

The Printing Revolution

Extracted from Wikipedia article, “Printing Press” on December 8, 2017

The Printing Revolution occurred when the spread of the printing press facilitated the wide circulation of information and ideas, acting as an ‘agent of change’ through the societies that it reached.¹ (Eisenstein (1980))

The invention of mechanical movable type printing (by Gutenberg et al, approximately 1436 C.E.) led to a huge increase of printing activities across Europe within only a few decades. From a single print shop in Mainz, Germany, printing had spread to no less than around 270 cities in Central, Western and Eastern Europe by the end of the 15th century. (“Incunabula Short Title Catalogue” British Library. Retrieved 2 March 2011.) As early as 1480 C.E., there were printers active in 110 different places in Germany, Italy, France, Spain, the Netherlands, Belgium, Switzerland, England, Bohemia and Poland. From that time on, it is assumed that “the printed book was in universal use in Europe.” (Febvre, Lucien; Martin, Henri-Jean (1976))

In Italy, a center of early printing, print shops had been established in 77 cities and towns by 1500. At the end of the following century, 151 locations in Italy had seen at one time printing activities, with a total of nearly three thousand printers known to be active. Despite this proliferation, printing centres soon emerged; thus, one third of the Italian printers published in Venice.² (Borsa 1976, p. 314; Borsa 1977, p. 166–169)

By 1500, the printing presses in operation throughout Western Europe had already produced more than twenty million copies. In the following century, their output rose tenfold to an estimated 150 to 200 million copies. (Febvre, Lucien; Martin, Henri-Jean (1976))

European printing presses of around 1600 were capable of producing about 1,500 impressions per workday. (Pollak, Michael (1972)) By comparison, book printing in East Asia, did not use presses and was solely done by block printing.³ (Needham 1965, p. 211⁴)

Of Erasmus’ work, at least 750,000 copies were sold during his lifetime alone (1469–1536). (Is-sawi 1980, p. 492) In the early days of the Reformation, the revolutionary potential of bulk printing took princes and papacy alike by surprise. In the period from 1518 to 1524, the publication of books in Germany alone skyrocketed sevenfold; between 1518 and 1520, Luther’s tracts were distributed in 300,000 printed copies. (Duchesne 2006, p. 83)

The rapidity of typographical text production, as well as the sharp fall in unit costs, led to the issuing of the first newspapers which opened up an entirely new field for conveying up-to-date information to the public. (Weber 2006, pp. 387f)

The printing press was also a factor in the establishment of a community of scientists who could easily communicate their discoveries through the establishment of widely disseminated scholarly journals, helping to bring on the scientific revolution.⁵ Because of the printing press, authorship became more meaningful and profitable. It was suddenly important who had said or written what, and what the precise formulation and time of composition was. This allowed the exact citing of references, producing the rule, “One Author, one work (title), one piece of information.” (Giesecke, 1989; 325) Before, the author was less important, since a copy of Aristotle made in Paris would not be exactly identical to one made in Bologna. For many works prior to the printing press, the name of the author has been entirely lost.⁶

Because the printing process ensured that the same information fell on the same pages, page numbering, tables of contents, and indices became common, though they previously had not been unknown. The process of reading also changed, gradually moving over several centuries from oral readings to silent, private reading. Over the next 200 years, the wider availability of printed materials led to a dramatic rise in the adult literacy rate throughout Europe. (Peck, Josh)

The printing press was an important step towards the democratization of knowledge.⁷ (Malte Herwig, 2007; Howard Rheingold, 2009) Within 50 or 60 years of the invention of the printing press, the entire classical canon had been reprinted and widely promulgated throughout Europe (Eisenstein, 1969; 52). Now that more people had access to knowledge both new and old, more people could discuss these works. Furthermore, now that book production was a more commercial enterprise, the first copyright laws were passed to protect what we now would call intellectual property rights. On the other hand, the printing press was criticized for allowing the dissemination of information which may have been incorrect.⁸ (Julia C. Crick; Alexandra Walsham (2004); Nick Bilton (2010))

A second outgrowth of this popularization of knowledge was the decline of Latin as the language of most published works, to be replaced by the vernacular language of each area, increasing the variety of published works. The printed word also helped to unify and standardize the spelling and syntax of these vernaculars, in effect ‘decreasing’ their variability.⁹ This rise in importance of national languages as opposed to pan-European Latin is cited as one of the causes of the rise of nationalism in Europe.

