US-China Competition in Cyberspace: A Perspective of Emerging Power Politics and Platform Competition

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Introduction

One of the biggest issues that represents structural changes in world politics is the rise of China as an emerging power in the early 21st century. The rise of China does not only mean the growth of the national capability of China as a state, but also implies the transformation of East Asian regional politics and the possibility of China's hegemony competition with the United States at the global level. As a result, the rise of China into a great power may entail a hegemonic transition in world politics, which is expected to have a profound impact on the Korean Peninsula. The key factor in this process is whether the current US-China competition will follow the pattern of similar power transitions, which have happened in past hegemon competitions, or whether a new pattern will emerge.

In exploring the current US-China competition, this paper highlights the new issues of information technology—in a broader sense, knowledge, culture, and communication. These issues are recognized as the new sources of power in the information age, or so-called Fourth Industrial Revolution, and are now opening a new horizon of world politics beyond the traditional power politics based on military and economic resources (Schwab 2016). More specifically, these issues belong to a leading sector which is both growing faster than any other part of the world economy and driving the growth of other sectors. This new sector has enjoyed recent rapid expansion through the medium of cyberspace. Cyberspace has been understood intrinsically as the space of technologies and industries, but has been recently transformed into a complex space that includes online and offline activities with socio-political implications. Understanding this, this paper pays attention to US-China competition in cyberspace as an emerging leading sector.

Indeed, the competition among great powers in leading economic sectors is one of the long-standing concerns of international relations theory in that it provides a clear example of structural changes in the world order. For example, historically the locus of competitiveness in leading sectors has been closely related to the fortunes of global hegemons (Gilpin 1987; Thompson 1990; Modelski and Thompson 1996; Kim 2007). The most typical example is the competition between Britain and the United States over electrical engineering, durable consumer goods, and the automotive industry in the first half of the 20th century. Another good example is the competition between the United States and Japan in the consumer electronics industry, computer hardware, and software industries in the late 20th century. Within this continuum, we can understand the US-China hegemony competition in information technology (IT) sectors as one of the leading sectors of the 21st century (Dynkin and Pantin 2012). Competition in the IT sector is expected to be one of the determining factors that shapes the future

of the US-China competition; it is noteworthy in that the new mode of the power game is expected, unlike the previous cases.

In order to properly grasp the nature of US-Chinese competition in the 21st century, we must closely monitor trends in cyberspace as a future power space wherein emerging power politics play out, together with offline space which is the traditional forum of power politics. The recent rapid development of the Fourth Industrial Revolution predicts that competition on this emerging stage will determine the overall outcome of world politics. In this view, the United States and China are competing in cyberspace to secure their capabilities in technology, data, information, and knowledge as emerging power resources. They are playing power games in such fields as electronic commerce, finance (i.e. FinTech), digital diplomacy, and cyber security, and others. This paper presents an analytical framework for US-China competition—the so-called three-dimensional competition of technology, standards, and charm. It examines various factors that affect the structure and process of this complex competition (Kim 2017; Ha and Kim eds. 2018).

This paper understands the dynamics of emerging power from a new theoretical perspective—network theories of world politics.[1] This paper maintains that existing studies of US-China competition are inadequate for providing a guideline to understand the new aspects of power politics in the 21st century. They mostly look to the elements of traditional power politics already known in order to explain the present and future of US-China competition in world politics. Based on this perception, this paper does not rely solely on new theoretical resources in international relations, but also on network theories in natural and social sciences. Relying on the network theory of world politics, particularly on the notions of network power, network states, and network order, this paper attempts to develop and adopt this theoretical framework to understand the politics of emerging power and middle powers.[2]

From this network perspective, the current patterns of US-China competition in cyberspace as emerging power politics have the following three meanings. First, emerging power means the transformation of the power game, called "power transformation." Beyond the traditional power game of military and economic resources, a new mode of power game which focuses on the pursuit of non-material resources and relational advantages is currently emerging through cyberspace. Second, emerging power means the diffusion of power holders, called "power diffusion." In cyberspace, various non-state actors are emerging beyond the traditional boundaries of state sovereignty. Finally, emerging power means the shift of the power structure, or "power shift." However, competition in cyberspace does not seem to result in a mere "shift" from one axis to another; rather it will entail a complex "reconfiguration" of power structures. Based on these theoretical notions, this paper explores the rise of China and the upcoming hegemonic competition between the United States and China (Kim 2014a).

