Emerging Powers and a Middle Power:
U.S.-China Competition and South Korea in Cyberspace[1]

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I. 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 nation, 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 toward a great power may entail a hegemonic transition in world politics, which is apparently expected to have a profound impact on the Korean Peninsula. The key in this process is whether the current U.S.-China competition will repeat the similar pattern of power transitions, which have happened in the past hegemony competitions, or show a new pattern.

In exploring the current U.S.-China competition, this paper highlights the new issues of information technologies—in a broader sense, knowledge, culture, and communication. These issues are recognized as the new sources of power in the information age or the so-called 4ᵗʰ 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 growing faster than any other areas of the world economy and driving the growth of others. The new leading sector has recently expanded rapidly, using cyberspace as a medium. Cyberspace has been understood intrinsically as the space of technologies and industries, but recently characterized as a complex space including online and offline activities of socio-political implications. Be aware of the trend, the paper pays attention to the U.S.-China competition in cyberspace as an emerging leading sector.

Indeed, the competition among great powers in the leading sectors of the very

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[1] This paper was prepared for delivery at the 25th World Congress of Political Science, (July 21-25, 2018), Brisbane, Australia, International Political Science Association.

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period was one of the long-standing concerns of International Relations theory in that it was a clear example of the structural change in the world order. For example, historically the locus of competitiveness in the leading sectors has been closely related to the fortunes of global hegemony (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, or automotive industries 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. In this continuum, we can understand the U.S.-China hegemony competition in information technology (IT) sectors as a leading sector of the 21st century (Dynkin and Pantin 2012). The competition in the IT sector is expected to be the criteria for determining the future of the U.S.-China competition; it draws a lot of attention in that the new mode of power game is expected, unlike the previous cases.

In order to properly grasp the nature of the U.S.-China competition in the 21st century, we should closely monitor the trend of cyberspace as a future power space in which emerging power politics take place, along with offline space in which traditional power politics do. In particular, the recent rapid development of the 4th industrial revolution predicts that competition on the 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, etc. Based on this perception, this paper presents an analytical framework for the U.S.-China competition—the so-called three-dimensional competition of technology, standard, and charm; it examines various factors that affect the structure and process of the complex competition (Kim 2017; Ha and Kim eds. 2018).

It must be an important task for South Korea as a middle power in concisely analyzing and predicting the future of U.S.-China competition in the emerging leading sector (Gilley and O'Neil eds. 2014). In this context, this paper looks at the direction of national strategies that South Korea has to adopt as a middle power in the hegemony competition in cyberspace between the United States and China. In particular, it emphasizes the need to identify the structural position of South Korea within the configurational structure generated by the U.S.-China competition in cyberspace and the attempts to prescribe South Korea's middle power strategies based on its structural position. In this context, this paper adopts three elements of middle power strategies—brokerage, coalition, and norm-setting, and applies them to the cases of South Korea's strategies within the U.S.-China competition for emerging power in cyberspace.[2]

This paper understands the dynamics of emerging power and middle power from a

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[2] Concerning the diplomatic strategies of South Korea as an emerging middle power, my discussion on the middle power diplomacy in this paper relies on various works that I have conducted for the last several years; for example, Kim (2011a, 2011b), Kim (2014a, esp. ch.8.), and Kim ed. (2015). For literature about middle power diplomacy written in English, see Kim (2014b; 2014c; 2014d; 2016).

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new theoretical perspective—network theories of world politics.[3] This paper maintains that existing studies of U.S.-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 U.S.-China competition and South Korea's national strategies in world politics. Based on this perception, this paper does not rely only 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 state, and network order, this paper attempts to develop and adopt the theoretical framework to understand the politics of emerging power and middle power.[4]

From this network perspective, the current patterns of U.S.-China competition in cyberspace as the emerging power politics have the following three meanings. First, emerging power means the transformation of power game, called "power transformation." Beyond the traditional power game of military and economic resources, the new mode of power game pursuing non-material resources and relational advantages is currently rising in 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 power structure, called "power shift." However, competition in cyberspace does not seem to result in a mere "shift" from one to another axis, rather it will entail a complex "reconfiguration" of power structure. Based on these theoretical notions, this paper explores the rise of China and the upcoming hegemony competition between the United States and China, and further South Korea's strategies as a middle power (Kim, 2014a).

This paper is composed of three main chapters. In chapter two, adopting network theories, it outlines a theoretical framework for emerging power competition between two great powers, and interprets the competition as "inter-network politics" between two network states—the United States and China. In chapter three, applying the framework of three-dimensional emerging power competition, this paper analyzes the U.S-China competition in cyberspace in coping with the "inter-network politics" of cyberspace. In chapter four, along with providing a theoretical platform for middle power's strategies of brokerage, coalition, and norm-setting, this paper briefly proposes some strategic directions for South Korea as a middle power between the United States and China in cyberspace. This paper concludes with a brief summary of the main argument, and presents further research concerns.

