A Strategic Evaluation of the Concept of Mission Command with Reference to the Present Information Age

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ABSTRACT

Mission Command is a concept of decentralized command and control that tries to use the Clausewitzean chaotic nature of war as an advantage, to give decision superiority to the side employing it, by allowing subordinate officers to exercise initiative within their commander's intention and take advantage of better situational awareness they have on their area of deployment. Mission Command, as a method of decentralized method of military operations, was made a doctrine and adopted by most western armed forces. Yet information technology has evolved to such a degree that today commanders have at their disposal sophisticated command and control systems that allow them to have a dramatically improved situational awareness combined with communications capabilities in comparison with the not-so-far past. Subsequently, the Clausewitzean concepts of the fog of war and friction are set in doubt, and accordingly, Mission Command is put in question.

This paper examines if Mission Command remains a relevant command and control concept in the modern information age war environment. In this context, I examine not only the usefulness of the method in warfare, from the past to today, but also take into account the importance of the initiative to build capable and effective military leaders.

This paper shows that modern command and control systems have capabilities that make centralized command not only possible but even more effective. Yet war remains a chaotic phenomenon. The redundancy and resilience of such systems are critical and in case of failure, subordinate commanders must be capable to act alone.

KEYWORDS: Mission Command, Command and Control, Decision Superiority, Strategic Analysis

1.0 INTRODUCTION

Mission Command (Auftragstaktik) is considered by many academics and officers the most important contribution of the German Military art in modern warfare. Mission Command is praised and promoted at least in theory by the majority of the NATO armed forces who emphasize the importance of decentralized control and initiative exercised on the field by local commanders to defeat the uncertainties of war and achieve success in military operations [1].

At the same time, the evolution of mass- and social- media has drastically increased the effect of military operations on societies, at least in democratic ones. Today even small tactical actions can have a disproportional effect on public opinion because of the rapid uncontrolled flow of

information and the effect of social media. Therefore political and military leaders try to keep a strict centralized control of military operations in order to avoid the development of unwanted situations. In that context Mission Command as a concept is difficult to accept and implement since it requires giving over authority and responsibility to others.

Furthermore, the present information age technologies have led to a drastic advance of modern C2 systems which give unprecedented capabilities of real-time communication and situational awareness to high-level commanders, claiming to defeat the uncertainty that dominated the battlefields of the past. Because of those systems, there is an increasing tendency of centralized control of operations from the higher level HQ. Therefore Mission Command is rarely fully applied, especially above the tactical level. Although it exists in the doctrine as a method, operational orders tend to be more and more detailed while constant real-time communication between levels of command reduces, even more, the room for an initiative of subordinate commanders.

The question that arises and which I will examine in this paper is if there is room for Mission Command in the modern operational environment or to rephrase it: Has the Information Age and the developments in C2 systems rendered Mission Command obsolete? Have the conditions that made it so effective ceased to exist and to what extent?

The three main elements of this paper are Mission Command, Command and Control, and Information technology. Their connection and interaction will be examined consequently.

In the first section, we will examine the method of Mission Command. At first, I will present the history and definition of Mission Command, focusing on the conditions that necessitated its employment and the advantages it gave on the field. Understanding those conditions that made it so effective we will be able to evaluate if the method remains relevant in the modern operational environment.

In the second section, we will present how technological developments affected the evolution of military C2 throughout the last two centuries. The influence of various technological advances starting from the telegraph, radio communication to today's information age technologies were critical for the evolution of warfare. Those technologies both provide improved situational awareness and control of own forces thus putting in doubt the necessity of Mission Command.

In the last section, we will examine in greater depth the contribution of information age technologies in C2 thus evaluating the relevance and importance of mission command in today's information age. We will examine both present and future developments in C2 and discuss its vulnerabilities focusing on the problems of resilience and redundancy of those systems. Finally, we will evaluate if those technologies move the decision superiority to the higher level of command.

Lastly, I will present the THESIS of this paper that today Mission Command is remaining relevant but much more restricted in its application than in the past.

As far as it concerns literature review, there are several official documents, books, and journals in German, English, and Greek used. The official documents are open-source NATO, US, and Greek documents. Books from contemporary writers like Martin van Creveld, Eltan Shamir, Martin Vego, Anthony King and Stanley McChrystal who have dealt with the problem of command and control in modern warfare are also used. Finally a great number of journal articles covering history, defence, and information technology which I will not mention here for the sake of brevity. As a general

remark, contemporary scholars in their writings still consider Mission Command the main method of controlling armed forces, yet they all see a flawed application by most countries worldwide.