This paper comprises two main parts. In the first part, adopting network theories, it outlines a theoretical framework for platform competition and emerging power politics between two great powers, and interprets the competition as "inter-network politics" between two network states—the United States and China. In the second

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[1] The theoretical framework of this paper is in a similar context to other IR studies that adopt network theories (Hafner-Burton, Kahler and Montgomery 2009; Kahler ed. 2009; Maoz 2010). However, my framework of the "Network Theory of World Politics" (NTWP) is more comprehensive than other attempts that have mainly relied on social network theory. Along with social network theory, my framework also pays attention to the other camps of network theories, e.g., network organization theory and actor-network theory. For the outline of NTWP, see Kim (2008a; 2008b; 2014a).

[2] This paper does not provide a comprehensive literature review of network theories. In fact, network theory is not a single theory; there are different variants. For an overview of network theories from an IR perspective applied to the Korean context, see Ha and Kim, eds. (2006; 2010; 2012) and Kim (2014a).

part, applying the framework of three-dimensional platform competition, this paper analyzes U.S-China competition in cyberspace in coping with the "inter-network politics" of cyberspace. This paper concludes with a brief summary of the main argument, and presents further research concerns.

Theories of Platform Competition and Emerging Power Politics

The term "emerging" in "emerging power" was adopted from "emergence," a conceptual word in complexity theory. "Emergence" means a phenomenon that used to be in chaos on a micro level, but that shows certain patterns and regularity (i.e., an order) at the macro level, as complex interactions and self-organization proceed among the elements in the system. In this paper, the term "emerging" is understood to describe the complex transformation that is currently taking place in world politics—the transformation of power, states, and structure. The term "emerging" is also a good indicator that reveals the hidden aspects of US-China competition in cyberspace, which is discussed in the paper. In particular, the emerging powers observed in the US-China competition are understood in three dimensions: the transformation of the power game, the diffusion of power holders, and the shift of the power structure.
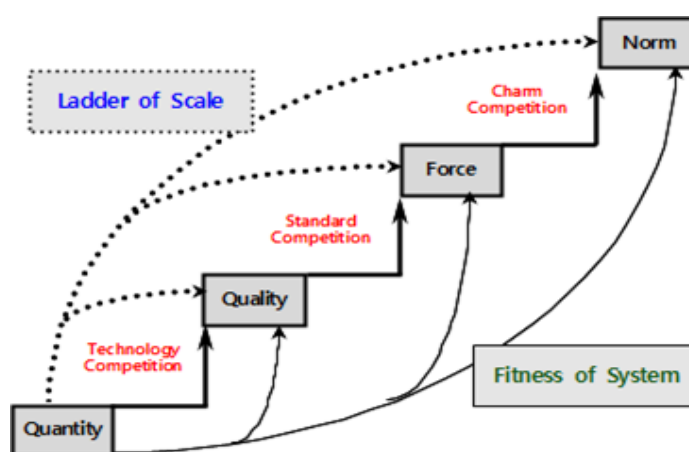
Framework for Platform Competition

The term emerging power primarily means the transformation of power game, which is pursued by state actors. US-China hegemony competition in the 21st century will take place over non-material resources, such as technology, information, knowledge, and culture and communications, beyond the conventional power game that deals with military and economic power. Furthermore, the competition will develop into a network power game that works in the context of the relationship between actors; the competition over power is not reduced to the resources and attributes of the actors (Nye 2004; Grewal 2008; Castells 2009). Although this new phenomenon of power transformation has occurred in the realm of traditional international politics, it is more prominent in the non-traditional sectors—climate change, energy, food, health and disease, migration, refugees, human rights, and international development issues. In particular, the recent competition in cyberspace vividly reflects this phenomenon of power transformation.

The emerging power competition in cyberspace is becoming much more complex than before. In other words, the competition in this leading sector is not just a game of resource power over market share or product innovation, but also a "platform competition" that involves the setting and diffusion of standards, the variables of scale, and the characteristics of systems (Kenney and Zysman 2016). Platform competition is not about the competition for quantity and quality of products, but rather about creating a platform, bringing other actors into it, and leveraging the scale factor that arises. It is a concept that is mainly used in the study of computers and networks, but here it can also be applied to world politics which are undergoing a transformation thanks to the technological changes represented by the Fourth Industrial Revolution. To understand the dynamics of platform competition, as depicted in Figure 1, this paper proposes an analytical framework of emerging power competition at the three thresholds of technology, standards, and charm (Kim 2017, 103-104).

