

# From Gutenberg to Google-

**A Look at the History of the Printed Word**

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# Before Gutenberg . . .

- Everything was hand-written by scribes in the Western World. In Medieval monasteries, monks who worked with pen & ink worked in a room known as a scriptorium.
- There were approximately 30,000 books on the entire continent of Europe before Gutenberg, the majority of which were bibles or religious works. By 1500, there were more than nine million books on various subjects.



# A Scribe during the 1440s



*A scribe during the 1400s.*



## In 1455 . . .

- A printed, two volume (1,282 pgs) Latin Bible appears, a book that is now known as the Gutenberg bible, after Johann Genfleisch zur Laden zum Gutenberg, a printer whose workshop was in Mainz, Germany. Approximately 180 copies are produced, 48 known copies exist today.
- This bible is seen as the symbolic of the beginning of the systematic use of moveable type, though Gutenberg printed other items before it.
- Gutenberg combined moveable type, paper & ink with a Wooden press, possibly modeled after the winepresses in use in the Rhineland vineyards or on the papermaker's press. It was the beginnings of the Letterpress, which would transform the transmission of human ideas across the globe.



Pause to Consider the Ramifications  
of Gutenberg's contribution to  
Mankind ...

Write down on a sheet of paper what  
you think the invention of moveable  
print & the printing press made  
possible




# Here's a top ten list:

- The disintegration of the Catholic church's monopoly on the written word
- The gradual spread of literacy
- The spread of scientific thinking
- The acceptance of vernacular languages for written works
- Democratic governments
- secular universities
- The novel, the short story, the newspaper
- Renaissance
- Protestant Reformation
- The widespread knowledge of the history of other cultures and other races



# How was the Bible printed?

 A typesetter selected individual pieces of type for each line of the 42 lines of text and set them in a frame, which was placed on the bed of the press and then inked with horsehair-stuffed balls. A sheet of paper was slightly moistened before being placed over the frame, and then a stout pull by the pressman completed the printing process.











What did YOU notice about the type and presentation of the pages I just showed you of the Gutenberg Bible?



# What you might have noticed was:

- The text is set in 2 columns
- There were at least two large (drop) capitals letters on the page
- There are both upper and lowercase letters used in the typesetting
- Most of the text is in black, a few lines in red
- The drop capitals are illustrated and have color in them
- The columns are set using justified text
- The bible is printed using block letter or gothic type, resembling a script called gothic textura in use already for hand-done illuminated manuscripts



## What you couldn't see was that . . .

- The bible was set in 42 lines per page
- The type contained ligatures—linked letters.
- The majority of copies were printed on handmade paper, imported from Italy, and each sheet contains a watermark
- A few copies were printed on vellum (scraped calfskin).
- Gutenberg's ink was oil-based, with a high metal composition that gives it an exceptionally black appearance.
- The bible was sold in folded sheets and bound later. Illustrations and decorations were added later according to the owner's tastes.



# Typesetters today still . . .

- Justify text in order to fit the maximum amount of copy on a sheet of paper
- Drop caps are used frequently in magazines, books, and other forms of printed matter to designate important passages and add beauty to a page.
- Text is often set in columns of equal line length in a grid
- Color is used to distinguish captions or other important text elements, though today it is added during the printing and not later
- Illustrations highlight important sections of text, though today they are also printed with the text and not added late
- Use typefaces with ligatures



# Like the 15th century printer,

- At today's printers, binding is still a separate process from printing, and the printing is a separate charge from the binding, although the customer usually buys the bound product from the same printer, unlike the Gutenberg bibles, where the customer arranged for the binding and illumination.
- Printing inks are still usually oil-based, though the composition is very different from Gutenberg's day. Gutenberg's inks were made from linseed oil, lampblack and eggwhite.



# Who was Gutenberg's target market ?

- Given their fine quality paper and printing, monasteries or wealthy clergymen were the buyers of these bibles
- Like any businessman today, the financing of the print shop for the bibles was needed before the sales could begin. Gutenberg had a wealthy Mainz individual, Johann Fust, who provided the funds for his bible print shop
- Gutenberg also funded his work from the sale of indulgences to wealthy individuals.