The methodology I used is that of qualitative research of theoretical documents of many researchers and historians combined with several official documents. The main problem that I faced during the research was the great number of sources available and the width of the question examined. The danger of moving out of focus and extending the paper to other relevant matters like leadership, operational art and design, organization and procedures, etc. was always present yet I tried to keep the analysis narrowed to the three elements described above

2.0 MISSION COMMAND

Mission Command[1] as a method to conduct military operations is considered by many as a paradox. Historically armies were characterized by a strict chain of command and discipline. Obedience and following orders to the letter were always characteristics of good soldiers and officers. Mission Command, on the other hand, expects that officers can take initiative and move beyond their instructions. How can this be employed in an army without creating a chaotic situation which will lead to defeat?

2.1 Origins of Auftragstaktik

This concept evolved through a painstaking process that started with the destructive defeats of the Prussian army by Napoleon in Jenna and Auerstadt in 1806. Those defeats were the starting point of army reforms led by Scharnhorst2. In this new Prussian military thinking3 firstly appeared, at a theoretical level, the importance of initiative and decentralized decision-making on the battlefield [2]. Prussian military theorists and generals realized that this defeat came from one side for ineffective leadership characterized by risk avoidance and lack of initiative, and from the ‘’Fog of War’’ that lead to decisions being taken with limited or even false information. Since that time initiative and original thinking became indispensable parts of German military thinking [3],[4].

It was the great reformer of the Prussian army, Möltke, that through doctrine and personal example firstly employed the concept of Mission Command in the Prussian-German army defining it as the leadership concept in the infantry exercise regulation of 1888 [5]. Möltke4 believed that blind execution of a plan was wrong and encouraged his subordinates to take initiative [6].

From that time and after this concept was employed as a principal in the German army and according to it, orders must only define the desired outcome and not the road to it. This concept also led to an acceptance of error. Errors were accepted as long as they came from initiative and boldness. On the other hand, inactivity and indecision were not accepted. Especially young officers were expected to dare to do mistakes [7].

[1] Mission Command is not a tactic as its well-known German name “Auftagstaktik ” implies but a method of exercising Command closely connected with the leadership principle of “leading from the front” (Führung von Vorne) which was also used by the German army.

[2] Gerhard Johann David von Schanrhorst (1755-1813) was a general and the first Chief of Staff of the Prussian General Staff.

[3] It is important to note that renowned war theorist Clausewitz was a student of Scharnhorst and secretary of the reform committee.

[4] Graf Helmuth Karl Bernhard von Moltke also known as Möltke the elder (1800–1891) was a Prussian field marshal that served as CoC of the Prussian Army for 30 years. He has defined the essence of Auftragstaktik more than 160 years ago by saying:” As a rule, the orders must only contain the information the subordinate commander cannot find himself to achieve his given objective”. He also said ‘’ It is a mistake for an officer to wait for orders in situations in which these cannot arrive. His actions will be more effective if he can act freely within the intention of his commander” [4].

After the 2nd World War, the concept was considered responsible for the tactical and operational successes of the German Army and was thoroughly studied. As a result, it was instituted in the manuals of many armies[5]. After the 1980's[6] it was adopted by most Western armies, and Mission Command became a basic term in modern military operations and training [8].

2.2 Why Mission Command

To better understand the root causes of this concept we must understand the conditions of warfare at that time. Clausewitz in his book "On War" identified the two critical characteristics of warfare that made initiative so important. The "Fog of War" and "Friction" [9],[10] . The Fog of War is a characteristic that includes the unknown and the gaps that exist in the situational awareness of a commander. Friction includes all those parameters that hinder the fulfillment of a commander's intention like danger, psychological parameters, accidents, unforeseen events, technical parameters, the effects of physical and mental effort, and their result on the effectiveness and morale of the army. To avoid defeat from the unpredictable, flexibility and adaptation are required to all levels of war. This flexibility resulted in the evolution of Mission Command [11].

In a situation with a great deal of uncertainty and inadequate information local commanders have a better understanding of the current situation thus they are more capable to make a good decision than their superiors. This situation called for the empowerment of junior commanders closer to the events rather than higher commanders on the rear [12]. In other words, war is a chaotic phenomenon. To gain the advantage in chaos against an opponent one must have the initiative. In modern warfare, this is called decision superiority [13]. A commander facing an unforeseeable situation, without having adequate authority, must send all the available information to his superior commander to be evaluated and wait for orders, losing precious time in the process. That's why mission command states that decisions must be taken on the lowest possible level [7] increasing the speed of decision making especially when facing unexpected disruptions [12].

Mission Command as a method tries to exploit the chaotic nature of warfare to establish the desired decision superiority. It accepts the uncertainty that exists in the complex operational environment and instead of trying to lift it, tries to use it for its own advantage. The opposite of Mission Command is the detailed or linear command (Befehlstaktik). This command philosophy shifts the emphasis from the purpose to the task and is important on missions that require a high degree of coordination [8]. This includes strict control methods and hierarchical structures, limiting the allowed flexibility of the plan and the authorization of decision-making of subordinate officers [14]. This has the danger, if the control of friendly forces is too tight and subordinate commanders have no freedom of action that will lead to incapacity to exploit any opportunity thus loss of initiative on the battlefield [15].

