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*Think globally, act locally*

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# STRATEGIC DILEMMA OF THE RECENT SECURITY PARADIGM: ADJUSTING THE NATIONAL ENDS, WAYS AND MEANS TO PREPARE THE MILITARIES FOR HYBRID WARFARE

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***Abstract:** Blending all available national assets to wage war is not a new concept. Integration of different ways and means for armed violence is a logical step for building flexibility, resilience and strength. However, the contemporary military thought leans toward accepting the hybridity as the warfare of the future. At first recognized as a virtue of the non state actors, it turned out that the hybrid warfare can be even more dangerous when initiated from state actors. Nations that aim to prepare against the unpredictable and ambiguous nature of hybrid warfare will certainly face a strategic dilemma. They will inevitably have to adjust their ends, ways and means to build diverse capabilities to deter simultaneous, wide range of threats. There are two general choices how to organize, equip and train the military for hybrid warfare: adapt either capability-based or threat-based planning. This is a harsh decision because the national defence policies affect the whole society. It will trigger completely different paths how the instruments of national power will be employed. Preparing alone against hybrid threats is undoubtedly more expensive solution than preparing as part of the collective defence system. It requires a much higher military budget and still not guarantees that it will be sufficient to build enough capabilities to counter all possible security threats. The latter is less expensive solution to prepare for hybrid warfare, but have other side effects. It can have long term effects on the military organization and culture, limit national assets, trade or give up capabilities, become more dependent on foreign policies ect. Although still early to predict if the concept of hybrid warfare will trigger the next revolution in military affairs, the militaries that did not start focusing on hybridity are already late.*

***Key words:** hybrid warfare, military, capabilities, strategy, doctrine.*

## INTRODUCTION

Combining different ways and means to achieve military victory is certainly not a new concept. Throughout history states, nations, groups or organizations, used whenever it took to achieve flexibility, resilience and

strength when using armed violence. However, as the new trend in the both western and eastern military doctrines, the term hybridity was introduced in the last decade. Just ten years ago, there were two general concepts in the military doctrine worldwide: conventional and unconventional warfare. Since the "long war on terrorism", the term "hybrid warfare" became the new catch phrase to explain when these two concepts merge in one strategic approach. In 2008, the US general Casey used the term "hybridity" to describe the situation in Iraq as "diverse and dynamic combinations of conventional, irregular, terrorist and criminal capabilities"<sup>1</sup>.

Initially, the term "hybrid warfare" was intended to explain the actions of the non-state actors such as those like Hezbollah, when they successfully suppressed the conventional Israeli forces by combining different ways and means in the short war of 2006. Describing hybridity as a virtue of groups and organizations continued during the coalition and NATO in Iraq and Afghanistan. However, the concept of hybridity has become truly popular since the Ukrainian war in 2014, when the western doctrine attempted to explain the Russian involvement in the conflict as a "strategic intent that relies on influence, deception, and manipulation"<sup>2</sup>.

Today's armed forces must be prepared to simultaneously counter a wide range of threats. The problem frame for the military doctrine is to develop a strategic approach able to resist against state and non state hybrid threats. It is the latest strategic dilemma, because although conventional and unconventional warfare usually overlaps, when imposed deliberately from a strong state actor, it can be difficult to fight against. Accepted viewpoint so far is that in order to prepare for hybrid warfare, it is imperative to integrate conventional and Special Forces.<sup>3</sup> The goal is to develop flexible operational skills through a wide range of options that reduces the uncertainty on the battlefield.

## ROOTS OF THE HYBRID CONCEPT

Many authors today refer to asymmetric threats as something that mostly the non-states actors apply,<sup>4</sup> as terrorism, insurgencies and cyber attacks. However, the other side of the coin is that those are merely implied tactics so the militarily weaker opponent might cope with the asymmetry of power already imposed from the stronger opponent. When there is a strong imbalance of strength and power between confronting sides, for example, state versus non-state actors, the only way to achieve balance and confront the stronger opponent

<sup>1</sup> Casey, G. C., America's Army in an Era of Persistent Conflict. *Army Magazine*, October 2008.

<sup>2</sup> Diego A. Ruiz Palmer, Hybrid Warfare in a Contested World Order: Insights and Implications, Foreign Expert Perspective (No.001-June 2017) <http://www.nids.mod.go.jp/english/publication/backnumber/pdf/20170614.pdf>.

<sup>3</sup> Kumar, Narender. "Changing Face of Conflict: Need to Reshape Military Philosophy." *CLAWS Journal*, Winter 2013, p.123.

<sup>4</sup> Peters, Anne, Lucy Koechlin, Till Förster, and Gretta Fenner Zinkernagel, eds. *Non-state actors as standard setters*. Cambridge University Press, 2009.

is to downsize such asymmetry.<sup>5</sup> Following this logic, maybe what we are labelling today as 'asymmetric' is merely an attempt of returning toward symmetry on the chess board.

The point of warfare is to take the opponent out of balance, by applying tactics and techniques for which he is not prepared to confront. Thus, asymmetry in warfare is desirable for both sides, if they can achieve it. Either it is a new weapon on the battlefield or an unorthodox new method, the goal of every adversary through history was to deliver such novelty or surprise on the field that the opponent would not be able to cope with. Based on this, the asymmetric conflict is every conflict in which the two sides have different capacities and capabilities and because of existing strategic inequality, it is assumed that the asymmetry will increase in the future wars.<sup>6</sup> Even if they have similar capabilities, all sides in conflicts will tend to introduce novelty on the battlefield just to take the opponent out of balance and use it as an advantage.

The concept of hybridity is connected with the asymmetry, because it is a product of the intent to impose or overcome the inequality of the ways and means in war. There is an intellectual friction, especially amongst military practitioners if the concept of hybrid threats is nothing but a contemporary model of irregular warfare.<sup>7</sup> However, the term 'hybridity' is very catchy and in less than ten years became a trend in the military vocabulary and international relations. Especially military professionals tend to seek simple solutions to deal with complex problems, so the term 'hybrid' became acceptable because it covers all possible threats at the same time, making the explanation of today's warfare easier. Nevertheless, the war has always been 'hybrid', a combination of all possible tactics, techniques and operational approaches available.

More than often authors say that the hybrid war is a dirty war, because of the irregular part of the equation. This may be one of the reasons why the term was introduced in the first place, to suggest that any adversary that uses the irregular warfare to support its strategy is a dirty player. During the Cold war, such strategy was pursued in the West as well, as part of special operations, psychological operations, electronic warfare and covert and clandestine actions in proxy wars.

The nature of war has always been complex and all sides involved throughout history attempted to outsmart the opponent, using varieties of tools to gain an advantage and achieve surprise with unpredictable behaviour. Giving the importance of hybrid threats as something new suggests that the militaries need to organise and equip adequately to counter the 'new' challenges. Sceptics believe that such categorisation as a new way of warfare is harmful and a waste

<sup>5</sup> Arasli, Jahangir. "States vs. Non-State Actors: Asymmetric Conflict of the 21st Century and Challenges to Military Transformation." *INEGMA, Mar* (2011).

<sup>6</sup> Sorabji, Richard, and David Rodin, eds. *The ethics of war: shared problems in different traditions*. Ashgate Publishing, Ltd., 2006. p155.

<sup>7</sup> Fleming, B. P., 2011. *The Hybrid Threat Concept: Contemporary War, Military Planning and the Advent of Unrestricted Operational Art*. Monograph, US Army School of Advanced Military Studies.

of time, because it cannot offer any new solutions, which are not already existing in the military doctrines. But if this was true, how do we explain the inadequate performance of the modern operational art in Iraq and Afghanistan, possibly in Syrian conflict as well?

### THE WARFARE OF THE FUTURE

The first suggestion that hybridity is the future of warfare was given in 2005.<sup>8</sup> It triggered discussion among military professionals if we need a new term to describe this merging of conventional, unconventional and other means in war. By now, the military community in the West accepted hybridity as the future warfare. Hybrid warfare was defined in NATO as the future warfare in the Wales Summit Declaration in 2014, urging the alliance to address “the specific challenges posed by hybrid warfare threats, where a wide range of overt and covert military, paramilitary and civilian measures are employed in a highly integrated design.”<sup>9</sup>

Labeling future warfare as hybrid means that it might be the next revolution in military affairs. Such strong statement is challenging for the military doctrine because any trend that becomes a new normal is the next paradigm. This will cause a reevaluation of the existing military doctrine as the old dogma in order to change the framework as the new, hybrid doctrine.

