

## THE JOURNEY OF BOOK: CLAY TABLET TO E-BOOK

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### Abstract

*Books are essential in human life. It has a vital role in spreading ideas, information, languages, and knowledge across cultures and civilizations. This article discussed about the history of the book. It has emphasized and deliberated on ancient book creating tasks, innovation, and the modernization of books and book crafting materials, processes, and methods. Besides this text also addresses various forms of technological leaps. This paper has provided some interesting facts and extending descriptions about the transitional phases of transformation of the book; some of them were slow or complex, and sometimes those were swift or sudden, but constantly, the old technologies have gradually overtaken, replaced, or renovated by the latest ones. New technologies survive until the latest one comes because the latest one makes the task easier, impressive, effective, and profitable. On the other hand, sometimes some old technologies also exist for their worthwhileness. This paper tried to explain the evolution and development of books from the ancient to the modern era. This study is historical research based on secondary data. This research comprehends the study of book creation and print culture from antiquity to the present. The paper has investigated the shifts from orality to literacy, from handwriting books to well-printed books, and finally, from ancient clay tablet books to digital books.*

**Keywords:** History of book, the transformation of books, publishing technologies, ancient printing process, printed book, digital book.

### Introduction

A 'Book' is an essential ingredient of human life. A book is reliable evidence of our surroundings, environment, society, and civilization. It is an impeccable conveyor for transmitting experience, knowledge, ideas, and thoughts to contemporary and future generations. Basically, 'Book' is the

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constituent part of knowledge, experience, and perceptions. The foremost step of 'Book' as it appeared as a book is the act of discovering letters and writing. While verbal communication is not enough, it is strained and troublesome to keep up a sustainable trend of transmitting knowledge and experiences to generations together, human beings invented letters. They began writing to meet their own challenges and necessities. Though there are differences of opinion among historians regarding the date and place of invention of the letter and writing, there is no contrary about the cause of necessity that motivated primitive people to invent and develop writing systems. It refers to a method of markings with a conventional reference that communicates information (Powell, 2009).

During the Stone Age, it is assumed that human beings used to put a stain in counting the number and quantities of pets, prey, animals, and crops for future reference. The historians presumed this by examining the picture of the cave; they also guessed that the primitive people used to delineate on stones. Firstly, they wanted to keep and preserve the technique of hunting, and secondly, they believed in miraculous power. They had faith that the drawn animal could be easy to hunt next time by dint of unseen power if delineated (Fischer, 2001). Till date, the most ancient cave pictures are found in Asia and Europe. Even though the 'Altamira' of Spain is known for the most ancient cave pictures, the latest discovery of cave pictures found on Indonesian Sulawesi Island in 2014 demands to be the oldest (Ghosh, 2014). Cave pictures are titled the primitive stage of writing, which is also stated as the memento system of writing. There are some basic types of writing systems. The written signs used by the writing system can represent either a whole word, a syllable, or an individual sound (Rochelle, 2016).

The trend and practice of delineating cave pictures are the beginning of writing. Thus, the initial kind of writing contained drawings stains, which were defined as 'Pictograms.' With a pictogram, it was complicated to express the whole theme and even a statement; then, the 'Ideograph' evolved to eliminate the limitations of pictogram and to express the emotion, feelings, and speeches adequately. Lines-drawing and symbolic objects were used to indicate matter and subject-oriented themes. For instance, the pictogram of 'Sun' had been used to indicate heat, light, brightness, and other synonyms. But both the Pictogram and Ideograph could not overcome the limitations. Necessity leads towards new inventions and discoveries of word-based 'Phonogram' to bring complete satisfaction in

expressing the state of mind, thoughts, and ideas. After that, phonogram lines possessed brief and emblematic signs, and thus, line and geometric compositions formed the alphabet.' Human beings invented an alphabetic script (Olson, 1993). The general development tendency is roughly from pictogram to alphabet via word writing first and then syllabic writing (Coulmas, 1989).

