**Basic understanding of intelligent warfare**

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Author: Guo Ming

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【Abstract】Modern warfare is accelerating its evolution towards information warfare, and intelligent warfare is beginning to emerge. Intelligent combat systems have become the main force form of intelligent warfare, giving rise to new combat styles such as adaptive warfare, cluster consumption warfare, and synchronous parallel warfare. "Intelligent power" has become a new commanding height for war power. In the future, intelligent warfare will show a trend of accelerated evolution in stages. The development of intelligent technology will determine the direction of intelligent warfare. The law of contradiction in war will undergo profound changes, and war ethics and legal regulations will continue to be strengthened. To meet the challenges of intelligent warfare, we must actively design intelligent warfare, accelerate the development of intelligent equipment, shape intelligent organizational forms, and strengthen intelligent strategic management.

【Key words】Intelligentized war Informationized war Form evolution Strategic measures

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**Guo Ming is the deputy director, researcher and doctoral supervisor of the Institute of War Studies of the Chinese People's Liberation Army Academy of Military Sciences. His research direction is military command. His major works include "Warfare" (chief editor) and "Special Warfare Course" (chief editor).**

In recent years, driven by a new round of scientific and technological revolution, industrial revolution and military revolution, the war form has accelerated its evolution towards information warfare, and intelligent warfare is about to emerge. As a new form of future warfare, intelligent warfare is not only subverting people's cognition of war and military, but also attracting increasing attention from countries around the world. Exploring and mastering the characteristics and laws of intelligent warfare and accelerating the development of military intelligence are contemporary issues to safeguard the overall strategic situation of the great rejuvenation of the Chinese nation.

**Deeply understand the evolution of intelligent warfare**

The form of war is the historical stage of war, mainly marked by the technical attributes of the main weapons. It is the manifestation of the production mode and movement of human society in the military field. [1] Historically, the form of war has undergone several evolutions from cold weapon war, hot weapon war, mechanized war to information war, and is currently evolving towards intelligent war. This is the result of the combined effects of multiple factors such as politics, economy, military, science and technology, and culture.

The new round of scientific and technological revolution is the fundamental driving force for the evolution of intelligent warfare. Science and technology are the primary productive forces and the core combat power of modern warfare. Major breakthroughs in military science and technology and the iconic development of dominant weapons and equipment have led to new changes in the organization of the army, combat methods and combat theories, resulting in an overall change in war and a new form of war. Since the beginning of the 21st century, new technologies with the main characteristics of "intelligent, ubiquitous and green" have emerged in a concentrated manner. In particular, artificial intelligence, driven by new technologies and theories such as mobile Internet, big data, supercomputing, and brain science, has shown new features such as deep learning, cross-border integration, human-machine collaboration, group intelligence development, and autonomous control, triggering chain breakthroughs in the military field, which have brought about major changes in people, weapons, and the combination of people and weapons, and weapons and weapons. Various intelligent equipment projects have emerged, including "multi-purpose unmanned tactical transport" ground vehicles, "loyal wingman" drones, "stingray" ship-borne unmanned tankers, "sea hunter" anti-submarine unmanned boats, satellite robots, "cyberspace aircraft", "adaptive radar countermeasures", and "Alpha" beyond-visual-range air combat systems. Human-machine mixed formations, unmanned swarm combat, and system-based cognitive deception will become possible. Major systemic innovations have emerged in various fields such as combat methods, command and control, institutional organization, logistics support, and military training. Intelligent warfare that "controls energy with intelligence" has emerged.