Such paradigm shift will affect the military organization and maybe the whole defense system of the country. Every vast change in doctrine, tactics, strategy and operational art initiate either by the new technology, weapon systems or sudden change in the operational environment will certainly affect many other spheres of national interests in the country. No matter how we label the new trend in warfare, it is obvious that it urged the military organizations to respond adequately.

The contemporary military thought leans toward accepting the hybridity as the warfare of the future.<sup>10</sup> At first recognized as a virtue of the non state actors, it turned out that the hybrid warfare can be even more dangerous when initiated from state actors.<sup>11</sup> Nations that aim to prepare against the unpredictable and the ambiguous nature of hybrid warfare will certainly face a strategic dilemma. They will inevitably have to adjust their ends, ways and means to build diverse capabilities to deter simultaneous, wide range of threats.

Periodically, militaries need to change or adapt their doctrine. It is a crucial part of practicing operational art. Militaries that are stuck in the existing

paradigm and refuses to change might face the consequences later. Delaying the reorganization of the military to cope with the new concept should be considered as a risk with strategic effects. One suggested approach to find solutions against hybrid enemy is to think as one and develop a “hybrid way of thinking”<sup>12</sup> Looking at the threats from the perspective of the predator, an operational artist should quickly understand the gaps in the defense capabilities. Imperative for success is critical and creative thinking skills and rejecting to perceive the existing doctrine as a dogma that cannot change.

### PREPARING FOR HYBRID WARFARE

The hybrid warfare will be more complex in future, especially when initiated from state actors that have various capabilities and recourses. To achieve victory, military professionals and their civilian leadership must prepare to respond to various threats across the spectrum of war. Most probably, the hybrid threats will come as unannounced, covert and clandestine actions. Preparing for such warfare is very expensive. So far we see the patterns that the strategy of hybrid enemy is a war of attrition.

To build capabilities and capacities to counter hybrid threats is tricky. Militaries usually cannot prepare for multiple types of threats at once, primarily because of their budget restrictions. With never-ending economic challenges, it is increasingly difficult to convince policy makers to approve necessary budget for the military. This is why the first and foremost, it is essential to clearly define what are the most realistic future threats to the security of the country. Soldiers must justify in front of the civilian leadership what exactly they need to be effective in the future war.

There are two general choices, how to organize, equip and train the military for hybrid warfare: adapt either capability-based or threat-based planning. This is a harsh decision because the national defence policies affect the whole society. It will trigger completely different paths how the instruments of national power will be employed.<sup>13</sup>

Threat based planning was used during the Cold War because both blocks were preparing against “a known monolithic threat”<sup>14</sup> that was purely conventional in nature. In that sense, using threat based planning to prepare against a combination of threats will have to cover a huge list of scenarios. It will take massive forces that would have to be designed to fight both conventionally and unconventionally. However, the conventional threat might

<sup>8</sup> Mattis, J.N. and Hoffman, F. 2005. *Future Warfare: The Rise of Hybrid Wars*. Proceedings Magazine. US Naval Institute, November 2005 Vol. 132/11/1,233.

<sup>9</sup> NATO, 2014. *North Atlantic Treaty Organization*. Available at: [http://www.nato.int/cps/en/natohq/official\\_texts\\_112964.htm](http://www.nato.int/cps/en/natohq/official_texts_112964.htm) (Accessed 14 08 2017).

<sup>10</sup> Miller, Michael. *Hybrid Warfare: Preparing for Future Conflict*. Air War Coll Maxwell AFB AL, 2015.

<sup>11</sup> Hunter, Eve, and Piret Pernik. *The challenges of hybrid warfare*. International Centre for Defence and Security, 2015.

<sup>12</sup> Davis Jr., J. R., Continued Evolution of Hybrid Threats. The Russian Hybrid Threat Construct and the Need for Innovation. *The Three Swords Magazine*, issue NO. 28, 05, 2015. pp. 19-25.

<sup>13</sup> Blaker, James R. *Transforming military force: the legacy of Arthur Cebrowski and network centric warfare*. Greenwood Publishing Group, 2007. p.148.

<sup>14</sup> Tony Balasevicius, Is It Time To Bring Back Threat-Based Planning?, The Mackenzie Institute, 04/07/2016, <http://mackenzieinstitute.com/is-it-time-to-bring-back-threat-based-planning/> (Accessed 11 08 2017).

never show up and more resources would be drained for nothing. Because the hybrid enemy's intention will be exactly that, it is obvious that threat based planning, although effective, it is more expensive.

Capability based planning is a more economic approach in force generation. The logic is to imagine how the enemy will fight, assuming different scenarios in future warfare, and build up capabilities to counter the expected enemy's actions. The problem is that similar to threat based planning, soldiers usually assume the worst possible courses of actions and plan capabilities that might not be necessarily essential. In the absence of clearly defined threat after the end of the Cold war, NATO countries adopted the capabilities based planning.<sup>15</sup> However, the emergence of Russia and the introduction of sophisticated hybrid warfare might change again NATO's approach in planning for war. Although more expensive and complex, the threat based planning is the right answer when building up forces to counter hybrid enemy.

### THE STRATEGIC DILEMMA

Suggesting simple solutions to fix complex problems is a logical fallacy. Only complex organizations can effectively solve complex problems. Hybrid threats are challenging the modern society on all levels simultaneously, making it very if not the most, complex form of warfare. To prepare for such a complex war, countries need to build up complex militaries.

The best way to respond to hybrid threats is if the military is designed as a hybrid force with various capacities and capabilities. Such hybrid military could respond in short time notice against different threats across the spectrum of war, from small border skirmishes, isolated rebel groups, insurgencies, terrorist activities, up to full scale conventional war against a conventional enemy. Developing different tools for many possible scenarios is a threat based force generation. While most effective, it is more expensive solution. This kind of approach is for bigger countries with many resources, a luxury that not many countries can have.

The hybrid military would have to be a large organization with different types of units, services and branches, with strong special operation forces, cyber, counter propaganda and information operations capabilities. Important notice is that such military would have to be empowered through legislative to act in low intensity conflicts, because hybrid war will probably never be declared as open war. To use the military against hybrid threats in various circumstances, countries must adjust their legislative when and how they can use their military forces.

Less expensive solution to prepare against hybrid threats is seeking safety in numbers. Choosing to be part of a military alliance (collective security system) is a decision that many countries do. Sharing responsibilities and assets

<sup>15</sup> Tony Balasevicius.

among partners and committing to fight together in a coalition warfare some believe is also the future of warfare. There are many challenges in organizing a collective security system, but also benefits. It seems that rarely countries go to war alone.

Countries that are in the same alliance can agree on what kind of capabilities they should provide to avoid duplication of resources. In coalition warfare, different militaries are asked to deploy various specialized units on the battlefield against various threats. By achieving synergy of different capabilities, partners avoid spending more than necessary to fight effectively. Also, when part of any military alliance, countries agree during peace time what types of units they develop. This does not mean completely disbanding national assets, but having priorities when cutting the budget pie.

The example from NATO alliance strategy is that countries dedicate certain type of units ready to deploy for NATO led missions, if and when needed.<sup>16</sup> Sharing capabilities is an elegant way to prepare for hybrid threats and seek safety as part of the large military alliance. The question often raised even among long time partners is to which level a country should voluntarily weaken its own national defense capabilities at the expense of strengthening the collective security system. Regardless of the cooperation and trust, countries are reluctant and do not easily give up from obtaining certain expensive capabilities. At the end of the day, every country has to protect its own national interests first.

Preparing alone against hybrid threats is undoubtedly more expensive solution than preparing as part of the collective defense system. It requires a much higher military budget and still not guarantees that it will be sufficient to build enough capabilities to counter all possible security threats. The latter is less expensive solution to prepare for hybrid warfare, but have other side effects. It can have long term effects on the military organization and culture, limit national assets, trade or give up capabilities, become more dependent on foreign policies ect.