In particular, this paper raises the question of whether China will be able to cross these three thresholds.

- Can China cross the "threshold of technology" in many IT sectors, such as semiconductors, smartphones, supercomputers, artificial intelligence, and other network infrastructure and information device hardware? (Assume that this threshold corresponds to the stage of achieving $15,000 GDP per capita)

- Can China cross the "threshold of standards" in computer software (esp. operating systems), Internet service business (e.g., e-commerce, FinTech, and social media) and other big data services? (Assume that this threshold corresponds to the stage of achieving $20,000 GDP per capita)

- Can China cross the "threshold of charm" in cultural content, entertainment industries, and public diplomacy, in which major concerns surround achieving or setting universal values and norms based on persuasion and consent? (Assume that this threshold corresponds to the stage of achieving $30,000 GDP per capita)

Figure 1. Framework for Emerging Power Competition

Source: Kim (2017, 103)

These three thresholds are based on theoretical imagination, but they reflect the evolution of IT competition that has emerged over the last 40 years at intervals of about 15 years. In the mid-to-late 20th century, although there were some twists and turns, the United States generally dominated these thresholds and its leadership led to innovation. In addition, the competition at each threshold does not operate in a sequential way—from technology, to standards and finally charm—but in a complex way that occurs through interactions of the three factors with one another (Kim 2017, 104).

To gain an overall understanding of the current competition in IT, two additional variables need to be examined. First of all, competition over the so-called "scale variables" is unprecedented in the era of complex networks, media convergence, and big data (Zwitter 2015; Hansen and Porter 2017). In this competition of scale, "bigger" is more likely to triumph over "better." This is not just a matter of quantity or the simple dimension of quality. Rather, a number of micro-units overlap and link to one another, and climb up the "ladder of scale" to reach the macro level; ultimately this is what makes the impossible on a small scale possible on a large scale. When this phenomenon crosses a threshold, which is usually called "criticality," a new pattern is created that was not seen at the micro level. This process is called the "conversion of quantity to quality" (Kim 2017, 105)

Along with these factors, so-called "fitness of system" should not be missed as political and social variables

that facilitate understanding of the competition in future leading sectors. This is closely related to the capability of political actors, such as government policies and institutional flexibility in individual systems, which supports or restricts the innovative endeavors of business actors in emerging IT competition. What matters here is the ability of a national system to effectively change its existing policies and institutional conditions by adapting to new environmental changes in order to cross the thresholds of technology, standards, and charm or to climb up a ladder of scale (Kim 2017, 105-106).

Inter-network Politics: Interpreting Emerging Power Politics

In addition to the transformation of power games, emerging power means the diffusion of power holders (or players) involved in these games. Here, power diffusion means the rise of non-state actors in world politics. Of course, state actors as the traditional power holders are still playing a significant role in the new power game. However, in the platform competition of cyberspace, non-state actors such as IT companies and internet users play an equally important role to state actors. In the global politics of the 21st century, various non-state actors are exercising power comparable to that of state actors as emerging players in cyberspace. These emerging power players include multinational corporations, managers and investors of financial capital, global think tanks and knowledge networks, transnational civil groups, terrorist networks, and international and regional organizations that operate beyond borders. Moreover, we note that established state actors are also undergoing a transformation of their form and seeking a new role in the process.

From this point of view, the "United States of America" and the "People's Republic of China," which are competing in cyberspace, do not need to be just state actors or governments of both countries. In other words, it is true that the US-China competition is seen here as a competition between "two countries," not just a competition between "two nation-states" in the modern sense. In terms of the theoretical arguments presented earlier, the "two countries" currently being observed are rather complex actors representing an alliance of government-business-society rather than a unitary actor, as international relations realist theory assumes. This paper attempts to understand these complex actors as the concept of "network state" (Ha and Kim eds. 2006). In particular, US-China competition in cyberspace can be understood as inter-network competition, which means competition among network states; it is more than mere "inter-national competition," which implies competition among nation-states. In fact, this conceptualization is persuasive because the United States and China have previously been more like "network states" rather than "nation-states."

