

Early Printing History in Japan

Akihiro KINOSHITA*

(Kyushu Sangyo University)

Abstract

First printing media in Japan is one million of little pagodas-Hyakumatou-Dharani-published in AD 770.

There is the oldest printing matter existing in the world.

It exists to the matter which the saving condition is bad from good printing matter by this Hyakumantou-Dharani preserving 3076 volume in Horyu Buddhist Temple in Nara Prefecture at present.

Is printed the Hyakumantou-Dharani Pagodas by stamp system or block system and metal or wood materials?

In West Branch of the Japanese Soc. of Printing Science and Technology these research results were opened to public in 1987.

However, these are many uncertain circumstance on this printing system.

The Tensho-Kenou Boys Mission had introduced metal type printing which Johannes Gutenberg invented from Portugal to Nagasaki in Japan at 1611.

The publications that it called this the Amakusa edition had printed it in the metal type, and they exist in all over the world.

Since the Christianity was forbidden in these period, Amakusa Book of the 13 volume for 6 years was published to the Macao exile of 1597.

It is based of the metal type printing in the establishment of the letterpress manufacture by Shouzou Motoki in 1869.

He thought that future development of Japan consists with printing technology and purchased printing machine, metal type, printing ink and paper from the Netherlands ship.

The printing technology was widely spread by the research of the electroplate matrix.

From China, Korea and Europe, the metal type printing technology in Japan was mainly accepted like this and succeeded with industrialization.

1. Introduction

Japan has a long tradition of printing and publishing which goes back to the earliest times.

In AD 770 one million small wooden pagodas were made each containing a short passage of Buddhist scriptures printed with metal plates or

wood-block plates for printing.

There are the world's oldest samples of print.

The West Branch of the Japanese Society of Printing Science and Technology⁽¹⁾ has been making a special study of these printing methods for the past 40 years.

For example the scientific research of these

printing methods include letters, materials, platemaking, printing process, ink and paper, etc.

But still I can not tell whether they were printed by wood-block printing method or metal plate printing.

At present I have not yet come to conclusions.

The Gutenberg's technique of movable-type printing was introduced from Portugal to Nagasaki in 1590.

13 volumes of "the Bible and etc." were printed and published at Amakusa in Kyushu for 6 years.

At this time the matrix had been developed by the type-casting technique (2).

Unfortunately these printing technique were lost with the exile of the early Christians in Japan.

These precious books of the Amakusa edition are preserved all over the world.

It was in 1869 that the movable-type printing had been established in Japan for the first time.

Shozou Motoki was an interpreter of Dutch and had relation with the Netherlands.

He thought that the printing was important for the future development of Japan. He bought a printing machine and sets of types from Netherlands. After making improvements on them, he made Japanese printing types. With the rapid advancement of Japanese scientific industry in the Meiji era, Japanese movable-type printing had been developing (3).

2. Buddhist scriptures in "One million small wooden pagodas"(Hyakumantou Dharani)

One million small wooden pagodas were made each containing a short passage of Buddhist scripture.

The Emperess Shotoku of the Nara era ordered the making of the pagodas and Buddhist scriptures, and alloted a share of them to the Horyuji temple and 9 others provincial temples. (Fig. 1) The Horyuji temple has 3076 scriptures at present. There are 4 kinds of scriptures.

