

Johannes Gutenberg's Printing Press: A Revolution In The Making

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By

Hafeezat Ghaffar

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Some people would claim that the invention of Gutenberg's printing press was just as important and impactful as the harnessing of fire, metallurgy, and the internet. Generally speaking, the advent of the printing press was a triumph for many aspects of the developing western world. The printing press welcomed literature being able to travel faster, less expensive, and easier to the masses establishing the aboriginal information age- the Renaissance. The influence of the printing press ranges from the education and literacy rates of European civilians slowly increasing, scientists being able to share discoveries (Scientific Age of Enlightenment), and the almighty Catholic Church not being able to censor what everyone was viewing. Protestant thinkers used Gutenberg's printing press to expand their proposition of reformation in the Catholic Church through pamphlets beyond their miniscule villages, to all of Europe. There was a sense of liberation of the ideas that created a substantial imprint on the philosophy of religion to this day and was one of the most powerful tools of the modern era.

Prior to the version of Gutenberg's printing press, Buddhist monks would hand copy words or use blocks that were hand carved, which was very time consuming and costly. Those books were unable to keep a consistent tone and were prone to mistakes. A single book would take months or years rather than days or weeks. There wasn't much effectiveness with this genre of printing considering that this took place in 932 A.D. The next type of printing that was widely used was when in 1401, Chinese printers would have individual blocks that represented a letter, symbol, or picture. Those blocks wore out quickly, resulting in another block needing to be carved. This type of printing got refined when clay was used instead and could be strung along together to welcome faster and more productive printing. The past way of printing was allowed for only people that were educated, religious groups/monasteries such as the Catholic Church, universities, and nobility, to have those costly and special books.

Almost all of the books were written in Latin, so most uneducated folk would not have the opportunity to read and understand the book, so many lived their lives without even glancing at one. The vast majority of people would depend on what they heard and saw in their small villages, and what was preached to them by the Catholic Church as a source of education. All of this changed with the help of the great Johannes Gutenberg.

Johannes Gutenberg was no amateur when it came to working with metal and its characteristics. By the early 1400s, metalsmiths in Europe had adopted the use of woodblock printing and engraving. Although little is known about why Gutenberg choose to experiment with printing, by 1438, Gutenberg began to attempt different techniques and secured funding from a wealthy businessman. Around 1440, Gutenberg was occupied working on several prototypes of the printing press. To clarify, Gutenberg didn't suddenly fabricate a new invention, he used older technologies and mechanisms to construct his press. He used the screw press and a new proposition that he created by himself: molded typesetting. Molded typesetting involved making a mold for each character that he wanted to use which could be reused. With that creation, he was able to produce individual letters which could be placed within a wooden frame to create the layout of the page to be printed. The ink that scribes used was a watered down mixture which was adequate for woodblock printing because it would be soaked up by the wood with thicker little excess remains, but insufficient for metal type printing. Metal is not porous base so the ink couldn't be absorbed, which would lead droplets of watery ink to dribble on to the paper in unmanageable pools. Watery ink would make the definition of the words blend into the pools of ink, and the paper would act like a sponge and bleed. To stop this disaster from happening, a much thicker ink was developed to suit metal type printing.