The notion of emerging power from this point of view leads us to the discussion of changes in power structures or the hegemonic order. Interestingly, judging from US-China competition in cyberspace, this hegemonic competition is unlikely to culminate in a single war with a clearly defined winner and loser, as was the case with global hegemonic competition in the past. This is because today's hegemonic competition in world politics has become much more complicated. The outcome of this hegemonic competition will be a more complex "transformation" of power structures rather than a mere "shift," as the theory of power transition suggests (Organski and Kugler 1980). It is not appropriate to portray the competition between the two countries—that is, two network states—as a simple power transition in which the locus of power moves from one side to another. In particular, it is not proper to explain the complex changes in cyberspace relying solely on power transition theory derived from the experience of modern international politics that occur offline.

Considering the competition of network states playing the emerging power game in cyberspace, changes in power structures or the hegemonic order in the 21st century are likely to develop as the United States and China are tangled in the process of competition and cooperation. This complex aspect is not so much a power transition played in the game of the "balance of power (BoP)" in an anarchic system, but rather a kind of reconfiguration of the "network of powers (NoP)" in a world order based on a more complex organizing principle (Kim 2014). In short, world politics in the 21st century, conceptualized as inter-network politics in this paper, is experiencing the rise of emerging power at two levels: i) the possibility of the rise of China as a potential hegemon and consequent changes in power structures, and ii) the underlying transformation of modern international politics, characterized by the rise of a new power game and new power players.

US-China Emerging Power Competition in Cyberspace

US-China Technological Competition in Cyberspace

The key issue in emerging power politics is the technological competition between the United States and China in the wave of the Fourth Industrial Revolution. The success or failure of each country in the sectors of semiconductors, smartphones, supercomputers, artificial intelligence, cloud computing, the Internet of Things (IoT), big data, e-commerce and FinTech will determine the future of global hegemony. In these sectors, product productivity and technology innovation are the keys to competition at the first threshold. Technological innovation in such sectors as network equipment, servers, and sensors, which are composed of infrastructure environments interconnecting individual devices, are also critical to this competition. In addition to wired and wireless internet, recent innovations in technologies related to IoT are drawing attention. In this regard, the future of the United States and China might be dominated by the CEOs of the digital economy and industry rather than by political leaders.

China is fiercely pursuing technology in the high-performance semiconductor sector, where demand is surging due to recent developments in sectors of the Fourth Industrial Revolution. In addition, Chinese companies such as Xiaomi and Huawei are targeting not only the Chinese market, but also the global market by investing in inexpensive smartphones. China's technological prowess in areas such as unmanned vehicles, drones, and artificial intelligence is also growing rapidly (Zhang et al. 2016). Chinese companies have pulled ahead of US companies in developing technological capabilities in the supercomputer sector in the past three years. As of June 2016, Chinese company Sunway TaihuLight (which uses Chinese chips) was first, followed by Chinese company Tianhe-2 (which uses Intel chips). Two US companies, Titan and Sequoia, ranked third and fourth. Artificial intelligence (AI) technology has recently become a key factor in predicting future technology competition. According to the number of AI patents by country, the United States and China comprised 9,786 cases (28 percent) and 6,900 cases (20 percent) respectively. By company, IBM has 2,399, Google 2,171, Microsoft 1,544, and Baidu 466, Alibaba 384, and Tencent 201 AI patents.

One of the biggest issues in US-China technology competition is network equipment. Cisco, a US telecom equipment maker, has a 60-80 percent market share in China. At the end of 2012, Cisco dominated more than 70 percent of the financial sector, exceeding 50 percent in government agencies such as maritime, public security,

armed police, fantasy, and education. Cisco also had about 60 percent of market share in the railway system. The founder of the Internet Lab, Pang Sing Dong, said, "under Cisco's dominance over the core of the Chinese economy, China would not be able to resist if there were conflicts between the United States and China" (SINA.CN November 27, 2012). Edward Snowden's disclosures resulted in increased oversight of Cisco by the Chinese government. Meanwhile, the Trump administration recently banned Huawei from purchasing network equipment owing to suspicions that its close relationship with the Chinese government could pose a national security threat, and banned Chinese telecom equipment maker ZTE from doing business with US companies for seven years. In addition, DJI, the world's leading Chinese drone maker, and Hikvision, a Chinese CCTV company, have faced similar difficulties entering the US market. This reminds us of the precedent of US-Japan competition in the 1990s, which took place in the realm of dual-use technologies and industries, and had huge security implications for hegemony competition (Kim 2007).