### CONCLUSION

The hybrid way of war will be the future of warfare from several reasons: emergence of non-state actors, state actors reshaping the geopolitics through proxy wars, trend of information warfare, the use of cyberspace for perception management ect. Although still early to predict if the concept of hybrid warfare will trigger the next revolution in military affairs, the militaries that did not start focusing on hybridity are already late. It is quite difficult one military to prepare itself for various kinds of threats, especially if they are simulations, and planned by state or non-state actors as a long term strategy.

<sup>16</sup> <https://www.shape.nato.int/nato-response-force--very-high-readiness-joint-task-force> (Accessed 13 08 2017).

The hybrid warfare will eventually change the traditional military to think hybrid as well. Following the latest research and analysis among military professionals, there is a shift in the way how war is understood. Militaries will have to organize, equip and train to fight simultaneously against different threats initiated from several highly unpredictable enemies in an undefined battlefield. There are two approaches how a country could develop hybrid capabilities for future threats. Either spend a significant amount of resources and prepare alone, or choose to prepare for specific threat as part of the collective security system.

The first option is more expensive and a huge challenge for a smaller state. The advantage is that such country is less dependant on outside assistance thus more sovereign in decision making. Hybrid threats can come unexpectedly and the best way is to confront them promptly. Because international politics take time to respond and consensus is necessary to approve the use of violence, being more independent on military capabilities is an advantage against hybrid enemy.

The second option is less expensive and arguably the preferred option for smaller and economically weaker country. The advantage is that some gaps in the defense system could be augmented with partners' capabilities. Also, being part of a bigger club is a proven deterrence strategy. However, the collective security system is a robust organization that might take time to decide when and how to react. A country that depends on partners' assets will depend on their will to provide support when needed. This is the risk of the capability based preparing for hybrid warfare. A military that is dependant on certain capabilities means it has gaps penetrable for certain hybrid threats.

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## COORDINATED ACTION – APPEARANCE AND DEVELOPMENT

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**Abstract:** *Coordinated action is a form of coordination which represents harmonization of actions by Armed services, branches, support services, units, means or operating combat formation elements by object, place, time and mode of action, in order to execute a common task.*

*Joint (coordinated) action (synergy, coordination) is organizing by all units at all levels of command and in all operations. Also, coordinated action is planning by the staff of commands and units and is organizing directly between operational groups, tactical groups, combat groups, teams and compositions that perform the task.*

*The aim of coordinated action arising from the common task in order to maximize the maneuverability, fire, technical, organizational and other capabilities of units engaged in the operation. The importance of coordinated action is reflected in the fact that the proper organization of coordinated action prevents fire on its own. The basic requirement of effective interaction is the integrity and coherence of the fire and movement of the units involved.*

*Joint (coordinated) action (synergy, coordination) is generating by reliable and permanent connection among engaged forces and through exchange of liaison officers at all levels of command. Method of coordinated action among the units is developing by the plan and instructions for joint action. Coordinated action has been realized always, from the first combat actions until nowadays contemporary operations.*

**Key words:** *Coordinated action, organizing, combat actions, operations.*

### INTRODUCTION

In order to successfully and correctly solve the diverse and complex problems of modern combat - operations, it is necessary to see in full light the coordinated action (synergy), its appearance and development, because it represents the basis of modern combat actions, determines their nature and essence and is of decisive importance for success in the fight.

Organized coordinated action (synergy) appears in the earliest times of history, but its development can only be traced back to the first recorded war conflicts. Of course, it was in the extent that corresponded to the level of development of the army, technique and weapons - a certain age or epoch. An idea of how the problem of coordinated action (synergy) was solved in the past can not give epochs that are characterized by the inadequacy and very poor

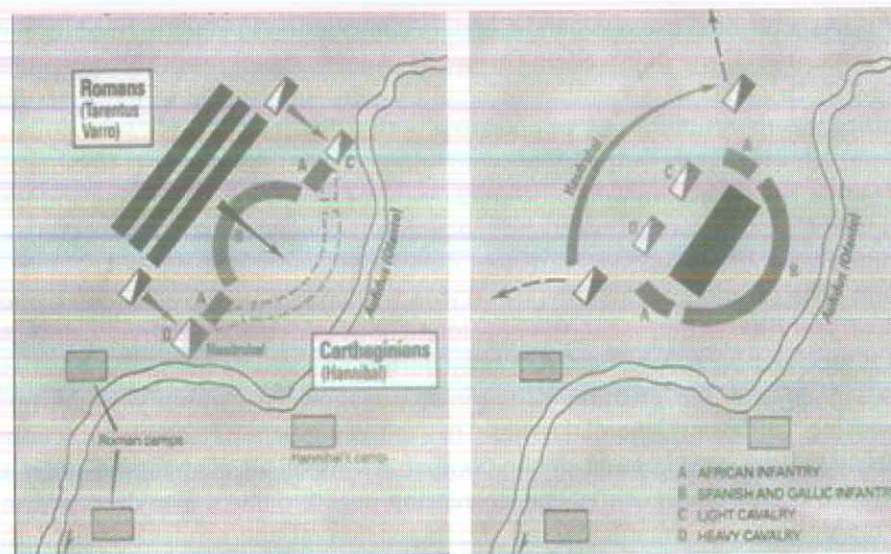
development of combat assets and the army. It, and only a few, can provide an analysis of the epochs and wars in them, which were distinguished by many and more qualitative armies.

Historical development of the coordinated action (synergy) was moving alongside the numerous and qualitative development of the army, the advancement of military thoughts and technical achievements in general, and especially in the field of war techniques. If the armies (armies) became larger, their organizational structures were more complex and the combat technique was more diversified, insofar as the problems of coordinated action (synergy) were imposed in an ever-sharper form and sought appropriate solutions. It is important to note that coordinated action (synergy) has not been reduced, nor can it be reduced to, exclusively on the coordinated action (synergy) between the military, although this is precisely its key issue, because it is a far more complex term.

### COORDINATED ACTION (SYNERGY) THROUGH HISTORY

In the planning and carrying out of combat actions, the desire to correct the issues of coordinated action (synergy) by defects of the arms of service and certain types of military equipment has always been expressed by the commanders and their staffs; they have taken advantage of their positive qualities and are complementary to the positive qualities of others. It is known that in the earliest times there were such battles and collisions in which the problems of coordinated action (synergy) were solved almost exclusively through the elements of the battle formation and their maneuvers on the battlefield. The reasons for this lie in the weakness of military equipment, which reflected the underdevelopment of technology in general, and especially war technology. Until the appearance of gunpowder and its use in armaments, fire as an important factor in the performance of coordinated action (synergy) was replaced by "cold weapons", whose effect could only be fully apparent in the course of the "chest chest" or at short distances (spears, bow, etc.). In this regard, it can be explained that the collisions took place in a small space and that the coordinated action (synergy) could have taken place more or less the way it was planned before the battle began.

Thus, for example, in 216 BC, in our famous battle of Cannae, we find ourselves in the classical forms of coordinated action (synergy) (Figure 1).



**Figure 1 - The coordinated action (synergy) in the famous Battle of Cannae, 216 BC**

Source: [http://www.greatmilitarybattles.com/html/the\\_battle\\_of\\_cannae.html](http://www.greatmilitarybattles.com/html/the_battle_of_cannae.html)

Basically, Hannibal's concept and battle plan contained the correct solution to the coordinated action (synergy) between infantry and cavalry, and in the first place an excellent solution to the issue of coordinated action (synergy) between the elements of his battle formation<sup>1</sup>.