Great power strategic competition is the internal driving force behind the evolution of intelligent warfare. Military affairs are subordinate to politics, and strategy is subordinate to policy. Comrade Mao Zedong pointed out that war is "the highest form of struggle for resolving contradictions between classes, nations, states, and political groups at a certain stage of development." [2] Great power strategic competition and the resulting military needs are key factors driving the evolution of war forms. During the Second World War, although the armies of Britain, France, Germany, the United States, and the Soviet Union all had tanks, aircraft, and radio communication equipment, only Germany took the lead in successfully practicing "blitzkrieg." One of the important reasons for this was that Germany tried to use this to solve the strategic dilemma of fighting on two fronts. At present, the world is undergoing a major change that has not been seen in a century, the international balance of power is undergoing the most revolutionary change since modern times, and the international political and economic structure is undergoing profound adjustments. In order to maintain its world hegemony, the United States proposed the "Third Offset Strategy", which clearly identified artificial intelligence and autonomy as the technological pillars of priority development. It accelerated the development of military intelligence in terms of war design, operational concept development, technology research and development, and military expenditure, actively seized the initiative of the military intelligence revolution, and sought to seize the strategic initiative with the advantage of new technological generation gaps. Russia insists on investing limited scientific and technological resources in areas of high strategic value, cutting-edge technology, and great practicality. It regards intelligence as the key to the modernization of weapons and equipment, and clearly proposed to increase the proportion of unmanned combat systems to 30% by 2025. [3] Other major countries such as Britain, France, India, and Japan are also unwilling to lag behind, and have increased their investment and layout in military intelligence. Fierce international strategic competition not only affects the strategic focus of military intelligence development in various countries, but also promotes the evolution and development of intelligent warfare.

Innovation in military theory is the ideological forerunner of the evolution of intelligent warfare. Innovation in military theory plays a significant ideological leading role in the development of military science and technology and the evolution of war forms. The history of human warfare shows that if cutting-edge technology and its materialized weapons and equipment are to truly form combat capabilities, they must be guided by advanced military theories. It is not uncommon for people to stick to the original military theories and miss the opportunity to build and use new combat capabilities. The US military has always focused on designing wars from a scientific and technological perspective, and has used the development of new combat concepts to drive the innovation and leap of national defense science and technology, weapons and equipment, and combat capabilities. The new combat concepts intensively proposed by the US military in recent years are all centered on the top-level combat concept of "cross-domain collaboration". For example, the "distributed combat" proposed by the US Air Force decouples capabilities through "distribution" and aggregates capabilities through "collaboration" to build a complete combat system. Reflected in the allocation and use of forces, a small number of manned aircraft cooperate with a large number of intelligent drones with decomposed functions to form a combat system. In August 2020, the US Department of Defense's Advanced Research Projects Agency (DARPA) organized the third human-machine air combat concept verification. In the final virtual duel, the artificial intelligence team defeated the human pilot team. Russia has clearly identified military robots as a key direction for the development of military intelligence. In April this year, Russian media disclosed that its Aerospace Forces’ “Lightning” multifunctional unmanned driving system had completed group deployment tests and was able to achieve the Russian military’s “swarm” combat concept attack mission. [4] The core of these combat concepts, which already have certain intelligent characteristics, is to explore how intelligent warfare can coordinate the use of various military forces through the improvement of “intelligence”, defeat the opponent with cross-domain asymmetric advantages, and seek complete victory. The formation of intelligent warfare depends on a deep understanding of intelligent technology, a keen insight into its military application potential, and an intelligent military theory that highly integrates the art of war and the development of intelligent technological innovation.

War practice exploration is the main way to promote the evolution of intelligent warfare. The evolution of war forms is a dynamic practice process. The development and change of each war form has a realization process from quantitative change to qualitative change, from gradual change to sudden change. Compared with the rise of information warfare, intelligent warfare has so far lacked a complete and typical war practice sample like the Gulf War. However, the experiment and practice of intelligent warfare are promoting the development of intelligent warfare from gestation to budding and from low level to high level. In 2015, Russia used four tracked "Platform-M" combat robots and two wheeled "Argo" combat robots in the Syrian war for the first time, as well as unmanned reconnaissance aircraft and "Andromeda-D" automated command system, creating a ground combat operation with combat robots as the main force. In January 2018, the Russian army used anti-intelligent equipment for the first time on the Syrian battlefield to destroy, interfere with and capture 13 incoming drones. In September 2019, more than a dozen drones attacked two Saudi oil facilities, causing its oil production to halve. In the 2020 Nagorno-Karabakh conflict, during the Azerbaijani army's offensive against the Armenian army, unmanned combat platforms exceeded manned platforms for the first time, accounting for more than 75%. The number, frequency, and intensity of drone use were all the highest in human war history. [5] These practical explorations of intelligent warfare will not only promote the wider application of intelligent equipment on the battlefield, the increasing number of equipment, and the increasingly complex combat scenarios, but will also promote the gradual upgrading of intelligent combat means and anti-intelligent combat means in confrontation, thereby accelerating the profound evolution of intelligent warfare.

