**Unleashing cognitive combat power to open the door to victory**

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**introduction**

In intelligent warfare, cognitive space is the key combat space, cognitive advantage is an important strategic advantage, and cognitive confrontation is the main form of confrontation. It can be said that "there is no war without cognition". Cognition contains huge combat effectiveness, among which the perception system is the portal, the thinking mode is the core, and the psychological factors are the cornerstone. Improving perception efficiency, building intelligent thinking, stimulating psychological advantages, and maximizing the cognitive combat effectiveness of officers and soldiers will greatly help win intelligent warfare.

**Perception effectiveness is linked to combat effectiveness**

Information processing theory holds that cognition is not spontaneously generated by the brain, but requires external information input. The complex battlefield information is screened by the perception system and then processed by the brain to generate intelligence for recognizing the opponent and judging the situation. In this process, perception effectiveness is the key, which directly affects the battlefield survival rate and combat effectiveness. Samsonov, an expert on the history of World War II, said: "When the battle of Stalingrad was the most intense, a soldier could not survive on the battlefield for more than 9 minutes, and an officer could survive for 3 days." Even though they are both soldiers, there is a big gap between the battlefield survival time of recruits and veterans. The difference in battlefield survival rate reflects the gap in perception effectiveness.

The battlefield situation is a ruthless examiner, the deadly artillery fire is a life-and-death test, and the perception efficiency is a sharp weapon for taking the test. The same test question is input into the sensory system of new recruits and veterans, and the output responses are very different: new recruits hear rumbling noises and panic, and self-rescue is still a problem, not to mention the ability to fight; veterans can hear the distance of the shells from the sound of the artillery, and can quickly hide and act decisively in the time difference between the sound of the artillery and the falling of the shells. On the battlefield where life and death are at the forefront, the perception system of combatants can only maximize their combat effectiveness if it responds "well" on the basis of "fast" and "accurate". When war moves from the mechanization of "truth is only within the range of artillery" to the informatization and intelligence of "discovery means destruction", facing the massive, multi-source, complex, heterogeneous and rapidly growing battlefield situation data, human perception speed and processing ability appear "dull and slow". Intelligent "sensing nodes", "perception systems" and "perception nerves" with sensors as the core have begun to appear, which will help combatants get out of the perception dilemma and achieve fast and effective perception and decision-making.

Intelligent perception of human-machine fusion provides powerful assistance to combat personnel, but also puts forward higher requirements. It is necessary to open up the "Ren Du Meridians" of empowerment and empowerment to improve the quality and efficiency of perception. Empowerment means to train officers and soldiers' perception systems in all aspects, reduce the "unfamiliarity coefficient" of complex battlefield information, improve the "adaptability base", and effectively promote the transformation of perception resources into perception capabilities in the game between perception stock and battlefield variables. Empowerment means to extend, expand and make up for human perception efficiency with the help of artificial intelligence technology. People are responsible for non-logical, fuzzy and irregular perception parts, such as prediction of unknown trends, feeling of incomplete information, and messy and irrelevant perception, so as to obtain "data beyond data, information behind information"; machines process logical, clear and regular perception parts, and use expert systems, knowledge graphs, brain-like computing and other intelligent perceptions to quickly extract high-value information from massive data, reduce the cognitive load of combat personnel, and achieve deep perception of battlefield situation.

**Thinking is the underlying code for success**

On the surface, military confrontation is a confrontation of hard power between the two sides, but at a deeper level, it is a contest of thinking power. In war, even the most advanced equipment is subject to a strong mind. Thinking, as the rational stage of the cognitive process, is the underlying code that determines victory in war.

The thinking of an army is the fuse that ignites its combat capability. Closed and backward thinking is like a fuse that gets damp and moldy. Even if there is a strong foundation of strength, it may not be able to fully burst out and release on the battlefield. In the late Qing Dynasty, China had the largest number of soldiers in the world and the strongest Beiyang Navy in Asia. The material strength to resist invasion was still vulnerable. "Backward thinking" led to the painful lesson of "backwardness will be beaten". After World War I, Britain, France and Germany developed mechanized weapons and equipment almost simultaneously. When the German army was determined to use the "blitzkrieg" theory to guide mechanized warfare, the British and French armies adhered to the concept of positional warfare, so there was the tragedy of the German army sweeping across the battlefields of Western Europe in the early days of World War II. One in China and one abroad, one far and one near, all reveal a truth: every era has its own war form and a matching thinking mode. Whoever occupies the commanding heights of thinking can seize the opportunity to win. In order to take the initiative in future intelligent warfare, we must boldly change our thinking and always focus on the horizon where the mast has just emerged.

