

A Comparative Study on the Sociocultural Drivers in the Development of Printing Technology in Korea and Europe*

CHOI Kyung-eun and KIM Mi-sung

Abstract

Korea owns the real Jikji printed about 70 years before Gutenberg's 42-line Bible in 1377. In contrast to how printing originated in Europe, the invention of Korean printing was born through social and cultural demand. In Europe, copying technology, or transcription, was used before printing. In the early Middle Ages, demand for transcription immediately increased in parallel to the creation and development of the urban area and construction of universities. The development from transcription to printing was inevitable due to increase in demand for texts as well as the need for financial profit, and the sharp increase in the circulation of information broke the monopoly of the literate clergy on learning. During the time in which metal movable type was invented in Korea, society did not demand a massive spread of information. Therefore, rapid and revolutionary social change did not occur. However, the sociocultural role of printing was still significant. Despite the long distance between Europe and Korea, printing in the two societies successfully fulfilled required demand through a technology that sufficiently performed its role.

Keywords: *Jikji*, Korea, metal movable type, printing technology, Gutenberg, 42-line Bible, printing culture

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CHOI Kyung-eun is Professor of Humanities Korea Research in the Institute of Humanities, Yonsei University. E-mail: choikec@yonsei.ac.kr.

KIM Misung is Professor of Humanities Korea Research in the Institute of Humanities, Yonsei University. E-mail: kimmisung@yonsei.ac.kr.

Introduction

The idea that the invention of printing marked the end of the Middle Ages, and the beginning of modern times is now well established in the West. The invention of printing was a revolutionary event that drove social change through the dissemination of knowledge and information; this incident gave rise to the Reformation and the Enlightenment, as well as the Industrial and Information Ages. With Gutenberg's *42-line Bible*, Europe moved from the medieval era of transcription to an era of printing—the period of information sharing. In this regard, the invention of printing was the first historical step to the current era of capitalism and digital revolution, and globalization is hardly an exaggeration.

In contrast to Gutenberg's discovery, Korea is the Eastern inventor of metal movable typing—a scientific copying method as evidenced by *Jikji: Selected Teachings of Buddhist Sages and Seon Masters* (hereafter, *Jikji*). Published in July 1377 at Heungdeoksa temple near Cheongju, Korea, *Jikji* is the world's first book printed with metal movable type¹ even though it was long forgotten and neglected in research on printing. Maurice Audin's following remarks represent the long-standing misconception of Westerners regarding this text:

It is intriguing to discover that printing technology, without which the spread of culture would not have been possible, was invented almost at the same time on the opposite sides of the northern hemisphere—in Korea and by the Rhine. These two inventions took place almost simultaneously and could be explained in the social context, which was without doubt at the heart of a great change (Audin 1972, 31).

Audin points out that in both the East and the West, highly energized social desires for change drove the invention of printing. The desires, however, were different in the two parts of the world. Korea was at the time

1. The passage at the end of *Jikji*—“*Seongwang chilnyeon jeongsa chilwol il cheongjumok oe heungdeoksa jujainsi* 宣光七年 丁巳七月 日 清州牧 外 興德寺 鑄字印施” (It was printed with metal movable type in July 1377 at Heungdeoksa temple near Cheongju)—specifies the time and venue of the book's publication.

undergoing an upheaval of one dynasty replacing another. The purpose of printing was not to facilitate further change (as was the case in Europe), but rather was aimed at social stability. Another factor to consider is that the period Audin mentions—the reign of King Sejong the Great 世宗大王 (r. 1418–1450) in the subsequent dynasty—was not when metal movable type first came to being at the end of the Goryeo 高麗 Dynasty (918–1392), but when it reached its highest refinement. Audin’s rather misconstrued notion had been the widely accepted thinking until the early 1970s. He published his book in 1972, the time when *Jikji* (it was housed at the National Library of France until that point) was dramatically revealed to the world on the occasion of *Le Livre* (The Book)—the Exhibition in Paris to celebrate the International Book Year. Therefore, 1972 is remembered as the year when Korea’s printing technology of metal movable type newly emerged in the history of printing and books.² Also, while Korean metal movable type is becoming recognized as “first” within academia across the globe, questions remain about its social and cultural role compared to that of Gutenberg’s *42-line Bible*, which provoked abrupt social change. In 1995, the G7 Ministerial Conference on the Information Society held in Brussels, Belgium; Al Gore, the former Vice President of the United States, joined this conference and correctly mentioned that the Korean metal movable type has been regarded as failing as an impetus to social reform through the dissemination of information. The Korean cultural critic Lee O-Young argued that “Korea was unsuccessful in realizing social reform or modernizing the industrial economy in spite of the metal movable type which predated that of Europe, paper- and ink-making techniques, and fine metallurgy,” (O. Lee 2000, 3) and his argument is more or less commonly shared by Western scholars (Volti 2001, 181–194; Man 2003, 158). From this point of view, the invention of printing in Korea was not a revolutionary event

2. From this point, Koreans started to make diverse efforts to get *Jikji* recognized as the earliest book printed with metal type. After 30 years (in 2001), they succeeded in acquiring global recognition when *Jikji* was inscribed on the UNESCO Memory of the World Register. However, many Western scholars still believe *Gyemija* 癸未字 (1403) to be the first metal type made in Korea, and numerous textbooks and literature in many countries describe Gutenberg as the first inventor of metal type.

having an enormous influence on human culture in contrast to Europe, because it had only minor social and cultural impact confined to the ruling class.

However, such an analysis overlooks the obvious fact that printing in the two parts of the world was invented within different social and cultural contexts and from dissimilar motives, reflecting a divergent course of development. In this regard, it fails to incorporate thorough historical research on each society's expectation for printing. As a consequence of this oversight, this paper aims to prove that printing fulfilled the needs of society and the culture where it emerged and developed, playing its due role in society. To this end, this paper analyzes the sociocultural factors behind the development of printing in Korea and Europe. If the technology of printing operated divergently in Korea and Europe, it was because the two cultures valued the technology differently. In order to judge whether a particular technology effectively aided in maintaining and developing a society, one must recognize such diversity between societies and cultures. Accordingly, attempting to judge the success or failure of a technology in a society from the perspective of another society would be precarious. Such recognition is the basic premise of this paper.

