

Introduction

At the height of the Hussite crisis in the early 1400's, when the authorities ordered 200 manuscripts of heretical writings burned, people on both sides realized quite well the significance of that act. Two hundred handwritten manuscripts would be hard to replace. Not only would it be a time consuming job, but also trained scribes would be hard to find. After all, most of them worked for the Church, and it seemed unlikely that the Church would loan out its scribes to copy the works of heretics. Although the Hussites more than held their own against the Church, their movement remained confined mainly to the borders of their homeland of Bohemia. One main reason for this was that there was no mass media, such as the printing press to spread the word. A century later, all that had changed.

If one process started the chain reaction of events that led to the invention of the printing press, it was the rise of towns in Western Europe that sparked trade with the outside world all the way to China. That trade exposed Europeans to three things important for the invention of the printing press: rag paper, block printing, and, oddly enough, the Black Death.

For centuries the Chinese had been making rag paper, which was made from a pulp of water and discarded rags that was then pressed into sheets of paper. When the Arabs met the Chinese at the battle of the Talas River in 751 A.D., they carried off several prisoners skilled in making such paper. The technology spread gradually across the Muslim world, up through Spain and into Western Europe by the late 1200's. The squeeze press used in pressing the pulp into sheets of paper would also lend itself to pressing print evenly onto paper.

The Black Death, which itself spread to Western Europe thanks to expanded trade routes, also greatly catalyzed the invention of the printing press in three ways, two of which combined with the invention of rag paper to provide Europe with plentiful paper. First of all, the survivors of the Black Death inherited the property of those who did not survive, so that even peasants found themselves a good deal richer. Since the textile industry was the most developed industry in Western Europe at that time, it should come as no surprise that people spent their money largely on new clothes. However, clothes wear out, leaving rags. As a result, fourteenth century Europe had plenty of rags to make into rag paper, which was much cheaper than the parchment

(sheepskin) and vellum (calfskin) used to make books until then. Even by 1300, paper was only one-sixth the cost of parchment, and its relative cost continued to fall. Considering it took 170 calfskins or 300 sheepskins to make one copy of the *Bible*, we can see what a bargain paper was.

But the Black Death had also killed off many of the monks who copied the books, since the crowded conditions in the monasteries had contributed to an unusually high mortality rate. One result of this was that the cost of copying books rose drastically while the cost of paper was dropping. Many people considered this unacceptable and looked for a better way to copy books. Thus the Black Death rag paper combined to create both lots of cheap paper plus an incentive for the invention of the printing press.



The Black Death also helped lead to the decline of the Church, the rise of a money economy, and subsequently the Italian Renaissance with its secular ideas and emphasis on painting. It was the Renaissance artists who, in their search for a more durable paint, came up with oil-based paints. Adapting these to an oil-based ink that would adhere to metal type was fairly simple.

Block printing, carved on porcelain, had existed for centuries before making its way to Europe. Some experiments with interchangeable copper type had been carried on in Korea. However, Chinese printing did not advance beyond that, possibly because the Chinese writing system used thousands of characters and was too unmanageable. For centuries after its introduction into Europe, block printing still found little use, since wooden printing blocks wore out quickly when compared to the time it took to carve them. As a result of the time and expense involved in making block prints, a few playing cards and pages of books were printed this way, but little else.

What people needed was a movable type made of metal. And here again, the revival of towns and trade played a major role, since it stimulated a mining boom, especially in Germany, along with better techniques for working metals, including soft metals such as gold and copper. It was a goldsmith from Mainz, Germany, Johannes Gutenberg, who created a durable and interchangeable metal type that allowed him to print many different pages, using the same letters over and over again in different

combinations. It was also Gutenberg who combined all these disparate elements of movable type, rag paper, the squeeze press, and oil based inks to invent the first printing press in 1451.

The first printed books were religious in nature, as were most medieval books. They also imitated (handwritten) manuscript form so that people would accept this new revolutionary way of copying books. The printing press soon changed the forms and uses of books quite radically. Books stopped imitating manuscript forms such as lined paper to help the copiers and abbreviations to save time in copying. They also covered an increasingly wider variety of non-religious topics (such as grammars, etiquette, and geology books) that appealed especially to the professional members of the middle class.

