Guest Editor's Introduction: The Role of Historical Studies in the Age of the Fourth Industrial Revolution*

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Historical Studies in Step with the Times

If we were to line up academic disciplines in the order of their speed of change in step with the times, the study of law will come at the very end. It is because laws change only after numerous precedents have been accumulated over time. Since laws change with the majority, not minority, consent of the people, law is considered the most conservative field of study.

Then which academic disciplines adapt quickly to the changing times? I believe that art and technology stand at the forefront. In art, a small number of creative geniuses are always the first to read the changing trend of the times when creating their artwork. As a result, the public does not necessarily love or agree with their work, which are often considered strange. Great artworks in history that we love today might have been thought of as bizarre and unconventional in their time. Even today, people do not tend to enjoy and love modern art but rather think of it as strange and curious.

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The field of technology is also a field where a small number of creative individuals stay ahead of their time. The pursuit of comfort is a basic driver of technological change since basic human desire heads in the direction of developing technologies to eliminate inconvenience and improve convenience. Such technological progress also brings great economic benefits to the developers, which is why technology actively keeps ahead of the curve at all times. The development of one particularly convenient technology also sparks development in all related technologies much faster than in other fields of study. It makes sense when we think of how fast a technology is applied across a broad range of sectors. Technologies that lag behind the times are instantly neglected by the public and thus become mostly insignificant in terms of its economic value.

Where, then, does historical studies fit on this spectrum of academic disciplines and their speed of change with the times? People often say that knowing the past helps us understand the present and foresee the future. However, it is difficult to say that historical studies is standing at the forefront of the changing trends of the times in Korea and abroad. Considering that historical studies must be founded on historical sources and facts, it is, by definition, impossible to keep ahead of the times. Yet this does not mean that such a trait of the discipline should keep historians trapped in a "net of positivism." I believe that historical studies today should have more affinity to technologies that are rapidly advancing to improve people's convenience in order to boost the discourses that are aligned with the issues of our time.

At a time when the Fourth Industrial Revolution is rapidly changing the world, I find it extremely encouraging to see new researchers in historical studies, particularly in Korean history, asserting their opinions about the "Fourth Industrial Revolution and the Study of Korean History." I sincerely hope that this attempt will provide an opportunity to establish historical studies as a discipline that keeps in step with the times.

Keywords of the Fourth Industrial Revolution

Today, the generally-accepted idea is that there are four industrial revolutions. The First Industrial Revolution is represented by mechanized production and the steam engine; the second, by mass production and electricity; the third, by the Internet and IT; and the fourth, by artificial intelligence (AI) and big data. But, because there is a huge time gap between the first two industrial revolutions and the latter two, understanding of the Fourth Industrial Revolution must be preceded by a comparative understanding of the Third Industrial Revolution, which occurred a mere decade earlier.

The development of digital technology since the 2000s is referred to as the Third Industrial Revolution. This industrial revolution saw the advancement of various media, including cameras, videos, televisions, personal computers, internet, mobile phones, and social media, as well as improvements in a number of different genres, such as film, games, animations, amusement parks, expositions, and festivals. The developments in technology have led to the integration and connection of these various media and genres.

Although the Third Industrial Revolution brought together various media through innovative digital technologies, this revolution would be meaningless unless new content was created to make use of these new technologies. As a result, the concept of "content" came to the fore during the progress of the Third Industrial Revolution in the 2000s. Content became a necessary component of the different types of media, and those cultural in nature came to account for the overwhelming majority of media content in the public age of the twenty-first century. Thus the term "cultural content" became popularized in Korea.

The process of creating cultural content can be divided into three phases: preproduction, production, and postproduction. Preproduction refers to the planning phase. The key to the creation of cultural content in this stage is the search and selection of creative content. Planning cannot begin unless there is a topic, and therefore planning always begins with

choosing a theme. Only when the theme is selected will the subsequent concept be developed and the storytelling begin.

