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in Korea

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Early Printings in Korea

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Printed in Korea

The Understanding Korea Series (UKS) 2

Early Printings in Korea

FORWARD

Korea achieved extraordinary economic development today by overcoming historical crises and hardships with wisdom and intelligence. The foundation for such development is the result of Korea's harmonious integration of various characteristics like traditional culture, social structure, emphasis on education and politics. Accordingly, widening the understanding on South Korea by re-examining the engine of Korea's miraculous development including its rich cultural heritage and economic achievements and sharing the findings with the world is a timely requested task.

Since its establishment in 1978, the Academy of Korean Studies strived to develop and creatively preserve Korean culture. In doing so, the Academy of Korean Studies not only published many academic books specialized in Korean studies but also provided overseas scholastic support and trained and produced Korean studies experts. Today, the Academy of Korean Studies faces a new opportunity to step forward in elevating the importance of Korean studies in the world on the occasion of the rise of the Korean wave and professionalism in the field.

In this regard, I am delighted to see the publication of *Early Printings in Korea*, the second book in the *Understanding Korea*

Series. I hope that this book will contribute to the deepening of the understanding on Korea and stimulate interest in creativity and authenticity of Korean culture. Finally, I would like to thank the Director of the Center for International Affairs and others who made this publication possible.

December 2013
Lee Bae Yong, Ph.D.
President of the Academy of Korean Studies

ACKNOWLEDGMENTS

The Center for International Affairs (CEFIA) at the Academy of Korean Studies (AKS) undertakes the task of promoting better understanding of Korea through development of materials on Korean history and culture as well as making sure that textbooks around the world are correctly presenting Korea. In doing so, I learned that it is hard for foreign students to understand Korea correctly due to too many incorrect contents or too little contents in various foreign textbooks.

This book is the second book in the Understanding Korea Series (UKS) covering the Korea's early printing culture, Korea's world-class cultural heritage. UKS aims at publishing books on Korea that go beyond being simply a popular guide to Korea and provide in-depth understandings on Korea from academic approaches. The UKS books will academically deal with various concrete topics related to Korean history and culture in general but written with general readers in mind.

This book demonstrates the excellence and rich features of early Korean printing culture. It begins with the origins of printing culture in the world and in Korea and development moving on to discuss in detail about woodblock printing and movable type printing in Korea that include many artifacts registered as memory of the world. Especially, the book contains

illustrated discussion on the invention and development of metal movable type printing. Although this book is written to broaden the understanding on Korean culture, the contents are written from a bibliographic perspective making the book a valuable reference to students of Korean bibliography.

Many whom I cannot name here have helped in the publication of this book. I am grateful to them. I would like to thank Prof. Ok Yeong Jeong the author and National Museum of Korea, Gyeongju National Museum, Buyeo National Museum, Gaya National Research Institute of Cultural Heritage, Leeum, Samsung Museum of Art, Central Buddhist Museum, Samsung Museum of Publishing, Cheongju Early Printing Museum, Yonsei University Library, Korea University Library, Donga University Museum, Suwon Museum, Jangseogak at AKS, Yonhap News, Mr. Seo Jae-sik and Mr. Hong Incheon. Lastly, I give thanks to Prof. Christian J. Park for translating and Dr. Greg Sharzer for editing the manuscript.

I sincerely hope that this book will contribute to the better understanding of Korean culture and the raising the international community's interest in Korea.

December 2013

Yang Young-Kyun, Ph.D.

Director of the Center for International Affairs

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1. KOREA'S MEMORY OF THE WORLD AND EARLY PRINTING (古印刷)

Nowadays, people can easily and instantaneously acquire anything they need. Speed has become a virtue, and society and its members must move fast to keep up with the pace. All the necessities have been commodified, and the rapid logistics of supply systems help people move quickly so they can accommodate the speed of change. This commercialization is not limited only to physical goods. Knowledge, information, and even people's emotions are handily packaged and readily supplied. Modern society is often described by the following words: the abundance of material and the flood of information. Now is such a time.

When modern society's development process is examined, people understand that its speed is usually due to hidden efforts behind every success. First, people recognize the inconvenience; second, they create some device to overcome that inconvenience; and lastly, they reinvent the device to compensate for its weaknesses. This evolving process involves the collective efforts and

experiences of countless people. The media that contain knowledge and information work in the same way.

A book is a typical medium that contains knowledge and information, and the history of books, in strictly functional sense, regardless of their form or material, began with the birth of scripts. Now more books are becoming digitalized; this too has a long history.

Recorded materials are defined more inclusively and encompass manuscripts and prints. Korea has an enduring history of recorded materials. Old or antique books, made in the traditional methods, are sources of national pride as they are commonly referred in the dating of print technology. Korea possesses nine UNESCO Memory of the World properties, and five of those are antique books printed using traditional methods. Also, the world's oldest extant woodblock and movable type prints are produced in Korea as well.

The precise origin of Korea's printing technology is still veiled; yet it has been pointed to as a means for the transmission and dissemination of Buddhism. Buddhism reached the Korean peninsula for the first time and began propagating in the 4th century. By the 8th century Unified Silla period, Buddhism was flourishing, and woodblock printing technology was used for mass production of the Buddhist canons.

Materials printed by traditional methods can be classified according to the following techniques: xylography, typography, reprography, and lithography. Typography can be further categorized into wooden and metal type depending on the material. Gyonihwalja (膠泥活字, clay movable types), Dohwalja (陶活字, ceramic porcelain movable types) and Pohwalja (匏活字, movable types made of gourd) were also used. The invention of metal movable type, in particular, is pivotal even in world history.

In order for a book to be perfected, various technologies and tremendous labor power had to be harnessed, under that particular period's social system. The knowledge and information, or the religious views and philosophies contained in the book reflect the social and cultural trends of that period. Understanding the compilation and publication background of an antique book, and dating that book to learn about the various trends and aspects of early printing culture, can be a worthwhile undertaking. It may be a short cut to attaining a better picture of Korean culture and its characteristics at the time.

This paper aims to promote the basic understanding of Korea's early printing culture by introducing its origins, the early prints and their various differentiation

methods, and elaborating on major printing techniques, including metal movable types and their meanings. The differentiation method that uses printing as criteria, and the characteristics of different periods, will be examined first.

2. THE ORIGINS OF WORLD PRINTING CULTURE AND KOREA

◆ The Emergence of Printing Culture and Korea

Whether in the East or West, printing techniques originated from the desire to relay information to as many people as possible in the shortest time. Communities began forming due to the development of agriculture, and the subsequent population explosion caused those communities to grow ever-more complex at a rapid pace. The need for widely accepted rules within the community to create a harmonious coexistence engendered the invention of scripts. Individual human beings, as the vessels of their own creation and discoveries, are inherently mortal, and there exists a definite limit in the preservation and transmission of their knowledge and information. Something to record and distribute scripts more efficiently was needed: books appeared and printing techniques were developed. They created a leap in cultural progress.

The development of printing was revolutionary. It made the mass production of knowledge possible.



〈Figure 1〉 Seal for enclosure



〈Figure 2〉 Inscription on Yeongachilnyeonyeong geumdongyeoraeipsang (National Treasure No. 119): Goguryeo Statue of Buddha made in the late 6th century with an inscription written on the back of the halo.



〈Figure 3〉 Part of Hwaecomseokgyeong: Stone Sutra of Hwaecomgyeong made in the 9th century. Scripture is engraved on stone. It is believed to have been used to decorate the wall of Jangyukjeon at Hwaecom Temple built by Great Buddhist Priest Uisang (625-702). Made with various materials scriptures are one of the foundations of Korean printing culture.

Although the technique was not perfect from the beginning, it evolved through countless trials and errors. Printing's specific origins, where and when, are yet to be revealed. Nevertheless, when one traces back the development process of printing it is widely accepted today that the origin of printing technique may have started with various forms of seals where one engraves letters or images on the surfaces of stones or metal and stamped.

Mugujeonggwangdaedaranigyeong (無垢淨光大陀羅尼經, Sutra of Pure Light), the world's oldest surviving woodblock print, is in Korea. This short religious scroll describes the process of building and dedicating a stupa, and generally estimated to have been published before the mid 8th century, during the United Silla period. Buddhism was transmitted and popularized in Korea long before then; technology and sciences such as casting and astronomy were already thriving, and Korea was cultivating its own unique culture in the midst of an active cultural exchange with China. The probability that Koreans of that time used printing technique to promote philosophy and culture is fairly high. Even though there exist some disputes regarding the dating of this scroll, its value as the earliest print should not be underestimated. It has a definite potential to act as a key in solving questions

related to the origins of printing techniques, not only in Korea but also worldwide.

◆ The Development of Printing Materials

It is hard to record anything without paper and pen. Likewise, progress in printing technique requires advancement in printing materials. The latter were usually derived from handwriting materials; paper and ink were the foundations of printing in the East.

Paper of the East is mainly made from plant fiber base, and the current form was perfected by Cai Lun in the year 105, during the Han Dynasty. Paper was spread to Europe as well, after its convenience and economic value were proven.

The exact point of transmission is uncertain, but since Korea was adjacent to China and the two countries engaged in an active cultural exchange, the technique must have been introduced relatively early. There is a record supporting such opinion, stating that Damjing, a Buddhist monk from Goguryeo, relayed the paper manufacturing technique to Japan in the 21st year of King Yeongyangwang's reign (610).¹ This suggests that paper was already in existence in Korea before the beginning of the 7th century. Another discovered manuscript, made of high quality paper produced with dhak tree fiber (paper



〈Figure 4〉 Paper making method described in the epilogue of *Baekjimukseodaebanggwangbu Ihwaeomgyeong* of Silla and enlarged photo.

mulberry, *broussonetia papyrifera*) is estimated to have been produced during the Silla period.² One can guess that the paper manufacturing technique may have been already highly refined by that time, and the technique recorded at the end of *Daebanggwangbul Hwaeomgyeong*, written on white paper in ink (白紙墨書大方廣佛華嚴經) confirms this. Other records of Korean paper during Korea's Three Kingdom period are apparent in some ancient tomb murals and other contemporary manuscripts.³

This paper manufacturing technique continued to develop during the Goryeo period. The contemporary Chinese Song Dynasty praised Goryeo's paper as 'the best in the world'. This acclamation from China, the country that invented paper, was due to Goryeo's superior raw material quality, made from mulberry tree, and the advanced paper manufacturing technique producing hard and silky papers.

Ink is another critical material, and as with paper, Korea has produced high quality ink since the Three Kingdom period. There is a record of Goguryeo's Songyeonmuk (松煙墨, pine charcoal ink) offered to the Tang dynasty as a tribute.⁴ Ink sticks from the Silla period with inscriptions, Silla Yanggasangmuk (新羅楊家上墨, ink from the Yang family) and Silla Mugasangmuk (新羅武家上墨, ink from the Mu family), are still preserved in Japan's



〈Figure 5〉 Silla ink stick preserved in Japan's Imperial Repository, Shosoin.

Imperial Repository, Shosoin.

Ink was produced by mixing carbon-black from old pines with a special glue obtained from water deer (hydropotes inermis argyropus). *Gosa Sinseo* (攷事新書, Fresh Notes Made According to Events of Long Ago) written in the late Joseon period elaborates the process in greater detail: first, prepare ten geun (1 geun = 600 grams) of boiled and dried pure pine charcoal in a bag, four geun of glue, and ten geun of water; second, put four geun of glue in nine geun of water in a copper pot and heat it until the glue melts; third, thoroughly mix in the charcoal and transfer the mixture into a separate container; forth, wash the pot with remaining one geun of water and pound the mixture numerous times, pouring the wash water over it.

The paintbrush and ink-tablet are closely related to ink, as they are critical writing material elements, assumed to have started use around the same time.

The remaining ink-tablets from the Three Kingdom period are usually of Baekje; ink-tablets from the Sabiseong and Hanseong periods were excavated in bulk, and several were recovered in Anapji located in Gyeongju. Recently, a paintbrush dated in the first century B.C. was excavated in Dahori tomb number one in Changwon, which proves that brushes were in use from ancient times, and a mural in Anak tomb number three shows a government official holding a brush.⁵



〈Figure 6〉 Writing brush of the Three Kingdoms period (Excavated at Hamanseong Mountain Fortress)



〈Figure 7〉 Ink-tablet of Unified Silla (White porcelain ink-tablet)

3. WOODBLOCK PRINTING AND MOVABLE TYPE PRINTING

Korea used various printing techniques, starting from the 8th century United Silla period until the beginning of the 20th century, when they began fading away due to the influx of Western technology. The techniques' prints are divided into xylography, typography, reprography, and lithography, depending on the methods used. Typography can be further categorized into wooden type, metal type, Gyonihwalja, Dohwalja, and Pohwalja, depending on the materials used.

