

Chapter 1

THE BIG QUESTION

Why was Gutenberg's invention of a printing press so important?

The Power of the Printed Word

Did you know that a man named “John Gooseflesh” changed the world? Johann Gensfleisch, which in English is John Gooseflesh, was born in the city of Mainz, Germany, around 1397 CE. However, by the time Johann started school, he went by the name *Gutenberg* instead of *Gensfleisch* and that is the name we remember. Gutenberg was the name of the large manor house in which Johann grew up. He came from a very wealthy family.

Johann was taught to read from an early age. Unlike the homes of less privileged children in the early 1400s, the Gutenberg house was full of books. That may not seem unusual, but it was. Books in the 1400s were very different from the books we have today. The book you are reading right now is a printed book. There are thousands of copies of this book, all exactly the same. They were printed by machines in a very short time. Not so with the books in Johann's day. Each book in the Gutenberg's home library was one of a kind, rare, and expensive.



Books in the Middle Ages

Throughout the Middle Ages, books were made by hand. Much of the writing was done by monks working in monasteries, although the craft of making books also took place in some universities and **secular** schools. Primarily existing books such as the Bible and great works authored by ancient Greek and Roman scholars were copied. The monks painstakingly

copied the text with pen and ink on thin sheets of **parchment**.



Flemish illuminated manuscript, 1365 CE

bind the pages into a book. This was done by sewing them together along one side and then sandwiching them between wooden boards covered with cloth or leather.

An enormous amount of time and effort went into creating each book. Only the wealthiest members of society, scholars, and Church **clergy** could afford to own such treasures. Throughout the Middle Ages, of course, these were typically the only people who were able to read.

It typically took monks many weeks or months to complete the pages of an entire book. The highest quality books were illustrated. This task was accomplished by a skilled artist called an illuminator. An illuminator decorated the pages with colorful, ornate designs and small pictures. Bits of gold, pounded very thin, were applied to the pages of the most expensive books to make the text and illustrations shine.

When the manuscript was finished, the final step was to

Lead and Letters

When Johann Gutenberg finished school, he went to work at the mint in Mainz. His father was in charge of the mint, which coined money for the city. Johann learned how to melt and cast metal in molds to form precise shapes. He liked working with metal, and he was skilled at metal casting.

As Johann Gutenberg grew older and became a master metalsmith, he thought a lot about the growing demand for books. His experience working with metal gave him an idea: what if he cast letters out of a metal such as lead? He could arrange those metal letters, or pieces of type, in lines to spell out words, make sentences, and create entire pages of text. By applying ink to the surface of the type and pressing paper onto it, he could print those pages.

Gutenberg set out to try. First, he developed a way to pour melted lead into molds in the shapes of the letters of the alphabet. Each letter (piece of type) was cast as a mirror image of how it would look when printed. For example, “R” was cast as “Я,” and “C” was cast as “Ɔ.” Gutenberg made many copies of each letter, both capital and lowercase, plus every punctuation mark. Because his collection of metal type was made up of individual pieces that could be moved around to form endless combinations of letters, it was called movable type.



Movable type



Gutenberg's printing press, 1430 CE

Gutenberg didn't truly invent movable type. The Chinese and Koreans had used a form of movable type hundreds of years earlier. He didn't invent printing, either. Different printing techniques had also existed for centuries. In Europe, people had begun printing with ink on paper using blocks of wood. This technique called woodblock or woodcut printing began around 1400 CE. The surface of a block of wood was carved to create raised letters and images. Ink was then applied to the carved surface. Finally, the block was pressed onto paper to make a print. If you've ever pressed your thumb onto an inkpad and then touched it to paper, you've created a "thumbprint" in much the same way. Woodblock printing was a complex and time-consuming process. It wasn't much faster than copying pages of text by hand!

What Johann Gutenberg did invent was a machine that greatly improved the process of printing with movable type. He may have gotten the idea for his press from a winepress, a machine used to press the juice out of grapes. Gutenberg's printing press worked in a similar way. Instead of squeezing grapes, though, his press squeezed paper against the inked surface of metal type to make a clear, dark imprint of words on paper. Once he had perfected both his metal type and his press, he was able to print—with help from a number of assistants—several hundred pages a day.



Movable type from China

Die leitet künig Sigmund burggraft fride-
richen von nürnberg marggraft schaft zu
brandenburg.



