

Mission Command over the horizon

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Since mission command is culture it will be with us in the future as it was in the past.

In the 21st century, the technology changes are dramatic to a degree of a new era – the Information Age.

The Information Age revolution is spreading as an evolution, beginning where electronic and digital technology forms the basis, slowly penetrating to other areas. At the end of the process, we will be in another age - the information age.

This apply to war as well, armies have always been leaning on technology and technological developments have influenced the development of military doctrine. The horse, the bow, the gunpowder, the internal combustion engine, and now the digitization.

In the fifth chapter we take a look at the future, we do not know what will happen in the future, but the coming era develops based on man-made technologies, it necessary to shape the ways we utilize it - this chapter meant to inspire thoughts.

Mission Command and non-linear warfare **Introduction**

It is impossible to separate the mission command approach from general military doctrine. The concept of mission command has adopted in part by most armies, but consensus has not yet reached regarding how to apply it.

In a document (David Alberts, 2003), David Alberts and others analyzed warfare in a net-centric environment and suggested possibilities and topics for implementing the Net in battle. This document issued almost two decades ago, but it is still relevant today. Much has accomplished since then and experience has acquired, but then, as now, we are only at the beginning.

Sometime in the future, our field of endeavor – in war and in general – will administered by virtual systems. In a considerable part of our economic and social lives, this is already the case, but as war and military activity are among the most complex developed by man, more time and effort is necessary in order to realize the potential of technology for this field. The current chapter will discuss this topic in specific relation to mission command in a net-centric environment.

The chapter will present the projected impact of developments in information technology on military theory and the need to shift from traditional linear to non-linear, multi-dimensional thinking. This must primarily base on capabilities, rather than on hierarchical organizations focused on quantity and beset by uncertainty due to limited information.

The information era began in the second half of the twentieth century. Its development has been an ongoing process, which began with groundbreaking technologies that had a local impact and went on to influence every sphere of modern life. For the sake of discussion, it is possible to assume that this era will reach maturity in the second quarter of the present century.

Like all other areas of our lives, warfare has affected by this process. In the present chapter, we will primarily deal with one component of “revised” warfare, command and control, and specifically mission command. This is a topic widely discussed in

every military organization, and it is not a new development, however in an era of changing warfare, it has acquired new significance. In the first section of the chapter, we will present a possible scenario of warfare in the information era. There is no guarantee that these predictions will be realized, but they are still worthy of consideration.

Multi-dimensional warfare

Warfare has and always will be a struggle between human beings functioning in an organizational framework with the aid of various systems in order to impose their power and exploit it to achieve their aims. In the present era, warfare is undergoing radical changes, most of them not on the battlefield itself, but in systems exerting their influence without first-hand involvement in the fighting.

It started with Nations in Arms during the Napoleonic wars – nations impacted by the war's outcomes when it swept through their territory. In the modern era – in World War II for example – the impact of weapon and armies reached far beyond this.

The new information era has opened up new dimensions – most of them non-military by nature - yet it has expanded the effects of war, sometimes with immediate impact and influence. This is mainly due to a physical process of urbanization and warfare within urban areas, reinforced by the information revolution that has caused the integration of bodies, resources and systems in the virtual dimension into battle, including the international community exerting its influence through the media. The world once organized according to nation states that waged war with one another.

However, nowadays small, local wars sometimes conducted between various types of organizations and nation states.

By its nature warfare is not linear (as indicated by Clausewitz, who cited factors such as friction, luck, etc.), but it is waged by means of linear devices due to man's need to implement tools that he can understand and manipulate. Nevertheless, due to limited human ability to determine how a war will develop, it is liable to end in chaos (generally for the losing side). This creates an absurd situation where, although man invented war, he does not have the ability to guarantee its outcomes.

Human beings have a limited understanding of reality and its repercussions. From the beginning of time, they have been aware of this and have constantly searched for ways of improving their knowledge and understanding. Humanity has unceasingly changed, developed and advanced in areas that are within the scope of its understanding, both by altering behavior and developing tools that improve its perceptions of reality.

Most human activities have carried out in areas that are familiar, in a comfort zone, whether real or imagined. For thousands of years, people believed they were living in a world that was flat and that the Sun revolved around the Earth. This changed, but not without difficulty, at the cost of "heretics" who burned at the stake.

Human beings function comfortably in a world where it is possible to measure, count and weigh, a linear, proportional world where if you give more you will receive more, give less and receive less, where everything is anticipated and orderly. Mathematics and engineering based on these principles. Our lack of understanding of things that are distant from us enables us to conduct a full life, develop insights and ignore what is "really" out there.

People have created a world for themselves in which their lives conducted in a linear manner. What people fail to understand, they attribute to fate, luck or supernatural

powers. Warfare is no exception, being a human invention that generally conducted according to human linear thinking, although it actually develops in a non-linear manner. This gap generally attributed to the “uncertainty” that arises when two armies confront one another on the battlefield influenced by additional “participants” with various levels of involvement and interests. In such a situation, too many variables are present for human beings to immediately grasp and exploit them to their advantage. Thus, they attribute their failure to do so to force majeure and uncertainty.