In every stage, the necessity has developed the pattern of the alphabet and simultaneously the ingredients of writing. The practice of writing has also been improved to make it easier and more suitable for the user. Afterward, human beings began writing and scripting their mode of speaking on manifold ingredients like clay tablets, stone pieces, animal and botanic skins, leaves, bones, metal, and canvas. Dissimilarities of elements are quite visible in individual areas based on easy availability, which has turned the shape of writing techniques as well as the use of ingredients, such as in the era of 3500 BC. The people of Sumer (an ancient civilization founded in the Mesopotamia region), beside the river Tigris and the Euphrates, used gluey clay discs of the river banks, whereas the Egyptian civilization used Papyrus to write in 3000 BC.

The concept of the writing pattern and its ingredients appeared to be familiar to the people of neighboring areas of Mesopotamia and Egypt in connection with trade and commerce. The introduction of exercising knowledge through writing demands the synchronization of the script in a disciplined manner. Thus, the idea of constituting a book appears in the thoughts of the primitive people. The whole process of preparing the writing ingredients, scripts, and synchronization was very tough and challenging. Human beings usually took those challenges years together and endeavored to improve the situation towards a more upgraded technology. The Journey of the book began with clay tablets, and by the generosity of science and technology, now the book prevails in electronic tablets, mobile phone screens, and palmtops. What the next generation's concept and the improvement of science and technology shall bring the shape and existence of a book is beyond the imagination. Necessity and the comfort of users shall bring certain changes consistently. But the requirement of books reveals and shall remain forever.

**Research method:** This research aims to depict the evolution of books from clay tablets to e-books by highlighting the technological, cultural, and societal impacts throughout history. This article describes an ancient

book's history with chronological records of significant innovations, initiatives, and transitions. In this study, intensive research and literature-based methodology were conducted to anticipate the evolution of book publishing technology over time. To understand the historical context and technological advancements, the researcher consulted diverse literature sources, including academic journals, historical texts, books on the history of writing and publishing, technological reviews, and book history related articles. The historical analysis method was vital in examining significant historical developments, such as the initiation of writing systems, the transitions from tablets to scrolls, scrolls to codices, paper to screen, the starting of the printing press system, and the contemporary digital revolutions.

### **What is a book?**

The English word 'Book' originated from the ancient English word 'Boc,' which comes from the Germanic source 'Bok,' which denotes an engraved slab or plank. Actually, the visible shape of a book is the bundle of papers fastened by two covers where a series of letters, words, pictures, and colors are printed in a synchronized manner. Oxford Dictionary connoted the book, A written or in print work comprising sheets of paper either glued or sewn together along one side and bound in covers. UNESCO defined it as a non-periodical printed publication of at least 49 pages excluding cover (UNESCO,1964). The Cambridge Dictionary defines 'Book' as a written text that can be published in printed or electronic form.

In most cases, the above definitions raise contradictions in the previous concepts of the book, and further, the existing definition may also have been enumerated as ancient and incompatible. As e-books have become increasingly important as text carriers, there has been an escalation in the complexity of defining books. 'Book' whatsoever, the form may be universal and prevailing in all ages. However, the demands and requirements of the book have played a vital role in its forms and transformation, and it is a continuous process. For an easy and convenient discussion, people have tried to assemble the renovation cycle and the important stages of the transformation of the book in a harmonized manner.

### **Clay tablet and stone slab: Ancient model of book**

The region of Mesopotamia, consisting of modern Iraq, Armenia, Arabs, and Persia, was built on the bank of the rivers Tigris and Euphrates.

The Sumerians built the ancient civilization in this region. The emergence of Sumerian civilization and its extension in the West Asian region during the Neolithic period in 3900-3000 BC. There was a writing style in which people scratched on clay slabs with Reed pen. Those wrinkled forms of writing were termed as Cuneiform. The historians assumed that the civilization expanded, and at the same time, this concept of writing spread into Assyria and Babylon. The Hittites and Phoenicians also adapted the writing style of Cuneiform.

