

Challenges and Countermeasures of China's Cyberspace Governance in the New Era

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Abstract. In the context of the new era, countries are constantly competing and cooperating in the field of cyberspace. China is facing an increasingly complex international environment. Meanwhile, the number of domestic cyber citizens is increasing and the structure is diversified, the incidence of cyber misconduct is increasing significantly. However, policies and laws for cyberspace governance in China are relatively imperfect. Facing with these challenges, China can carry out the practice of cyberspace governance from three aspects: pay attention to internet technology innovation, promote the governance model with multi-actors participation, and improve institutional guarantee.

Keywords: Cyberspace, Cyberspace governance, Cyberspace security.

1 Introduction

The situation in the cyberspace field has shown many changes in the new era. On the one hand, the international cybersecurity situation has changed abruptly, cyber security, development and freedom are the common goals pursued by all the countries Chuanying Lu, 2016 [1], and a community with a shared future has become the appeal of the times Zhengzhong Xu, 2020 [2]. The advent of the 5G era led to a deeper contest between China and the United States in the field of cyberspace. Cyber weapons, hacker and other cyber threats to cyber security are increasing. On the other hand, China's demand for Internet application and security surges, and the development of digital economy and industry advances by leaps and bounds. Digital civilization depends on cyberspace, the rapid development of Internet of Things catalyzes the update and iteration of internet technology. The proportion of the industrial economy built on the network platform is increasing, the internet popularity rate of the public is rising constantly. Hence, the security management and comprehensive governance of the cyberspace are facing unprecedented challenges. Cyberspace governance has entered a new era.

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2 Cyberspace and cyberspace governance

2.1 The concept and evolution of cyberspace

The term cyberspace first appeared in the short sci-fi novel by Canadian writer William Gibson to portray the unreal space experienced by computer enthusiasts. With the development of information technology and human knowledge, the connotation of cyberspace has been continuously enriched.

In 2003, the US National Strategy for Cybersecurity identified cyberspace as a space made up of thousands of interconnected computers, servers, routers, switches and optical cables that enable critical infrastructure to function properly. The International Telecommunication Union (ITU) has defined cyberspace as a physical or non-physical domain consisting of all or part of elements include“ng computers and their systems, networks and their software, data and users. “Human interaction” and “exchange of information” are highlighted in the definition of cyberspace in the British Cyber Security Strategy published in 2011. Therefore, cyberspace includes communication service networks, military networks, industrial networks, agricultural networks, etc., which connects physical space and continuously blends with physical space. Cyberspace is becoming a tool for understanding and transforming physical space. Since the establishment of the ARPA network during World War II in the United States, cyberspace has gone through the communication network stage, the information network stage, and the computing network stage Hongren Zhou, 2019 [3]. The first stage is based on basic communication needs. While in the second stage, network is not just a carrier of information, but also an operating platform for various businesses, shopping, social networking, teaching, finance, war, can all be conducted through the Internet, with “Internet +”as the main symbol. In the third stage, informatization moves towards socialization and molecularization, big data, artificial intelligence, global Internet of Things, cloud computing, have become the four major technologies of the new generation of informatization. Based on the four major systems, a global integrated super-large system driven by artificial intelligence is built. In the future, the direction of cyberspace evolution is the cyber-physical space. Cyberspace and physical space are more closely connected and eventually become a whole.

2.2 Connotation of cyberspace governance

Cyberspace governance refers to the international coordination and cooperation activities carried out by all stakeholders in the international community (national governments, private sectors, civil society and even users) in order to promote the orderly and healthy development of cyberspace based on the dual impact of technology and society on the development of the global Internet. Cyberspace governance can be divided into two areas: national governance and global governance, both of which are indispensable. Facing cyberspace governance, on the one hand, we should grasp the basic structure of cyberspace governance in China, on the other hand, we should pay attention to the current mode of global cyberspace governance.

