

# CHALLENGES FACING INFORMATION ENVIRONMENT IN CONTEMPORARY CONFLICTS

**Milan Miljkovic, PhD<sup>1</sup>**

University of Defense, Belgrade, Serbia

**Vangel Milkovski**

University of Defense, Belgrade, Serbia

**Abstract:** The increased number of factors and participants in a conflict has additionally complicated the information environment where these conflicts occur, due to the mass application of information and communication technology (ITC), as well as to global networking that substantially affected the strategic environment where modern conflicts are actually taking place.

Numerous features characterize the complex information environment where contemporary conflicts take place, including: a) *the lack of information* – regarded as an obvious source of omissions and failures in conflict management in the classical theory; b) *too much information* – viewed by some theorists as a major problem in relation to the lack of information; and c) *the deception* – considered by the third group of security theorists to be a bigger problem than the one of separating the relevant signals coming from the “*sea of noise*”.

The complexity of the field of information makes taking the right decisions in conducting the conflict even more difficult and confirms the legitimacy of Clausewitz’s thesis, put long time ago, that “much of the information obtained in the war is contradictory, even more false, and by far the most suspicious.” In reducing the uncertainty of the conflict, the experience of the people who are engaged in leading the conflict, who assess, analyze and decide on the engagement of forces in the war, plays a crucial role.

**Keywords:** information, information environment, information warfare, fog of war.



## INTRODUCTION

There is an eternal and urgent need in conflicts to have as much information as possible about the opposite side. A clearer picture of the opponent contributes to better defense preparation, a more adequate distribution of forces and resources, and a better predicted course of events (Harshberger & Ochmanek, 1999).

History, on the other hand, teaches us that the nature of conflict and war is such that knowledge of the adversary is almost always imperfect. Clausewitz thus states that: "Most of the information obtained during the war is contradictory, an even more is false, and by far the largest part of it is of a dubious character." The image obtained of an opponent commander, Clausewitz compared to looking through "fog" or "twilight". He concludes that "the difficulty of perceiving things correctly" is one of the greatest challenges of the war.

Currently, the increased number of factors and participants in a conflict has additionally complicated the modern information environment where these conflicts occur, due to the mass application of information and communication technology (ICT), as well as global networking that substantially affected the strategic environment where modern conflicts are actually taking place.

Having in mind the above, the question can be asked whether in the modern information age and modern conflicts, the information environment enables faster and better decision making.

## CHARACTERISTICS OF MODERN CONFLICTS

As a permanently present companion of the humanity it inspired numerous theorists who have classified it, defined it, determined its content and presented their views on the best ways how to defeat the enemy. In that context the Chinese general and military strategist Sun Tzu wrote about "breaking the resistance of the enemy without a fight" (Sun Tzu, 2009). The German military theorist Carl von Clausewitz stated that "war is not over until the will of the enemy is broken" (Klauzevic, 1951). The English journalist and military historian Liddell Hart warned that "generals should think about paralyzing, not killing the enemy" (Lidl, 1985).

Another military strategist, John Boyd, defines war as "the physical exhaustion, mental-level maneuver, and moral with a level of morality, which seek to penetrate an opponent's moral-mental-physical being, to destroy his inner harmony, produce paralysis, and broken his will to resist" (Lind & Gregory, 2015).

The importance of information and technology for conducting modern conflicts in the modern information society has obviously increased. The imperative of the information society is the domination of information in vital areas. If we transfer this observation to the sphere of war and the sphere of waging the war, we can say that the conflict of information is one of the basic characteristics of "the conflict" in the information society.

The principles of "the new generation of conflicts", like the transfer 1) from direct destruction to the direct influence as a goal; 2) from the direct annihilation of the opponent to their inner decline; 3) from the war waged by arms and technology to the war against culture; 4) from the war in the physical environment to the war in human mind and cyber space; 5) from the symmetric to asymmetric war by



combining political, economic, information, technology and military campaigns; all of these indicate the increased importance of information as means for managing conflicts (Berzins, 2015).

Theorists therefore conclude that information conflicts will play a key role in the contemporary and future conflicts. The goal of future wars will not be achieved unless information superiority over the opposing side is already gained. In essence, the framework for asymmetric and hybrid warfare and nonlinear conflicts, as presented by Russian military experts Chekinov and Bogdanov, relies on the successful implementation of information actions at the beginning of the conflict in order to create favorable conditions for conducting military operations. One of their arguments is the following: the new generations of warfare are predominantly informational and psychological in nature, achieving in that way the information superiority and control over units and armed systems of the enemy, as well as the depressed mental state and decline of the enemy morale. Applying these operations reduces the need for more significant involvement of military forces in offensive operations (Chekinov & Bogdanov, 2013).