2.3 Definition of Mission Command today

In the academic field[7], Milan Vego[8] has defined Mission Command as a relaxed decentralized command and control method based more on understanding the requirements of the mission than on

[5] The Russian armed forces are assessed to implement detailed planning and centralized control at the operational level but promote de-centralized execution at the tactical level. All units operate under a command and control system [16]. Russian military culture has early identified the importance of speed and time in winning wars. As General Suvorov said, "one minute can decide who wins a battle, one hour the war and one day the fate of empires". Reforms try to improve the C2 system of the Russian army, both technical as well as organizational, to gain a decided superiority over any potential opponents [17].

[6] It firstly appeared in the US Army in FM 100-5 in 1982 [18].

[7] In official documents different countries and even different services within a country have different wording in their definition of Mission Command. A good example is the definition of the Joint Operations Doctrine of the US which states that "Mission Command is built on subordinate leaders at all echelons who exercise disciplined initiative and act aggressively and independently to

detailed orders and instruction from the chain of command [19]. Mission command requires that the superior commanders trust and empower their subordinates to act on their own will when something unexpected occurs [20]. Yet as I will analyse in detail in the third section, modern C2 systems favor and promote centralized control of operations. There is also the widespread phenomenon of commanders demanding trust and authority from their superiors and at the same time denying this to their subordinates [21].

The opposite of Mission Command as already mentioned is the issue of detailed orders and micromanagement in which commanders provide detailed instructions on how tasks and missions should be fulfilled through a well-defined hierarchy chain. Decisions are based on a detailed plan that tries to foresee all possible scenarios of action and counteraction of the opponent. Supporters of this concept claim that recent technological developments enable centralized control from above. The subordinate commander expects instructions and guidance from the top without ambiguities or space for misunderstanding [22]. This enhanced role for superior commanders is amplified by their feeling that they are responsible and will be blamed for mistakes at lower levels [12].

2.4 Practical employment

Mission Command should not be misconceived as complete freedom of action for subordinate commanders. The concept entails initiative and freedom of action within an operational plan. Officers have to act within the intention of their superiors and struggle to achieve a designated objective. It is easy to institute the concept but difficult to employ as it requires adequately trained officers at all levels, common understanding, as well as defined procedures.

The size of the forces involved is also a parameter to be taken into account. As a rule, command arrangements tend to be more rigid when bigger units are involved. When allowing tactical initiative at the tactical level one must take care not to disorganize the operational level [23]. It is not easy to maintain a balance between giving adequate freedom of action to subordinates and at the same time avoiding unwanted actions. Too many restrictions can result in a lot of communication thus canceling the scope of Mission Command. Too few restrictions can lead to a mission developing towards an unwanted direction or causing problems to other units in the theatre of operations.

Another parameter that affected and promoted the use of centralized detailed command is the new kind of warfare that most modern armed forces are preparing to fight. After the end of the cold war, there was a switch of focus from high-intensity conventional warfare to low-intensity conflicts. The level of violence and the number of units involved in such conflicts are much smaller than in conventional war and usually is employed at the tactical level. Yet those tactical actions have strategic and even political consequences[9] [21], [26]. This tendency of risk aversion is further enhanced by Western societies' attitudes towards military and war [8].

The last parameter is technology. Advances in communications, surveillance, and command and control create a false sense of control and an illusion of clarity thus tempting commanders to exercise micromanagement to an operation [13]. The proliferation of technology promotes

accomplish the mission. Mission-type orders focus on the purpose of the operation rather than details of how to perform assigned tasks. Commanders delegate decisions to subordinates wherever possible, which minimizes detailed control and empowers subordinates' initiative to make decisions based on the commander's guidance rather than constant communications" [24]. In this definition, it is obvious that a clear mission and understanding of the commanders' intention is paramount for the correct implementation of this doctrine. The Swiss army regulation for leadership and staff organization of 2004 defines it as a leadership procedure where the subordinate has the maximum freedom to achieve his mission within the intention of his commander [25].

[8] Dr. Milan Vego is professor of joint military operations in US Naval War College since 1991 and renowned writer.

[9] This is also a result of information age and the effects it has on society (e.g. social media, mass media etc.) yet those parameters fall outside the scope of this paper.

centralized command and according to various scholars marks the end of Mission Command [8]. Furthermore, modern communication acts as a connecting tissue between independent units (on horizontal command level) thus further reducing confusion and uncertainty [27].

