SOUTH KOREA AS A FOURTH INDUSTRIAL REVOLUTION MIDDLE POWER?

Dongwoo Kim

ABSTRACT

This paper proposes a framework for conceptualizing middle powerism in the context of the Fourth Industrial Revolution, using South Korea as an example. The paper argues that the systemic transformation of the Fourth Industrial Revolution has created new openings for middle powerism, and proposes 1) technology, 2) networks, and 3) governance as factors that could enable it. Then, South Korea's capacities in each of these three areas, potential barriers, and ultimately Seoul's capacity to act as a "Fourth Industrial Revolution" middle power are evaluated.

INTRODUCTION AND BACKGROUND

As the competition between China and the U.S. intensifies with technology at its center, there have been growing concerns over the bifurcation in global governance of the Fourth Industrial Revolution technologies. The challenges entailed in the Fourth Industrial Revolution reflect the challenges of growing interdependence and declining sovereignty of the states that Higgott[1] wrote about shortly after the end of the Cold War—but perhaps in a much more amplified and politicized manner. Here, South Korea is yet again the shrimp between China and the U.S. in this contest for supremacy. Seoul has suffered from the consequences of angering Beijing with the installation of the THAAD missile defense system, but now Washington has been pressuring it to join the tech blockade against China. In purely realist terms, there is not much that South Korea could do, but the intersection of the middle power and the Fourth Industrial Revolution literatures offer the country a more optimistic assessment of its capabilities.

This paper is an attempt to showcase such a potential. I explore this very intersection and examine whether South Korea could exercise a greater agency through its middle power activities in the space of the Fourth Industrial Revolution. Following a quick literature review, I identify the relevance of middle powers literature in the context of the Fourth Industrial Revolution, and propose a framework with three conditions (i.e., technological capacity, networks, and governance capacity) that would allow the feasibility of a country's middle power leadership in this policy space. Then, I use this framework to demonstrate South Korea's intent and capacity to be a proactive middle power in the global governance of the Fourth Industrial Revolution. While this paper focuses on South Korea, the intention is to explore a new conceptualization of middle powers within a different systemic environment.

Dongwoo Kim is a first year J.D. candidate at the Faculty of Law, University of Toronto, and a Junior Fellow at Massey College. The views expressed are solely those of the author and do not necessarily reflect the views of any organizations they are affiliated with. To read other KEI Special Reports, please visit https://keia.org/keia_publication/special-reports/

THE ELUSIVE SEARCH FOR MIDDLE POWERS

Defining Middle Powers

The middle powers literature is nebulous. While the term "middle power" has been used since World War II, there is no real consensus as to whether they exist or not—much less what it means. As such, there is a plethora of different discussions about the definitional issue of middle powers.[2]

The Cooper-Higgott-Nossal definition categorizes middle powers into three categories: positional, geographic, and normative, of which the latter has transformed into a focus on behaviors—that is, categorizing based on what states do.[3] The Carr definition also presents a three-pronged approach: position, behavior, and identity.[4] In these, there is the recurring theme of placing the state in the "middle" between superpowers and "small states," based on measurable or concrete attributes (e.g., GDP, geography, etc.), or behaviors or functions that foster brokering or international collaboration among states—which fit into the realist or liberal explanations of international relations. Then, there are more constructivist examinations of the concept, in which states view themselves as middle powers and socialize with others based on this self-attributed identity. Indeed, as Robertson points out, the disagreement over the term reflects the fragmentation of different schools of thought in international relations (i.e., realism, liberalism, and constructivism)—premises that carry the baggage of the "Great Debate" that cannot be settled within this short paper.[5]

Therefore, I opt for the contextual definition that Robertson offers: "a middle power ought to be considered as a state with an interest in and *capacity* (material resources, diplomatic influence, creativity, etc.) to work proactively in concert with similar states to contribute to the development and strengthening of institutions for the governance of the global commons."[6] At the same time, I take a decidedly constructivist approach in the analytical exercise in this article, as this seems to be best suited for addressing the more ideational elements of governing intangible technologies such as data or artificial intelligence (AI). "Interests" are viewed through the Wendtian lens that "presuppose identities"[7] and capacity is understood more broadly, including not just material resources, but also the ability to influence norms, constructed intersubjectively.

Role of Middle Powers in Global Governance

In global governance, middle powers have played different roles that often overlap with each other. First, middle powers have been *policy entrepreneurs,* starting initiatives that serve broader goals within the international community. Cooper and Mo highlight the role that Canada played in the creation of G20 as an example.[8] Second, middle powers have also conducted the role of *managers* that direct and conduct international undertakings, especially in institutional settings.[9] As managers, Henrikson argues that middle powers play the role of managers through mediation, as when Canada mediated the Suez crisis in 1956.[10] Finally, middle powers have also functioned as *coalition builders,* bringing together the group of like-minded countries to promote a cause, as Australia has done with the establishment of the Cairns Group of Fair Trading Nations.[11] These roles are neither exhaustive nor mutually exclusive, but emphasize most of the middle power roles that have been highlighted by the literature.

FOURTH INDUSTRIAL REVOLUTION & MIDDLE POWERS

In this section, I examine the idea of "Fourth Industrial Revolution Middle Powers." The emergence of new, disruptive technologies such as AI, internet of things (IoT), and robotics have raised new challenges for policymakers worldwide, who believe that they will be critical for the international competitiveness of their countries. In this context, technology has been further incorporated into existing geopolitical rivalries, creating points of tension that stretch beyond traditional spheres—impacting academic research, the private sector, and problems that require international, multistakeholder solutions. Therefore, the digital sector has become a policy space that merits an examination on how middle powerism could be possible within it.

