**Cognitive domain from a humanistic perspective and its national security strategic value**

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【Abstract】Cognitive domain has become an important position in the national security strategy around the world today. In philosophy, cognitive domain is the basis for human cognition. Thinkers such as Shannon and Foucault have analyzed the fundamental position of cognitive domain in information dissemination and knowledge construction in the human world, and the competition between cognitive domains has become the epistemological root of the post-truth society. After entering the digital age and intelligent society, cognitive domain has further expanded from the fields of human psychology and linguistics to computer algorithms and data structures. The new concept of cognitive domain has brought an unprecedented intelligent environment and space. This space is not neutral, but has national attributes. It is a new field for countries to compete in the future. Therefore, for the future national security strategy, in order to obtain strategic advantages in the "leading cloud", it is necessary to establish a certain cognitive domain sovereignty under the cooperation of autonomous algorithm systems, data structures and operating systems. Only in this way can we maintain and protect national security in the intelligent space and the world of the Internet of Things.

【Key words】Humanistic perspective, cognitive domain, national security strategy

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On May 30, 2023, General Secretary Xi Jinping presided over the first meeting of the 20th Central National Security Commission and stressed the need to “accelerate the modernization of the national security system and capabilities, and safeguard the new development pattern with a new security pattern”[1]. General Secretary Xi Jinping stressed at the meeting: “The complexity and difficulty of the national security issues we are currently facing have increased significantly. The national security front must establish strategic confidence, firm confidence in victory, and fully recognize its own advantages and favorable conditions. We must adhere to bottom-line thinking and extreme thinking, and be prepared to withstand major tests of high winds and rough waves, even stormy waves. We must accelerate the modernization of the national security system and capabilities, highlight the clear orientation of practical combat and practicality, pay more attention to coordination and efficiency, rule of law thinking, scientific and technological empowerment, and grassroots foundation, and promote the organic connection and linkage integration of all aspects of construction.”[2] In this passage, it is worth noting that the national security system has been highly linked with “scientific and technological empowerment” and “grassroots foundation”. With the development of science and technology and its applications, we need to think about national security strategic issues in more aspects of “linkage and integration”.

Today, we see that the new developments in cloud computing, big data technology, deep learning, edge computing, artificial intelligence, virtual reality, metaverse and other technologies have, to a certain extent, challenged the previous understanding of national security strategy. In fact, these technological spaces and virtual reality systems formed by new scientific and technological fields are not neutral, but are full of ideological and geopolitical struggles. The most core manifestation of this is the concept of "multidomain operations" proposed by the US Department of Defense in 2016[3]. "Multidomain operations" has surpassed the traditional understanding of war. In addition to the physical weapons operations (physical domain) and the ideological concept operations (conceptual domain) that people often understand, it also raises the issue of operations in the "cognitive domain". On the one hand, cognitive domain operations are not purely physical battles, because they affect human consciousness and cognition, and the object of their action is cognition (of course, not only human cognition, but also artificial intelligence cognition). On the other hand, the cognitive domain is not an ideological struggle in the traditional sense, that is, it does not achieve ideological influence on human beings by mastering the content of news media, education, intelligence, etc.; on the contrary, the cognitive domain is closer to the underlying algorithmic level of digital technology and intelligent technology. In other words, it is what makes cognition possible in the intelligent-digital age. This thing constructs a basic format at the bottom of the algorithm, or the simplest algorithmic model. All data and information are constructed on this most basic format and model. This most basic algorithmic model and basic format have become the most important components of cognitive domain operations.

However, so far, most of the research on cognitive domain has appeared in the military field and the technical field of science and engineering. The humanities are not very familiar with this new field of national strategy. With the development of social epistemology research, especially the intervention of digital technology, communication technology and intelligent technology, we need to re-examine the issue of cognitive domain from the perspective of humanities. Because the rise of cognitive domain brings not only technological changes, but also promotes the shaping of people's worldview, values, and outlook on life in the huge information cocoon, and also involves the basic cognition of individuals. The understanding and explanation of this issue is not a purely technical issue, but an issue that requires the participation of humanities scholars. When we face the future national security strategy, what kind of common understanding do we need? How to realize the strategic value of this cognitive domain with the intervention of digital technology and intelligent technology?