2.5 Training and Culture

Mission Command is a demanding concept to implement. It requires the subordinate officers to have all the qualities of a good commander, including tactical expertise as well as a suitable character including self-discipline and readiness to take responsibility for his action [25]. The preconditions for effective implementation of Mission Command are common understanding, trust, initiative, tolerance to failure, and of course acceptance of the concept through all levels of the military hierarchy [28].

This can only be achieved through a common professional education [8]. With that, we don't mean just the institutional education in the various schools and courses that an officer attends during his career. Equally important is the experience he gathered during his career and the trust build on professional competence. This applies to higher-ranking officers. They must be ready and even encourage initiative from their subordinates, and at the same time support their decisions even in cases of failures[10]. Simply said someone cannot expect an officer to show initiative during a crisis when during his whole career he had to request permission for even the more menial tasks, or when he knows that he will take the blame for a failure. The problem for modern armies is to produce and train officers that combine discipline and obedience with the capability for taking initiative and think out of the box when needed. Armies like all large organizations have inertia that resists changes making them difficult to implement [29].

Fear of accepting responsibility has grown even more with the evolution of modern communications[11] where officers are much less inclined to take responsibility and usually resort to calling their superiors for permission for any action they feel falls outside their given instructions. That's why stating mission command at the doctrinal level is one thing but actual practice is quite another [28].

Finally, we must not forget the importance of Mission Command in preparing confident officers capable to assume higher duties. When officers are confined in a strict control environment they are not able to improve their skills in exercising command. This unpreparedness will become obvious when they assume higher command duties and prove unable to cope with the weight of decisions. Theoretical training alone builds academic background is not enough to build their character. Experience is critical for the development of officers to assume responsibility in the future.

2.6 Summary

In this section, we examined the concept of Mission Command. It is described as a decentralized command method that promotes authority and initiative from subordinate officers within the general intention of the commander. Its innovation was that it tried to use the chaotic and uncontrolled nature of warfare as an advantage to gain decision superiority and not to try to bring order to it. We

[10] In most modern armies even a small error can seriously damage an officer's career. Officers in such an organization will tend to be professional and well educated, yet unwilling to take unnecessary responsibility and will seek guidance from their superiors when called to make a decision. In failures, the chain of command tries to distance itself from any responsibility from the initiative of the subordinates [8]. This is the direct opposite of what the German 1936 field manual considered the most important quality of leadership, the readiness to take responsibility [15].

[11] There is no better example of that than in warships. Before radio communication, a ship's commanding officer was cut off from outside the ship and exercised complete command with an extremely big degree of freedom.

identified the Clausewitsean concepts of Friction and the Fog of War as the main factors that necessitated its employment.

3.0 COMMAND AND CONTROL SYSTEMS

We have already mentioned the concepts of Friction and Fog of War. A military commander at all levels of war tries to overcome these two. To do that he must have an, as good as possible, situational awareness, overcoming Fog of War, together with the capability to issue orders to his units and troops and at the same time monitor their execution defeating the effects of Friction. Or with other words: the outcome of a war is the outcome of information and employment of violence [30]. C2 Information Systems are the main tools for this purpose. The functions of C2 together with its main parameters which are examined in this paper are presented in the following figure.