Context for Middle Power Diplomacy in the Fourth Industrial Revolution

Klaus Schwab of the World Economic Forum defines the Fourth Industrial Revolution as a paradigmatic shift characterized by "a much more ubiquitous and mobile internet, by smaller and more powerful sensors that have become cheaper, and by artificial intelligence and machine learning."[12] However, beyond the spread of specific forms of digital technologies, Schwab points to "the fusion of these technologies and their interaction across the physical, digital, and biological domains," which *strengthen the interconnectedness and interdependence of systems,* as the unique characteristic of the Fourth Industrial Revolution.[13]

The Fourth Industrial Revolution creates new policy challenges, spanning domestic and international levels in an interconnected manner. First, at the domestic level, there are no clear policy frameworks for governing the intangibles such as data or AI, much less enforcement mechanisms. Policies fall behind new innovations, and the growing adoption of these technologies in key sectors such as public service, finance, or even security create new vulnerabilities for states.[14] That is, private sector and academia operate with increased profile and authority with their on-the-ground expertise. At the same time, states are pressured to provide policy environments to foster innovation to maintain the competitiveness of their economy.[15] At the international level, the same problems become amplified, with different state interests coming into conflict with each other. Considering the interconnectedness of the Fourth Industrial Revolution, states are incentivized to collaborate with one another, as well as non-state actors, to ensure interoperability between products and services and access to critical supply chains, while remaining concerned about the vulnerabilities entailed to this interconnectedness and openness. These further add

to the erosion of sovereignty and changes to the role of the state amidst growing interdependence and complexity of global governance agenda that Higgott wrote about in the post-Cold War context.[16]

Thus, the Fourth Industrial Revolution has further intensified the tension between states, inserting security concerns into areas that hitherto had not been securitized, and raising threats against the sovereignty of the governments. For instance, consider data governance. Data has become a coveted asset, getting referred to as the new "oil"[17] or "electricity"[18] due to its importance for training algorithms that in turn support the adoption of AI. Beyond its economic value, however, data has sovereignty and national security implications that complicate the global governance of data. As noted by Ciuriak and Ptashkina, data governance reflects social values regarding privacy, civil rights, and democracy, and attempts to impose an international governance framework on data could potentially limit the sovereignty of states.[19] In 2019, India, along with Indonesia, Egypt, and South Africa, refused to sign the Osaka Track, a data governance framework launched in Japan, on the grounds that its data localization requirements disregard the needs of developing economies, thereby making a sovereignty-based argument against it.[20] Also, some have securitized data to the extent that the ban on TikTok, a social media platform based in China, was rationalized on the grounds of "national security" in the U.S.[21]

The U.S.-China rivalry has especially created a chasm in this policy space in recent years—raising concerns about the bifurcation of the digital world along the geopolitical fault lines. Increasingly, states around the world have been pressured to choose between the U.S. and China, as in the case of Huawei 5G equipment. 5G infrastructure has been seen as the core of the Fourth Industrial Revolution infrastructure, and the U.S. launched a global campaign to push against the widespread adoption of Huawei's 5G equipment. Now, the pushback against Chinese digital technology in North America and Europe revolve around issues such as Beijing's surveillance system (i.e., social credit ratings) or oppression of ethnic minorities and political dissidents (e.g., Uyghurs, Hong Kong protesters), which have altogether been labelled under the umbrella of "digital authoritarianism."[22] There are concerns that the digital world might get divided into the Chinese camp, along the Belt and Road Initiative, and the U.S. alliance camp, with some referring to it as the "new Cold War."[23]

However, it would be limiting to regard the U.S.-China competition regarding the digital world through the realist lens of great power competition alone; and it is also important to understand that the vying for supremacy in the digital space does not allow a neat, dichotomous understanding of global politics that pits the liberal (or the U.S. alliance) camp against the illiberal camp. First, it is important to understand how the clash of interests between China and the U.S. on digital issues reflects diverging discourses on governance, but also on the new technologies themselves, which are products of different identities. For instance, consider how the values driving Silicon Valley's "Open Internet" model in the U.S., which have its roots in the technocratic and entrepreneurial culture of its namesake, contrast from China's "Authoritarian Internet" model, which brings together public and private sectors in the service of socio-economic development and social stability.[24]

Secondly, there is the importance of grasping the nuance of this bifurcation beyond the rhetoric. There are competing interests and identities, as well as complexities in terms of social, political, and economic ties, that drive digital geopolitics that escape the simpler categorization of the camps into democracies and non-democracies. Here, it is clear that the Fourth Industrial Revolution policy space is a microcosm of global politics, constituted by myriad interests and identities, but one with more specific policy problems that could be addressed through middle power leadership. Even the U.S. experts advising on the alliance-approach to competing against China acknowledge the advantages of such "smaller countries," noting that "[they] tend to be more agile…have unique expertise or capabilities to distinguish them as a credible leader, or there may be a pressing global issue where great power rivalry comes with too much baggage, and a non-threatening honest broker is required to bring the capacities of larger countries together."[25] Clearly, there is the space for middle powers to contribute.

Conditions for Middle Powerism in the Fourth Industrial Revolution

Having established that there are policy vacuums that could benefit from middle power leadership, this section examines the conditions could allow certain states to play the role of a middle power in the global governance of the Fourth Industrial Revolution. These conditions are not meant to be exhaustive or sufficient on their own, but to provide a useful starting point for assessing the possibilities of middle power leadership in this space.