**Cognitive Domain in a Post-Truth Society**

In today's world of highly developed 5G communication technology, cognitive science, intelligent technology, and digital technology, there is a well-known concept, that is, "post-truth". After Donald Trump defeated Hillary Clinton and became the president of the United States in 2016, the president who claimed to rule the country with Twitter became the subject of much discussion. Among them, in the American intellectual community, the most famous explanation of this issue is that social media such as Twitter, Facebook (now changed to Meta), Instagram, and TikTok have brought about a cognition wrapped in "post-truth". Under the control of this cognition, the so-called post-truth society has been formed. The post-truth society does not mean that people no longer believe in real things, nor that people only read those fake news, but that the standards of truth and falsehood have suddenly become invalid. In other words, we cannot understand the post-truth problem on the basis of the dualism of truth and falsehood, but what kind of basis constitutes the distinction between truth and falsehood, and whether this basis and the tools for distinction are universal and general. In a previous article, I emphasized that truth is a factual judgment based on epistemology. “The reason why we are human is that we are not confined to this epistemological barrier. We must use various methods to approach the truth. In the process of approaching the truth, that is, once we step out of the circle of self-consciousness and face the so-called real world, we must need some kind of tool, and this tool serves as the basis and support for our progress.” [4] In short, the real problem brought about by the development of digital technology and intelligent technology is not that illusions have replaced the truth, but that the tools and foundations used by human society to distinguish between truth and falsehood in cognition have caused problems. In the past, people could trust the facts derived from scientific research, empirical judgments, and data analysis, but today people are wrapped in information and data mixed with truth and falsehood, and accept the so-called “facts” under the impact of various articles, pictures, videos and other information. With the emergence of generative intelligent applications such as ChatGPT and Midjourney, all kinds of information can be generated and modified. What looks like real photos or videos can actually be generated through analysis and synthesis using artificial intelligence programs. In the face of such information, what do we rely on to judge the truth or falsehood of the information, and how do we shape the reality under digital technology and intelligent technology?

Take data as an example. The previous statistical and analytical information was relatively reliable, but in the era of big data, various types of data information have emerged. Some important data information, such as gross domestic product (GDP), consumer price index (CPI), purchasing managers index (PMI), etc., are the core data for statistically analyzing the economic status of a country. These data reflect each other and are difficult to falsify, so they have become the main basis for economic analysis of the economic development status and trends of a country or region. From these data, we can see the actual economic status of an economy. However, in the era of big data, these data actually contain some factors that are difficult to unify. For example, Hector MacDonald cited a case in his book The Post-Truth Era: "As technology changes our activities and what we value, the difference between GDP and human well-being is becoming increasingly important. The GDP of most developed countries has remained stagnant for many years. Critics believe that this means that our living standards are also stagnant. However, during this period, the quality of our machines, communications, and medicine has improved significantly, and we have access to almost endless knowledge, music, television, books, the Internet, and game resources... Since all these things do not cost a penny, most of these values ​​are ignored by GDP statistics." [5] In a sense, GDP statistics are of course real, and our feelings about the life around us are also real, but these two so-called "realities" do not completely match in terms of data, and cannot even be interpreted within a unified theoretical framework. This means that it is not the data of economics and statistics that are wrong, nor is it our perception of the life around us that is wrong. The real question is: in what sense is our cognition a cognition and dominates our thinking about the things around us?

To answer this question, we can go back to the French philosopher Michel Foucault. In his Archaeology of Knowledge, there is a very classic question, namely, how is knowledge formed? Foucault explained that knowledge "involves certain elements that should be formed by discursive practice so that scientific discourse can be formed if necessary, and scientific discourse is determined not only by its form and rigor, but also by the objects it involves, the types of statements it uses, the concepts it uses and the strategies it applies. Therefore, science is not necessarily related to what should have been experienced in the past or now, so that the ideal intentions unique to science can be established, but to what should have been said in the past - or what should be said now - so that a discourse that meets the experimental or formal standards of scientificity can exist if necessary" [6]. The basis of the knowledge problem that Foucault is concerned about is that knowledge does not lie in the factuality of reality, nor in its truth, but in how these so-called "truths" are expressed in discourse. In short, the occurrence of facts and the existence of truth are one thing, and how to express these truths in "discourse that meets the experimental or formal standards of scientificity" is another thing. In the data cases mentioned above, we believe in the data because the empirical scientific system since modern times has established scientific discourse on strict data analysis and calculation. Only those discourses that conform to data analysis and expression are truly scientific discourses, and only such discourses can express the "truth". For example, in today's European and American countries, the reason why the consumer price index CPI is so important is that today's economic discourse believes that CPI is a relative number that reflects the trend and degree of price changes of consumer goods and service items purchased by residents over a period of time. Of course, this is the result of a comprehensive calculation of the consumer price index of all residents (including urban and rural residents). In economic discourse, we pay attention to CPI because this index is directly related to the state of inflation (or deflation) and can measure the actual living standards of people. But the problem is that the reason why we believe in CPI is fundamentally our trust in the foundation of empirical science since modern times; it is also our trust in how to construct and calculate CPI in economic discourse, and the economic interpretation of the correlation between CPI index and actual inflation level. Only when we have trust in economic discourse and empirical science and take this discourse as the basis of our knowledge, can these data be presented as real knowledge in government agencies, the media, academia, and people's daily lives. To illustrate this point, Foucault used the concept of "epistem" in The Order of Things and The Archaeology of Knowledge. In Foucault's words, "epistem is the set of relations that connects the discursive practices that produce epistemological forms, science, and possibly formal systems in a given era; it is the way in which the transitions to epistemology, scientificity, and formalization are located and realized in each discursive formation" [7]. In short, the so-called epistem is the rules of discursive practice that we use to express knowledge and truth in science and daily life.