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[3] 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).

[4] 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).
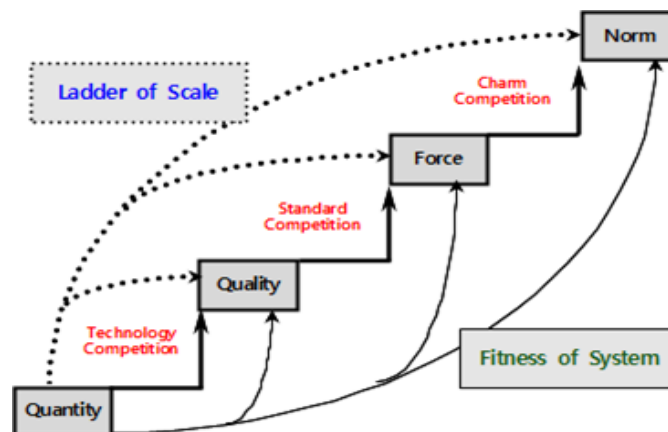
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II. Theoretical Understanding of Emerging Power Politics

The term "emerging" in "emerging power" was adopted from "emergence," a conceptual word in the complexity theory. Emergence means a phenomenon that used to be in chaos at a micro level, but that shows certain patterns and regularity (i.e., an order) at the macro-level, as complex interaction 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, state, and structure. The term "emerging" is also a good indicator revealing the hidden aspects of U.S.-China competition in cyberspace, which is discussed in the paper. In particular, the emerging powers observed in the U.S.-China competition are understood at three dimensions: the transformation of power game, the diffusion of power holders, and the shift of power structure.

Framework for Emerging Power Competition

When it is said to be an emerging power, it primarily means the transformation of power game, which is pursued by the state actors. The U.S.-China hegemony competition in the 21st century will be carried out over non-material resources, such as technology, information, knowledge, culture and communications, beyond the conventional power game over military and economic power. Furthermore, the competition will develop into a network power game that works in the context of the relationship between actors; it is not the competition over the power that is reduced to the resources and attributes of the very 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.

<Figure-1> Framework for Emerging Power Competition

Source: Kim (2017), p.103

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In fact, the emerging power competition in cyberspace is becoming much more complex than before. In other words, the competition in the 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, 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 on it to work, and leveraging the scale factor that arises. It is a concept that is mainly used in the studies of computers and network, but it can be applied to world politics that are undergoing transformation due to technological changes represented by the development of IT. To understand this 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, pp.103-104).

By applying this analytical framework, the most visible area of IT competition today is the competition at the "threshold of technology," which is a physical layer composed of network infrastructure and information device hardware. Another important competition in the IT sector is the competition at the "threshold of standard," which occurs at the logical layer composed of software or Internet services. Finally, the competition at the "threshold of charm" is also important; it is the competition to dominate universal norms in the content layer composed of knowledge, ideology, identity, and communication. 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 has generally dominated these thresholds and led to innovation in its leadership. In addition, the competition at the thresholds does not operate in a sequential way—from technology, to standard and charm—but in a complex way by interacting with each other (Kim, 2017, p.104).

To gain an overall understanding of the current IT competition, two more variables need to be looked at in addition to the previous three thresholds. First of all, competition over the so-called "scale variables" is becoming unprecedented in the era of complex networks, media convergence, and big data (Zwitter 2015; Hansen and Porter 2017). In this competition of scale, the "better" does not always win, rather the "bigger" is more likely to win. This is not just a matter of quantity or the simple dimension of quality. But it is the matter that a number of micro units overlap and link to each other, and climb up the "ladder of scale" up to the macro level; ultimately is the matter that makes the impossible on a small scale possible. And then, when this phenomenon crosses the 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, p.105)

Along with these factors based on the scale phenomenon, the so-called "fitness of system" as political and social variables should not be missed to understand the competition in future leading sectors. This is closely related to the capability of political actors, such as government policies and institutional flexibility in a certain system, which supports or restricts innovative endeavors of business actors in the

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newly rising IT competition. What matters here is the ability of a national system to effectively change existing policies and institutional conditions by adapting itself to new environmental changes in order to cross the thresholds of technology, standard, and charm or to climb up a ladder of scale (Kim, 2017, pp.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 significant roles in the new power game. However, in the platform competition of cyberspace, such non-state actors as IT companies and internet users play as important a role as state actors. In the 21st century world politics, various non-state actors as emerging players in cyberspace are exercising much power comparable to that of state actors. These emerging power players include multinational corporations, financial capital, global think tanks and knowledge networks, transnational civil groups, terrorist networks, and international and regional organizations that can operate beyond the national level. Moreover, we note that the established state actors themselves 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 as the leading sector, do not need to be just state actors or governments of both countries. In other words, it is true that the U.S.-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 a complex actor of government-business-society than a unitary actor, as the realist theory of International Relations assumes. This paper attempts to understand these complex actors as the concept of "network state" (Ha and Kim eds. 2006). In particular, the U.S.-China competition in cyberspace could be understood as the inter-network competition, which means the competition among network states; it is not the mere "inter-national competition," which implies the competition among nation-states. In fact, this conceptualization is persuasive because the United States and China have previously been more of "network states" than the typical forms of "nation-states."