Technology

First, a state must possess technological capacity to play the role of a middle power in the governance of the Fourth Industrial Revolution, which can be regarded as a niche issue. Geoffrey Hayes wrote that a state must display some degree of competence or expertise on the subject matter in order to effectively play the role of an honest broker or policy entrepreneur on the international stage, as in the case of Canada's peacekeeping efforts.[26] Further, emerging technologies are complex, and they advance quickly. Governance initiatives in this field are no longer intra-state, but they are increasingly multistakeholder, which reflect the need for the participation of technical experts. For instance, Canada's strength in AI basic research and the presence of leading institutes with top, Turing Award-winning scholars such as Yoshua Bengio or Geoffrey Hinton have allowed it to play a leading role in setting up the Global Partnership on AI with France.[27]

Networks

Coalition building is one of the key traits of middle power diplomacy,[28] but in context of the Fourth Industrial Revolution technologies it is especially important to consider not only the ability to rally like-minded middle power states but also to mobilize *non-state* actors, such as entrepreneurs, scientists, and international and civil society organizations that play critical roles in multistakeholder governance forums. Also, strong people-to-people ties with policy, research, and industry groups, beyond government-to-government relations, in *both* China and the U.S. could provide critical assets for playing the role of middle power in this space.

Governance

The Fourth Industrial Revolution, as highlighted by Klaus Schwab, is not merely a technological phenomenon, but more importantly also entails a "systemic change."[29] Put another way, the challenge is not so much the lack of innovative technologies, but rather, the lack of their governance that prevents their malicious applications and ensures that they serve the common good, and at the same time addresses the existing structural challenges such as climate change, growing inequality, and declining trust in the leadership, which have been lumped with "technology" problems, as shown in the concerns about automation or mass surveillance. Here, the governance of the technology requires the ability of regulators to "learn-by-doing": testing new solutions for a targeted, existing problem in a small, controlled manner and then adjusting regulations moving forward (e.g., regulatory sandboxes). This does not necessarily necessitate big government, but there must be the capacity to act proactively and agilely, and then to address problems when they emerge.

Middle powers that can propose effective governance frameworks could gain the momentum to play a significant role internationally through the "first mover advantage."[30] In the tech sector, there is an emphasis on problem- or project-specific approaches, which align well with the aptitude of middle powers for addressing "the increasing importance of issue-specific, mission-oriented diplomacy, cutting across ideological, regional and developmental barriers."[31] The problem-solving approach to these new challenges provides an opening for policy entrepreneurship that is agnostic to existing ideological dichotomy (i.e., tech democracy vs. digital authoritarianism). This kind of norm-shaping approach is highlighted in the Fourth Industrial Revolution literature because technology is increasingly becoming decentralized and global, which makes it difficult to impose traditional, "hard" regulations; instead, norm-centered approaches, such as Gary Marchant's "soft law" governance of AI,[32] have been highlighted. In this context, effective middle powers would gain legitimacy and shape norms in the space through good *proofs of concept* in their own uses of the technology. Estonia is a great example of such middle power leadership in Fourth Industrial Revolution governance, serving as a role model for digital transformation to economies around the world.[33]

Finally, China and the U.S., while indisputable leaders in technology, may not offer actionable insights to most of the economies looking for benchmarks, as they are too big and have resources that the rest cannot access. Here, middle powers that can offer convincing "proofs of concept" to their peers or smaller countries have an opportunity to make a tangible impact. Then, does South Korea have what it takes?

SOUTH KOREA AS A FOURTH INDUSTRIAL REVOLUTION MIDDLE POWER

South Korea's Pursuit of Middle Powerism

Following successful economic growth and democratization throughout the twentieth century, South Korea started to adopt the middle power identity around the turn of the century. Cha Tae-suh attributes Kim Dae-jung and Roh Moo-hyun's attempts to leave behind the vestiges of the Cold War and reconfigure the North-South relations, and more broadly, the Northeast Asian security structure through diplomacy.[34] Sohn Yul also recognizes Roh's attempts to leave behind the "small-state mentality that pursues short-term interests" with preoccupations with the North Korea policy and an alliance with the U.S. as the starting point of South Korea's adoption of middle power identity, although he notes that this was done without officially taking up the term.[35] Mo Jongryn specifically points to the global financial crisis in 2008 as a turning point, highlighting the efforts to take on additional responsibilities in various issues in global governance under the Lee Myung-bak government.[36] Self-identification as a middle power has continued under the Park Geun-hye administration, during which the Ministry of Foreign Affairs listed "Realization of Responsible Middle Power that Contributes to Global Peace and Development" as one of the seven pillars of the work plan for 2013, highlighting the need to contribute to global problems, strengthening of cooperative networks with key middle powers in each region, and assisting developing economies.[37] Moon Jae-in has continued to identify South Korea as a middle power as well, noting that the Candlelight Revolution had earned "respect" from abroad and stressed that "it is the time [South Koreans] leave behind the thinking that South Korea is at the periphery of powerful countries and become a strong middle power that is independent and confident."[38]

The literature on South Korea as a middle power generally highlights its internationalist policies that seek to contribute to global governance in niche issues, emphasizing Seoul's self-attributed identity as a middle power, its economic and military capacity, and finally, soft power.[39] South Korea's contributions to issues such as energy, climate change, cybersecurity, and development have been well documented.[40] On the point about soft power, the literature not only highlights South Korea's cultural exports (i.e., *hanryu* or K-pop), but also Seoul's successful transition from a *developing* to *developed* economy, and in other cases, its democratization and maturing of civil society.[41]

South Korea's Fourth Industrial Revolution Policies

In addition to establishing itself as a middle power, South Korea has invested heavily in its ICT, and more recently, in Fourth Industrial Revolution policies domestically and internationally to enhance its global competitiveness. Here, I examine South Korea's intent and capacity to play the middle power role within the context of the Fourth Industrial Revolution by using the categories (i.e., technology, networks, and governance) presented above.