It should be noted that variables other than technological capability in quantitative or qualitative terms are at play in the manufacturing and network sectors. As discussed earlier, this paper conceptualizes one of these variables as the concept of a "ladder of scale." In fact, the indirect acquisition of competitiveness through targeted investments, acquisitions, mergers, joint ventures, and purchases, which may be conceptualized as climbing up the ladder of scale, are also a factor in technology competition. Of particular note is the fact that Chinese companies are pushing for joint ventures and mergers and acquisitions based on the huge scale of the Chinese domestic market. Chinese companies initially adopted technology through learning and innovation at the early stage of development, but after achieving a certain level of scale, they do so via mergers and acquisitions rather than just by developing technology. Just like recent cases in the field of artificial intelligence, Chinese companies are also recruiting high-quality human resources using huge salaries to lure top talent to the country. Even in the IoT industry, China has an advantage based on its huge domestic market, and rapid economic growth has created a good environment in which to introduce IoT (Hu and Wang 2014).

Ultimately, China's success in reaching the threshold of manufacturing and network technologies will be determined by the fitness of its system. The Chinese government has launched various policy projects such as the 13th five-year plan, Internet Plus, Made in China 2025, and the AI Action Plan. Internet Plus, for example, outlines the pursuit of eleven major tasks, including the convergence of the Internet and artificial intelligence. Made in China 2025 set a goal of making China a manufacturing powerhouse by promoting the adoption of IT, robots and electric vehicles. The AI Action Plan pushes the creation of an innovative ecosystem to nurture global AI businesses by 2018. In addition, the Chinese government has been generous with its policy support, establishing industrial complexes all over the country to revitalize the IoT industry. The question is how successful the Chinese government's policy model, which is reminiscent of the East Asian model of the developmental state, will be.

US-China Standard Competition in Cyberspace

Recent competition in IT has been different from past competition to produce cheap and high-quality semiconductors, high performance software and computers, and fast, accessible Internet. In other words, it goes beyond competition in which a company or country acquires resources and builds manufacturing capability and innovations. Of course, there is no denying the importance of having enough capital and advanced technology in

winning this competition. However, as the environment of complex networks and media converge in cyberspace competition, it is very important to dominate standards in related sectors. From this point of view, standard competition is "platform competition" to create a new stage and play a new game, rather than a game to win on the established stage. Recently, based on the enormous power of Chinese consumers, Chinese companies have been challenging US companies in this field of platform competition.

Since the early days of the computer industry, China has posed an ongoing challenge to US hegemony in technological standards for computers and mobile operating systems. There is a fear that China relies too heavily on American IT companies, and that should any serious problems arise between the two countries, these companies will side with the United States. Since the early days of informatization, the Chinese government has been sensitive to the reality that the main computing platform used in China came from a US company, Microsoft. This sensitivity became embedded in the Chinese government and business, and was strongly reflected in the Chinese policies supporting the Linux operating system as a step towards escaping Microsoft. Nationalist concerns formed the foundation for the supportive policies pushed by the Chinese government to adopt Linux, as well as economic motivation. In this process, Chinese Linux companies have led the distribution of Linux with strong government support. Ultimately, however, China's Linux experiments were not as fruitful as anticipated (Kim 2014a, esp. ch.9).

More recently, there is fierce Internet platform competition in areas such as Internet search engines, e-commerce, and social media (Kenney and Zysman 2016). Recent competition in information services such as cloud computing, big data, FinTech, and others can be epitomized as the competition between two groups of US and Chinese Internet companies: GAFA—that is, Google (G), Amazon (A), Facebook (F), and Apple (A)—on the one hand, and BATX—that is, Baidu (B), Alibaba (A), Tencent (T), and Xiaomi (X). The competition in this field is still dominated by US Internet companies. Recently, however, Chinese companies have challenged the US stronghold; Baidu competes against Google, Alibaba against Amazon, Tencent against Facebook, and Xiaomi against Apple. Of course, their rivalry is not portrayed as simply as the above parallels imply, and recent developments paint a more complicated pictures (Haucap and Heimeshoff 2013; Zhu and Smith 2015; Chen 2016).

It should be noted that a ladder of scale is operating behind this competition for Internet platforms. As recognition of the value of big data grows, competition over the utilization of big data has become a matter of interest between the two countries. In particular, China's big data companies such as Baidu, Alibaba and Tencent are growing in strength. In fact, these Chinese Internet companies are able to expand in a short period of time thanks to the huge Chinese population and, more specifically, the large number of Internet users who speak Chinese. Behind this de facto competition is de jure competition at the state level over the establishment of international norms to manage data and information flows. While transnational IT corporations, mainly US companies, advocate for an environment that guarantees the free flow of information, the Chinese government is committed to maintaining the state's sovereign jurisdiction over Internet transactions and interactions. China insists that blocking and censoring unhealthy and harmful information on the Internet that is distributed both at home and abroad is a legitimate right of the government of its sovereign state.