◆ Woodblock Printing

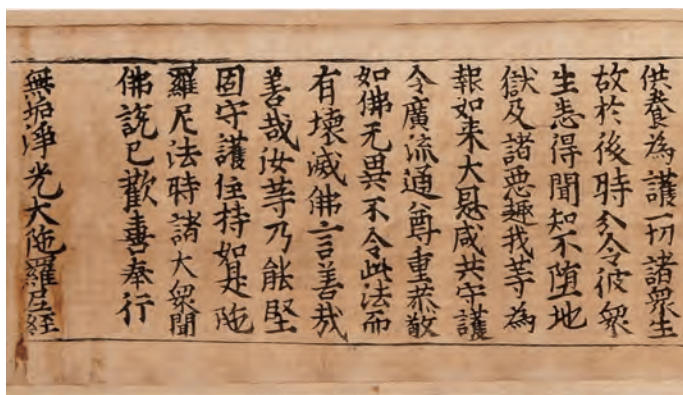
Woodblock printing starts out with a calligraphy on paper done by a master; next, this paper is put face-down on a wooden plate the letters on the page are see-through. Then, the chiseler engraves the plate meticulously to perfect the woodblock. The ink is applied on the block and paper is pressed on top of it and rubbed.

Woodblocks usually consist of two maguri's which function as handles on each end and protect the plates,

and a plate face and center. Woodblocks are sometimes categorized according to their use: chaekpan (the book plate), for the main contents of a book; seopan (書板), for a calligraphy practice book; neunghwapan (菱花板), for a book cover illustration; inchalgongchaekpan (印札空冊板), for a notebook, Sijeonjipan (詩箋紙板), for letters; and dopan (圖板) for diagrams.

Depending on the number of editions or publication order, various names are given to them: choganbon (初刊本, first edition), junggakbon (重刻本, multiple-engraved edition), huswaebon (後刷本, latter edition), beongakbon (飜刻本, re-engraved edition), bogakbon (補刻本, complimentary edition), and gyojeongbon (校正本, revised edition). Other names include daejabon (大字本, large letter edition) and sojabon (小字本, small letter edition) according to the letter size, and daehyeongbon (大型本, large size edition) and sohyeongbon (小型本, small size edition) depending on the size of the book. Besides these names, generic antique book names were applied according to the time period, the place where it was engraved or the shape of the book.

Woodblock printing is a book created by engraving and printing writings using a wooden plate. Multiple copies cannot be made at once: the process is long, arduous and costly. Initially, they were created mainly



〈Figure 8〉 Mugujeonggwangdaedaranigyeong (Spotless Pure Light Dharani Sutra), the World's Earliest Dated Woodblock Print in Existence



〈Figure 9〉 The Scene of Excavation of Bulguksa Stupa's Sari Reliquary, 1966.

to publish Buddhist canons but later on, the usage became more diverse and general: they were used to publish trendy philosophic ideas, academic papers, essay collections and other various documents.

Currently, the world's earliest extant woodblock print is the *Mugujeonggwangdaedaranigyeong* (無垢淨光大陀羅尼經, Spotless Pure Light Dharani Sutra) discovered inside the Seokgatap stupa, located in the Bulguksa temple in Gyeongju. The dating of this printing of Silla, estimated to be before the year 751, is based on several grounds: the time of restoration of Bulguksa and building of Seokgatap stupa (751), the use of Wu-Zhou Dynasty style scripts in the sutra which was popular during the reign of Empress Consort Wu, the date of Chinese translation (漢譯) of *Mugujeonggwangdaedaranigyeong* (704), the timing of erection of the three story stupa of Hwangboksas temple which dedicated the identical sutra, and the date of inscriptions on Guhwangri stupa's sari reliquary, which used the same style (706).

Jujube tress, pear trees, sputum trees, prunus and white birch were usually used as woodblock materials. They are mostly hard trees with a dense grain. The preparation process is: first, soak the lumber board in sea water for a given time or steam it in salted water, to soften the grain and make the chiseling process easier,

and then dry it carefully to prevent warping; second, level the surface of the plate with a planer and apply end grains on each ends; third, place the carefully calligraphed manuscript face-down and engrave the letters directly; fourth, to print, situate the woodblock so the letters are facing upward and apply ink evenly throughout the plate face, and fifth, press a piece of paper on it and rub using waxed or greased inche (印鬃, a printing sieve) made of horsehair or human hair.

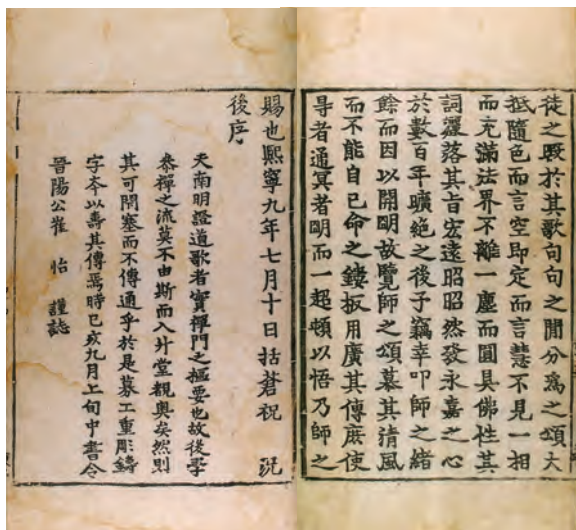
The majority of books printed by traditional Korean methods are woodblock prints. They can be produced only after the original manuscript has been copied, so the source itself is a copy. There are three major ways these woodblock prints are created.

The first way is using the original manuscript. The final manuscript written for the woodblock print is called deungjaebon (登梓本, listed edition) and this deungjaebon disappears as the board is engraved, since the letters are directly engraved upon it. A woodblock engraved with an original manuscript is referred to as chogakbon (初刻本, first engraved edition) or choganbon (初刊本, first published edition).

The second method is called beongakbon (飜刻本, re-engraved edition): recreating a woodblock print from a movable type or woodblock print. This method evolved



〈Figure 10〉 The first part of *Bohyeobindaranigyeong* printed in 1007.



〈Figure 11〉 *Nammyeongcheonhwasangsongjeungdoga* (南明泉和尚頌證道歌, Hymn of Monk Cheon in Homage to the Buddha) with Remains of Beongak

after the invention of woodblock printing: the beongak or re-engraving process took apart a previously-printed book, pressing the individual pages onto a woodblock and engraving it directly. This could induce distortions on the surface of the woodblock and alter the content if the deungjaebon used was unclear, causing incorrect chiselling. Also, during the re-engraving process, contents were sometimes omitted to save paper, and the beginning and the end were altered, omitted or added. Therefore, the content of the print became more unrefined and inaccurate over multiple re-engravings.

Among Korea's beongakbon, the earliest confirmed one is *Nammyeongcheonhwasangsongjeungdoga* (南明泉和尚頌證道歌, Hymn of Monk Cheon in Homage to the Buddha). In the 26th year of Goryeo's King Gojong's reign (1239), it was published by engraving an upside down copy of an original movable type print. In Korea there is a large quantity of antique books created by beongakbon due to the convenience of the method. Since an already-existing book was used, a new manuscript was not necessary.

The third way is simply writing the manuscript over and making it into a woodblock print. In this case the original content in question is already published.

A woodblock print made for publication is different

from manuscripts in the following ways. First, a woodblock print has a clear goal of publication. It is usually proofread for accuracy and the content tends to be complete, with distinctive, visible characteristics such as letter size, control of board shape and editing.

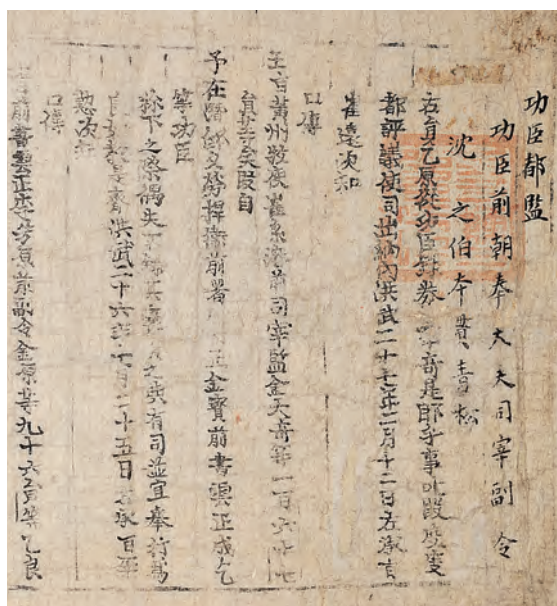
Second, while written manuscripts are unique and multiple books cannot be produced, woodblock prints can be reproduced as long as a supply of paper exists. The style of writing is consistent, and the form is maintained unless there are special circumstances.

Third, woodblock print can be used continuously for a relatively prolonged period, but attrition of the plate face may occur if it is overused, and sometimes it can become impossible to decipher the letters.

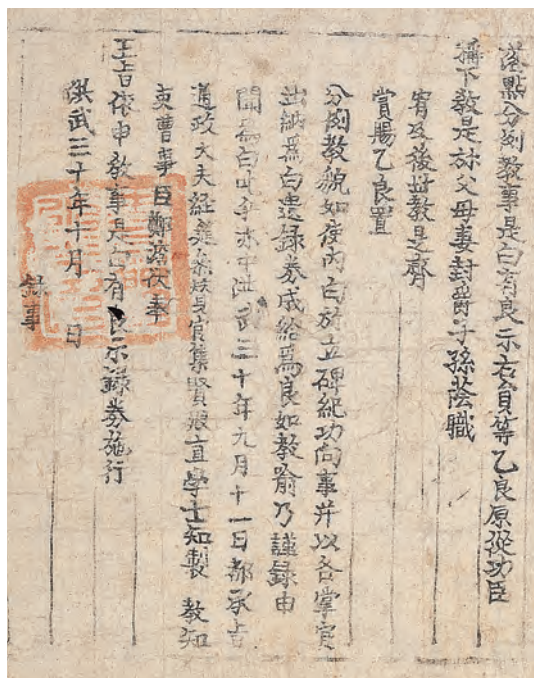
Fourth, the center of the plate, the scripture style and shape of the woodblock reflect social changes over time.

◆ Movable Type Printing

Movable type printing is a process of arranging types created by either engraving or casting in a case and then printing. Moveable type has an enormous significance in the history of printing. The metal movable type, in particular, takes the most effort, requires exceptionally refined and high technology and is the pinnacle of that era's cultural products. The unprecedented invention



〈Figure 12〉 Wooden Movable Type Print *Gaegukwonjonggongsinnokgwon*
(開國元宗功臣錄券, Certificate of Titles and Rewards for the
Contributors for the Foundation of the Nation, Front Page)



〈Figure 13〉 Wooden Movable Type Print *Gaegukwonjonggongsinnokgwon*
(開國元宗功臣錄券, Certificate of Titles and Rewards for the
Contributors for the Foundation of the Nation, Back Page)

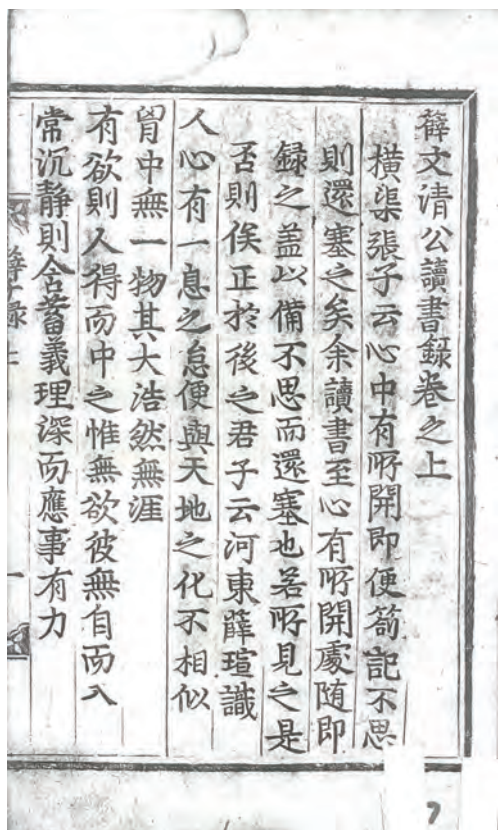
of metal movable type printing in the mid-Goryeo period became a fundamental technology for spreading knowledge in human history, and possessing such technology is a source of pride for Koreans.