By 1482, there were about 100 printing presses in Western Europe: 50 in Italy, 30 in Germany, 9 in France, 8 each in Spain and Holland, and 4 in England. A Venetian printer, Aldus Manutius, realized that the real market was not for big heavy volumes of the Bible, but for smaller, cheaper, and easier to handle "pocket books". Manutius further revolutionized book copying by his focusing on these smaller editions that more people could afford. He printed translations of the Greek classics and thus helped spread knowledge in general, and the Renaissance in particular, across Europe. By 1500, there were some 40,000 different editions with over 6,000,000 copies in print.

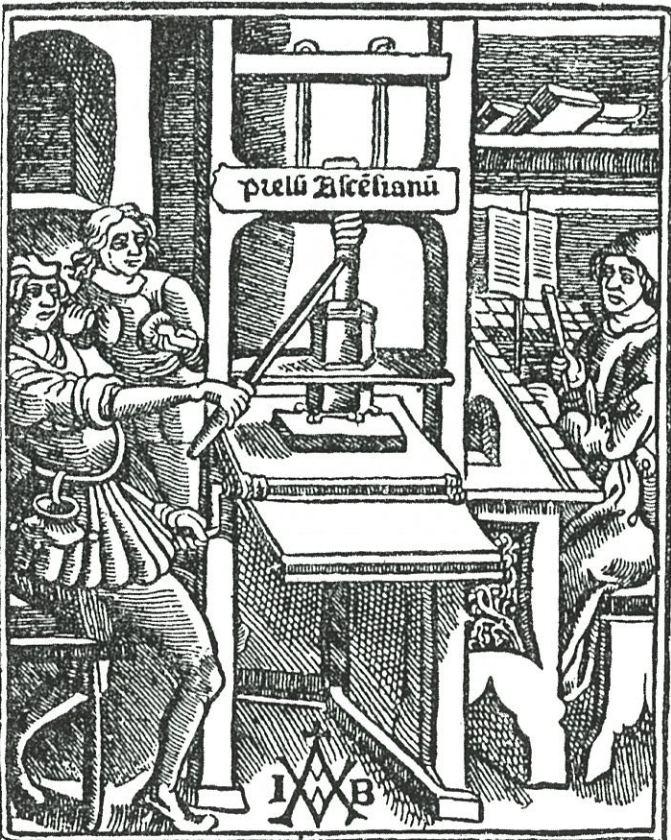


Fig. 1.

The impact of the printing press

The printing press had dramatic effects on European civilization. Its immediate effect was that it spread information *quickly* and *accurately*. This helped create a wider literate reading public. However, its importance lay not just in how it spread information and opinions, but also in what sorts of information and opinions it was spreading. There were two main directions printing took, both of which were probably totally unforeseen by its creators.

First of all, more and more books of a secular nature were printed, with especially profound results in science. Scientists working on the same problem in different parts of Europe especially benefited, since they could print the results of their work and share it accurately with a large number of other scientists. They in turn could take that accurate, not miscopied, information, work with it and advance knowledge and understanding further. Of course, they could accurately share their information with many others and the process would continue. By the 1600's, this process would lead to the Scientific Revolution of the Enlightenment, which would radically alter how Europeans viewed the world and universe.

The printing press also created its share of trouble as far as some people were concerned. It took book copying out of the hands of the Church and made it much harder for the Church to control or censor what was being written. It was hard enough to control what Wycliffe and Hus wrote with just a few hundred copies of their works in circulation. Imagine the problems the Church had when literally thousands of such works could be produced at a fraction of the cost. Each new printing press was just another hole in the dyke to be plugged up, and the Church had only so many fingers with which to do the job. It is no accident that the breakup of Europe's religious unity during the Protestant Reformation corresponded with the spread of printing. The difference between Martin Luther's successful Reformation and the Hussites' much more limited success was that Luther was armed with the printing press and knew how to use it with devastating effect.

Butler, Chris. "The Flow of History." *FC106: Napoleon and His Impact (1799-1815) - The Flow of History*, 2007, www.flowofhistory.com/units/west/11/FC74.