The notion of emerging power from this point of view leads us to the discussion of changes in power structure or hegemonic order. Interestingly, judging from the U.S.-China competition in cyberspace, the hegemony competition is unlikely to end in a single war and a winning or losing one, as was the case with the global hegemony competition in the past. It is because today's hegemony competition in world politics has become much more complicated. The outcome of this hegemonic competition will be a more complex "transformation" of power structure, 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

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network states—as a mere power transition in which the locus of power simply moves from one side to another. In particular, it is not proper to explain the complex changes in cyberspace, relying solely on the power transition theory which is derived from the experience of the modern international politics in offline space.

Considering the competition of network states playing the emerging power game in cyberspace, changes in power structure or 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 "balance of power (BoP)" under anarchy, but rather a kind of reconfiguration of "network of powers (NoP)" in the world order based on a more complex organizing principle than anarchy (Kim, 2014). In short, world politics in the 21st century which is conceptualized as inter-network politics in this paper is undergoing the rise of emerging power at the two levels: i) the possibility of the rise of China as a potential next hegemon and consequent change of power structure, ii) the underlying transformation of modern international politics, characterized by the rise of new power game and new power players.

III. U.S.-China Emerging Power Competition in Cyberspace

U.S.-China Technological Competition in Cyberspace

In terms of emerging power politics, the key issue that requires a primary attention is the technological competition between the United States and China in the wave of the 4th Industrial Revolution. The success or failure of the competition between the two countries 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 winning the competition at the first threshold. The key is also the technological innovation in such sectors as network equipment, servers, and sensors which are composed of infrastructure environments interconnecting individual devices. 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 may be dominated by CEOs in the digital economy and industry rather than by political leaders.

China's pursuit of technology is fierce in the high-performance semiconductor sector, where demand is surging due to recent developments in the sectors of the 4th Industrial Revolution. In addition, Chinese companies such as Xiaomi and Huawei are targeting not only the Chinese market but also the global market by banking on inexpensive smartphones. China's technological prowess in areas related to the 4th Industrial Revolution such as unmanned vehicles, drones and artificial intelligence is also growing rapidly (Zhang et al. 2016). Also, concerning with technological capabilities in the supercomputer sector, Chinese companies have been ahead of U.S. companies for the past three years. As of June 2016, Chinese company Sunway

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TaihuLight (using Chinese chips) was No.1, followed by Chinese company Tianhe-2 (using Intel chips). And No. 3 and 4 were two U.S. companies, Titan and Sequoia. Artificial intelligence (AI) technology has recently become a key factor in predicting future technology competition. According to the number of AI patent by country, the United States and China comprised 9,786 cases (28 percent) and 6,900 cases (20 percent) respectively. And by company, IBM has 2,399, Google 2,171, Microsoft 1,544, and Baidu 466, Alibaba 384, and Tencent 201.

One of the biggest issues regarding the U.S.-China technology competition is the area of network equipment. Cisco, a U.S. telecom equipment maker, has a 60-80 percent market share in China. As of the end of 2012, Cisco had more than 70 percent of the financial sector, exceeding 50 percent in government agencies such as maritime, public security, armed police, fantasy, and education. It took up about 60 percent of the railway system. The founder of the Internet Lab, Pang Sing Dong said, "with Cisco dominating 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). Under these circumstances, "Edward Snowden's disclosure" has led Cisco to be subjected to more checks by the Chinese government. Meanwhile, the Trump administration recently banned Huawei from purchasing network equipment in case of doubt about its close relationship with the Chinese government and banned Chinese telecom equipment maker ZTE from doing business with U.S. companies for seven years. In addition, the world's leading Chinese drone maker, DJI and a Chinese CCTV company, Hikvision, have a hard time entering the U.S. market. This reminds us of the precedent of the U.S.-Japan competition in the 1990s, which took place in the dual-use technologies and industries, which had huge security implications (Kim, 2007).