By 1450, Gutenberg had made noticeable progress with his work in manufacturing a new type of printing press. Gutenberg modified a wine press to create his printing press. With his success of ultimately creating his printing press, he began to look for additional funding from another investor, Johannes Fust. At the time of 1452, Gutenberg entered a business partnership with Fust in order to continue providing funds for his printing experiments. Gutenberg continued to refine his printing press and at the time of 1455, had printed several copies of his infamous Gutenberg Bible. The Bible had three volumes of text in Latin and had 42 lines of characters per page with color illustrations. The printing of the Bible was a step for man and a leap for technology in the modern world. That book symbolizes the embodiment of perseverance and the frustration one has to go through, to prove that what they are working for will be legendary, not only for them but for everyone. The Gutenberg Bible is the outcome of an orchestra of technologies and ideas that converged together to form the first book printed with movable, metal type, around 1455, which is very impressive for the amount and type of technology that was available around that time in history. That was new territory no one had dared to venture into before; those pages were numbered over 1,200 and were printed at remarkable speed. The main goal of Johannes Gutenberg and his printing press was to show the visual aspect of beautiful handwritten words, without the painstaking cost of actually writing the words and characters. The words are shown to be flowing calligraphy that deems to be written by experienced hands to form a mixture of enticing words with mechanical accuracy. The exterior of lavish books was coated in expensive material such as vellum (a material from calfskin), and an enormous amount of animals would have to give their hide for some editions. Due to the price to produce books with calfskin and other luxurious material, only a small portion was made with those materials, for the cost would be far greater than anyone could afford. Gutenberg chose to use linen cloth paper from Piedmont, Northern Italy, and the paper

could handle the pressures of the press, unlike the luxurious paper. Rapid manufacturing along with fewer materials decreased the levy for increased availability of books so more opportunities were provided for anyone of any economic status to own and read literature.

Unfortunately, Johannes Gutenberg's fate is not as pleasing as his invention.

With not enough money to finance his project, he whirled around into the world of investors. Tragically, the investor that he turned to (Fust), reached the end of the line and lost his patience. After years of experimenting left him six-feet under in heavy debt, Gutenberg was brought to court for not repaying Fust and suffered the repercussions for those poor circumstances. Gutenberg's pension was paid off by Archbishop Von Nassau.

In the last days of Gutenberg's press, Fust shut the entire production down and closed Gutenberg's shop, disallowing him entry and access to his equipment. Gutenberg's assistant became a business partner with Fust; he created books and sold them, creating a continuous flow of financial support for himself rather than his previous master. Although his printing press was a humongous success, Gutenberg didn't gain nor earn a single cent from it, which led to his demise. Despite him forming the invention, within a small number of years, quite a few "printing presses" appeared all over Europe during the end of the fifteenth century. It is not very easy to determine which of the surviving texts of that subsequent period were actually printed in Gutenberg's printing press. Unlike today, copyright laws were non-existent. To add to that dilemma, Gutenberg didn't add his name to any of his printed work. Nearly eight million religious books were printed applying the printing press; that is about one hundred eighty times the number a single scribe could produce in that amount of time. Thus ended the life of

Johannes Gutenberg, but not his legacy, which still lasts to this very day and age, and a great deal is owed to him, although his efforts are dismissed and swept under the rug.

One of the major consequences of Johannes Gutenberg's printing press is the Reformation of the Catholic Church. Interestingly enough, the Catholic Church was one of the biggest consumers of the printing press in the beginning. The church utilized the printing press to communicate their ideas and beliefs, ordinances, indulgences, and anti-Islamic Crusade propaganda during the late 1400s and early 1500s, and many monasteries said the printing press was a gift from God. For centuries, Catholicism was the religion of Europe. Martin Luther was the force responsible for spreading knowledge of the Bible to a large population during the sixteenth century, ultimately sparking the Protestant Reformation. In spite of the fact that Luther loved the church, he had his reservations concerning the corrupted sale of indulgences by certain religious authority figures. Under Catholic teaching, every sin must be absolved either here on earth or after death in a state called purgatory before one could go to heaven. A purchase of indulgence in Catholicism absolved and relieved punishment from sins either partially or fully. Normally, one would go through Confession to have their sins absolved. This would, in turn, shorten the amount of time in purgatory since their sins would be partially or fully absolved when alive before entering purgatory. Luther disagreed with the Church; he believed that purchasing indulgences wouldn't shorten the time in purgatory. To his observations, selling indulgences was just a way to raise money for the church without any benefits to the scammed soul that paid for it. To address his beliefs and concerns, Luther pinned his Ninety-Five Theses to the church door in 1517. His ideology challenged what he thought were inconsistencies with the religion and practice of the Church, mainly the sale of indulgences. Luther only intended to address issues of the Church conventionally, by debating