The cyberspace governance structure is based on the three-tier architecture of Internet governance proposed by the Internet Corporation for Assigned Names and Numbers (ICANN), namely, the infrastructure layer, logical layer, economic and social layer Baoguo Cui, 2020 [4]. The infrastructure layer is mainly composed of internet switching center, terrestrial cables, submarine cables, satellites, wireless systems. The logic layer mainly solves the problems of root servers, domain name, IP address, and protocol parameters. The economic and social layer belongs to the content application layer, which is used for information dissemination and citizens' social and service rights.

Two patterns of global governance have gradually evolved over time in the course of global cyberspace governance practice: multilateralism and multistakeholderism. The former focuses on national sovereignty, is led by the government, and other groups collaborate to participate, collaboratively solve cyberspace-related problems and find development strategies within the framework of the United Nations W. Moritz, 2019 [5]. The latter is typical of Western countries, focusing on the needs of multiple stakeholders, weakening national sovereignty, and advocating for equality in participation. It is a bottom-up decision-making mechanism. The comparison of the two models is actually a contest between bottom-up and top-down decision-making mechanisms. In the practice of cyberspace governance, the United States practices multilateralism and has first-mover advantage, in fact the government has administrative jurisdiction to root servers, root zone files, the file system. Due to the international situation, the United States transferred its jurisdiction over IANA in 2016. Multilateralism was challenged by multilateralism, which is a kind of hierarchical order, the characteristics of network space more show the level of freedom and order, therefore, simple multilateralism or multilateral doctrine are not enough to achieve good governance in cyberspace.

2.3 Foreign experience in cyberspace governance

The United States is the initiator of the network technology and the superpower in the field of cyberspace, and has upgraded the cyberspace strategy to the national strategy. Its governance model is based on the multi-stakeholder model. On the one hand, it attaches importance to the development of technology-related enterprises and the protection of personal privacy data. On the other hand, the United States has established relatively complete legal documents, such as a network security review system. At the same time, at the content application level of cyberspace governance, the United States is constantly advancing the construction of military operations. This is a guarantee for national development that cannot be ignored or excessive. In addition, in the field of cyberspace, the United States has always been committed to technological innovation, from talent training to industrial investment, which deserves attention.

Singapore has a high degree of informatization, and the cyberspace governance has typical oriental characteristics, which can be used for reference in cyberspace governance of China. Singapore has established a sound organizational management system, policy system, and legal system in the cyberspace governance system. In 2015, the Cyber Security Agency of Singapore (CSA) was established to coordinate cyberspace governance and security matters. Its policy documents involved the construction of a secure cyberspace, the development of a dynamic cyberspace ecosystem, and the construction of a resilient key Information infrastructure, strengthening international cooperation in cyberspace and many other aspects. In 2017, the new cybersecurity bill was revised, and laws including the *Domestic Security Act*, the *Personal Information Protection Act*, and the *Abuse of Computer and Cybersecurity Act* were established to regulate cyberspace order. Singapore's cyberspace governance process has its own characteristics. The government's functional role is no longer "all-round", but "cooperative" Wei Wang, 2018 [6]. First, cooperation with ASEAN and other countries actively promotes the healthy development of global cyberspace. Second, tries to cooperate with domestic and foreign high-tech enterprises or colleges to absorb superior technology and professional personnel training methods. Third, Singapore cooperate with domestic people and explore national participation in cyberspace security governance.