The listed features of new conflicts indicate the actuality of conflicts through information, i.e. the importance of the area of information where modern conflicts are conducted. The massive application of modern information technology and the phenomenon of information abundance have led to the intensification of competition through information, which is why the control of the information environment is becoming increasingly important for national security, because the modern information area opens wide opportunities for hybrid conflicts.

Due to all the above, it can be said that the mass nature of the conflict through information further complicates the information environment, and thus its proper perception, which is important for making the right decisions during the conflict.

## TYPES AND CHARACTERISTICS OF | INFORMATION RELEVANT TO CONFLICT MANAGEMENT

Information as a term has been known since ancient times. Proponents of mathematical information theory, Claude Shannon and Norbert Weaver, define information as any stimulus that has reached a receiver through some kind of communication channel and is capable of eliciting its selective reaction (Shanon & Weaver, 1968).

The combat rules of the US Armed Forces, FM-105 and FM-106, define information as a medium that enables functioning of the decision-making and execution cycle at the command level. It states that the information manages the actions of the forces, ensures the flow of activities on the protection of forces, and helps them to carry out their operational mission. It quotes that the goal of the conflict has always been, among other things, to influence the enemy's information system (US Department of the Army, 1993, 1996).

Participants in the exchange and interaction with information tend to influence changes in the intentions, goals, decisions and actions, not only of their own, but also of other actors with whom they communicate in a conflict. In this regard, there is a violation of the integrity of information, i.e. changes in information that manifest as technical, semantic and social errors, i.e. that lead to the appearance of erroneous information that becomes a legitimate subject of research in the scientific discipline that some authors call information science (Tudman, 2003). They argue negative forms of information, i.e. misinformation and its synonyms: "Lie, propaganda, misrepresentation, gossip, deception, trick, er-



ror, concealment, distorted view, allusions, and deceit.” The English word *misinformation* is used here with meaning: the distorted information or announcement, or the information that is misleading.

When considering theoretical views on the characteristics of information related to conflict management, it should be emphasized that the information gains in value if it contributes to the improvement of conflict decisions. Thus, the role of information in armed conflicts is to positively influence the quality of strategic or tactical decisions. It could be said that this role of information is as old as warfare and conflict management (Libicki & Shapiro, 1999, 437-461).

In that manner, the theorist Shannon, within the mathematical theory of information, speaks about the influence of information on the reduction of uncertainty, i.e. the entropy in conflicts (Shannon & Weaver, 1968). In relation to its contribution to the elimination of uncertainty, there is a discussion about how much the information is “worth”. It is concluded that information that abolishes higher entropy has, in principle, higher value and vice versa.

Also, it is important to say that the instructions of the US Armed Forces FM-105 and FM-106, quoted that only when the data is processed, i.e. placed in a situational context, it gains meaning and becomes, by definition, information. The difference is that information has meaning, while data lack that characteristic. Data represent an isolated fact, and as such make no sense. Information represents data plus meaning, and being that it can trigger an action, a maneuver in a conflict. The ability of information to initiate action also indicates that information, in itself, has the ability to influence a man as a participant in the war, and through him the surrounding people and his combat environment. Influence on the combat environment is achieved through the communication process, the line of command or other channels (US Department of the Army, 1993, 1996).

Observing the stated definitions and attitudes, it could be concluded that the information, by removing the uncertainty, influences a person’s thoughts and attitudes about the environment in which conflicts take place, as well as future decisions and actions of the person in relation to a specific conflict. In view of the above, it follows that “the elimination of uncertainty about the conflict” and the “possibility of initiating action” are some of the important features of information relevant to the conduct of the conflict.

Given that information is crucial for reducing uncertainty and decision-making regarding the direction of conflict forces, the complex information environment and the existence of misinformation and deception make decision-making difficult in contemporary conflicts.

## OBJECTIVES OF USING INFORMATION IN CONTEMPORARY CONFLICTS

Information is used in war to react to hostile information and information systems, while at the same time protecting one’s own information and information systems (Joint Chiefs of Staff, 1998). The goal of this action is to use the information and information system to influence the behavior of the management structure, primarily the decision makers of the opponents, but also the opponent’s public opinion. Also, through information, one’s own decision-makers and one’s own public opinion are protected and defended from the excessive influence of the target information and information systems of the opposing party.