The most notable advantage of movable type printing is the freedom to rearrange the sorts once they are created. They can be used to publish different books. This is the obvious distinguishing point from woodblock printing, which cannot be corrected once the letters are engraved.

(1) Mokhwaljabon (木活字本, Wooden Movable Type Print)

Mokhwaljabon is a book created by making a typeset from wood types and printed. It was invented and used before the creation of metal movable type. The oldest one was used in the Uighur region in the 12th century and is still preserved. It came into practical use during the Yuan period in China.

The initial record of wooden movable type production appears in *MengxiBitan* (夢溪筆談, Dream Pool Essays) written by Shen Kuo of the Northern Song (北宋) Dynasty. When explaining the use of Gyonihwalja, fire-hardened clay (terra-cotta), created by Bi Sheng (畢昇), he asserts that since wood grain has different densities, it becomes uneven when wet, making the board face irregular. It is

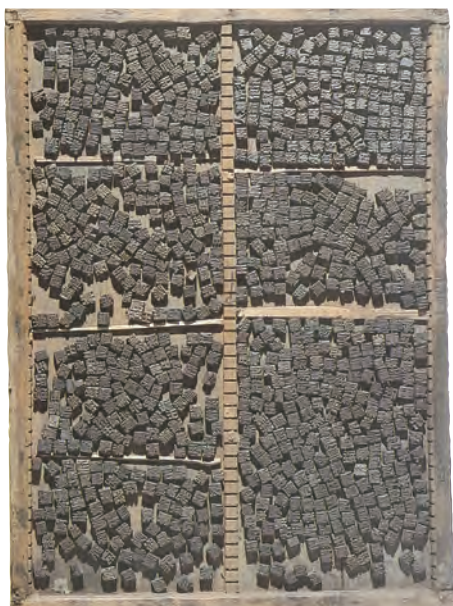


〈Figure 14〉 Wooden Movable Type Print Published in Naju in the 17th Century

also difficult to separate when chiseling because it is put together with adhesives, and as a result, he decides to use clay movable types instead. The use of wooden movable types are clearly confirmed in the records mentioning Wang Zhen (王禎) of the Yuan Dynasty, who made 30,000 wooden types and printed a book he authored, *Jing De Xian Zhi* (旌德縣志, A County Annual about Jing De). Two years later, he wrote *Nong Shu* (農書, Agricultural Treatise) and described the printing process of wooden types in detail in the concluding section of the book, *Wooden Type Printing Methods* (造活字印書法).

It is uncertain when Koreans started using the wooden movable type, since there is no record of it. However, it must have preceded the metal movable type invented during the Goryeo period, so it is estimated that it should have been widely used before the metal kind. The abundant prints preserved from the Joseon period prove that it was utilized extensively not only by the central government but by the private sector as well.

The earliest extant print of wooden movable type in Korea is *Gaegukwonjonggongsinnokgwon* (開國元宗功臣錄券, Certificate of Titles and Rewards for the Contributors for the Foundation of the Nation, the National Treasure of Korea No. 69) which was awarded to the contributors for the founding of Joseon. Around the same time,



〈Figure 15〉 Wooden Movable Types: Movable types made of wood, Jeongyujabojayong wooden type



〈Figure 16〉 Tools for making wooden movable types

Seojeokwon (書籍院, the Royal Publication Institute) published *Daemyeongnyuljikhae* (大明律直解, the Great Ming Code) using the wooden types made by Seo Chan (徐贊).

(2) Metal Movable Type Print

Metal movable types are made by melting and casting metal for printing, and metal movable type prints are books made using the metal movable types. These types are classified according to the kinds of metal used, such as copper, lead and iron. Traces of minor metals were usually alloyed with the main metal. In general, metal movable type usually refers to any movable type made of metal material, regardless of its kind.

There is no decisive record of the invention date or inventor of metal movable type. Several hypotheses exist in Korea, dating it to the 11th, 12th or 13th centuries. Based on recent research, the latter hypothesis has been accepted as the most convincing, since various beongakbon and movable types dated to the early 13th century have been found.

In the concluding section of jungjobon (重雕本, re-engraved edition) of *Nammyeongcheonhwangsongjeungdoga* (The Song of Enlightenment of Namyeong) published in the 26th year of King Gojong's reign

(1239), the year the Goryeo court moved the capital to Ganghwa Island, Choe I (崔怡) states that “the Song of Enlightenment is very critical to the study of Zen (禪門), yet it is no longer in circulation, therefore, I commanded manufacturing of a re-engraved edition based on jujabon (鑄字本, metal type edition) so it can be distributed widely.” This record suggests that the original metal movable type print was printed and in circulation before 1239.

Recently, the authentic metal movable type that was used to print for the first time of this book was excavated.

With this evidence, a record in Yi Gyubo’s *Donggukisanggukjip* (東國李相國集, Collected Works of Minister Yi Gyubo of Korea) which says “in the newly printed edition’s epilogue of *Sangjeongyemun* (詳定禮文, Authentic and Detailed Code of Etiquette) written instead of Jinyaggong (Choi I)” attests that the *Authentic and Detailed Code of Etiquette* was printed using metal movable type in the 21st year of King Gojong’s reign (1234), which also supports the previous claim that Korean metal movable type dates to the early 13th century.

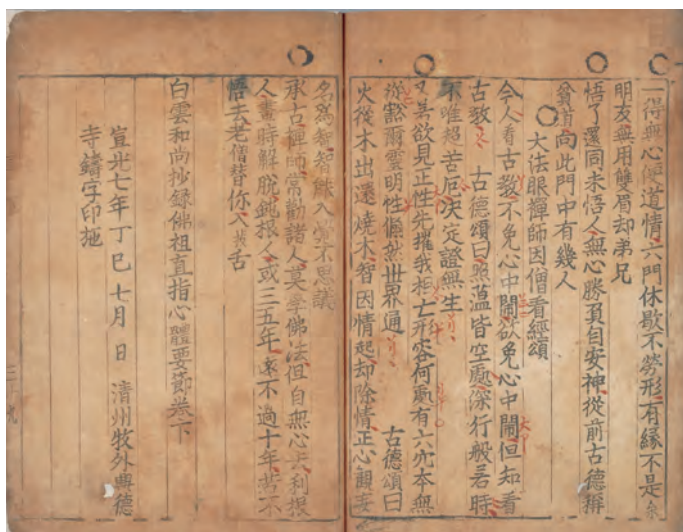
Baegunhwasangchorokbuljojikjisimcheyojeol (白雲和尚抄錄佛祖直指心體要節, Anthology of Great Buddhist Priests’ Zen Teachings) is the oldest extant metal movable type print, recognized as the oldest cultural heritage in



〈Figure 17〉 Sininsangjeongyemunbalmi (新印詳定禮文跋尾, Introduction for the New Print of Authentic and Detailed Code of Etiquette) in Yi Gyubo's *Donggukisanggukjip* (Collected Works of Minister Yi Gyubo of Korea)

the world. The first edition was printed in two volumes using the metal movable type, *juja*, in the Heungdeoksa temple on the outskirts of Cheongju, in July of the 3rd year of King U (禍王)ʼs reign of Goryeo (1377). The second volume, missing its front cover, has been passed on and is preserved in La Bibliotheque Nationale de Paris in France. The letter size and the fonts in this metal type print are inconsistent, since it was printed in a local temple instead of the government printing offices of Goryeo.

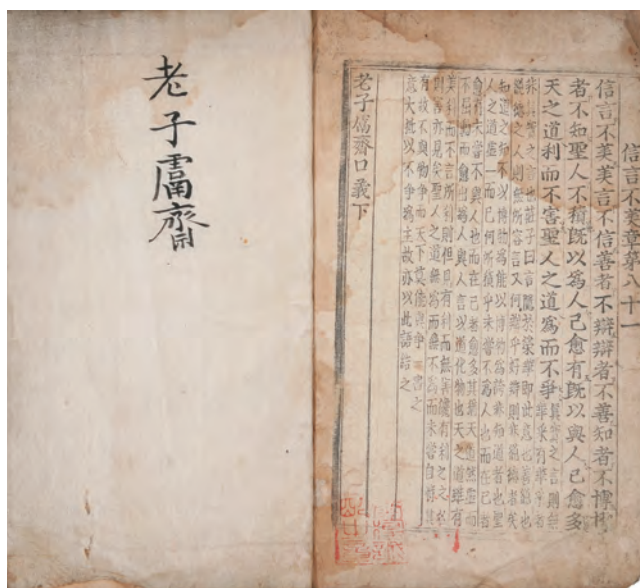
The *Jujaso* (鑄字所, National Foundry) was first reinstated in the Joseon Dynasty in the 3rd year of King Taejong (1403), and metal movable types were manufactured there for several months. Those typefaces produced were named *Gyemija* (癸未字) after the name of the year, *Gyemi*, according to the 60 year Chinese calendar computation cycle called *Ganji* (干支). The movable-type casting process and methods of base character inscription, carving and casting were vastly improved compared to *Baegunhwasanchorokbuljojikjisimcheyojeol*, but the letter size and fonts were still inconsistent, the thickness of movable-types were uneven, and the lines were disconnected in places, so the prints were not immaculate. The typesetting technique was also refined enormously; however, type pieces of irregular sizes and heights were jammed into a fastened square case, with a copper plate



〈Figure 18〉 Baegunhwasangchorokbuljojikjisimcheyojeol (白雲和尚抄錄佛祖直指心體要節, Anthology of Great Buddhist Priests' Zen Teachings), printed in 1377, in the Heungdeoksa temple in Cheongju



〈Figure 19〉 A print of Gyemija cast in the 3rd year of King Taejong's reign (1403)



〈Figure 20〉 A print of Gyeongjaja (庚子字), an improved version of Gyeonmija, manufactured in the second year of King Sejong's Reign (1420)

fixed onto the top and bottom borders in order to arrange the letters tightly. This caused the border line to bend and the letters on top and bottom to be interposed.

The Gyeongjaja (庚子字), an improved version of Gyemija, was manufactured in the second year of King Sejong's reign (1420). The Gyeongjaja's fonts are much smaller than those of Gyemija, yet the strokes appear more intense, powerful and beautiful. The copper plate was leveled and the movable types were made more uniform to fit better, so the copper types stayed in place and allowed more convenient printing. The only drawback was that the letter sizes were too small.

The third and improved movable type of the Joseon Dynasty, Gabinja (甲寅字), was cast in 1434. The thin and crowded Gyeongjaja fonts needed a larger type. The sizes of big and small fonts became uniform, the four squares of the letters became flat, and the typeset became completely assemblable. The ink could be applied more evenly on Gabinja, so the resulting print appeared clean and clear. The initial prints were even more meticulous and beautiful: they may be the ideal of Korean metal movable type prints.

The wooden and metal movable type prints discussed so far can be differentiated due to factors like certain characteristic differences in the fonts, the strokes of letters,

wear and tear, and engraving marks, due to variances in type materials and manufacturing methods. This is an important field in the movable type research, where the major weight is sometimes put on distinguishing wooden movable type printings from metal ones and differentiating various metal movable type prints. The differentiation of prints directly influences the estimated publication dates for particular books.

Extensive experiences and careful observations are required when making these distinctions. In many cases, antique books tend to suffer damage from various factors over time, whether it be their covers or contents; when there is considerable wear and tear or corrections, it is especially difficult to differentiate the prints. Even so, some typical differentiating factors can be identified.

Metal movable types are cast using molds and thus tend to be thinner, more uniform and regular. Wooden types, on the other hand, have no identical-looking letters, even when using the same characters, so their strokes tend to be irregular. When the types are worn down, metal type strokes become even thinner, and deformed in some cases, but the strokes are usually still intact. For wooden ones, the wear tends to blot out the letters, so the print appears more coarse. There are no engraving marks in metal type prints whereas clear chisel marks are apparent in wooden

types at times, and sometimes knife marks appear in the crossing point of vertical and horizontal strokes. The metal types are finished with a file after casting, so the end of each stroke usually appears round; no tattered parts are shown in wooden type prints. Because the metal type prints typically use yuyeonmuk (plant oil charcoal ink), spots can be observed if seen under a microscope. Songyeonmuk (pine charcoal ink) is used for wooden types, and the ink color tends to be more intense as a result. When seen under the microscope, ink is smeared around the letters.

