global dispersion, operate from networked structures, and avoid decisive engagement with conventional forces on land, sea, or air.<sup>6)</sup> Adversaries will continue to rely on uniting principles rooted in common values of systems, profit motives, and/or cultural bonds. The scientists and strategists agree that the new battle space will have four dimensions and they create a bigger picture for the information war, which can lead to blurred distinctions between peace and war. For instance, Chun<sup>7)</sup> has compared paradigms of “old” and “new” wars. He wrote about the military operations in the “old” war pattern were conducted by mass armies and their goal was to destroy the enemy and seize his territory. Traditionally, military forces were located in large areas, and the battlefield has had a linear structure. The warfare was conducted on the ground, at sea, and in the air. Yet, the decisive role was always played by land forces. Priority targets were soldiers and their weapons. The kinetic fire effort was concentrated on the main axis of the land force’s advance. This logic has been adopted for use on the battlefield. The main factors for victory were kinetic attacks, destruction of the enemy’s ability to conduct war, and the occupation of their territory. Chun also describes the paradigm of “new” military conflicts. He argues that military operations of the future will be conducted by small professional forces, and their aim will be disorganization of the enemy state and its armed forces, not simple destruction.<sup>8)</sup> The battlefield will be non-linear, without discernable differences between the front and the rear areas. The warfare will be multidimensional and precise weapons will be important and useful. The political and military management centers will belong to the highest priority targets. The main fire supports effort will cumulate on the most important objects. The strategy will have supremacy over tactics and the criteria of success will be the defeat of

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5) Bernard B. Fall. “The Theory and Practice of Insurgency and Counterinsurgency.” *Naval War College Review*, L21, No.1, 2013, 46–57.

6) David W. Pendall, “Effect-Based Operations and the Exercise of National Power.” *Military Review* (February 2014), 21.

7) Kwang Ho Chun. “‘A War’ and ‘The War’: Conceptualizing Modern US Security Cooperation”, *The Journal of Peace Studies*, Vol. 20, No.2, 2019, 133-148.

8) Kwang Ho Chun. “‘A War’ and ‘The War’: Conceptualizing Modern US Security Cooperation”, *The Journal of Peace Studies*, 133-148.

political and military control and command systems, disorganization of the economy, transportation and communication nets, but, notably, without occupying the enemy's territory and destruction of infrastructure.

### *iii. Future Paradigms and Preparedness*

How will a typical scenario within military conflicts for the first half of the 21st century be characterized? This question has been raised by many scientists, politicians, and military planners in countries all over the world. By analysing diverse concepts of contemporary military operations such as Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom, they try to give a rational answer to this question. They try to describe the characteristics of the strategic environment in the 21st century that have made these conflicts difficult to resolve decisively. What will be the relationships between actors on the world stage? The expression of this question could come in various ways. The logic of the development of the international system suggests that the number of democratic states is gradually increasing, and politics will be driven more and more by ordinary people engaged in democratic procedures. Simultaneously, it will be growing with the power of the mass media as the eyes, ears, and voice of public opinion. Globalization will cause the events, which we treat now as very far in time and distance, to affect us directly anywhere we will live. More and more individuals and institutional actors on the international stage will need to understand the necessity for cooperation and collaboration to resolve global problems.

Information will be the cornerstone, particularly within the domestic political systems that provide tacit support for states to engage in warfare. As much as democratization may thrive in this environment, it is equally probable that repressive states will seek to obstruct and control information, and this may deepen existing rifts between different parties that are presented with vastly different realities. Inter-state military conflicts may become rarer as the worldwide community grows more and more sensitive to casualties and collateral damages. Already this century we have seen tremendous pressure placed on the United States not to enter into Iraq and Russia in response to the invasion of Ukraine; this is only likely to grow alongside interconnectivity. Perhaps, asymmetric warfare will be the dominant type of combat activity. Some specialists claim that future wars will be information wars, but this kind of warfare may be restricted to only a few highly developed states. The "old" Clausewitz paradigm that victory means to destroy the enemy is not being expressed in force.<sup>9)</sup>

Meanwhile, the classical approaches such as the one taken by ancient Chinese

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9) "The shortest way to achieve one's political objectives is by the destruction of enemy's forces in a major battle. Other, non-military methods of winning are recognized but rarely effective". Michael I. Handel, "Sun Tzu and Clausewitz: The Art of War and On War Compared." Army War College Strategic Studies Institute, Carlisle Barracks PA., 2011, 22.