First, South Korea has established itself as a technology powerhouse throughout the twentieth and twenty-first centuries. In key indices that measure ICT or digital innovation competitiveness, South Korea has consistently ranked on top; for instance, it was ranked first in the 2021 Bloomberg Innovation Index,[42] second in the 2020 UN E-Government Survey,[43] and second in the International Telecommunication Union's 2017 Global ICT Development Index 2017.[44] The internet speed and penetration rate in South Korea has been very highly ranked as well, and it was the first country in the world to launch the first commercial 5G network.[45] South Korea's strong ICT foundations have been consistently referred to as a strength for its national strategies for the Fourth Industrial Revolution. The establishment of strong ICT infrastructure is a product of the developmental state approach to industrial policy, in which the state coordinated closely with the private sector in order to achieve rapid socio-economic growth.[46]

Through a similar approach, the South Korean government has launched several initiatives to attain leadership in the Fourth Industrial Revolution technologies governance as well. The Ministry of Science, ICT and Future Planning (now Ministry of Science and ICT) published the *Mid- to Long-term Master Plan in Preparation for the Intelligent Information Society* in 2016, setting the three thematic goals of securing the foundation for world-class intelligent information technology, application of intelligent technology to all industrial sectors, and reforming social policies to proactively respond to the challenges of the Fourth Industrial Revolution.[47]

Moon Jae-in has further advanced the Fourth Industrial Revolution agenda after coming to power in 2017. One of his first directives was to set up the Presidential Committee on the Fourth Industrial Revolution (PCFIR), an advisory body that brought together five ministers and over twenty private sector stakeholders to reform and introduce policies on science and technology, industry, infrastructure, education, and social welfare, that proactively address the challenges posed by the Fourth Industrial Revolution technologies.[48] Since 2017, the PCFIR has played an instrumental role in developing and introducing tangible policy recommendations for government support in key industrial sectors, reform of laws and regulations (e.g., the "Three Data Laws"), and talent development and retention.[49] In 2019, the Moon administration also introduced plans to invest more than 10 trillion won ($8.96 billion) in key sectors such as data, AI, and hydrogen until 2023, and also increase the public R&D expenditure to more than 20 trillion won ($17.9 billion).[50] With the funding from government, ten leading universities now offer AI graduate programs as of May 2021,[51] and major corporations such as Samsung, LG, or Kakao have invested in AI R&D, both domestically and internationally.

More recently, Seoul introduced the 160 trillion won ($133.1 billion) "Korean New Deal" as the Moon government's COVID-19 recovery policy in July 2020. The Korean New Deal has three pillars (digital, green, and social welfare), and 44.8 trillion won ($40 billion) was allocated to the "Digital New Deal" pillar, which would boost the integration of data (5G), network, and AI (DNA) into the Korean economy, and fund digitalization of public infrastructure over the next five years.[52]

South Korea as a Fourth Industrial Revolution Middle Power?

Building upon the brief exposition of South Korea's efforts on middle power diplomacy and the Fourth Industrial Revolution, this section assesses whether South Korea has the conditions that would enable it to play the role of an effective middle power in this policy space.

Technology

First, as discussed above, it is clear that South Korea has the technological capacity. Its existing strengths in ICT, combined with aggressive investments by the government and the private sector altogether suggest that South Korea has the technological prowess that would provide it with the legitimacy for policy leadership or entrepreneurship in the space of the Fourth Industrial Revolution on the international stage.

Networks

Second, South Korea has the right networks to mobilize both state and non-state actors. South Korea maintains a relatively favorable relationship with both Beijing and Washington as of May 2021, and it has actively participated in key global governance forums such as the UN, APEC, OECD, and G20. On digital governance, South Korea has been active within the OECD's "Going Digital" initiative, was one of the five founding members of the Digital Nations, and was one of the fifteen founding members of the Global Partnership on AI.

Seoul's efforts on the digital front with developing economies is particularly noteworthy. South Korea has integrated the tech component into its New Southern Policy, New Northern Policy, and official development assistance (ODA) strategies, assisting developing economies to adopt Fourth Industrial Revolution technologies while creating market opportunities for South Korean firms. Particularly, Seoul has exported its digital public service system to developing economies. For instance, South Korea exported its digital public service system to Indonesia's tax agency, as well as the Fair Trade Commission's digitalized case analysis system to the Philippines.[53] South Korean ODA also helped build a national ID card data center in Tanzania.[54]

According to Chung Choong-sik, South Korea promoted over 130 e-government ODA projects, and provided $174.7 billion worth of ICT projects, which constituted 15 percent of its total ODA (compared to 3 percent for Japan and 2 percent in the U.S.)[55] The ODA white paper emphasizes that Seoul will boost support in ICT, science, and public administration with partner countries through the "Digital New Deal ODA," a consolidated ICT and ODA policy.[56]

But beyond government-to-government relations, South Korea also has deeper networks around the world, spanning academia and industry. South Korean companies such as Samsung, LG, and Naver have gone to North America and Europe to set up R&D institutes and local subsidiaries, accessing the tech talent and the markets.[57] South Korean firms are also active in developing economies; Naver established two AI R&D centers in Vietnam in collaboration with local research institutes, for instance.[58]

The final point to highlight on networks is South Korea's position between China and the U.S. South Korea has traditionally had a strong relationship with the U.S. and there are ties with it in many sectors, including technology. However, South Korea also has a very strong linkage to China, which is South Korea's top trading partner, accounting for more than a quarter of its total exports.[59] Over 54,000 South Korean students studied in China in 2019—five times that of the American students (11,639) in the same year.[60] There is also a strong linkage in industry and research, which altogether provides a strong network in China that goes beyond the government.