(3) Gyonihwalja (Clay Movable Type), Dohwalja
(Ceramic Porcelain Movable Type),
and Pohwalja (Gourd Movable Type)

Clay, ceramic porcelain and gourd movable types were used alongside wooden and metal movable types. The clay movable type was the first attempt at creating movable type print, crafted by Bi Sheng between 1041 and 1048. This manufacturing process is recorded in the *Paninseojeokjo* (板印書籍條, the printed book) section of *Mengxi Bitan* (夢溪筆談, Dream Pool Essays) written by Shen Kuo of the Northern Song Dynasty. It was created by flattening and thinning clay dough and inscribing onto it and separating and baking each individual letter. The

typeset was prepared as a stereotype, and pine tar (松脂臘) mixed with paper ashes was applied. In order to expedite the printing process, two iron plates were prepared, so printing and making typesets could be alternated. The clay movable type is significant as the first serious attempt at creating a convenient printing method. However, the coagulative strength of the adhesives used was not strong enough, causing the types to fall off or be shaken during the printing process. Since clay's fragility meant the types were easily broken and disfigured, they were never used widely or practically.

Dohwalja is also referred to as Tohwalja (土活字, earthen movable type), and was used in the latter part of the Joseon period for private printings. The manufacturing method for this type is recorded in a manuscript called *Donggukhusaengsinrok* (東國厚生新錄, The New Report on Korean Welfare), which includes a summary of commander Yi Jaehwang's experiences when he was staying at the military quarters in Haeju, Hwanghae-do during the Joseon Dynasty. His type-making instructions are: take clay usually used for porcelain and pound it; let the clay half-dry in the sun after flattening the dough on a wooden plate; on a thin paper, write down big and small letters as needed with care; melt beeswax and put it upside down on the plate; let the carvers engrave in intaglio and



〈Figure 21〉 Dohwalja print edition of *Dongmyeongseonsaengjip* (東溟先生集, Collected Poems of Teacher Dongmyeong)

bake the individual type.

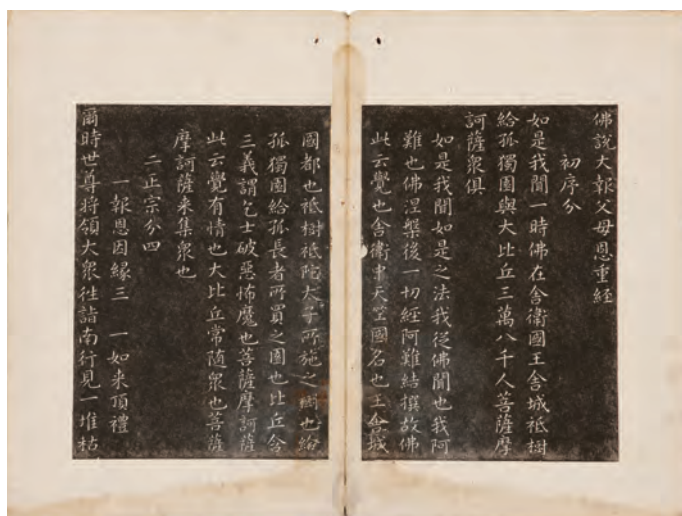
Currently, a couple of verified dohwalja prints are extant: *Gogeummyeongyu* (古今名喻, the Classic Epigrams of China) and Kim Seryeom (金世濂, 1593-1646)'s *Dongmyeongseonsaengjip* (東溟先生集, Collected Poems of Teacher Dongmyeong) printed in July of 1737. The distinguishing characteristics of this type, when compared to the wooden one, are: no trace of wood grain is found on the prints, the stroke ends are not as sharp, and the shape and thickness of fonts are not as regular.

Pohwalja or bagajihwalja (both mean ‘gourd movable type’) is created by inscribing letters on the surface of a gourd and cut into types. Although records or prints are yet to be found, it can be assumed that this method was used among the lay people, since it makes small type and thin strokes possible.

◆ Other Early Printing

(1) Takinbon (拓印本, Reprography)

Takbon is also called tapbon (榻本, rubbed print) or tabon (打本, dabbed print). It is the process of making prints out of inscriptions or pictures engraved on rocks or metal surfaces, by applying ink on a wet paper using an ink-soaked cotton dabber and avoiding the engraved area.



〈Figure 22〉 An example of antique rubbed print

When takbon is bound like a book, it is called takinbon and appears in several different types: scroll (卷子形), folded (折帖) and thread-bound (線裝).

The most common type of takinbon in Korea are the writings on stele (石碑文), and plenty of folded type books are extant. These examples precede the Goryeo period, and early epigraphs suffering from minimum wear and tear are of special historical importance.

(2) Seokinbon (石印本, Lithography) and Other Type of Prints

Seokinbon is the most primal form of lithography: a flat surface printing method that uses a completely smooth limestone plate for printing, relying on materials' hydrophobic and hydrophilic qualities. It was invented by a German named Alois Senefelder but has been replaced by zinc, aluminum and plastic plates. As photographic technology advanced, it evolved into photolithography and offset lithography.

In Korea, seokinbon was adapted towards the end of the 19th century and in the beginning was mainly used to print stamps, post cards and product labels by the Ministry of Agriculture, Commerce and Manufacturing. There are several seokinbon preserved from the initial period:

Daegabeopcheop (大家法帖, Collected Works of Great Calligraphers) published in 1908 by Gwangdeokseogwan (廣德書館, Gwangdeok Library), *Munjayujip* (文字類輯, the Collection of Various Chinese Idioms) published in 1913 by the Singuseorim (Singu Books), *Hunmongjaheo* (訓蒙字會, Chinese Character Textbook for Children) published in the same year by Sinmungwan, the *Amita Sutra* published in 1914 by Munadang (文雅堂), and *Sinsikchogandok* (新式草簡牘, the New Learning Book of Chinese Cursives) published in the same year by Bojinjae.

This method boomed during Japanese colonial rule, enjoying its heyday in the 1920s. Even after 1945, it was still used predominantly to print genealogy books, anthologies and documents. It almost disappeared completely after the 1970s.

The aforementioned printing technologies have been evolving with the speed of scientific advancement and development. Modern techniques include yuinbon (油印本, mimeography), tajainbon (打字印本, typeset printing), offset lithography, yuripan (琉璃版, collotype), zinc lithography, photolithography, yeonginbon (photo printing), and laser printing. Yuinbon is created by applying ink with a roller after using a stencil to scratch a greased, lined paper and placing it on a polygraph machine. This method was widely used until the 1970s as

the most convenient way of printing.

Offset lithography is the most common form of printing technology, and more convenient and precise techniques are in development. Yeonginbon is a replica of a rare book or useful material from the past, published through either photo-printing or other scientific methods.

4. THE INVENTION AND DEVELOPMENT OF METAL MOVABLE TYPE PRINTING

A book was the typical medium of spreading knowledge in a traditional society. Movable type and woodblock printing techniques, fundamental technologies for printing books, advanced frequently and played a crucial role in creating the infrastructure for the development of academics and philosophies. These techniques allowed the printing of all types of books, including but not limited to study guides and religious and other types of publications. Since inventing metal movable type in the early 13th century during the mid-Goryeo Dynasty, Korea came to own metal movable type and printing technology for the first time in history. It is one of the fundamental technologies that made the rapid transmission of knowledge possible for humanity, so it is a source of immense pride for Koreans. How does this invaluable metal movable type make prints? Previously, metal movable type printing was discussed. Now the typecasting process and typesetting for printing will be examined in more detail.

Metal movable type refers to movable type made of any metal, including copper, lead and iron. Korea's metal movable type, traditionally called juja (鑄字, type cast), is the oldest in the world, and the hypothesis that it was invented in the early 13th century during the Goryeo Dynasty has been established in several ways. The only dispute is over the exact date, of which there are several theories. Currently, it is believed that the invention occurred before the 19th year of King Gojong's reign (1232). That theory is based on the record found in the epilogue of *Nammyeongcheonhwasangsongjeongdoga* (南明泉和尚頌證道歌, Hymn of Monk Cheon in Homage to the Buddha) which is a re-engraved edition from the original jujabon edition. In 2011, type pieces that were actually used in printing *Nammyeongcheonhwasangsongjeongdoga* were newly excavated and named as "Jeungdogaja (證道歌字, Jeungdoga type piece)." Scientific analysis confirmed it to be cast before the beginning of the 13th century. More research on this Jeungdogaja may discover that this invention may date even further back.

There have been other examples known to be of the Goryeo metal movable type discovered before this Jeungdogaja. There are the fonts named after the book they were used in, Jeungdogaja, Sangjeongyemunja (詳定禮文字) and Heungdeoksaja (興德寺字), and the physical



〈Figure 23〉 Newly excavated Jeungdogaja (The top: Detail Photo)

type piece from Goryeo named bok (複). Various research on topics including print methods, typecasting techniques, typesetting methods, filaments, and differences compared to the Western printing technology have been conducted using these samples.

◆ Metal Movable Type Casting

Korea's metal movable type printing technology has been recognized as a renowned cultural heritage worldwide, celebrated by the entire world. The irregularities found in the type pieces reveal that the technology at the time was yet to be perfected, and indicate the limited resources of the local Buddhist temples where they were cast. However, the true beauty of world's oldest extant metal movable type print lies in its importance in cultural history, rather than the physical beauty of the print itself.

The printing technology of *Baegunhwasangchor okbuljojikjisimcheyeojeol* (the Hymn of Monk Baegun and Identification of the Buddha's Spirit by the Practice of Zen), the only physical metal movable type print of the Goryeo Dynasty still extant, had been handed down to the Joseon Dynasty, and became the foundation for the improvement and development of consequent metal movable types such as Gyemija, Gyeongja and Gabinja.

The recent discovery of Jeungdogaja has aroused keen interest among the scholars.

There are several known traditional Korean metal movable typecasting methods: wax, sand and kaolin. Casting is done by pouring the molten substance into a mold to create the desired shape, and this method is used not only for metal but also for gypsum, kaolin and glass. Bronze, an alloy of copper and tin, is the primary metal used for the casting of metal movable type. Bronze from the prehistoric Korea is known to be an alloy of seven parts copper, two parts tin and one part zinc. A more general ratio for bronze is about 95-70% copper and 5-30% tin. Impurities such as nickel, zinc and antimony are mixed in as well but their combined amount is usually less than 1%. Copper is alloyed with tin in order to create a stronger metal, but as the amount of tin increases, the color becomes lighter and the metal becomes more brittle.

There is no trace of records about the wax typecasting method related to metal movable type. For the sand and kaolin techniques, the complete formulae are unknown, yet some fragmentary information has been handed down.

There is no record of exactly what type of casting methods were used during the Goryeo Dynasty. But Joseon is known to have used the sand typecasting method from the founding of the Dynasty led by the National

Foundry, Jujaso (鑄字所). The kaolin typecasting method was also used towards the end of the Dynasty, mainly among the lay people.

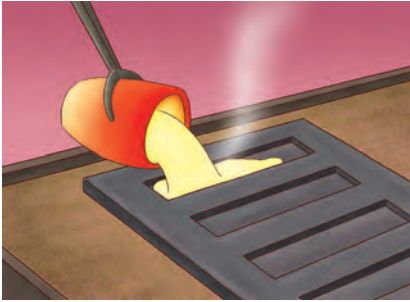
According to up-to-date research, Heungdeoksaja, derived from the re-engraved edition of *Baegunh wasangchorokbuljojikjisimcheyojeol*, the movable metal type printing of the Goryeo Dynasty, and *Jabidoryangchambeopjiphae* (慈悲道場懺法集解, the Collection of Prayers for Mercy) were manufactured using the wax typecasting method. This method was traditionally used to manufacture delicate and complex Buddhist objects (佛具類). Wax typecasting for metal movable type is done by carving the letter on one side of a prepared block of beeswax, covering the carved beeswax block with a dough consisting of oto (refractory material used in making crucibles (烏土) and clay into a mold (鑄型), letting the mold dry, baking it and pouring liquefied iron into the mold. The type pieces made of this method are meticulous; however, only one type is created per inscription, making it almost impossible to recreate type pieces with identical fonts or size.

Each letter is made by pouring liquefied iron into a closed space and applying pressure on it, which in turn will inevitably melt the matrix (模本), so only one character can be made for one mold. On the other hand, complex patterns, metal objects with curves such as accessories, complicated parts of copper bells, like the dragon head (龍頭), which cannot be divided in two, may be cast into singular molds.