Foucault's definition of episteme is very close to today's cognitive domain problem. In fact, starting from Claude Shannon, the founder of information theory, cognitive domain problem has been regarded as the most basic problem in thinking about data, information and cognition. In his most important work, A Mathematical Theory of Communication, he clearly pointed out: "The basic problem of communication is to accurately or approximately reproduce at one point selected information at another point. Information is often meaningful. In other words, it refers to or is related to certain physical or conceptual entities according to a system." [8] The key word here is not the reproduction of information, but "selection". In information dissemination, what we face at the beginning is not accurate information, but a large number of signals. These signals cannot be integrated into meaningful information. In order to spread information, Shannon believes that it is necessary to create a set of system forms to reduce the entropy of information so that meaningless signals or noise can be transformed into meaningful information in the system. What is actually realized in communication is precisely this kind of information processed by the system. Information is a symbol system with meaning and content. Before system processing, they are meaningless signals. Our cognition and knowledge can only operate on meaningful information, and cannot understand noise and messy symbols. It can be seen from this that what our knowledge or cognition can grasp must be content information that has been processed by Foucault's "knowledge type" or Shannon's "system form". In other words, without these "knowledge types" and "system forms", we cannot form effective cognition. In this sense, we can call this system that processes various noises and messy symbols and signals into meaningful information or knowledge a "cognitive domain". The "cognitive domain" is what makes our knowledge and cognition possible. Without the "cognitive domain", we cannot obtain meaningful information from the world around us, nor can we form any knowledge and cognition.

As the most basic system rules and forms, "cognitive domain" not only determines the possibility of our knowledge, but also determines what kind of cognition we can form. For example, our cognition of diseases actually depends on different "cognitive domains". In the "cognitive domain" of traditional Chinese medicine, different diseases are based on the theory of meridians. For example, the interpretation of colds in Zhang Zhongjing's "Treatise on Febrile Diseases" is "sunstroke, yang is floating and yin is weak. If yang is floating, fever will occur spontaneously, and if yin is weak, sweat will come out spontaneously" [9]. After French biologist Louis Pasteur discovered the existence of microorganisms, modern medicine associated symptoms such as colds and fevers with the invasion of bacteria or viruses. From this, we can see that for the same symptom manifestation, if it is based on different "cognitive domains", it will actually form completely different cognitions. More importantly, cognitive domains are not actually unique. There is a competitive and complementary relationship between various cognitive domains. If a certain cognitive domain occupies a mainstream position, it will determine what kind of knowledge and cognition people are more likely to adopt.

Back to the issue of post-truth society, through the introduction of the concept of cognitive domain, we find that the post-truth society is not about the issue of truth and falsehood, but rather the issue of competition and conflict between different cognitive domains. A certain cognitive domain that previously dominated gradually declined, allowing various new cognitive domains to emerge. These new cognitive domains do not represent the birth of new truths, but in turn impact the existence of what the traditional cognitive domain regards as "true knowledge". For example, Trump's rise to power represents that the cognitive domain of a certain group is challenging the mainstream cognitive domain system in the United States, and making the previous mainstream cognitive domain feel the advent of the post-truth society. It is also because of this that, on a global scale, ideological struggles have evolved into deeper cognitive domain struggles.