Governance

South Korea's model of governance for the Fourth Industrial Revolution technologies also adds to its potential to play a significant role as a middle power in this policy space. South Korea's model has appeal for both developed and developing economies. For the former, South Korea is a country that has gone through successful democratization. There are limited concerns, if any, about its "digital authoritarianism," and instead, its use of technology is regarded as a product of good governance. Its whole-of-nation approach to responding to the systemic challenges of the Fourth Industrial Revolution offers a compelling proof of concept. At the same time, for developing economies, South Korea has soft power as a poster child of successful economic development, and it offers more compelling benchmark than those of North America or Europe. South Korea's successful response to COVID-19 has further solidified positive perceptions of its public administration system from abroad. Seoul's effective use of the Fourth Industrial Revolution technologies, such as the AI-based smart city platform for contact tracing has demonstrated South Korea's ability to agilely deploy digital solutions for emerging policy challenges.[61] Beyond the export of the technology, South Korea also provides consulting services for its ODA partner economies on development of e-government systems based on South Korea's knowledge and experience, which suggests that Seoul might be exporting not just its digital government systems, but also its governance framework, shaping its norms around the world in a less ostentatious manner.[62]

South Korea provides a model of a Fourth Industrial Revolution middle power that could potentially command trust from all actors, without getting accused of promoting digital authoritarianism or "aid with strings." Here, Seoul would offer not liberal or authoritarian models of governance, but trustworthy solutions that address systemic challenges of the Fourth Industrial Revolution. These solutions would firstly demonstrate commitment to widely agreed principles on technology that are agnostic to the ideological dichotomy promoted by efforts such as the proposed "T-12," an alliance of "techno-democracies" that is gaining traction in the U.S. as a way of countering China's digital expansionism.[63] For instance, a Harvard study demonstrates that there is an emerging consensus on AI ethics principles around eight core themes around the world—spanning both the U.S. and China.[64] Now, the main challenge here is to translate these principles into actionable guidelines and regulations. Here, "trustworthy solutions" from middle powers would demonstrate the commitment to working with local stakeholders to bridge globally agreed principles and local needs through technical competence, consultation, iterative governance, and establishment of transparent guidelines. In this context, Seoul's successful delivery of the Fourth Industrial Revolution policies, combined with both its participation in key multilateral conversations with developed economies and the experiences of collaborating on the ground with local stakeholders in developing economies, could provide it with strong authority as a middle power on the international stage.

CHALLENGES

South Korea's pursuit of the Fourth Industrial Revolution comes with several challenges. Firstly, the feasibility of middle power diplomacy in this context leverages a) limited securitization of digital technology, and b) relative decentralization / fragmentation of the digital policy across different sectors, which would theoretically allow a state to pursue initiatives through multiple channels. However—with the dual trend of intensifying strategic contest between China and the U.S. as well as growing securitization of

digital technology as it increasingly becomes integrated into society, economy, and security—middle powerism within this context is likely to become difficult in the same way that it has been challenging in the context of more traditional issues in diplomacy. Already, the U.S. has identified South Korea as one of the key allies to collaborate closely with to tackle China's digital expansionism, and Seoul has always been included in the proposed T-12. While there is a recognition from the U.S. that middle power leadership from partners like South Korea in niche areas might be helpful considering the decentralized/fragmented digital policy space, this premises on Seoul's alignment with the U.S. objective of checking China and does not necessarily indicate the support for South Korea's strategic autonomy.

Further, if South Korea remains within the developmental state mindset that prioritizes economic values over all else in its pursuit of technological leadership, it may lose credibility to conduct middle power diplomacy moving forward if its technology solutions do not address social and ethical concerns. While Seoul has included these social and dimensions of the Fourth Industrial Revolution in its key strategies, it remains to be seen whether these aspirations will materialize in practice. Especially with a stronger government leadership and relatively less input from the civil society, there is a risk that certain uses of technology that prioritize production of economic over social or ethical values, or efficiency over consultation might get perpetuated. For instance, Seoul's COVID-19 contact tracing efforts entailed extremely intrusive uses of personal data and AI, at least from the Western perspective, and startups have been caught operating in ethically questionable manners, as in the Lee Luda case.[65] Unchecked, those incidents could undermine South Korea's credibility as a provider of trustworthy solutions and therefore its ability to play the role of a middle power.

CONCLUSION

The Fourth Industrial Revolution is not a politically neutral space; different interests and positionalities collide against each other. Even if the tensions between China and the U.S. de-escalate, there will be flashpoints surrounding governance of the Fourth Industrial Revolution technologies around the world. This trend poses both familiar and new challenges. They are familiar in the sense that academics have warned about the difficulties of interdependence and technical complexities in global governance. However, the Fourth Industrial Revolution has introduced intangible technologies that are poised to provoke systemic changes and further expand the areas of vulnerabilities for sovereign states, securitizing what had hitherto been civilian sectors (e.g., retail, telecommunications, etc.) and even humans (e.g., researchers, students). Especially in the context of the China-U.S. rivalry, there is an urgent need for middle power leadership for ensuring continued dialogues about interoperability and proper governance of these powerful new technologies.