Furthermore, in a comparative study between Korea and Europe, one should draw a line between objects being compared. The period of this comparative study is from the end of the 14th century—when *Jikji* was printed—to the latter half of the 16th century, when in Europe great social upheaval was exemplified by the Reformation driven by Gutenberg's invention of metal movable type, and in Korea, where metal movable type was already at its zenith.

Copying Technology before Metal Movable Type

Transcription Culture in Europe

Before the invention of metal movable type, copying technology—using woodblocks or copperplates—was already being used in medieval Europe,

but the most widely used technology was transcription. During the early years of the Middle Ages and when papyrus scrolls made way for parchment codex, the use of writing outside the monastery became almost extinct and only clerics stored and supplied written information. The motto, “A cloister without a library is like a castle without an armory,” appropriately demonstrates the characteristics of monasteries as the center of text culture during the time. The network that linked the Roman Catholic Church and monasteries had a strong hold of medieval Europe through storage and the supply of letters. In the early Middle Ages, Christian clerics were the only users of letters, and Creation in the Bible is carried out by God’s Word. The Word was the Letter.³ As Christianity was a religion of scriptures, reverence for the one responsible for copying letters was natural.

In a society where most people were illiterate, it is not surprising that literate clerics enjoyed privilege and their work of transcription was described as a sacred act. The diligent transcription activities of clerics rendered supply of parchments scarce, which often led them to write over the works of pagans. Through this work of overwriting, numerous ancient texts were discovered to ignite the Renaissance. However, many original versions of ancient texts also disappeared in this process, since in many cases the original was discarded after it had been transcribed. In the later years of the Middle Ages, the medieval transcription culture bloomed thanks to the rise in demand for texts and the supply of paper. A number of professional transcription workshops emerged aside from monasteries. Costly transcription work requiring sponsors as materials for manuscripts were extremely expensive; the livelihood of transcribers needed to be secured, because they were to spend more than two years in producing a single codex.

Significantly, medieval manuscripts were mostly made-to-order, as one can readily note in the following passage from the *Ornamenta ecclesiae*: “Medieval arts were in essence ordered art . . . most artworks of the church

3. “In the beginning was the Word, and the Word was with God, and the Word was God.”
(John 1:1)

were made to order” (Bergmann 1985, 117). If the concept of copyright was to be applied to manuscripts, it would not be wrong to deem the one who placed the order as the copyright holder. In the Middle Ages, the sponsors were known even though transcribers were not: “Acts of sponsors had to be identified with their names, so that the names are remembered when descendants pray for their soul” (Bergmann 1985, 145).

Invented in China and having spread to Europe through Saracens, paper serves as the catalyst in the prosperity of transcription culture. Medieval Europeans needed many manuscripts for various reasons: the supply of cheap materials such as paper, the rise in readership after the invention and prevalence of reading glasses,⁴ and the increase in users of letters with the establishment of universities and development of administrative institutions. Therefore, commercial trade in manuscripts produced in the secular world outside of the monasteries also became robust. In the German Holy Roman Empire, manuscript shops were at large marketplaces or commercial *Messe* (fair). Large-scale councils, such as Council of Constance (1414–1418) or Council of Basel (1431–1449), were always accompanied by book markets in the vicinity, which welcomed officials at the Vatican or imperial states and knowledgeable humanists as customers. The Frankfurt *Messe* by the Rhine, which was established as the “most important international market in Europe” (Kapp 1886, 448) as early as the 13th century, became specialized as the Frankfurt Book Fair in the mid-15th century thanks to the boom in manuscript trades and printing technology born in neighboring city, Mainz.

Leading the transcription culture of the late Middle Ages were Brethren of the Common Life, a group of clerics established in the Netherlands in 1386. Their livelihood was supported by selling of manuscripts. The best-known producer of manuscripts was Diebold Lauber (?–1471), a teacher from Hagenau, Alsace. He supplied manuscripts produced in his workshops to regions along the Rhine, Franconia and Switzerland from 1425 and 1467. Instead of making expensive parchment codices with artworks, he produced paper manuscripts consisting of vernacular texts and

4. Glasses were invented in Venice or Florence in 1284 (Manguel 2000, 224).

illustrations in color, based on the principle of the division of labor between transcriber and illustrator. Also, he sold ready-made products rather than making manuscripts to order, thereby practicing the principle of the modern market economy. Beyond being an owner of a transcription workshop, Lauber was also a publisher. His production encompassed a wide array of religious or secular salvation literature, entertainment, and practical literature. His one-page advertisement of a series of manuscripts reads: “All books people want, big or small, religious or secular, can be found through Diebold Lauber, a transcription master of Hagenau” (Wittmann 2011, 20).

However, evidences of other European transcription workshops in the late years of the Middle Ages are insufficient. Some believe that a meaningful number of transcription masters were working for wages in big commercial cities or university cities. In these places, transcription for transactions or administrative matters was essential, and the citizen class (e.g. jurists, doctors, business magnates, and members of city councils) showed growing interest in reading and possessing manuscripts as a progressive sociocultural movement. Secularization of reading also promoted commercialization of books; In Europe, “books had already become transaction items and commodities for consumption before they were mechanically copied” (Schmidt-Künsemüller 1972, 124).

Woodblock Printing in Korea

Before the invention of printing technology and similar to Europe, people in Korea also used transcription so as to spread and preserve knowledge and information. However, manuscripts inherently come with the risk of typos and omissions during the process of transcription, and the content of the original version could change at any time if the scribe wanted to change it. Therefore, as technology developed and demand for books grew, invention of printing technology was naturally required. It took the form of woodblock printing in the East after the early stages of inscribing letters on rocks and bones.