The concept of cultural content emerged in Korea in 2000, and the Korea Creative Content Agency was established the next year. From 2002 to 2010, the agency pursued a project to turn cultural archetypes into digital content, understanding the importance of themes for creative content. In the process of discussing how to define and classify these themes, the concepts of "archetype" and "cultural archetype" emerged. All of this process began from recognizing the importance of media content, which was spawned by the digital revolution. This is the general landscape of the Third Industrial Revolution as I see it, and the keywords for this revolution are "media" and "content."[1]

The technologies that are considered symbolic of the Fourth Industrial Revolution are actually an advanced extension of the digital technologies of the Third Industrial Revolution. Klaus Schwab, who first used the term Fourth Industrial Revolution to describe the current phenomenon, stated that artificial intelligence, robotics, and the Internet of Things (IoT) were new technologies,[2] but that is not true. These are technologies that first emerged as early as the 1950s and as late as the 2000s. A number of research papers have been written on them, and related products have already been created.[3]

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1 This explanation of the Third Industrial Revolution is a summary of Kim Ki Duk (Kim Kidŏk), "4-cha sanŏp hyŏngmyŏng sidae k'ont'ench'ŭ-wa munhwa k'ont'ench'ŭ (Contents and culture contents in the Age of the Fourth Industrial Revolution)," *Inmun k'ont'ench'ŭ* (Humanities Contents) 52 (May 2019): 3-20.

2 Klaus Schwab, *The Fourth Industrial revolution*, World Economic Forum, 2016, P.7. Klaus Schwab referred to the following technologies as emerging technology breakthroughs: artificial intelligence (AI), robotics, the internet of things (IoT), autonomous vehicles, 3D printing, nanotechnology, biotechnology, materials science, energy storage and quantum computing

3 Shin, Dong Hee, "4-cha sanŏp hyŏngmyŏng-ŭn in'gan chungshim rŭnesangsŭ hyŏngmyŏng (The Fourth Industrial Revolution is a human-centric Renaissance revolution)," *Segye Ilbo*, February 1, 2017; Park Chang Kyu, *4-cha sanŏp*

It is true that these technologies have undergone breakthroughs, resulting in an exponential increase of data and the birth of a hyper-connected society. But it would be incorrect to call such extension of existing digital technologies new technologies. Therefore, instead of differentiating the Fourth Industrial Revolution from the third by representative technologies, Park Chang Kyu (Pak Ch'anggyu) distinguished the two by the aspect of intelligence and defined the Fourth Industrial Revolution as the "Umma Machine." Umma (the Korean term for mother) knows all about her children's physical stature, preferences, health, and style. Therefore she makes clothes just for her children that fit perfectly. What she takes into consideration is context—in other words, intention, surroundings, and circumstances. Park argued that technologies of the Fourth Industrial Revolution are not simple extensions of the Third Industrial Revolution but rather different technologies that help collect, identify, and apply users' contexts.[4]

Ultimately, the key to the technologies of the Fourth Industrial Revolution is context. Earlier in this paper, I explained the Third Industrial Revolution by discussing the relationship between media and content. Then how will content change in relation to context in the age of the Fourth Industrial Revolution? I believe an important issue will be in the quality of content created from the contexts gained from user data. Context is important, but knowing the contexts, or individual consumers' preferences, does not automatically lead to the creation of personalized content that will satisfy consumers. Those who have the ability to create quality content from the given materials will be able to create proper content from the given context. In this aspect, the importance of content will not be diminished even in the age of the Fourth Industrial Revolution.

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hyŏngmyŏng sidae k'ont'ench'ŭ-ga wang-iramyŏn konteksŭt'ŭ-nŭn sinida (In the Fourth Industrial Revolution, content is king but context is god) (SEOUL: K'ŭlaudŭrain, 2018), 29-82..

4 Park Chang Kyu, *4-cha sanŏp hyŏngmyŏng sidae k'ont'ench'ŭ-ga wang-iramyŏn konteksŭt'ŭ-nŭn sinida*, 83-86.

At the 2015 Asian Leadership Conference, Jack Ma, the executive chairman of Alibaba Group, stated in his keynote speech: "Now the age of information technology (IT), which continued for 20 years, will end, and a new Internet market based on data technology (DT) will open in the next 30 years." But the data that Ma mentioned was not simple data. He also said, "Now is the age of DT, where companies use huge volumes of consumer data to meet individual consumers' needs." As we can see from this, DT refers to the type of technology that can analyze accumulated data to create value and forecast the future—in other words, data that contains consumer context. Ma added that he is "not afraid of companies with outstanding technology, but [he is] afraid of companies that listen closely to consumer needs."[5] This is the sentiment that is in line with the keyword "context" in the age of the Fourth Industrial Revolution that I have emphasized above.

In this aspect, I believe that expert content creators will receive more spotlight in the age of the Fourth Industrial Revolution. Access to user (consumer) context will enable creators to create suitable content more easily. The reason content planning has been difficult in the past is that it was not easy to analyze user demand without knowing more about the users. Once enough user context is accumulated in various areas through technological development, there will be an increasing need for expert content creators who can respond to consumer needs.