**Accurately grasp the essential characteristics of intelligent warfare**

The mechanized era represented by steam engines and internal combustion engines has greatly expanded human physical capabilities; the information age represented by the Internet and precision guidance has achieved an unprecedented leap in human perception; the rapid development of intelligent technology represented by deep learning and autonomous decision-making is accumulating material and capability foundations for the intelligent era of "controlling energy with intelligence". From a military perspective, new combat forces composed of intelligent payloads, intelligent platforms, and intelligent systems will give rise to new combat styles such as unmanned swarm warfare, cognitive control warfare, and intelligent algorithm warfare. Seizing "intelligence control" will become a new commanding height for war control.

Intelligent combat system has become the main form of force. The core of intelligent combat system lies in "human command, machine autonomy, network support", which is the key difference from the mechanization and information age. Intelligence is not unmanned. Intelligent combat system is "platform unmanned, system manned", weapons are in the foreground and personnel are in the background; intelligence is not the transformation of weapons into people, but the transplantation of human intelligence into weapons, and people and weapons have achieved a high degree of integration. Although the current artificial intelligence technology is developing rapidly, it is dominated by people and mediated by people, which essentially reflects the progress of human understanding of intelligence. No matter what kind of breakthroughs are made in intelligent technology, people will still be the initiators, designers and final decision-makers of war. People's combat thinking is materialized into intelligent weapons in the form of rules, algorithms, software and data. In war, intelligent weapons implement people's combat intentions and achieve predetermined combat objectives. Behind the autonomous combat of intelligent weapons is still the contest of people's combat methods, command methods and will quality. Autonomous characteristics are the core attributes of military intelligence and the essential characteristics of intelligent combat forces. In other words, weapons and equipment have some of the intellectual attributes of humans, and can achieve adaptive battlefield environments, self-coordinated complex actions, and self-organized force formation at the battlefield combat action level under human decision-making and control. Therefore, all the advantages of intelligent combat forces are derived from the characteristic of autonomy. Intelligent combat forces are also agile. Since combat operations are more autonomous by machines, the cycle time of "observation-judgment-decision-strike" will be shortened to a near-instant response, thereby achieving a cross-generational leap in action speed and combat rhythm. Network technology has spawned the iterative development of the Internet, the Internet of Things, and the Internet of Intelligence, which is the basis for improving mechanization, realizing informatization, and supporting intelligence. The rapid development of new network technologies such as the Internet of Everything and human-computer interaction is leading the evolution of combat formations to "man/unmanned" mixed formations, supporting intelligent combat forces through efficient collaborative networks, and realizing task customization, autonomous formation, and flexible coordination. Once the network environment that the intelligent combat system relies heavily on is destroyed and the link is interrupted, its combat function will suffer huge damage or even paralysis. This has prompted countries around the world to attach great importance to the resilience of intelligent combat systems in resisting interference and strikes.

