**Insight into the Evolution of Cognitive Warfare**

Source: China Military Network-People's Liberation Army Daily

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2022-09-29

<http://www.81.cn/yw_208727/10188151.html>

Cognition is the process by which people acquire, process and apply information and knowledge. At present, the cognitive domain has gradually become a new battlefield for competition, and cognitive warfare has gradually received attention from all countries. With the development of the scientific and technological revolution and the expansion of war practice, cognitive warfare is showing an accelerating evolution trend.

Cognitive technology is becoming the basic driving force of the evolution of war. Technology changes the form of war and also changes the way of cognitive warfare. If the large-scale popularization of information networks has promoted the information domain to become a combat domain, and the exponential growth of data and network scale is a sign of the maturity of the information domain, then the large-scale application of cognitive technology and the continuous iterative development of cognitive technology will become a sign of the maturity of cognitive warfare. In the future, technologies in cognitive environment, cognitive perception, cognitive control, artificial intelligence, etc. will reflect the transformative impact that cognitive technology may have on social cognitive confrontation and military cognitive confrontation. Human beings are entering the era of universal communication. The global cyberspace is being highly linked. The network has become a combat space for comprehensive game between state actors and non-state actors. The contention and war of communication have become part of the high-intensity military action level. At present, major countries in the world have laid out the frontier of cognitive technology and carried out cognitive technology competitions. Through modeling and analysis, they seek to penetrate and control the human brain network, information network and social network; through deep calculation, actuarial calculation, and clever calculation, they aim to maximize the control of people's cognitive world and cognitive domain.

The cognitive domain is becoming an important battlefield in hybrid warfare. In the intelligent era, the way humans communicate is undergoing complex and profound changes. Offline communication is giving way to online communication. Various new media platforms have become the main channels for the public to understand the battlefield, and large social platforms have become the main battlefield for cognitive game struggles. Therefore, the combat domain of future wars will continue to expand. The space domain will expand from land, sea, air, and space networks to deep space, deep sea, and deep earth, while the logic domain will expand from the physical domain to the information domain and cognitive domain. War is no longer limited to the physical threats of traditional wars, but is turning to the social consciousness threats brought about by mass media and technological progress. Blockade and anti-blockade, dominance and anti-domination around communication platforms will become the focus of cognitive warfare, and the struggle for international discourse control using information as ammunition has become the main way of cognitive confrontation today. From the perspective of hybrid warfare, ideological propaganda and indoctrination, the penetration of values ​​and culture, traditional public opinion psychology and legal offense and defense, and information network warfare have all become important aspects of cognitive warfare. Hybrid warfare can achieve the goal of small-scale war or even victory without fighting through comprehensive game means such as cognitive warfare. The offense and defense in the cognitive field will be an uninterrupted and normalized struggle, and combat effectiveness will continue to accumulate and be gradually released.

Cognitive advantage is becoming a winning advantage in high-end warfare. Freedom of action in war is the lifeblood of the military. From the cognitive dimension, the deeper the understanding of the battlefield environment and combat opponents, the freer the action and the greater the relative advantage. However, with the exponential growth of combat data in war, commanders are beginning to face the cognitive dilemma of data swamp, data fog, and data overload. Having information advantage does not mean having cognitive advantage. An important military application direction of artificial intelligence technology is to process massive data in real time, help commanders get rid of cognitive overload, and quickly form cognitive advantages. In intelligent warfare, cognitive advantage will dominate decision-making advantage, and decision-making advantage will dominate action advantage. Cognitive advantage has four key indicators: stronger information acquisition ability, faster artificial intelligence machine learning speed, more effective emergency handling ability, and higher ability to develop and apply new technologies and new knowledge. For example, public opinion warfare with data-driven intelligent communication as its new feature has been highly coordinated and integrated with traditional military operations. This virtual-real integrated combat style has stronger combat effectiveness than simple military operations, which has fundamentally changed the traditional combat methods. The linkage and superposition of cognitive advantages will accelerate the transformation of combat effectiveness and become a fundamental advantage for winning wars.

Cognitive theory is becoming the forefront of the game of winning wars. Cognitive warfare is a combination of soft power and hard power, and is an important factor affecting national security in today's era. At present, the competition for penetration and counter-penetration, attack and counter-attack, control and counter-control in cognitive space is fierce. Cognitive science theory is entering the military field. Concepts such as cognitive load, cognitive enhancement, cognitive immunity, and cognitive subversion have appeared frequently in the field of foreign cognitive warfare research. Foreign militaries believe that the cognitive domain is the "sixth combat domain" of human warfare, the core of the "intertwined conflict domain" in the era of great power competition, and an important direction for future military theory innovation. Obviously, cognitive warfare has become the strategic commanding heights for winning future wars, cognitive theory has become the frontier of theoretical innovation, and cognitive technology will accelerate the advancement of cognitive warfare to become an important "trigger point" for the intelligent military revolution. Since new technologies, new theories, and new styles of cognitive warfare are in the process of accelerated incubation, perhaps future wars will present a surprising new situation.