By analyzing some of the battles and battles that took place in the Old Ages and later, it can be noticed that almost through the entire Middle Ages, as far as Napoleon's era, there was a sudden decline and only occasional rise in the development of the army, which also had its corresponding reflection to coordinated action (synergy), so at that time there were no exquisite examples

<sup>1</sup> Hannibal, with a large number of Roman infantry, about 55,000 heavily armed pedestrians, opposed only its 20,000 weakest fighters – Spanish and Gallic. According to the plan, Spanish and Gallic were supposed to endure the battle while a heavy Cartagene infantry, deployed in the rear of both horses, did not strike at the sides of the Roman battle formation, and until the cavalry from the wings attacked from the background from the back of the Romans. At the beginning of the battle, the Spanish and Gallic infantry at the center, where Hannibal was located, was repressed by the Roman infantry, but it sustained all the attacks of the Romans - until Hannibal's right (light Numidic cavalry) and left column (heavy cavalry) were not in an unbearable storm broke the Roman cavalry, broke into the background of the Roman battle formation and attacked the Roman phalanx in the back. This led to the weakening of the pressure of the Romans at the center of Hannibal's battle formation, which allowed Hannibal to throw an African infantry on the sides of the enemy's battle formation. With the advent of the heavily armed African infantry, Roman troops were surrounded and destroyed. In war history, this was the first recorded destructive battle achieved by the weaker forces and the first classic example of a correct understanding of the coordinated action (synergy) and its successful accomplishment in the battle.



of this. As a positive example, and a certain contribution to a better resolution of this issue, the King of Sweden Gustav II Adolf<sup>2</sup> stands out. By creating a "Swedish Brigade" of a number of smaller units and attaching more serious significance to artillery and engineering units, by improving the command system, introducing the brigades of two regiments, etc., the way was to be taken to resolve the fights between different arms of service and various military equipment, and between several brigades that participated in the execution of common tasks.

The creation of the arms of service was conditioned by the emergence of diverse military equipment, the development of which was relatively slow, so that it received quite specific forms only during Napoleon's time. The diversity of weapons and the creation of various parts of the "military organism", possessing different characteristics in the conduct of combat actions, necessitated the coordination of the combat efforts of all elements in order to maximize use of their positive and decreasing negative traits. The diversity and the multiplicity of armaments and the expansion of the armies required the formation of units that comprise parts with different characteristics. Napoleon gave new quality both in terms of the measures taken to form large operational units and their organization, as well as in terms of a clear understanding of the need to form units of the arms of service and to harmonize their work in the battle. Thanks to a general conscript duty, he managed to create million men military which he formed in divisions and corps, and later in the armies. Also, he created special large cavalry units. All units had their respective the arms of service and services (artillery, cavalry and logistics). It can be said that Napoleon first laid the foundation for the organization and formation of the classical arms of service: infantry, artillery, and cavalry, of which the first two to this day preserved the characteristics and position of the basic arms of service.

Of course, the significance and role of these three basic arms of service was changed more or less. The most typical examples of their coordinated action (synergy) can be seen in the wars of the early nineteenth century. The infantry as the arm of service was the most self-sufficient in carrying out combat missions and constituted the basis of the battle formation. On the other hand, the artillery, under the conditions and circumstances of that time (the famous Napoleon's "100-gun battery"), was the decisive factor of the forces of the attackers; the artillery had the task of destroying the enemy's battle formation and, in this way, preparing conditions to theirs infantry for quick attack. The mass cavalry, as a means of quick hit and great flexibility to execute complex maneuvers, inflicted decisive blows on the enemy's battle formation,

<sup>2</sup> Gustav II Adolf (Swedish: Gustav II Adolf, December 9, 1594 - November 6, 1632) was King of Sweden (1611 - 1632) from the Vasa dynasty. It was also called "North lion". He was one of the main participants in the Thirty Years' War. He created a modern army. He introduced a number of innovations in the mode of warfare and tactics, so Napoleon considered him one of the greatest generals of all time.

dismantled it and disorganized it, creating favorable conditions for the simultaneous destructive strike in coordinated action (synergy) with the infantry.

Under such conditions, the essence and sense of organization of the arms of service coordinated action (synergy) were reflected in the preparation of one strike in which the fighting forces of the opposing sides were exhausted in a very short time - most often for only a few hours<sup>3</sup>.

After Napoleon's wars, during the 19th and early 20th centuries, a further increase in the number of armies was carried out, the war technique began to develop and improve rapidly, and operations and fights were carried out on much wider spaces. This demanded that the issue of coordinated action (synergy) be resolved from a new perspective and take steps to successfully manage large operational formations in changed conditions for the conduct of combat actions. Commanding the unit was no longer possible, as before, closely, but from distant places, indirectly and mainly by means of directives (which were elaborated in headquarters) in which only general tasks and objectives of action were given in some armies and all of that was coordinated in time and space. But it would be wrong to consider that the organization of the coordinated action (synergy) in all operations of that time was properly resolved. First of all, this issue for a long time was theoretically unaccounted for, and the commanders and staffs were relatively poorly trained in order to be able to solve it in any situation, although proper attention was paid to the issue of coordinated action (synergy) in military schools. The greatest difficulties in the proper connection and direction of all efforts towards one goal were in the process of carrying out combat actions at the moment when the initial plan of operation was violated. The commanders and the staffs were not yet ready, in limited time, to solve the problems of disturbed coordinated action (synergy) in the battle.

Further development of the war technique introduced a serious change in the physiognomy of the action of the joint units, which posed many tasks in terms of coordinated action (synergy). The invention of the insulated pipe, the introduction of wire connections<sup>4</sup>, the proper use of engineering units even in the attack (sappers in the Russo-Japanese War of 1904-1905)<sup>5</sup>, and firing

<sup>3</sup> Napoleon said: "The fate of the conflict is the result of one minute, one thought: the adversaries are approaching one another with different plans; The battle begins; the battle is in full swing; The decisive moment occurs; And a successful thought sudden as a lightning decides the battle; The smallest reserve sometimes leads to great victories." These Napoleon words spoken to Laksas on the island of St Helena certainly does not correspond to the nature of modern combat operations and the essence of the use of united units. But at that time they quite accurately characterized the process of conducting the battle of such a prominent military leader as Napoleon was.

<sup>4</sup> For the first time, the telegraph was applied by Prussia in the Austrian-Prussian War of 1866. The war was waged in 1866 between the Austrian Empire and its German allies on the one hand and Prussia, its German allies and Italy on the other.

<sup>5</sup> Sapper (Fr. Sapeur - miner) - an engineer soldier. Sapper units were designed for engineer reconnaissance of enemies and terrain, mining and explosive obstacles and passages in them. The

artillery from sheltered firing positions - all said that the problems of coordinated action (synergy) were becoming more complicated. And the arms of service began to change their physiognomy. Infantry units, armed with shotguns and machine guns, received increased firepower. At the same time, the improving of artillery weapons and the increase in initial speed of shooting and range has led to the improvement of the quality of the weapons within artillery units at the expense of quantity. Even a division of 16 field cannons, at the beginning of the twentieth century, in its firepower exceeded Napoleon's "100-gun battery". The third, until then equal participant of the joint battle - the cavalry, was due to the increase in the firepower of the infantry and artillery, gradually pushed from the battlefield. From the means of making a decisive strike in the joint battle, the cavalry became a means of maneuver outside the battlefield.

Just before the start of the First World War, the combat actions of the joint units were based on the coordinated action (synergy) of two generations of troops: infantry and artillery<sup>6</sup>. The artillery has various and complex tasks. She had to support the development of infantry in the battle formation, and in an offensive to shake her way through her massive fire, destroying goals that severely interfere with the infantry movement. During the infantry strike, artillery was obliged to concentrate most of its fire on the targets that were being stroked, and if they were sheltered, then at the reserve of the enemy.

As for the use of massive artillery fire, the Russian War Service acknowledged that artillery could decide the outcome of the battle if its fire was massively applied, especially if it was initially put into action and the required density was achieved. However, it was recommended that "artillery be better defined on the sectors of combat" as a whole divisions rather than batteries. So, as part of the combat actions of the joint units, artillery, as a rule, was not exploited centrally.

Approximately, the same case was in the French army, where the prevailing assumption was that the battle would be primarily an infantry maneuver, while the role of artillery would be reduced to supporting the infantry movement by all forces. But the light guns that were at that time in the arms of both the French and the Russian armies could not successfully solve these tasks. The German army, although it did not much advance in the organization of infantry and artillery, was better than its enemies perceived and solved the problem by introducing howitzer and heavy field cannons into its

term "sapper" has been in military terminology since the mid-16th century, when the armies of Western countries began to form engineering units for the construction of trenches.

<sup>6</sup> Thus, for example, in the Military Service of the Russian Army issued in April 1912, Two years before the start of the First World War, the term "coordinated action (synergy) of the arms of service" is mentioned. The obligations regarding the issue of coordinated action (synergy) were set out in the chapter "Mutual obligations of various arms of service", which had 7 paragraphs. The main role is given to the infantry. Other arms of service "must help her achieve the combat goal and sacrifice for her rescue in difficult moments." It also said "the infantry must also be sacrificed for the salvation of others, especially artillery."

weapons, thereby organizing the coordinated action (synergy) between artillery and infantry overcame their enemies.