The characteristics of cyberspace governance in Japan in the new era can be elaborated from three aspects. First, from the perspective of economic governance, Japan attaches great importance to the comprehensive upgrade of the application level of cyberspace, and the application and development of digital technology are laid out in an orderly manner under

the escort of a series of policies. IT Comprehensive Strategy Headquarters promulgated the *Digital Procedure Law* in May 2019, and formulated the *New IT Policy Outline for the Digital Age* in June 2019. Japan accepted applications for the “information banking” industry in 2018, the first authentication enterprise was born in March 2019, and it is at the forefront of the business model that uses personal information to create value worldwide Man Ding, 2020 [7]. Secondly, from the perspective of security governance, marked by the formulation of the *Network Security Strategy* in 2013, Japan officially entered the era of ultra-high development of network security, with increasingly improved institutional policy documents and authority departments, and explored a network space governance model combining the use of public power and corporate self-discipline. Finally, from the perspective of the integration of economic governance and security governance, Japan’s revised *Network Security Strategy* in 2018 first proposed the strategy of building a “cyber security ecosystem” in 2020, which is a mechanism for Japan’s international policy coordination mechanism to force itself to proceed useful exploration of practice, This strategy not only accelerates the practice of cyberspace governance in Japan, but also conforms to the governance philosophy of international cyberspace.

On the whole, taking the above three countries as examples, we can see that developed countries have the following experiences to learn from in terms of cyberspace governance: first, establish a sound institutional guarantee mechanism, including sound organization and clear management organization positioning, complete laws and regulations, and sound policy documents; The second is to pay attention to the development and application of the application layer in cyberspace to construct the ecosystem of cyberspace. Third, upgrade the cyberspace strategy to a national strategy; Fourth, the government should work with enterprises and citizens to advance the project of cyberspace governance.

3 Challenges of our country’s cyberspace governance in the new era

Cyberspace governance of China is facing both international and domestic challenges, which are embodied in the international environment, the scale of netizens, and cyber anomie.

3.1 The international cyberspace environment is complex

Between 2000 to 2009, the top Internet user growth not appears in developed countries, but in Africa, Latin America and other regions. It shows that more and more actors enter into the practice of the network space. The penetration rate of cyberspace in the fields of economy, security, individual power, and culture is getting higher and higher, and the cyberspace strategy has been upgraded to a national strategy. Various countries have coordinated and discussed the sovereignty involved in the three-tier structure of cyberspace governance structure. The level of technological development in the digital age is different Haimin Li, 2019 [8]. My country’s international influence has become one of the key factors affecting the build of a community with a shared future in cyberspace.

3.2 The number of network users is surging and the structure is diversified

The 44th China Internet Network Development Statistical Report by China Internet Network Information Center (CNNIC) shows that the scale and penetration rate of China’s Internet users have risen significantly from 2016 to 2019. By June 2019, the scale of China’s Internet users has reached 854 million, with an Internet penetration rate of 61.2%, as shown in the figure 1. The distribution of network users in terms of age, occupation and gender shows

different characteristics, and the network access methods are also more diversified. The large number of Internet users and the diversified structure pose a challenge to China's cyberspace governance.

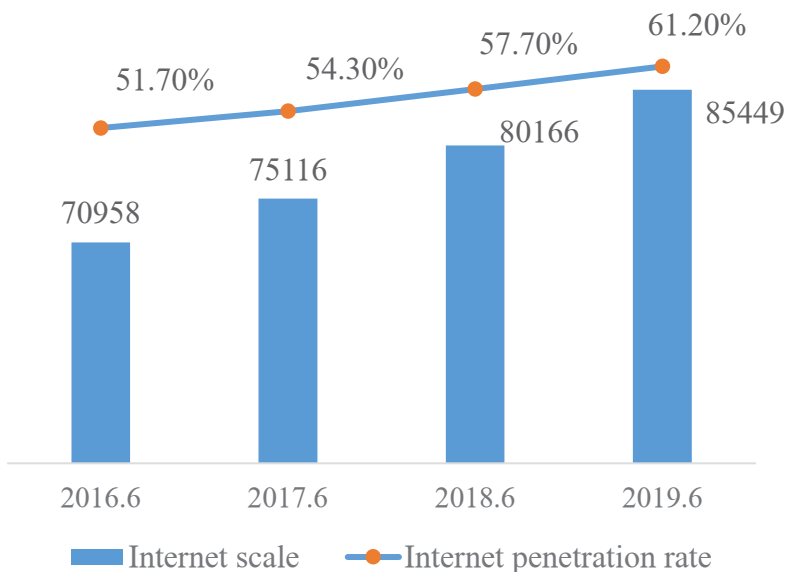


Fig. 1. The internet scale and penetration rate in China.

