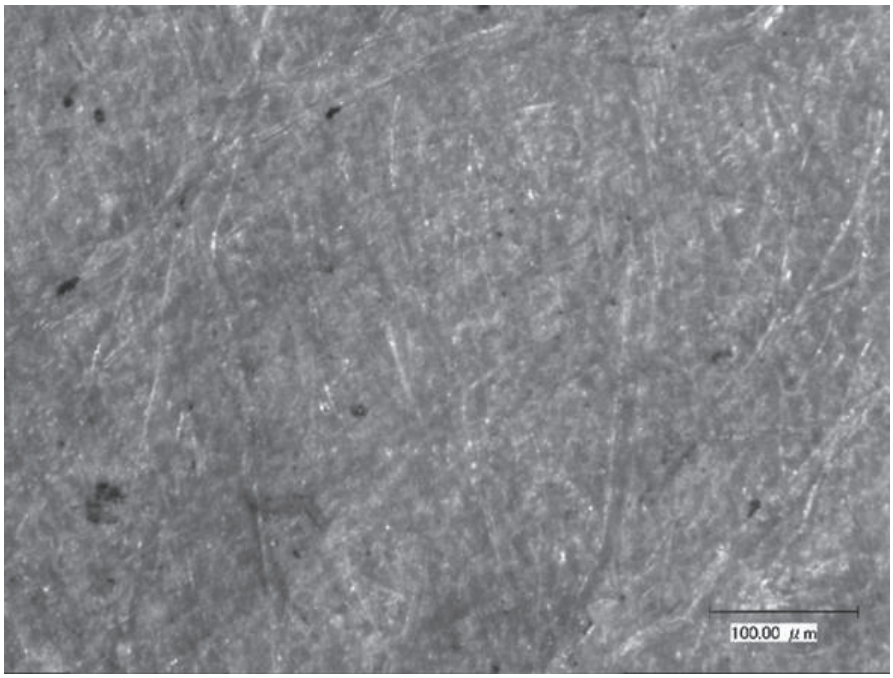
5. Christian printings in the medieval Japan

All of the Christian printings in the medieval Japan were printed on Gampi paper as the best printings.

[Slide 11] NIPPONNIES no Companhia no Superior, property of Toyo-Bunko, 1592, × 500, 100% Gampi fiber with rice powder.



[Slide 11] NIPPONNIES no Companhia no Superior, property of Toyo-Bunko, 1592, × 500, 100% Gampi fiber with rice powder.

The speaker has shown that the quality of paper has concerned the rank of the book.

Comparative Study of Paper Used for Books Published in Asia and Europe during the Premodern Era

ENAMI Kazuyuki

(Toyo Bunko, Professor Emeritus Ryukoku University)

Prologue

"The Encyclopedia of Diderot and d'Alembert", "Art" by Diderot

I shall follow the example of the English philosopher* and mention three inventions that were unknown to the ancients. It is to the shame of modern history and poetry that the names of their inventors are scarcely known. I am speaking of the art of printing, the discovery of gunpowder, and the properties of the magnetic needle. What a revolution these discoveries have brought about in the republic of letters, in military art, and in seafaring! The magnetic needle has led our ships to the most remote regions, typographic characters have created enlightened communication between learned men of all countries and all future time, and gunpowder has occasioned all the architectural masterpieces that defend our frontiers as well as those of our enemies; these three arts have almost transformed the face of the earth.

English translation, quod.lib.umich.edu/d/did/ (This site has been designed to make accessible to teachers,

students, and other interested English-language readers translations of articles from the Encyclopédie edited by Denis Diderot and Jean le Rond d'Alembert in the 18th century).

* Novum Organum, "Aphorism ", Francis Bacon, 1620

History teaches us the fact that China had continued to play a leading role in developing the highest cultural society in the world through the Medieval era, owing to obtain from quite early times those technologies which assist so materially the propagation of learning.

Did "Culture of Publishing Books" Prepare the Transformation of "Premodern** Society" to "Modern Society"?

Printing technique (first wood cut printing) invented in China in the 8th century diffused quickly into the East Asian countries such as Korea and Japan, and to the Central Asian oasis kingdoms, and introduced the invention of movable type printing technique in Korea in the 13th century, 200 years before the starting of press printing technique using movable types by Gutenberg in 1450. Here, paper and printing together became the basic way to introduce people to the world of the propagation of learning.

However, during 500 years after the invention of printing technique, the technique had been occupied by the upper ruling class, and used for their means of reign or for the purpose of propagating Buddhism, Confucianism, or other Religions. The fact that Gutenberg chose the "Bible" for his first printing book was not casual.

The first country in which paper and printing technique brought ordinary people "the propagation of learning" was again China. During the 15–16th centuries, from the end of Yuan to whole through Ming dynasties, in China "Due to the tremendous development of production and accumulation of wealth, not only intellectuals with Confucianism but also ordinary people of working class, farmers, and craft persons, began to get each social, cultural, and political powers (Mori Masao: History of China, Asahi Shinbun Press, 1993, in Japanese). Printing books now became the "social property" giving ordinary people to enjoy "culture".