Autonomous combat becomes the main combat mode. As intelligent combat systems are widely used in equipment troops and gradually become the main combat force on the battlefield, autonomous combat has become the main combat mode, profoundly changing the combat style in terms of autonomy, scale, flexibility, cognition, etc. According to the current development trend of military intelligence, it can be predicted that the following combat styles will appear in the future. The first is adaptive combat. That is, relying on the autonomous learning ability of intelligent weapons, it can respond agilely to complex battlefield environments, realize autonomous judgment, autonomous decision-making, and autonomous execution of combat operations, and exert the best combat effectiveness. Specific application styles include "extreme speed acupuncture warfare", "intelligent paralysis network warfare", "bionic special warfare", etc. The main advantage of this combat style is that it can greatly break through the inherent weaknesses of human psychological limitations, combat time limitations, combat mobility limitations, etc., and is especially suitable for deep into enemy-occupied areas, nuclear radiation areas and other high-risk areas to perform combat missions; at the same time, relying on the agility characteristics of intelligent weapons, through the rapid strike rhythm, the opponent cannot organize an effective response, thereby raising the speed to a new height. The second is cluster consumption warfare. That is, it is a combat style that mainly uses intelligent unmanned cluster formations and is supplemented by a small number of manned combat systems, imitating the "group intelligence" displayed by animal groups in nature, and performing combat tasks in a group autonomous collaborative mode. Specific application styles include "swarm" combat, "fish school" combat, "wolf pack" combat, etc. The main advantage of this combat style is the use of low-cost small intelligent weapons to destroy the opponent's high-value combat targets with saturation attacks or suicide attacks, and transform the number advantage into an asymmetric system advantage over traditional large main combat platforms. The third is synchronous and parallel combat. That is, the combat functions are decomposed into a variety of heterogeneous small manned and unmanned combat platforms deployed in the entire domain, and a distributed communication network is established between multiple platforms to achieve synchronization in combat time, space, and level, and jointly complete combat tasks in a systematic form. The main advantage of this combat style is to use the intelligent network to extend to the intelligent sensors, combat platforms and individual systems distributed over a wide area, implement synchronous and parallel strikes, and seize combat advantages.

"Intellectual control" has become the core control of war. The development of war control is consistent with the evolution of war forms. Firepower and mobility are the dominant factors for winning mechanized wars, and land control, sea control, and air control have become the core of the struggle for war control; information power is the dominant factor for winning in informationized wars, and air control and information control have become the core of the struggle for war control; intelligence advantage is the dominant factor for winning intelligent wars, and "intellectual control" has become the core of the struggle for war control. Intelligence dominance, autonomous control of energy, and winning by wisdom will become the basic rules of intelligent wars. The struggle for "intellectual control" is concentrated in the comprehensive competition of "algorithm + data + cognition". Algorithms are the core of intelligent technology, and "algorithms are tactics, and software defines warfare" has become a distinctive feature of intelligent warfare. The core of building algorithms is to create abstract models based on problems and choose different methods to complete the design of algorithms according to the target problems. The party with algorithm advantages can accurately simulate combat scenarios, accurately estimate combat results, and maximize the deduction and optimization of combat plans, providing a powerful means to achieve victory before the battle. "Whoever has advanced algorithms will have the advantage of winning" has become a new law of winning in wars. Data is the core resource of many disruptive technology groups in the era of intelligence. Mastering data, analyzing data, competing for data, and applying data in war have become the key to victory in intelligent warfare. Intelligent weapons have some human intelligence characteristics, which makes the cognitive domain the focus of war confrontation. With cognitive loops as the goal, relying on intelligent technology to limit the enemy's acquisition of effective information, force the enemy to use wrong information, delay cognitive speed, induce cognitive patterns, and block cognitive output, it can disrupt the enemy's command and decision-making, disintegrate its people's morale, and realize the customizability and controllability of the ancient war rule of "attacking the heart first". In information warfare, the party that loses the right to control information, although the combat personnel and platforms are not eliminated, has lost the smooth communication between each other and cannot form an organic whole. In intelligent warfare, if the intelligence advantage is lost, even if there is information advantage and energy advantage, the overall combat effectiveness will be greatly reduced due to the disharmony between man and machine and the failure of autonomous decision-making.