strategist Sun Tzu may have contemporary applicability: “to gain a hundred victories in a hundred battles is not the highest excellence; to subjugate the enemy’s army without doing battle is the highest excellence.”<sup>10)</sup> The Americans rediscovered this idea after the Vietnam War, when they wanted to overcome the Vietnam syndrome. Other countries have intentions in the same direction. Scientists and military specialists reinterpreted this and adapted the classical Sun Tzu thinking to contemporary reality.<sup>11)</sup> The result of this research became the birth of the concept of effects-based operations, the background of which are two key components of modern warfare: a kinetic and a non-kinetic interaction in the battle space. Kinetic effects on the battlefield are achieved through the application of kinetic weapons.<sup>12)</sup> While non-kinetic effects can be achieved through the application of appropriate weapons or non-kinetic military capabilities such as information operations or other similar activities, the challenge of effects-based operations is the ability to keep the balance between an appropriate combat estimate and kinetic and non-kinetic targeting process. This is ultimately achieved by measuring the effectiveness of military actions and then considering the relationships and dependence between the outcome of military operations and the end of the state desired by the civilian leadership. A potential enemy, in asymmetric combats, will attack with the cheapest measures and resources, target sensitive objectives, and intend to engage only with as many military forces as he can manage. He intends to destroy enemies’ will to fight by exhausting the resources: people, infrastructure, and others. Therefore, the United States and its allies are looking for an adequate and cheaper response to this threat by developing concepts of effect-based operations.

### **III. Effect-based Operations and Non-Kinetic Effects**

#### *i. Definitions and Conceptualization*

The British Defence Command Paper describes the concept of “effect-based operations”<sup>13)</sup> as follows:

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10) Sun, Tzu. *The Art of War*. Oxford: Oxford University Press, 2021.

11) The US Secretary of Defence, Caspar Weinberger, used “old masters of war,” Sun Tzu and Clausewitz’s main ideas and announced his six tests in 1984, which are presently known as Weinberger Doctrine or Weinberger Criteria. The *Art of War* by Sun Tzu has implemented in the U.S. military colleges in the late 1970s. Michael I. Handel, “Sun Tzu and Clausewitz: The Art of War and On War Compared.” Army War College Strategic Studies Institute, Carlisle Barracks PA., 2011.

12) Kinetic weapons’ effects are transmitted, by the motion of a substance, such as a projectile, a shock wave, or heat. David W. Pendall, “Effect-Based Operations and the Exercise of National Power.” *Military Review* (February 2019), 21.

13) The newest Army doctrinal documents mention effects-based approach as “a way of thinking

Effect-Based Operations is a new phrase, but it describes an approach to the use of force that is well established – that military force exists to serve political or strategic ends. We need a new way of thinking about this that is more relevant to today’s strategic environment. Strategic effects are designed to deliver the military contribution to a wider cross-governmental strategy and are focused on desired outcomes. Our conventional military superiority now allows us choices in how we deliver the effect we wish to achieve. We have begun to develop our military capabilities so that we can provide as wide as possible a range of options to fulfil operational objectives without necessarily restoring to traditional attrition warfare.

Effect-based operations help identify which objectives the military can support to achieve strategic aims. We need to determine the target of the effect --- understanding , will, or capability and the type of the effect. It should be also determined which actions or combination of actions will help us achieve these effects. It seems that the increased importance of affecting understanding and will, those non-kinetic effects, should become much more important than kinetic effects. The relationship among the aims, objectives, effects, and actions is not simple with the boundaries among the strategic, operational, and tactical also not being so clear-cut. Note that a tactical action can render a strategic effect, or a strategic action could bring about an operational effect. The critical thing is synchronising and coordinating all of these activities. This must be achieved through coherent planning and kinetic and non-kinetic targeting. Effect-based operations seek to move away from destruction centric, attrition-based, and linear warfare. They focus on assessing the behaviour of adversaries to determine whether they will choose to surrender or not. The means or “effectors” can comprise both the use of force and the application of non-force measures such as psychological operations (Ho 2013, 2).