It should be noted that variables other than technological capability in the quantitative or qualitative terms are working in the manufacturing and network sectors. As discussed earlier, this paper conceptualizes one of the variables as the concept of a "ladder of scale." In fact, an indirect way of acquiring competitiveness through investments, acquisitions, mergers, joint ventures, and purchases, which could be conceptualized as climbing up the ladder of scale, also work behind the technology competition. In particular, it should be noted that Chinese companies are pushing for a joint venture or mergers and acquisitions based on the huge scale of the Chinese domestic market. Chinese companies had adopted technology by learning and innovation at the early stage of immaturity, but after achieving a certain level of scale, they do so in a way called mergers and acquisitions rather than just by learning technology. Just like recent cases in the field of artificial intelligence, Chinese companies are also taking a strategy to recruit high-quality human resources with huge salaries. Even in the case of IoT industry, China has an advantage based on the huge domestic market, and rapid economic growth has brought in good conditions for introducing new technologies in IoT (Hu and Wang 2014).

Ultimately, China's success at the threshold of manufacturing and network technologies will be determined by the fitness of system. To support the industry's bold challenge, the Chinese government has launched various policy projects such as the 13th five-year plan, Internet Plus, China's Manufacturing 2025, and AI Action Plan.

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In the case of Internet Plus, for example, eleven major tasks are being pursued, including the convergence of the Internet and artificial intelligence. In case of China's Manufacturing 2025, the goal was set to become a manufacturing powerhouse by promoting IT, robots and electric vehicles. In case of AI Action Plan, it is pushing to create an innovative ecosystem to nurture global AI businesses by 2018. In addition, the Chinese government has been generous with its policy support, including establishing industrial complexes all over the country to revitalize the IoT industry. The question is how far the Chinese government's policy model, which reminds us of the East Asian model of developmental state, will work.

U.S.-China Standard Competition in Cyberspace

Recent competition in the leading sector has been different from the previous 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 capabilities of manufacturing and innovations. Of course, there is no denying the importance of having enough capital and advanced technology to win this competition. However, in the competition in cyberspace as the environment of complex networks and media convergence, it is very important to dominate standards in the related sectors. From this point of view, the standard competition in the leading sector is a "platform competition" to create a new stage and play a new game, rather than a game to win upon the established stage. Recently, based on the enormous power of Chinese consumers, Chinese companies have been challenging U.S. companies in this field of platform competition in the leading sector.

Since the early days of the computer industry, China has constantly challenged the U.S. hegemony in technological standards of computers and mobile operating systems. It is feared that China is relying too much on U.S. IT companies, and if there is any problem between the two countries, they will side with the United States. Particularly from the early days of informatization, what has touched the Chinese government was the reality that the computing platform used in China has been almost dominated by a U.S. company Microsoft. This perception embedded in the Chinese government and business was well documented in the Chinese policies supporting the Linux operating system as a step toward Microsoft. Behind the policies supported by the Chinese government on the Linux operating system were concerns viewed from a nationalist perspective, in addition to economic motivation. In this process, Chinese Linux companies have been the leader in the distribution of Linux with strong government support. Ultimately, however, China's Linux experiments did not earn as much as expected (Kim 2014a, esp. ch.9).

More recently, the so-called "Internet platform competition" is taking place in such areas as Internet search, e-commerce, and social network services (Kenney and Zysman 2016). Recent competition in information services such as cloud computing, big data, FinTech and others could be epitomized as the competition between two groups of U.S. and Chinese Internet companies: GAFA—that is, Google (G), Amazon

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(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 U.S. Internet companies. Recently, however, Chinese Internet companies have challenged the U.S. stronghold; approximately speaking, Baidu competes against Google, Alibaba against Amazon, Tencent against Facebook, and Xiaomi against Apple. Of course, their rivalry is not portrayed in this simple confrontation line, especially it is recently developing in a more complicated fashion (Haucap and Heimeshoff 2013; Zhu and Smith 2015; Chen 2016).

It should be noted that behind this competition for Internet platforms, a ladder of scale is operating. As the value of big data is largely recognized, 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 their strength. In fact, these Chinese Internet companies could grow in a short period of time with the huge Chinese population and, more specifically, a large number of Internet users speaking Chinese. Behind this *de facto* competition is the *de jure* competition at the state level over the formation of international norms to manage the flow of data and information. While transnational internet corporations, which are mainly U.S. companies, are advocating an environment that guarantees the free flow of information, the Chinese government is committed to maintaining state's sovereign jurisdiction over the Internet transaction. 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 for the government of its sovereign state to exercise.

In fact, behind these differences lies the nature of the Chinese political system. China's political stance and the nature of its political system, which emphasize government control and sovereignty, have not been a major stumbling block in the era of technological catching-up. However, as competition for Internet platforms is accelerating 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 sought to pursue a "the Informatization Model of Chinese Characteristics" against the U.S. global standard. In this context, the Chinese government asked Internet service providers in China to conduct self-censorship and filtering, and this policy was no exception to U.S. companies. The implications of these policies are also related to differences in the political and economic models of the two countries, beyond the simple conflict between U.S. 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 their fitness of system (Chu 2017).