Woodblock printing from the East was also embraced in Europe

along with paper (Füssel 1999, 8), and used from the early 15th to the 16th century. At this point in Europe, however, workshops, scribes, and other transcription infrastructure were already well established so that woodblock printing from the East could not replace it. Moreover, as metal movable type was soon invented, the use of woodblock printing in Europe was limited to copying short texts explaining illustrations. On the other hand, the importance of woodblock printing should not be ignored in the printing culture of the East, as it was not a prior technology soon to be improved and replaced by metal movable type. Woodblock printing survived until the late 19th century even after the invention of metal movable type, and the two technologies coexisted and complemented each other. In this regards, it is noteworthy that woodblock printing served for massive copying of texts and wide dissemination of knowledge in Korea and other countries in the East. That woodblock printing began around the 7th century in the East implies a long tradition that lasts for more than 500 years before the invention of metal movable type. According to Nam Young, “Woodblock printing was not a technology that needed to be replaced, and therefore metal movable type was not required to be improved for massive printing. If a technical improvement was necessary for massive printing, East Asian society would have chosen to improve woodblock printing” (Y. Nam 2009, 27). Under the leadership of King Sejong, for example, 100 to 300 copies were printed using metal movable type while 300 to 1,000 were woodblock printed (Sohn 1986, 42–64). Considering that the average number of copies printed from a book in around 1,500 in Europe was about 1,000 (Wittmann 2011, 27), this number is similar to the largest number of copies produced in the Joseon 朝鮮 Dynasty (1392-1897) (Y. Nam 2009, 15) and it shows that Korea had a dual printing system consisting of woodblock and metal movable type from the 13th century⁵ to the

5. Unlike in the West, neither the inventor of metal type nor the first published work is clearly known in Korea. As readers are aware, *Jikji* was produced in 1377, but a number of clues exist about the existence of books printed with metal type before *Jikji*. The most certain record among these clues is *Sangjeong gogeu yemun* 詳定古今禮文 (Collected Works of the Rules of Decorum from Old Times to the Goryeo Dynasty) recorded in *Dongguk isangukjip* 東國李相國集 (Collected Works of Minister Yi of Korea), but this

late 19th century.

Moreover, woodblock printing in East Asia had a completely different spiritual meaning from that of Europe, especially before the Joseon Dynasty, because crafting woodblocks and inscribing letters on them was in itself a practice of asceticism. *Mugujeonggwang daedaranigyeong* 無垢淨光大陀羅尼經 (the Great Dharani Sutra of Immaculate and Pure Light) was discovered in Seokgatap pagoda at Bulguksa temple in Gyeongju, and it was printed with woodblock before 751 BC when the pagoda was built. However, after the arduous process of crafting woodblocks and inscribing letters one by one, Korean ancestors chose to keep the printed work in the pagoda to be handed down to descendants rather than distributing it to the public.

Furthermore, Palman daejanggyeong 八萬大藏經 (*Tripitaka Koreana*)—a recording heritage of the Goryeo Dynasty that represents Korean printing culture—was not primarily aimed at printing to produce copies. The large-scale project occurring in two phases was inspired by the religious hope to save the country from foreign military threats with the help of Buddha, rather than the objective to print and disseminate. When their country was in a state of crisis, the people of Goryeo embarked on a colossal project to galvanize the faith of the people on to more than 84,000 woodblocks and imbued the process itself with great significance. *Tripitaka Koreana* is currently stored at Haeinsa temple and comprised of the oldest and the largest volume of woodblocks in the world. The huge volume of woodblocks is still kept in perfect condition. In the case of this particular artwork, woodblocks themselves have more meaning than books printed on paper to be distributed. Copying was not the main idea in this case; therefore, printing had a clearly different significance from what it had in Europe, which was mass production of books and spread-

text is not internationally recognized because the physical books do not exist anymore unfortunately. Based on records and physical works—such as *Dongguk isanggukjip*, *Jeungdoga* 證道歌 (Song of Attainment of Nirvana), *Sambongjip* 三峰集 (Collected Works of Sambong Jeong Do-jeon), and *Goryeosa* 高麗史 (History of the Goryeo Dynasty)—metal type printing was clearly invented before the 1230s. However, we should limit our discussion subsequent to 1377 when *Jikji*, the earliest printed work still in existence, was printed. See Cheon (1997, 255–267).

ing information to the general public.

In contrast, by the time Gutenberg invented metal movable type, woodblock printing in East Asia was the technology that sufficiently fulfilled social demand, whereas in Europe, woodblock printing had just begun and was not considered a cultural heritage to preserve. Also, Europe was looking for a means to print massive numbers of texts to meet society's demand for reading materials. Consequently, metal movable type in Europe developed to meet the requirements of mass production and commercial use of books. Meanwhile, woodblock printing was already being used for mass copying of written matter in Korea, and metal movable type developed to fulfill a social desire oriented to the spiritual value of printing. As such, printing technology in East Asia and Europe developed in different directions with two diverging goals.

What Drove the Invention of Printing?

Demand and Profit

Around 1400, expansion in the use of letters in Europe was triggered by the introduction of paper.⁶ At the end of the 14th century, paper was sold at one-sixth the price of parchments (Deibert 2006, 130). Paper allowed standardization in the form of books, and as a result, the first texts written on paper were secular and practical day-to-day ones (e.g. letters, accounting books, transaction reports, court records, and books on cities). Unlike parchments, paper could be produced and stored in large volumes, which triggered change in political and economic structures. That is, tools for the early capitalistic economy (e.g. notes guaranteed by documents, contracts signed on paper, market news, and settlement documents in commercial transactions) were only made possible by paper, and paper enabled countries with bureaucratic rules to manage vast territories. From then on,

6. The first European paper factories, or Papiermühle (paper mill), were built in Italy (1276), France (1348), and Germany (1389) (Biasi 2000, 44).

more and more transcription work was done out of the network of the Church and monasteries, and the tasks of copying became more specialized and sophisticated as commercial demand grew, leading to the emergence of independent workshops specializing in different steps of the copying process.