**Generative AI and Cognitive Domains**

Midjourney, an artificial intelligence system for painting, has become a hot topic of concern in 2023, just like ChatGPT. Generally speaking, Midjourney will draw the image that the user wants based on a series of keywords given by the user, such as "draw the image of an Indian couple in the Ganges River". Midjourney will give a work that basically meets the user's requirements based on the logic learned in the corpus and database. However, can we imagine such a situation: Can Midjourney also draw when we enter a series of garbled characters on the user interface? The answer is yes. When someone tries to give a series of characters that are completely meaningless to humans, Midjourney can still continue to draw, regardless of whether the painting meets the user's requirements. In fact, at the philosophical level, this has a consequence that the characters that are meaningless to the user are turned into meaningful pictures by the artificial intelligence program. The user who entered this string of garbled characters did not give meaning to this string of characters, but the final result is that the output picture has epistemological significance, so the question is, where does the cognitive meaning come from.

In the previous discussion, whether it is Chinese medicine or Western medicine, neoliberal politics or Trump's populist politics, or the cognitive type of the post-truth society, they have not actually departed from the cognitive scope of human beings, that is, we are still discussing the cognitive domain of human beings themselves. So, is there the possibility of other cognitive domains outside of human beings? To answer this question, we do not need to go back to the theology of medieval mysticism. In fact, there have been similar thoughts in modern physics problems. For example, the famous Maxwell's demon problem. In order to oppose the second law of thermodynamics, James Maxwell, a Scottish physicist in the 19th century, imagined a situation: an insulated container is divided into two equal parts, with a small door in the middle. In this container, molecules doing irregular motion keep hitting the small door. As a result, some of the faster-moving molecules will enter one of the cells, while the other cell is those with slower motion. Due to the different molecular motion speeds between the two cells, the temperatures of the two cells are different. The physics of Maxwell's time seemed unable to perfectly solve this paradox, so Maxwell had to assume a little demon with intelligence that could identify the speed of molecular movement, so as to put some of the faster-moving molecules through the "gate" into another grid, while other slower-moving molecules remained in the original grid. This is the famous Maxwell's demon problem. The reason why Maxwell's demon has attracted attention is not only because it challenges the second law of thermodynamics in classical physics, but also because of how Maxwell's demon obtains the intelligence to judge the speed of molecules, and whether this judgment intelligence means that Maxwell's demon also has some kind of knowledge. According to Foucault, once Maxwell's demon has knowledge, it must mean that it has a knowledge type, that is, it will raise the issue of the existence of non-human cognitive domains.

After entering the 20th century, Belgian chemist Ilya Prigogine used the theory of dissipative structures to solve the problem of Maxwell's demon. However, this did not eliminate the thinking about the problem of non-human cognitive domains. With the invention of computer technology and the emergence of generative artificial intelligence technology based on machine learning, there is still a lot of thinking about non-human cognitive domains. For example, Canadian communication scholar Robert Logan once proposed: "The next way to process information emerged from science and mathematics in the form of computer technology, which is a unique method of automatically processing and organizing information based on cyberspace. The emergence of computer technology is to cope with the information overload of science and technology. Finally, the latest language form has emerged, which is the language in the form of the Internet and the World Wide Web, which is derived from computer technology and telecommunications technology. The emergence of the Internet is to cope with the information overload generated by computer technology to meet the needs of storing and transmitting information overload." [10] Therefore, in Logan's view, with the emergence of computer technology and digital technology, new languages ​​outside the human language form have emerged, and the emergence of such languages ​​will inevitably mean the emergence of new cognitive domains. In the cognitive domain constituted by computer language, since it does not rely on human physiological body and perception to create language and statements, it is bound to mean that the formal structure of the cognitive domain will go beyond the scope set by traditional linguistics, that is, there exists a non-human or super-human cognitive domain, which provides a basis for cognition beyond human experience and thought.