This DBQ asks you to create an argument that answers the following prompt: *To what extent was the printing press a turning point in European history?*

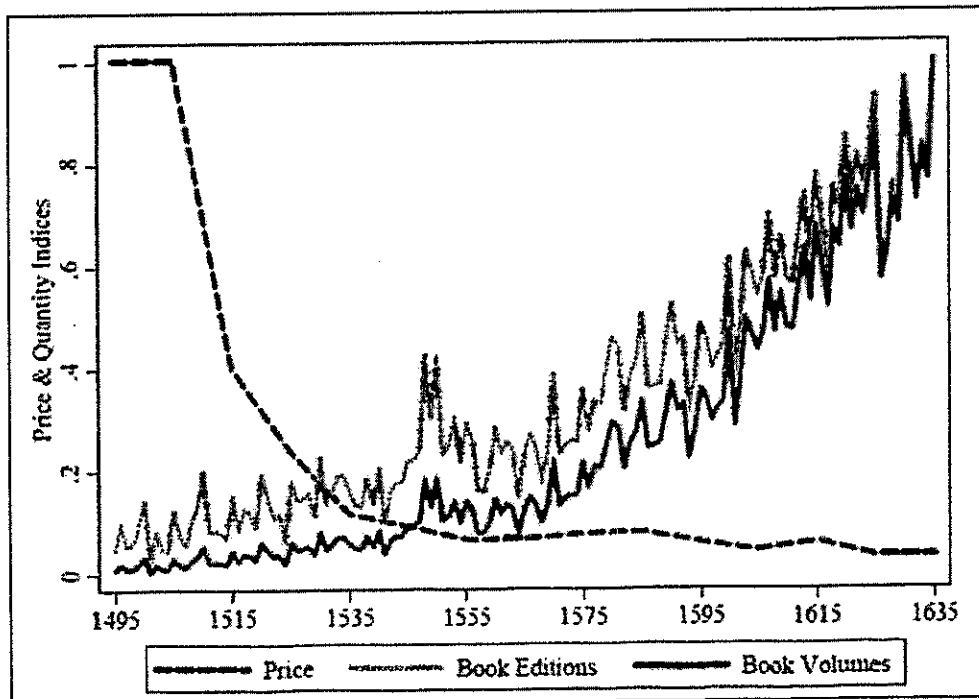
Use the documents below and your knowledge of world history to answer:

TO WHAT EXTENT WAS THE INVENTION OF THE PRINTING PRESS A TURNING POINT IN WORLD HISTORY?

*as you read, take notes on the graphic organizer. You will be able to use these documents + your organizer when you write your DBQ on Monday. **use this exercise to better understand how to write your research paper! Create an argument and PROVE IT!!

DOC A

Prices and Quantities of Printed Books in England 1495-1639



The Welfare Impact of a New Good: The Printed Book Jeremiah Dittmar 2011

DOC B

* both excerpts on
this page are doc B

Source: Derek T. Whiteside, editor, *The Mathematical Papers of Isaac Newton I: 1664-1666*, cited by I.B. Cohen book review, *The Scientific American*, January, 1968.

... at the beginning of Newton's final year as an undergraduate (1664) ... he gave up an exclusive diet of reading the ancients ... and plunged into the moderns.... He read and made notes on Galileo's *Dialogues* ... and Descartes' *Principles of Philosophy*.... As we turn the pages of his notebooks we can see his mind leap from summaries of his reading to his own new principles and results.... He began to think of gravity as a force extending as far as the moon.... In those two years a mathematician was born.

Isaac Newton's Bookshelf

Source: Charles Coulston Gilliespie, editor, *Dictionary of Scientific Biography*, New York: Charles Scribner's Sons, 1974.

Isaac Newton, the father of the Scientific Revolution, was admitted at the age of 19 to Trinity College, Cambridge, England, on June 5th, 1661. Among the books that he read at Trinity were the following:

***Dialogo* by Galileo (1564-1642) Italian scientist and philosopher**

In this work, Galileo challenges the idea that the earth is the center of the universe and argues that falling bodies fall toward the center of the earth, not the center of the universe.

***Dioptrice* by Johannes Kepler (1571-1630) German astronomer, physicist, mathematician**

In this work Kepler describes how lenses work and applies his ideas to a new kind of astronomical telescope with two convex lenses.

***Micrographia* by Robert Hooke (1635-1702) English chemist, physicist**

Hooke describes his observations through a microscope, and for the first time, accompanies them with illustrations. This was the first great work devoted to this subject.

***Geometrie and Principles of Philosophy* by Rene Descartes (1596-1650) French philosopher**

Descartes spells out the foundations of analytical geometry. He is credited with the discovery of this branch of mathematics.

***Organon* by Aristotle (384-322 BCE) Greek philosopher and student of Plato**

This book along with several other Greek classics including Aristotle's *Ethics* provides evidence that Newton was well-grounded in Greek rhetoric and logic.