U.S.-China Charm Competition in Cyberspace

In the most comprehensive sense, the U.S.-China competition in cyberspace is the charm competition, which could be called the competition for "soft power" (Nye 2004). Charm competition goes beyond just taking control of markets and policies toward obtaining universal norms based on persuasion and consent to the other. For

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example, unlike hardware-based manufacturing sectors, the success or failure of the cultural industry and Internet business depends on the actor's ability of producing more touching and sympathetic contents and services that can earn the other person's heart. Furthermore, it is not only about producing attractive contents and services, but also about diffusing and communicating them. Furthermore, what matters is how attractive the policies, institutions and culture of a certain country are in dealing with those contents and services. In this regard, the charm competition means the matter of establishing norms that include universal values and the world view. As in the case of technical standards and institutional models, the United States has so far dominated the realm of charm diffusion and norm setting, and the challenges of China in the future will reach to this domain in the near future.

The charm competition between the United States and China is found in the competition between Hollywood, which has traditionally dominated the global cultural hegemony, and the Chinese film industry, which challenges it. Hollywood in the digital age has been going for the global film market through the differentiation strategies of scale, represented by blockbuster strategies, introducing high-tech special effects and computer graphic technology to film making. In response to the U.S. cultural hegemony, the Chinese film industry has recently been challenging with rapid growth. In terms of technology competition, the Chinese film industry is gaining technological capabilities comparable to those of Hollywood based on the 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 to be penetrating the Chinese market on the surface, competition in the film industry is based on a more complicated aspect (Kim 2017).

In particular, we should note that the "ladder of scale" is operating behind the rapid growth of the Chinese film market. With its huge market size, China is likely to open a new horizon for competition in the cultural contents industry. Particularly noteworthy in this process is the change in the consuming 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 is attracting attention. The U.S.-China competition in the cultural contents industry will ultimately depend on who gives off more charms. Hollywood blockbuster films 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 the 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 making efforts to spread Chinese models and values by utilizing mass media such as CCTV. If the U.S. public diplomacy was aimed at establishing a universal ideological network with an unspecified majority, it

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is argued that China intended to create a network of like-minded groups with the people of developing countries as its audience (Bräutigam 2011). In this process, if the United States emphasizes 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 of 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 hegemony seeks norms and an order based on the global governance model involving non-state actors, China advocates a traditional model for international organization, in which state actors still play major roles. This configuration overlaps with the confrontation line between the Western and the non-Western camps in the diplomatic arena of international politics. The gap between the United States and China on the formation of international norms in cyberspace, as discussed earlier, stems from the differences between the two countries' policies, institutions and domestic systems. In other words, at the bottom of the charm competition lies the difference of 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 make their platforms and to gain support from other countries and citizens around the world. Since the inauguration of the Trump administration, the U.S. changing its stance on international norms while China is likely to take the initiative in the process of international norms.

IV. South Korea as a Middle Power in Cyberspace

South Korea as an Emerging Middle Power

In recent years, South Korea has come to be regarded as an emerging middle power in world politics and growing are concerns that South Korea should play diplomatic roles corresponding to its increased material capabilities. For example, it played impressive roles in various international conferences held in South Korea, such as the G20 Summit in Seoul (2010), High Level Forum on Aid Effectiveness in Busan (2011), Nuclear Security Summit in Seoul (2012), Conference on Cyberspace in Seoul (2013), and ITU Plenipotentiary Conference in Busan (2014). Behind the increased diplomatic roles, there are South Korea's military and economic capabilities, achieved for the last several decades; in 2010 South Korea's military budget ranked the 12th and GDP ranked the 15th in the world. South Korea has recently strived to figure out a new vision of middle power diplomacy: what kinds of roles are expected of it, and in which issue areas it plays those roles in effective ways.

Among various roles of middle power, this paper pays special attention to the advantages of brokerage empowered by positioning within a strategically important spot in a particular network structure (Goddard 2009, Kim 2011a). To organize this

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process, conceptual resources of network theories are adopted, and among them this paper especially relies on the social network theory presented by a network sociologist Ronald Burt. According to Burt, people who hold brokerage positions enjoy a competitive advantage over others who are less well placed. When they capture strategic places that connect otherwise disconnected groups, those people can exercise a special kind of power. In particular, he gives us some analytic insight; the unique forms of cleavages, which usually are conceptualized as "structural holes," found in a network which provide structural opportunities for some actors—known as brokers. By bridging the structural holes, brokers occupy central positions in a network structure, acting as nodes through which multiple transactions coalesce (Burt, 1992).

It is this structural position, not an actor's attribute that enables middle powers to exercise a certain kind of power. The structural conditions of a network—e.g., number of nodes, pattern of links, and architecture of the whole network—enable or disables middle powers to play particular roles and thus to have more possibilities to exercise power. In this sense, the power of broker—i.e., brokerage power—could be called "positional power" (Gould and Fernandez, 1989; Chang, 2009). Positional power is contrasted to the existing notion of "resource power," which refers to the power based on resources held by actors. In this respect, positional power is one aspect of recent theoretical attempts concerning "network power" that derives from one's relationships with others (i.e., networks) rather than its attributes (Grewal, 2008; Castells, 2009; Hafner-Burton, Kahler and Montgomery, 2009; Ha and Kim ed., 2010; Kim, 2014b).