with other professors. However, the theses were swiftly printed and distributed. At least 300,000 copies were printed and distributed in total between 1517 and 1520 in all of Europe, including those translated into other native languages aside from the original German language. Within a couple of months, not only did Germany know about Luther's theses, all of Europe was later enlightened by his thoughts and ideas. Not only did Luther address abuses of the Church and theological errors through his Ninety-Five Theses, he also translated the Bible from its original scholarly Latin language to the German language of the common people of Europe. Luther also used pictures to convince the minds of the illiterate. The diffusion of Luther's ideology let citizens inaugurate their own ideas and interpretation of the Bible without the influence of the Catholic Church. Luther's work left a gargantuan influence on Europe and the world.

The printing press was also utilized in the scientific community, like in the Protestant Reformation, but was affected differently. In the 1500s, science was considered a high academic subject, made for highly educated people instead of commoners and the academically challenged. It wasn't as prominent as religion was in people's everyday lives. The study of science itself was confined to a select few scattered around the globe. As a consequence, the effects of print on the development of science and the general population were much slower than that of religion, and often not seen until the seventeenth century. Even though the movable type printing press increased the amount of inexpensive scientific books available to both the scientific scholars and the rest of the population, most of the general population didn't buy the books because the topics were irrelevant or too complex for their understanding. Thus, the main consumers of early scientific material were still mostly scientific scholars in the immediate years after the innovation of the printing press. The printing press did play a huge

role in the Scientific Revolution within the scientific community, which later led to the spread of scientific knowledge to the rest of the general population. Before the printing press, many professional scientists kept much of their work from publication. When they did publish, it would be handwritten or printed using wooden stamps that easily deteriorated. Mistakes and textual corruptions in publishing scientific reports were extremely prevalent. After the printing press, published works could circulate more easily within the scientific community with fewer errors. This allowed for an easier exchange of ideas and discoveries between scientists of geographical and time constraints. Also, the development of movable type metal plates in place of wooden plates made accurate visual information such as diagrams, maps, anatomical drawings and representations of flora and fauna more permanent.

Lastly, the printing press encouraged reprinting and distribution of ancient texts by previous scientists for current scientists to access and consult freely. Evidence of the imprint of the printing press on the Scientific Revolution is shown by Nicholas Copernicus when he took advantage of the printing press to publicize his work that the Sun is the center of the universe instead of the Earth, which challenged 2,000 years of scientific belief. Though his ideas were radical, they were backed up by scientific evidence, and thanks to the printing press, his work was accurately publicized to mass populations inside and outside of his own country in increased quantity and quality. The printing press allowed for mass production of these detailed drawings, which would have taken years to print one copy by another printing process that was outdated or by a scribe. Print not only had an effect on the accessibility of current works to both the scientific community and the general population, it also gave rise to the development of modern scientific methodologies. After the innovation of the Gutenberg printing press, publication became easier and faster. This led to an information overload much like a simple Google search would cause today.

Another very important impact of Gutenberg's printing press is the spread of knowledge in less elite communities such as the general population. The printing press distributed literature from bright minds that were most commonly found in Latin, that was translated into more native languages so everyone could understand and absorb the knowledge of those brilliant people which overall made the literacy rates of European civilians grow. That enlargement was beneficial for everyone, not just the country of Europe.

In conclusion, Johannes Gutenberg's printing press was and still is a very indispensable part of history and our lives wouldn't be like it is today if it wasn't for Gutenberg's printing press. Even more, it allowed for greater accessibility and spread of all kinds of knowledge throughout a wider population never before seen, bringing about several new social dynamics that would lead to several social revolutions. Even though Gutenberg suffered, he helped heal many wounds in the world.

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