Intelligence has not changed the essential nature of war. Marshal Ye Jianying pointed out that "war is fought on two fronts: the first is politics, the second is technology. Politics determines the nature of war, and technology determines the style of war" [6]. Intelligent warfare has not overturned the basic principles of the Marxist view of war, but there will be many new developments and changes in the basic scope. On the one hand, the political determinism of intelligent warfare has not changed, and it is still a tool of politics. Politics determines the cause, purpose and nature of war. Without the purpose of war determined by politics, war becomes blind killing and war has no soul. In today's era, hegemony and power politics are still the main causes of war. Ethnic and religious conflicts, energy and resource competition, territorial sovereignty and maritime rights disputes will still be the direct causes of war. The widespread use of unmanned autonomous systems has blurred the boundaries between war and non-war. The reduction of strategic and military risks may lead to a lower threshold for future wars. In particular, the dual-use of intelligent technology and the popularization of the "open source sharing" model represented by "crowdsourcing", "crowdfunding" and "maker" have made the acquisition channels of more and more equipment and technology more commercialized, which will bring profound changes to the war subjects in the intelligent era, and the war subjects represented by non-state actors will become more diversified. On the other hand, the political factors for winning intelligent warfare have not changed and are still determined by the nature of war. Wars that promote historical progress and reflect the political purposes of the interests of the majority of the society are just wars, and vice versa. Just wars must win, and soldiers and civilians are the basis of victory, which will still be the iron law of winning in the era of intelligent warfare. However, as intelligent technology breeds an intelligent society, it will reposition the status and role of the people in intelligent warfare, significantly expand the breadth and depth of people's participation in war, and the people will increasingly become the direct attack target, defense subject and strong backing of intelligent warfare. Therefore, it is necessary to examine intelligent warfare dialectically and comprehensively, avoid "pure military viewpoints" and "pure technical viewpoints", recognize the "change" and "unchange" of intelligent warfare, and explore the way to win intelligent warfare.

**Scientifically predict the development trend of intelligent warfare**

At present, intelligent warfare is still in its infancy. Predicting the development trend of intelligent warfare is necessary and challenging. Some scholars have pointed out that although the future development trends of technologies such as machine learning, industrial robots, and materials science can be roughly determined, it is still impossible to accurately predict how these technologies will be combined and what specific impact they will have on future warfare. [7] This requires breaking away from the thinking mode of starting from a single technology and focusing on understanding the possible development trends of intelligent warfare from a holistic perspective.

Intelligent warfare will show a trend of accelerating evolution in stages. With the exponential progress, combination progress, and data progress in the field of modern science and technology, as well as the accelerated transformation and application in the military field, the process of weapon equipment transformation is constantly shortening. In addition, the world today is in a period of great development, great change, and great adjustment. Regional turmoil and local wars will become the norm, and intelligent warfare practice exploration will become more frequent. All of these will promote the accelerated development of intelligent warfare. At the same time, restricted by subjective and objective conditions such as the development of intelligent technology, the integration of intelligent forces into combat systems, and the updating of military perspectives, the evolution of intelligent warfare will show obvious stages. Some scholars have proposed that to truly enter intelligent warfare, artificial intelligence technology needs to take four steps, namely computing intelligence, perceptual intelligence, cognitive intelligence, and human-machine fusion enhanced intelligence. When artificial intelligence technology reaches the second step, intelligent warfare will begin to emerge. When it reaches the fourth step, the era of intelligent warfare will be fully opened. [8] Based on this, it can be preliminarily judged that relatively typical intelligent warfare will appear in the next 15 years or so, and intelligent warfare may become the basic form of warfare in the next 30 years. Practice has shown that every change in the military field and every evolution of the form of warfare begins with the rise of new combat forces. New combat forces have the nature of "trump cards" due to their unique and advanced military technology. They often break the balance of power on the battlefield and become the key force to defeat the enemy. Once new combat forces are integrated into the combat system and put into war practice on a large scale, it marks a fundamental change in the nature of the war. The real emergence of intelligent warfare will inevitably be the result of the development and growth of new combat forces such as intelligent unmanned combat platforms and intelligent unmanned combat clusters and their integration into the existing combat system. This is a long-term process that is gradually advancing and deepening. From initial integration to deep integration, it is by no means a one-day job.