The key to all content is the humanities—literature and history in particular make up the core content, which are digitized and uploaded to the internet through digital technology and turned into cultural products. Therefore, the humanities, centering on literature and history, should actively make use of the advanced digital technologies of the Fourth Industrial Revolution to intensify academic research efforts and engage in the development of popular cultural products. This is the expansion of litera-

5 "[Asian lidŏsip konp'ŏrŏnsŭ] Ma Yun 'IT sidae chŏmulgo DT sidae'" ([Asian Leadership Conference] Ma Yun 'The IT era has gone and the DT era has come'), *Chosŏn Ilbo* (Chosun Ilbo), May 20, 2015.

ture and history, and ultimately the humanities, as well as the way in which the humanities can keep in step with the changing times.

Research in Korean History using Fourth Industrial Revolution Technologies

Just like the Arabic proverb that people resemble the times more than their fathers, there is no reason for even the Korean history scholars who conduct conservative research based on historical materials and facts to not keep in step with the times. Young people today, who grew up using digital technologies and tools from their childhood, can be considered "digital natives." However, digital technologies have not yet been universally implemented in the field as the general atmosphere of the historical studies was not very technologically friendly.

Breaking through this reality, four new Korean studies scholars have shed light on research in Korean history that make use of Fourth Industrial Revolution technologies. First, in a research project that brought together ancient Korean history and digital technologies (Dongmin Lim, "Advanced Technology of the Fourth Industrial Revolution and Korean Ancient History"), the researcher sought ways to use AI to decipher the writing on wooden tablets (mokkan, 木簡), and ways for AR and VR to restore ancient ruins. This study discussed the need for an AI system, similar to Japan's MOJIZO, that can decipher the writing on Korean wooden tablets, which has proven to be particularly difficult. The author also accurately pointed out that the restoration of the ruins using AR and VR should reach the point where people can re-live or re-experience history. Technologies are not the only necessary elements for these tasks, since research experts must take part in interpreting the sources, studying the ruins, and confirm the authenticity of the restoration.

Another study shed light on historical research using big data (Minki Moon, "Big data and the prospects of historical research" and drew attention to the similarities between big data and historical studies, explaining

that both involve amassing and analyzing huge volumes of data. Specifically, the author discussed the issue of collecting, classifying, managing, and analyzing the vast amount of data from our times, and forecasting the ways in which history of our times will be written using big data. Just as critical examination of historical materials is important in historical studies, value judgments must be made regarding big data as well. This study emphasized the need for expert historians to intervene in areas where such value judgments are necessary and provide insight, instead of limiting their work to simply organizing and discussing the facts.

Another study (Geunhye Hong, "The Translation of Historical Documents and the Study of Korean History") examined the translation of diverse historical resources using AI, focusing on the methodologies and progress of the translation of sources written in classical Chinese. Basically, this research showed that translation of resources in classical Chinese, which comprise the foundation of Korean historical studies, will become easier and faster in the future due to AI, which will eventually broaden the horizons of historical research. However, historical scholars must differentiate themselves and arm themselves with expertise in order to conduct creative historical studies that cannot be performed by technologies. The author argued that scholars should not rely completely on technologies to translate the classical Chinese resources but that they must also study and internalize classical Chinese themselves.

Lastly, the fourth study (Soochan Park, "A New Path for the Study of the Koryŏ Dynasty: exploring the future of online historical sources archives") examined digital services that provide access to historical sources from the Koryŏ dynasty through a variety of technologies. The general topic of this research paper was the "popularization of history," a topic that is gaining huge interest in both Korea and abroad. The author first surveyed and analyzed several digital libraries that provide access to historical sources. Based on the results, he proposed "openness" and "expertise" as the goals that digital archives of sources from the Koryŏ dynasty should achieve and reviewed different options for the archives to meet both of these rather incompatible goals. Openness is a basic re-

quirement for services in our society today, and therefore systematic yet straightforward and convenient openness must be realized in providing access to historical sources. However, in order to provide access to historical sources properly, it is also necessary for their authenticity to be verified by historians with expertise in the relevant areas.

All four studies propose interdisciplinary collaboration as a way to make the most of technologies. Particularly in terms of using Fourth Industrial Revolution technologies, the authors of the studies mentioned above underline the need for technology developers to engage in discussions and cooperate with historians from the planning and design stage of such digital archive services to meet researchers' demands for their studies.