In 3500 BC, when the writing style began to be used, people used to write on soft clay slabs with reed pen in angular lines. Then, human beings began to express their thoughts and views through writing on clay plates or clay discs, and simultaneously, they discovered a way to preserve those for future generations. Still, those tablets and slabs were fragile and easily detachable by water. So, the ancient people used to preserve their writing slabs by burning them on fire. At the same time, they used to write on cave walls, stone plates, bones, skins, and metals. The initial reference to the concept of the book was clay tablets, which they used to write and obscure by a protective clay jar cover. These covers are the predecessor of the modern book cover. Hundreds of such clay jars with old-written clay tablets were recovered. Thus, modern civilization has a clear picture of primitive writing techniques, and the model of books and book covers from their former generations. Most worth mentioning in literature was the classical poem *Epic of Gilgamesh* in the Mesopotamian region. This ancient epic was written on 12 clay slabs in about three thousand lines around 3200 BC. It was a biography of the famous King Gilgamesh of Uruk in the Sumerian empire. So far, the Epic of Gilgamesh has been considered to be the first book among all ancient books discovered yet (George, 2003).

Extensive use of Cuneiform writings began in the neighboring areas in relation to their trade and commercial contacts. At the same time, there was another famous written document, a blackish-green stone-made epitaph. This epitaph was as large as eight feet high, and it would not be exaggerated if named a law book. Some civil law was engraved and written during the tenure of Hammurabi, the King of Babylon. It was discovered in 1902 by a team guided by the French archeologist Jack D. Morgan. In fact, the stone was engraved and preserved in Babylon. It is assumed that this epitaph was later brought to Paris by the triumph.

Assyrian civilization was another civilization of Mesopotamia. The contribution of Assyrians in the field of science and literature was worth mentioning. In 2000 BC, they conquered Babylon, and they extended their empire. The Royal Library of Ashurbanipal was established under the patronization of Assyrian Emperor King Ashurbanipal. There was a collection of more than 30,000 earthen tablets and fragments from the 7th century BC; More than 2200 clay tablet books were preserved. Those books were of grammar, dictionaries, astronomy, medical science, and chemistry, and some other documents on trade and commerce were also preserved in that library. The convention of writing on clay tablets was dominant in China, though the Sumerians, Babylonians, Assyrians, and Hittites of Mesopotamian also used these clay tablets.

Stone slabs have gotten reputations as writing ingredients in Egyptian civilization. Metal sticks having thin and acute front edges were used to write the hieroglyphic writings. Many of those stone slabs were written in 3000 BC, among which was the prominent Rosetta stone. The French soldiers unveiled the largest stone in 1799 in the Rosetta area of Egypt. Emperor Napoleon sent a photo of the large stone slab to distinguish linguistics and recover its complex and comprehensible write-ups. Later, after so many rotations, the stone was accommodated at the British Museum. Rosetta stone consists of content similar to that of modern booklets and state publications (Lesley & Adkins, 2000). It was written during the reign of Ptolemy V. The text of this Rosetta was prepared in the era of 196 by the Religious leaders and priests describing loyalty to the King. The stone was engraved with such text to get the Egyptians' faith in the Greek colonials and to accept the rule of the King. The stone contained three stages of letter writing respectively Hieroglyphics, Demotic, and Greek (Lesley & Adkins, 2000). Despite considering the concept of the shape and size of modern books, Rosetta stone cannot be turned into a book even though its position in the history of the book was very significant.