As war is a human invention, uncertainty is not an external influencing factor, but the result of lack of information and lacunae in human capabilities. If we accept this situation without sanctifying it as force majeure and acknowledge that we prefer to function in a linear “comfort zone” having no basis in reality, we must attempt to break free of these limitations and find ways of functioning in a non-linear world.

Here technology can come to our aid; the information revolution deals exactly with this area and opens up before us new possibilities and tools to cope with uncertainty. However, although technology enables us to achieve better performance, it does not guarantee us victory. Technology developed to help human beings function more successfully and realize achievements that were impossible in the past. However, the human element is always present in warfare. The combination of technological capabilities and groundbreaking human thought can apparently raise us to new levels. The current meeting between human insights and new technological information systems point to new directions that can enable us to successfully command and control the non-linear phenomenon called warfare, namely, by mission command.

The world is non-linear and in constant flux, rendering human beings only partially capable of functioning within it. It appears that we will never be able to break into

that world and exist fully within it, but we can create interfaces on the border between linear and the non-linear and activate them in order to improve our understanding and functioning in an incomprehensible and uncontrollable environment.

Warfare

When the information available to commanders was (and is) limited, we specified main efforts and secondary efforts based on our capability for linear thinking reinforced by human ingenuity and much luck. However, when the information available to us is much richer and readily available, we can leave more room for commanders to make on-the spot choices based on their best judgment in real time and in a real environment.

This calls for agile organization and flexible thinking based on successes that accumulate by the ad hoc introduction of reserves and concentrated efforts. The designated forces must be constructed autonomously for their mission, otherwise it will be impossible to rapidly disseminate and combine efforts. Units are designated to achieve goals and prepared to efficiently combine information with other units for synergetic outcomes according to battle developments. Structure and organization must allow for flexibility. The centralized/decentralized battle combines tactical mission forces, reinforced with surrounding supporting elements.

The use of the swarming concept as a way of thinking means looking for weak points or opportunities, then bringing in one's forces and exploiting them. When the guiding principle is that the battle is fluid and takes place on a continuum, the power and wisdom of the commander will be grounded in his reserves. The leading force makes contact, breaks through or creates the basis from which the battle must develop according to the strength and direction determined by the commander, at the time and

place chosen for activating the determining force. However, this will be possible only when information is available about the enemy' the battle environment and our own forces. This best carried out if the mission command philosophy is well understood and practiced.

Warfare and the Information Environment – An Unbalanced Development

We study, analyze and conduct warfare based on the information at our disposal. However, relying on information that we can absorb through our senses is precarious, as there is much more of it than we can comprehend or digest. In order to improve achievement and view the general picture, human beings must overcome their limited abilities.

The gap between human understanding and the environment called “uncertainty” in military operations and force majeure in other spheres. From the dawn of time, man was aware of this gap and never ceased his efforts to create tools to limit uncertainty, but it is still with us and apparently always will be.

There are two directions that may be taken to solve this problem – procedures and information: the first is an attempt to improve performance by means of teamwork, think tanks and improved thinking processes; the second is the development of technological aids for collecting, processing and disseminating information.

Until the middle of the twentieth century, such solutions were in the realm of disseminating linear information (print, radio, television, etc.) or developing the sciences (physics, chemistry, mathematics) that later given practical applications.

The appearance of the computer constituted a giant step forward in information dissemination, followed by the personal computer and the internet that led to a new

information age enabling mass sharing and application of information. One leading development direction is to teach computers to "think" like human – Artificial Intelligence.

At the initial stages of the information era, these new capabilities integrated into existing management systems; today far-reaching change is developing rapidly in every aspect of life. The information age has created a previously unknown situation in which we have at our disposal information of a scope, depth and quality that greatly exceeds our ability to process it. In every technological revolution, time is required to assimilate and adjust to new developments and their application and integrate them into individual and collective human value systems. It is far faster and easier to change a computer disc than it is to change human habits and culture. The gap between human conservatism and fear of change on the one hand and cognitive initiative and intellectual daring on the other may also be found in the military sphere.

Although military organizations are slowly implementing management and cognitive tools that have been developed and upgraded over the past 100-200 years, are still decades behind with what technology can actually accomplish. Whereas armies are already equipped with up-to-date and technologically advanced weapon systems, their battle doctrines, decision-making processes and organizational procedures are at least twenty or thirty years behind the times, thus preventing potentially improved capabilities.

One significant repercussion of the information era is a new perception of time; information can arrive at any location almost immediately. Time management has become a crucial factor in the efficient running of forces, resources and command. This already holds true today and will develop much more in the future, when it will

be possible to make decisions, determine timetables and activate forces more quickly due to immediately available data and feedback in the field, and being free of dependence on hierarchy. All is available to all at any time and space. However, all of this depends on revolutionizing organization, cognitive processes, command procedures and officer training. All of which are the most difficult to accomplish.

Mission command, which was first formulated at the time of Frederick the Great of Prussia in a successful local battle, has become a central approach to warfare management in the information era. Fundamentally, it affords agility to the campaign commander by removing bureaucratic restrictions to the task for which he is responsible. Make technological advances making it possible to distribute and absorb knowledge that in the past was the sole province of the higher echelons and could not easily available to commanders at the front lines, thus limiting their ability to make educated decisions, have reinforced this. Here too, as in decision-making processes, theoretical and organizational adaptations are likely to have a positive impact on much more than information only, as will be discussed later.