American linguist Noam Chomsky expressed a different opinion on this issue. He did not think that computer language and artificial intelligence language would bring about a new cognitive domain. Chomsky once proposed the famous "generative grammar system". In other words, language only needs to rely on a very simple generative grammar rule to generate an infinite number of sentences and cognition. Chomsky believes that "the basic nature of language is to provide means for expressing an infinite number of ideas and for responding appropriately to an infinite range of new situations." [11] However, Chomsky himself does not think that the generative grammar system will really generate infinite knowledge, just like the Tower of Babel in linguistics; but the problem is that Chomsky realized that for humans, the reason why generative grammar cannot generate infinite knowledge is precisely because of the biological limitations of humans, so that humans are constrained by the limitations of the human brain and body perception in the generation of grammar, expression and cognition. It is not difficult to understand that Chomsky's generative grammar system also involves the issue of cognitive domain, that is, setting the simplest grammatical rules, and making infinite associations of various elements on the basis of these rules, so as to continuously generate meaning and expression, and achieve the possibility of continuously producing cognition and knowledge. Today, popular generative AIs such as ChatGPT, Wenxinyiyan, and Moss in the field of artificial intelligence, no matter how they change, their basic models are Chomsky-style. Although Chomsky himself stood up to oppose the application scenarios of ChatGPT in early 2023, his criticism of ChatGPT was not to criticize its basic cognitive domain model, but to criticize that this infinite generative system will constantly infringe on the human knowledge domain and cause a situation beyond the biological boundaries of humans.

In linguistics, Chomsky saw the potential power of generative artificial intelligence, which was constantly devouring various corpora and data. Although the generative grammar system was still confined to human language communication and thinking, people had realized the potential of this generative grammar system. This forced people after Chomsky to think about a question: If the biological limitations of humans were removed, could the generative grammar system become a cognitive domain that was completely incomprehensible and incomprehensible to humans? On March 8, 2023, in the article "The False Promise of ChatGPT" published by Chomsky et al. in The New York Times, Chomsky actually denied the possibility of artificial intelligence having a cognitive domain. The article pointed out: "ChatGPT and similar programs are designed to be infinite. They can 'learn' (that is, 'remember'); they have no ability to distinguish between possible and impossible. For example, ChatGPT is different from humans. Humans are given a universal grammar that limits the languages ​​we can learn to those with a certain mathematical elegance, while these programs learn languages ​​that humans can learn and languages ​​that they cannot learn in the same way. Humans can only rationally infer a limited number of explanations, while machine learning systems can learn both 'the earth is round' and 'the earth is flat'." [12] Chomsky believes that although generative grammar can generate sentences infinitely, they are only generated mechanically, rather than establishing a connection with true judgments. Although the generative artificial intelligence system can generate the two sentences "the earth is round" and "the earth is flat", it cannot establish an effective connection between the generated statements and specific objective facts. Only humans can establish a relationship between language expression and true and false judgments, and artificial intelligence such as ChatGPT does not have this ability. In Chomsky's view, artificial intelligence has no cognitive domain. It only has a basic generative grammar system, and this system does not constitute a cognitive domain system that is exclusive to humans. This is because, although artificial intelligence can create new sentences, such as "the earth is flat", in human judgment, this sentence cannot become real knowledge because it cannot correspond to the facts of the human world, and therefore can only become an invalid language combination.

However, if we carefully analyze Chomsky's logic, we will find that Chomsky's criticism of generative artificial intelligence such as ChatGPT has actually fallen into a circular argument. Chomsky believes that although ChatGPT can generate sentences composed of human vocabulary based on the basic naive Bayes algorithm, these sentences do not constitute knowledge innovation, because artificial intelligence can only generate sentences and expressions infinitely based on syntax, and cannot make truth or knowledge judgments on the sentences themselves, and this truth or knowledge judgment is unique to the human cognitive domain. In fact, while Chomsky pointed out that ChatGPT cannot make real creations, he also made a judgment himself, and the basis of this judgment is the perception and logical reasoning of humans based on the cognitive domain; in other words, Chomsky believes that ChatGPT generates a "false promise" and is not a real knowledge innovation, and the basis for making this judgment is the cognitive domain of humans themselves, which is consistent with the basis of his judgment that "the earth is round." In the field of artificial intelligence, the generation of sentences and their forms do not need to correspond to the judgment structure in the human life field. For example, the generative sentence "the earth is flat" criticized by Chomsky may not necessarily target the human cognitive domain, but can generate a space in cyberspace where "the earth is flat". For example, in online games or metaverse space, the judgment that "the earth is flat" can be meaningful. However, the generation of this meaning does not depend on human life experience and logical reasoning, nor on the real world, but forms a new relationship through algorithms and virtual reality technology. In this new relationship, sentences and expressions that were previously meaningless to the human cognitive domain can be generated into meaningful knowledge. The most extreme example is the Midjourney mentioned above, which can generate meaningful images for a bunch of meaningless garbled codes output by humans. This pile of garbled codes may be meaningless in the human cognitive domain, but based on the cognitive domain of Midjourney through machine learning, a logical connection is established between the garbled code symbols and data, that is, the meaningless garbled codes in the human cognitive domain can gain meaning in the non-human intelligent cognitive domain. In this sense, computer technology and intelligent algorithms can completely generate meaningful systems based on the most basic language structure; this system can be a non-human structure, that is, a non-human cognitive domain. Some previously meaningless expressions can generate meaning in this non-human cognitive domain and be understood by intelligent terminal devices, including humans themselves being reinterpreted in this new cognitive domain. In this virtual world, the human body is not generated directly, but will be virtualized and generated into a digital twin. In the digital world, we cannot rely on physical experience to establish knowledge, but need to rely on digital virtual bodies to establish relationships with various languages, algorithms and virtual objects. The basis of this relationship is not the cognitive domain in the real world before, but the knowledge system regenerated in the digital world, that is, the digital cognitive domain.