### **Papyrus Pages: Accessible and handy components**

The introduction of hieroglyphic writings began in ancient Egypt in 3200 BC but was named by the Greeks. The meaning of Hieroglyphics is 'God's Word.' Hieroglyphic writings were used in the sanctuary, pyramid, and King's proclamation. Linguistics considered hieroglyphic writings pictographs because they contained more art and drawings; as many as the letter writings were, different types of symbols were used to

express thoughts. Hieroglyphic writings were improving years together and continued till the 400 Christian eras. The letters used in hieroglyphic writings were termed Hieroglyph. In the beginning, the Egyptians utilized 750 symbolic Hieroglyph letters. Thereafter, modification took place, and symbolic letters began using 24 vowels and 80 consonants. Hieroglyphics became popular through the use of writing on Papyrus despite the usage of wood, clay, and stone slabs. It is assumed that the use of Papyrus began in 3100 BC. There were two more patterns of writing technique, hieratic and demotic. Those are basically dislodging of Hieroglyphic patterns. Hieroglyphic patterns were predominantly used to write the royal and religious script and maintain the decorous arrangement. However, the hieratic and demotic pattern was used to write on Papyrus to avoid redundancy for suitable script-type writings. The hieratic pattern developed during 2700 B. C. and in 700 B. C. the demotic pattern. Papyrus became popular during 700-500 BC, though it began far before 2700 BC, mainly in writing literature and accounting.

Papyrus is a kind of reed that grows on the banks of the Nile River. It is called *Cyperus Papyrus*. The Bark of *Cyperus papyrus* was similar to paper but a bit fleshy. These writing ingredients were used to link with one another and were folded together. It was used to open while it was required during reading from the left-hand side to the right-hand side (Dahl, 1958). The average shape was 30 feet long and seven to ten inches wide. Brushes made of thin reeds were used to write on Papyrus, where soft carbon, glue, and water were used as ingredients to make ink (Baines, 2007). Reputation and demand for Papyrus began to increase prominently because of its easy portability and easy usage.

The longest papyrus book of Egypt was Papyrus Harris, no. 1, and its length was 133 feet and width 16.5 inches. Innumerable Egyptian literature was written in the papyrus roll. At that period, papyrus books were given along with mummies and pyramids. The use of Papyrus steadily increased because of its suitability in Egypt for use, transportation, and preservation. Egyptian accessibility to Crete, Palestine, Phoenicia, and Lydia in connection to their trade and commerce had made the hieroglyphic writings and Papyrus most popular and demandable to those countries and neighboring areas (Baines, 2007). Phoenicians also played an important role in prolonging and expanding the hieroglyphic pattern of writings and the Papyrus. They were merchants by nationality, and Papyrus was one of their trading commodities. They used to import it from Egypt and

export it to the Mediterranean Sea region. The Phoenicians explored 22 English letters from the Egyptian pattern of writings and aftermath. The Greek included four more letters, and after that, with the touch of Romans, the modern English letters came in the form. So, it could be said that in introducing Papyrus, the Phoenicians were the forerunners.

### **Parchment and vellum: Enthusiasm to explore alternative**

Alexandria captured the domination of the papyrus market in the 6<sup>th</sup> century BC. As it was narrated, the King of Mysia, intending to build a library, requested the emperor of Egypt for Papyrus, but the emperor denied it. In such a situation, the Mysian King did not discontinue his strive to build the library. Still, he advised and directed his people to discover substitute ingredients available in his kingdom. In the aftermath, smooth & moderately more durable components were invented from hides, and the new writing ingredient 'parchment' was used as a substitute for the Papyrus. As a result, parchment got the most usage by the endeavor of Greece. The word parchment evolved from Pergamon or Pergamum. It is assumed that the maximum parchment was manufactured in Purgamous, the famous city of Mysia, and thus named. From the 3<sup>rd</sup> to 4<sup>th</sup> century BC, the usage of parchment and vellum was massive in quantity. In manufacturing parchment, pet animal hides, and animal skin were largely used. These hides and leather underwent a process in preparing those appropriate for writing. Firstly, the skin was restrained in a wooden frame and then scrubbed with lime and chalk to bring softness and brilliance (Houston, 2016). Later, the vellum was added with parchment to improve the writing ingredients. Books made from vellum were considered to be luxurious in Persia and Turkey. Many verses and epic books were written on vellum. Parchment and vellum could overcome the limitations of the fragility and durability of Papyrus immediately after the invention of paper. The use of parchment and vellum was padlocked because of the affluent price. However, the introduction of the bound book appeared by using parchment and vellum; nevertheless, the parchment book was folded and rolled like papyrus books at the beginning.