In fact, the nature of the Chinese political system lies behind these differences. China's political stance and the nature of its political system, which emphasizes government control and sovereignty, have not been a major stumbling block as the country has played catch-up in its technological development. However, as competition for Internet platforms accelerates in the future, China's political system may be a factor in blocking or facilitating

Chinese Internet companies from moving forward (Wang and Li 2017). In this process, the Chinese government has sought to pursue an "Informatization Model of Chinese Characteristics" as an alternative to US-led global standards. In this context, the Chinese government asks Internet service providers in China to perform self-censorship and filtering, and this policy makes no exception for American companies. The implications of these policies also relate to differences in the political and economic models of the two countries, going beyond the simple conflict between US companies and the Chinese government. In this regard, the competition at the threshold of standards is also a competition between the United States and China for the fitness of their systems (Chu 2017).

US-China Charm Competition in Cyberspace

In the most comprehensive sense, US-China competition in cyberspace is a competition of charm, which could also be called a competition over "soft power" (Nye 2004). This charm competition goes beyond taking control of markets and policies to establish persuasive and agreed-upon universal norms. For example, unlike hardware-based manufacturing sectors, the success or failure of the cultural industry and Internet businesses depends on who can produce more emotionally compelling content and desirable services. Producing attractive content and services is only half the battle- diffusion and communication are also important. The extent to which the policies, institutions and culture of a certain country are able to embrace the content and services provided also plays a critical role. In this regard, the charm competition means establishing norms that include universal values and an accessible world view. As in the case of technical standards and institutional models, the United States has thus far dominated the realm of charm diffusion and norm setting, and China's challenge in the future will be reaching this domain.

The charm competition between the United States and China is found in the competition between Hollywood, which has traditionally dominated global culture, and the Chinese film industry, which challenges its hegemony. Hollywood in the digital age has been going for the global film market through differentiating strategies of scale, represented by blockbuster strategies, as well as introducing high-tech special effects and computer graphic technology to film making. The recent rapid growth of the Chinese film industry has recently been challenging this American cultural hegemony; the industry has been dubbed Chollywood (China + Hollywood) by journalists. The Chinese film industry is gaining technological capabilities comparable to those of Hollywood based on recent rapid quantitative growth. China is also looking for its own technology development, but is trying to purchase or transfer technology from Hollywood through joint ventures, investments and acquisitions. In this process, although Hollywood's standards appear on the surface to be penetrating the Chinese market, competition in the film industry is based on more complicated factors (Kim 2017).

We should note that the "ladder of scale" is operating behind the rapid growth of the Chinese film market. With its huge market, China is likely to open a new horizon for competition in the cultural content industry. Particularly noteworthy in this process is the change in consumption patterns of cultural products in China due to the spread of the Internet and mobile devices. That is why the recent trend of Internet companies such as Alibaba, Tencent and Baidu, video sharing sites such as YoukuTudou, and the Internet fandom community in the Chinese film industry are attracting attention. US-China competition in the cultural content industry will ultimately depend on whose content is more appealing. Hollywood blockbuster films have tried to reach global audiences by using a

universal culture-code that has bleached ideology as much as possible. By contrast, China's culture-code remains within the confines of nationalism and has the limitation that it has little interest in communicating with audiences outside its territory.

In addition, the United States and China are competing for public diplomacy by utilizing digital media in cyberspace. During the Obama administration, public diplomacy in the United States focused on actively utilizing the Internet and social media to spread American institutional models and values around the world. In contrast, China's public diplomacy has been working to spread Chinese models and values by utilizing mass media such as CCTV. If American public diplomacy was aimed at establishing a universal ideological network of an unspecified majority, it can be argued that China intended to create a network of like-mind groups with the people of developing countries as its audience (Bräutigam 2011). In this process, if the United States emphasizes the participation and networking of non-state actors beyond inter-government cooperation, China is building a network of governments in developing countries in order to build a counter-hegemony coalition against the United States.