In Ming dynasty, many books of wide range of category, e.g. popular novels: 水滸伝 (Shui-hu-zhuan: Story about Outlaws in their Water Front Base), 三国志演義 (Sun-guo-zhi-yan-yi: Romance of the Three Kingdoms), books of science: 天工開物 (Tian-gong-kai-wu: Technology in the Seventeenth Century), 本草綱目 (Ben-cao-gang-mu: Encyclopedia of Medical Herbology), 農政全書 (Non-zheng-quan-shu: Encyclopedia of Agriculture) and many medical books (seen in the attached Table of the analysis of paper of Chinese books) began to be published. "Culture of publishing" giving enjoy of fruits of culture and scientific knowledge to ordinary people now was established. The above trend was then succeeded to the next Qing dynasty. Due to the above tradition on book printing and the propagation of learning, China in those days was the country playing leading role to develop world cultural society along with newly appearing culturized European countries after the Renaissance.

Quickly this trend was diffused into Japan. After the long-continued civil war time, at the end of the 16th century when Japan could recover its peaceful society, large number of books; Japanese editions of the above books of Chinese origin, "Teaching of Confucianism", Chinese fantastic novels, encyclopedias, books of science began to publish using traditional woodcut printing technique (partly influenced by movable type printing technique and movable types plundered from Korea during the invasion upon Korea by TOYOTOMI Hideyoshi). In addition, Japan began to develop its own culture of publishing books. Many kinds of books, Japanese own encyclopedias, picture books, novels, and finally "publishing" Ukiyoe had been widely supported by ordinary citizens during whole through the Edo era. Publishing business in Japan became the biggest business in the main

three cities; Kyoto, Osaka, and Edo (later Nagoya joined) and being proud of the biggest number of publishing books in the world during the middle of the Edo era (NAKANO Mitsutosi: "Let's study Wahon", (Wahon: Japanese old books), Iwanami Shinsho, 2011, in Japanese).

No need to wait long time for publishing business became the big business in European countries. When the "Age of Discovery" began in the 16th century, Portuguese Jesuit missionaries, Luis Frois visited Japan and Matteo Rich visited China. They well understood the importance of book publishing and brought correct information on paper production and printing books in those countries to Europe. Roman Catholic Church published their sacred books even using Japanese and Chinese paper. Although faced to severe deficit in production of paper using still only rag for raw material of papermaking, in the 17 to 18th centuries publishing business got the main position of the business in several cities like Japan.

The material support for the rise of publishing business which began during the end of premodern era, simultaneously, in the civilized world is the large-scale production of paper for printing.

Here we will see, "what kind of paper used for books in China and Japan", "how to obtain paper in Europe, "what effort they tried to fulfil the big demand on paper in Europe" by our recent analysis of paper used for books published in those countries.

** Ancient era: until 476 A.D., the collapse of the West Roman Empire
Medieval era: from 476 to 1453 A.D., the collapse of the East Roman Empire
Premodern era: from 1453 to 1789 A.D. French Revolution
Modern era: from 1789 to 1917 A.D. Russian Revolution
Contemporary era: 1917 to the present time

Paper Used for Ming Books

In China, the motherland of paper, various kinds of paper made from various kind of plants have been fabricated. However most of them already disappeared and we have little concrete example of such paper, except those used for documents, Sutras remained miraculously in Dunhuang and Central Asia regions.

Huge amounts of books published in Ming Dynasty when new culture, "culture of publishing", the first boom or flood of books in the world, for not only intellectuals but also ordinary working class people began. Fortunately, many Chinese books of that era and of the next empire Qing, Japanese eagerly bought to learn Chinese culture, and kept them carefully until now. We can read and touch them directly and to study paper of those books by microscopy. Here we show our recent results of paper used for Chinese books of Ryukoku University's collection.

In the present study three kinds of paper, mainly, were found:

Xuan Paper: This paper is estimated to be the finest paper among all kinds of paper having been made during the long history of Chinese papermaking. In the present study, it was found that Xuan paper was used for important books for Ming Empire, books of the Zhu Xi school of Neo-Confucianism which was the main doctrine of the Empire.

For Ming editions of "Great Learning", "Classical Poetry" edited by Zhu-xi in the Song era probably, they used fine Xuan paper.

Bamboo Paper: In Song dynasty, Chinese invented paper using bamboo pulp. It was found that bamboo paper was used for large numbers of books published during Song, Yuan, Ming, and Qing, in the present study. Bamboo paper is not strong, fragile, and brittle and changes its colour to brown soon and its estimation is not so

good. However, papermaking technique by pulping of hard woody part of plant (by natural bio-chemical method: fermentation) began really in bamboo papermaking 600 years before European papermaking using wood pulp by artificial chemical process invented in early 1800s. It was another "innovation" of papermaking technique, next to Tsai Run group's new techniques.

Without bamboo paper, Ming China could not open the new culture, "publishing tremendous amounts of books for everyone". Japanese book publishing culture which began by studying Chinese cultural trend in the Edo era would not occur without diffusing of huge number of Chinese books into Japan. Yes, we never neglect its important role in "propagation of learning".