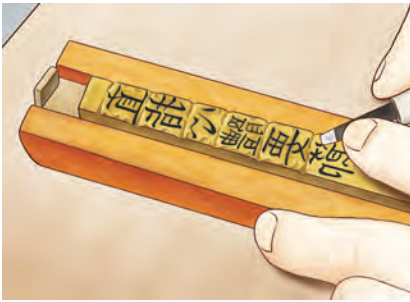
Wax typecasting can be summarized as follows:

1. Select the character style and the size
2. Make master characters with beeswax (蜜蠟父字): create the tree branch-shaped wooden mold from the character model first
3. Make the tree branch shape with beeswax
4. Decide on the angle of entry and passageway for liquefied iron
5. Choose materials to be used as the clay dough (埋沒材料) (Knead the clay mixture)
6. Fabricate the mold and melt the matrix
7. Liquefy and pour in the iron
8. Separate and trim the type pieces

Wax typecasting :



Melt the beeswax and pour it into rectangular shaped mold panel.



Place the paper with characters on to the wax bar and engrave the characters

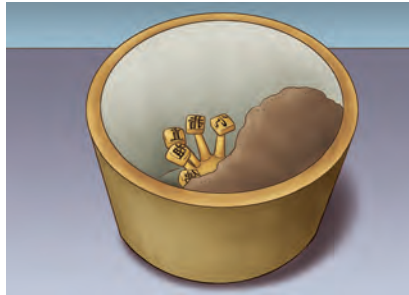


Cut the bar into each character piece.

Glue the character pieces to the tree branch shaped beeswax base by applying heat.



Cover the beeswax base with character pieces with clay to make a mold.



Once the mold is hardened heat the mold to melt the beeswax. Melted beeswax will pour out from the mold making a hollow space in the space of the base and character pieces.





Pour melted bronze into the opening of the mold to fill the hollow space.



Cool the bronze and break the clay mold.



Once the mold is completely broken the bronze tree branch base and character pieces will appear.

Using a metal saw
separate the character
pieces and trim them with
a file.



Finished type pieces



Records related to metal movable typecasting methods of Goreyo are scarce, but a relatively large number of records on the Joseon Dynasty's sand typecasting methods have been passed on. The most frequently quoted historical account in almost all

researches dealing with the latter is a record found in *Yongjaechonghwa* (慵齋叢話, Compilation of Essays by Yongjae) written by Seong Hyeon in the 16th century.⁶ This Joseon-period document is significant, since it contains a detailed record of the traditional movable typecasting process.

The typecasting process begins by inscribing various letters on a piece of beechwood. Next, soft clay mixed with sand found near the coast is spread uniformly and flatly on the printing plate (印板), and the wooden engraved letters (木刻字) are pressed on it to create impressions. After that, two printing plates are combined, and the melted copper alloy is poured into a hole so that the liquid fills in the concave section to form individual type pieces. The pieces are then trimmed several times.

The document also explains the titles and specifies the roles of the casting artisans.

- ① Gakjajang (刻字匠): the Master Wood Engraver
- ② Jujang (鑄匠): the Metal Casting Master
- ③ Sujang (守藏): the Master Keeper in charge of storing and maintaining the type pieces in the warehouse (藏櫃)
- ④ Changjun (唱准): the Master Orator who reads out the original writing (書草), is usually able to decipher all the characters

- ⑤ Sangpan (上板): the first typeset made after the master typesetter arranges the type pieces over the original writing
- ⑥ Gyunjajang (均字匠): the Master Typesetter in charge of justifying the typeset when aligning and fixing the type pieces, by filling up the void with bamboo, wood or scrape of paper so they do not shake
- ⑦ Inchuljang (印出匠): the Master Printer in charge of printing the embedded plat
- ⑧ Gaminjwan (監印官): the Master Printing Inspector who oversees the whole process, usually an officer from the Royal Ministry of Publication. A separate inspector, a civil administrative officer, was also appointed⁷

In the *Annals of Joseon Dynasty* made during King Jeongjo's reign, an entry about the casting process of Imjinja and Jeongyuja states:⁸ "in the gabin year of King Sejong's reign (1434) (the King) commanded Kim Don (金墩) and others to melt copper and cast movable types modeled (字本) after *Hyosunsasil* (孝順事實, Book of Filial Piety) and *Wiseoneumjeul* (爲善陰鷺, the Books on Merits and Demerits), commonly called Wibuinja (衛夫人字), there were 200,000 of them. During the reign of King

Seonjo, these types were refurbished (重修), and when the King (Jeongjo) was still residing in the crown prince's palace (春邸), he ordered his subordinates to amend Gabinja to cast 150,000 characters, known as Imjinja (壬辰字), and printed books such as *Gyeongseojeongmun* (經書正文, the Compilation of Four Books and Three Canons of Confucianism) and *Gyemongjipjeon* (啓蒙集箋, the Compilation of Zhu Xi's Works) using these characters while keeping them in Ungak (芸閣, the storage at the Royal Publication Ministry). In the same year he also ordered the former governor of Pyeongan province, Seo Myeongeung, to initiate casting 150,000 characters in Giyeong (箕營) based on Gabinja, known as Jeongyuja (丁酉字).” This confirms the facts surrounding the founding of Gabinja, used the most during the Joseon Dynasty, and the later re-cast Imjinja and Jeongyuja.

The research on the sand metal movable typecasting technique is based on these original documents and is being refined as more records are confirmed. Based on up-to-date research and experiments, the process can be recreated and summarized as following:



Once the mold is completely broken the bronze tree branch base and character pieces will appear.



Flip the bottom mold and arrange the movable type matrix on the bottom inside surface. Check the passage way of the liquefied iron and the size of the characters at this time, and make sure the letter surface faces upward.

Use a sand sieve to evenly cover the bottom area surrounding the movable type matrix.





Fill up the mold with sand and knock on the inside of the mold slightly or press down so the movable type matrix is fixed.



Fill the mold with sand up to the top and make it even using a line gauge.



Fill the bottom mold completely with sand and then flip it.

Lock the top mold with the bottom mold, snap the connective piece attached to the girth, and fill them with sand using the sand sieve.

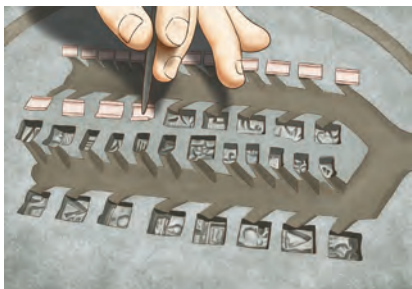


When the top mold is filled about halfway with sand, knock on it with a pounder to pack the sand hard and evenly. Once the sand fills the entire mold, level it with a line gauge.



Look at the flip side of the master-letters in the background and determine the direction, length and thickness of the passageway of liquefied iron and its branches. Paint the approximate passageway and its branches with a brush dipped in water. Dig the sand out according to the water marks using an engraver.





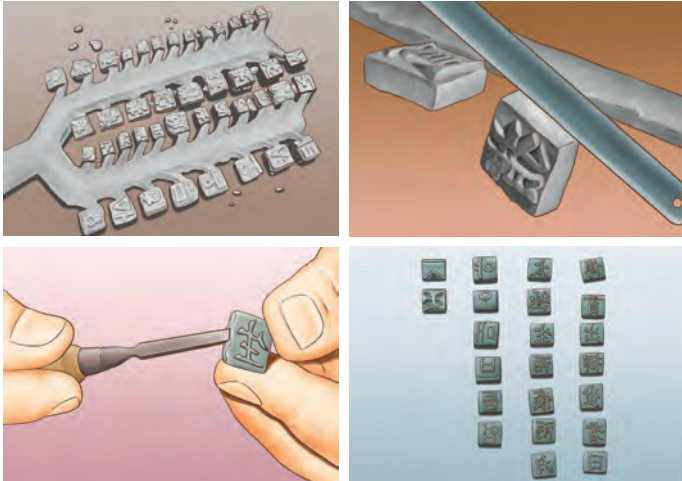
Poke the back side of the master-letters with an awl type of instrument while stroking it lightly and remove it vertically.



Apply heat to the passageway to reduce moisture and combine the top and bottom plates; fix them by connecting the hooks on the girth and position the prepared mold at an angle so the liquefied iron can flow easily.

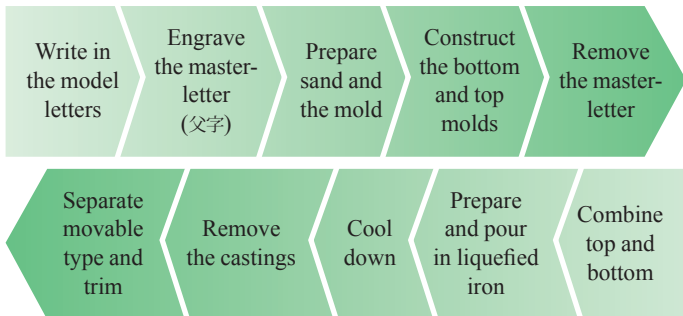


During the above process, melt the optimum amount and ideal alloy of copper, tin and others in a crucible to get it ready to be poured into the mold. The optimal temperature for the liquid alloy is about 1,200 degrees Celsius, and ingredients like lead, zinc and sulfur are supposed to be added five minutes before the liquid is poured.



Pour in the liquefied iron and wait until it cools down. Separate the mold and rub the iron branch section with an iron brush, or a tough brush of any kind, to make sure it is molded. Cut the type pieces away from the iron branch using an iron saw and complete the process by trimming the whole thing including the letter surface and the letter pole.

* The Sand Typecasting Process



◆ **Metal Movable Type Typesetting**

Once the casting is complete, the next step in printing is typesetting. Most research on this process involves searching for records and physical samples, and analyzing them or attempting to recreate the process through experiments. A recent study has tried to classify the development of typesetting techniques of metal movable types based on when it was refined. This happened during the reign of King Sejong, to raise printing efficiency and prevent the types from moving. As the result, the movable type became square and the bottom became completely flat. Instead of beeswax, wood pieces and paper scraps were inserted between the letters to prevent shaking, to even out their height and to line them up straight. The

development process for this technique, documented in the Annals of the Joseon Dynasty, may be outlined as follows.

㉑ When King Taejong first established Jujaso to produce big letters, he proceeded despite opposition from his court officials. ㉒ In the beginning, the manufacturing technique was not precise enough so beeswax was always spread under the plate (板), and the letters were fixed on it in the proper order every time a print was made. ㉓ Since beeswax is soft, the letters would be skewed to one side or severely crooked after a couple printings and had to be rearranged frequently, annoying the printer. ㉔ King Sejong commanded Yi Cheon to come up with a better plate; even though he considered it a difficult task, Yi Cheon used his wisdom and manufactured exact, uniform and solid cast types. ㉕ Although no beeswax was used for typesetting, the letters did not skew, even after multiple prints were made. ㉖ There was a high demand for copper and iron because many weapons were lost in the war in the north, and hardworking blacksmiths were scattered around the country. Yet the princes asked for the manufacture of bigger letters to print books, so resources and manpower had to be withdrawn. ㉗ Yi Cheon was appointed to oversee the whole process, and Kim Don from Jiphyeonjeon (the Royal Academy for

Scholars), Kim Bin, Jang Yeongsil, Yi Sehyeog, Jeong Cheok and Yi Sunji led the task. They manufactured more than 200,000 letters, using *Hyosunsasil* (孝順事實) and *Wiseoneumjeul* (爲善陰鷺) stored in the Royal Library as models. ④ Nearly 40 prints were made each day, the calligraphy of the prints appeared clean and exact, the work became much easier, and productivity doubled compared to previous efforts. The metal movable type used was Gabinja, part of a notable leap in the technological development of typesetting, typesetting and printing which occurred at the time.