These differences between the two countries also appear in the process of shaping international norms in cyberspace (Segal 2017). For example, if the United States as a global hegemon seeks norms and an order based on a global governance model involving non-state actors, China advocates the traditional model of international organization, in which state actors still play major roles. This configuration overlaps with the confrontation line between Western and non-Western camps in the diplomatic arena of international politics. The gap between the United States and China in the formation of international norms in cyberspace, as discussed earlier, stems from the differences between the policies, institutions, and domestic systems of the two countries. In other words, at the bottom of the charm competition lies the difference in political economic models represented by the Washington Consensus and the Beijing Consensus (Beeson and Li 2015). In this process, the United States and China are competing with each other to create platforms and gain support from other countries and citizens around the world. Since the inauguration of the Trump administration, with the US changing its stance on international norms, China is likely to take the initiative in the process of leading international norm creation.

Conclusion

Recently, the United States and China are engaged in competition with one another in the vicinity of the Korean Peninsula. The US-China hegemony competition in IT is not only seen as a mere competition between two powerful countries, but an emerging power game that will affect the fate of the Korean Peninsula. Historically, while the hegemonic competition of great powers has influenced the structure of the international system, on today's emerging stage the competition between the United States and China is more noteworthy than ever. Recognizing the uniqueness of the emerging power game, this paper looked at US-China competition at the thresholds of technology, standards, and charm, and also considered the variables of scale and system.

In order to properly understand the future of competition between the two countries, we should keep a close watch on the emerging power competition in cyberspace as well as the traditional power competition over military and economic power that occurs in the physical realm. The most appealing sector is the US-China competition for technology and standards along with the wave of the Fourth Industrial Revolution. The success or failure of the

competition between the two countries in semiconductors, smartphones, supercomputers, artificial intelligence, cloud computing, IoT, big data, e-commerce, and FinTech will determine the future of supremacy in 21st century world politics. In this sense, the destiny of the United States and China is likely to be influenced by economic leaders in these sectors rather than by political leaders. This prediction is gaining momentum in recent developments of US-China competition, which has expanded beyond the technology-standards-charm competition in cyberspace to spill over into   more general aspects of offline world politics.

In fact, US-China competition in cyberspace has recently turned into an international security game. Cybersecurity has become a hot agenda item (Kim 2018). Chinese hacker attacks on US critical infrastructure prompted the Obama administration to engage in counterattacks, including military options. The so-called peril of the Chinese hacker, which caused controversy over hyper-securitization, was one of the hot issues that troubled US-China relations in the early-mid 2010s. Cybersecurity conflicts have the potential to escalate into a high-tech arms race in the offline world. Recent developments in unmanned weapons systems such as drones and killer robots have raised concerns that there may be a robot war between the two great powers in the near future. Since the inauguration of the Trump administration, this competition has become more complex; thus, cyber security is being linked to industry and trade issues. Mobilizing discourse relating to the "peril" of Chinese IT products, the Trump administration is keeping Chinese companies, which are leading the Fourth Industrial Revolution in China, in check.

Behind these conflicts lie not only economic considerations but also the interests of both countries in data resources. Since the revelations of government spying put forth by Edward Snowden in 2013, privacy and data security have become a matter of national security. China's cautionary concerns about data leakage by US multinational corporations led to the passage of the Cybersecurity Law of 2016 in China. The focus of this legislation is to censor and control the services provided by US companies in China, and to prohibit the transfer of data containing private information outside the country in the name of national sovereignty. The Chinese move reflects the differences in policy and ideology between the United States and China regarding the Internet. Since 2014, China has been hosting the World Internet Conference (WIC) to counter the US initiative in global Internet governance (Segal 2017). This shows that US-China competition in cyberspace has gone beyond the scope of domestic policies and institutions to the realm of international norm formation and world order building.

Indeed, the recent competition between the United States and China in cyberspace has developed into a multi-dimensional competition over industry, trade, security, military, privacy, law and institutions, and international norms. Faced with such complexity generated by the rise of the emerging power game, South Korea must take systematic measures to implement necessary policies and rearrange existing institutions. South Korea must also seek out strategic roles in the US-China competition. In searching for such strategic roles, as this paper recommends, South Korea should consider its structural position and take actions for security and prosperity as a middle power. Indeed, this situation is likely to provide South Korea with a golden opportunity to engage in middle power diplomacy, especially in cyberspace. However, we also have to keep in mind that the structural conditions produced by US-China competition may pose a threatening challenge to South Korea, whose geopolitical fate is to be located between two super powers. ∎

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