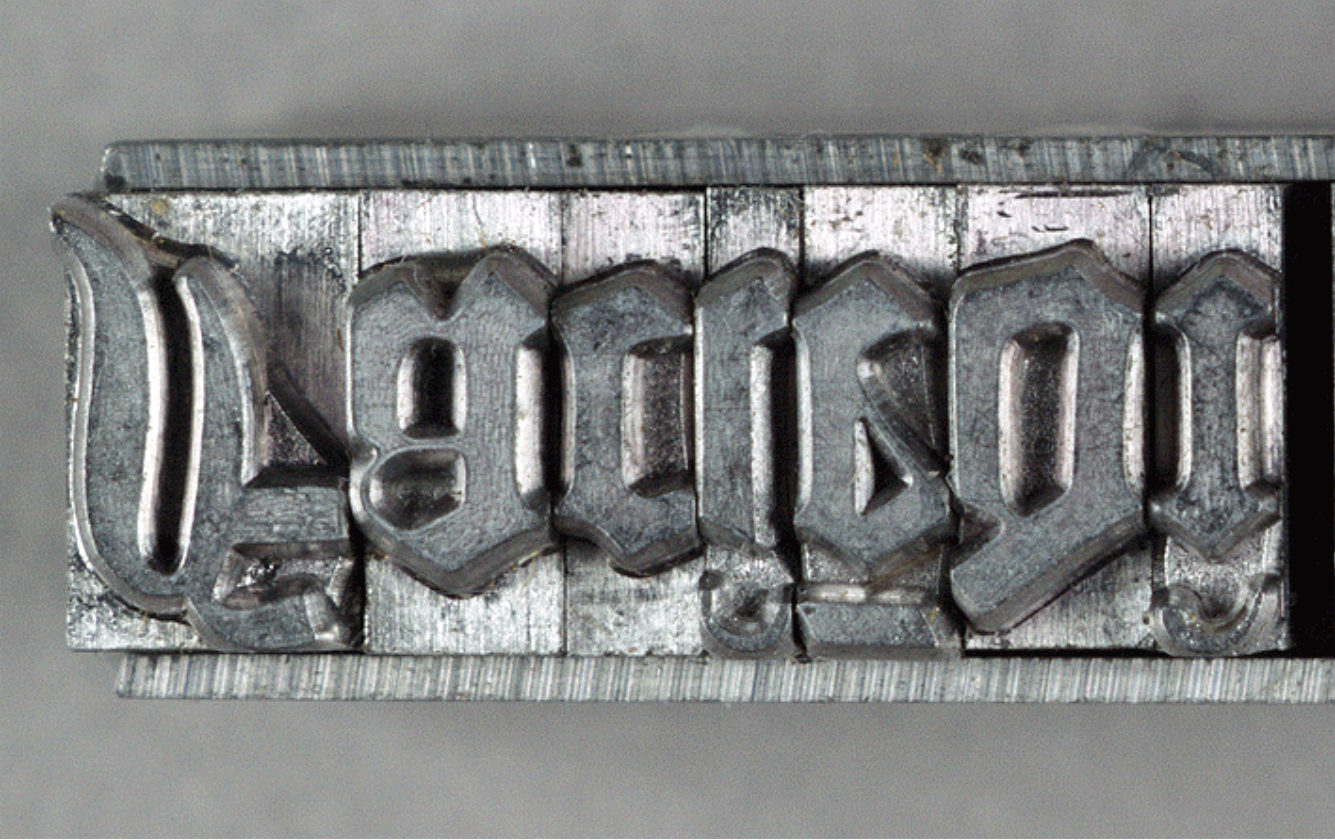
# Why was Gutenberg's Invention unique?

- The breakdown of the text into its smallest component, the 26 letters of the alphabet
- His process allowed individual letters to be cast with the appropriate metal alloy, enabling the precise adjustment of the mold to guarantee the uniformity of the type.
- The use of screw presses to press the moist paper onto the type
- Letterpress printing didn't change much for the next 350 years!!



Printing press in Gutenberg's day,  
on the right and on the left, the  
Columbia Eagle Press, invented in 1870





# Gutenberg's contribution . . .

- Did not go unnoticed in his lifetime as he was given a pension by the Archbishop of Mainz for clothing, wine and grain
- In our century, Gutenberg named by Time Magazine, as a "man of the millennium"
- <http://www.gutenbergdigital.de/gudi/>
- <http://www.hrc.utexas.edu/exhibitions/permanent/gutenberg/project/>



# After Gutenberg. . .

- Printing spread rapidly through Europe, with workshops opening in all the major European countries. Medical and scientific books were printed, as were maps and calendars.
- The price of a book dropped to one-half and even one-fourth the price of the original price.
- By 1515, the Church became so concerned about losing its monopoly on the dissemination of information that Pope Leo X issued a Papal Bull that attempted to control the printing of books and to censor them. Like many later measures to control printing, it failed.
- Books no longer resembled manuscripts, they used different formats and began to integrate woodcuts.



# Aldus Manutius, Venetian Printer

- Born around 1451, began his print career in 1494 in Venice, Italy. In the 15th century, Venice had more printers than anywhere else.
- Aldus introduced page numbering in books and standardized punctuation
- He popularized the use of fonts designed by the Frenchman Nicholas Jensen in small pocket sized books. These small books were more affordable and made popular classics available to more people. He cut a font called Chancery to make more letters fit on a page and derivations of this font we now call italic.



## Aldus named for the Venetian Printer

- Aldus Corporation was responsible for the first desktop page layout program, Pagemaker. Aldus later merged with Adobe Corporation in 1994.
- Paul Brainard, founder of Aldus was the person who coined the term “desktop publishing”. In 1994, he was the first American given Europe’s prestigious Gutenberg Prize for his contributions to printing and publishing.