Here, South Korea seems to be positioned in an especially advantageous nexus to make a tangible contribution to the global commons. Seoul has shown the intent to play a leading role in the global governance of the Fourth Industrial Revolution, and it has made tangible commitments, both domestic and international, to that end. Of course, external or domestic factors mentioned above pose risks that could undermine South Korea's endeavors as a middle power—but at the very least, Seoul seems to have taken early steps in the right directions.

ENDNOTES

[1] Richard Higgott, "Issues, Institutions and Middle-Power Diplomacy: Action and Agendas in the Post-Cold War Era," in *Niche Diplomacy: Middle Powers after the Cold War,* ed. Andrew Fenton Cooper (New York City: Macmillan, 1997), 25-45.

[2] Jeffrey Robertson, "Middle-Power Definitions: Confusion Reigns Supreme," *Australian Journal of International Affairs* 71, no. 4 (July 4, 2017): 355-70, https://doi.org/10.1080/10357718.2017.1293608.

[3] Andrew Fenton Cooper, Richard A. Higgott, and Kim Richard Nossal, *Relocating Middle Powers: Australia and Canada in a Changing World Order,* Canada and International Relations 6 (Vancouver: UBC Press, 1993).

[4] Andrew Carr, "Is Australia a Middle Power? A Systemic Impact Approach," *Australian Journal of International Affairs* 68, no. 1 (January 1, 2014): 70-84, https://doi.org/10.1080/10357718.2013.840264.

[5] Robertson, "Middle-Power Definitions."

[6] Ibid.

[7] Alexander Wendt, *Social Theory of International Politics* (Cambridge: Cambridge University Press, 1999), https://www-cambridge-org.ezproxy.library.ubc.ca/core/books/social-theory-of-international-politics/0346E6FDC74FECEF6D2CDD7EFB003CF2.

[8] Andrew Fenton Cooper and Jongryn Mo, "Middle Power Leadership and the Evolution of the G20," *Global Summitry Journal,* May 2013, http://dx.doi.org/10.7871/2291-4110.1001.

[9] Alan K. Henrikson, "Middle Powers as Managers: International Mediation within, across, and Outside Institutions," in *Niche Diplomacy: Middle Powers after the Cold War,* ed. Andrew Fenton Cooper (New York City: Macmillan, 1997), 46-72.

[10] Ibid.

[11] Richard A. Higgott and Andrew Fenton Cooper, "Middle Power Leadership and Coalition Building: Australia, the Cairns Group, and the Uruguay Round of Trade Negotiations," *International Organization* 44, no. 4 (1990): 589-632.

[12] Klaus Schwab, *The Fourth Industrial Revolution,* Illustrated edition (New York: Currency, 2017).

[13] Ibid.

[14] Taylor Owen, *Disruptive Power: The Crisis of the State in the Digital Age* (Oxford: Oxford University Press, 2018).

[15] "Globalisation Has Marginalised Many Regions in the Rich World," *The Economist,* October 21, 2017, https://www.economist.com/briefing/2017/10/21/globalisation-has-marginalised-many-regions-in-the-rich-world.

[16] Higgott, "Issues, Institutions and Middle-Power Diplomacy."

[17] Kiran Bhageshpur, "Data Is The New Oil – And That's A Good Thing," *Forbes,* November 15, 2017, https://www.forbes.com/sites/forbestechcouncil/2019/11/15/data-is-the-new-oil-and-thats-a-good-thing/.

[18] Shana Lynch, "Andrew Ng: Why AI Is the New Electricity," Stanford Graduate School of Business, March 11, 2017, https://www.gsb.stanford.edu/insights/andrew-ng-why-ai-new-electricity.

[19] Dan Ciuriak and Maria Ptashkina, "Toward a Robust Architecture for the Regulation of Data and Digital Trade," April 15, 2020, https://www.cigionline.org/publications/toward-robust-architecture-regulation-data-and-digital-trade.

[20] Scroll Staff, "G20 Summit: India Does Not Sign Osaka Declaration on Cross-Border Data Flow," *Scroll.in,* June 29, 2019, https://scroll.in/latest/928811/g20-summit-india-does-not-sign-osaka-declaration-on-cross-border-data-flow.

[21] The White House, "Executive Order on Addressing the Threat Posed by TikTok," August 6, 2020, https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-addressing-threat-posed-tiktok/.

[22] Lydia Khalil, "Digital Authoritarianism, China and COVID" (Sydney: Lowy Institute, November 2, 2020), https://www.lowyinstitute.org/publications/digital-authoritarianism-china-and-covid.

[23] Robert D. Kaplan, "A New Cold War Has Begun," *Foreign Policy,* January 7, 2019, https://foreignpolicy.com/2019/01/07/a-new-cold-war-has-begun/.

[24] Kieron O'Hara and Wendy Hall, "Four Internets: The Geopolitics of Digital Governance," CIGI Papers (Waterloo: Centre for International Governance Innovation, December 7, 2018), https://www.cigionline.org/publications/four-internets-geopolitics-digital-governance/.

[25] China Strategy Group, "Asymmetric Competition: A Strategy for China & Technology" (Arlington: Axios, 2020), https://www.documentcloud.org/documents/20463382-final-memo-china-strategy-group-axios-1.

[26] Geoffrey Hayes, "Canada as a Middle Power: The Case of Peacekeeping," in *Niche Diplomacy: Middle Powers after the Cold War,* ed. Andrew Fenton Cooper (New York City: Macmillan, 1997), 73-89.