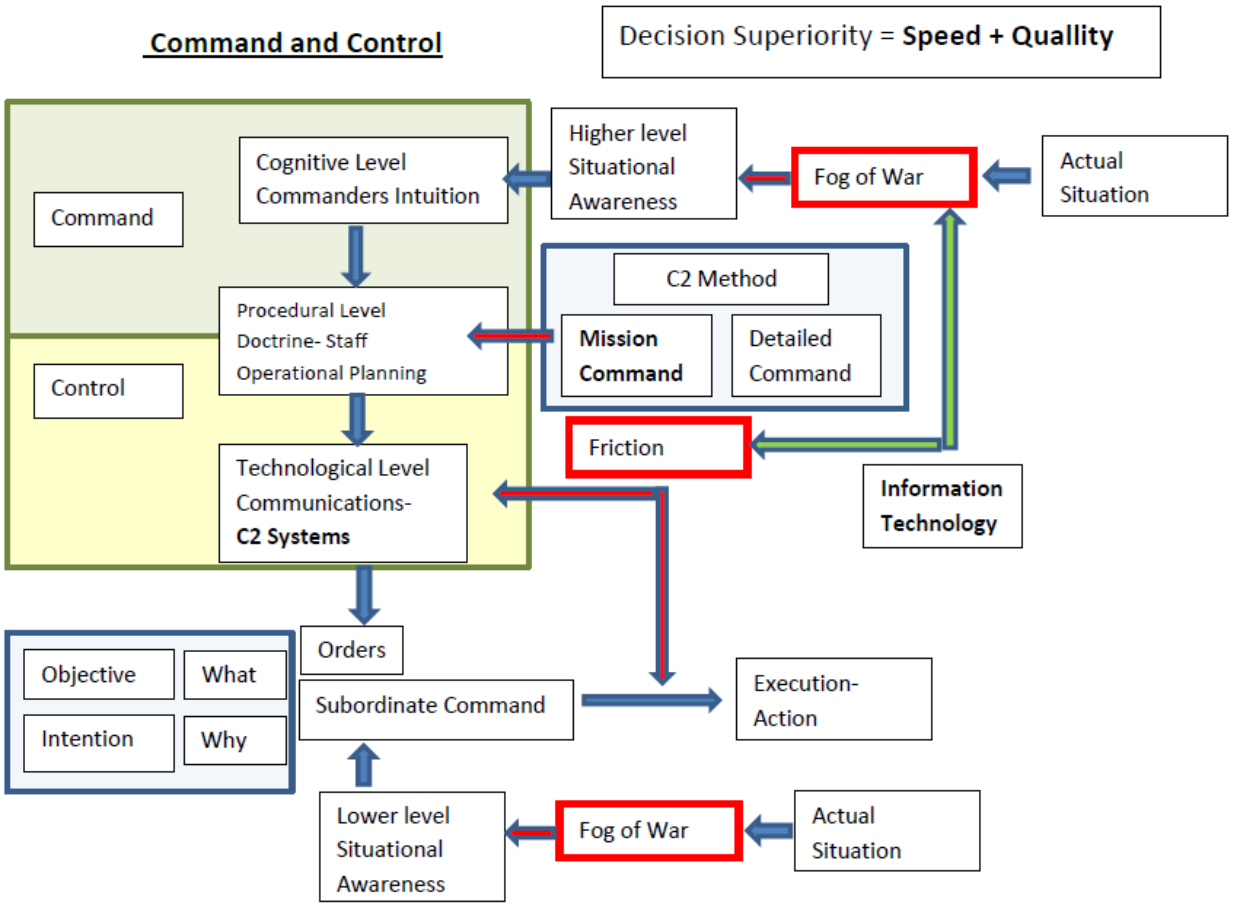

Figure 1: Schematic Representation of C2.

Here we see how a commander with his appreciation of the current situation, through C2 and depending on the method followed (Mission Command, etc.) will issue orders to his subordinates who act to achieve the given objectives. Friction and Fog of War affect both the execution and the understanding of the situation. Situational Awareness is not necessarily the same between different command levels. Modern Information age technologies reduce their negative effect. In an ideal

situation, Situational awareness should be the same on all command levels, and at the same time, the delays of communication between them would be minimal. Depending on the various C2 elements, speed and quality of decision are affected towards the objective of achieving the desired decision advantage.

3.1 Definition of Command and Control

To further analyse and define C2, I will first try to identify its two components. Command is the authority of a person over others to accomplish a mission. Control is the technical equipment and organizational processes designed to facilitate command [31]. In other words, Command is broader and comprises of decision-making, leadership, authority, and accountability while Control is a component of Command that includes the organization and direction of the forces by the Commander and his staff. Command is more about human characteristics like leadership and authority. Three factors contribute to command capability from a human point of view. Those are competency, authority, and responsibility [31]. Control on the other side is concerned with management and organization and includes both procedural and technological elements. For military information systems those two functions are usually considered together [32].

While the first has not changed a lot through history the second has evolved dramatically. Technological and organizational advances like the development of radio communication and the establishment of the general staff respectively have changed the way military operations are controlled. Through advanced communication technologies, the required communication time between various levels of command and units is minimized and at the same time, the volume of exchanged information has greatly increased.

At the same time, institutionalized planning procedures result in formalized operational orders trying to cover all possible aspects of an operation and minimizing ambiguities. The drawback is the sheer volume of paper officers receive from their superior command levels, sometimes reaching levels humanly impossible to read.

Finally, the civic developments, at least in Western democratic states mean that commanders today are even more restricted in terms of authority. Professional officers do not want to overstep their limits of responsibility and be accused of abusing their legal authority with their actions. Criticism from society has created a tendency to remove authority from junior commanders and at the same time affects the trust between them [8].

3.2 Historical evolution of Command and Control

In early human history, C2 of armies rested on the leader, usually the king or ruler of the country with some close advisors. Control was exercised through voice commands, messengers, and sometimes optical or sound signals. The military commander[12] or the ruler consequently was the center of gravity and many battles were decided just because the ruler has fallen.

In the last centuries, armies became much larger, and exercising C2 became more difficult. Yet until the early 1900 exercising control of armies was still based on messengers. Developments were mainly focused on organization matters, like the introduction of the corps system and the institution

[12] Napoleon has reached this system to its limits. He was the absolute ruler and commander of his country and army exercising an unprecedented level of unified command [34].

of the general staff by Napoleon. Under those conditions initiative and decentralized command, although not officially instituted, could give a significant advantage to armies.