Cereal Straw Paper: This paper was also invented during Song Dynasty (really its origin is the papermaking technique using Italian millet or other millets began at the end of the 4th century at the oasis kingdoms in Central Asia). Cereal straw paper, however was used for books of novels or local government use during Ming. In Qing use of this paper began to spread, and especially for exporting paper to European countries as shown below.

Chinese Paper Used for European Books (from the Text Applied to the IPH 2016 Congress)

1. In some books related to the Jesuit missionary activity in Asian countries in the 16th to 17th centuries peculiar paper with many plant remains were found to exist.
2. Microscopy analysis of paper of those books revealed that the paper used for those books was found to be cereal straw paper. At that moment, Europe did not develop papermaking technique using any cereal straw. Paper found in the present study was thus confirmed to be Chinese paper.
3. Peculiar paper having much plant debris and blue colour fine fibre fragments was also found in not a little number of books published in Frankfurt and Leipzig during the 17th to 18th centuries. Microscopy of paper used for those books showed that paper was made from cereal; wheat, barley, and straw. It was also found that fine blue fibres were those of indigo-dyed hemp fibre, extracted from rag of hemp cloth commonly used among peoples of China.
4. Faced to deficit in paper in European countries, Frankfurt and Leipzig book publishers which played a leading role of book publishing in Europe at that time imported large amount of Chinese paper and fulfilled increasing demand of books among peoples of European countries.

Paper Used for Japanese Books Published in Edo Era:

It was found that difference in paper quality used for printed books between those published in Kyoto/Osaka and Edo; Paper made from Kozo + Mitsumata and rice powder for Kyoto/Osaka books, Paper made from Kozo + rice straw with or without rice powder for Edo books. There have been so many studies on Japanese paper "Washi" by many Japanese paper researchers by this time. However, studies analyzing the paper of real, concrete books published in Edo era have never been reported. The present results are the first findings on the difference in paper quality used for printed books between those published in Kyoto/Osaka and Edo.

Famous Japanese scholar of Japanese Books published during the Edo era, Professor NAKANO Mitsutoshi told in his book (Iwanami Shinsho, 2011, "Lets' study Wahon") that book publishing business in Edo City began to get the first position from the early 18th century exceeding book publishers of Kyoto". However, the facts found in the present study that higher quality paper was used continuously to the end of the Edo era by Kamigata (Kyoto/Osaka) book publishers prior to Edo book publishers tell us that at least better book publishing business using high quality paper in Kamigata (Kyoto and Osaka) had been kept until the end of the Edo era.

The present research suggests us that "scientific study" of paper is quite important and useful not only for study of history of paper, but also study of economy, social lives of citizen, and cultural lives of citizens.

Concluding Remarks

The study of paper used for old Chinese, European, and Japanese books by the direct scientific analysis methods gave the answer to the question "did culture of publishing books prepare the transformation of premodern society to modern society?", Yes!

Due to the long history of making large amount of paper in China, high quality paper production began during the end of premodern era in Japan and big effort to obtain paper for books even by purchasing Chinese paper in the 16th to 18th centuries in Europe caused the flood of book publishing, simultaneously. It is proved that paper and printing technique gave peoples wider opportunity of learning and enjoying their own culture, and prepared the modern era.

While in the present time quite curious trend in culture, "paperless lives and having no book" is popular among younger generation. Will book publishing has its meaning in future?

Accelerated development of new technologies of recording by computer, almost unaccountable number of new devices, recording tapes, floppy disks, and memory sticks and cards during the last half century would drive away paper out of use. By the everyday-changing working power of devices and basic computer systems, and greedy capitals pushing people to buy new equipments, we cannot read the data recorded in devices only ten years old at all by newly appeared computer systems. I addition memory devices consisting of new materials, metals, and organic plastics have no guarantee to live one hundred years.

Significance of the scientific study of history of paper, printing, and publishing culture is not only to give new findings in the history of technology, but to prove the real meaning of the facts that "paper and printing" continue to keep and introduce the overall records of human being of the past 1000 years to us, living in the present time.

By temptation in a twinkling "convenience", to try to throw away "paper and printing" which had been proved its reliability of keeping its life and records written on paper by the past 1000 years history should be absolutely avoided. Our study would be an advice for the danger of the above temptation.

We dream coming new age of "revolt of books" printed beautifully on beautifully prepared paper for every person.

Why the Invention of Letterpress Printing Has Brought about the Media Revolution?

NAKANISHI Yasuhito (Printing Museum, Curator)

Historically speaking, paper and printing are inseparably tied, and both co-exist in the media of all kinds, such as books, posters, flyers or newspapers. Among others, letterpress printing, which emerged in Europe in the 15th century, is widely known to have transformed man's intellectual environment. In fact, it had such a huge impact on everything from how to distribute information to shaping people's mindset that some even call it the biggest media revolution in human history. Well, why was letterpress printing accepted worldwide? Starting with one of the most rudimentary questions, such as "what is letterpress?" and based on what we have noted concerning how it has been introduced throughout the world and the building of a wooden printing press, I would now like to devise an answer. Leveraging the author's own experience, I will take up the challenge of answering the simple yet profound question with you.