## COORDINATED ACTION (SYNERGY) DURING THE FIRST WORLD WAR

As it can be seen from the previous one, prior to the First World War, in terms of organization of coordinated action (synergy) in joint battle did not require precision, and in the larger armies, the role of artillery was underestimated. Combat experiences in the first conflicts in 1914 underwent a strong critique of the pre-war forms of the organization of the joint battle and the principles of the organization coordinated action (synergy) and arms of services therein.

In the first period of the First World War, wandering in the organization of coordinated action (synergy), on which the best use of all arms of services in combat was the basis, had severe consequences. Success in the offensive battle came at the cost of great casualties in manpower and material, and when the last reserves were exhausted, the war got a position character. Operational experience and tactics in 1914 could not solve the tasks set by the strategy before them. In a tactic, as well as in the operational art, a painful and long-lasting period of theoretical speculation arose, whether the defense is stronger than the attack or vice versa. The defensive fire was on the battlefield as long as it was able to preserve its own firearms. In such conditions the success of the striker and his maneuver were practically impossible or they were inconsistent with such losses that couldn't be taken. Naturally, in such a situation, the idea emerged that an attacker had to make a fire of such a intensity that would be able to disrupt and defeat the defender's well-organized defense system. Already in 1915, in offensive operations, a sharp increase in the density of artillery fire was observed (it reached three times the density of that in the maneuvering period of the war in 1914).

With the increase in the number of artillery weapons, conditions have been created in the process of more or less long-term artillery preparation, defeat the enemy's defensive position and destroy or neutralize its firearms and thus open the way to their own infantry. The infantry also sought to increase the impact force by deepening the echeloning of its battle formation. In this way, the attacker sought the solution of the defense defeat task within the framework of the coordinated action (synergy) of arms of services - by increasing the infantry and artillery fire force, which was achieved by the mass of fire and living forces. But in the first attempts to realize this concept of coordinated action (synergy), it turned out that in this way, such organization can only break through the first defensive position. However, such a breakthrough did not provide the attacker with even full tactical success, as his defender instantly opposed his second position in the tactical depth of the defense, for which the breakthrough needed new infantry forces and the re-organization of artillery

preparation. The complexity of the organization and the coordinated action (synergy) between infantry and artillery at that time with the Allies was further enhanced by the fact that at that time, in 1917, none of the engaging sides, apart from the Germans, had a strong and well-developed artillery that would provide a breakthrough in the tactical depth of defense and transferred success to operational depth. Certain attempts to solve this problem using chemical weapons have also not yielded satisfactory results.

Typically for operations in 1916, the tactics used by the French in the battle of Somme<sup>7</sup> can be considered. From operations in 1915, the French have come to the conclusion that the infantry is incapable to beat the position defense. The French instruction for the offensive operation in 1916 was based on the idea of "artillery conquers, infantry occupies". The essence of the actions and of the coordinated action (synergy) in it lay: artillery to destroy the whole defense system, to "calm it" and then the infantry to take it. Bearing in mind that the French possessed artillery for this role of artillery with an effective range not exceeding 6 km, as well as their assumptions that one battery is enough at one kilometer of the front, it is clear that the breakthrough was extinguished, on the first trenches of the enemy's defensive system. Indeed, the experience of such an organization of coordinated action (synergy) between infantry and artillery has shown that in this way, only the first position of the defense at a depth of about 4 km can be broken. In order to go further, the attacker was forced to do a new organization of coordinated action (synergy) for a re-attack, which required a large re-enumeration of infantry forces and a new artillery preparation, for which it was necessary to change the fire positions and to move artillery closer to the front line. All this took a lot of time, which went to the benefit of the defender, as he regularly managed to consolidate his defense in a different position.

Interestingly, in that period, especially the French, the infantry was underestimated and overestimated the power of artillery. In the organization of the coordinated action (synergy) between infantry and artillery, it was so far that the artillery was tasked with the succession of its fire to destroy the entire depth of the defense, and the infantry were only to appear and fit on already won positions. It was happening that the whole regiments were pulled back in order to wait for a new "jump" of artillery that would prepare the strike of infantry, although for that, there was often no need for it.

On the one hand the increasing use of joint forces in the fight is seen and the need to organize close coordinated action (synergy) between the arms of service and the services, and on the other hand staffs are still inadequate to solve these problems successfully. It was necessary to take appropriate measures for the organizational improvement of units, their formations and the command mechanism. Without it, it could not be spoken about successful coordinated action (synergy), which was confirmed in practice. While the issue

<sup>7</sup> French artillery, which was more numerous and more experience than the British, was extremely effective.

of coordinated action (synergy) in tactical frameworks (within the regiment) was resolved, or at least manifested, an attempt to resolve, in operational terms, what was almost completely absent. A characteristic example is the Battle of Tanenberg<sup>8</sup> from August 26 to August 30, 1914 (Figure 2).

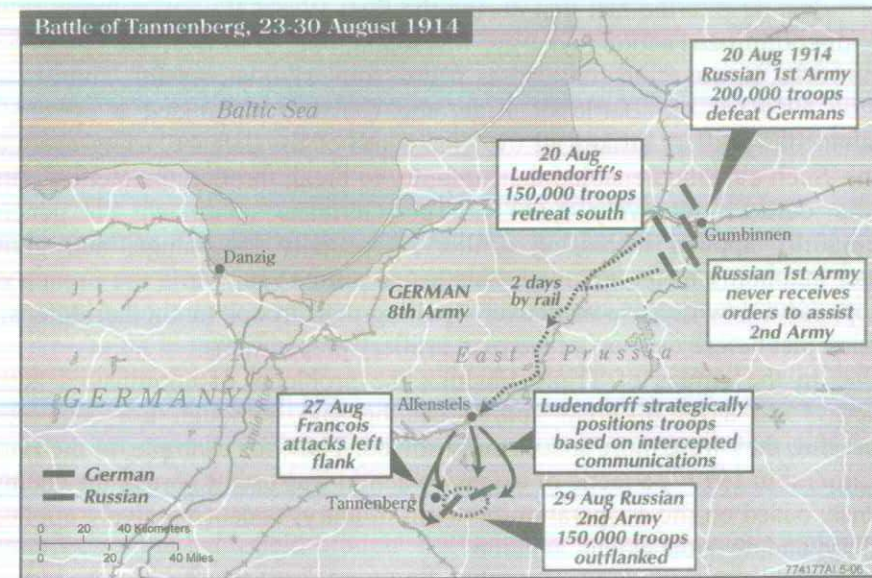


Figure 2 - Coordinated action (synergy) in Battle at Tanenberg, August 26 - 30, 1914

Source: <https://www.vox.com/a/world-war-i-maps>

Although the issues of coordinated action (synergy), especially operational, in the First World War were not always successfully solved, there were examples of well-organized and accomplished operational coordinated action (synergy). Such a case was in 1915 between the Serbian and Montenegrin army. The Serbian army, during the retreat - driven from the north

<sup>8</sup> The Battle of Tanenberg in 1914 was a major conflict between the Russian and German empires in the first days of World War I. The armies were Russian 1st and 2nd armies and the German 8th Army, between August 17 and September 2, 1914.

In this battle, the 2nd Russian Army, under the command of General Samson, contrary to the front commander's frontier directive, went into a wider range (about 50 km) of German forces in the Alenstein and Osterode direction, with the aim of cutting off a breakaway in Eastern Prussia. In the period from August 20 to 26, they managed to penetrate deeper into the enemy's territory. During this time, the 1st Russian Army, under the command of General Renenkampf, achieved initial successes in the borders of the border front, but it does not exploit it and very slowly moves forward just about 15 km. Due to the absence of operational coordinated action (synergy) between the 1st and 2nd Russian armies (although they were at a distance of about 100 km, counting from the inner wings of the armies), and especially because of the very slow moving of the 1st Army, the Germans pulled out almost all the troops, except for the weak horse curtains. All forces in front of the 1st Russian army were engaged against the 2nd Russian army and helped to beat them.

and northwest by German and Austro-Hungarian troops, and from the east by the Bulgarians, deviate to the valley of Ibar and through Kosovo Polje towards Montenegro and Albania. Strong holding of the position in Mojkovac<sup>9</sup> by the Montenegrin army provided withdrawal of Serbian army.