The evolution of technology and the further growth of armies and their capabilities led subsequently to the development of defined C2 methods [14]. The first technological advancements that drastically changed the battlefield were the invention of the telegraph, and later the telephone and the radio. For the first time in history, commanders could communicate with their units in real-time and instantly relay their orders. In the beginning, those systems were restricted by the use of cables and available only to high-level headquarters, yet gradually they became more portable and reached lower-level units. We could say that telephone and radio communications combined with a staff made the first C2 systems a reality. Thus the contemporary battlefield contains not only the ground, sea, and airspace but also the world's computers and communication systems. Victory will probably go to the side that has better control over the global information infrastructure and technological advantage [33]. Furthermore, requirements over C2 systems increased because of the increased complexity and variety of modern combat systems, as well as in their capabilities in speed, accuracy, range, firepower, etc.

3.3 Information Age era Command and Control systems

As I already mentioned modern C2 systems try to overcome the two Clausewitzean characteristics of war, Fog of War and Friction.

The relatively recent advances made in modern communications, information, and computer technology transformed the problem of lack of adequate information into a problem of an overflow of information. A modern C2 System has capabilities that a commander could not even dream of, in the not-so-far past. A commander has the power to receive real-time information from the most distanced units, even in the form of live video from individual soldiers. Communications and thus relay of orders are instantaneous. Through such a system, a commander can assess the operational environment, plan his actions, relay his orders, and monitor the process of an operation and the actions of his units. In the modern operational environment, the importance of such a system is growing drastically as developments in weapon systems increase the importance of time in the decision-making process and execution [35].

There is the commonly accepted assumption that the greater the information flow the better the situational awareness within an organization. This is not always true. In the modern operational environment, the amount of data gathered has grown so much that the term big data has emerged in military operations. The big amount of data modern C2 systems provide do not always contribute to a better understanding of a current situation. On the contrary raw data can increase confusion and delay in the decision-making process. To assist the commander all incoming data must be transformed into useful and consistent information 13[32]. The transformation of data into useful information is a job for both an advanced computer system, usually integrated inside our C2, but also a job for the mental capabilities of the staff manning this C2 system and providing advice and expertise to the commander.

This has resulted in a tremendous demand for larger communication capabilities mainly translating to bigger bandwidth. Data fusion algorithms, Big Data management Cloud technology, and

[13] In this context, it is important to understand the difference between data and information in the operational domain. Data is the sum of all facts gathered by various sensors and actors across all domains. Information is produced by this data either analytically or subjective in order to provide to the commander an as good as possible situational awareness and gain decision superiority for the friendly forces.

Artificial Intelligence (AI) are all becoming the future fields of development of future C2 systems. In lower command levels, we can even have autonomous functions in situations that require extremely fast reactions like antimissile air defence, and the question of assisting commanders with AI in making decisions has emerged.

Anthony King argues that commanders are now more professional than in the past and that they are assisted in their work by a team of officers. These facts transform command effectively into a collective work while at the same time they give increased importance to the procedural elements of C2, the staff, and the operational planning [36]. The importance of the command team is also mentioned by General (ret.) Stanley McChrystal, who wrote that in some cases the only job of the Commander is to put a "rubber stamp" on decisions processed by his staff, losing precious time in that process [37].

Yet all of this ends up in the commander. Like in the past one person must be able to comprehend the situation and make the final decision. Even under those circumstances the majority of military leaders completely dismiss the idea of collective leadership [36]. Thus human intuition and the analytical skills of the commander remain as relevant as ever.

3.4 Net-Centric Warfare

The value of sharing information between units and systems is increasing as this facilitates decision-making at all levels [38]. Information and communication technologies greatly expand activities previously carried out by humans. In this concept, they also increase the speed and expand the capabilities of C2 [32]. Yet a problem that can appear is that sometimes this information is transferred primarily to higher-level commands thereby creating what some called the ''digital divide'' [1],[12].

In this context, several modern armed forces around the world are examining the Net-Centric Warfare (NCW) approach[14] as their future C2 structure. NCW concept represents a common situational awareness picture for all units involved irrespective of their level or geographical dispersion [35]. This is considered by some scholars a completely new theory of war that will change future conflicts [39].

For those concepts, resilience and redundancy are important factors to consider. Land communication is generally more susceptible to attack or interference by hostile forces. Space assets are indispensable for this concept to work. Technological solutions, like for example network caching services can greatly improve the resilience of such a system, providing functionality even with unreliable network connectivity [40] yet it remains difficult to completely disregard the possibility of a failure.

3.5 Summary

In this section, we examined C2 systems as the main tool assisting a commander in performing his duty in warfare. Modern Information Age Technologies give improved capabilities of centralized command and much improved situational awareness to commanders trying to overcome the Fog of War and Friction and enabling centralized C2 of forces.

