20th ICCRTS

"C2, Cyber, and Trust"

Analyzing the Latest War Morphology in Current Age

Topic 1: Concepts, Theory, and Policy

Topic 2: Organizational Concepts and Approaches

Topic 8: Social Media

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Abstract

We are in a new, as yet unnamed age, in which the competition and coordination of organizations have been transferred profoundly. Meanwhile, we are increasingly interconnected, interdependent, just like organizations. The new age advances transformation of existent mode of human organizations, which have been changed conspicuously from mutual survival to public dependency. The individual-interactive production mode of complex enterprises is coming. The economic viability of complex enterprises will be well represented by organizational interaction level.

Different age always gives birth to different war morphology, because different age produces different troops. Up to now, human has gone through wood stone war, cold weapon war, hot weapon war, mechanized war and information war. What would happen in interaction age (just a temporary name)? I think it might be interaction war.

The thesis analyzes the existent mode of organizations in interaction age, of which the influences on warfare are discussed. Nowadays, combat forces exchange information more deeply and extensively than before. War features become blurred and variegated. The interaction war then will arrive from information war. It will be illuminated that there is a variety of interactive battle styles and operation methods in interaction age. And, it is predicted that the level of system interaction may dominate battle results.

1   Introduction

When people widely talk about information age, the irresistible trend of information technology becoming ubiquitous, which contains internet of things, big data, and smarter planet and so on, has overwhelmed us. More and more sensors and actuators are embedded in entity so that interaction between the entities expands abroad, for instance, the same or heterogeneous intelligent terminal exchange idea according to some communication protocols and interaction rules, to compare notes between things and things, man and man, man to things. Many new applications, typically one of which is the internet of things, bring a new era, i.e., intelligent interactive age between things and things if human is regarded as things. The internet of things expedites the third wave of the world's information industry following the computer and the internet. The internet of things will develop into ubiquitous network, which would deeply lead to the social form, promoting contemporary information society into the ubiquitous network society. This advanced ubiquitous network status means that the interaction era of Negroponte's prophecy at the end of twentieth century has quietly been around us. Weapon's technical properties and the corresponding form and status of warfare will be transformed once the advantages of internet of things are irresistibly applied to the military field.

2   Features of Interaction Age

Industrial age which undergoes repeated machine production at any time and place in uniform and standardized way, is called atomic age. In information age, information patterns have changed from analog to digital and specific things have started to virtualization. The atomic has been rapidly replaced by bit which is the basic exchange in human life at the same time. Although the media coverage of mass media has widely spread through bit transmission network, the type of audience group (such as readers) has been decreasing and differentiating. As a result, the information age brews an important alteration. In the age of interaction, mass media audience

often get alone, whose commodities can be purchased through the order way, and social information becomes extremely personal. As a matter of course, individuals have exclusive private requirements, and which could be personalized to meet through the internet of things. Therefore, the individual is not a unit of demography or a group member any more. For the same reason, individual does not inherit group's common attributes in the age of interaction, i.e., I is 'I'. The typical characteristics include:

1) Product and information can be highly customized, obtained and pushed in personal way;

2) Machine knows people's idea no less than human to human;

3) People can devote to highly distributed work and life. Accordingly, there is no space-time disorder.

4) Organization rights will be decentralized by bit network and individual will acquire more power;

5) Information network technology makes boundaries of nations and countries fuzzy that human tends toward globalization and the competition will be replaced by cooperation.

The cooperation and coordination relationship among organization, group, individual, human agent entity, is established through information interaction in like manner. Nowadays, we are facing more and more interaction of which the density and velocity (this is a vector) have been accelerated among entities. Some new application such as big data and cloud computing to provide deep interaction among entities will be vividly created. At the age of interaction, single entity must rely on collective action to get victorious, not to act alone, because information interaction feedback between subject and object dominates the orientation of achievement. The interaction feedback is the result of information movement, then the form, object, and effect of interaction function to outside are determined as a result of entity information interaction. Under the background of globalization, the global corporation and

