



8

JOHANN GUTENBERG

1400 - 1468

Johann Gutenberg is often called the inventor of printing. What he actually did was to develop the first method of utilizing movable type and the printing press in such a way that a large variety of written material could be printed with speed and accuracy.

No invention springs full-blown from the mind of a single man, and certainly printing did not. Seals and signet rings, which work on the same principle as block printing, had been used since ancient times. Block printing had been known in China many centuries before Gutenberg, and, in fact, a printed book dating from about 868 has been discovered there. The process was also known in the West before Gutenberg. Block printing makes possible the production of many copies of a given

book. However, the process has one major drawback: since a completely new set of woodcuts or plates must be made for each new book, it is impractical for producing a large variety of books.

It is sometimes said that Gutenberg's main contribution was the invention of movable type. However, movable type was invented in China, some time in the middle of the eleventh century, by a man named Pi Sheng. His original type was made of earthenware, which is not very durable; however, other Chinese and Koreans made a series of improvements, and well before Gutenberg, Koreans were using metal type. In fact, the Korean government was supporting a foundry for the production of printing type in the early fifteenth century. Despite all this, it would be a mistake to think of Pi Sheng as a particularly influential person. In the first place, Europe did not learn of movable type from China, but developed it independently. In the second place, printing by means of movable type never came into general use in China itself until comparatively recent times, when modern printing procedures were learned from the West.

There are four essential components of modern printing methods. The first is movable type, along with some procedure for setting it and fixing it in position. The second is the printing press itself. The third is a suitable type of ink, and the last is a suitable material, such as paper, on which to print. Paper had been invented in China many years earlier (by Ts'ai Lun), and its use had spread to the West before Gutenberg's day. That was the only element of the printing process that Gutenberg found ready-made. Although some work had been done before him on each of the other three elements, Gutenberg made a variety of important improvements. For example, he developed a metal alloy suitable for type; a mold for casting blocks of type precisely and accurately; an oil-based printing ink; and a press suitable for printing.

But Gutenberg's overall contribution was far greater than any of his individual inventions or improvements. He is important principally because he combined all the elements of printing into an effective system of production. For printing, unlike all prior inventions, is essentially a process of mass production. A

single rifle is in itself a more effective weapon than a single bow and arrow. A single printed book, however, is no different in its effect from a single hand-written book. The advantage of printing therefore is mass production. What Gutenberg developed was not a single gadget or device, or even a series of improvements, but a complete manufacturing process.

Our biographical information concerning Gutenberg is scanty. We know that he was born about 1400, in the city of Mainz, Germany. His contributions to the art of printing were made in the middle of the century, and his best known work, the

Gutenberg and friends examine the first printed page.



Vras sirus natione antih-
 occulis arte iudic? dila-
 pulus apostolor? postea
 paulū secut? usq; ad con-
 fessionē d? seruens dño sine crimine:
 nam neq; uxorem unq; habuit neq; fi-
 lios: septuaginta et quatuor annorū
 obiit in bithynia. pleq; spiritu sancto.
 Qui cū iam scripta essent euāgelia. p
 mathēū quidē in iudra. p marcū autē
 in italia: sancto instigante spiritu in
 achaie parib; hęc scripsit euāgelicū:
 significans etiā ipse in principio ante
 suū alia esse descripta. Qui cetera ea q̄
 ordo euāgelice dispositionis exposcit:
 ra maxime necessitas laboris fuit: ut
 primū grecis fidelib; omni pphetati-
 one uerturi in carnē dei cristi manife-
 stata humanitate ne iudaicis fabulā
 arcenti: in solo legis desiderio tene-
 tur: uel ne hereticis fabulis et stultis
 sollicitationib; seducti reciderent a ue-
 ritate et laborarent: dehinc. ut in princi-
 pio euāgelij iohānis natiuitate pre-
 sumpta. cui euāgelium scriberet et in
 quo elect? scriberet indicaret: cōtestās i
 se cōpleta esse. q̄ essent ab alijs incho-
 ra. Qui ideo post baptisimū filij dei a
 pfectione generacionis i cristo imple-
 re pende a principio natiuitatis huma-
 ne potestas pmissa ē: ut requirentib;
 demonstraret in quo apprehendēs e-
 rat pcc nathan filij dauid inchoitu re-
 currentis i deū generacionis admisso.
 indisparabilis dei pōicās in homini-
 bus cristu suū. pfecti opus hois redire
 in se p filiū faceret: qui per dauid patē
 uentibus iter p̄bebat in cristo. Qui
 lux non immerito etiā scribedorum
 aduū apostolor? potestas i ministerio
 datur: ut deo in dñū pleno et filio p̄di-
 tionis gerindo. oratione ab apostolis