## *ii. Application in Practice*

In accordance with governmental policy, the new British military contingent was deployed to Afghanistan in May of 2016 and stayed there for three years. During the summer of the same year, the total number of British troops in Afghanistan increased to 5700.<sup>14)</sup> “*Counter-insurgency*” and “*securing a framework*” were the official

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that encourages a broader and longer-term view of situation. It focuses on outcomes rather than activity, and advocates collaboration and synchronized actions from military and non-military forces. It requires a thorough understanding of the strategic environment in order to determine the appropriate ends and the orchestration of violent and non-violent actions to achieve the desired effects.” Ministry of Defence, UK., Defence Command Paper 1, 2021.

14) 3.300 troops to Helmand province was the most centered opium production; 1.000 troops were to reinforce the garrison in Kabul; 1.000 engineers were to build a camp; and 300 instructors

objectives of the British soldiers. They had sufficient capabilities to achieve kinetic effects: attack helicopters, artillery, and armored vehicles. They were prepared to conduct a counter-insurgency mission, but the British soldiers could act only in self-defense in accordance with the rules of engagement. This raised a question: how can they accomplish their mission by using kinetic weaponry in a place where the enemy does not wear a uniform? How are they prepared to find suicide bombers among the civilian crowd who have been trained by fanatic Taliban?<sup>15)</sup>

The example presented above substantiates that from the beginning of the 21<sup>st</sup> century, military forces from democratic countries are increasingly becoming involved in asymmetric warfare and miscellaneous operations other than war. Here they cannot use limited-extension kinetic weapons to achieve the designated goals due to political or humanitarian pressures. It appears that in the near future armed conflicts will only become more political, expressed as regional conflicts, people's revolutions, insurrections, undeclared wars, covert operations, and United Nations missions, but not total wars<sup>16)</sup> with massive usage of kinetic weaponry. In his work "Conflict in a Changing World: Looking Two Decades Forward," Charles Dick writes, "The struggle for territory is now passé. Now competition is for influence, especially in the economic field, and national boundaries are of limited relevance to it."<sup>17)</sup>

## **IV. Non-kinetic Effects in Peace Support Operations**

### ***i. Unconventional Warfare***

As we continue into the 21<sup>st</sup> century, the world is not free from phobias, crises, conflicts, and wars. Military conflicts and local wars have become the means to resolve ethnical, territorial, religious, or economic problems, especially in Africa and Asia where the nation formation process for many states is ongoing. As such events usually have regional or local dimensions, because of globalization, the international community frequently looks to take action in those situations by using

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were for Afghan army training. Christina Lamb, 2016. "The Bandits Wait for The British." *The Sunday Times*, January 29, 2016.

[http://www.thesundaytimes.co.uk/sto/news/world\\_news/article202870.ece](http://www.thesundaytimes.co.uk/sto/news/world_news/article202870.ece) (accessed April 14, 2021)

15) Taliban claim that they have 200 suicide bombers, who are ready to assault foreign troops. Christina Lamb, 2016. "The Bandits Wait for The British." *The Sunday Times*, January 29, 2016. [http://www.thesundaytimes.co.uk/sto/news/world\\_news/article202870.ece](http://www.thesundaytimes.co.uk/sto/news/world_news/article202870.ece) (accessed April 14, 2021)

16) Whitehurst, Clinton H. "Limited Wars, Civilian Casualties, and Who Must Decide." The Strom Thurmond Institute, 2018, 8.

17) Charles J. Dick, *Conflict in a Changing World: Looking Two Decades Forward*. Camberley: Conflict Studies Research Centre, 2012, 5.

military forces. The United Nations' regulations allow for the conduct of operations that protect international peace and security or serve to resolve inter- and intra-state conflicts. International peace activities can have the following forms: preventive diplomacy, peace-making, peace-keeping, peace-building, peace-enforcement, disarmament, and economic and political sanctions. Analysis of peace operations that were undertaken since the 1990s indicates that they were primarily conducted in the regions afflicted by multicultural, ethnic, and religious conflicts. The changes in the international situation and the balance between the superpowers were additional factors that decided how they persisted. This study considers the peace operations undertaken from the 1990s onwards because the bipolar international system which characterized the Cold War has collapsed. As a result, the new players have appeared on regional stages and they have achieved independent, strong positions. Subsequently, regional conflicts have become more bloody and brutal. Human rights and international war law have often been ineffectual. Public opinion in democratic countries has strengthened and the international community has reacted by sending military forces to prevent regional conflicts, ethnic cleansing, and human rights violations. These military forces, prepared historically for classical warfare, have had to learn new tactics and techniques. The heavy equipment and kinetic weaponry, which evolved over centuries, have become often useless in peace operations. Experiences from Somalia, Cambodia, and Bosnia and Herzegovina where civilians were massacred and banished show that soldiers participated in peace operations by receiving other non-kinetic tools and changing rules of engagement.