In addition, a cultural desire for writing became very strong in cities, which rapidly grew in numbers after the mid-Middle Ages. Urban writers around 1400 were involved in various tasks and had the required knowledge, such as in law. They not only wrote and recorded administrative and legal matters, but also assumed diverse tasks related to writing as “*homo literatus*” (a literate man) in positions including notaries, public officials, protocol writers, diplomatic delegations, witnesses, and legal advisors to high-ranking officials.

Likewise, the increasing use of letters outside of monasteries was linked to new goals and requirements. Since the 15th century, the publicness of the early citizens has required members of city councils to have perfect ability to read and write. Additionally, a new wave of readers longing for secular literature appeared in many parts of the society. One example is the urban bourgeoisie who learned to read. Jurists, lay advisors at courts, public officials, and later rich merchants and other citizens wanted books not only on their own areas of expertise (e.g. law, politics, and science), but also other subjects such as literature, didactic ethics, and the saga of knights.

In addition to the demand from public officials, the refinement of laymen—developed since the activities of mendicant orders in the 13th century—gathered momentum from expansion of schools and universities and secularization of the Church at the end of the 14th century. Some education began to be provided by agents other than the Church, such as lords and cities. Many city libraries and giant libraries of rich book collectors built at the end of the 14th century still exist. *Vocabularius Ex quo*, a Latin-German dictionary indispensable for self-study was handed down in 280 manuscripts in the 15th century and became popular enough to be reprinted 48 times until 1505.

Also, a number of small private schools were founded in about 1400.

These schools were generally run by writing masters and reading masters organized in guilds under the supervision of city councils. Universities were first founded in Italy and France in the 12th and 13th centuries and later in Germany in the mid-14th century. Universities were established in Prague (1348), Vienna (1365), and Heidelberg (1386), and cities like Cologne and Erfurt were built along with their universities. Since about 1400, cities built their university buildings outside the territories of churches and monasteries, and many who taught belonged to the middle class of the 15th century. Not until the end of the 15th century did aristocrats and noble families residing in cities take interest in academic refinement. Curiously, the origin of bookstores can be found in a profession at universities called “*stationarius*”. University *stationariuses* were originally responsible for copying and proofreading study materials, but they became involved in renting them as well in the 15th century.

Furthermore, professors and students needed textbooks for classes, and libraries were founded within universities to meet the demand for transcribers. Scriveners or professional masters organized in booksellers’ guilds were employed at universities to produce study materials. A growing number of universities allowed learning and education to gradually expand from the territory of the Church in order to be “secularized” and brought about an explosion in letter consumers.

During the century before Gutenberg printed the Latin Bible *Vulgata*, Europe saw many social developments that made invention of printing inevitable: the distribution of paper, the boom in writing workshops, the invention of reading glasses which led to an increase in readership, and the users of letters expanding from clerics to secular realms (e.g. cities and administrative offices). Also, universities founded since the 13th century were behind the expansion of the reading class.

Accordingly, Europe was literally in a “golden age of transcription culture”; people longed for books, and supply of paper soared—producing a wait for the invention of book printing technologies. In the early 15th century in Europe, the need for a means to copy books was readily apparent. During this period, quite a number of people claimed to be inventors of the press. For instance, France claims that Procopius Waldvogel first

taught how to copy between 1444 and 1446 based on documents found in Avignon (Deibert 2006, 132). Of course, to be accurate, Gutenberg of Mainz is most widely recognized in Europe as the inventor of the press. However, such a series of events indirectly shows how desperate the need for copying technology was at the time.

As a primary motive for inventing the press, Gutenberg looked for a way to print the Bible in large numbers in order to make money. Evidently, the early investment in printing was greater than in other businesses because one needs to account for paper, parchments, ink, and workers' wages. Gutenberg borrowed this capital from Johann Fust—the investor who involved himself in other matters besides financing Gutenberg's business—and his colleague Peter Schöffer also joined very actively in the business, keen on invention. These facts indirectly demonstrate how lucrative the Bible copying business was at the time. As with all other cases, soaring demand and desperate need inevitably lead to invention. In conclusion, the invention of printing in Europe was not merely "God's gift from Heaven,"⁷ but a natural consequence of the call at the time during the peak of transcription culture, and the fast development of the technology can be attributed to the Pan-European market yearning for printed matter and the commercial spirit of early printing professionals (Deibert 2006, 134).

Records and Education

Records tell us that copying techniques before metal movable type (e.g. movable clay type printing and woodblock printing) were first invented in China. Clay type printing uses ceramics, and this method proved impractical due to its fragility while woodblock printing was integral in mass printing for a long time. Bringing in nonmetal type printing from China, Korea invented metal movable type and successfully put it into practical use. Iron-casting techniques, quality paper, and suitable ink for printing

7. The drawing on the opening page of Marchand's *1740 History of Printing Press* (1740) describes the spirit of printing descending from Heaven under the protection of Minerva and Mercurius, hinting that printing technology is a God's gift from Heaven (Eisenstein 2008, 1).

were necessary to print books using metal movable type. Development of such techniques and demand for books can be considered a sociocultural driver in the invention of metal movable type. All these requirements were met at the end of the Goryeo Dynasty in Korea, when metal movable type was invented and *Jikji* was printed.⁸

This particular demand for metal movable type at the end of Goryeo came from the Buddhist circle. Consistent demand existed for Buddhist books as Buddhism had been the ruling ideology of the nation for more than a millennium. In addition, the religion was forced to revolutionize itself as neo-Confucianism—which emerged as the new ideology at that time—began to criticize and defy its strong status. When *Jikji* was created, “Buddhism lost much ground as the idea that had dominated society during this time of great political and social confusion. Military officials were in political power, and the Yuan 元 Dynasty (1271-1368) was interfering in national matters. In addition, this confusion was coupled with criticism of Buddhism by neo-Confucianism. The Buddhist community subsequently sought diverse ways to revive its status, and underwent many upheavals” (K. Nam et al. 2002, 66).