Good thinking: Look up at the stars and build a military technology thinking system. Engels said that when the wave of technological revolution is surging around, we need to update and braver minds. In the face of the increasingly approaching intelligent war, if we cannot get rid of the path dependence and cognitive inertia of mechanized thinking in time, we will be like Poland during World War II. Facing the "armored torrent" of the German army, we were reluctant to give up the "world's largest" cavalry. Not only will we be defeated on the battlefield, but we will also be eliminated by the times. To adapt to intelligent warfare, we should keep a close eye on the leading and cutting-edge directions of military science and technology development, break the barriers of thinking, step out of the cognitive "comfort zone", focus on building a military technology thinking system, and enhance the sensitivity, cognition, and understanding of forward-looking, strategic, and disruptive technologies and new tactics that may be hatched from them.

Good use: Be down-to-earth and promote the implementation of military technology thinking. Advanced technology should be in the hands of good users. On the basis of renewing the old and embracing the new in thinking mode, we should accelerate the innovation of scientific and technological knowledge and the improvement of scientific and technological literacy, continue to promote the application of main combat equipment technology, improve the coupling and control degree between people and intelligent weapons, explore the potential of equipment and the "optimal solution" of technology, and "secondary empowerment" for the release of weapon technology value.

Changeability: Seek change and innovation, and foresee the future in the activation of thinking. Douhet, the father of "air supremacy", said that victory only smiles on those who can foresee the changes in the characteristics of war, not on those who wait for changes to happen before adapting. Military revolution is like a 100-meter hurdle race. When the starting gun sounds, whoever stops before the solidified thinking will lose the race. War will not remain unchanged, and thinking cannot be done once and for all. Only by taking the future as the orientation, accelerating the activation of thinking with a spirit of daily innovation and a diligent attitude, can the road to future victory be illuminated by the light of foresight.

**The focus of the competition is psychological balance**

Intelligent warfare is not only a "core war" but also a "psychological war". During the Iraq War, the US military deployed more than 200 psychologists, psychologists and psychiatrists to participate in psychological warfare. They targeted the psychological weaknesses, blind spots and sensitive points of the Iraqi army, and used the pervasive information "ammunition" and ubiquitous network "transmitters" to complete the "bloodless" psychological manipulation in silence. To adapt to the "heart" characteristics of intelligent warfare, there must be an overall design of "strong equipment" and "strong heart" to build together, and the construction of steel platforms and psychological platforms to support each other, as well as local efforts to break through single points, increase the use of "smart +" technology in the cultivation of fighting spirit, psychological assessment, and psychological training, improve the contribution rate of information and intelligent technology, and constantly sharpen the psychological advantages of participants.

"Use soft to overcome hard" and strengthen the cultivation of fighting spirit. Engels said that guns will not move by themselves, and they need brave hearts and strong hands to use them. Psychological checks and balances are wars without gunpowder smoke, and the essence is still the contest of material forces supported by spiritual power. To win this war, more steel and more spirit are needed. We should actively try to use intelligent technology to strengthen psychological advantages, use technology to boost morale, and use morale to multiply capabilities. Improve cognitive emotions, enhance will quality, and comprehensively improve soft killing capabilities.

"Test people" and strengthen psychological assessment. The practice of assessing and selecting soldiers has existed since ancient times. In the Spring and Autumn Period, the athletic ability of young recruits was tested to see whether they could wear armor and carry out military activities. Those who could were called "victorious clothes" and those who could not were called "unvictorious clothes". In modern wars, psychological confrontation is surging, and we should actively play the role of psychological assessment, scientifically carry out stress psychological adjustment, and reduce the occurrence of combat stress reactions. With the help of artificial intelligence technology, such as face recognition and emotional analysis big data, facial expressions, sight directions, and eye contact times are captured and recorded to identify the internal psychological state and behavioral characteristics of officers and soldiers. Based on the assessment results, psychological adjustment should be done throughout the whole process, at all times, and in all dimensions. Psychological prevention should be done before the war, and officers and soldiers with substandard mental health should be found early, and "emotional impurities" and "psychological blockages" should be eliminated in time; psychological regulation should be done well during the war to ensure that the psychological state of the participants is maintained at the best level of combat, reduce stress reactions during wartime, and improve battlefield survival rate and combat effectiveness; psychological recovery should be done well after the war to assist officers and soldiers in achieving a smooth transition between wartime and peacetime psychological states.

"Training to strengthen the heart" means strengthening psychological training. Clausewitz pointed out that the bravery of soldiers is different from the bravery of ordinary people. The bravery of ordinary people is a natural quality, while the bravery of soldiers can be cultivated through exercise and training. Winning intelligent wars urgently requires the empowerment of psychological training. We should establish the concept of psychological training to produce combat effectiveness, make full use of artificial intelligence means such as computer vision, human-computer interaction, and virtual reality technology to build a high-stress environment for the virtual battlefield, carry out immersive relaxation training, battlefield psychological adaptability, psychological endurance, and psychological stability training. Through these trainings, we can help the combatants to effectively enhance their psychological resilience and stimulate their psychological potential by experiencing the battlefield environment in advance again and again, and prevent the occurrence of psychological damage in war.

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