In fact, many scholars in the field of computer research have discovered the existence of this non-human cognitive domain of digital twins. For example, Italian computer scholar and mathematician Roberto Salaco pointed out that "technology and digital information will help. The development of the field of cognitive digital twins will support the encapsulation and sharing of knowledge, aggregate knowledge into meta-knowledge, and generate new knowledge. Artificial intelligence is a powerful tool in this field. The original intention of creating cognitive digital twins is to encapsulate the knowledge of machines (robots). The expanded cognitive digital twin can map the knowledge of a person or a group of people (teams or organizations). The latter's knowledge will exceed the sum of all people's knowledge." [13] In this sense, digital twins and cyberspace do constitute a new type of non-human cognitive domain that is different from the cognitive domain of biological humans. These new cognitive domains are generating knowledge systems in different intelligent environments. These knowledge systems include not only the subject-object relationship between people and objects, the intersubjective relationship between people, but also the inter-object relationship between objects, as well as the circulation and exchange relationship between data of various terminal devices, switches, application scenarios, sensors, servers, base stations, etc. In the future, in the fields of unmanned driving, environmental intelligence, smart home, smart city, metaverse, etc., these digital technologies and intelligent technologies will create more cognitive domains. For example, the intelligent sweeping robot and the air conditioner equipped with intelligent sensors will form a knowledge exchange system between objects based on the smart home environment. The data exchange between them does not need to be known by the human individuals in the intelligent environment. The only thing human individuals can do is to enjoy the results of the exchange between these objects. In other words, on the road of future technological development, many new cognitive domain forms will be born, and these cognitive domains will become the most important foundation of intelligent life. Different intelligent production systems and consumption systems rely on these cognitive domains to varying degrees. Therefore, artificial intelligence technology and big data technology have brought the cognitive domain problem to an unprecedented height. We need to re-examine the cognitive domain problem from the perspective of national security strategy.

**National Security Strategy and Cognitive Domain Sovereignty**

As the cognitive domain problem expands from the pure linguistic and human epistemological dimensions to the dimensions of digital technology, communication technology, and intelligent space, the cognitive domain has also further extended from the scope of psychology and linguistics to the digital and algorithmic fields. From the analysis of the post-truth society and generative artificial intelligence in the previous article, we can initially draw the following conclusions about the cognitive domain problem.

The cognitive domain is the foundation that makes cognition possible. The cognition here not only involves human cognition itself, but also involves cognition in intelligent technology and the generated intelligent space. We can regard the cognitive domain as a processing device for generating meaning. In Shannon's understanding, entropy reduction is achieved through information processing, that is, meaningless noise and garbled codes are processed into meaningful information output. Before the digital age and the intelligent age, this processing must be completed through the human body and brain, and the output information is realized in the form of language. However, after entering the digital age, big data technology and intelligent technology have also participated in the process of information processing, forming an intelligent cognitive domain outside the human cognitive domain itself.

If we do not limit ourselves to the scope of epistemology, but instead talk about it from the perspective of social ontology, the cognitive domain is not only the basis of human and intelligent cognition, but also the basis for the unity of the community. In Foucault's view, it is precisely because we have the same discursive formation and the same knowledge type that dialogue between people becomes possible. The knowledge and discourse generated on the basis of these dialogues become the basis for the survival of the human community. French sociologist Pierre Bourdieu uses the concept of "field" to describe the foundation of human community. In other words, the reason why we can coexist with each other is not only the psychological emotions and empathy of human beings, but more importantly, we practice in the same discourse and knowledge field. In Bourdieu's view, the field is a "structured social space... It becomes a space where all actors try their best to change or protect this field" [14]. In short, the cognitive domain is a field, and further, a field of power struggle. Since the field achieves the identity of the social community, it means that whoever controls the cognitive domain controls the community. In the digital age and the intelligent age, control of the cognitive domain not only means control over the human community, but also means control over the future community composed of intelligent environments.