Every scripture of yellowish hemp paper has

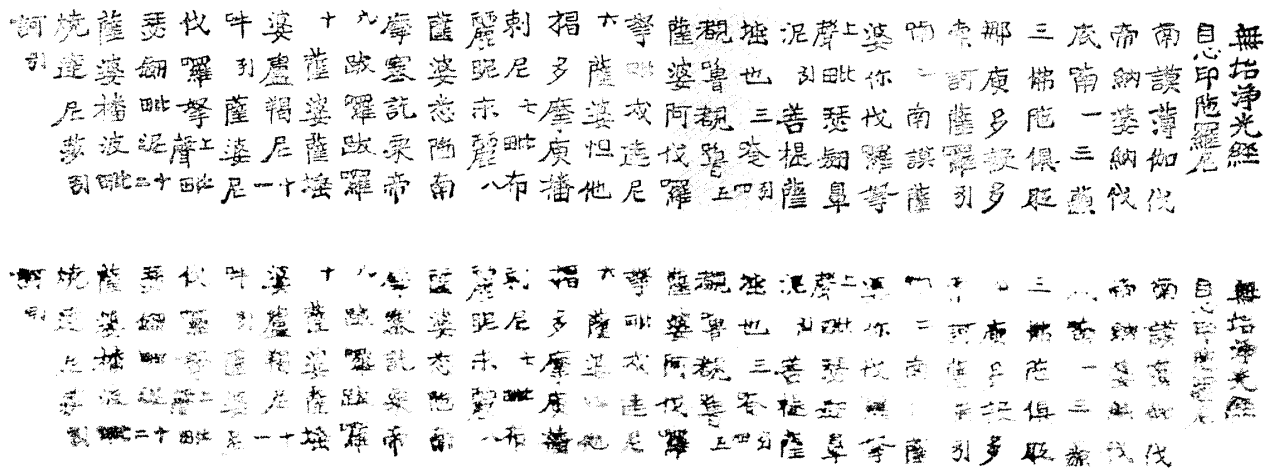


Fig. 2 Jishinin was printed by metal plate with ink upper;conventionl, lower;aqueous ink(from ref.1)

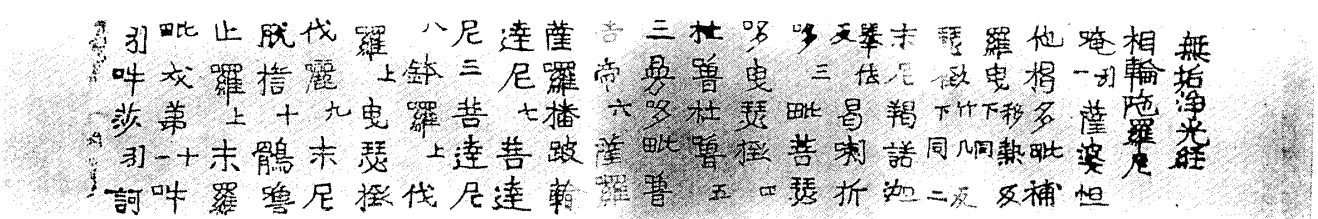


Fig. 3 Sourin scripture original(from ref.1)

two kinds, long and short editions, thick ones and thin ones in roll paper state.

There are a lot of fragments. The width of sutra averages 5.4 cm and it ranges from 4.6 cm to 6.0 cm. The length of sutra varies from 26 cm to 56 cm. The sutra seems to be cut off after Buddhist scriptures were printed, and there is the possibility of its being cut according to the length of sutra.

The grain of wood can not be found. There is a discussion of whether wood engraving or metal plate has been used on these Buddhist scriptures. It is also uncertain whether stamp system or fixation system had been used on these editions.

However, it has been proven to be a system for cutting off the top and bottom, after it was printed by adding the paper.

After all, it is whether metal plate of the size was able to cast in old those days, it was cut off, after Buddhist scriptures were printed by succeeding paper.

In the experiment of the Society, the Buddhist scriptures were changed to wax from the actual size of wood engraving, the electro plate was produced.

The printing was done by printing ink and Indian ink of aqueous property.

The result is shown in Fig. 2. Fig 3 shows Buddhist scriptures of Jishinin sutra that have been preserved in the Horyuji Temple.

Judging from the Hyakumantou-Dharani sutra it is not known whether the printing was produced from a metal plate.

However, the wood engraving specialist has intuitively decided that it may be a wood engraving.

However, there is no trace of the grain for the printed matter in the sutra.

From these results, it is still unclear whether wood engraving or metal plates have been used.

We will have to be established the research

program for One Million of Little Pagodas, Hyakumantou-Darani scriptures.

3. Amakusa Edition

The Tensho-Kenou Boys Mission left Nagasaki in 1582. They had been to Rome and returned home 8 years later.

At that time the Mission brought back to Japan with the metal type, its casting machine and the printing machine which were invented by Gutenberg, with a view to publishing the teaching books mainly used in the Collegio, (the missionary training college), and then the printing factory was established there.

There was the Collegio for the purpose of training of the christianity person at Kazusa in Nagasaki in 1590. In this printing factory, the book of "Santosu no Gosagyō no Uchinuki" was published in 1591.

This book was printed in movable-metal type printing of Roman characters and was printed by Gutenberg's press in Japan for the first time. The type of this Roman character is lead, which missionary Alexandro Valegnani brought back from Macao and he also had some Italics characters and some matrix.

The Collegio and printing factory were moved to Amakusa islands the next year, because it was safer location.

Amakusa edition of 13 volume were published in this Amakusa islands from 1592 to 1597.

The most famous edition was "Heike stories". It was used metal type with Roman characters. This "Heike stories" was edited and has been published by the Roman character in Japanese reading. This original book is preserved at the British Museum in London.