The previously discussed typesetting order, according to the printing masters, can be explained in more detail:⁹

- ① Select the cheoluri (鐵弓里, iron casing) and cheolurichaekpan (鐵弓里冊板, iron casing book plate) according to the number of rows of letters.
- ② Depending on the shape of cheoluri, if it is double-sided, insert a thin bamboo piece inside the edge and setup the donginchal (銅印札, border).
- ③ Read the letters out loud in the proper order so the type pieces can be located. (Changjun, 唱準)
- ④ Pick up the letters called out by Changjun from the jajang (字穢, letter storage) using a pair of bamboo chopsticks, and arrange them in order on the sosapan

(小沙板, a plate without the grid). (Sujang member, 守穢諸員)

- ⑤ Move the plate with arranged letters onto the cheolurichaekpan. (Sangpan, 上板)
- ⑥ Align the gongmok (空木, quadrat) near the center of the plate, the eomi (魚尾, a fish tail shaped symbol marking the middle of a book plate used in the traditional way of printing), pansimje (版心題, title of the book marked in pansim (the center of the book plate) used in the traditional way of printing), sometimes Wooden block and/or wooden movable type (連刻活字), Gwoncha (卷次), and Jangcha (張次) movable types accordingly, and secure spaces by plugging in the gongmok.
- ⑦ Fix the height of the movable types, the spaces between the movable types and the border (銅印札) by inserting wet paper and jaganbakji (字間朴只, space wedge made of wood or bamboo) to prevent shaking. (Gyunjajang, 均字匠)
- ⑧ Secure the empty spaces by inserting quadrat.
- ⑨ After aligning the letters, make the plate even and uniform using the justifying plate.
- ⑩ Apply ink onto the completed plate and print. (Inchuljang, 印出匠)
- ⑪ Proofread the letters and inspect the print quality of

the initial print. (Gamgyogwan, 監校官)

- ⑫ The gyunjajang corrects the plate and movable types with jumuk (朱墨, cinnabar stick) and by sebo (洗補, proofreading). In general, the plate goes through first, second and third readings, and the proofreader's name is indicated.
- ⑬ Once the inspection is complete, the main printing assignment begins.
- ⑭ If another type is set while one plate is being printed, the two are printed alternately.

5. THE PUBLISHING ENTITIES OF KOREAN TRADITIONAL PRINTS

In addition to identifying a print's publication dates, a print's value can be enhanced through knowledge of the organizations that compiled and published it. Early printing relics of publishing entities like the central government and local society represent the broad and local social trends of the time. Therefore, substantial efforts are exerted in finding such relics.

◆ The Government Publications (官)

The two major publishing sources of early Korean prints are the government and private organizations. The quantity of government publications greatly outnumbered that of private ones. During the Joseon Dynasty, in particular, publications were initiated predominantly by the government. Books had different uses back then. They were not for sale; rather, they were the means of spreading the country's ruling philosophy. Published books including archive editions were distributed only to a few top officials and nobles, and as a result,

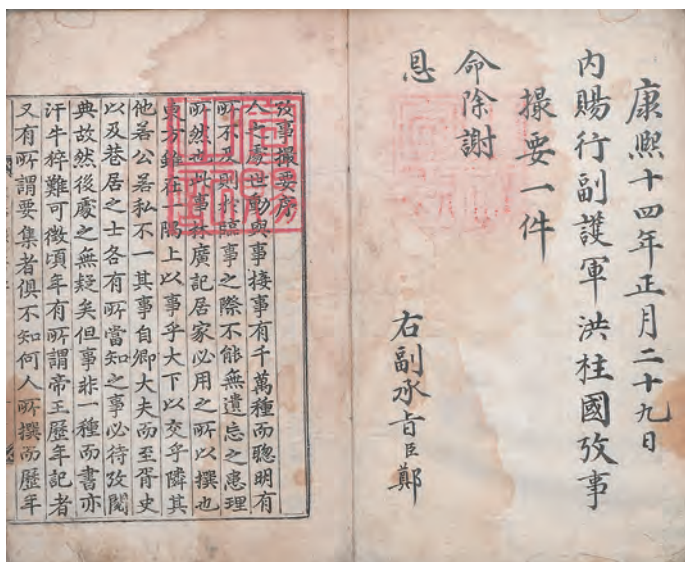


〈Figure 24〉 Jujaso: Reconstruction of Jujaso where printing blocks and metal types were manufactured during the Jeonson period

production and circulation were bound to be limited. The government of Joseon, founded on Confucian ideology, regarded publishing books as an effective educational tool and utilized it vigorously. The books published by the government were called gwanpanbon (官板本), and were mostly published by Gyoseogwan (校書館, the Central Government Publishing Agency). Even though publication was not their main task, Gwansanggam (觀象監, the Meteorological Agency), Sayeokwon (司譯院, the Central Translation and Interpretation Agency), Sigangwon (侍講院, the Royal Education Agency for the Crown Prince), and Naeuiwon (內醫院, the Royal Medical Clinic) published books for their own needs, and temporary institutions such as Chansucheong (撰修廳), Chanjipcheong (撰集廳) and Gyojeongcheong (校正廳) were established to publish books as needed. Gangyeongdogam (刊經都監), of the early Joseon Dynasty, chiefly published Buddhist canons, and Hullyeondogam (訓鍊都監) of the early 17th century were typical temporary publishing institutions, printing books using wooden movable type when resources were scarce due to war. At the local level, provincial officers such as Yeong Yeong (嶺營, Gyeongsang-do Provincial Officer), Wan Yeong (完營, Jeolla-do Provincial Officer) and Gi Yeong (箕營, Pyeongan-do Provincial Officer) took the leading role

in publishing. Although the quantity was not substantial compared to the government's output, private entities such as Buddhist temples and schools, as well as families and individuals published books. Even banggakbon (books for commercial sales) were published in the later period.

Since books were published for public purposes during the Joseon Era, the circulation of books by sale was not as dynamic as in China or Japan. There were several discussions about establishing a book store (書肆) after the 16th century; however, nothing came to fruition. It was not until the 19th century that books became widely available for sale and book stores started bustling. The books published by the government were distributed in the form of imperial gifts, not sold, and this ritual of the King awarding books was called bansa (頒賜). When awarded, the date of the award and the awardee's name were recorded on the inside of the front cover, and the record was called bansagi (頒賜記) or naesagi (內賜記). Primary recipients of these gifts included the history libraries (史庫) located on mountains like Jeongjoksan, Taebaeksan, Odaesan, and Jeoksangsan, major branches of the central and local governments, current and retired officials of the central government and local government officials. An early print with naesagi is called naesabon, and naesagi is recorded on the backside of its cover. The upper right



〈Figure 25〉 Naesabon and Naesagi

corner of the first page of the main content is always stamped with printing notes (印記) such as Seonsajigi (宣賜之記), Gyujiangjibo (奎章之寶), Dongmunjibo (同文之寶), Seonsadanbo (宣賜端輔), and Heummumjibo (欽文之寶). The fact that naesagi was recorded meant the book was published before the naesa date, and since bansa is usually done right after the publication, the naesagi year is sometimes assumed to be the publication date.

Where were books actually published during the Joseon Dynasty? There existed myriad publishing houses in the Joseon Era, in which, unlike today, in many cases printing and publication were not clearly differentiated. In case of the central government, the differentiation was recorded, but in most cases, Gyoseogwan was in charge of printing, and each individual publishing branch's name was mentioned or the book plate was stored. Several noteworthy institutions and publications will be discussed here according to the time of publication.

Joseon's ruling ideology was Confucian philosophy, yet during the King Sejo's reign, he established Gangyeongdogam to publish Buddhist canons, making it a national undertaking. Taking Daejangdogam (大藏都監) and Gyojangdogam (教藏都監) of the Goryeo Dynasty into consideration, the main branch was placed in the central government and local branches (分司) were established in

the provinces. Buddhist monks and Confucian scholars were both invited to the Dogam to translate Buddhist canons into Korean and conduct editing and printing. King Sejo sometimes added Gugyeol to the translation personally. The books published by Gangyeongdogam were made by the best printing masters using the highest-quality materials; they may be the best quality books produced at the time.

Gangyeongdogam only existed for a short time, yet it produced a large number of Buddhist canons. Gyoseogwan is known to have been the longest-maintained and largest publication institution. It was in charge of the central government's printing, and was given its official name of Gyoseogwan in 1484. The engraving and printing quality of the books published by the central government was superior, and the ones published by Gyoseogwan were classic examples. *Daejeonhusokrok* (大典後續錄) records itemized punishments for the printing masters when there were any mistakes in the book: for example, 30 lashings per error.¹⁰ This suggests the great efforts put into the book making process and helps explain why there are so few mistakes in the government publications of the early Joseon Dynasty.

Numerous books were published by government departments other than Gyoseogwan, even though their

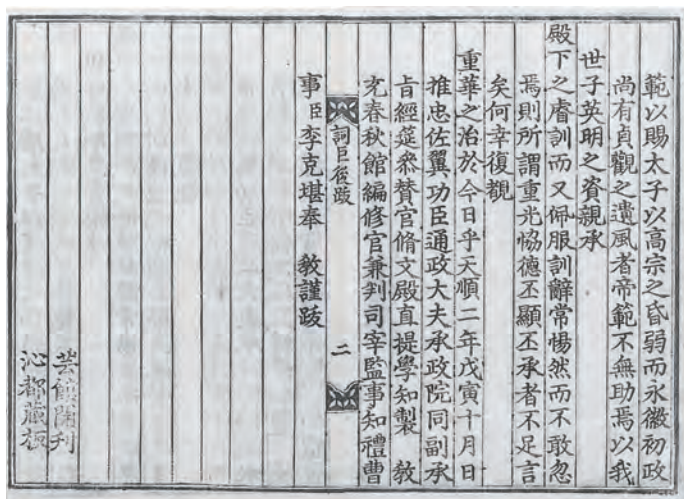


〈Figure 26〉 Neungeomgyeong published by Gangyeongdogam in the 15th century

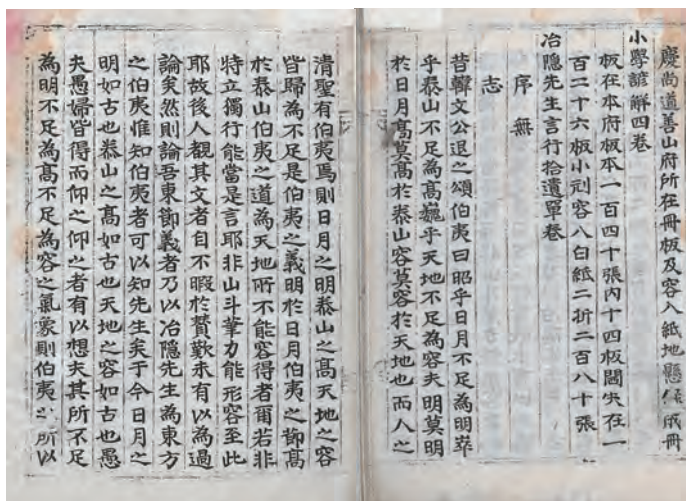
main task was not publishing. Gwansanggam (觀象監), the department designated for observing weather and astronomy, acted as a publishing institute. Gwansanggam's main tasks included astronomical and meteorological observations, the production of maps and selecting auspicious dates (taegil), and it also published calendars (冊曆) which it distributed every year. Since a high volume of calendars were published, the woodblock printing method was used in most cases, but many earlier calendars were published with metal movable type called Gwansanggamhwalja.

Sayeokwon (司譯院), in charge of translation and interpretation of foreign languages, published books as well. Workbooks for learning foreign language such as Chinese, Japanese, Mongol and Manchu were published; *Nogeoldae* (老乞大), *Baktongsa* (朴通事) and *Cheophaesineo* (捷解新語) are the most well known. Gangyeongdogam and Gyoseogwan were specialized publishing institutions, but other agencies like Gwansanggam and Sayeokwon published books according to their specific needs.

Although the topics were extremely limited, counting the number of plates engraved for woodblock printing shows that local government were as active publishers as the central government. Written records confirm there



〈Figure 27〉 *Gwangmyeojehunsa* first published by Gyoseogwan (Ungak) with movable type and reprinted with woodblock by Simdo (Ganghwabu) (Jangseogak, AKS)



〈Figure 28〉 A list of book plates indicating the books published by local governments

are 980 kinds of book plates maintained by the local governments by the end of the 16th century. After that, publishing was stalled temporarily due to the consecutive outbreak of wars: Imjinwaeran, Jeongmyohoran and Byeongjahoran. But it slowly started to resume from the late 17th century, and was once again flourishing by the beginning of the 18th century. This publication activities of the local government can be confirmed by the book plate lists such as *Gosachwalyo* (攷事撮要), *Nupango* (鑲板考) and *Jedochaekpanmokrok* (諸道冊版目錄). Among those, *Nupango*, which was compiled in the 20th year of the King Jeongjo's reign (1796), introduces not only government publications but also the books owned by the Buddhist temples, local schools and individuals.

◆ The Private Publications

During the Joseon Dynasty, publications were made by Buddhist temples, local schools, families and individuals, in addition to the government. The private publication activities of individual entities are as follows.