Traditionally, information has been (and still is) organized according to a command or operational hierarchy. This takes the form of a linear telescope that can cause delays, bureaucracy and excessive control. In the information era, this telescope disappears and information flows on a horizontal plane, making it available to all. The concept of the mission command system is that the higher ranks must slacken control, support subordinates and trust them to carry out their assignments as well as possible.

Information technology is fundamentally electronic-digital, but the information era involves cognitive, revolutionary ways of thinking. Technology enables rapid treatment of information in every lifestyle by means of collection, processing and

dissemination. These developments are unstoppable, as they are not unique to a specific sector, but have permeated every sphere of human life. In order to exploit these developments in the military sector, it is necessary to rise to a higher cognitive level, as the growth curve depends on thoughts, not on equipment.

Repercussions of Organizational Culture on Warfare

One of the most difficult problems in warfare was and still is commanders' ability to predict battle development and activate their forces as effectively as possible to achieve their goals. Number of central factors are influencing this:

- Insufficient knowledge
- Too much raw information
- Limited ability to isolate relevant information from an overload of sources
- Addiction to heavy computer processes at the staff level
- Poor training and vehicles (software or procedures) for efficient, real-time handling of accumulated data
- Poor awareness of situational developments due to a partial or incomplete grasp of on-the-ground conditions
- Lack of understanding of enemy activity
- The influence of unexpected or uncontrollable environmental conditions (weather, public opinion, NGOs, uninvolved civil populations, collateral damage considerations, etc.)

It is common practice to place all of the above in the category of "decision making" under the "uncertainty" term that limit the commander's ability to implement his forces most efficiently in order to achieve his objectives. This often presented as an excuse for operational failure. Typical solutions for uncertainty range from

concentrating on ourselves and ignoring our surroundings, to using "a lot" (i.e. "activating large numbers"). There are countless examples of this, one being the ineffectual deployment of Israeli artillery and airpower in the Second Lebanon War of 2006.

It might be "comfortable" to blame failure on uncertainty, but it made less relevant in the information era. With innovative approaches and the help of new technologies, a different scenario might emerge where some of those problems might either diminish or disappear altogether. With the help of technologies for collecting, processing, analyzing and disseminating information, it will be possible to narrow the gap of uncertainty in knowledge and at the relevant time. The information era points to the need for solutions that will reveal problems or issues that previously hidden from our view. In fact, when one deals with the general in order to arrive at the particular, one is constantly chasing after one's tail. In the information era, we can build a more complete picture from bottom-up details merging with top-down data. The changes in information time and space (when and where information is available) leads to immediate reaction capabilities in closed circles.

After all is said and done, there will always be uncertainty, but it will not stem from lack of information, but from the fact that we are facing an enemy who as determined as we are. Despite our ability to influence his decisions, we cannot fathom what he thinks or what he will do next. The center of gravity placed on the commander's shoulders more than ever; quantities and equipment are not the decisive factor – as the last twenty years of fighting between states and non-state rivals have shown time after time.

We need to step forward into a new era, no longer involving upgrading existing instruments and systems, but rather making the transition to a very different future. However, in order to make this transition, a number of difficulties must overcome. We will concentrate on the command and control element in battle conducting and management.

Information relevance

This is not a quantitative problem, but a matter of effective organization. The heart of the question lies in defining the information that is vital to the mission: What do we need to know and when? This decision lies with the commander when he visualizes



how the battle will develop. Sufficient resources exist today for selecting, processing and disseminating

information to support activities as required.

It is obvious in retrospect that before every armed conflict in which we caught unawares, there were plenty of signals that we failed to interpret. The Yom Kippur War is a blatant example of this, but it is by no means unique. Mission command is primarily a different concept of how to organize and operate command and control for battle planning and command. It leads every commander to fulfill his responsibilities, it directs him to supply his sub-commanders with the vehicles to carry out their mission successfully and it provides the “big picture” to support their efforts and achievements.

Whether it adopted practically or theoretically, mission command implemented today as improvised problem solving; however, in the new information era it should become the fundamental concept in command and control planning.

- 1) Relevant information at the relevant time – A surfeit of information, a rapid flow of events and a lack of tools for sorting, categorizing and processing data at the appropriate time all create blockages and lacunae in formulating situation analysis suitable for battle management. The information revolution has produced innovative tools for managing, analyzing and presenting data; it is necessary to characterize and introduce information systems tailored to mission command concept for information processing and distribution based on the command and control method to support agile and rapidly changing missions and responsibilities.
- 2) Commander training – Computerized information systems do not think or make decisions, but function according to what fed into them; the art of creative thinking is a strictly human domain. Even after artificial intelligence systems are developed, they will rely on algorithms that human beings have created. As robotic decisions are purely technical, it will always be necessary for people to make decisions. Commander and officer training must be adapted to the rapid tempo of events and vast data accumulation. This means that training programs and technological developments must enable them to accomplish this successfully. In order to achieve this, simplicity is required, a unified and clear language, delegating responsibility, allowing margin of error, sufficient training and practice and more. A starting point would be planning and organizing mission command systems to replace organizationally based ones.ⁱ
- 3) Mission oriented analyzing abilities – Analyzing ability depends on the prior definition of questions demanding answers. When starting out from a point of uncertainty, analysis performed in a generally determined format based on