The "Dochirina Kirischitan" published in 1592 was the doctrine book, and a part of wood type in the printing was used.

In this Amakusa islands it had succeeded in casting European metal type of Roman and Italics characters.

The Italics type face characters appeared in “the Latin Dictionary ” at the same year. For the metal type production more than 2000 as the father patterns were made. It seemed to make the punch matrixes from father patterns.

A Japanese metal type face was completed in 1597.

This type is used for the book of the Japanese translation “Sarubadoru Munji” published in Nagasaki in 1598.

In the publication of the early christian 's books in Japan to the exile in 1611, it is included 1 volume at Kazusa, 13 volume in Amakusa and 14 volume in Nagasaki.

These publications included religious books, dictionaries and literature. By the type character, the alphabet books were 18 kinds, Japanese books 12 kinds.

The cast of the Japanese type was done secretly in Nagasaki and the size of the type ranges from 16 pt. to 22pt.

The type is a cursive type of writing (chinese characters).

The christians edition including Amakusa edition had been brought by Constantino Drados accompanied with Tensho Kenou Boys Mission. About 40 craftsmen were working in the printing factory of the Collegio in those days.

It seemed that each worker had a particular areas to work in sculpture, type casts and printing. The Jesuit Mission admired Japanese printers for their skillfulness and quick learning ability.

4. Shouzou Motoki

The Japanese movable-metal type printing originated in Nagasaki. About 240 years had passed since the end of the movable type printing of the

early christianity.

Japan's national isolation policy prevented it from having contacts with foreign countries. In those days there were lot of desires to pursue learning and knowledge in Japan.

Shouzou Motoki was born in 1848, when he was 12 years old, he become a trainee of the Netherlands interpreter.

At 24 years old he made up his mind to make a printing factory.

In 1848 Dutch ship arrived in port of Nagasaki with Gutenberg's printing machine and one set of metal type.

Dutch books were reprinted in the Japanese National Printing Factory in 1855. And also the Dutch Factory was established in Nagasaki Dejima in 1858, and the foreign printing system was started.

He kept studying the Japanese metal type, and established the private typographic shop in 1868.

He studied the electro matrix and type casting technology under William Gamble's guidance.

In addition, he adopted the Chinese Mincho type in face character, and made up this size of the Gou number type.

He founded his private factory in Nagasaki, and the printing of Japanese metal type was started.

5. Outline of Early Printing History

The technology to preserve the ancient Buddhist scriptures such as Hyakumantou Dharani, one million small wooden pagodas scriptures (AD770) will have to be developed if this treasure is going to be passed onto the next generation.

The christians editions in Kazusa, Amakusa and Nagasaki had established that the publication activity in Japan between 1591 and 1611 left great achievements in printing cultural history.

Nariakira Shimazu, a feudal lord in Kagoshima district intended to do the reproduction of the En-

glish grammar book from the Netherlands language Dutch, "Engelische Spraak Kunst".

Nariakira Shimazu asked Kahei Kimura, an engraver of wood-block, to make Japanese metal type in the Edo Era.

Kahei Kimura spent the rest of his life making for the metal type.

Malco de Lo from the Paris Mission Church in France, came to Nagasaki to do missionary work in 1868. He had already acquired the method of lithographic printing.

He introduced lithography to Japan. In 1867, the agricultural calendars were printed in lithography for the first time in Japan.

Thus, Japanese printing practices have been introduced from overseas.

The Japanese have brought about many improvements from one million small wooden pagodas scriptures to the metal type by Shouzou Motoki as well as lithography methods while making remarkable progress in the printing art & technology.

6. The Beginning of Printing Media

Paper was invented by Tsai Lun in China by the publication media.

This technique of paper making took 1000 years to travel from China to Europe.

There are three steps in the development process of the print media.

The first step progressed individually each country.

That is say, in Korea there were the metal movable types, Mukujoukou Daidharani and Hachimandaizou scriptures, in China the movable type of Pyijen, and in Japan the one million small wooden Pagoda scriptures.

The invention of the Gutenberg's printing technique was developed in Germany.

In the second step, these inventions had propagated to other countries.

It is not too much to say that the propagation established the printing technique in each country.

The third step, new publication media⁽⁴⁾ of today is the DTP which began in 1985 in U.S.A..

We must study the new publication media for the future.

At the same time we must preserve the printed matter which there is a value as being old.

7. Print Media in Each Country

7-1 The One Million Small Wooden Scriptures

In India and China, there is a custom where small wooden Pagodas are made for religious services.