For national strategy, since cognitive domains are not unique, it means that in the future community jointly constituted by the intelligent world and the human world, there will be competition and even struggle between different basic cognitive domains. Although before the large-scale emergence of cognitive domains, various struggles in human history were frequently staged, including bloody wars, political intrigues, and ideological deceptions. But cognitive domains are not wars, nor politics, nor ideology. The struggle of ideologies depends on the indoctrination and acceptance of specific dissemination content, and on the persistence and choice of different ideological positions. In the pre-digital era, this ideological struggle actually resided in human psychology or social groups. Cognitive domains are completely different fields. In the intelligent era, cognitive domains are supported by basic protocols, basic algorithms, and data structures. In other words, cognitive domains have various formal foundations, on which different types of knowledge are constructed. As analyzed in the previous article, these formal foundations are not neutral in politics and values, but have distinct positions. Therefore, once we choose different forms of cognitive domains, it also means that we have chosen different communities and political positions. In today's highly platformized digital age, the struggle for cognitive domains is achieved through various platforms. When a country does not have its own digital platform (for example, European countries do not have influential social software), it means that the contemporary digital European youth generation is bound to realize their own interactions on American social platforms such as Twitter, Facebook (now Meta), Instagram, Google, Microsoft, and Apple, and enter the cognitive domain system dominated by the United States. Even if the content disseminated is not directly supportive of the United States, once entering this field, it is bound to mean that the young generation of Europe will become the "puppets" of these digital platforms to a certain extent.

From these conclusions, it is not difficult to see that after entering the digital society and the era of artificial intelligence, the cognitive domain issue has become a very important national security strategic issue. To explain this issue, we can also go back to Bourdieu's explanation of the concept of field. For Bourdieu, the modern nation-state is a field. The reason why it is a field is that the concept of the state has become the ultimate basis for all discourse and writing within the scope of the modern state (such as education, administrative documents, court decisions, media reports, etc.). Bourdieu said: "These are authorized actions with authority. And just as gods to Aristotle, this authority points step by step to the ultimate place through a chain of delegation: the state. Who guarantees teachers? Who guarantees the evaluation of teachers? This inversion can be seen in all other fields. If we take judicial trials as an example, it is even more self-evident; the same is true for a police record, a regulation formulated by a committee or issued by a minister." [15] Bourdieu's analysis shows that in a field, although the formal texts we write may not mention the concept of the state at all, the ultimate guarantee of these texts and writings in our written texts and formal discourse expressions is realized by the state as the ultimate foundation in a national community. Although we cannot see the presence of the state in our daily lives, this seemingly illusory concept is precisely the premise for all community behaviors and discourses to be established. Therefore, Bourdieu believes that "they are all actions performed and influenced by people with symbolic authority. This symbolic authority, step by step, points to a virtual community and an ultimate consensus. These actions are recognized, and people obey them - even if they resist, their resistance implies recognition - because they ultimately participate in a certain "virtual community" consciously or unconsciously." [16] In other words, in Bourdieu's view, the reason why a country becomes a country is not only because it has a certain territory and territorial waters, nor is it only because it has a certain number of permanent residents, but also because the country constitutes the field of the community, and all people and behaviors in this field are ultimately protected, and this protection is also a manifestation of state authority.