averages, and the results are calculated averages. We create these averages by setting end states and procedures according to what we think we are able to achieve. Such conceptions limit us in depth, length and daring, not due to a basic lack of ability, but rather to a lack of operational and organizational information, understanding and flexibility. In the new information environment, “vistas” open up in the “big picture” that were not previously visible. The horizon (and there is more than one) changes. In the new era, the panorama that spread out before us has broadened considerably and has become more comprehensive and complex. It is multi-dimensional with multi-participants and is rapidly and constant changing. We are active players in it, no longer blind to the warfare environment. This holds true for all levels and creates new responsibilities, as we are free to make choices and focus less upon ourselves only. Mission command can enhance that new situation, and cancel the need for centralized control, as a hierarchical system cannot manipulate and successfully function in such an environment. Thus, the mission command concept should be constructed as a general system rather than a local solution. When we realize that we have tools far beyond our imagination that can enhance our powers, we will dare to think ahead and accomplish far more. According to the present model, we search for the “end state,” (i.e. how to complete the mission and achieve its objectives). According to the mission command approach and by non-linear thinking, the assumption is that we will approach our objectives through decision points. As each decision point is reached, new ones will take that will lead us to the next point where the process will start anew, and so forth until the end state is achieved. Information is our main asset and main obstacle at the same time.

The scope and quality of information needed will be limited to what is necessary for each step; the final mission is in the background, guiding us on our way. Thus, the necessary information that is gathered and processed will afford us freedom of decision and enable us to operate in a mission command framework.

- 4) Mission command narrows the uncertainty gap by developing non-linear networking concepts that operate in smaller, more manageable systems and function on all levels without losing control. On the battlefield, there are numerous factors out of our control, including the enemy and the environment, but with a more "mission oriented" design, we can predict their behavior and exert our influence on them. The new information era provides us with much more information in a much shorter time, but presents the danger of information overflow. We will never have absolute control and we must direct and limit the amount of information we need; control of information is the vehicle of the entire operation's control.
- 5) The enemy is (a hostile) partner – The enemy's cognition functions under the same limitations as ours, thus it is possible to integrate the human element into both planning and operations. Mission command and non-linear thinking place heavy emphasis on the cognitive element, each point is a starting point; at each point, the enemy might face the unexpected, surprises or changes in directions and power; our fight is against human beings and we must consider this.

Warfare in the information environment provides opportunities to gain local superiority in information (intelligence), operations (surprise, temporal and spatial superiority, superiority in power ratios) and control (initiative, stratagem,

exploiting opportunities and overcoming crisis). This is especially relevant in asymmetrical warfare (against an enemy functioning in the framework of terror or guerrilla). Such an enemy will perform numerous tactical, decentralized missions, while avoiding direct confrontation on the battlefield. It will employ uncomplicated technologically weapon system, strike at times, and places that exploit the element of surprise. Mission command constructed far well than conventional military configurations for strong, decisive, concentrated action that can cope with such asymmetrical conditions

- 6) Narrowing negative environmental conditions (“force majeure”ⁱⁱⁱ) – If we improve our capabilities regarding the elements discussed above, the uncertainty gap will narrow to the point where “force majeure” might enlisted to work in our favor. Information could share to advantage with non-military factors in the fighting arena – non-combatants, economic bodies and public awareness – that could integrated into a purposive, unified information system. This may considered to the continual, integrated fourth (or fifth) dimension of information warfare.

The role of the Commander

Mission command focuses on the commander and how he grasps the fighting development. Resources are not the main issue; their role is to offer the commander capabilities considerations for his decisions. The commander’s field of expertise understanding the enemy, predicting how the battle will develop and assessing enemy commanders’ fighting spirit, rather than concentrating on details about his deployment. The mission command concept starts with the commander's decision-making, but its tactical organization operates in a non-linear manner. Mission

command is a holistic concept with two main functions: in commanders, fighting in their own way supported by the higher echelons' decision-making process and supporting means allocation. Where does all this lead?

We understand that when planning upcoming operations, we must act based on many short-term, coordinated actions. Of course, there are long-term goals, but there is no rigid pre-planning of how to achieve them. An old saying states "Any plan is a basis for change," but here the changes are the plan.

An effective operation on an ongoing, multi-dimensional battlefield must include both long-term planning and a battle plan made up of numerous short-term actions. The objective of this is to arrive at each milestone with optimum conditions that will enable advancement to the next one. The plan is flexible enough to accommodate change, so that various circumstances are created, disappear or become more or less important according to developments. This approach demands close supervision of events and improved control systems that direct activity in real time and recommend the necessary adjustments.

This approach affords the commander in the field considerable freedom to decide, accompanied with relatively close support on the part of staff monitoring long-term developments. This approach does not only influence field tactical command, but also higher-level decision-making, staff work and planning. It demands broad integration of various bodies based on the degree of their influence on how the operation develops, while requiring headquarters capable of efficiently analyzing and processing data in the required period.