Publication activities by the Buddhist temples had been reduced considerably during the Joseon Dynasty compared to that of the Goryeo Dynasty, but they still made up a substantial portion of private publications. Often, Buddhist temples published Scriptures in form

of an offering by the members for blessing in addition to be used for memorial services and missionary works. In the early Joseon Dynasty, prints were re-engraved editions of the Goryeo Era, and in the 15th century, woodblock printings based on famous calligraphers' manuscripts were published. After the 16th century, temples made re-engraved editions of sachalpan (publications made by Buddhist temples) from the previous era, Gangyeongdogampan, the King's edition, the Royal editions and the Jujaso movable type editions. Of these, a few are original works: analects of famous high priests, anthologies and translated Buddhist canons, poetry collections and workbooks. The printing notes, the offerer's name and the name of the inscriber are indicated at the end of the sachalpan books; this helps understand the book making process and cultural milieu of the time.

Seowon is the most typical Confucian educational institute, publishing books on Confucianism, the people related to seowon and Confucian scholars. Some seowons published books from as early as the late 16th century: Cheongryangseowon (淸涼書院), Cheongokseowon (川谷書院), Myeonggokseowon and Imgoseowon. *Nupango* includes the list of wooden plates maintained by seowons and mentions that there were 184 kinds of re-engraved book plates in 84 seowons: the sewon in Gyeongsang-do

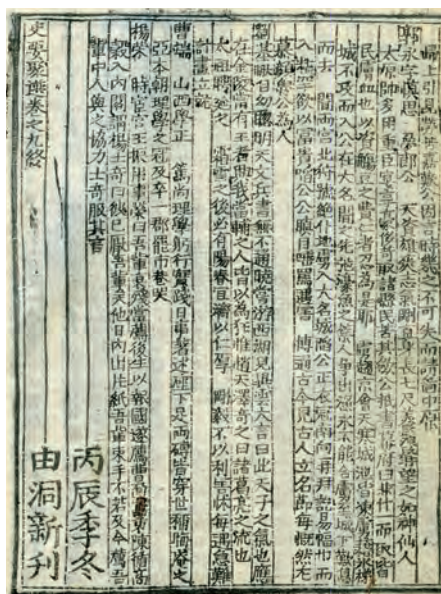
Province had 127 kinds; Chungcheong-do, 22; Jeolla-do, 21; Hwanghae-do, eight; Gyeonggi-do, Pyeongan-do, and Hamgyeong-do two each. The publications by seowons in general were relatively scarce and the quality of the printing was not as high as government publications.

Books published by families and individuals during the Goryeo Dynasty were chiefly Buddhist-related, whereas during the Joseon Dynasty, collections of poems, biographies and genealogy books were more prevalent. The publication of anthologies continued from the foundation of the Dynasty till the end, although personal anthologies from the early Joseon period are rare. From the latter part of the 16th century, analects (實記) and genealogy books (族譜) started to be published and became popular after the 18th century. These private publications are low-quality in terms of their engraving and printing levels, but they are indispensable relics reflecting the culture of that time.

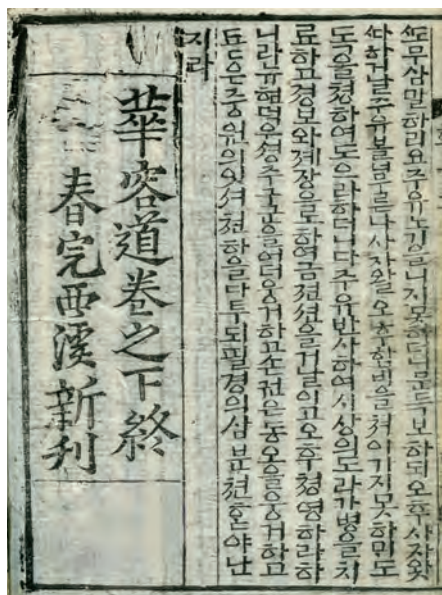
In the early Joseon Dynasty, books for sale were almost non-existent compared to adjacent China and Japan, and independent commercial bookstores were unheard of. There were persistent discussions on establishing a state-run book store of sort, seosa (書肆), but it never came to a fruition, causing a limited circulation of books in all of Joseon. However, after the Japanese

invasions in the late 16th century (Imjinwaeran), merchants selling books for money started to appear from the 17th century, multiplied during the 18th century and reached their heyday in the 19th century. Those books for sale were called banggakbon. Banggakbon is fundamentally different from previously-discussed books, since it was published for profit. In China commercial books appeared in the Tang Dynasty and were thriving by the Song Dynasty. The appearance of banggakbon in Joseon seems relatively late compared to China; this is because, as discussed earlier, from the foundation of the Dynasty the books functioned primarily to spread national ideology.

The heaviest quantity of banggakbon was published in Seoul area and they were called Gyeongpan (京板) banggakbon. There were also banggakbons from other areas: Wanpan (完板, Jeonju), Dalpan (達板, Daegu), Taeinpan (泰仁板, Taein), Geumseongpan (錦城板, Naju), and Anseongpan (安城板, Anseong). The genre of the published books consists of study materials for children's education, scriptures and history books for state entrance exams, poetry collections, ceremonial books, books on agriculture, books on medicine, letter manuals and Hangeul novels. These books are highly regarded as they helped educate the common people and expand the number of readers.



〈Figure 29〉 Sayoch wiseon, an example of Gyeongpan (京板) Banggakbon



〈Figure 30〉 Hwaryongdo, an example of Wanpan (完板) Banggakbon

The advancements and changes in the early printing technique are interrelated, reflecting both the evolution of their forms and social phenomena. The metal movable type, in particular, has revolutionized the means of communication and is one of the greatest inventions that changed the history of humanity. Metal movable type technology from the Goryeo Dynasty and early Joseon period played a critical role in the foundation of the Joseon Dynasty, which developed for the next 500 years by spreading more efficiently knowledge in all areas, including political, economic, social and cultural.

The printing technology of Korea has been improving since the 8th century Unified Silla Period, and the book plates and movable types are witnesses to it. Metal movable types can produce a much higher quantity of books of various kinds compared to woodblocks; however, because the cost of production was relatively high, and the government kept a strict control on the supply of metals, this method was not popularized like other printing methods, unfortunately. When it was critically necessary, the government disseminated knowledge and culture by printing and distributing books. Local governments and individuals that had difficulties accessing the metal movable type used the wood re-engraving method to produce reprints. This satisfied their cultural needs and

contributed to the circulation of knowledge at the same time.

More meticulous, profound research on metal movable type printing, typecasting technique and typesetting methods is in progress, and interest is expanding to the fields of documentary heritage and the history of science.

ENDNOTE

- 1 *Nihon Shoki* (日本書紀): entry made in March of 18th Year of Empress Suiko-tenno's reign.
- 2 Choi Jaeseok, *Shosoin sojangpumgwa tongilsilla* (The Collections of Shosoin and Unified Silla) (Seoul: Iljogak, 1995), pp.588-610.
- 3 According to a research from North Korea, a mural in Anak tomb number three, which recorded ink in the year 375, shows a government official holding a scroll, and paper dated to the 4th century made of hemp was excavated from an archeological site in Guksabong of Daeseongsan mountain in Pyongyang. Refer to Ri Cheolhwa, *Joseonchulpanmunhwasa* (Joseon's Publication History) (Pyongyang: Sahoegwahakchulpansa, 1995), p.26; see also The Illustrated Book of Ruins and Relics of Korea Compilation Committee, *Bukhanui munhwajaewa munhwayujeok I Goguryeopyeon* (Cultural Assets and Sites in North Korea, vol. 1 Goguryeo) (Seoul: Seoul National University Press, 2000), p.37.
- 4 DoJongueui, "Cheolgyeongnok," Chapter 29, Charcoal Section.
- 5 The Illustrated Book of Ruins and Relics of Korea Compilation Committee, *Bukhanui munhwajaewa munhwayujeok I Goguryeopyeon* (Cultural Assets and Sites in North Korea, vol. 1 Goguryeo) (Seoul: Seoul National University Press, 2000), p.37.
- 6 成倪, 慵齋叢話. 卷7. '鑄字'條. 太宗於永樂元年 謂左右曰 凡爲治 必須博觀典籍...大抵鑄字之法 先用黃楊木 刻諸字 以海浦軟泥 平鋪印板 印着木刻字於泥中 則 所印處凹而成字 於是合兩印板 鎔銅從一穴瀉下 流液分入凹處 一一成字 遂刻剔重複而整之...
- 7 成倪, 慵齋叢話. 卷7. '鑄字'條 刻木者曰 刻字匠 鑄成者 曰鑄匠 遂分諸字 貯於藏櫃 其守者 曰守藏 年少公奴爲之 其書草唱准者 曰唱准 皆解文者爲之 守藏

列字於書草上 移之於板 曰上板 用竹木破紙 填空而堅緻之 使不搖動者 曰均字匠 受而印之者 曰印出匠 其監印官 則校書館員爲之 監校官則 別命文臣爲之...

8 正祖實錄第4卷. 正祖元年 8月丙申條. 鑄字成 鑄字成 世宗甲寅 命金墩等以孝順事實. 爲善陰陽字範銅爲字 凡二十餘萬字 俗稱衛夫人字是也 至宣廟朝 重修其字 上在春邸 命宮僚 校正甲寅字 鑄十五萬字 藏于芸閣 印行經書正文. 啓蒙集箋 是爲壬辰字 是年 命前平安監司徐命膺 開鑄箕營 以甲寅字爲本加鑄十萬字以進 是爲丁酉字 至是教曰 重臣前後勤勞甚著 從此可以壽傳 我英廟之志事於幾千百載 豈是等閒勞役之比 況有已例者乎 且此重臣 卽予春宮舊賓 今又爲同休戚之人 而至於要地 予不强勉 其宜置之閒局 前監司徐命膺特陞判中樞階 仍復除奎章閣提學.

9 Nam Gwonhi, “Joseonsidae geumsokhwalja jujowa jopane gwanhan yeongu (A Study on Metal Movable Typecasting and Typesetting during the Joseon Period),” *Gabinjawa hangeulhwalja*(Gabinja and Hangeul Movable), Cheongju Early Printing Museum, 2007.

10 『大典後續錄』卷3 禮典雜令條. “...書冊印出時 監印官監校官唱準守藏均字匠每一卷一字誤錯者 笞三十每一字加一等 印出匠每一卷一字 或濃墨或熹微者 笞三十每一字加一等 竝計字數治罪 官員五字以上罷黜 唱準以下匠人論罪後削任五十竝勿揀赦前”

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GLOSSARY

Anseongpan (安城板, Anseong)	Commercial books published in Anseong, Gyeonggi Province, in the 19 th century
<i>Baekunhwasangchorokbuljojikjisim cheyojeol</i> (白雲和尚抄錄佛祖直指心體要節)	The Hymn of Monk Baekun and Identification of the Buddha's Spirit by the Practice of Zen. It is currently the world's oldest book.
Bansa (頒賜)	Books given by the king
Bansagi (頒賜記)	The record of books given by the king
Beongakbon (翻刻本)	Reproduced edition
Bogakbon (補刻本)	Complimentary edition
Chaekpan (冊板)	Wooden plate
Changjun (唱準)	Master Orator who reads out the original writing (書草), is usually able to decipher all the characters.
Chanjipcheong (撰集廳) or Chansucheong (撰修廳)	A special tool made for the compilation of a special book
Vheoluri (鐵圀里)	A rectangular metal frame, a tool used in the book printing
Chogakbon (初刻本)	First engraved edition
Choganbon (初刊本)	First edition

<i>Daebangwangbul Hwaomgyeong</i> , written on white paper in ink (白紙墨書 大方廣佛華嚴經)	Currently the oldest sacred book (sagyeong) written with ink brush produced in 755 in Korea. It records the process of paper making.
Daehyeongbon (大型本)	Large size edition
Daejabon (大字本)	Large letter edition
Daejangdogam (大藏都監)	Special office established for the production of the Tripitaka Koreana
<i>Daemyeongnyuljikhae</i> (大明律直解)	The Great Ming Code. A book printed with wooden movable type in the early Joseon. It is currently the oldest wooden movable type print although the genuine article does not exist.
Dalpan (達板)	Commercial books published in Dalseong (Daegu), Gyeongsang Province in the 19 th century.
Dohwalja (陶活字)	Ceramic porcelain movable types
<i>Donggukhusaengsinrok</i> (東國厚生新錄)	The New Report on Korean Welfare. An encyclopedia compiled in the 19 th century recording the techniques of casting metal and clay types
<i>Donggukisanggukjip</i> (東國李相國集)	A book written by Yi Gyu-Bo documenting the books printed with metal types in the 13 th century
Donginchal (銅印札)	One of the tools used in book printing. It is a metal stick made for printing a line that denotes a border in the middle of the text.
Dongmunjibo (同文之寶)	A royal seal for books given by the king. The seal is stamped on the first page of the book. There are different versions.