In 770 AD there was an epidemic of cholera and serious domestic problems. The Empress Shotoku wanted to settle them and ordered the making of the one million pagodas.

Scriptures were put inside them. She hoped for a peaceful country. (Fig. 4)

In Korea the Mukujoukou scriptures were found in the stone tower of the Bukokuji Temple. These scriptures are older than the one million small wooden Pagoda scriptures. (Fig. 5)

7-2 Hachiman-Daizou Scriptures

Though these scriptures were published in 1100, they disappeared during Mongolian raids.

In 1236 Koryo made 81,340 wooden engraving plates.

The purpose was the elimination of the foreign enemy from Korea and to return to a country of peace.

The author went to an investigation in kampher island.

(Fig. 6, 7)

The wooden engraving plates were fully pre-

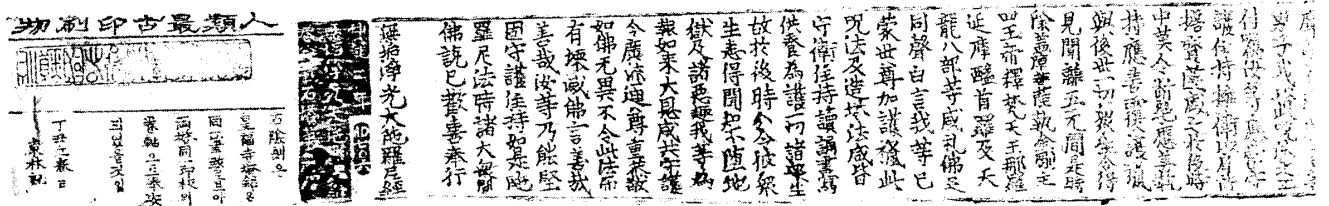


Fig. 5 Mukujoukou Dharani sutra (Source: Chongju Printing Festival'97)

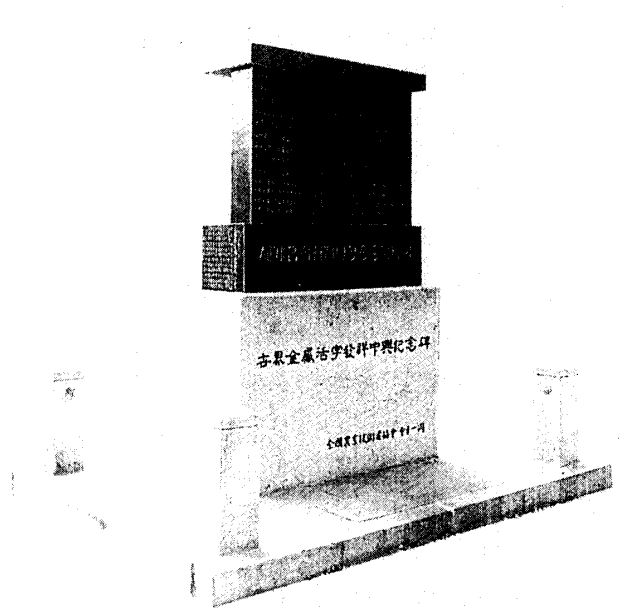


Fig. 6 Production Monument of World Metal Printing Type served in Heiinsa (5). (Fig. 8)

7-3 Gutenberg's Bible

Gutenberg made the 42-line Bibles. Movable type printing was developed in 1440.

Printing consists of 4 elements to the printing machine, the type, ink and paper. These movable metal printing types spread rapidly all over Europe.

8. Culture Exchange

8-1. Christian Edition

In 1590 Tensho Ken-ou Boys mission brought movable type printing to Japan.

They learned these techniques in Lisbon, Portugal.

Using these techniques they made movable

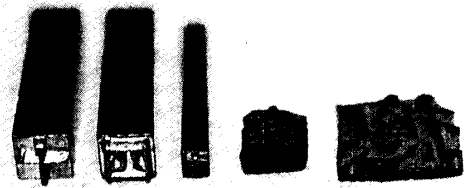


Fig. 7 Gutenberg type and Korean type

types in the Roman Alphabet and Japanese characters. They published 30 volumes of Christian books (6).

8-2. The Establishment of Movable Type Printing

Shouzou Motoki brought the printing machines and movable metal types from a Dutch ship and studied hard to make Japanese movable types.

He established a printing shop in 1868. This printing technique spread rapidly all over Japan.

9. Digital Printing

Digital printing was developed in the USA in 1985 and has spread as DTP all over the world.

