Name: Block:

**Who Invented the Printing Press?**

by Elizabeth Palermo, Associate Editor   |   February 25, 2014 01:48am ET | from livescience.com

Johannes Gutenberg is usually cited as the inventor of the printing press. Indeed, the German goldsmith's 15th-century contribution to the technology was revolutionary — enabling the mass production of books and the rapid dissemination of knowledge throughout Europe. However, the history of printing begins long before Gutenberg's time.

**Chinese monks and blocks**

Nearly 600 years before Gutenberg, Chinese monks were setting ink to paper using a method known as block printing, in which wooden blocks are coated with ink and pressed to sheets of paper. One of the earliest surviving books printed in this fashion — an ancient Buddhist text known as "The Diamond Sutra" — was created in 868 during the Tang (T'ang) Dynasty (618-909) in China. The book, which was sealed inside a cave near the city of Dunhuang, China, for nearly a thousand years before its discovery in 1900, is now housed in the British Library in London

The carved wooden blocks used for this early method of printing were also used in Japan and Korea as early as the eighth century. Private printers in these places used both wood and metal blocks to produce Buddhist and Taoist treatises and histories in the centuries before movable type was invented.

An important advancement to woodblock printing came in the early eleventh century, when a Chinese peasant named Bi Sheng (Pi Sheng) developed the world's first movable type. Though Sheng himself was a commoner and didn't leave much of a historical trail, his ingenious method of printing, which involved the production of hundreds of individual characters, was well-documented by his contemporary, a scholar and scientist named Shen Kuo….

Historical evidence suggests that metal movable type was also developed independently in Korea in the late 14th century. In 1377, a Korean monk named Baegun is credited with printing a compilation of Buddhist sayings using movable metal type. The two-volume book, known as "Jikji," is believed to be the oldest book in the world printed with metal type. One volume of the work is held at the National Library of France.

Despite early successes with movable type, this method of printing didn't catch on as quickly in Asia as it did in Europe. This lukewarm reception was most likely due to the complexities of Asian writing systems. Unlike the concise, alphabetic script of many Western languages, Chinese, Japanese and Korean are made up of thousands of characters, which would each have to be cast individually for printing using movable type. Such a daunting task may have made woodblocks seem like a more efficient option for printing in these languages.

Europeans, however, took to movable type quickly. Before the invention of the printing press — sometime between 1440 and 1450 — most European texts were printed using xylography, a form of woodblock printing similar to the Chinese method used to print "The Diamond Sutra" in 868. Manuscripts not printed with woodblocks were painstakingly copied by hand. Both processes were extremely labor intensive and, as a result, books in Europe were very expensive and few could afford to buy them.

But all that changed in the middle of the 15th century, when Johannes Gutenberg established himself as a goldsmith and craftsman in Strasbourg, Germany. In Strasbourg, Gutenberg first began experimenting with both xylography and the development of a more efficient method of printing.

**Gutenberg printing press**

Like Bi Sheng, Wang Chen and Baegun before him, Gutenberg determined that to speed up the printing process, he would need to break the conventional wooden blocks down into their individual components — lower- and upper-case letters, punctuation marks, etc. He cast these movable blocks of letters and symbols out of various metals, including lead, antimony and tin. He also created his own ink using linseed oil and soot — a development that represented a major improvement over the water-based inks used in China.

But what really set Gutenberg apart from his predecessors in Asia was his development of a press that mechanized the transfer of ink from movable type to paper. Adapting the screw mechanisms found in wine presses, papermakers' presses and linen presses, Gutenberg developed a press perfectly suited for printing. The first printing press allowed for an assembly line-style production process that was much more efficient than pressing paper to ink by hand. For the first time in history, books could be mass-produced — and at a fraction of the cost of conventional printing methods.

**FOCUS QUESTIONS**

1. How were books made in Europe before the printing press?
2. Where did the idea for the printing press come from? How did these people make books?
3. How do you think Johannes Guttenberg came up with the idea?