[27] Government of Canada and CIFAR, "Canada's Leadership in AI – Talent, Ecosystems, and Responsible AI," OECD.AI, May 4, 2021, https://oecd.ai/wonk/canada-national-ai-strategy-2021.

[28] Cooper, Higgott, and Nossal, *Relocating Middle Powers.*

[29] Schwab, *The Fourth Industrial Revolution.*

[30] Soumik Roy, "First Mover Advantage Will Be Significant for Those That Deploy AI at Scale," *Tech Wire Asia,* November 20, 2019, https://techwireasia.com/2019/11/first-mover-advantage-will-be-significant-for-those-that-deploy-ai-at-scale/.

[31] Higgott, "Issues, Institutions and Middle-Power Diplomacy: Action and Agendas in the Post-Cold War Era."

[32] Gary E. Marchant and Brad Allenby, "Soft Law: New Tools for Governing Emerging Technologies," *Bulletin of the Atomic Scientists* 73, no. 2 (March 4, 2017): 108-114, https://doi.org/10.1080/00963402.2017.1288447.

[33] Mark Robbins, "Myths, Values and Digital Transformation: The Exceptional Case of Estonia" (Ottawa: The Institute on Governance, April 5, 2018), https://iog.ca/publications/myths-values-and-digital-transformation-the-exceptional-case-of-estonia/.

[34] Taesuh Cha, "South Korea's Middle Power Diplomacy and the Politics of Identity Co-evolution Ostpolitik and its Implications Revisited," *Journal of International Politics* 24, no. 2 (December 2019): 43-72, https://doi.org/10.18031/jip.2019.12.24.2.43.

[35] Yul Sohn, "South Korea's Drive for Middle-Power Influence," *Global Asia* 11, no. 1 (2016): 44-48.

[36] Jongryn Mo, "South Korea's Middle Power Diplomacy: A Case of Growing Compatibility between Regional and Global Roles," *International Journal* 71, no. 4 (2016): 587-607.

[37] Ministry of Foreign Affairs, "2013nyŏndo chuyoŏmmugyehoek 2013년도 주요업무계획 [2013 Work Plan]," Ministry of Foreign Affairs, March 27, 2013, https://www.mofa.go.kr/www/brd/m_4175/view.do?seq=345717&srchFr=&srchTo=&srchWord=&srchTp=&multi_itm_seq=0&itm_seq_1=0&itm_seq_2=0&company_cd=&company_nm=&page=1.

[38] Cheongwadae, *Munjaein Taet'ongnyŏng Yŏnsŏlmunjip* 문재인 대통령 연설문집 *[President Moon Jae-in's Speeches],* vol. 1 (Seoul: Office of the President, 2018).

[39] Mo, "South Korea's Middle Power Diplomacy"; Seonju Kang, "Chunggyŏn'guk Oegyo Chŏllyak 중견국 외교 전략 [Middle Power Diplomacy Strategy]," Policy Research (Seoul: Institute of Foreign Affairs and National Security, 2014), http://knsi.org/knsi/admin/work/works/150603%20%EC%A4%91%EA%B2%AC%EA%B5%AD%20%EC%99%B8%EA%B5%90%EC%A0%84%EB%9E%B5(%EC%99%B8%EA%B5%90%EC%95%88%EB%B3%B4%EC%97%B0%EA%B5%AC%EC%86%8C).pdf?PHPSESSID=e7eb311d803d851c22943aad43ba4a22.

[40] Sangbae Kim, "Cyber Security and Middle Power Diplomacy: A Network Perspective," *Korean Journal of International Studies* 12, no. 2 (December 2014): 323–52, https://doi.org/10.14731/kjis.2014.12.12.2.323; Sohn, "South Korea's Drive for Middle-Power Influence."

[41] Seonju Kang, "Han'gugŭi Chunggyŏn'guk Oegyo: MIKTA Ch'ulbŏmgwa Kaebarhyŏmnyŏk 한국의 중견국 외교: MIKTA 출범과 개발협력 [South Korea's Middle Power Diplomacy: Launch of MIKTA and Development Cooperation]," Analysis of Key International Issue (Seoul: Institute of Foreign Affairs and National Security, October 24, 2013); Mo, "South Korea's Middle Power Diplomacy."

[42] Michelle Jamrisko, Wei Lu, and Alexandre Tanzi, "South Korea Leads World in Innovation as U.S. Exits Top Ten," Bloomberg, February 3, 2021, https://www.bloomberg.com/news/articles/2021-02-03/south-korea-leads-world-in-innovation-u-s-drops-out-of-top-10.

[43] United Nations, "2020 United Nations E-Government Survey," United Nations: Department of Economic and Social Affairs, July 10, 2020, https://www.un.org/development/desa/publications/publication/2020-united-nations-e-government-survey.

[44] ITU, "2017 Global ICT Development Index," ITU, 2017, https://www.itu.int/net4/ITU-D/idi/2017/index.html.

[45] Kenneth Li Park Ju-min, "Who Was First to Launch 5G? Depends Who You Ask," Reuters, April 6, 2019, https://www.reuters.com/article/us-telecoms-5g-idUSKCN1RH1V1.

[46] Meredith Woo-Cumings, ed., *The Developmental State,* Cornell Studies in Political Economy (Ithaca, NY: Cornell University Press, 1999); Stephan Haggard, *Developmental States,* Elements in the Politics of Development (Cambridge: Cambridge University Press, 2018); Choong-sik Chung, *Developing Digital Governance: South Korea as a Global Digital Government Leader* (London: Routledge, 2020), https://doi.org/10.4324/9780429054426.