facta. sorte domini electionis nuncq;
 complectetur: sicq; paulus cōsumma-
 tionē apostolicis actib; daret. que dñi
 cōtra stimulū recalcitrantē dñs elegit.
 ser. Quod et legentib; ac requirentib;
 dñi. et si pcc singula repediti a nobis
 uile fuerat: scitis tamē q̄ operācū
 agricolā oportet de suis feudibus e-
 dere. uirauim? publicā curiositatem:
 ne nō tā ualentib; deū demonstrare uide-
 remur. quā fahidimabus prodidisse.

Alius prologus
 Bonā quidē multa co-
 nati sūt ordinare nar-
 rationes q̄ i nobis com-
 plete sūt res. sicut tradi-
 dēt nobis q̄ ab inicio
 ipi uiderūt. et ministri
 fuerūt timonis: uisū ē et michi allucio
 omnia a principio diligere et ordine ubi
 scilicet opne theophile: ut cognoscās
 eor? uolō de q̄b; erudit? et uentat. cū l.
Hic in diebus hecōdis re-
 gis iude sacerdos quidam
 nomine zacharias de ui-
 ce abia. et uxor illi de filia-
 bus Aaron: et nomen eius: elizabeth.
 Erant autem iusti ambo ante deum:
 incedentes in omnibus mandatis et
 iustificationibus domini sine quer-
 la. Et non erat illis filius. eo q̄ et
 ser elizabeth sterilis: et ambo procre-
 sissent i diebus suis. Factū est autē cū sa-
 cerdotio fungeretur zacharias in ordi-
 ne uicis sue ante deū: scdm cōsuetudi-
 nem sacerdotij sorte eij; ut incensum
 poneret ingressus in templū domini.
 Et omnis multitudo ppli erat orās so-
 nis hora incensi. Apparuit autem illi
 angelus dñi: stans a dextera altaris

so-called Gutenberg Bible, was printed at Mainz, around 1454. (Curiously, Gutenberg's name does not actually appear on any of his books, not even on the Gutenberg Bible, although it was clearly printed with his equipment.) He does not appear to have been a particularly good businessman; certainly he never managed to make much money on his invention. He was involved in several lawsuits, one of which seems to have resulted in his forfeiting his equipment to his partner, Johann Fust. Gutenberg died in 1468, in Mainz.

Some idea of Gutenberg's impact on world history can be gained by comparing the subsequent development of China and Europe. At the time Gutenberg was born, the two regions were about equally advanced technologically. But after Gutenberg's invention of modern printing, Europe progressed very rapidly, while in China—where the use of block printing was continued until much later—progress was comparatively slow. It is probably an overstatement to say that the development of printing was the only factor causing this divergence; certainly, however, it was an important factor.

It is also worth noting that only three persons on this list lived during the five centuries preceding Gutenberg, whereas sixty-seven lived during the five centuries following his death. This suggests that Gutenberg's invention was a major factor—possibly even the crucial factor—in triggering the revolutionary developments of modern times.

It seems fairly certain that even had Alexander Graham Bell never lived, the telephone would still have been invented, and at about the same point in history. The same can be said of many other inventions. Without Gutenberg, though, the invention of modern printing might have been delayed for generations, and in view of the overwhelming impact of printing on subsequent history, Gutenberg assuredly deserves a high place on our list.