As a result, the Buddhist circle looked for many solutions to the problems it faced, and publication of *Jikji* should be understood with this decline of Buddhism in the background. *Jikji* is a sort of educational Buddhist book, a compilation of selected teachings of Zen Buddhism thought useful to monks.⁹ According to the foreword of Yi Saek (1328–1396)—written on the woodblock version of 1378—Preceptor Baegun 白雲和尚 (1299–1374) learned Dharma or Buddhist teachings from Zen Master

8. Notably different from Europe, a market for trading books was not considered an indispensable condition in Korea for the invention of metal type printing. “Demand” in this context does not refer to tradability of books in the marketplace, since metal type printing was carried out as a national project in Korea to create a strong foundation for the country.

9. As the title *Jikji* suggests, the subject of this book is “*Jikji insim gyeonseong seongbul* 直指人心 見性成佛”—the famous phrase of the Zen sect meaning, “attaining enlightenment through the practice of Zen, realizing that the essence of the human mind is no other than that of Buddha.”

Seogok 石屋和尚 (1272–1352) in Xiawu mountain in China, and the Master gave him a copy of *Buljo jikji simche yojeol* 佛祖直指心體要節 (The Essential Passages Directly Pointing at the Essence of the Mind) transcribed by himself. After returning to Korea, Baegun read and cherished his teacher's book (K. Nam et al. 2002, 27–28); he wrote an abstract of the content, supplemented a considerable part of the book, edited in two volumes, and compiled them with some annotations. After he entered Nirvana 涅槃 (blown out), his students published *Jikji* with metal movable type. *Jikji* was the precious writing of their teacher, for which only one original version existed in Korea. Since Baegun was one of the three greatest preceptors at the end of Goryeo Dynasty, he had considerable influence on the Buddhist community. Considering the fact that Buddhism was inevitably tied with politics as the national religion,¹⁰ one can understand that the invention and printing of metal movable types during the dynasty began and developed in close relation to the political circle.

Soon, metal movable type played an important role in the distribution of neo-Confucianism in the early years of the Joseon Dynasty, which had become the ruling idea of the new dynasty. At the time in Korea, publishing books on neo-Confucianism was a keen national project as this ethical system had just become the national ideology. Thus, a need was apparent for technology to print neo-Confucian books—the new academic subject from China—accurately without typos and omissions for storage and also to reprint the books whenever needed. As metal movable type played this very role, this printing method at this point in history was a matter related to the spiritual value of the founding ideas of the nation; it was not at all

10. According to the imprint of the book, *Jikji* came into being thanks to the offering by the female monk Myodeok. Even if little record remains about her, but Myodeok gyecheop 妙德戒牒 (A Certificate of Myodeok's Entering into the Buddhist Community) discovered in 1988 and the last record of *Dongmunseon* 東文選 (Collected Literary Works from the Silla 新羅 Dynasty [57 BC-AD 935] to the Joseon Dynasty) volume 74 describe that she is estimated to be a woman of considerable wealth at the end of Goryeo and also donated much to the Buddhist community. Some try to identify her ties with the royal family, assuming that she was Lady Im who got married to the blood royal Jeongangun. However, this argument is not backed by clear evidence. See Lee Se-yeol (2000).

aimed at commercializing books or spreading them to the public. According to Choi Jeongho, “Just as woodblock printing was aggressively sponsored by kings in Goryeo, metal movable type in Joseon was also mainly initiated by no one else but kings. It was not rich businessmen who invested in the technology, or the intellectual class who developed the technology for their needs. Of course, it was not possible at all for printing technicians to make money using their expertise; Printing technique was never a money-making tool not only from Goryeo to Joseon, but also throughout traditional society” (J. Choi 1997, 35). In other words, metal movable type in Korea was a project thoroughly managed and pursued at the government level, as it was not a means to make profit, unlike in Europe. *Taejong sillok* 太宗實錄 (The Annals of King Taejong 太宗) clearly explains the King’s intention to “invent bronze type to print and spread books; as there are not enough Korean books for Confucian scholars, it is hard to bring in Chinese books as Joseon is across the ocean, and woodblocks are too easily distorted and damaged to be used to print all books in the world.”¹¹ Considering that neo-Confucianism was new at the time, not many related texts were available in Korea. As the national ideology transitioned from Buddhism to neo-Confucianism, printing various kinds of books within a short period of time and keeping at least some copies to stabilize the foundation of the country were necessary. However, the existing woodblock printing was not a suitable technology to print and distribute large volumes quickly or inscribe the numerous books newly published in China. Therefore, they sought to increase the types of books by using metal movable type because one can easily disjoin and rearrange letters to print another book after printing a book. As such, book printing in Korea was completely under control of the state; Books controlled and printed in this way were *distributed*, not sold. In Korea, books belonged to the domain of spirituality, and thus they were not tradable commodities. Only later after the 1870s did books begin to be printed by private entities and become commodities when the so-called European printing techniques were rein-

11. *Taejong sillok*, *gwon* 5, 2nd lunar month of the 3rd year of King Taejo 太祖’s, 1394.

roduced through Japan.¹² This particular attitude represents the fundamental reason behind the totally different developments in the history of printing between Korea and Europe.

Moreover, attempts have been undertaken to identify the technical and physical limitations for why Korea's novel printing did not facilitate such mass reproduction and dissemination of knowledge like the West, as well as why wooden blocks continued to exist alongside metal types. These attempts are viable theories since Korean printing technology—which no longer advanced from the 15th century in the reign of King Sejong—was still largely a manual undertaking (Gang 2014, 111). The sheer number of types required for the Korean alphabet and Chinese characters (both of which are constructed by syllable and thus have countless combinations) far exceeds that of the Roman alphabet.¹³ Another constraint for the private sector was to secure the metal itself, and it was a valuable commodity controlled by the state. Thus, the reasons are readily apparent as to why books of steady demand were often printed with wooden blocks—a technology that did not fade away but coincided with the newer metal types. In other words, Korean metal-type printing was actually far removed from the often-associated merits of *efficiency or mass production*. Conversely, this fact also signifies that Korea was “the world's first” to invent metal movable printing even without such objectives. Also, a presswork culture flourished even when the invention was deemed unsuitable for mass production, because the technology was fulfilling whatever the role society expected from it at the time.