But despite the fact that during the First World War no solution to the issue of coordinated action (synergy) was found, both in tactical and operational frameworks, however, in some cases it was somewhat successful. Thus, at the end of 1917, at the Battle of Riga, the Germans organized a system of simultaneous artillery strikes all over the depth of the defense, using chemical grains. Such a method enabled their infantry to break through the tactical depth of the defense relatively quickly. The Germans continued, in general, successfully applied increasing artillery, especially long-range, and giving greater autonomy to the infantry. This lasted until 1918, while the French did not oppose a new defense maneuver - pulling their troops to another defensive position just before the start of German artillery preparations.

In the armies of Triple Entente, the problems of coordinated action (synergy) are a bit different and, it can be said, although not completely successful, they were more successfully solved. Thus, for example, in the Battle of Cambrai in 1917<sup>10</sup>, a tactic of offensive action was used to break the enemy's defense, based on the cooperation between infantry, tanks (massively applied), artillery, and, to some extent, aviation.

Finally, it is useful to see what the First World War had to do with the organization of the combat actions of the joint units and in the plan of coordinated action (synergy), as well as the role that was given to certain arms of service as part of the solution of this basic issue of combat - operation.

First of all, the joint battle has developed and complicated. If at the beginning of the war the joint battle was only based on the coordinated action (synergy) between infantry and artillery, which was not nearly perfected, at the end of the war, the joint battle was based on coordinated action (synergy) among the infantry, artillery, tanks and aviation, although not sufficiently advanced, especially in operational frameworks.

The infantry preserved the importance of the basic and most important arms of the service. Its underestimation, which was observed in 1916 and in the first half of 1917, was significantly reduced at the end of the war. It required greater independence in combat, while artillery, tanks and aviation worked for her. She got artillery in her organic composition, and was very often reinforced with accompanying tools. Armed with automatic weapons, the infantry were able to carry out maneuvers on the battlefield, even within the smallest tactical units, with more independence, and to renounce bulky battle formation that only

<sup>9</sup> The Battle of Mojkovac was conducted from January 6th to 7th, 1916, in the vicinity of Mojkovac, where the Sandzak Army of the Kingdom of Montenegro successfully stopped the Austro-Hungarian offensive, which allowed the Army of the Kingdom of Serbia to withdraw from the parts of the Kingdom of Montenegro to the Adriatic Sea.

<sup>10</sup> The Battle of Cambrai, from November 20 to December 7, 1917, was a British offensive in World War I.

blocked the maneuver, exposed it with great losses and sensibly reduce the pace of moving.

Artillery has grown in many ways and has improved qualitatively, so it has become a significant factor in a joint battle and a very important element of coordinated action (synergy). The artillery tactics have also improved, as well as its coordinated action (synergy) with infantry. The grouping of artillery in the breakdown sectors, splitting into groups, according to the tactical and ballistic characteristics of certain weapons, posed a demand for the organization of coordinated action (synergy) not only between artillery and infantry, but also within the artillery itself.

The tanks<sup>11</sup> were still uncompleted and relatively poorly represented in the joint battle. Therefore, they were not able to play the role of arm of service capable of developing success at the operational depth, their coordinated action (synergy) with infantry and artillery did not come out of tactical frameworks.

As far as combat aircraft, about a serious contribution to its successes in combat there could be no question<sup>12</sup>. A number of small and technical uncompleted, with a small radius of action and very weak arms, he was not able to carry out serious tasks of coordinated action (synergy) in the joint fight - operation. But, in spite of the fact that the use of air force did not exceed the framework of experimental tests of its capabilities, the first appearance of the aircraft over the battlefield brought confusion in the enemy ranks and positive impact on the faster and more effective measures to find ways for the development of aviation in the future, and as an element of coordinated action (synergy) it is, however, played a positive role, especially coordinating to artillery in the targets detection and fire correction. In addition, it is used as a means of communication, it is, represents a new quality in the system of organization of command and control of troops.

In the initial period of war, engineers had, in general, the role of the technical arm of service, which was even before the First World War. But later, and especially at the end of the war, both sides of war are beginning to develop into a combat arm of service and to set up, in addition to the task of establishing and fortifying the organization of the position, and pure combat tasks in close coordinated action (synergy) with infantry and artillery.

The complexity of the combat actions of the joint units and the requirements for precisely organized coordinated action (synergy) among the

<sup>11</sup> As a military asset, the tank first appeared in the First World War as an innovation of the British army and served to break through well-established trench positions. In the Second World War, the tank made a revolution in warfare, and together with the aviation, they created the backbone of military action in the military doctrine of lightning warfare (German blitzkrieg), which was perfected and applied by the Germans, although theoretical foundations were set by the English after the end of World War I.

<sup>12</sup> The First World War brings the combat use of planes, flying machines that were created all over a decade before the global conflict. Already at the very beginning of the war, airplanes showed their great usable value. Although they were mostly used on the western front, they played a very important role in the initial conflicts at the Balkan war and the clash of the Serbian and Austro-Hungarian armies.

arms of service and within them, as well as the related effects of all elements of the battle formation in one operation, required the taking of appropriate measures for the modification and improvement of the commanding and managing system of the units in combat. The question was asked of the place and role of the commander as the organizer of the battle - operations in such complex conditions of action.

Thus, as already pointed out, in the initial period of the First World War, the essence of the organization of coordinated action (synergy) and its realization, in general, did not go beyond the framework of the infantry regiment. In such a situation, the superior commander, in particular the commander of the division, had no other tasks except to organize the coordinated action (synergy) between the infantry regiments, which he accomplished by setting the tasks to each of them, and pointing to the basic forms of their maneuver. Later, in particular between 1916 and 1917, this role of senior commanders changed significantly. Coordinated action (synergy) has already to be organized within the corps, including, in addition to the divisions, the units of the arms of service outside of the infantry divisions. And the commanders of the armies had to deal with this issue, since the operations were planned at great depths.

This would be the basic experience of combat actions in the First World War that were used for the improvement and further development of coordinated action (synergy) in the post-war period.

#### **DEVELOPMENT OF THE THEORY OF COORDINATED ACTION (SYNERGY) BETWEEN THE TWO WARS**

It is not a rare phenomenon that after the end of the war in the theoretical works, it is quite wandering in the processing and ordering of the abundance of experiences given by the war practice. So it was in the period between the First World War and the Second World War. In the theoretical papers, extreme views have emerged regarding the further development of the battle - the operations, the places and the roles of certain arms of service in it. And this period is characterized, on the one hand, by a strong pace of development of technology, especially war, and on the other - a lag in terms of theoretical processing of past experiences and existing practices. Along with the depletion of tanks and aviation, their tactical, operational, and even strategic options have grown. Overcoming these possibilities led some military theorists to absurd conceptions, such as, for example, the underestimation of the classical arms of service - primarily infantry and artillery. Ultimately, this meant underestimating the positive war experiences and modern combat actions that were based on the close coordinated action (synergy) of all arms of service. It was lost out of sight that the very existence of various arms of service outside the infantry units, and also in their organic composition, defines the character of the modern battle - operations.

Thus, for example, Fuller<sup>13</sup> wrote that the tank would "kill" the old arms of service, proclaiming tanks for the "gods" of a future war. According to his theoretical concepts, the role of the infantry will be reduced to "the execution of the police service and the defense of important points - railway stations, bridges, fortifications, factories and supply stores". Infantry may become the "queen of the fortress," but on the battlefield, she will lose her offensive force, lose her crown. "For artillery, this famous "reformer" of military thought after the First World War claimed that it would not lose its importance only in that case if the cannons were placed on tanks, i.e. that artillery becomes exclusively tanks.

Some military writers overestimated the importance, place and role of aviation, such as General Duet<sup>14</sup>. According to them, victory can only be achieved by aviation, while all other arms of service will be minor and less important factors. Such theoretical considerations did not remain without regard to the policy of further development of the arms of service and branches of the army. It was a phenomenon that in some armies too tangible assets were spent on the construction of tanks and aviation, while other arms of service were seriously neglected.