A woodcut print, 1480 CE

Gutenberg's Bible

After experimenting with printing a few official documents and small, simple books of grammar, Gutenberg was ready to undertake a big project. He decided to print a large, beautiful Bible. He hoped to make a lot of money. Gutenberg started printing his Bible around 1450 CE. He may have cast more than 100,000 pieces of type for it. Several times during the process he ran out of money and had to borrow more. He completed the first edition of roughly 180 copies of the Bible (the exact number isn't really known) in 1454 or 1455 CE. Gutenberg's Bible was the first large book printed with movable metal type in Europe.

The Power of Communication

Gutenberg didn't make much money from his Bible or his new printing process. But as you read at the beginning of this chapter, he did change the world. Gutenberg's printing press and the availability of inexpensive paper made it possible to produce many copies of books and documents quickly. This dramatically lowered the price of books and other printed materials. Suddenly, people had a way to distribute ideas and information from person to person, and place to place, much faster than ever before.

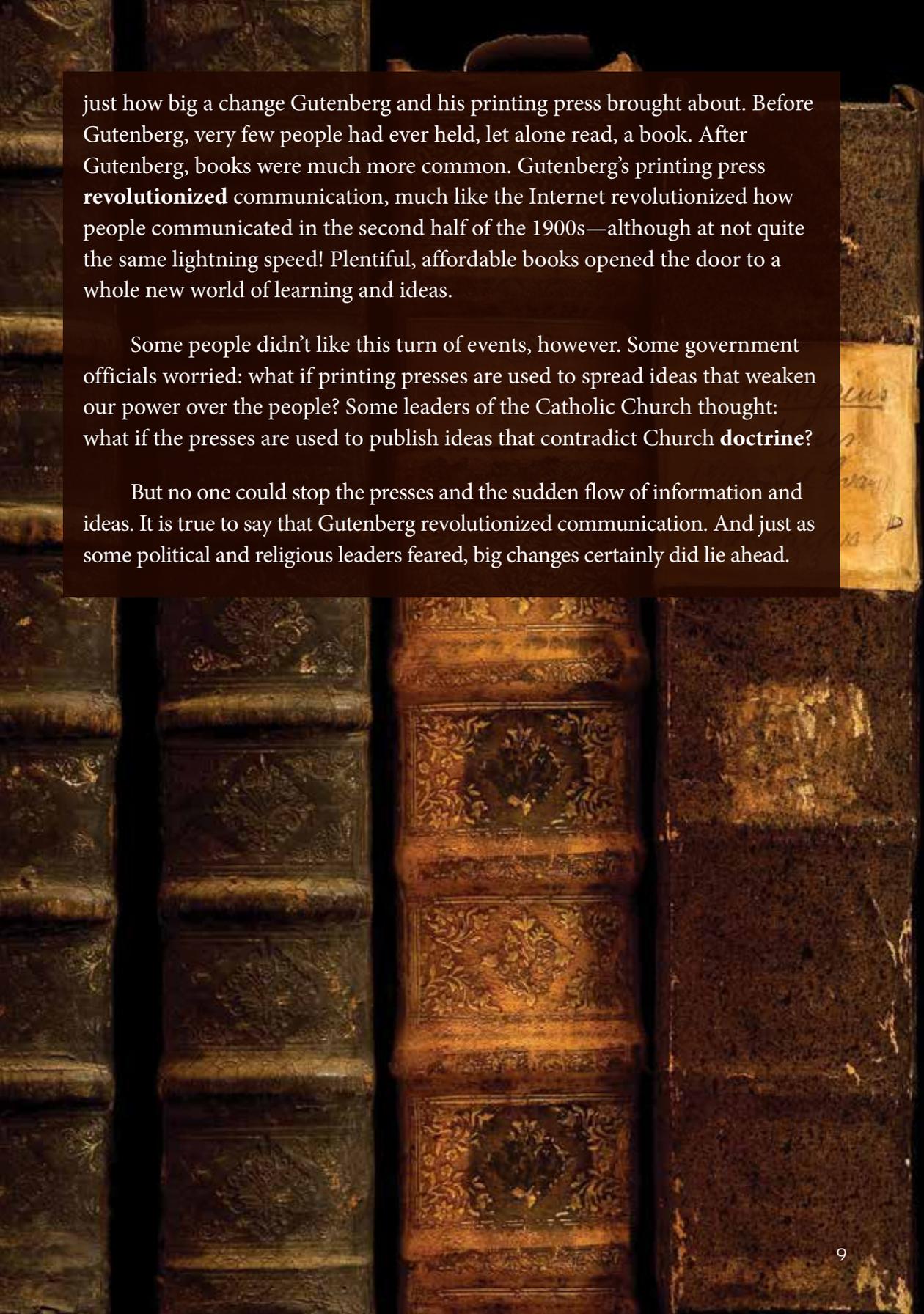
Soon printing presses just like Gutenberg's were producing hundreds and then thousands of books in cities throughout Europe. At first, most books were printed in Latin. But it wasn't long before books were being printed in more familiar languages including French, English, Italian, Spanish, and German.