A third consequence of popularization of printing was on the economy. Printing press was associated with higher levels of city growth. (Jeremiah Dittmar, 2011) Publication of trade related manuals and books teaching techniques like double-entry bookkeeping, increased reliability of trade and led to decline of merchant guilds and rise of individual traders. (Prateek Raj, 2017)

¹ Commentary: Some people think of things and forget to write them down. Some other people write stuff down and forget to think.

² Commentary: Italic Type was invented and used by a Venetian printer, Aldus Manutius around 1500. He also left his mark on the printed comma and semi-colon, and vigorously reprinted the lost classical and ancient works for the first time. His Aldine Press continued until the end of the 16th Century, about 100 influential years.

³ Commentary: Note that a movable type press was known to the Song Dynasty in the 13th Century C.E., but as is discussed later, many East Asian inventions, predating those in Europe, were restricted, abandoned and lost, only to be re-imported from Europe later. This is part of a process known as the East-West Technological Inversion.

⁴ Citation & Commentary: “The outstanding difference between the two ends of the Old World was the absence of screw-presses from China, but this is only another manifestation of the fact that this basic mechanism was foreign to that culture.” – Needham, 1965.

✓ “Chinese paper was suitable only for calligraphy or block-printing; there were no screw-based presses in the east, because they were not wine-drinkers, didn’t have olives, and used other means to dry their paper.” – Duchesne, 2006, Man, 2002. The introduction of European olives (and other fruits) to China and other places, is an example of another macro-historical process, the 400-year Columbian Exchange.

⁵ Commentary: For example, Kepler’s “Conversation with Galileo’s Sidereal Messenger,” quoted previously in 2 Sidereal Stage, was published in 1610 in response to Galileo’s *Sidereus Nuncius*, also published in 1610. This is the book that got Galileo embroiled in the famous controversy with the Church – because he said that celestial bodies, specifically the moon, had mountains, irregularities, like the Earth, and was not a perfect spherical heavenly body. Independent observations by others soon confirmed his claims; this begins the necessity of independent verification to scientific claims. Francis Bacon published his famous book, *Novum Organum Scientiarum*, around 1620 C.E.

⁶ Commentary: And here would be an interesting point for discussion. It is implied that the loss of the author's name is inherently bad. But it is not clear why this is? What is important about the author's name if we still have the written work? The importance of authorship in printed works, both for reference and for the commercial value of the name, arising from the printing revolution parallels generally the egocentric, individualism drift of Western Society and later, civilization globally, in the last 500 years, the first technological empowerment of individualism. Before the printing press, could modest Erasmus have put or even envisioned his name on 750,000 works?

⁷ Commentary: I admit that when I read the story of Diderot, I was disappointed that he signed the letter of submission and gave oral deposition against his publisher and printer to escape incarceration in 1749. He also swore not to write any further offensive materials. But maybe he was crazy like a fox. Diderot, through his writings and his 20 year labor, the *Encyclopédie* (banned in 1759), began to wrestle the privilege of knowledge and learning away from the elite and wealthy, the aristocracy, and royalty and hereditary nobility, and to redefine the notion of the nation. He also gained the odd patronage of and strange friendship with the enlightened despot, Catherine the Great of Russia, which probably restrained the French persecution of Diderot since his entire library was her property and he was her caretaker in France. He started the information age, which is now a ubiquitous reality of governments everywhere, thanks in large part to the U.S. Government – first with the need for machines to calculate the Census and naval gunfire tables, and later, ARPANET (U.S. DoD research network), which morphed into the internet.

⁸ Commentary: Yes, Mr. President, American media can print whatever stories they want, without your approval.

⁹ Commentary: The Great Vowel Shift began in the English language around 1350 and continued through the period of the printing revolution, into the 17th Century. The printing press was brought to England around 1470. Because printing standardized spellings and punctuation, while oral pronunciations shifted, many English words are not printed on paper the way they are pronounced by native English speakers.