Because of this innovative approach to warfare, a new kind of work relationship must create between superior and subordinate levels, which is more akin to apprenticeship,

accompaniment and support than to authoritarian, proscriptive leadership. The upper ranks must create and sustain conditions under which subordinate officers will be able to sustain successfully a mission command framework.

In order for a commander to do so, he will need maximum support from the next highest rank regarding information and resources. The information era makes it possible to construct information networks focusing on different areas and distributed for various purposes independent of geographical location. A commander might be aided by information arriving from overseas for tactical battle purposes. The information era also enables maximum precision in aiming fire, thus expands the fire support availability based on effective range rather than proximity, thus minimizing the need for a large auxiliary force following the fighting units.

Nowadays the army must find solutions to a variety of challenges within the same mission, ranging from conventional battles to combating terrorism to stabilizing missions at the end of operations. It is impossible to establish a special army for every need, thus it is necessary to organize forces and construct doctrine suited to flexible, modular decision-making and operational forces.

Staff and decision-making processes will need to accommodate such an innovative approach. Headquarters (in their decision-making, supervision and control capacity) will need to adapt to such a form of operation and support the forces in carrying it out based on their specific fighting conditions and battle understanding. The staff needs to organize into subject-oriented teams to meet the concrete needs of specific missions (firepower, maneuvers, logistics, communications and intelligence), in addition to integrative teams that will direct the operation (managing the current battle, planning the next one or initiating special operations). In this form of headquarters, the staff's

need "to support the commander" is still there, but its main activity is battle control. Thus, it takes on the character of a fighting element in its own right, allocating supporting means, "building" the next step, operating "out of nowhere" fire, intelligence and logistics support and weapon systems supporting commanders at all levels in carrying out their missions. The headquarters is a crucial component in the networking combat arrangement. It operates both on hierarchical command channels as well as flattened operational support networks.

The battlefield simultaneously conducted on two major planes that include countless interim battles and systems:

- 1) The physical battlefield includes geography, population, economics, the army including its organization and equipment, the bureaucracy and the control mechanism running those systems. In other words, this a kind of hard engineering casing with clear, defined directions of movement and behavior that grounded in a set of rules with clear boundaries.
- 2) The information battlefield, including information centers, Centers of Powerⁱⁱⁱ created by and for the physical system, but not necessarily rigidly attached to it. It operates as flexible networking connecting centers of powers based on interests. Its agility provides it with the ability to change constantly at a much faster rate than hierarchical connections within the physical system.

Both systems are present on the battlefield and the art of war involves employing a combination of the two according to command and control methodologies.

As long as we did not possess a wealth of information and the ability to apply it, decision-making was "made easy" and in cases of uncertainty, the guiding principle was to send in the greatest forces possible. In the age of industrial warfare, wars often

won by quantity, whereas in the information era and with the appearance of irregular fighting concepts, quantity might constitute an obstacle. The information battlefield demands attitudes to time, space and quantity that differ from the physical system; it loosely connected to geography, but strongly impacts human cognition.

This type of battle is multi-dimensional and affected by non-linear influences. It consists of dynamic, changing forces linked by networks that are not subject to rigid, static measurement.

If we acknowledge that we are living within two parallel systems, questions arise regarding how to integrate them into a decisive physical-information interface. We might integrate them gradually according to our level of understanding, not as a revolution but as a gradual evolution. An example of this is the combination between electronic media – television and social media – and political culture and public opinion. Net superstars have become trendsetters and politicians curry their favor. If in the past, the electronic media served the purpose of informing the public and conveying the establishment's messages, today this is a two-way process, with a constant flow of information from the public to the politicians. "Physical" technology has caught up with cognitive development, and this process has just begun. As this involves interfacing between two different systems, it is not a "natural phenomenon," but one created by and for human beings.

We exposed to a very different reality from what we assumed until today, a new world where old explanations have become irrelevant. Our task is not to create tools that "tame" this new world to fit our old conceptions, but to develop new insights, not to upgrade what exists, but to take a bold step forward into the future. For example, for hundreds of years we sought decisive war – to eliminate the enemy fighting

capabilities; in the information age, we might reach our goals by eliminating the enemy's will to fight – and that calls for very different means and methods.

However, if this process not fully understood and carried out ad hoc to meet a specific need or solve a certain problem, the result is a tangle of solutions that make it difficult to apply the new capabilities on a large scale. It becomes a case of “too many trees hiding the forest”.

Today we are on the brink of improving our capabilities, but since we cannot change human nature, we must equip ourselves with tools enabling us to create interfaces for exploiting what is beyond our comprehension. At the "other side" of nonlinearity stands chaos. If we step into the nonlinear zone, we must restrict our steps forward. Regarding military systems, command and control tools fall into this category, whereas dynamic, flexible command – (i.e., mission command) constitutes a higher level of traditional linear command precepts.

Since today these potential developments exceed our ability to comprehend fully them, we must find ways of going forward and employing them to our benefit.

Limited human capacities tend to create interfaces that turn the virtual and non-linear into something that can measured and controlled, that we can “live with”. Such interfaces mainly involve systems for processing and analyzing information and rendering it applicable to human purposes. As the human brain tends to translate concepts and non-linear outputs into the linear systems to which it is accustomed and according to which it can activate devices in the physical world, it requires an interface that creates a dialogue between non-linear and linear systems.