## *ii. Small Wars*

The types of operations described above have dominated the world system since 1989<sup>18)</sup> when the Cold War had ended. However, as Bernard Fall wrote about the coming "Small Wars Century" twenty-nine years ago, this view can be updated and can be said that the coming era of military interventions on behalf of the international community will be connected with military peace operations.<sup>19)</sup> What is the characteristic of these types of activities? First, it is limited use of the conventional

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18) 19 military operations can be categorized as interventions. 1989: Panama – US intervention, 1990-91: Kuwait-coalition operation, Iraq-air enforcement; 1992-95: Somalia- US-led intervention, Bosnia-UN/NATO operation;1994: Rwanda- French operation, Haiti-US intervention; 1994-95 Chechnya-Russian domestic operation; 1995-2003: Bosnia-NATO led operation;1997-98: Albania – Italian led operation; 1999-2003: Kosovo – NATO operation, Chechnya- Russian domestic operation; 1999-2002: East Timor-Australian led operation; 2000-02 Sierra Leone- UK led operation; 200: Macedonia-NATO operation;2001-03: Afghanistan-international coalition;2002-03: Cote d'Ivoire-French peacekeeping operation, Salomon Islands-Australian led operation; 2003: Iraq-coalition operation by US/UK/Australia.

19) Bernard B. Fall, "The Theory and Practice of Insurgency and Counterinsurgency." *Naval War College Review*, L21(1), (2013), 46–57.

kinetic weapons only, the movement of large groups of refugees who have escaped from the conflict areas. Next, the permanent presence of the media is a new challenge for commanders and troops because war will be reported on-air through diverse broadcast platforms on the front line. They will need to try to influence public opinion about the protection of non-combatants and collateral damage and to turn to non-kinetic methods of fighting. In this context, using non-kinetic military measures, where possible, seems a reasonable solution.

### *iii. Limited Wars*

The justification for using non-kinetic measures in modern warfare is well documented in international humanitarian law documents.<sup>20)</sup> One of the most important principles in modern warfare is that the “parties of the conflict shall at all times distinguish between the civilian population and combatants, and between civilian objects and military objectives, and accordingly shall direct their operations only against military objectives.”<sup>21)</sup> Parties in the conflict will also attempt to “remove the civilian population, individual civilians, and civilian objects under their control from the vicinity of military objectives.”<sup>22)</sup> The next principle forbids attacks on objects which “may be expected to cause incidental loss of civilian life, injury of civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage.”<sup>23)</sup> On the other hand, defenders would not use civilians or civilian property “to render certain points or areas immune from military operations. In practice, this means that it is hard to conduct war fighting because of unidentified enemies located in the area, especially in cities.

In accordance with western standards, which dominate the international law system, human life is the priority for protection. Therefore, this point of view has to be reflected in the approach to the development of new weapons systems that can disable rather than kill. Developed countries will seek to avoid collateral damage and especially casualties when they are engaged in military conflict. This is because abuse of violence is considered to be barbarism in the international communities. The most recent conflicts in the Middle East (Syria, Afghanistan, and Iraq in particular) illustrate this tendency very well. The victorious coalition led by the United States, successfully or not, sought to build democracy as well as provide recovery for the infrastructure which was demolished during the war. From this perspective, there is an expectation that warfare will be conducted by developed

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20) International Committee of the Red Cross (ICRC). 1949. Geneva Convention IV; International Committee of the Red Cross (ICRC). 1977. Additional Protocol of 1977 to the Geneva Conventions

21) International Committee of the Red Cross (ICRC). 1977, Article 48.

22) International Committee of the Red Cross (ICRC). 1977, Article 58.