multi-national corporation, developed traffic, internet and culture-politics, integrate increasingly in a ethnic and public way. Consequently, the survival requirement and crisis of all people on the earth tend to be public. Complex enterprises to pursue survival interconnect with multi survival appeal, and they are forming a common structure between each other through social practice. Thus, the structure of complex enterprises and individual, of which the survival mode has been diverting to be public, not common, gradually turn to horizontal from vertical. Compared to the information age, organization performance in the age of interaction is represented by its overall characteristics, which is more obvious than ever. At the same time, the local vulnerability of complex enterprises could be more infectious. If terminal putrescence of complex enterprises arises, it will soon spread to the surrounding and even infect the upper. Similarly, the local toughness of complex enterprises could spread faster to offset its instability, and even affect the organizational decision-making and operation. The organizational interaction is ever to be stronger and the stability of complex enterprises will be confronted with impact in the age of interaction. The development of society and economic market will leap over the gap of geographical boundary between different ethnics or society. As a result, military organization can not be an exception in the primary movement that limitations of cognition and geographical boundaries will be break.

3   Tropism of Morphological Elements of War

3.1   Deepened and Expanded Interaction between Combat Power

From view on the developed trend of the last few information wars and interactive army, sensor networks, command and control network, weapons of network, military organizations, commanders and soldiers, have widely interconnected between them that the fog of war has been dispersed to a certain degree. Thus, commanders, fighters and weapon platforms could be capable of picking up battlefield information in the theatre of war in real time and complete the

interactive information deciding in time, so the troops can play it by ear in action. In Iraq warn, fighter aircrafts of U.S. military was responsible for air raid mission, of which about one third was called for strike action according to the pre-operation plan. Most of the US aircraft and command entities were bundled as an entirety acting synchronously. The trend of real-time dynamic operation has been accepted by a number of military academics. The U.S. air operations could be considered as a manifestation of dynamic decision-making diverted to mobile firepower between command and control entity and intelligent terminal of interaction, which is a primary self-self (not self-enemy) interactive operation pattern.

3.1.1 Interconnections and Parallel Operations between Platforms

The forces in industrial age acquired battlefield information through isolated equipment, while the forces in information age got it through network interconnection between subjects and platforms that combat platforms and command subjects can share, exchange messages and battlefield situation. Here the network may be the direct communication network or platform-platform, also possibly special data link, command and control network. Obviously, the information-based army has achieved certain achievements in terms of network interconnection and interoperability, but interoperation in parallel, intelligent self-adaption, self-synchronization, agile operation and other aspects need to be conquered based on some hard work. The latter should be the pursue that we desired to promote the combat effectiveness of the interactive army. In addition, as technological synthesis has been deeply penetrating into military, the ability of military things system, the platform performance of apperceiving and computing, the ability of interactive decision making, the interactive combat strategy and art will be gradually improved. Different weapons, aircrafts and military personnel could complement each other's advantage through internet of things and the interactive decision of intelligent terminal. Accordingly, it is easy to find weaknesses of enemy to defeat them and save us. With the removal of interactive

barriers between soldiers and military systems, the army promotion of interactive competence has been accelerated. The army staff will become aggressive fighters considering internet of things and cloud operation. Thus, it will get potential function of weapons as long as it is located in the internet of things in interaction era no matter what the entity's type is. In a word, the weapon concept has been extensively extended.

3.1.2   New Relationship between Command and Control Subjects

The internet of things, the one representative of information technology integrated again, make the ability of information acquisition, analysis and judgment, command and decision-making, operations planning and control stronger distributed in all levels of command and control subjects. The level of information interaction between those different subjects has been deepened, and the interactive relationship between them goes to be more complex, so that the interactive operation becomes more orderly and its linkage effect has impressed us. Military quality, cooperation consciousness and information decision-making power which are about terminal subjects at the end of the command and control structure (if they are some persons or humanlike entities), gets stronger. This brings tremendous influences to the command and control system structure and its operational management. For instance, when one aircraft formation has got to the target airspace, its command and control subject could perceive, obtain the states of wingman and remnant weapons. Moreover, the leader could know some combat measures and countermeasures that may have to be taken. Meanwhile, the leader may share his current status and surrounding situation to his team members, and the members could acquire their leader's judgment and action to be taken. Fighting platforms of air operations could collaborate intelligently even interoperate based mutual trust to some extent in real time. A good application is like this: a great deal of cooperative detection, coordinated operation control, missile coordinated guidance, collaborative defense based on electronic warfare system in

formation. However, due to personal feelings or interests, large-scale information interactive chain may be disconnected. The integrated advantage of formation system thus would be lost. This part tried to express that interactivity and coadaptation between the three of platforms, weapons and network links, will produce complex relations and process difficult to precisely control. In view of that, the chimney shape or flat shape of the command and control structure could not bear so much rich and complex interaction located in or outside military organization in the age of interaction. The management, leadership and operation of military organization needs to be reevaluated. This is the impact that command and control community suffered in the interactive age.