[47] Ministry of Science, ICT and Future Planning, "Che4ch'a sanŏp'yŏngmyŏnge taeŭnghan chinŭngjŏngbosahoe chungjanggi chonghaptaech'aek 제4차 산업혁명에 대응한 지능정보사회 중장기 종합대책 [Mid- to Long-term Master Plan in Preparation for the Intelligent Information Society]," Korea Policy Briefing, December 27, 2016, https://www.korea.kr/archive/expDocView.do?docId=37384.

[48] Dongwoo Kim, "Artificial Intelligence Policies in East Asia: An Overview from the Canadian Perspective," Asia Pacific Foundation of Canada, 2019, https://www.asiapacific.ca/research-report/artificial-intelligence-policies-east-asia-overview-canadian.

[49] Office for Government Policy Coordination, "Munjaeinjŏngbu 4chunyŏn Sŏnggwajaryojip 문재인정부 4주년 성과자료집 [Report on the Achievements of the Moon Jae-in Government in Its Fourth Year]" (Seoul: Office for Government Policy Coordination, May 2021), https://www.4th-ir.go.kr/article/detail/1362?boardName=internalData&category=relation.

[50] Yul Lee, "Teit'ŏt'pAIt'psusogyŏngjee 5nyŏn'gan 10cho t'uja 데이터·AI·수소경제에 5년간 10조 투자 [10 trillion invested in data, AI, and hydrogen economy for the next five years]," Yonhap News, April 28, 2019, https://www.yna.co.kr/view/AKR20190427051300002.

[51] Young-min Kwon, "Han'gugŭi 10tae in'gongjinŭng taehagwŏn hyŏnhwang p'yo한국의 10대 인공지능 대학원 현황 표 [Table of Top 10 Artificial Intelligence Graduate Schools in Korea]," *AI Times,* May 3, 2021, http://www.aitimes.com/news/articleView.html?idxno=138301.

[52] Dongwoo Kim, "South Korea's 'New Deal,'" *The Diplomat,* August 1, 2021, https://thediplomat.com/2020/07/south-koreas-new-deal/.

[53] Government of the Republic of Korea, "K-Nyudil Kŭllobŏrhwa Chŏllyak K-뉴딜 글로벌화 전략 [Global Strategy for K-New Deal]" (Seoul: Government of the Republic of Korea, January 13, 2021).

[54] Office of Government Policy Coordination, "2020 Taehanmin'guk ODA Paeksŏ 2020 대한민국 ODA 백서 [2020 Korea ODA White Paper]" (Seoul: Office of Government Policy Coordination, April 19, 2021).

[55] Chung, *Developing Digital Governance.*

[56] Office of Government Policy Coordination, "2020 Taehanmin'guk ODA Paeksŏ 2020 대한민국 ODA 백서 [2020 Korea ODA White Paper]."

[57] Eun-jin Kim, "Samsung and LG Set up AI Research Bases in Canada," *Business Korea,* May 30, 2019, http://www.businesskorea.co.kr/news/articleView.html?idxno=32385.

[58] Tomoya Onishi, "Vietnam Enlists South Korea's Naver to Drive AI Ambitions," *Nikkei Asia,* April 7, 2021, https://asia.nikkei.com/Business/Technology/Vietnam-enlists-South-Korea-s-Naver-to-drive-AI-ambitions.

[59] "South Korea's Top Trading Partners," World's Top Exports, February 1, 2021, https://www.worldstopexports.com/south-koreas-top-import-partners/.

[60] Ministry of Education, "2019nyŏn Kugoe Kodŭnggyoyukkigwan Han'gugin Yuhaksaeng t'onggye 2019년 국외 고등교육기관 한국인 유학생 통계 [Statistics of Korean Students Studying Abroad at Overseas Higher Education Institutions]," November 18, 2019, https://www.moe.go.kr/boardCnts/view.do?boardID=350&lev=0&statusYN=W&s=moe&m=0309&opType=N&boardSeq=79010; Statista, "China: Number of Students from the U.S. 2019," Statista, November 2020, https://www.statista.com/statistics/374169/china-number-of-students-from-the-us/.

[61] June Park, "Striking a Balance between Data Privacy and Public Health Safety: A South Korean Perspective," *National Bureau of Asian Research (NBR)* (blog), April 29, 2021, https://www.nbr.org/publication/striking-a-balance-between-data-privacy-and-public-health-safety-a-south-korean-perspective/.

[62] Chung, *Developing Digital Governance.*

[63] Jared Cohen and Richard Fontaine, "How Cooperating on Digital Technology Can Unite Democracies," Foreign Affairs, December 2020, https://www.foreignaffairs.com/articles/united-states/2020-10-13/uniting-techno-democracies.

[64] Jessica Fjeld et al., "Principled Artificial Intelligence: Mapping Consensus in Ethical and Rights-Based Approaches to Principles for AI," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, January 15, 2020), https://doi.org/10.2139/ssrn.3518482.

[65] Dongwoo Kim, "Chatbot Gone Awry Starts Conversations About AI Ethics in South Korea," *The Diplomat,* January 16, 2021, https://thediplomat.com/2021/01/chatbot-gone-awry-starts-conversations-about-ai-ethics-in-south-korea/.

Contract Editor: Gimga Group | **Design:** Gimga Group

KEI Promoting Dialogue and Understanding Between Korea and the United States

1800 K St. NW, Suite 300 | Washington, DC 20006
T 202.464.1982 | F 202.464.1987 | www.keia.org