[14] This approach links all respective functions of the system (sensor data, status, engagement orders, communication, etc.) with units down to the tactical level. This common use of information creates synergies that greatly enhance the effectiveness of forces. While this concept provides a holistic approach to controlling operations is also greatly reliant on network infrastructure and communication. Different systems must be able to exchange data through various means and without compromising information security [38].

4.0 EFFECT OF INFORMATION TECHNOLOGY ON C2

Kondylis[15] wrote that we have a revolution in military affairs when a new technology dictates the adoption of new doctrines and methods at the operational level and a change in the structure of military forces [27]. The present RMA is identified with the technologies of space and IT enhanced with weapons technologies like precision weapons, energy, and EM rail guns [39]. It is assumed that the above technologies will greatly enhance the information available to military forces thus transforming the nature of war [41].

In this section, we will examine the effect Information Technologies have to C2 in an effort to evaluate if Mission Command remains a valid C2 method.

4.1 Is there a Fog of War and Friction?

As we already saw the main reason that gave Mission Command the decision advantage was the fact that the tactical commander had better situational awareness and was able to make decisions faster and better than his superiors. Fog of War and Friction were the root causes for the development and success of Mission Command. Throughout history, commanders tried to lift as much as possible this Fog of War and counter the uncertainties regarding the disposition and the intentions of their opponent [34].

Recent Information age Technologies have had a great effect on the technical and subsequently the organizational levels of C2. Modern C2 information systems have become big all-in-one integrated platforms that incorporate and interconnect most functions of military C2. More powerful computers, with big communications bandwidth, display systems, space assets, etc. give today's commanders' greatly increased real-time capabilities in information gathering, display, and communications. The utilization of tactical data in mobile networks provides a better situational awareness and thus decision superiority [42].

In this way, modern C2 systems help to lift the Fog of War and reduce the effects of Friction. Yet the answer to this question is not simple. It depends on the capabilities available and the size of the operation. It is relatively easy to focus available assets on a small area, and centrally control a small operation like a Military Operations Other Than War (MOOTW). The higher-level command can be instantly informed of any unexpected situations and react especially for small to medium-size operations. For full-scale operations or conflicts, this is difficult. Recent military operations like Afghanistan, Syria, etc. show us that the Fog of War is reduced but not completely lifted.

The same applies to Friction. US Army doctrine states that modern C4ISR systems greatly reduce the effects of Friction on forces thus helping imposing one’s will on the opponent [41]. Kondylis defined ideal technological warfare as a utopia where Friction would cease to exist. This ideal warfare helps us understand the nature of real warfare and why Friction cannot be eliminated. The causes for that are the uses of both superior and inferior technology by the potential opponent to counter our own combined with the inevitable gaps of information and the problem of the process of available data [27].

[15] Panagiotis Kondylis (1943-1988) was a Greek philosopher interested in a number of areas of study including the philosophy of war

4.2 Strategic Control of Tactical Situation

With improved C2 systems, the commander in the HQ can be in a better position to make a tactical decision than the local officer thus making obsolete the concept of Mission Command [8]. Furthermore, superior-level commanders can make better decisions since they have the overall picture of the situation and they have direct control of additional supporting assets. Local commanders can have better information and should be given decision authority only when technology is not able to bring information to headquarters [12].

Modern C2 capabilities tempt commanders to control operations and their forces to the finer details. Yet despite the vast increase of the capabilities of modern C2 systems the capabilities of the human mind have not developed accordingly. Great military leaders of the past like Napoleon were able to exercise unified command because of their exceptional intuition and received a relatively small amount of information in comparison with the information received today by a commander. In the modern battleground, there is an increasing amount of information received and processed by the C2 system. A commander can watch his units in live streaming and issue a direct command to them down to the level of individual soldiers. This is maybe good in MOOTW [8] like a situation of a crisis or when a small-scale individual operation is executed. In such a case this operation is at the same time the main theatre of operations and the commander can have the luxury to dedicate his attention to it.

This cannot happen in a full-scale conflict. In such a case, there will be a large number of different points where an action takes place. If the commander dedicates himself to one point there is a great danger of him losing the great picture with dire consequences for the whole war effort. At the same time, his brain will probably not be able to process all the available information. In a display system, the human capacity to retrieve different levels of representations is highly constrained by the decision load [43].

A second consequence will be that if officers and units learn to receive direct control from above it will be difficult for them to adapt if the situation changes and they have to act without guidance. Young officers tend to resort to “Authorized” command requesting permission from their superiors for their actions [8] thus refusing to assume unnecessary responsibility. This can prove problematic and time-consuming leading to loss of the desired decision advantage.