# Dr. Alan Kay, on Aldus the printer. . .

■ *The desktop computer to me, at least since 1968 has been a passing phase. It's not an aberration, but it's like Gutenberg in that you invent something new, but you don't know what it is, so you put it in the old case. Aldus [Mantius] is my hero. He's the guy who wanted books that could fit into saddlebags, so he was forced not only to change the size of the book, but to also invent a lot of modern typography in order to make the books legible." Alan Kay .*

■ **Who is Alan Kay?**

■ **Dr. Alan Kay, President of Viewpoints Research Institute, Inc., and Senior Fellow at Hewlett Packard Labs and is best known for the ideas of personal computing, the intimate laptop computer, and the inventions of the now ubiquitous overlapping-window interface and modern object-oriented programming. One of the founders of the Xerox Palo Alto Research Center, (PARC) he led one of the several groups that together developed modern workstations (and the forerunners of the Macintosh), Smalltalk, the overlapping window interface, Desktop Publishing, the Ethernet, Laser printing, and network "client-servers."**





# Key dates for printing in English

- William Caxton in 1476. He printed, among other items, Chaucer's *The Canterbury Tales* and the *Fables of Aesop*.
- Oxford University Press established in 1585 and has operated continuously since that date
- Richard Pynson, a printer in the latter part of the 15th century/early 16th century believed to be the first to print using Roman typefaces.
- William Caslon born in 1692, will design many Old Style Typefaces between 1716 and 1728, including the Caslon type family. This face was used by Benjamin Franklin and for the first Printing of the Declaration of Independence.



## In America,

- First printing press in 1638 in Massachusetts and the first printed piece was The Freeman's Oath.
- Benjamin Franklin, the most famous American of his day, begins his career as a printer. He provided funds and other support for about 40 printing plants in the colonies and at his death, preferred to be known first as a printer in his epitaph.
- The Stamp Act of 1764 was really a tax on printer. Thomas Paine's pamphlet Common Sense helped generate the support for the revolution.



## In 1886, a Milestone in Typesetting .

- Otto Mergenthaler demonstrates the Linotype, a major step forward in Letterpress printing as it automated the setting of type, replacing labor-intensive handsetting of type.
- Once again, a technological breakthrough makes it easier for pages to be printed faster and at a reduced cost.
- It was estimated that 12,000 composing room workers lost their jobs during the period 1890 to 1910, but by 1910 more jobs were created than were lost.
- Mergenthaler Linotype Company founded in Brooklyn, NY in 1890. Linotype company still exists selling typefaces.



# A Look at the Linotype

Keystrokes retrieved letter molds from the magazines. The machine poured molten **lead** into the molds, producing a complete line of type in reverse, so it would read properly when used to transfer **ink** onto paper. The molds were then assembled by hand onto a page.



# Significant Changes in press design begin in the 19th century

- First steam powered press early in the century. Used to print the *London Times* in 1814, designed by Friedrich Gottlob Koenig. It could print three times faster than the hand press. Koenig later developed the perfecting press, by which we mean that the press prints both sides of the paper at once.
- First successful web (self-feeding press) was developed by William Bullock of Philadelphia in 1865 The continuous roll of paper was printed on both sides of the sheet –Bullock later died as a result of injured suffered when his clothes were caught is the running press.



# In the 20th century, Letterpress is supplanted by offset lithography

- Lithography is now the dominant printing process
- Based on the principle that oil & water do not mix.
- Printing plate is treated so that ink, which is oil-based adheres to the image area, while it doesn't adhere to the non-image areas, which are water receptive
- Image is offset from the plate to the rubber blanket on the cylinder and then back onto the paper from an impression cylinder











GRAPH  
EXPO  
CONVERTING  
EXPO  
1700

hp imp

MAN  
ROLAND

1

LITHOMAN



WEB

solutions

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# The rise of “cold” type

- In 1954, the Harris Intertype company introduced the Harris Fotosetter, the first truly commercial phototypesetting machine—font masters were created on negative film and projected through the lens on paper or film—the computer has begun to transform typesetting
- 1966, Mergenthaler Linotype Company releases a typesetting machine called the VideoComp, based on machines developed by a company in Germany. The electronically produced characters were recorded on film or on photographic paper.
- In the 1970s, Atex and other dedicated typesetting systems were used to set the type for printed magazines, newspapers, etc. on computer terminals using typographic codes and page makeup commands.



# Postscript hits the marketplace

- in 1985, Adobe introduces a page description language called Postscript, that RIPs (raster image processors) interpret for output to a proofer or to film or a printing plate or paper.
- Apple had introduced the Macintosh computer the year before and becomes the computer most used for desktop published in the '80s and 90's.
- Pagemaker introduced by Aldus in 1985, first page layout software—output PostScript.



# Adobe History