As an illustration, woodblock printing was already serving the function of printing in the Joseon Dynasty, and “while competing with wood-

12. The inaugural issue of *Hanseong sunbo* 漢城旬報—Korea's first newspaper published in 1883. A Korean politician Bak Yeonghyo is known to have brought Japanese journalists and pressmen from Japan. Before that point, some Japanese people were publishing newspapers including *Joseon sinbo* 朝鮮新報 in Japanese in Busan, and they are thought to have prepared printing equipment (e.g. printing types for this task) in about 1879.

13. In 1403, over 100,000 types were created for a single publication in Joseon (200,000 in 1434 and 300,000 in 1484) and it is a truly remarkable number (Gang 2014, 111). By comparison, the number of required Roman alphabet types is limited; the Gutenberg Bible only needed 292 typing blocks (Füssel 1999, 15).

block-printed books, metal movable type was developed for the purpose of printing a small number of copies, on occasions where mass production with woodblock was not needed. Consequently, Joseon's metal movable type was improved for saving labor, resources, storage space, and small-scale printing of prestigious books rather than for economic feasibility or speed of printing¹⁴ (Y. Nam 2009, 28). *Goryeosa* 高麗史 (History of Goryeo Dynasty)¹⁴ and *Joseon wangjo sillok* 朝鮮王朝實錄 (The Annals of the Joseon Dynasty)—designated as a UNESCO Memory of the World—were only published in a small number and kept in archives rather than being distributed to the public (Seol 2005, 101), and it can be understood in the same sense. In addition, neo-Confucian books were in large and sustained demand, and they were reproduced en masse by municipalities with wooden blocks based on the metal-type versions distributed by the central government.

At this point, we must ask what types of books the government of Joseon published. Besides *Joseon wangjo sillok* and *Goryeosa* mentioned previously, many others were also published including *Shiqi shizuan gujin tongyao* 十七史纂古今通要 (History of China, Summarized in 17 Volumes) written by Hu Tingfang 胡庭芳 of the Yuan Dynasty in 1403 (the 3rd year of King Taejong's reign), and other Chinese history texts made 17 years later (the 2nd year of King Sejong's reign) such as *Zizhi tongjian* 資治通鑑 and *Shiji* 史記. In 1434 (the 16th year of King Sejong's reign), primers on Confucius teachings—*Daixue yanyi* 大學衍義 and *Chunqiu jingchuan jijie* 春秋經傳集解, and *Jinsilu* 近思錄—were published along with literature like poems of Li Taibai. In 1447 (the 29th year of King Sejong's reign), the first molds for the newly created Korean alphabet were produced with *Worin cheongangji gok* 月印千江之曲 and *Seokbo sangjeol* 釋譜詳節. In 1455 (the 1st year of King Sejo 世祖's reign), the new King's personal tastes were reflected in Buddhist publications such as *The Diamond Sutra*, poetry, *Dongmunseon* 東文選 (Anthology of Korean Literature), maps, *Dongguk yeoji seungnam* 東國輿地勝覽 (Augmented Survey of the Geography of Korea),

14. *Goryeosa* was compiled from 1449 (the 3rd year of King Sejong's reign) and completed in 1451 (the 1st year of King Munjong 文宗's reign). It consisted of 139 volumes.

and *Naehun* 內訓 meant for the ladies. Basically, the books were for intellectuals and aimed at solidifying the rule of the new dynasty. In 1484 (the 15th year of King Seongjong 成宗’s reign), texts chronicling Korean history from the legend of Dangun—the founder of the first Korean Kingdom “Gojoseon”—to the latest Goryeo Dynasty (e.g. *Dongguk tonggam* 東國通鑑), and poetry collections like *Wang Jing wengong shi* 王荊文公詩 and *Zuanzhu fenlei dushi* 纂註分類杜詩 were mainly published. The Joseon Dynasty continued to publish books with metal type like *Daehak eonhae* 大學諺解 (Annotated Daixue in *Hangeul*), *Maengja eonhae* 孟子諺解 (Annotated Mencius in *Hangeul*), and *Sohak eonhae* 小學諺解 (Annotated Xiaoxue in *Hangeul*) with the aim of furthering understanding of neo-Confucianism (Cheon 2012, 449–453).

Accordingly, the importance of Korean metal movable type should be understood as an aspect of accurate recording, education, and preservation of a heritage for subsequent generations not simply for the mass distribution of knowledge. Thus, the invention was aimed not at mass production but at publishing accurate and prestigious books, by overcoming limitations of transcription and woodblock printing. The society’s demand for books in Korea at that time was sufficiently met by woodblock printing. Therefore, the role of mass production of metal movable type in Korea was not as critical and urgent a matter as in Europe. As metal movable type in Korea was oriented toward small-scale printing and the storing of precious books rather than mass production, books printed with metal movable type were not replicas but had “authenticity and an aura of unique appearance in the Korean imagination” (Benjamin 1983, 202).

Social Change through Printing Technology

The Reformation

When the press was first invented, the Western Catholic Church welcomed this invention as God’s gift. Crusaders on a mission to overthrow Turkey were engaged in the first religious movement by mass-printing

indulgences to fund the war. However, Luther's Reformation was the first event where printing functioned as mass media—especially as a force for reforming society—not the ruling Catholic Church. For three years after Luther posted the “95 Theses” at the Castle Church in Wittenberg, his works were reprinted in 30 editions and more than 300,000 exemplars were sold. Without printing technology, the Reformation would not have succeeded.