***Elements* by Euclid (3rd century BCE) Greek mathematician**

In this classical work Euclid creates the first systematic geometry based on clarification of such previously undefined concepts as point, line, and plane. Our young scholar Newton is said to have found Euclid "trifling" and put him back in the shelf in favor of a Latin edition of Descartes' *Geometrie*.

DOC C

Ten Important Works of Classical and Medieval Authors*

(Date represents first printing)

Homer, *Iliad and Odyssey*, Florence, 1488/89.

Plato, *Dialogues*, Florence, 1484.

Aristotle, *Works*, Venice, 1495-8.

Ptolemy, *The Cosmographia*, Bologna, Italy, 1477.

Herodotus, *Histories*, Venice, 1502.

Virgil, *Aeneid*, Venice, 1491.

Saint Augustine, *The City of God*, Subiaco, Italy, 1467; and
The Confessions, Strasbourg, Germany, 1470.

Thomas Aquinas, *Summa Theologica*, Basel, Switzerland, 1485.

Dante, *Divine Comedy*, Foligno, Italy 1471.

Thomas à Kempis, *The Imitation of Christ*, Augsburg, Germany 1473.

Note: In the 50 years following Gutenberg's invention, three-fourths of the 20 million newly printed books were classical or medieval works. These books had existed already in scribal manuscript form, but now for the first time were widely available to all who could read. Moreover, as Latin and Greek texts became more well known, publishers began to print the same works in the vernacular (native language), thus expanding the reach of these ancient ideas even further.

*Classical authors dated back to the time of Ancient Greece and Rome. Medieval authors wrote during the several centuries before the invention of the printing press but after the fall of Rome.

Source: John Man, *Gutenberg: How One Man Remade the World with Words*, 2002.

DOC D

As Rome prepared the heavy artillery, Luther fired off more salvos, with the help of the press. His sermons, tracts and polemics, all in German ... streamed from presses by the hundreds of thousands.... According to one estimate, a third of all books printed in Germany between 1518 and 1525 were by him. Pause to consider that figure. Of course, printing was in its infancy, but Germany at the time was turning out about a million books a year, of which a third - 300,000 - were by Luther. No comparison with the modern world stands up, but it would be the equivalent of one author selling almost 300 million books in Britain (which prints some 800 million a year), or 700 million in the US, every year, for seven years running.

DOC E

Source: Petrarch, Italian poet and man of letters, letter to Boccaccio, 1366

To be sure, the Latin, in both prose and poetry, is undoubtedly the nobler language, but for that very reason it has been so thoroughly developed by earlier writers that neither we nor anyone else may expect to add very much to it. The vernacular, on the other hand, has but recently been discovered, and, though it has been ravaged by many, it still remains uncultivated, in spite of a few earnest labourers, and still shows itself capable of much improvement and enrichment. Stimulated by this thought, and by the enterprise of youth, I began an extensive work in that language. I laid the foundations of the structure... And then I began to consider a little more carefully the times in which we live, the fact that our age is the mother of pride and indolence, and that the ability of the vainglorious fellows who would be my judges, and their peculiar grace of delivery is such that they can hardly be said to recite the writings of others, but rather to mangle them. Hearing their performances again and again, and turning the matter over in my mind, I concluded at length that I was building upon unstable earth and shifting sand, and should simply waste my labours and see the work of my hands levelled by the common herd.