Letters are made by computer in each country.

At present the movable types are changing to a Digital font.

10. Summary

The electro publication and Internet have been developing rapidly.

It is necessary to preserve the antique printed matter before it is too late.

(1) I reported "Beginning of Printing Media" following "Early Printing History in Japan." announced in Seoul Symposium.

(2) The history of publication media is generally divided into the three steps. There is the progress which respectively develops in the each country on the first step. Those countries are such as China, Korea, Germany, Japan etc.

The second step is the process that each country is exchanged, that it is developed and improved.

Especially, in Japan, the printing culture is accepted from Europe and USA, and then developed.

The third step is propagated to the each country from U.S.A. in the development of the digitalization of the computer.

Print '97 was held in Chicago in September 1997.

(3) The average height of Hyakumantou pagoda is 21cm, and the diameter 10.6cm.

The pagoda is divided into upper stage and lower, and the hole of the 6cm depth is hollowed out at about 1cm diameter in the lower.

There upon, by rounding 4 kinds of Buddhists scriptures, that was put in.

(4) This Dharani sutra was analyzed by a method of the different edition research from the printed image of Buddhist scriptures

- ① Posi film
- ② Desilverization
- ③ Contact of ① & ②
- ④ Magnification of ③

(5) The photograph of the right side is original, and left side is a result of being a different edition.

The character generally thins on the different edition.

And, the different character exists in each place.

(6) The Hyakumatou & sutra would be accepted in

world wide.

Especially, it has exhibited even in the Art Institute of Chicago.

Simultaneously, there was the exhibition of the Ukiyoe of woodblock prints by Hiroshige Andou.

(7) Enormous number woodblock (Parman Dejan Gyon) of 81.340.

(8) 81 thousand 3 hundred 40 blocks are preserved in Hejinsa, and are largest in the world.

The architecture of building is saving in the natural state, and the technology is used for leaving the wood block to future generations.

(9) There is a place in the middle site in Tejion and Tegu, and there is in midslope in the Kaya mountain. It is known that the place of manufacture of Parman Dejan Gyon is Kampher island.

(10) In Kampher History Museum in Kampher island the process which produced the Parman Dejan Gyon is explained.

(11) In the front face of Kampher History Museum, there is monument of metal type origin, and it is the historical fact of producing the metal type than Gutenberg in early 200 years. Fig. 9 shows Paegun Hwasang Chorok Puljo Chikji Shimche Yojol(col II) printed at the printing date (1377)

(12) 600 years birth of Commemoration special number of King Seijon of Korea is published in Japan, and publication culture in King Seijon is described.

(13) This photograph is cast in the metal type in King Seijon Era, and it is the post card of the aspect of assembling metal type and composing them.

The Book of King Seijon is published from the Society.

(14) This is metal type from King Seijon. It is proven that the height is lower than Gutenberg metal type.(Fig. 7)

(15) It is a pamphlet of Japanese edition of Museum of Early Printing History in Ch'ongju.

Here, the photograph of wood block printing and metal type manufacture is summarized.

(16) It is country in which Korea does the printing culture important, and in Tejon Expo 1993 event, new and old printing system are compared.

(17) Gutenberg invented the typographic printing in 1447.

There is printing element necessary for type, press, ink and paper.

It is disadvantageous for the printing in early days that oil constituent of the ink is slightly bad, and that the printed ink is easy to peel off.

(18) It is Gutenberg Museum in Mainz, Germany. I have visited the Museum 5 times.

(19) It is statue of standing figure of Gutenberg in Mainz city.

It is different a little from the Strasburg statue in France.

(20) I have published a brief paper in 1995 for Shouzou Motoki 120 Memorial after death in Nagasaki NEWSPAPER⁽³⁾.

Acknowledgement

We have recognized the importance of printing through the symposium and the forum in Korea this time.

We express our gratitude to Korean UNESCO for your hearty supports.

After going back to Japan, we are going to strive hard for preserving of our ancient printed matters. We look forward to meeting again in the near future.

(A part of the paper was presented in International Symposium on the Printing History in East and West(Seoul) at 30 September, 1997 and in Ch'ongju, International Forum of Printing Culture at 2 October, 1997)

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*Akihiro Kinoshita (Kyusyu Sangyo University)
2-3-1, Matsukadai, Higashiku, Fukuoka, Japan, 813-8503
Tel 001-81-92-673-5758, Fax 001-81-92-673-5799
E-MAIL, kinosita@ip.kyusan-u.ac.jp
<http://www.ip.kyusan-u.ac.jp>