The primary target is the opponent's leadership, as well as the decision-making process of the opponent's leadership. Influence on the decision-making cycle of the opposing leadership is a process called "loop, observe, orient, decide and act" ("OODA-loop") established by the US military strategist John Boyd (Osinga, 2005, 2). Reducing the opponent's ability to make a timely and effective decision will diminish his response or initiative to military action taken by the opposing side.

In this regard, and starting from the fact that information is a strategic tool in war, three types of warfare can be distinguished: *the struggle* for information, *protection* of information and *war* through information, which would mean: *find out*, *prevent* other side from learning and *lead* them to come to false knowledge. This third aspect is about misinformation and influencing opinions and attitudes (Moliner, 1998).

The war for information is based on the exploitation of available information, regardless of whether it comes from open or confidential sources. This means that data from all available sources can be used - from the media, printed and electronic, from the Internet, information collected by eavesdropping on electronic shows, communication channels, intrusions into the opponent's information system, but also obtained by classic intelligence procedures. At the same time, it is very important that the flow of information be constant, which includes significant human and technical resources, for their successful processing.

Information protection, in its essence, represents specific measures and procedures by which unauthorized persons are prevented from accessing the information, which is of exceptional importance for the army, defense, or the state in general. This type of warfare relies on the security of information systems, i.e. on the functioning of special offensive and defensive devices. It also implies informative countermeasures - the application of techniques intended for one's own protection against possible manipulation of information.

The war by information is based on successful knowledge of media struggle, psychological actions and disinformation systems. In order to make this form of war effective, it is necessary that those carrying out these activities be predominantly inventive and imaginative people, endowed with great analytical ability. Western military analysts have noticed numerous advantages of information warfare, which by their characteristics can be compared to the guerrilla style of combat. Namely, when goals are clearly defined, with little initial resources, disproportionately larger effects are often achieved. Their media effect is also significant, as a rule it is enhanced by the flywheel effect.

When advocates of the use of information as a weapon state that its goal is to diminish the will and ability of the opponent to fight, they are in fact establishing a direct connection with one of the important views of Carl von Clausewitz. Basically, after Clausewitz explained the concepts and characteristics of war, he claimed in his book "On War" that objectives of war include three general opposing goals, namely: the armed forces, the country and the will of the enemy (Klauzevic, 1951, 54). *First*, he argues that the armed forces must be destroyed: that is, they must be brought to such a state that they can no longer fight. *Second*, he claims that the opposing country must be occupied; otherwise the enemy could raise fresh military forces. Nevertheless, both of these goals can be realized, but the war can neither be considered over until the enemy's will is broken: in other words, until the enemy government and its allies are forced to seek peace, nor until the population bows to the attacker.

Types and goals of conflicts through information, indicate that these conflicts are significantly directed towards the information environment of the opponent, and that their primary goal is the decision-making process of the opponent's leadership.



## ELEMENTS AND CHARACTERISTICS OF INFORMATION ENVIRONMENT IN CONTEMPORARY CONFLICTS

Activities related to information in contemporary conflicts are carried out within a context called *the information sphere - environment*. The information sphere consists of three elements: 1) information infrastructure (systems and devices for collecting, transmitting, processing and delivering information), 2) information and its flows, and 3) personnel performing various activities.

*The information environment* was the result of the emergence of a new socio-economic formation of the society - the information society (Синковски, 2005). The information sphere permeates and transcends the boundaries on land, sea, air and space and cyberspace. There are three conceptual dimensions within the information sphere: physical, informational and cognitive. The information sphere is defined as a set of individuals, organizations, or systems for collecting, processing, or distributing information (US Department of the Army, 1996). The modern information sphere is manifested through the information infrastructure. There are global, national and military information infrastructures.

Modern information area opens wide asymmetric possibilities for reducing the combat potential of a stronger and richer enemy. The following characteristics of the information area favor the use of information weapons in asymmetric attacks: 1) the ability to access from a distance; 2) difficulties in identifying attackers and attributing responsibility for the attack; and 3) low cost of high-tech products freely available on the market (Миљковић & Путник, 2016).

One of the tasks of states during conflicts and wars is to ensure their own *information independence*, i.e. the independence of the state officials from foreign information resources. In that sense, *the information dependence* is the necessity for a state and non-state officials to satisfy their information needs by "importing", because that is not possible from their national information resources. This is a serious problem, especially in war when *an information crisis* often occurs, i.e. the inability to meet basic information needs, even from abroad or due to a lot of contradictory information coming from foreign sources (Мијалковић, 2010).