The development of intelligent technology will determine the direction of intelligent warfare. Intelligent technology is a science and technology that comprehensively develops and applies cutting-edge technologies such as brain and cognition, biological intersection, advanced computing, big data, and micro-nano to study the mechanism of intelligent behavior and its realization. As the fundamental motivation and material basis for the evolution of intelligent warfare, the development trend, industrial foundation, technological maturity, and the depth and breadth of its application in the military field directly determine the future direction of intelligent warfare. In the more than 60 years of development, artificial intelligence technology has experienced "three ups and two downs". At present, the development of artificial intelligence is still in the primary stage of statistical learning, and it may be in the weak artificial intelligence stage for a long time. Strong artificial intelligence that evolves independently of humans is difficult to achieve in the short term. The development and breakthroughs of intelligent technology directly determine whether intelligence is an advanced stage of informatization, or a stage higher than informatization. At present, the development trend of intelligent technology drives intelligent warfare in the following aspects. First, intelligent technology empowers existing weapons and equipment. Although the current development is mainly dedicated intelligent systems for specific application scenarios, the combat effectiveness of traditional main combat platforms such as aircraft carriers and aircraft has been continuously improved, from direct human control to the ability to independently complete specific combat tasks. Second, intelligent technology will transform the future combat command mode. The integration of intelligent technology into and transformation of the command and control system will promote the hybridization of command subjects, the flexibility of the command system, and the flexibility of the command mode. The competition for adaptive, self-organizing, and self-coordinated command advantages at the combat action level will become more intense. Third, intelligent technology will update future combat processes. Intelligent technology will integrate multiple kill chains in land, sea, air, and space combat domains into a cross-domain kill network, fundamentally changing the traditional single combat process of "from sensor to shooter".

The law of contradiction in intelligent warfare will undergo profound changes. Applying the law of contradiction in war is the main way to grasp the laws of war, and the confrontation between the two hostile parties is the basic contradiction in war. For intelligent warfare, the basic contradictions of war will be concentrated in the competitive relationships between concealment and discovery, cognition and confusion, network resilience and network incapacity, attack and interception, speed of action and speed of decision-making, winning the hearts of the people and shaking morale, consumption and effect, delivery and denial. With the accelerated development of intelligent technology, these core combat confrontations will become increasingly fierce, and the exchange of advantages will become more frequent, thus promoting the continuous maturity of intelligent warfare. The confrontation between concealment and discovery in the future battlefield will develop in the direction of stronger intelligence, faster response, smaller size and lower price. As a strategic commanding height technology for controlling the "double-edged sword" of information explosion, intelligent technology will make the confrontation of enhancing the cognition of one's own battlefield situation and misleading, deceiving and confusing the enemy more intense. Technologies such as intelligent network information system design and dynamic target defense provide new ideas for the network construction of future wars, and technologies such as cognitive electromagnetic manipulation and electromagnetic spectrum warfare and cyberspace intelligent confrontation provide new ways to attack enemy networks. The development of autonomous unmanned systems and smart ammunition is expected to optimize the means of attack in future wars and enhance the power of attack. The development of autonomous homing weapons, ultra-short-range interception active protection and other performance will significantly enhance the interception and defense capabilities against new threats. Technologies such as autonomous unmanned systems and group collaboration will significantly increase the speed of action. Technologies such as intelligent decision-making assistance and group intelligent operating systems can greatly increase the speed of decision-making. Ubiquitous networks, social media and smart terminals are deeply integrated into human life, and the speed of information dissemination, the scope of impact and the accuracy of push have been unprecedentedly improved. With the emergence of low-cost swarm drones, missiles and other technologies, future wars are likely to overwhelm the enemy's defenses with low-cost combat platforms, forcing the enemy into a war that cannot be defended or afforded.