23) International Committee of the Red Cross (ICRC). 1977, Article 51.5b & 57.2b.

countries with the increased utility of precision weapons and other non-conventional military resources.

## V. Measures of Non-Kinetic Effects and Human Factors in Modern Warfare

### *i. The Impact of Non-Kinetic Effects*

Non-kinetic effects can be delivered in one way by a group of non-explosive weapons, sometimes called non-lethal weapons. They may involve high-power microwaves or directed electromagnetic energy, which can overpower and permanently degrade computer circuitry in short pulses or cause temporary physical discomfort in other applications.<sup>24)</sup> NATO defines non-lethal weapon as “weapons, which are explicitly designed to incapacitate and repel personnel, with a low probability of fatality and permanent injury, or disable equipment, with minimal damage or impact on the environment.”<sup>25)</sup>

Thus, the definition of non-lethal weapons means, in practice, less-lethal weapons. They are sticky foams, graphite bombs, cyber weapons, high-energy radio frequency strikes, calmatives, acoustic weapons, stink bombs, and anti-traction and anti-reaction chemicals.<sup>26)</sup> So far, any dream of “war without blood” remains naïve and harmonizes more with science fiction literature than reality partly because the development of non-kinetic weaponry tends to be considerably more expensive.

In the 21<sup>st</sup> century, the asymmetric enemy hides among the people in the cities, the towns, and other urban areas and attacks his targets unexpectedly. He uses “human shields” and civilian hostages to realize his intent. So, a traditional military response, with kinetic effects including direct and indirect fire and the maneuver of troops, will inevitably result in casualties among non-combatants and cause large damage to sensitive civilian infrastructure. Importantly, the media globally will show and pursue every act of violence conducted by military forces. The commanders and any politicians supporting the war effort will be under the pressure of public opinion and international law. The partial answer to this problem is the application of non-kinetic weapons or non-kinetic combat methods. The Americans began to develop this concept in the 1990s as a part of air power operations. It has since been adopted during Operation “Desert Storm”<sup>27)</sup> in which about 80,000 of

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24) Clay Wilson, “Information Warfare and Cyberwar: Capabilities and Related Policy Issues.” CRS Report. Washington, D.C.: Congressional Research Service (CRS), 2014.

25) Martin Hubbard, “Non-Lethal Capabilities and the Road Ahead.” *World Defence Systems* 19(1), 2017. 105–107.

26) David W. Pendall, “Effect-Based Operations and the Exercise of National Power.” *Military Review* (February 2019), 20–31.

Saddam Hussein's soldiers surrendered after psychological actions and without shooting at US forces.

There has been a struggle among specialists about whether psychological operations are independent kinds of military activity or a part of information operations. However, the consensus seems to be growing that psychological operations are a vital part of information operations. Within the realm of psychological operations, information operations are of four main elements: deception, electronic warfare, operational security, and physical destruction. These elements are dependent on the type of conducted operation. However, many authors consider that in the new environment, psychological operations<sup>28)</sup> may become the dominant operational and strategic weapon.<sup>29)</sup> This view suggests that appreciating the value of psychological operations, many countries have developed a doctrine, and have banded specialized units within the last 20 to 30 years. NATO is a good example of this tendency. At the beginning of the 1990s, only several nations from the Alliance had the capability and trained personnel to conduct such operations. There were the United States, Germany, and the United Kingdom. As early as 2004, twenty NATO nations were able to declare that they had, or would soon have, psychological operations forces.<sup>30)</sup>

Paradoxically, western society may be the most sensitive and vulnerable to psychological influences. For instance, the U.S. Congress had to decide to withdraw American military forces from Somalia when the media expressed anger at Somalis dragging an American body through the streets of Mogadishu.<sup>31)</sup> In Bosnia, the Serbian media accused General McKenzie of having raped four Muslim girls. He later said that such baseless accusations had weakened his and the UN's authority

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27) In the spring of 2001, the Effect-Based Operation Panel hosted by U.S. Air Force Doctrine Centre formulated the following findings: "EBO is a way of thinking or a methodology for planning, executing, and assessing operations designed to attain specific effects required to achieve desired national security outcomes. An "EBO methodology" improves our ability to use all elements of national power to achieve national policy goals." Effects-Based Operations Panel. "White Paper on Training, Planning and Systems Development for Effects-Based Operations." At the 2nd C4ISR Summit. Danvers, MA: Effects-Based Operations Panel, 2003.