The information environment in modern conflicts is characterized by numerous features, among others are:

a) *Lack of information* - classical theory estimates that the lack of information is an obvious source of omissions and failures in decision-making. On the other hand, this is one of the theses refuted by some American intelligence theorists when they studied the US intelligence failures regarding the Japanese attack on Pearl Harbor, claiming that the USA had enough information about the upcoming Japanese attack. The current view of experts is that lack of information is rarely the primary source of failure to make decisions in war (Wohlstetter, 1962)

On the other hand, Western military theory and practice significantly emphasizes the importance to the activity called Operations Security (OPSEC), whose role is to deprive the opposing side of critical information about friendly potentials and intentions necessary for efficient and timely decision-making. Operations Security (or concealment) is the process of identifying one's own critical information and analyzing one's own operations, in order to determine: what one's own information is needed to the opponent to have accurate information about the real intentions of friendly forces, deprivation of opposing command structures with critical information from information about intentions of their allies and leading the opposing leadership to misjudge the real intentions, ensuring the secrecy and security of such information (US Army Joint Chiefs of Staff, 1997).



b) *Too much information* - theorists believe that this phenomenon is, in relation to the lack of information, a bigger problem. Theorist Albert Wohlstetter points out, in relation to the case of Pearl Harbor, that it is difficult to extract relevant “signals” from the excess of confusing information and noise (Wohlstetter, 1962, 426). Theorist Ephraim Kam claims “the greater the amount of information ... the more confusing and contradictory the data ..., which are then more difficult to process” (Kam, 1989, 222). Contemporary decision-makers face too much information and the main problem is not a lack of information, but “the flooding of information” which leads to “intelligence blindness.” The increase in raw intelligence is the cause of growing problems with creating accurate intelligence warnings and frequent intelligence omissions.

c) *Deception* - warfare at all levels is a two-way game. That is, even if someone tries to create a clearer picture of the enemy, their own forces and the environment, or attempts to control their own forces, the enemy is at the same time working to oppose those efforts. This fact makes even the simplest tasks of gathering information about an opponent difficult to execute. A competent commander will always actively try to keep the opponent in doubt about the intentions and abilities of his military force. This is especially pronounced in maneuver warfare, where the aim is to deny the enemy the opportunity to gain an accurate picture of the battlefield.

The modern information environment is complex and multi-layered, it permeates and transcends the boundaries of land, sea, air and cyberspace. Such an information sphere is an extremely complex information environment, which is difficult to control, monitor and analyze during conflicts. Characteristics of the information environment, such as an abundance of unnecessary information and too little relevant information, make the decision-making process and directing forces in conflicts more difficult.

## INFORMATION ENVIRONMENT AND NATURE OF CONFLICT

Relative information uncertainty is the main characteristic of engaging in conflict in all epochs, even in the modern one, despite the technological progress.

It is impossible to achieve an absolute information certainty, both temporally and spatially, since it is above all restricted, apart from technology, by limited capabilities of a man to receive and process the information.

In this regard, the nonlinearity is expressed in the domain of unpredictability of the outcome of the war, which is caused by the impossibility of predicting events and their sequence, as well as the impossibility of knowing the initial conditions precisely.

This unpredictability cannot be overcome. Consequently, in considering the nonlinear aspects of a war, Karen Wilhelm reached the conclusion that war is fundamentally uncertain and that the increased accumulation of information and interaction of many complex systems involved in a modern conflict, generate even more uncertainty, due to the rules on which nonlinear dynamics are based, and the sensitivity of these systems to initial conditions (Karen, 1999).

On the other hand, this does not mean that some military estimates and plans are obsolete - they just need to be more flexible and adaptable. Nor does it mean that money has been wasted on information technology - it has proven to be a significant support to war efforts and it is necessary just to be aware of all the limitations imposed in modern conflicts. The stated features of the information environment indicate that modern conflicts occur in a complex and unclear information environment, which raises



the question of whether modern information technology has helped to reduce this complexity and uncertainty.

Similar views on the complexity of contemporary conflicts and the complexity of the environments in which they are conducted were expressed by the American military historian Antulio Echevarria, who, when analyzing contemporary conflicts, advocates an inter-dimensional approach. In particular, he states that modern conflicts are fought in the military, political, social, technological, logistics and information dimensions. All these dimensions exhibit nonlinearity and complex interactivity and, depending on the specific context, they express different levels of influence on the totality of contemporary conflicts as phenomena (Echevarria, 1997).

Chaos is also one of the enduring features of war that contributes to its uncertain nature. Conflict, due to the fact that it represents human action, is always uncertain and chaotic (Nicholls & Tagarev 1994).