#### **COORDINATED ACTION (SYNERGY) DURING THE SECOND WORLD WAR**

It is logical that such extreme theoretical views of certain military writers between the two wars could have nothing in common with the experiences gained in the war and the further tendency of the development of the army, and in particular the development of joint battle and coordinated action (synergy) as its most characteristic feature. Because the combat experience of the First World War unambiguously showed that success in contemporary combat - an operation can be achieved only if the proper organization and implementation of coordinated action (synergy) of all arms of service throughout the depth of the task and at all stages - the phases of its execution. Furthermore, they pointed out that in the modern war no arm of service or branch is capable of replacing the other and that it has won the victory over the enemy. This was best proven by the Second World War, which at the outset strongly disproved pre-war theories about the development of tanks and aviation at the expense of other arms of service. On the contrary, it turned

<sup>13</sup> Major General John Frederick Charles Fuller, September 1, 1878 - February 10, 1966, was a senior British officer, a military historian and strategist, significant as an early theorist of modern armored combat, including the categorization of principles Warfare. With 45 books and numerous articles, he was a very prolific military theorist. He explored the laws of battle in terms of the relationship between war and social, political and economic factors. Fuller emphasized the potential of new weapons, especially tanks and planes.

<sup>14</sup> General Giulio Duet (Italian Giulio Douhet, May 30, 1869 - February 15, 1930) was an Italian air force officer and theorist. He was the main advocate of a strategic bombing in the war. He claimed that the war could be solved by massive bombardment attacks.

out that the opposite sides in the war had to simultaneously strengthen and develop all arms of service, and first of all those whose development was neglected in the peacetime period. Thus, for example, the Red Army, which in the pre-war period paid special attention to the development of infantry and artillery (though insufficient), faced with the cruel laws of warfare, was forced to develop aviation and tanks during the war.

Thus, the Second World War "buried" all the theories about the prevailing significance and role of one arm of service over the other and, in the treasury of military theory, introduced the experience, instruction and confirmation of the importance of the joint battle - operations based on coordinated action (synergy) among infantry, artillery, tanks and aviation, along with wide involvement of engineering, communications and other combat equipment.

The Second World War was a clash between huge number armies (millions men) by opposite sides in the war in which the quantitative and qualitative development of arms of service, branches, and services got unexpected conditions. Struggles, fights, battles and operations gained a new look not only because of the strength of the forces, the diversity of the technique involved in them, but also because of the viewpoint on the organization of command and control of combat actions under changed conditions, and especially in terms of organizing the coordinated action (synergy).

Regardless of the enormous technical development of other arms of service, and in particular of aviation and tanks, infantry continued to maintain the importance as the basic arm of service. In fact, the development of other arms of service only strengthened the infantry, as they fit into its organic parts. This, among other things, has enabled her to perform tasks of joint battle far easier. Therefore, infantry units ceased to be composed only of "pure" infantry.

If this is added to the fact that the infantry in the conduct of combat actions will have to fight not only with the enemy infantry, but also to fight the battle against its tanks and aviation, and that they will widely apply engineering resources, the conclusion will be reached on the increasing complexity its combat actions and the increasing demands placed on the commanding authorities, and especially against the commanders of infantry units.

For artillery it should be pointed out that in World War II it had preserved the role of the basic factor of battle against the enemy's firepower, especially with those in well-built shelters. Also, artillery has played a first-class role in the fight against enemy tanks and armor in general. Pre-war theories that tanks and aviation will reduce the role of artillery to zero will prove to be completely wrong and unjustified, as Stalin's formulation "artillery-god of war" proved to be completely defective and pretentious, since warfare confirmed that artillery came to the fore in extensiveness in coordinated action (synergy) with other arms of service.

Contemporary artillery has a large range, a very powerful destructive effect and speed of movement (motor towing), which allows it to perform combat tasks at great depths, i.e. to destroy targets that are out of reach of infantry and tanks. Fuller claimed that the tank would push artillery from the battlefield, but in practice there was no talk of "pushing". On the contrary, the tanks could not be used more seriously until they were armed with artillery medium and large-scale artillery with great breakthrough power, and while artillery did not smash the way by destroying anti-tank weapons.

Modern artillery (self-propelled, motorized) is not only represented in artillery units, but also in the organic composition of infantry and armored units. This shows that the issue of the coordinated action (synergy) of artillery units with other arms of service no longer arises, but also the coordinated action (synergy) of their parts with parts of other arms of service in the organic composition of infantry and other units.

In terms of tanks, the Second World War showed that it had to go through a line of more massive production of such a tank that would have a large action radius, reinforced armor and more powerful weapons, primarily cannons. In particular, the German army was dominated by this, and its experience was also used by other armies, primarily Soviet and American. The war has revealed wide possibilities, tactical and operational exploitation of tank units in close coordinated action (synergy) with airborne troops and aviation. They have become the main impact force and most important for maneuver in offensive operations at great depths. In addition, tanks were widely used in the attack on the tactical depth of the defense, but their success could not be imagined without close coordinated action (synergy) with artillery, infantry, and engineering troops.

In defensive actions, tanks were the main force for the execution of counterattacks and counter-attacks on the enemy's infantry infiltration. Especially there was coordinated action (synergy) with infantry units (reserves, other combat echelons and artillery). Self-propelled weapons entered in the organic composition of the armored units and became a direct artillery support to their effect in some way.

The aviation took a prominent place not only in combat actions of tactical units, but also in operations involving large operational units and strategic elements. While the bombers of a large action radius and carrying capacity, accompanied by fighters, were widely used for strategic and operational goals in a deep enemy's background, until then, the attack aviation was used for close coordinated action (synergy) on the battlefield with other arms of service, primarily with infantry. She "found" and destroyed fire points that broke the movement of infantry and tanks, which artillery could not destroy. On the other hand, infantry and tank units coordinated action with tactical aviation in that way that they pointed targets, directed its action and destroyed land-based anti-aircraft weapons.

Fighter aviation has increasingly coordinated action with anti-aircraft artillery in the fight for air superiority and the protection of units on the ground, and the development of its weaponry has increased its significance in supporting, especially the infantry and tank units in the battle. The significance of the coordinated action (synergy) between aviation and artillery in the correction and control of its fire has significantly increased, which has contributed to the further development of artillery aviation.

From the point of view of the coordinated action (synergy) of aviation with other arms of service, the Second World War gave a new quality, which consists in modernizing the means for successfully commanding the airplanes and airborne formations from the land by the commander-in-chief, in the domain of his jurisdiction.

Engineer troops, as arm of service, were given a very important role in modern combat activities. In the first place, it provides activities of other arms of service and closely coordinated actions with the infantry, tanks and artillery. Engineers' role has grown especially in the attack, where she is a part of the attack groups, cleaning the minefields and removing obstacles, thus enabling the infantry and tanks to attack. Nothing less is its role in the depth struggle, where also within the attack group and prevention group, constitutes very important elements of the tactical formation of the attackers. It has a special place in the performance of defensive actions, especially in forcing. While appearing in the defense as a leader of the fortification organization of the position and prevention, in drafting the river it constitutes a skeleton of the technical organization of the passage. The engineer units also have the task of masking both tactical and operational. All this says that modern engineer troops has emerged from the "purely technical" arm of service and has become a major fighting factor in modern battle - operation. This fact indicates that its coordinated action (synergy) with other arms of service must be organized and carried out well.

Communications units have become the "nervous system" of the joint battle - operation, which allows the commander to continuously observe the combat situation and to have a direct impact on the course of combat actions. In the organization and performance of coordinated action (synergy), communications play a first-class role, since it allows the coordinated action of all the coordinated elements of the battle formation of the troops from the beginning to the end of the combat actions. Without modern means of communication, coordinated action (synergy) could not be organized or implemented.

## COORDINATED ACTION (SYNERGY) AFTER THE SECOND WORLD WAR

The Arab-Israeli war<sup>15</sup> brought forth new insights and experiences about the importance of coordinated action (synergy) in the conduct of contemporary wars. This war had all the features of contemporary war.

The features of contemporary wars arise from the intensive development and possibilities of modern weapons and other war techniques, primarily aircraft, satellites, electronics, achievements in other fields of technology and science, and conditions and states in the international community.