28) Two acronyms that pertain to psychological operations recorded in documents or literature are PSYOP and PSYOPS. The former is found in the U.S. national documents, while the latter is used in NATO terminology and among other Alliance members.

29) Joshua Ho. "The Advent of a New Way of War: Theory and Practice of Effects Based Operations." Institute of Defence and Strategic Studies, no. 67 (December 2013), 1-28.

30) According to NATO sources, the US, Germany, Poland, the UK, France, Spain, Romania, Italy, and Turkey possessed PSYOPS capabilities in 2004, and they could conduct such operations on the tactical or operational level. The other eleven countries will develop those capabilities in the near future.

31) Pascale Combelles Siegel. "Perception Management: IO's Stepchild?" *Low Intensity Conflict & Law Enforcement* 23(2), 2015. 123-124.

and had threatened the safety of troops.<sup>32)</sup>

In modern warfare, especially in peace support operations, effective communication between the commander and hostile audiences is one of the keys to success. Well-organized and well-conducted psychological operations can efficiently influence the conduct of the campaign, and limit unnecessary casualties.

## VI. Conclusion

Commanding military forces are becoming more and more complex. Commanders must not only take account of how to conduct the immediate combat operation itself but must also concentrate on how to manage the broader strategic picture and take account of the whole environmental spectrum.

The technological revolution in military affairs has transformed the classical Clausewitz paradigm of victory through destruction in warfare. Humanity is now at a juncture where the development of technology has raised the destructive capacity of weapons to a point where their utilization also inflicts a tremendous toll on the user. Thus, the requirement for responsibility in using force has grown near-exponentially. Large demolitions seem like an anachronism. Now, it is not a problem of hitting the targets; the problem is finding and choosing an appropriate means to do so.

The concept of effects based-operations, which first appeared during the Gulf War in 1991, is now the central strategic concept underlining warfare in the 21<sup>st</sup> century. Non-kinetic effects on the battlefield will be expressed in all forms of modern combat operations and, thus, characterize modern warfare. Commanders increasingly need to adapt to it through the application of high technology and non-kinetic tools. At the tactical level, it is undeniable that kinetic weapons systems will remain a mainstay, but these will be supplemented and moderated by non-kinetic effects. Moreover, non-kinetic effects will be the main concentration at both operational and strategic levels. The progressively growing respect for the international system within the world community is a major driving factor moderating warfare; in this context, it stimulates the increasing value of non-kinetic effects in modern warfare. The Geneva Convention (1949) and the additional Protocols from 1977, which reflected experiences from World War II and anti-colonial movements in the 1960s and 1970s, focused on protecting non-combatants and civilians and reducing collateral damage of cities. These precedents have become a foundation and the norm for what warfare can be; the limits they set have only tightened as a function of their becoming increasingly

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32) Pascale Combelles Siegel. "Perception Management: IO's Stepchild?" *Low Intensity Conflict & Law Enforcement* 23(2), 2015. 125.

embedded in international institutions and public consciousness.

As the environment, as well as the tactics of the potential enemy, shift, non-kinetic effects will become more important. Due to the military superiority of the United States and its allies under the international system, the potential enemy will approach asymmetric warfare to resist dominant superiority. The adversary will not conduct conventional wars on the open battlefield but will conduct guerrilla warfare. Civilians should be protected by international humanitarian action during military operations as they become increasingly vulnerable to the battlefield migrating to the civilian theatre. Commanders will be under permanent pressure from public opinion to avoid the use of violence wherever possible.

Non-kinetic effects will be the central strategic concept of modern warfare because of the characteristics of current and future military conflicts. Often, those conflicts will be conducted in urban areas and have a limited extent or even could be peacekeeping operations. Considering those factors, using conventional kinetic military measures will not be acceptable for political and humanitarian reasons. The use of non-kinetic methods will, therefore, be critical in asymmetric warfare and include anti-terrorist or counter-insurgency operations in order to avoid civilian casualties and unnecessary collateral damage. The information operations arsenal, which involves physical destruction, deception, operations security, electronic warfare, and psychological operations, will be the most feasible maneuver under the current concept of warfare.

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