When considering the information dimension of a conflict, it has long been known that its complexity and unpredictability are influenced by many factors, including the lack and unreliability of information. It happens that certain information or knowledge is not available at the time when an important decision is made or some action taken. This can result in unpredictable consequences that are impossible to control and that can have great destructive potential and cause unforeseeable consequences. Incomplete, inaccurate or contradictory information leads to the creation of the so-called “*fog of modern conflicts and wars*”, which limits perception and creates confusion in their understanding (Klauzevic, 1951).

In addition to “fog and friction”, due to unclear information, which in this context has a negative impact, the literature cites other, not less important sources of nonlinearity, such as psychological aspects of interpreting the actions of opponents. In a conflict, each side tries, by using deception, to deliberately prevent the adversary from seeing its intentions in terms of taking future actions, thus increasing the state of chaos in the combat and information space of the conflict (Nicholls & Tagarev, 1994). A necessary precondition for preventing such a state of uncertainty and gaining a decisive advantage is that the command staff knows their opponent well, the way they think, react and perform actions, which will greatly overcome the complexity and uncertainty of the conflict information environment. But since armed conflict is fundamentally unpredictable and chaotic, its outcome is always uncertain, except in some trivial cases, and therefore, coincidence can also play a certain role.

Military defense analyst Barry Watts studied Clausewitz’s concept of general friction in detail. He points out that war has been shown to be a nonlinear activity both on an intuitive level and in simple mathematical models. He concluded that “the interaction of repeated feedback can, in this way, increase even the smallest differences, including those that are the product of human decisions, as well as make combat results structurally unpredictable” - meaning that there is no such detail or information that can to make the results of a conflict and war completely predictable. As a consequence, the effects of friction cannot be eliminated or significantly reduced (Watts, 2004).

Therefore, despite the opinion that we have enough information about the situation, the effects of friction in war cannot be eliminated. However, there is still a normal obligation and demand for better, more perfect knowledge of the situation, intelligence activities and information, in order to satisfy the need to reduce fog and friction to a minimum.

Despite the presence of numerous modern information systems that help to perceive the information environment and make decisions, theorists point out that the uncertainty of modern war is not reduced, so that modern conflicts retain features such as nonlinearity, chaos, unpredictability, which is



why they are permanent features of war. Regarding the information environment, it can be said that the war is still informationally uncertain.

## CONCLUSION

In the age of information, the information revolution transforms warfare, i.e. it causes changes in how societies engage in conflicts and how their armed forces wage armed conflicts. Information has always been a means of making an impact, and therefore of gaining the power. In modern society, modern information technology spreads information much wider and faster than ever before in history, that is the reason why the importance of information as an element of power has increased. In the age of information, the information is becoming increasingly important for national security as well. Although only military conflicts are still registered, when viewed through an outdated prism, as armed conflicts, the information, intelligence and other conflicts are conducted on a daily basis at various levels. This shifts the focus of the conflict from the war to other spheres and activities such as information (Миљковић, 2016 b, 1).

The application of modern technology in engaging in a conflict has brought a network-centric concept of warfare, which involves connecting numerous sources of information and databases, as well as rapid exchange of information, ensuring that an informational advantage over the enemy is achieved in a short time.

All of this mentioned above indicates the increased importance of the information environment in which modern conflicts are conducted. Complex and multi-layered information environment and the existence of numerous conflict through information, misinformation and deception, make decision-making additionally difficult. The modern information environment is difficult to monitor and analyze, which make the decision-making process and directing forces in conflicts more difficult.

Due to the application of modern technology in a way, modern conflicts becomes even more complex and unclear. In addition, the modern war for those who take part in them and command has failed to become more predictable or clearer. It could be concluded that there is no such amount of detail or information that can make the results of the conflict and the war completely predictable. As a consequence, the complexity of contemporary conflicts can neither be eliminated nor significantly reduced. Regarding the information environment, it can be said that the contemporary conflicts are still informationally uncertain. Also, it cannot be said that the modern information environment significantly contributes to faster and better decision-making in conflicts.

However, there is still a commitment and demand for better, more sophisticated knowledge of the situation, intelligence and information, in order to meet the need to minimize the fog and friction of the conflict and make the complex information environment clearer. The main role in that should be played by a person, the one who manages the conflicts, who evaluates them, analyzes them and decides on the engagement of forces in the war. Experience from modern conflicts indicates that more information is available and better visualization of the battlefield cannot compensate for the experience of commanders, which is crucial for a quick understanding of the situation and making quality decisions. Experience shortens the time of information processing, it causes rejecting unnecessary information, focuses only on important facts and puts quickly obtained information in a certain context, gives them real meaning, quickly understands the strategic situation of conflicts, which contributes to correct and fast decision-making and reacting in conflicts.



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