The correct manner of employing these tools would be a combination of human control and flexibility without exaggerating in either direction, reducing bureaucratic

regulation on one hand, but avoiding total freedom and anarchy on the other. The mission command approach can create tools by which to maintain regulated hierarchical command integrated with flat networking control.

In the information era, a tremendous burden placed on the commander, as the constant flow of information might engulf him; the issue is not collection, but processing. In a hierarchical command system, information streams through a central “plumbing” system that is prone to clogging. The mission command concept demands that at every level data directed in such a way as to achieve the required results. According to hierarchical concepts, information directed by the higher level toward subordinates; according to mission command networking concepts, commanders at each level pull the needed information from the data power center. On the one hand, this places a heavy burden on the commander, who now needs to define what his information needs are and make sure he receives them; on the other hand, he is can tailor the information to his needs and plans.

Adapting Language as a Condition for Understanding and Control

As was always the case in the development of human culture, a language must developed that is capable of describing reality and allowing the development of more appropriate behavior. Our world of linear concepts is two-dimensional and

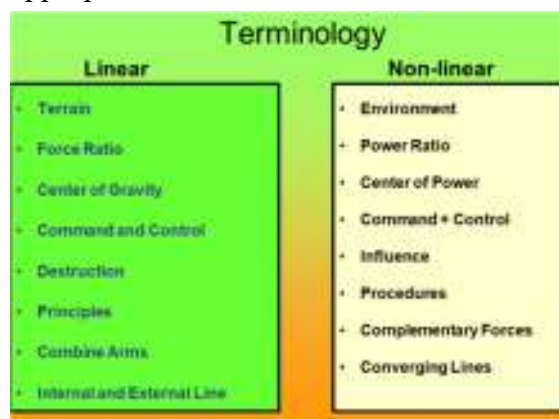


Figure 1 - Changing terminology

insufficient. It must expanded to describe a virtual world that cannot be mathematically measured or weighed and is fundamentally impermanent. It must be able to describe concepts that are not absolute and whose central axis involves

processes, not results. There is no “black and white”; anything is possible in the proper conditions; what is true today might be very different tomorrow. Even without our being able to describe such a situation in a way that we can comprehend, we can still use it to our advantage. Concepts can aid the operational organization in developing and exploiting situations and making alterations according to developments, thus exerting influence but not necessarily “conquering the mountain,” reaching the final goal. Language can channel thought in new, creative directions.

Recognizing the Temporary as Permanent and Preparing for what is Next

If on one hand we know that the outcome will be different than we expect and on the other, we know that outcomes can be influenced by our performance, we must not exert all our initial efforts in achieving the result. We must rather invest sufficient energy in gaining superiority, while constantly examining what is happening around us, retaining sufficient reserves in order to gain the initiative and advancing toward the next higher goal that was determined in advance.

Of course there are liable to be unusual circumstances in which over-investment is likely to avoid “distracting” developments. But this will mainly occur in situations where one side has a clear or absolute advantage; In a non-linear perspective, there will always be the next phase and it will always be a critical and decisive one from which our further plans are derived and achieved, leading us on to our goal.

All our plans are subject to an expiration date, especially since we are confronting a rational foe; this being so, we must understand that absolute superiority is transitory and subject to quantitative and qualitative limits, as a wise enemy will always find ways of overcoming them. For example, the superiority of regular armies with conventional fighting power has brought terrorist organizations and less powerful

nations to make the transition to semi-regular urban warfare, while recruiting forces and resources that do not rely on military might. In this manner, they have neutralized the ability of regular armies to achieve absolute victory, some examples being Vietnam, Afghanistan, Hezbollah in Lebanon and Iraq.

The argument between “sufficient” and “absolute” power in warfare (influence versus annihilation) is a long-lived one. On the eve of World War I, Sir Julian Corbett claimed that at the ocean “the first goal of the fleet is to ensure that the sea routes remain open in the most economical manner,” while Sir John Fisher, the first Admiral of the British fleet was of the opinion that “the fleet’s first priority is to find the enemy fleet and destroy it.” (Falls, 1960).

On land Clausewitz (1780-1831) and other military theorists claimed that the goal of war is destruction, so it is necessary to concentrate and destroy the major enemy force, after which a situation will be created in which victory and other goals may be realized. Clausewitz wrote, “To achieve victory we must mass our forces at the hub of all power and movement, at the enemy's 'Center of Gravity'; thus will we reach our objectives.” Clausewitz, Book IV, Chapter 11, p. 258.

Continuous Warfare Having No Clear Conclusion or Single Center of Gravity

In military planning, two concepts - “end result” and “center of gravity” - serve as the basis for detailed operational preparation. They meant to create a framework for planning and running operations, based on the idea that it is possible to determine “anchors” in battle development whose attainment will guarantee operational successes. This idea is based on a planner’s point of view.

In a situation with no clear finish line, there will be no center of gravity in the accepted sense. Rather there will be centers of power with varying degrees of importance according to the level of fighting develops. We are witness to decision-making centers (on the tactical and operational level) and centers of power (on the operation and strategic level). The former serve primarily for planning and managing the battle, whereas the latter serve for planning and managing the entire operation, having critical influence on the campaign. Today, when planning and activity carried out with linear vehicles, which are unsuited to a non-linear reality, a conflict arises between the organizational system and reality, which described as “uncertainty” or ‘battle fog’.