3.2   War Feature in Interaction Age

The military organizations in the age of interaction that is no longer as a independent and closed collective to participate in state affairs, differ from the mode of creating value in industrial age and information age, because war features has undergone tremendous changes. This change makes war lose its traditional features beyond recognition, which expedites the coming of new war pattern.

3.2.1   Increased Military Mission

The geopolitical contradiction has become more complex as a result of global expansion and access of all countries' interests. Expectations and requirements to army get higher than any previous historical period ever in politics, economy, society, culture and diplomacy. The military missions that can be executed have broken through traditional military boundaries, which divert from the military field (such as border conflict or uniform war) to non-military fields (for example, large scale network war and financial war). The military mission may need to be intensively coped with several conflicts, such as border conflict, protecting overseas countrymen, traditional war, large-scale network war occurred simultaneously. In addition, people's emotion influencing on national affairs has been exacerbating the complexity

to fulfill army mission. Hitherto, army has been facing unprecedented pressure.

3.2.2　Dominant Factors of Victor

The evolution of war morphology since industrial age indicated: along with weapon and equipment performance improvement, even reaching gradually physical limit, the fighting between two sides had confront divergences with operational means and tools under the guidance of military strategy and operation art, and finally that made function of organization or system entity degrade. But the practice of recent wars of networking preliminarily shows that: with the extensive and deep infiltration of technology impacting on army, the appearance of war has changed from the jointly destroying entities to the confrontation of psychology and volition. However, it could not be considered as the representative of war pattern in the interactive age owing to the large gap between the two sides. Nowadays, the technology of information and network has infiltrated widely and deeply that the warring parties will focus on interaction to compete fiercely. The typical campaign mode and tactics are mainly embodied in virtual realm. There are some examples below:

1) To destroy systems of finance, water supply, power and energy network to put pressure on government and the populace.

2) To chronically disseminate political rumors and adverse opinions on enemy, then prepare the tsunami of network for the other side.

3) To maliciously tampering weapon's database so that the command and control system and platforms call weapon resources in error.

4) To destroy the office network of joint services to disturb the guaranteeing order.

5) To inject some false information into intelligence and reconnaissance network to deceive enemies.

6) To pour a new virus into military information processing center in wireless way to destroy hardware and software of the system to a standstill.

As mentioned above, there are a large number of such dizzy forms and tactics of operation. In the era of interaction beyond ample networking and informatization, it is more likely that the war would be launched from virtual field, even that the related carriers, tools and interaction itself with human-computer interaction would become objects to be operated. Finally, the performance of systemic and organizational interaction will dominate the outcome of war.

3.2.3   Diverged Standard of Combat Effectiveness

In industrial age, the function of the army is to fight for existent space through winning a purely sense of military war. While the military mission environment gets so complex in the current and foreseeable future that the army could not only fight and win in pure military field but also beat in other fields, i.e., the operational ability of troops has been represented as "fight and win", of which the form has been diversified from pure military field to the super military and non-military field. In this regard, Chinese strategic experts have studied it before, and put forward "forces must have the capability to win local wars under the condition of information, also can accomplish diversified military tasks". No matter local wars or large-scale war, it depends on the change of world situation and geopolitical environment. Nevertheless, the army should carefully analyze new situation and identify new problems to improve combat effectiveness facing the unpredictable combat styles and tactics as well as non-traditional security threats.

4   Interaction-based War Coming

4.1   Network-based War

The direct evidence of a new war pattern produced is the mode of social production deeply applied to the war field. In early twenty first century, the network as the "linker" opened up every corner of the army. And, diverse entities had been connected through network, which aggregated combat forces and energy. The network as a deep conversion transformed human society productivity to military

battle power. Military capability depends the level of networking. The prevalent networks make wars of networking not confine to the simple networking combat style any more. As a matter of fact, the alleged informationization warfare of this period has turned to network-based warfare in essence, which integrated entities damage-based warfare, electronic warfare, psychological warfare, intelligence warfare, public opinion warfare, etc. through network. In brief, network-based warfare of which the connotation and extension is rich and vast, can be regarded as the primary stage of the information war.