3.3 The number of cyber anomie climbs and the scope expands

Cyber anomie is mainly manifested in the form of cyber fraud, cyberattack, and cyber data leakage, and we are faced with both international and domestic cyber anomie. According to Reporting Center of Cyberspace Administration of China, the total number of acceptances of cyber violations and bad information in our country was 12.506 million in May 2019, while it rose to 15.199 million in May 2020. Although the relevant departments have taken certain measures in cyberspace governance, however the effectiveness is not optimistic. There is room for improvement in the role positioning and organizational management structure setting of departments and institutions, and the corresponding laws and regulations concerning cyberspace governance need to be further improved to provide guarantee for cyberspace governance.

4 Countermeasures of cyberspace governance in our country

According to the challenges we face in cyberspace governance, our country should take corresponding measures to deal with it.

4.1 Strengthen international cooperation and pay attention to internet technology innovation

Internet technology is the foundation of cyberspace and the driving force of national development. According to the “Global Connectivity Index” released by Huawei, information and communication technology (ICT) infrastructure investment is highly

correlated with economic growth, and every 20% increase in ICT investment will pry 1% GDP growth. Therefore, in the exploration of cyberspace governance mechanisms, the first thing to consider is to improve the ability of Internet technology innovation, which is a consistent practice in the United States. First of all, we can refer to the practice of Singapore, draw on the technical strength and professional talent training experience of developed countries in national cooperation, and then we hope find technological breakthrough points, improve the strength of professional talents in China, build technological pioneers by top-notch innovative talents. Second, in terms of economic development, application and security management of cyberspace, Japan is at the forefront of in the word. We should also strengthen cooperation with other countries, carry out multinational cooperation on the basis of trust, promote the exchange of experience and consultation on international rules, and jointly build a community of shared future in cyberspace.

4.2 Innovate the governance model of cyberspace and coordinate with multiple actors to participate

In the process of cyberspace governance, we should exert public power, at the same time give full play to the initiative of other actors. Exercising public power means that cyberspace governance proceeded by a powerful management organization. The function of the organization is not only to supervise, but also to take the initiative. It is also a key force for coordinating the participation of enterprises, democracy, civil society and other actors. To exert the power of other actors, we must adhere to the principle of industry self-discipline. The self-discipline of the Internet industry is the weak link of our cyberspace governance, China should give them rights and space to give play to their initiative and creativity, and provide them guidance in key links Tianshu Que,2018[9].

4.3 Formulate policies and laws to ensure system security

Reducing cyber anomie and promoting the development of the content application layer in cyberspace are inseparable from a sound institutional system. The United States, Singapore, and Japan have rich experience in this area and are worth learning. Therefore, on the one hand, we should learn from foreign experience, explore a policy system suitable for China's national conditions, and form a comprehensive system covering infrastructure construction, cyber security space ecosystem, and foreign cooperation. On the other hand, we should improve relevant laws to guarantee the exercise of rights and obligations of all actors.

5 Summary

With the development of Internet technology and the expansion of its application scope, my country's cyberspace governance is facing a more complex international environment, a larger scale of netizens, and more prominent cyber anomie. Cyberspace governance is facing unprecedented challenges. First, China should continuously strengthen international cooperation and focus on cultivating our own technological advantages. Second, we also need to improve the organization and management system of cyberspace, take the government as the lead, cooperate with enterprises and the public to jointly govern, and promote industry self-discipline. Finally, China must establish a perfect policies and legislation to provide institutional guarantees for the practice of cyberspace. Thus, China should continue to promote the integration of cyberspace and physical space in the new era, and create a favorable situation in cyberspace.

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