Although Bourdieu analyzed modern nation-states since modern times, his analysis of field issues is also applicable to the cognitive domain of the digital age and the intelligent age. For many scholars in the field of digital research and intelligent research today, the cognitive domain of digital space directly involves strategies in the field of national security. For example, Benjamin Bratton, an American sociologist and researcher in the field of computing science, imitated Carl Schmitt's analysis and discussion of the transformation from land countries to maritime countries in his book Land and Sea in his representative work The Stack: Software and Sovereignty. One of the important points is that maritime countries established the concept of territorial waters for the first time, which to some extent impacted the territorial principle of land countries. Territorial waters and airspace are the two most basic principles that dominate the world's geopolitical structure after the rise of Mediterranean civilization and transatlantic civilization, which makes the territorial principle of continental countries a parallel principle. Bratton believes that with the large-scale application of digital technology and intelligent technology today, a new sovereignty field has actually emerged, that is, a brand-new digital space field composed of platforms, algorithms, data, etc. Regarding this area, Bratton bluntly pointed out: "We should not only see the emergence of this platform sovereignty, but also embed it into the interface of strategic decision-making." [17] Bratton imitated Schmitt's description of territory and territorial waters and created a new term - "territorial cloud", pointing out that the cloud is also a sovereign area and needs to be intervened by the sovereign power of the state. Because the territorial cloud is a new space created by data, stacks, and algorithms, this space is not neutral, but has sovereign nature. Bratton points out that "the stack creates space by occupying space; it does this by abstracting data, absorbing data, and virtualizing it, which is why it is even possible to consider fundamentally creating a cloud nation. If the planetary-scale computational space is a new kind of 'free land', then this new land is simultaneously territory, territorial waters, and airspace, and is equally tangible and ephemeral. It can be within the sight of the Westphalian state and its internal laws, but also outside its borders and sovereignty; sometimes it is both outside its borders and internalized by legal and military demarcation lines."[18] In other words, this new cloud power space has actually become a new form of sovereignty after the land state and the maritime state. Unlike the ultimate guarantee of the concept of "state" that Bourdieu appealed to before, the ultimate guarantee of behavior and discourse in cyberspace and the cloud is not entirely achieved by state power today. If we trace this issue back, we will find that the rationality of our behavior and speech on digital platforms (such as Douyin, Bilibili, Weibo, etc.) is highly dependent on the grassroots algorithms and protocol structures that constitute this cloud region. For example, Bratton mentioned TCP/IP and OSI structures, which were developed by digital teams in the United States in the 1980s and 1990s, and enjoy extremely high network sovereignty. They are also the basis for the use of the Internet worldwide. The cognitive domain we analyzed earlier is formed on the basis of such a data stack infrastructure. In other words, what kind of underlying protocol and structure will determine what kind of cognitive domain, and will also form the corresponding cognition of humans and intelligent entities in the network and intelligent world.

Of course, the connection between the Internet and smartphones is still the dominant position of digital technology and network technology today. In this field, it is quite difficult for national security strategies to obtain the dominant position of the leading cloud and the sovereignty of the cognitive domain. However, for a long-term national security strategy, we are not only facing the current state of the digital world and the Internet, but also need to look far ahead to see the next generation of leading clouds facing intelligent technology. For example, with the development of 5G and 6G communication technology and the breakthrough of quantum computer computing power, we can imagine that in the future intelligent environment and the wide-area environment of the Internet of Everything, the operating system and cognitive domain of smartphones will no longer be the only dominant structure, which requires other companies and platforms to form systems different from operating systems such as Android, Windows, and IOS. For example, the LiteOS operating system developed by Huawei is a system built for the future lightweight Internet of Everything system. This system will inevitably form a cognitive domain system between people and things, and between things. This system depends on the dominance of sovereignty. If there is no sovereign dominance, the definition and architecture rights of the cognitive domain will be lost, which means that the thinking and knowledge of individuals under this system will inevitably be impacted accordingly.

Finally, we can see that when we think about cognitive issues in digital networks and intelligent spaces from the perspective of a "domain" and define them as "cognitive domains", it has fully demonstrated that this concept itself has important national security strategic value. The concepts of leading cloud and cognitive domains show us the basic forms of future national security and competition between countries. Some scholars pointed out: "Data is a strategic weapon. With the deepening of the information revolution, big data has risen from a key factor in leading the development of new economic industries to a strategic resource related to national security and national comprehensive competitiveness. The scale of a country's big data, the vitality of data, and its ability to understand and use data are closely related to its insight into the world situation, influence and dominance. The status of data as a basic strategic resource in the competition between major powers is more prominent, and the trend of cross-border political application of big data is becoming increasingly prominent." [19] In fact, this only talks about the problem at the data level. Data is of course the focus of national security. However, once the system and mechanism that generates data (i.e. cognitive domain) is controlled by other countries and institutions, the destructive power it brings is far greater than the impact of ideological output and data content. Therefore, for China's current national security strategy, developing its own data system, operating system, and intelligent algorithm system, and thus mastering the sovereignty of the cloud and cognitive domain, must be a necessary condition for future competition and game between major powers. Although there is still a long way to go in the new world of artificial intelligence, we must master the basic weapons of the cognitive domain, maintain the strategic initiative of national security, and lay a solid foundation for national security before entering a new cognitive domain competition and struggle.

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**Notes**

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