<i>Dongmyeongseonsaengjip</i> (東溟先生集)	Collected Poems of Teacher Dongmyeong. A book written by Kim Se-Ryeom (1593-1646) and printed with earthen movable types
Eomi (魚尾)	A fish tail shaped symbol marking the middle of a book plate used in the tradition way of printing
Gabinja (甲寅字)	Metal movable types created in 1434. Among the metal movable types, they were used the longest.
<i>Gaegukwonjonggongsinnokgwon</i> (開國元宗功臣錄券)	Certificate of Titles and Rewards for the Contributors for the Foundation of the Nation. It is currently the oldest wooden movable type print book among the Korean antique books as it was printed in 1395.
Gakjajang (刻字匠)	Master wood engraver
Gamingwan (監印官)	Master Printing Inspector who oversees the whole process, usually an officer from the Royal Ministry of Publication. A separate inspector, a civil administrative officer, was also appointed.
Gangyeongdogam (刊經都監)	Special office established for the publication of Buddhist scriptures during the reign of King Sejo
Gangyeongdogaman	A general name for Buddhist scripture printed by Gangyeongdogam
Geumseongpan (錦城板)	Commercial books published in Geumseong (Naju), Jeolla Province
GiYeong (箕營)	Pyeongang-do Provincial Officer

<i>Gogeummyeongyu</i> (古今名喻)	The Classic Epigrams of China. The book known to be printed with earthen movable types
Gongmok (空木)	Quadrat
<i>GosaSinseo</i> (攷事新書)	Fresh Notes Made According to Events of Long Ago: An encyclopedic style book compiled by Seo Yu-Gu in the 18th century. It can be considered to be a revised edition of Gosachwalyo.
<i>Gosachwalyo</i> (攷事撮要)	The first encyclopedia of Joseon compiled by Oe Suk-Kown in the 16 th century. It was revised several times by the 18 th century. The 16 th century editions had records of chaekpan.
Gwanpanbon (官板本)	A general term referring to the books published by the central government or regional governmental offices during the Joseon period
Gwansanggam (觀象監)	Meteorological Office
Gyemija (癸未字)	Metal movable types made in 1403. They are the first Joseon metal movable types.
Gyeongjaja (庚子字)	Metal movable types made in 1420. The way they are set during print press was greatly improved.
Gyeongpan (京板)	Commercial books published in Seoul in the 19 th century
<i>Gyeongsejojeongmun</i> (經書正文)	Compilation of Four Books and Three Canons of Confucianism

<i>Gyojangdogam</i> (敎藏都監)	Special Office overseeing the engraving project of National Preceptor Daegak (Uicheon)
Gyojeongbon (校正本)	Revised edition
Gyojeongcheong (校正廳)	Special administrative office established to edit and support the book compilation in the Joseon period
Gyonihwalja (膠泥活字)	Clay movable types
Gyoseogwan (校書館)	Central Government Publishing Office
Gyujangjibo (奎章之寶)	A royal seal stamped on the first page of books given by the king. It was used after the establishment of Gyujanggak by King Jeongjo.
Gyunjajang (均字匠)	Master Typesetter in charge of justifying the typeset when aligning and fixing the type pieces, by filling up the void with bamboo, wood or scrape of paper so they do not shake
Heummumjibo (欽文之寶)	One of the royal seals used to stamp the first page of the book given by the king
Heungduksaja (興德寺字)	Metal movable types used to print Jikji in 1377. Jikji was printed at Heungdeok Temple, Cheongju, Chungcheong Province.
Hullyeondogam (訓練都監)	A military organization established in the Joseon period that contributed to the development of print culture by making wooden types in the 17 th century
<i>Hunmongjaheo</i> (訓蒙字會)	Chinese Character Textbook for Children

Hushoaebon (後刷本)	A general term referring to books that were reprinted some time after the first print. Often times, the original book plate was preserved and used for reprinting.
<i>Hyosunsasil</i> (孝順事實)	Book of Filial Piety. A Chinese book that used the fonts of Gabinja in early Joseon
Imjinja (壬辰字)	Metal movable types made in Pyeongyang in 1777 and used by Gyoseogwan for printing. Around 150,000 types were produced and many pieces still remain.
Inchalgongchaekpan (印札空冊板)	Wooden plate marking the rectangular frame and line borders. A printing tool used to make notebooks in late Joseon. Many of hand-written documents used these notebooks.
Inche (印槌)	Printing sieve
Inchuljang (印出匠)	Master Printer in charge of printing the embedded plate
<i>Jabidoryangchambeopjiphae</i> (慈悲道場懺法集解)	The Collection of Prayers for Mercy. A book printed with the wooden production of Jikji, the oldest metal movable type print
Jaganbakgi (字間朴基)	Space wedge made of wood or bamboo
<i>Jedochaekpanmokrok</i> (諸道冊版目錄)	Records of the list of book plates stored by regional governmental offices
Jeongyuja (丁酉字)	Metal movable types made in 1772 and used for printing by the central government. Around 150,000 types were produced but were destroyed by fire in 1857.

Jeungdogaja (證道歌字)	Jeungdoga type piece. Metal movable types used to print Nammyeongcheonhwasang songjeungdoga in the 13 th century. Recently, genuine articles of the metal movable types were found.
Jiphyeonjeon (集賢殿)	Royal Academy for Scholars
Juja (鑄字)	A general term referring to the casting of metal movable types or metal movable type itself
Jujabon (鑄字本)	Metal type edition
Jujiang (鑄匠)	Metal casting master
Jujaso (鑄字所)	Central office established in early Joseon to manage the movable types and printing along with Gyoseogwan
Jumuk (朱墨)	Cinnabar stick
Junggakbon (重刻本)	Re-engraved edition
Maguri	Wooden bumper placed on two sides of book plates for protection
Mengqibitan (夢溪筆談)	Collection of Things Seen and Heard. Book written by Bi Sheng (Pil Seung in Korean) of Song China. It contains the description of the Gyoniwhalja printing method.
Mokhwaljabon (木活字本)	Wooden movable type print
<i>Mugujeonggwangdaedaranigyeong</i> (無垢淨光大陀羅尼經)	Buddhist scripture found inside the Seokgatap stupa of Bulguksa Temple in 1966. Printed before 751, it is the oldest wooden plate print.

<i>Munjayujip</i> (文字類輯)	Collection of Various Chinese Idioms
Naesagi (內賜記)	Records of the books given by the king. Same in meaning with Bansagi
Naeuiwon (內醫院)	Royal Medical Clinic
<i>Nammyeongcheonhwasangsongjeongdoga</i> (南明泉和尚頌證道歌)	Buddhist scripture of Goryeo known to have been printed with metal movable types in 1239. Currently the reproduced edition of metal movable types still exist and recently genuine articles of the metal movable types are found.
Neunhwapan (菱花板)	Wooden plate used to make embossed patterns on the covers of Korean antique books
<i>NongShu</i> (農書)	Agricultural Treatise. Book written by Wang Jeong of Won China. It contains the description of the wooden movable type printing method.
<i>Nupango</i> (鑲板考)	Book compiled by Seo Yugu by the order of King Jeongjo. It shows the situation of the wooden plate printing in 18 th century Joseon as it records the list of book plates stored by regional governmental offices and private Confucian academies.
panhabon (版下本)	Book hand written in great care right before the engraving of wooden plate for the production of wooden plate print book
Pansimje (版心題)	Title of the book marked in pansim (the center of the book plate) used in the traditional way of printing
Pohwalja (匏活字)	Movable types made of gourd

<i>Sangjeongyemun</i> (詳定禮文)	Authentic and Detailed Code of Etiquette. 13 th century metal movable type print book mentioned in Yi Gyubo's Donggukisanggukjip. The genuine article has not been found yet.
Sangjeongyemunja (詳定禮文字)	Metal movable types assumed to have been used to print Sangjeongyemun
Sayeokwon (司譯院)	Central Translation and Interpretation Office
Sebo (洗補)	Proofreading. Another term for editing. It was used for print books in early Joseon.
Seojeokwon (書籍院)	Office responsible for book publication in the late Goryeo period
Seokgatap stupa (釋迦塔)	Stupa of Bulguksa Temple, Gyeongju. Mugujeonggwangdaedaranigyeong was found inside the stupa during its repair in 1966.
Seokinbon (石印本)	Lithography
Seonsajigi (宣賜之記)	Royal seal stamped on the first page of books given by the king. It was used till the reign of King Yeongjo in the Joseon period. After the reign of King Jeongjo, Gyujanggakjibo is often used.
Seopan (書板)	Wooden plate for calligraphy practicing
Seosa (書肆)	Book store that also functioned as a publishing company in the traditional period
Sigangwon (侍講院)	Royal Education Office for the Crown Prince

Sijeonjipan (詩箋紙板)	Wooden plate for making letter paper. Fancy writing, painting or design can be engraved for color printing.
Singuseorim (新舊書林)	Publishing company and book store established in Seoul in 1887
<i>Sininsangjeongyemunbalmi</i> (新印詳定禮文跋尾)	Epilogue written by Yi Gyubo for Sangjeongyemun. It is found in Donggukisanggukjip and reveals the situation of the 13 th century metal movable type printing.
Sinmungwan (新文館)	Publishing company established by Choi Namseon in 1908
Sohyeongbon (小型本)	Small size edition
Sojabon (小字本)	Small letter edition
Songyeonmuk (松煙墨)	Pine charcoal ink
Sujang (守藏)	Master Keeper in charge of storing and maintaining the type pieces in the warehouse
Tabon (打本)	Dabbed print
Taeinpan (泰仁板)	Commercial books published in Taein, Jeolla Province between the late 18 th century and early 19 th century
Tajainbon (打字印本)	Typeset printing
Takinbon (拓印本)	A book consisted of rubbed prints made by rubbing papers with ink on tombstones, roof tiles, and inscriptions

Tapbon (榻本)	Another word for takbon (rubbed print)
Jajang (字藏)	Letter storage
Tohwalja (土活字)	earthen movable type
Wibuinja (衛夫人字)	Another name for Gabinja. Gabina is called by this name because it resembles the writing of Wang Xizhi (Wang Huiji in Korean). Wibuin (Lady Wi or Wei Shuo in Chinese) is mother of Li Chong of Qin China and the teacher of Wang Xizhi.
Ungak (芸閣)	Another name for Gyoseogwan which is the central office responsible for the book publication in the Joseon period
WanYeong (完營)	Jeolla Provincial Officer
Wanpan (完板)	A term referring to commercial books published in Jeonju, Jeolla Province. Recently, the term includes books published by governmental offices in Jeonju.
Wiseoneumjeul (爲善陰鷲)	Chinese book printed with fonts of Gabinja of early Joseon
YeongYeong (嶺營)	Gyeongsang Provincial Officer
Yeonginbon (影印本)	Photo printing
Yongjaechonghwa (慵齋叢話)	Journal by Seonghyeon (1439-1504) recording various aspects of life. It contains detail records of Joseon type printing.
Yuinbon (油印本)	Mimeography

Yuripan (琉璃版)

Collotype

Yuyeonmuk(油煙墨)

Plant oil charcoal ink

SOURCES

Photos	Sources
Seal for enclosure	National Museum of Korea
Inscription on Yeongachilnyeomyeong geumdongyeoraepsang	National Museum of Korea
Part of Hwaemseokgyeong	The Academy of Korean Studies
<i>Baekjimukseodaebanggwangbulhwaemgyeong of Silla</i>	Leeum, Samsung Museum of Art
Silla ink stick	Gyeongju National Museum
Writing brush of the Three Kingdoms period	Gaya National Research Institute of Cultural Heritage
White porcelain Ink-tablet	Buyeo National Museum
<i>Mugujeonggwangdaedaranigyeong</i>	Central Buddhist Museum
The first part of <i>Bohyeobindaranigyeong</i>	Central Buddhist Museum
<i>Nammyeongcheonhwasangsongjeungdoga</i>	Samsung Museum of Publishing
<i>Gaegukwonjonggongsinnokgwon</i>	Donga University Museum
Wooden Movable Type Print Published in Naju in the 17 th Century	Korea University Library
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Tools for making wooden movable types	Samsung Museum of Publishing
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A print of Gyemija cast	Cheongju Early Printing Museum
A print of Gyeongjaaja cast	Cheongju Early Printing Museum
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<i>Gwangmyeojehunsa</i>	Jangseogak at The Academy of Korean Studies
A list of book plates indicating the books published by local governments	Jangseogak at The Academy of Korean Studies

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