In this manner, the Reformation was the first movement to use printing technology for anti-establishment propaganda or instigation. A tremendous number of the vernacular—not Latin—pamphlets were published to call for public support, and early reformers (e.g. Luther, Melancthon, and Zwingli) became revolutionaries before they knew it. According to one source, “Presses all over the world have already grown to become fortresses, and are now facing the castle of St. Angelo standing in Rome. The Pope should either eradicate knowledge and printing or should be toppled by printing” (Eisenstein 2008, 154). The passage leads one to ask: was the status of religion in the early 16th century so unstable that it inevitably led to religious reform or revolutionary confusion? Was Europe in the early 16th century really longing for Luther? The conclusion one can draw from historical facts known so far is that Europe at the beginning of the 16th century was much more stable than generally thought. However, even though European society or the Church in around 1500 was relatively stable—50 years after Gutenberg's invention of printing—political perception of the general public had changed extensively. In particular, laypeople's perception of the Bible was once an exclusive property of the Catholic Church, and it has significantly changed. Previously, vernacular bibles were sacred books that could not be read by commoners, let alone possessed. After the invention of printing, however, the Bible became widely distributed through printing. Distribution of vernacular bibles to commoners especially started to threaten the Catholic Church's exclusive rights to the Bible. In 1486, the Archbishop of Cologne even banned publication of the vernacular bible (Kapp 1886, 529). Before Luther's Reformation started, as many as 18 types of German bibles were printed in Germany alone, the number of whose copies exceeded ten

thousand. Massive production and distribution of vernacular bibles through printing provoked endless questions about the traditional Catholic Church. The Church could not have let this conflict go on forever since it involved newly emerging questions on the privileges of clerics and religious studies. As James Curran notes, “Laypeople’s transcription activities and development of printing culture brought down the ideological superiority of the Church. Commercial transcription workshops, and later, growth of commercial press businesses made it difficult for the Catholic authority—which used to have the control over the tools of bookmaking and to censor effectively” (Curran 1982, 218).

One can reasonably assume that, even if Luther or other early reformers had died before being able to make their arguments, some other reformers must have attained the goal of the gospel by enlightening the laypeople with the help of printing. If so, the Reformation through Luther and the 30 Years’ War (1618–1648) ensued might have been avoided. However, the influence of printing technology would likely have fostered another character like Luther in some other part of Europe, who would have eventually embarked on a religious reformation. In conclusion, the invention and spread of printing in the 15th century was the most important driver of the Reformation; it toppled European society and the Catholic Church, and also established a new social order in the relatively stable 16th century.

The Maintenance of Order and Stability of the Establishment

As previously discussed in the last section, metal movable type in Korea served completely different objectives and functions. Despite this fact, the social role of Korean metal movable type was underestimated compared with the aggressive and dynamic force of Gutenberg’s printing; this printing method was industrialization and popularization of knowledge and information, as well as the consequent revolutionary social change. As widely understood, European printing involved the massive copying of documents and the popularizing of knowledge. This type of analysis suggests an “orientalist” error of interpretation, as it attempts to understand the value and importance of Korean metal movable type from a European

point of view.

Moreover, the analysis of European scholars—served as a standard for such assessment—sometimes reveals errors, because it fails to be based on a more profound understanding of Korea at the time. Rudi Volti explains why movable metal movable type produced only a “limited” sociocultural impact as follows:

Korean scholars even invented a phonetic alphabet known as “*Hangeul*” in the 15th century, which greatly facilitated the use of movable type. However, Korea’s traditional aristocracy clung to the use of Chinese characters for the written rendition of Korean words, for their ability to understand the difficult-to-learn characters set them apart from the common folk. Although a mass readership—literate in *Hangeul*—could have provided a large audience for printed works, no self-respecting writer was willing to use the “inferior” script. Consequently, printing with movable type had minimal effects on Korean society (Volti 2001, 187).

However, even if one is to accommodate the European perspective on printing technology, his statement is factually mistaken because it overlooks the unique circumstances regarding the invention of *Hangeul*. At the time of invention, the official name of *Hangeul* was *Hunminjeongeum* 訓民正音 (The Correct Sounds for the Instruction of the People). The motive for its invention is clearly stated in the King’s Foreword at the beginning of *Hunminjeongeum haerye* 訓民正音解例 (Explanation and Examples of *Hunminjeongeum*) published in 1446 (the 28th year of King Sejong’s reign). In the Foreword, the King specifies: “A new alphabet of 28 letters [be] created as there should be a different alphabet from the Chinese letters for the people to express their opinions. Each person is encouraged to learn it.”¹⁵ In other

15. The newly invented alphabet was used entirely to maintain the national order, for instance, to translate Buddhist and Confucian scriptures. Its creation by King Sejong was not a product of a modern spirit based on so-called “humanism.” *Hangeul* “was invented according to the needs of the royal family, not in response to the call of the people. Some see it as a trophy for growing the power of the people, but this would only be a conclusion from analyzing *Hangeul*’s history of realizing popular values, rather than the motive for invention itself” (K. Choi 2012, 25).

words, *Hangeul* was invented as an ancillary tool for ruling an ideal state based on Confucian ideologies.

However, despite the King's wish, the alphabet was "used in a limited matter by government officials, in aristocratic literature and the correspondence of some ladies in the royal family" (Song 2011, 179), and took more than a century to be disseminated to the general public (Ahn 2007, 245–252). As Song Ho-Keun states, "It is appropriately viewed that a serious readership began to develop in the 18th century, or more precisely, in the latter half of the 18th century; publishing printed works became possible and anonymous professional writers—who made their livings by writing—emerged," (Song 2011, 290). Thus, *Hangeul* was not an alphabet handed down from antiquity; it went through a process of invention, proclamation, and dissemination instead. Moreover, more than 300 years had lapsed for "a mass readership, literate in *Hangeul*," as Volti describes, to form and consume a large number of printed works in *Hangeul*. However, since the 18th century, *Hangeul* became settled as the people's alphabet and played a central role in their literary life. A slow and steady process was required for letter printing to provoke a revolution in the people's perception through *Hangeul*; it means that metal movable type served as a driver of gradual social reform in Korea, rather than a catalyst for revolutionary social upheaval, as was the case in Europe.

Unlike Europe, metal movable type in Korea did not cause social change like the Reformation. Just as in Europe during the fledgling phase of the technology, in Korea as well, metal movable type in the early years was used to print religious scriptures. Buddhist scriptures were by definition religious, and although it remains debatable whether the metaphysical neo-Confucianism was a religion per se, it served as the prevailing ideology of the times. The techniques of Korean metal movable type printing were already at their peak from the dawn of the Joseon Dynasty, and unlike Christianity, neo-Confucianism was a secular governing ideology of the ruling class.