In wielding the positional power, the pre-stage of the game is to identify the nature of network committed, and to contextualize middle power's position within the network structure of the whole system. In other words, a major task here is to comprehend the overall configuration of the network and define the coordinating or conflicting interests of the actors who are engaging the network game. For a middle power, a central task at this stage is to read the context of which world powers set the scheme. Only after reading the context, a middle power can assign itself roles within the network. Those roles of middle power could be articulated by understanding three aspects of network strategies: brokerage, collection, and complement.

First, situated at the interstices of networks, a middle power is likely to play the role of brokerage. Brokerage may alter network structures, leaving actors with a fundamentally different set of network ties, and changing the agenda in a network. This occurs because the brokerage process is usually accompanied by the process of "asymmetric coordination of relationships." This is to make certain ties stronger and to sever others. Simply, a process of network diplomacy is to break existing ties on the one hand, and to build new relationships on the other hand. It is this process of integrating and destroying ties that lies at the heart of brokerage. Indeed, this process of connecting and disconnecting ties belongs to the realm of strategic choices at the risk of opportunity costs.

Second, the enriched pool of supporters in the network enables middle powers to play active brokerage roles. In fact, a large portion of middle power's brokerage roles comes from its ability to bring more actors than others do. Being aware of the

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limitations of their brokerage roles, middle powers have to rely on collecting and attracting as many like-minded countries as possible. This carries with it the basic ideas of network power—i.e., "social power" (Hafner-Burton, Kahler and Montgomery, 2009; Kahler ed., 2009) or "collective power" (Kim, 2014a). The patterns of power remind us of online collaboration, conceptualized as "collective intelligence" (Levy, 1999). In particular, middle powers seek to exercise the collective power through coalitions or alliances.

Finally, middle powers may exercise a "programming power" as new architects of the network program. However, middle power's programming power is concerned with the ability to complement and possibly further renovate the whole system, designed by world powers. Indeed, its unique position in the existing system requires middle powers to play a complementary role to the existing world order, not to play a defiant role through challenging world powers' initiatives. In this sense, they do not necessarily have to be a whole system designer; it is sufficient for middle powers to be a complementary programmer who can provide system adjustments and adaptations that increase interoperability and compatibility, and further reinforce normative values and legitimation.

Theoretical notions, introduced in this section, are useful to understand the structural conditions of U.S.-China competition in cyberspace, and South Korea's middle power strategies under the unique structural conditions. In recent years, South Korea as an Internet power is likely to play diplomatic roles in easing cyber conflict between world powers, and to build a new global mechanism for cyberspace governance. In this context, the theoretical notion of middle power diplomacy will be applied to analyze the overall issues in the emerging power politics of cyberspace. To achieve these tasks of middle power diplomacy in the sector, it is essential that South Korea properly identify the structural conditions in which it currently operates and determine adoptable options for the future to aid in its success. Now let us turn to the more specific discussion about South Korea's structural position and middle power strategies in cyberspace.

Searching for Middle Power Strategies in Cyberspace?

The exemplary fields where South Korea's roles of middle power are discussed, include non-traditional security issues such as atomic energy, global warming, cyber security and other economic issues such as official developmental aid (ODA), global trade and finance. Besides these issues, IT and Internet issues in cyberspace are considered as one of the emerging agendas that South Korea is likely to play a meaningful role as a middle power. South Korea, which has a high reputation as an "Internet Strong Nation," is expected to play a contributive role in cyberspace. South Korea boasts its cutting-edge digital technology, efficient computer networks and the world's top high-speed Internet penetration rate.

In fact, South Korea sells more smartphones and high-definition TVs, has better access to the Internet and mobile network, and engineers more popular online game

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programs than any other country. In addition, Korea has also showed excellent performances in providing semiconductor, word processer software, Internet search engines, social network services, and the Internet community. Of course, it should be carefully examined how meaningful such an Internet power's achievements are, beyond mere rhetorical packaging. Nonetheless, it is true that over the past few decades, South Korea has done better in the IT sector and cyberspace than any other sectors. Above all, the IT sector has been a growth engine that has been feeding South Korea for decades.