Rather than determining instruments that are comfortable to use and adapting warfare to them, instruments must be constructed that conform to the reality of the battlefield and that can that form the basis for our thought and actions. This resembles driving from one point to another on a well-paved and controlled highway or taking a cross-country shortcut. One is familiar and relatively safe with no surprises, the other leads from point to point, allowing changes in direction and wider possibilities.

Heavy armies overloaded with headquarters and complex, hierarchical decision-making systems do not support a freer cognitive style, as it goes against “proper order”. Heavy organizations need stability and definite procedures and methods subordinated to command and operative principles that are comfortable for them. The encounter between Rommel and Montgomery in the World War II Western Desert campaign (1942) was a clear example of this.

The linear approach works well when both sides are conducting symmetric warfare, but not when one side (or more) breaks all the rules, driving the regular army to

complain about asymmetry, as occurred when the IDF confronted Hezbollah in the 2006 Second Lebanon War. Stubborn armies (and most of them fit that description) attempt to find ways of squaring the circle, (i.e. how to introduce asymmetry into the playing field), but like anything else, when this is unclear, unsuitable or based on insufficient knowledge it doesn't work, we fall back on quantity: If it doesn't work – send in more.

In consecutive fighting, there is no end state. Every situation is a beginning that flows in a number of directions, a variety of missions with various strengths and no center of gravity. There is rather an accumulated flow from many channels, while the center of gravity for decision-making is virtually and temporary created according to the nature of the mission. We are dealing with a battlefield impacted by forces, contingencies, local situation and other environmental conditions. The flowing plan constructed for change from the outset, containing many decision-making points in which it is possible to design a different type of battle and construct a "new" task force from a variety of teams. Mission command-style planning tailored to ceaseless adaptation. Obviously, the tactical level cannot possess endless flexibility, thus the appropriate mission command structure based on firm organization at the unit level and maximum flexibility at the support and combat support level. Since in the information era we operate in the form of networking systems, one is not restricted to what one has on hand; support in all forms can arrive from a distance, as long as it is in range and linked with effective communication.

The Operational and Strategic Level

The national security arena in which we live is fundamentally different from what it was two decades ago. The clear boundaries between civilian and military (strategic-

operation-tactical) have considerably blurred and the distinction between lethal and non-lethal wars has become less clear than it was in the past. If in the past they appeared one after the other, nowadays they are combined one within the other.

The involvement of distant contributory factors has increased and the dependence on allies has become a more vital commodity than in the past on all levels. The influence of non-combatants, the media and non-government bodies may found at every turn and might drastically affect freedom of action.

The war does not end when the guns fall silent, but carries on by other means. After achieving their war objectives, the army moves on to other types of activity. Wars conducted by task forces as the coalitions that fought in Bosnia, Iraq and Afghanistan emphasize the need to integrate stabilizing operations into their combat doctrine, (i.e., the campaign after the fighting). A few weeks' fighting becomes a prolonged military effort that continues over many years, as was the case in Lebanon from 1982 to 2000, Iraq from 2003 to 2011, Afghanistan, Bosnia, Chechnya, and others. The IDF has also adopted this concept into its doctrine. Operations found in the security zone with different degrees of severity and definitions range from crises, disputes, terror, guerrilla activity, limited war and more. Battle doctrine demands an answer for all of these situations.

In most cases, it is the same army that needs to adapt to the new situation, so a doctrine is needed that can be adapted to this reality. An open framework needed that is sufficiently flexible to accommodate non-linear fighting, thus mission command and a doctrine based on net-centric warfare appears to be a good solution.

Overview

One way of examining the matter is to determine a war definition. Countless books have written regarding this and countless suggestions have made, ranging from quantity (size of force, amount of damage and number of casualties etc.) to objectives (political, military, national, etc.). In many cases in the past, wars defined and evaluated according to the amount of devastation and number of casualties.

Today these clear boundaries have become blurred, while a good number of military and political objectives are achieved by the combined forces on the "ground" as power demonstrations (in many cases by proxies) and threats of using lethal or non-lethal force. The repercussions of this unclear situation are inevitable, on both a theoretical and a practical level. The distinction is not dichotomous: the infiltration of influential non-lethal forces onto the battlefield has not canceled out the use of violence, but has changed its nature by adding new kinds of power tools. The non-lethal weapon system arsenal has expanded dramatically and has created an additional - virtual – warfare environment that influences the battle sphere in ways that other developments have done in the past (air and space dimensions).

Nevertheless, war has remained the imposition of one side's will on another by use of force, although many elements have added and the foe has changed its shape and function. The ratio between lethal and non-lethal has changed, meaning that when destruction is dominant, the fighting arena is minimized to the site of destruction, while when the non-lethal is dominant, the fighting arena broadens and deepens and the lethal element becomes only one component and its relative value gradually decreases. Armies that were accustomed to reach decisive victories by destruction must accommodate to a very different reality.