The most significant features of contemporary war are:

- To express the influence of the most modern war technique on how to perform war actions;
- Changed role of space and use of cosmic space;
- Increased importance of actions from large distances and altitudes;
- Greater use of special actions and forces and professionalisation of the armed forces.

The organization of coordinated action (synergy) in the Arab-Israeli War had two characteristic phases.

The first phase is characterized by the appropriate organization of coordinated action (synergy) among the armies of the Arab countries, especially the Egyptian army in the forcing of the Suez Canal, and the rather weak organization of coordinated action (synergy) by the Israeli army.

The second phase is characterized by a weak organization of coordinated action (synergy) among the armies of the Arab countries, in particular the Syrian Army and good coordinated action (synergy) by the Israeli army. The incomplete organization of the coordinated action (synergy) of the armed forces of the Arab countries is reflected in:

- Insufficient coordinated action (synergy) between infantry and tanks;
- Insufficient coordinated action (synergy) between infantry and artillery, especially in Syria;
- The unresolved issue of aircraft identification, resulting in unnecessary loss of its own aircraft.

According to the level of organization and practical realization, in the fourth Arab-Israeli War, coordinated action (synergy) can be divided into two periods.

The first period includes the initial period of war, from October 6 to October 14, 1973 for Egypt, and from October 6 to October 8, 1973 for Syria. This period is

<sup>15</sup> The Arab-Israeli conflict - geopolitical clash over the creation and survival of Israel, which includes five wars (1948-1982) and a continuous Palestinian struggle for statehood.

characterized by the initial successes of both armies, especially Egyptian, and the beginning of the loss of the initiative. In practice of coordinated action (synergy) organization has shown these characteristics:

- High organization of the coordinated action (synergy) between branches and arms of service, especially among artillery, infantry, engineer troops and anti-aircraft units, and on the side of Egyptians also between infantry and armored units;
- High organization of the coordinated action (synergy) between infantry units as a whole and elements of the battle formation of these units;
- Very good coordinated action (synergy) between the lowest infantry units, groups and temporary compositions, especially in the armed forces of Egypt.

During this period, due to the precise planning of actions and elaborated procedures of the units of the arms of service, the combat actions were carried out in a coherent, planned manner, and according to the predictions, with success, which equally applied to all units. In addition to the basic tasks, the procedures and modes of coordinated action (synergy) with neighboring units, armored units and other elements of the battle formation were elaborated and mostly implemented.

The second period includes a further period of war, from October 14, 1973 for Egypt, and on October 8, 1973 for Syria, and coincides with the takeover of the initiative by Israel. The organization of coordinated action (synergy) in this period is characterized by:

- Insufficient coordinated action (synergy) between infantry and tanks. For example, a number of tanks by Syrian armed forces were destroyed in their own minefields when they were attacking from the background. It was even worse when the tanks passed through the enemy's minefields, which their own infantry did not mark or marked very badly passages in minefields;
- Cases of the destruction of their own tanks and planes when they are returned from their tasks;
- Cases of attacking without the tanks' coordinated action (synergy), as well as allowing the infantry to separate from tanks, due to which they suffered great losses;
- Insufficient cooperation between infantry and artillery, which led that infantry attacked without the necessary support;
- Lagging artillery and even, in certain cases, the artillery effect on its own forces;
- Forgetting the assignment of tasks to artillery, moreover at the level of the infantry battalion. Commanding officers and commanders did not have direct links with artillery, and when they had the need for urgent artillery support, they were not able to get in time;

- Bad coordinated action (synergy) between neighboring units on junctions resulting in the unintentional infiltration of Israeli forces on the compound between the 2nd and 3rd Egyptian armies, which at a later stage was given strategic conditions and significance;
- Poor mutual targeting, resulting in irrational use of units, ammunition spending, non-fulfillment of the most important targets and the suffering of large losses;
- Marking the front end for the needs of aviation and the issue of coordinated action (synergy) with aviation was not solved at all, and part of its own aircraft was destroyed by the fire of its own anti-aircraft weapons;
- At the end of the war, the other extremes were going. Coordinated action (synergy) between the units ensured the direct reliance of the units on one another (visually), transforming the attacking battle formation into an uninterrupted chain and a lucrative target of artillery.

At the time of the counterattack of Israel, the organization of the coordinated action (synergy) of its armed forces is characterized by:

- Appropriate coordinated action (synergy) among infantry, primarily mechanized, with tank and artillery units and with airborne aviation;
- Very good coordinated action (synergy) in time and target, which was achieved by continuous monitoring of combat actions, continuous command and officers' ability to perform independent activities<sup>16</sup>.

This confirms that the organization of coordinated action (synergy) in performing of combat actions is gaining in importance. Combat actions in this war have unambiguously confirmed that the coordinated action (synergy) by goal, time and target must be precise and clear to all officers in chain of command for more variations of the action and at the depth of the whole task<sup>17</sup>.

## CONCLUSION

So, as we can see in previous chapters, coordinated action (synergy) had its own process of development and change that evolved along with the development of the army and technical achievements in general, especially in the field of war technology. The experience from all wars, and especially from the Second World War, shows that modern combat actions were based on the coordinated action (synergy) of all arms of service and that the coordinated action (synergy) is the basis of a joint battle - operation. Regardless of the quantitative growth and qualitative improvement of some arms of service and branches, none of them was able to solve all the tasks of modern combat -

<sup>16</sup> Fourth Arab-Israeli War, JNA General Staff, and Administration, Belgrade, 1974, p. 88

<sup>17</sup> Fourth Arab-Israeli War, JNA General Staff, and Administration, Belgrade, 1974, p. 82



operations, alone - without coordinated action (synergy) with others. There is still no such combat device with which the commander, whether in tactical, operational or strategic frameworks, could decisively influence the course of the event, if it were not exploited in coordinated action (synergy) with the other.

Today, every arm of service and every technical device meet with counteract means of more or less the same combat value. In such circumstances, the opposing side that best organizes coordinated action (synergy) between the arms of service and within them will achieve greater success, in which each of the coordinated arms of service will have the opportunity to fully display their strongest qualities, and at the same time, with the help of other arms of service participating in the coordinated action (synergy), reduce their weaknesses.

But as far as the combat means are perfect, they can not give a more visible effect unless they are massively applied. But massive use of a diversified combat technique sets in front of the organization a new and more complicated task. In modern conditions, the skills of the commander, as the organizer of the coordinated action (synergy), consist, inter alia, of the fact that from the numerous combat means available, he does not create a mixture of infantry, artillery, tanks, etc., but a monolithic entity that will have a significantly higher combat potential of appropriate capabilities of every arm of service and any technical means, as well as the way of use in all aspects of combat actions. It means that, in addition to the necessary intuition, for the joint battle and its forms, commanders must have appropriate professional knowledge and solid practical experience from the work on organization and execution of coordinated action (synergy).

The war experience showed that the coordinated action (synergy) works perfectly only when its organization was set up on realistic bases, when the coordinating commanders and units knew their tasks well, and when disturbed coordinated action (synergy) during battle - operation were corrected in a timely manner and in accordance with the specific situation.

It should be pointed out that determining the task of coordinated action (synergy) is the most important part of the decision for every commander and that he can not, in any way, delegate this work to the other part or the person in his command.

Coordinated action (synergy) is not exhausted only by being organized between certain arms of service, because they are not unitary in their organizational structure and organization. Each type of arm of service owns a variety of weapons in its organic composition, resulting in their different purposes and capabilities in combat actions. Let's just take artillery. Its efficient exploitation in a modern battle - operation is not conditioned only by well-organized coordinated action (synergy) with infantry, tanks and other arms of service, but also by the internal coordinated action (synergy) of its various groups, subgroups and caliber. The same is true for tanks and infantry. This means that the internal coordinated action (synergy) of the arms of service, among other things, ensures the successful performance of tasks and must be

considered as a very important factor, which often has a decisive influence on the success of the coordinated action (synergy) between the arms of service. It follows that coordinated action (synergy) in contemporary combat actions is a complex, tactical, operational and strategic issue to which great attention must be paid in the future. Coordinated action (synergy) is organically connected in all three of these categories of combat actions and intertwines with each other; it comes from one another and conditions one another.

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