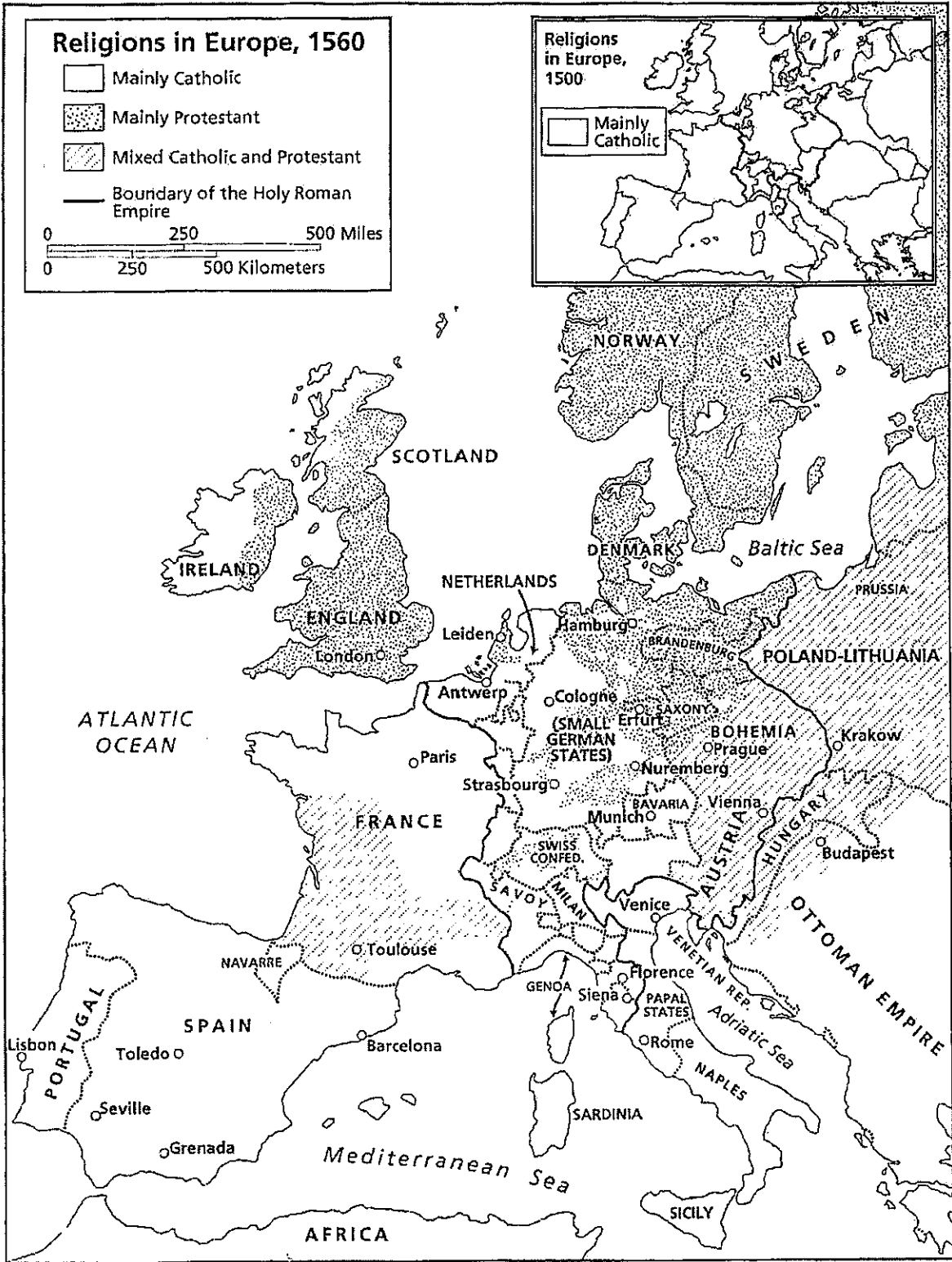
DOC F

Source: The Council of Trent, Rules concerning prohibited books drawn up by the fathers chosen by the Council and approved by Pope Pius, c. 1564

The books of those heresiarchs, who after the aforesaid year originated or revived heresies, as well as of those who are or have been the heads or leaders of heretics... whatever may be their name, title or nature of their heresy, are absolutely forbidden. The books of other heretics, however, which deal professedly with religion are absolutely condemned. Those on the other hand, which do not deal with religion and have by order of the bishops and inquisitors been examined by Catholic theologians and approved by them, are permitted. Likewise, Catholic books written by those who afterward fell into heresy, as well as by those who after their fall returned to the bosom of the Church, may be permitted if they have been approved by the theological faculty of a Catholic university or by the general inquisition.

DOC G

Source: Map created from various sources.



DOC H

*both docs on this page are
doc H

Source: Christopher Columbus' Letter, *Concerning the Islands Recently Discovered in the Indian Sea*, 1493.

Excerpt from Columbus' 15-page Letter to the King of Spain

Because my undertakings have attained success, I know that it will be pleasing to you: these I have determined to relate, so that you may be made acquainted with everything done and discovered in this our voyage. On the thirty-third day after I departed from Cadiz, I came to the Indian sea, where I found many islands inhabited by men without number, of all which I took possession for our most fortunate king, with proclaiming heralds and flying standards, no one objecting.

Note: Columbus is believed to have written much of the letter on his return voyage from the Americas.

Dissemination of Columbus' Letter