It is possible to discern this in the relationship between civilian and military in wars of recent years. If in the past, the military component constituted 80 percent of the war effort and the civilian component finished the job, today the military component constitutes about 40 percent of the war and it mainly creates conditions for the civilian component to set out on the long road toward achieving its objectives. This may be seen by observing the war from beginning to end – the decisive battle is relatively brief and employs lethal resources in a concentrated geographical effort and relatively concentrated forces, whereas the final battle for achieving objectives is prolonged, decentralized and ongoing, integrating “civilian” elements and selective resources. Together in varying proportions they end the war, but the army is still chiefly responsible for creating the conditions for "ending the war".

The rise in value of the non-lethal component has changed the world order. No longer can one hierarchical framework acting under one commander achieve success on its own. There are no longer any direct connections between results and centers of gravity, rather everything is in flux with continual fighting among constantly shifting power centers. The lethal effort is limited and finite, whereas the non-lethal effort characterized by prolonged interim situations manipulating and supporting lethal outcomes.

Fighting by Proxy

With the realization that conquest or destruction in their various forms are the result of many actions and are not necessarily a culmination point, it becomes clear that it is possible to achieve military objectives by other means. When it is crucial to limit casualties and collateral damage and avoid political complications, enraged public opinion, it is preferable to act through a proxy. This enables continued pressure on the

enemy and ongoing fighting without directly investing forces and resources, even without holding nation states responsible. This is certainly not new, but in the past, it mainly done on a hidden strategic level, while today ongoing fighting takes place on both the tactical and operation levels. At various times Russia, China, Israel, Iran and many other countries have implemented such strategies. Here in addition, mission command is appropriate; the “proxy” assigned a mission and performs it to the best of his ability, while the objectives are define– from a distance – by the initiator. One form of proxy derives from information-era weapon systems to the point where it may considered a weapon system itself. Information management becomes a basis for a new form of warfare: the information war.

What is the Significance of This?

If fighting is consecutive and the means of achieving objectives are ongoing, concepts, systems, the commander’s behavior and the staff headquarters must all be adapted to this reality. The entire theoretical and practical system must be prepared for fighting in perpetual motion with changing forms and methods, meaning that the command and control system must enable and support perpetual change. Constant fighting demands clear definitions, for example the term “maneuvers,” which previously defined as a combination of movement and fire, receives a new meaning. It becomes a combination of all the elements influencing the objectives, via achieving supremacy and control on the way to reaching them, including movement, fire, information, deception, shaking the enemy’s defenses and the morale of its troops, interfering with reserves and fighting strategies and whatever else imaginable dedicated to the same mission regardless of its original chain of command. Ongoing maneuvering is multi-dimensional and takes place in a simultaneously physical and virtual environment, with varying degrees of dominance of one or the other, but with

them always working in harmony toward a unified mission under the auspices of single commander.

When results and centers of gravity are the cornerstones for planning and building a maneuvering force, the fighting plan will be coerced to conform to our conceptions of the battlefield while ignoring those of the other side; we will pay the consequences, a blatant example being the Second Lebanon War of 2006. In the information era, we must organize forces and resources differently and develop planning and management processes suited to acting in a network-centric warfare environment combined with a constant fighting environment. This leads us to a “no-man’s land” between linear and non-linear warfare and the more control over it we achieve, the better the results. The "no-man’s land" is there all the time – we need to adjust to operating in it.

The way to gain control of this no-man’s land is to construct systems and doctrines that overcome our cognitive limitations, to perceive, digest and act effectively in the necessary period and dimensions. Instead of operating with a limited number of large, heavy bodies, this will demand activating many small teams acting in synergy and harmony for a single unified goal. This begins by organizing a chain of command and net-centric control and information flow.

According to the traditional linear concept, we have five to ten elements in a formation relying on set of vertical channels for command, control and support. We build all kinds of "supporting" secondary systems to bypass checkpoints and shortcuts. The new information capabilities with rapidly streaming data creates overload even before processing starts, resulting in traffic jams and clogged arteries. A way to open this situation is splitting linear telescopic channels into specialized information centers supporting intermediate missions. The same idea applies to

organizations supporting continuous fighting, while continuity and flexibility achieved by the extensive use of modular building blocks, strong reserves and maneuverability as the leading concept in all systems, not just by a powerful breaking force. Commanding and controlling that way of fighting can best be conducted by the mission command concept as the guiding force for building, training and leading.

Penetrating the Non-Linear Battlefield

Network fighting with a non-linear approach relies on information-age capabilities and constitutes a step forward in the art of war. The slogan “Every plan is a basis for change” serves commanders as an excuse for lack of planning or failure, while following a linear approach. In a non-linear approach we prepare and plan for changes, we plan smaller steps, ready to change direction regarding means and power; we organize a force with reserves to introduce according to a developing situation instead of preliminary apportioning forces in a rigid manner. The mission command concept is established and built into the organization as the leading doctrine of activating forces, as it makes non-linear warfare possible.

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- i. Organizationally based systems based on professional corps, whereas mission-based systems based on necessary capabilities, such as hand-to-hand combat, fire battles, etc.
 - ii. As used here, “*force majeure*” applies to a given situation that is not subject to control at the time and place of the military operation. However it might, , be subject to change by various means.

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- iii. In this chapter, power means "influence". Influence might have many forms, in the physical, virtual or cognitive dimension. Centers of Powers in this paper relate to whatever has such an influence outside its own entity.