During this period when neo-Confucianism became dominant, intellectuals started their public career by passing the state examination, and even those not in active positions were potential rulers. Confucian books,

such as *The Analects of Confucius* and *Mencius*, were textbooks for the state exam—the only fair gateway to becoming a public officer. Therefore, printing in Korea was directly linked to the Confucian education of aristocrats, which was critical for maintaining a solid social structure. Such a structure ruled by intellectuals was impregnable, as evidenced by the fact that this structure of ruling by intellectuals armed with Confucian ideas remained unaltered until the end of the 19th century. Intellectuals who committed themselves to social reform (e.g. Silhak 實學 [Practical Studies] in the 18th century) also did so from the frame of Confucianism. Joseon Confucianism—fancied itself as the legitimate child of Confucianism after the demise of the Ming 明 Dynasty (1368–1644)—was not an object of reform. That is, Korea never saw the status of Confucianism destabilized by the development of printing work through mass dissemination of books on revolutionary ideas from the educated.

Consequently, reformation of neo-Confucianism was never truly undertaken from within by its own scholars. This lack of reform gave way to other ideologies, attacking, refusing, and ultimately substituting for it. By the 19th century, the neo-Confucianism that had underpinned the Joseon Dynasty for five centuries was being criticized and rejected by Donghak 東學 (Eastern Learning)—a homegrown religion and grassroots movement—and Catholicism, which was gradually taking hold after the sacrifice of numerous martyrs. These movements indicate why Korea's neo-Confucianism quickly lost relevance in the 20th century, rather than being able to reinvent itself through painstaking internal criticism. Korean neo-Confucianism today has been reshaped and diminished into a tradition and convention, and no longer presides over the larger society. In conclusion, printing was not a tool to reform the ruling ideology in Korea. On the contrary, by solidifying and systemizing printing, the country established a foundation for a deep-rooted, impregnable realm in contrast to the role Europe expected of the technology.

As further illustration of this contrast with Europe, one must note that commerce in Korea was suppressed vigilantly as it could shake the foundation of the most important industry of the nation, farming, and bring about a collapse of rural society. The collapse of farming was a potential

threat that could unsettle the class society, and the emergence of rich merchants would have changed the essential principle sustaining Joseon. In the society, which pursued ethical governance by poor but honest scholars, pursuit of profit through commerce was despised as trickery and artifice. Also, the market had a negative connotation as it was often described as a place for corruption, decadence, and lies. In a society where the general market was deemed negative, books—which were viewed as containing the truth—could never become an object for profit seeking.

As a result, social reform caused by the invention of *Hangeul* and the growth of popular printed works developed much more gradually in Korea than in Europe and in a different form. Like all other technological inventions by humankind, whether a technology itself drives social change within a short period of time depends on whether its innovativeness was embraced by the social conditions at the time. Society did not expect the technology to fulfill the function of a massive copying of information when metal movable type was invented in Korea, hence no abrupt and revolutionary social change through the popularization of information. As a consequence, Korea could be an example of a society—where the biggest role of metal movable type was not the massive copying of information, but instead the intrinsic function of preserving accurate knowledge through the production of authoritative editions of significant texts.

Conclusion

The common view held so far is that printing revolutionized human civilization, especially communication. Renowned academic works (e.g. McLuhan's *The Gutenberg Galaxy*, Eisenstein's *The Printing Press as an Agent of Change*, and Deibert's *Parchment, Printing, and Hypermedia: Communication in World Order Transformation*) state, with little difference, how much Gutenberg's printing contributed to the development of civilization. As is widely known, the invention of printing—named as one of the three most important inventions of civilization, along with gunpowder and the compass—put an end to the Middle Ages and ushered in

modern times. However, this argument is not entirely convincing since Korea gave birth to the earliest work printed with metal movable type.

First, a look at copying technology before printing clearly reveals the difference between the two cultures. Before printing was invented, copying was done through transcription in Europe. The pre-Gutenberg century was called “the golden age of transcription culture,” virtually the only method of copying in Europe where transaction of transcribed books was prevalent throughout the continent. Meanwhile, woodblock printing was the primary copying technology in East Asia.

Against such a backdrop, a closer look into the background of Gutenberg’s invention of printing and the invention of metal movable type in Korea weakens the dominant argument that printing triggered the development of civilization. While the sociocultural background of Gutenberg’s printing in Europe was the forming of a readership throughout the continent, thanks to the blooming transcription culture and the impact of the consequent capitalist market economy, Korean metal movable type was created to continue the technological development from woodblock printing and to solidify the ruling idea of the nation.

Nonetheless, the printing press left an enormous impact on European society as seen in the slogan, “Without the printing press, no Reformation!” United by the Christian religion, the Church was wielding absolute power in medieval Europe. Christianity was a religion that worshiped the Bible, and the disseminator of the scripture was the Church and monasteries. In particular, monasteries were the only channels through which books—including the Bible—were produced and distributed. However, the invention of printing threatened the Church’s exclusive right to knowledge written in letters. Laypeople’s thirst for knowledge was quenched by massive distribution of printed books, and the Church’s exclusive right to knowledge disappeared due to increased use of letters in the secular world. During this process, the Reformation was sparked causing conflicts in European society for several centuries. Consequently, the printing press provoked a revolution of society in Europe, thereby playing a key role in the transition from medieval to modern times.

Meanwhile, the trajectory of development seen in European society

evolved differently in East Asia. Unlike Europe, woodblock printing had already started to take root before metal movable type in Korea. The invention of metal movable type in Korea can be understood as an extension of the development of woodblock printing. Also, metal movable type in Korea emerged, unlike in Europe, for the maintenance of the existing order and structure. Of course, this development in Korea did not drive a full-scale social revolution as it did in Europe. But from a long-term perspective, it had a gradual but significant impact on spread of knowledge and information in Korean society, eventually nourishing the IT powerhouse Korea has become today.

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