4.3 Summary

In this section, we determined that modern technology has in great effect reduced the effects of Clausewitzean Fog of War and Friction putting the necessity for Mission Command as a command method in modern warfare in doubt. We also examined the feasibility of centralized control of operations stating that the main restrictive parameter is the human cognitive capabilities.

5.0 CONCLUSIONS

In the first section, we examined theoretically the command method of Mission Command as a concept of decentralized C2 of military operations. We identified the Clausewitzean Fog of War and Friction as the main reasons that made it so effective in achieving decision superiority in the chaotic war environment. Finally, we elaborated on the importance of its employment in creating capable commanders.

In the second section, we analysed the function of Command and Control of armed forces in its two components and identified it as a key function to gain the decision advantage. Modern information age technology gives unprecedented capabilities of centralized C2, except for the human cognitive capability, which is the restrictive parameter to this goal.

In the last section, we concluded that modern C2 systems can greatly lift the Fog of War and reduce Friction to a level that the commander can control tactical operations even better than a local commander. Yet the human mind remains a restrictive factor.

The question examined in this paper was if Mission Command remains relevant and important as a command method in a modern operational environment. In this question, there is no easy answer.

The strategic implication of even minor tactical action, especially when this action includes employment of force, dictates a requirement for higher-level control of military actions and centralized command. This effect is stronger in MOOTW like low-intensity or expedition missions (like for example peacekeeping operations) than in high-intensity warfare. This results in operational orders usually full of restrictions and details that greatly restrict the room for initiative for subordinate commanders. Yet we must not forget that Mission Command was a method developed and used in a state of war. In the last decades, although there were a great number of armed conflicts around the world, they are usually not characterized as wars, even by the involved parties.

Modern information technology greatly diminished the conditions that gave birth to Mission Command. Thus modern C2 systems allow the above-mentioned desire for a centralized command greatly reducing the need for freedom of action for the lower-level commanders. We could say that modern technology shortens the chain of command allowing for a more centralized C2 structure of forces. At the same time, this does not mean that complex operations can be transformed into a “one-man show”. Human cognitive capabilities remain unchanged and no man can control everything even when he has all available information available. At the same time, the combination of space assets with NCW can even enhance Mission Command by providing better situational awareness to the lower level, tactical and operational commanders.

On the other hand, we must not forget the importance of building capable officers able to assume responsibility and show initiative when needed. It is difficult to cultivate such skills when modern operations are ordered through extensive and detailed documents and at the same time units are under close observation from above during the execution. Intuition and experience of officers remain relevant and the only way to cultivate them is through both training and experience. Furthermore, nobody can rule out the possibility of a catastrophic failure of C2 assets and capabilities. Armed forces can of course invest in the resilience and redundancy of their systems. But even better they should be able to cope with such an example of Friction by falling back to the quality and capabilities of their officers. Thus the importance of Mission Command as a method remains important in building capable and confident commanders.

Thus we conclude that a balance between centralized C2 and allowance for taking the initiative must be maintained. This is easier said than done. Constant real-time communication with higher levels increases the pressure on commanders and makes them less willing to delegate authority to lower levels of command.

In this context, higher-level commanders must not be tempted to control operations in detail. Their job remains to look at the big picture and assigning clear missions to their subordinates. If they try to micromanage an operation, because modern C2 systems give them this capability, there is a danger

to become too occupied with small details. We must not forget that the mental capacity of human beings has not changed dramatically. If a commander is overwhelmed by dealing with minor details he will probably not be able to do his real job and manage the larger picture. On the other hand, a lower-level commander can always address his superiors when he requires further instructions. The choice, if he needs to, is up to him. An officer who repeatedly requests instructions from his superiors is either not a good officer or has not received a clear unambiguous mission.

Another conclusion is that the hierarchical levels of armed forces should be reduced and simplified. During the two World Wars armies were organised in many command levels comprising of Army groups, corps, divisions brigades, etc. to cope with the limitations of communications at the time. In the last three decades after the cold war armies were reduced in size and brigades substituted divisions as the main operational level unit. At the same time, technological advances improved capabilities to control larger and more geographically dispersed units.

The more command levels there are in an army the more time is needed to relay and process information and orders among them and the more complex is the coordination. Napoleon exercised a unified command that despite the technological limitations of the era gave him an advantage over his opponents. Today's technology makes unified command more possible than ever. This can reduce the need for many C2 levels and different HQs as long as the commander is intellectually capable to do it and his staff is trained and organised to support it. This would maximize the effect of information technology to achieving the desired decision advantage by shortening the time factor.

Closing we can say that Mission Command remains a relevant and important command method of forces in a more restricted form than in the past. Technology will continue to evolve further enhancing modern C2 capabilities and allowing even more centralized command. This will never change the fact that officers must be able to take initiative when necessary and Mission Command cultivates and promotes this capability better than any other method.

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