The ethical and legal regulation of intelligent warfare will continue to be strengthened. Intelligent technology is a double-edged sword. While promoting the evolution of war into intelligent warfare, it also brings a series of new war ethics issues and dilemmas in the law of war. For example, is it ethical to give machines the power to decide human life and death? When machines have the power to dominate human life and death, what awaits mankind may not be a brighter future, but a bottomless abyss without light. For another example, who should be held accountable for war crimes caused by intelligent weapons? This may involve the weapons themselves, users, designers, producers, etc., as well as a series of responsibility and power dilemmas brought about by this. In recent years, the international community has attached increasing importance to the legal regulation of intelligent weapons, conducting international dialogues through international conferences, establishing relevant institutions to study legal regulation principles, and promulgating ethical guidelines for artificial intelligence, etc. In July 2017, the Chinese government issued the "New Generation Artificial Intelligence Development Plan", which proposed from the national strategic level to "preliminarily establish artificial intelligence laws, regulations, ethical norms and policy systems" and "ensure the safe, reliable and controllable development of artificial intelligence." In April 2019, the European Commission issued the Ethical Guidelines for Artificial Intelligence, proposing seven conditions including transparency, fairness, security and human supervision. In October 2019, the US Defense Innovation Board proposed five principles for the use of military artificial intelligence: responsible, fair, traceable, reliable, and controllable. Looking to the future, it is urgent for the international community to regard safety and reliability as an important development direction of intelligent technology, conduct strategic dialogues around the explainability and transparency of military intelligence, prevent the safety risks of "instant collapse" of autonomous weapon systems, and design new rules of engagement, promote the establishment of international rules for the military application of artificial intelligence, and jointly respond to the global challenges that may be brought about by intelligent warfare.

**Strategic measures to meet the challenges of intelligent warfare**

The advent of intelligent warfare may create a new military generation gap, affect the balance of power between countries from a military perspective, and even trigger a new round of rise and fall of major powers. Intelligent warfare has not only brought new challenges of the times to national security, but also provided a rare strategic opportunity for our military to achieve overtaking. In the face of opportunities and challenges, it is urgent to plan ahead, plan ahead, and adopt comprehensive measures to strive to seize the strategic commanding heights of future military competition and firmly grasp the strategic initiative to maintain national security and win intelligent warfare.

Actively design intelligent warfare. First-rate armies design wars, second-rate armies respond to wars, and third-rate armies follow wars. In the face of the upcoming intelligent warfare, we must foresee wars as early as possible, actively design wars, aim to achieve the transformation from following, running side by side to leading, and strive to become the insight and game rule maker of future wars. First, we should focus on designing intelligent warfare from a scientific and technological perspective, enhance the cognition of cutting-edge science and technology, keenly grasp the new trends in scientific and technological development, and gain insight into the key areas, key directions, and key technologies that can trigger the evolution of war forms. We should design the initiative of war with the advancement of science and technology, design the flexibility of war with the combination of science and technology, and design the asymmetry of war with the subversiveness of science and technology. Second, we should focus on strengthening the development of new intelligent combat concepts, focus on the security threats facing my country in the future and the missions and tasks undertaken by our army, and focus on how to use intelligent warfare to solve the war threats and strategic dilemmas facing my country based on the development, application and impact of military intelligence. We should systematically conceive the intelligent combat scenarios that may be faced in the future around various strategic directions and new security fields, vigorously promote the innovation of intelligent combat theory, and accelerate the construction of an intelligent combat theory system with the characteristics of our army. Third, we will focus on strengthening the traction of intelligent combat needs, focus on new intelligent combat styles, systematically describe the required capabilities, systems, and equipment, use combat needs to drive the development of military intelligence, ensure that combat needs are implemented in all aspects and throughout the entire process of military intelligence development, and comprehensively improve the actual combat level of military intelligence development.