4.2   Interaction-based War

Networked military developed to a certain stage, the stability of marshalling combat forces structure would be relegated to the second, and will emphasize the agility of the combination of combat power due to the widespread interaction between combat forces, concurrent operational tasks executed, and interactive control needs. Therefore , the agile structure of combat forces assembled which is to dynamically match combat aim, mission, battlefield environment and enemy situation, is to be designed based on the conflicting characteristic, and finally to obtain the agile effectiveness of operation. Operational system combined of different military or civil entities could break through the original system structure and operational framework for action according to some sudden event. Then the altered operational system could participate another battlefield or another action to focus and release energy in the new task space.

With army fully networked, the combat style would consequently divert to super combinatorics from operational combination with unstable structure while military theory, organizations, technology, weapons and ideas be developed to a certain stage. That means supplies and equipment, human resources, weapons, sensor network, platform network, logistics network, command and control network and data center would be connected and integrated through the internet of things and cloud computing

platform, which would realize serried linkage and interaction between the thrin of soldier-things and soldier-soldier as well as soldier-things-soldier. The super combinatorics means the distributed military resources may be aggregated agilely to a super power in order to carry out those dizzy forms and tactics of operation through the sensitive internet of things, the strengths of information interaction, the superiority of interactive decision and the ability of interactive maneuver control. The aggregated military resources can be immediately dispersed once operational tasks are over. The super power is constituted from resources located within the military internet of things and non-military forces. The basic premise of the super combat pattern combined is:

1) things to be fully networked.

2) cloud computing platform to be applied far and wide.

3）to have the agile ability of decision and maneuver.

4) the bottom of decision nodes having enough decision-making rights.

5) combat forces interacting deeply and extensively.

That the combat effectiveness has been explained to the radical principle of army would not change, although the army would be fully armed by the internet of things and cloud operation theory. In fact, network is just a transport team in which information coerces combat energy, but operation effectiveness get defined by interaction and cooperation in the age of interaction. Meanwhile, the age of interaction in which the demarcation line blurred between military affairs and non-military, makes the level and scale among strategy, campaign and combat dilute. The concept of offensive and defensive gets confused at the same time. All networked resources located in military internet of things, can be directly involved in the war, participating combat action of for different field, level and scale at any time. Interaction age provides hereto a new opportunity for military revolution in general. The level of interaction is to dominate the outcome of the war among people and system, military and military system, military and non-military system. It is just like

that mechanical and chemical energy dominated war result, and that information determined victory or defeat in war. Similarly, the warring parties would confront in interactive means, tools, content, decision-making and spirit, while the interaction truncation, reconstruction, interference and cheating would become effective methods to defeat enemy. In that view, interactive performance of military organization and its members finally represents the ability of the organization to meet new challenge. Roughly speaking, the commanding points of the new war maybe include: the information measurement of interaction, division and cooperation, evolution and expulsion, decision-making right allocation. Thereby, the war morphology would divert to post-informatization war, namely, interaction war right now.

5 Closing Remarks

Human's competition and cooperation have been changing profoundly. The development of the times deeply influences the change of war pattern. When the war monster went into twenty-first Century, there were a few of concepts emerged including network centric warfare, warfare beyond restriction, spiritual warfare, ecological warfare, etc. apart of information warfare. Different war doctrine impacts on ideas, but the war eventually falls on action in war. Network warfare makes the arms of mechanized war extended and strengthened, however the interaction war is to amputate or weaken the prolonged arms of war (i.e., interaction control). From the point of view, the war gets controlled whoever controls the interaction, and there is no an exception among mechanized warfare in the industrial age, networked warfare in the information age, interaction warfare and then to the interactive warfare, and whether unrestricted warfare, spiritual warfare, or ecological war.

However, whether to win or to deter the war, it is necessary to deliberatively march army for battle, and it is essential to establish global or local superior forces to vanquish the enemy.