At this time too, literacy, or the ability to read and write, increased across Europe. A growing middle class of merchants and craftsmen gained both wealth and influence. Learning to read and write became something more and more people wanted, and needed, to do. As a result, the demand for books increased. Books and other printed materials were more readily available for those people who could read.

Today, you can walk into a library or bookstore and choose from thousands of books. You can download books from the Internet to laptops, tablets, and phones. So you have to use your imagination to really appreciate

Incipit liber bresith que nos genesim

A principio creavit deus celum **dicimus**
et terram. Terra autem erat inanis et
vacua: et tenebre erant super faciem abyssi
et spiritus domini ferebatur super aquas. Dixitque
deus. **Fiat lux.** Et facta est lux. Et vidit
deus lucem quod esset bona: et divisit lucem
a tenebris. appellavitque lucem diem:
tenebras noctem. **Factumque** est vespere et
mane dies unus. **Dixitque** deus. **Fiat**
firmamentum in medio aquarum: et dividat
aquas ab aquis. **Et fecit** deus firmamentum:
divisitque aquas que erant sub firmamento
ab his que erant super firmamentum. et factum est
ita. **Vocavitque** deus firmamentum celum: et factum est
vespere et mane dies secundus. **Dixit** vero deus.
Congregentur aque que sub celo sunt in
locum unum et appareat arida. **Et factum** est
ita. **Et vocavit** deus aridam terram



just how big a change Gutenberg and his printing press brought about. Before Gutenberg, very few people had ever held, let alone read, a book. After Gutenberg, books were much more common. Gutenberg's printing press **revolutionized** communication, much like the Internet revolutionized how people communicated in the second half of the 1900s—although at not quite the same lightning speed! Plentiful, affordable books opened the door to a whole new world of learning and ideas.

Some people didn't like this turn of events, however. Some government officials worried: what if printing presses are used to spread ideas that weaken our power over the people? Some leaders of the Catholic Church thought: what if the presses are used to publish ideas that contradict Church **doctrine**?

But no one could stop the presses and the sudden flow of information and ideas. It is true to say that Gutenberg revolutionized communication. And just as some political and religious leaders feared, big changes certainly did lie ahead.



S.
DIONYSII
CARTHUSIA.
SERMONES
DOMINICA,



R. P.
ENGELHART
FESTIVALE



D. WICELY
EXPOS. IN
EUANGELLÆ

*Postille
a. 1546*

Upper and Lowercase

Have you ever heard someone call capital letters “uppercase” letters or small letters “lowercase” letters? These terms got their start in early printing shops like Gutenberg’s. A person called a typesetter arranged the individual pieces of type into the whole block of type that would be printed to create a page of text. This person grabbed pieces of type from two boxes, or cases, usually stacked one on top of the other. The upper case held the capital letters, while the lower case held the small letters. The names *uppercase* and *lowercase* caught on, and have survived for more than 500 years!



Type stored in cases

Parchment vs. Paper

The ancient Egyptians produced paper from the stems of the papyrus plant. Much later, the Chinese developed another way of producing paper. The Chinese method involved placing plant fibers in water to produce a pulp that could be pressed and dried into thin sheets. The art of papermaking slowly made its way across Asia into Europe. By the 1200s, there were paper mills in Spain and Italy.

In medieval Europe, paper was made primarily from linen rags. The rags were repeatedly soaked in water and beaten to create a pulp of tiny linen fibers. Papermakers dipped frames made of wire mesh into the pulp to capture a thin layer of these fibers, forming a sheet of paper. The sheets were dried and pressed, and sometimes polished with a smooth stone to create a soft, shiny surface. Compared to parchment, paper was lightweight and relatively inexpensive. Paper was often used for making small volumes of sermons and low-cost textbooks, whereas high-quality books were almost always produced using parchment. However, after the invention of the printing press, paper largely replaced parchment.



German papermakers in the 1600s