Develop intelligent weapons and equipment. Intelligent weapons and equipment are the material basis of intelligent warfare and an important symbol of an intelligent army. First, we must adhere to system construction. Informationized warfare is about systems, and intelligent warfare is about systems. At present, intelligent weapons and equipment represented by intelligent command and control systems, intelligent drones, intelligent tanks, intelligent missiles, and intelligent mines are still in a stage of decentralized development and are far from being systematically developed. How to build an intelligent weapons and equipment system, especially an intelligent network information system, has become a major strategic issue before us. Second, we must adhere to both offense and defense. Where there is a spear, there must be a shield. Where there is intelligent weapons and equipment, there must be anti-intelligent weapons and equipment. We must coordinate the development of offensive intelligent weapons and equipment and defensive intelligent weapons and equipment. For intelligent weapons and equipment, once the source code is obtained by the enemy, it is equivalent to obtaining the right to use the weapon. This puts forward new and higher requirements for the construction of intelligent weapons and equipment that are both offensive and defensive. Third, we must coordinate the integrated development of mechanization, informatization, and intelligence. We must adhere to supporting intelligence with mechanization and informatization, and driving mechanization and informatization with intelligence. Through the coupling, proportion optimization, and system integration of mechanization, informatization, and intelligence, we will accelerate the transformation and upgrading of intelligent weapons and equipment construction and improve quality and efficiency.

Shaping an intelligent organizational form. Without the modernization of the military's organizational form, there will be no modernization of national defense and the military. The basic function of the military's organizational system is to ensure the effective combination of military personnel and equipment, so that the overall combat capability of the military can be formed and continuously improved. To win intelligent wars and build an intelligent army, it is necessary to establish an intelligent organizational system and build an intelligent military force system. The intelligent military force system is an organic whole composed of combat forces that carry out combat operations under the authorization control or supervision of people, organized in accordance with human-machine collaboration and machine self-organization collaboration, with intelligent weapon platforms as the backbone, as well as combat support forces and logistics and equipment support forces that provide reconnaissance intelligence, communications, algorithm design and other activities. In accordance with the requirements of the idea of ​​"focusing on coordinated development, focusing on competitive advantages, and promoting system integration", we should focus on expanding the number of scales, optimizing the formation of troops, and innovating the organizational methods. On the basis of inheriting the traditional tree structure and the organizational model of the military and arms structure, we should take into account the dual organizational system of stability and innovation, strive to build a command system with a virtualized focus, explore and innovate new organizational methods such as cross-domain hybrid forces and manned/unmanned hybrid formations, and strive to achieve flexible, organic and efficient operation of the intelligent military force system.

Strengthen intelligent strategic management. The evolution of intelligent warfare began with science and technology and was achieved through management. To meet the challenges of intelligent warfare and accelerate the development of military intelligence, we must insist on placing strategic management in an important position, focus on improving the quality and efficiency of military intelligence development and the efficiency of the operation of intelligent military systems, stand at the overall height to strengthen overall planning, system design, centralized management and classified guidance, and embark on an intensive and efficient intelligent development path. Adapt to the requirements of rapid response capabilities of intelligent warfare, focus on optimizing management systems and mechanisms, adopt networked and autonomous management models, improve the planning and planning level of cutting-edge intelligent technology research and development, and the transformation and application of scientific and technological achievements, increase R&D investment and support, and ensure that scientific and technological innovation is at the forefront of the times. Strengthen the construction of the military standard system for artificial intelligence, speed up the introduction of relevant laws, regulations and rules involving intelligent facilities, intelligent systems, intelligent weapons and equipment, intelligent talents and intelligent warfare, and continuously improve the key policies and systems to support the development of military intelligence. Focusing on the characteristics of ubiquitous and easy diffusion of artificial intelligence technology, as well as the requirements of high coupling between national strategic capabilities, social productivity and military combat effectiveness, further optimize the layout of open integration of intelligent construction, smooth the organizational leadership system and mechanism, build a good development environment, and promote the organic unity of enriching the country and strengthening the army.

**Notes**

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