Expansion of the Humanities, Expansion of Historical Studies

Today, the field of humanities (social sciences and art) has been utilizing digital technologies and collaborating with other disciplines to pioneer a new field called digital humanities.[6] In Korea, the term "humanities content (cultural content)" was coined in the process of people taking subject matters and storytelling ideas from the humanities for the cultural industry.[7] Both the digital humanities and humanities content are attempts

6 For the current status of digital humanities in Korea and abroad, see: Kim Hyeon (Kim Hyŏn), Im Yŏngsang and Kim Paro, *Tijit'ŏl inmunhak immun* (Intro to Digital Humanities), (Seoul: HUEBOOKs, 2016), 211-398. In Korea, the term "inmun chŏngbohak (humanities informatics)" is often used synonymously as digital humanities. See Kim Hyeon, *Inmun chŏngbohak-ŭi mosaek* (The search for humanities informatics) (Seoul: Book Korea, 2012).

7 The terms "humanities contents" and the organization "Korean Humanities Contents Society" emerged in 2002 to emphasize the use of the humanities in developing and planning culture contents. For more information, see Kim Ki Duk, "Munhwa k'ont'ench'ŭ-ŭi tŭngjang-gwa inmunhak-ŭi yŏkhal (Emergence of culture contents and the role of the humanities), *Inmun k'ont'ench'ŭ* (Humanities

to incorporate the humanities in various aspects of our lives. These attempts have led to an expansion of the humanities by both popularizing the field of study and expanding it across other academic disciplines and industrial sectors.

Figure 1 is a summary of my argument presented in this paper.

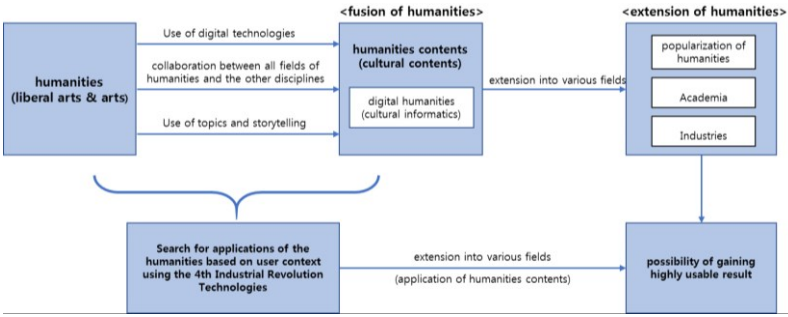

Fig. 1. The Extension diagram of humanities in the Fourth Industrial Revolution

It is true that there are still a number of difficulties and obstacles to overcome, such as concerns and opposition from the field of traditional humanities. Another possible problem is the qualitative decline in the results gained by bringing technology and historical studies together due to research historians' lack of knowledge of digital technologies. But this trend of fusing historical research and Fourth Industrial Revolution technologies will continue and expand in the future, as the transformation of the field of humanities brought on by the use of digital technologies will lead to an expansion, not contraction, of the discipline.

Witnessing the changes in the humanities that began in 2000 with the Third Industrial Revolution, humanities scholars must now grasp the landscape of the newly expanded humanities in the age of the Fourth Industrial Revolution. As mentioned earlier, Fourth Industrial Revolution technologies that provide consumer contexts will demand more humani-

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ties content from many different areas. It is because the goal of the Fourth Industrial Revolution is not the accumulation of consumer contexts but creation of new content based on consumer contexts. By creating consumer contexts through the use of Fourth Industrial Revolution technologies, the humanities will be able to provide suitable and highly utilizable results.

I would like to end this paper by stressing that the humanities need to become more technology-friendly to realize the expanded landscape of the humanities in the age of the Fourth Industrial Revolution. All technologies aim for automation, as only the technologies that are easy to use ultimately survive. Therefore the humanities need practical technologies that can be applied and adapted, rather than theoretical ones at the programming level. We need the technology for driving a car rather than making a car. Humanities scholars must become familiar with technologies to understand and furthermore use them in research. Since young scholars entering the field today are of the generation considered as digital natives, it is all the more likely for historical studies to be technologically friendly in the future.

As we face a transition in the field of humanities due to the introduction of the Fourth Industrial Revolution technologies, I would like to praise the attempts of rising Korean history scholars who proposed different ways to utilize technologies for research. These studies are lacking in terms of the specifics, as the authors approach the issue of fusing technology and the field of Korean history at the discursive level. However, I am certain that these attempts will be their first steps down the path of becoming historical scholars who pioneer and innovate the use of technologies in their field.

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