However, we should not forget that cyberspace is not only an opportunity but also a challenge for Korea. In particular, the change that has been taking place since 2016 has brought a reflection on whether Korea's performance as an Internet power will be sustainable. For example, the discussion of the 4th Industrial Revolution in the Davos Forum of 2016, the Go Game match between artificial intelligence AlphaGo with human champion Lee Sedol, and the continuous cyberattack by North Korean hackers raised concerns that South Korea's achievement in the IT sectors might be an instant glory or a temporary accomplishment. In this context, it is meaningful to identify South Korea's structural position within the U.S.-China competition in cyberspace and to think about the contents and direction of its middle power strategies to cope with the rivalry of US-China (Kim, 2010; 2012; 2016a; 2016b).

First, what are the achievements and challenges of IT Korea at the threshold of technology competition? South Korea is said to have relatively achieved its competitive edge in IT manufacturing and the proliferation of Internet infrastructure. However, there is a challenge to overcome the difficulties of being a sandwich between high-value and low-value products. At the same time, South Korea has the task of advancing its highly developed IT infrastructure and hardware competitiveness to match the new environment generated by the 4th Industrial Revolution. It also has a task to strengthen cyber security which ensures the safety of existing wired and wireless Internet infrastructures while continuously pushing for technological innovation and human resources development. Recently, in discussing the 4th Industrial Revolution, South Korea has been talking about ways to improve its competitiveness in the IT infrastructure and hardware sector to cope with the emergence of big data and cloud computing environments.

What should South Korea do to cope with the technology competition between the United States and China? Recently, there was a conflict with the United States when a South Korean telecom company was purchasing Chinese Huawei's equipment. Also, well known is the case of the Samsung Galaxy phone, which recently became a sandwich between Apple and Xiaomi in the Chinese market. Should South Korean companies focus on low-value product competition or high value-added technology competition in this situation? Furthermore, one of the controversial questions is what kind of technological vision South Korea will adopt amid the U.S.-China technology competition. As we are discussing in South Korea recently, what future discourse of technology would be right to take full advantage of South Korea's competitive edge in infrastructure and hardware? Is it a future discourse from the United States that emphasizes cloud computing, big data, and IoT, or the so-call Industry 4.0 discourse from Germany that aims to strengthen manufacturing competitiveness by introducing

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smart factories?

Second, what are the achievements and challenges of IT Korea at the threshold of standard competition? Despite the difficulties of having its own standard, South Korea has topped the domestic market share in the sectors of word processer software and Internet search engines based on the advantages of the unique language for the last years. Since the early days of the computer industry, Korea has primarily adopted the U.S. computing platform—that is the Wintel standard—upon which it has pursued a strategy to develop Korean-style application programs that depend on the Korean nationalist sentiment. However, this strategic stance has created the situation of "standard isolation," and has unexpectedly served as a barrier preventing South Korean companies from entering the overseas markets. It also served as a negative factor that limits the competitiveness of South Korea's software and Internet sectors to certain areas. This situation may have had the effect of establishing an independent territory in the global platform competition, but it has limited the nation's Internet ecosystem to domestic ones, resulting in greater challenge for future Korean standards to maintain compatibility with global standards.

What should South Korea do to cope with the standard competition between the United States and China? What strategy should South Korea take or adopt in the U.S.-China standard competition, especially in the landscape of Internet platform competition between GAFA and BATX, focusing on Internet search business, e-commerce and FinTech? What is South Korea's position on the *de facto* competition between U.S. and Chinese companies as well as the *de jure* rivalry between the two governments? After all, the key to South Korea's standard strategy is to maintain openness and compatibility. Moreover, the pursuit of such a strategy is an important issue in that the problem of adopting standards in cyberspace could potentially lead to the choice of alliances in the offline space of international politics. While the best is the situation that there is no problem with compatibility between the South Korea-U.S. alliance and South Korea-China cooperation, as seen in the 2016 THAAD incident, there is a possibility that South Korea's dilemma between the U.S. and China will be repeated.

Third, what are the achievements and challenges of IT Korea at the threshold of charm competition? The challenge for South Korea is to promote the attractiveness and universality of Korean Internet models, while producing and distributing competitive contents of the Korean Wave, which is called *Hallyu*, in and out of the digital information and cultural industries. From this perspective, South Korea's strategy should go beyond the previous industrial model, and step forward to create and spread a more comprehensive model of socio-political engagement and, by extension, a model of creating and diffusing cultural contents that seeks universal values in cyberspace. In this regard, South Korea has been making its own efforts over the past few years to build a national brand of participation in digital politics using wired and wireless Internet, which is usually titled as "Digital *Hallyu*." At the same time, South Korea has continuously made efforts to exercise its leadership in the digital diplomacy sector by participating in the formation of international norms in cyberspace.

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What should South Korea do to cope with the charm competition between the United States and China? How can we continue the success of the Korean Wave (*Hallyu*) between the "U.S. Wind" and the "Chinese Tide" in the cultural industry? Even in the field of charm competition, the strategic maintenance of openness and compatibility is an important matter of standard management. In the process of participating in the formation of international norms as well as cultural contents industries, Strategic wisdom is needed to flexibly accept the cultural models of the U.S. and Chinese origins, and in some cases, to play the role of cultural broker between them. Given South Korea's historical experience and current status, it is possible that South Korea will play an important role between the two discourses of global freedom and state sovereignty, which are supported by the United States and China respectively. In this context, it should be noted that the so-called Seoul Consensus Model, a combination of the Washington and the Beijing Consensus, has discussed in academia for the last decade (Sohn ed. 2007).

The "ladder of scale," which is becoming increasingly important in the competition at the three thresholds, is likely to pose a major challenge to the future of IT Korea. In fact, South Korea's domestic market does not offer the conditions to compete for the "ladder of scale" in cyberspace. Moreover, the size of the South Korean domestic market is too small to discuss the role of a hinterland supporting to go abroad. If South Korea is unable to obtain an adequate "scale" in the so-called big data era, how does it establish any meaningful relation with the networks of the United States and China that operate on the basis of their own scale? For example, what should South Korea do, when it has to make an inevitable choice between the U.S. PayPal and the Chinese Alipay in the FinTech service competition? South Korea's ambiguous status, lying between the United States and China in cyberspace, is likely to escalate its strategic agony between the South Korea-U.S. alliance and the South Korea-China cooperation in the offline space.

Ultimately, the variable of "fitness of system" will play an important role in sustaining the performance of South Korea as an Internet power. The need for a system reform to support the new paradigm has been actively discussed in recent years with the social concerns brought by the 4th Industrial Revolution. What is crucial to succeed in every field of competition for technology, standards and charm is the reform of the politico-economic model and socio-cultural infrastructure that South Korea has previously relied on. In this continuum, it is indispensable for government to implement political and social innovations or to renovate the governance system of cyber diplomacy. It is also pointed out as an urgent issue that the government, civil society and businesses have to build a collaboration scheme and to raise public interest to support the scheme. Furthermore, we should also think about the South Korean model of state in the 21st century.

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V. Conclusion

Recently, the United States and China are competing against each other in the vicinity of the Korean Peninsula. The U.S.-China hegemony competition in the leading sector is not only seen as a mere competition between two powerful countries, but an emerging power game that affects the future fate of the Korean Peninsula. Historically, while the hegemony competition of great powers has influenced the structure of the international system, especially in 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 the U.S.-China competition at the thresholds of technology, standard, and charm, additionally taking into account the variables of scale and system.

In order to properly understand the future of competition between the two countries, we should closely watch the emerging power competition in cyberspace no less than the traditional power competition over military and economic power in offline space. The most appealing sector is the U.S.-China competition for technologies and standards along with the wave of the 4th Industrial Revolution. The success or failure of the competition between the two countries in semiconductor, smartphones, supercomputers, artificial intelligence, cloud computing, IoT, big data, e-commerce and FinTech will determine the future of supremacy in the 21st century world politics. In this sense, the future 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 the recent development of the U.S.-China competition, which has expanded beyond the technology-standard-charm competition in cyberspace into the overall aspects of offline world politics.

In fact, the U.S.-China competition in cyberspace has recently turned into a international security game. Cyber security becomes the first hot agenda (Kim 2018). Chinese hackers' attacks on U.S. critical infrastructure prompted the Obama administration to take out a counter-attack card, including military options. The so-called "Chinese hacker's Peril," which even caused controversy over hyper-securitization, was one of the hot issues that heated up U.S.-China relations in the early-mid 2010s. The conflict in cyber security could 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, the competition has become more complex; thus cyber security is being linked to industry and trade issues. Mobilizing the so-called "Chinese IT products' Peril" discourse, the Trump administration is keeping Chinese companies in check, which are leading the 4th Industrial Revolution in China.

Behind these conflicts lies not only economic considerations but also the interests of both countries in data resources. Since the disclosure of Edward Snowden in 2013, privacy and data security have become a matter of national security. China's cautionary concerns about data leakage by U.S. multinational corporations have

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created the Cybersecurity Law of 2016 in China. The focus of legislation is to censor and control services of U.S. companies in China, and to prohibit the transfer of data containing privacy 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 on the Internet. Since the year of 2014, China has been hosting the World Internet Conference (WIC) to counter the U.S. initiative in global Internet governance (Segal 2017). This shows that the U.S.-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 the multi-dimensional competition over industry, trade, security, military, privacy, law and institutions, and international norms. Faced with such a complexity generated by the rise of emerging power game, South Korea has to take systematic measures with implementing necessary policies and rearranging existing institutions. Also, South Korea has to seek out strategic roles in the U.S.-China competition, which is taking place on the emerging stages as well as on the traditional stages of international politics. 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 for middle power diplomacy especially in cyberspace. However, we also have to keep in mind that the structural condition produced by the U.S.-China competition would be a threatening challenge to South Korea that has a geopolitical fate being located between two super powers.

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