Though the durability and facilities of parchment and vellum were more convenient than those of Papyrus, the manufacturing cost was extreme, which influenced finding new alternatives again. 'Necessity is the mother of invention'; thus, necessity inspired further developments in this regard. The paper came into fact.



**Codex: Book in the shape of a book**

Codex, the complete bound form of a book. Introduction of the codex symbols at the beginning of the modern book. The Greek people first initiated the bound book. Codex was the bonded form of parchment, vellum, and Papyrus. Reading text from Papyrus or parchment rolls was quite challenging because of the shape and size. So, large-sized Papyrus or vellum was cut into small pieces and sewed one with another; this procedure of making a book was called the codex method. Thin wood slices and metal sheets were used as the cover of those books. Thousands and thousands of codex books were found in Alexandria of Greece. Among those literature, history, politics, science, mathematics (comprising of arithmetic, geometry, and algebra), philosophy, religion, and medical sciences books were available. And later, in ancient Rome, the same pattern of books was used (Frederick, 1998).

Codex became popular during 100 BC. In this century, the Romanians added wax-coated manifold pages of books. In such books, the used sewed pages from one end/ edge of the page. The contemporary modern forms of books are the contribution of the Romanians. These arrangements of books are so proper to read and preserve as well. Around twenty libraries in the middle of the 4th century could be traced in Rome. Subsequently, the number of readers and educationists increased prominently; simultaneously, the literary exercise also expanded vastly.

**Cord book Craftsmanship**

A civilized society named 'Inca' developed in South America in the 11<sup>th</sup> century, spreading from Ecuador to mid-Chili. It was mainly formed in Cuzco, which is situated in the southern hilly region of Peru. Though the Inca empire was relatively young, the writing system in that region began far later. They had no alphabet or pictographic writing method. Subsequently, as a way of preserving information, they used an impeccable method named Quipu. It is a procedure of inscription by knot. They used diversified knot techniques with thread to count numbers, store information, manage accounts, and even compose history (Urton, 2017). It is assumed that the Quipu method continued from the 11<sup>th</sup> to the 13<sup>th</sup> century. Initially, by making knots with thread, the Inca civilization solved the counting issues- e.g., Population, demography, number of soldiers, counting years, taxes, etc. This system was as popular as it was used by the emperor, priests, and mass people. In this method, there was a primary

cord as the principal cord, which comprises much more rope hanging in the primary cord, and in those hanging cords, there were few additional threads docketed. Knots were made in the cord, maintaining a certain distance in between. Differences in the number were determined by examining the type of cord and the color of the knot. Records of individual statements or subjects were also kept in different types of yarns. The subject or title was understood by the distinguishing colors, e.g., Gold & war by red color; silver and peace with white thread. Determining statements and subject matters were based on the color used in the knot (Urton, 2017).

### **The invention of paper: Novelty of Books**

Paper is a significant invention of modern civilization. So, the prudent people designated paper as the handmaiden of the civilization. The word paper arrived from a similar-looking papyrus from Egypt. The invention of paper was in China. Some scholars stated that the use of paper began in 73-49 BC. Prior to the invention of paper bamboo strips, Palmyra leaf, tin/ lead slab, and canvas were primarily used as writing ingredients in the Asian region (Forrester, 2016). During the reign of the emperor, He Di, the first paper was made from the bark of the Mulberry tree. The historians considered the year a.d. 105 to be the year of the invention of paper because the invention was officially reported to the emperor by the eunuch Ts'ai Lun. It is assumed that the Chinese first invented paper from the pulp of wood (Carter, 1955).

Human beings use writing ingredients by collecting directly from the surroundings, sometimes by mixing and revising the collected constituents at a suitable position. Insertion of organic and chemical ingredients together occurs first in the process of manufacturing paper. In the process of manufacturing paper, human beings followed the insects, especially hornets and bees, and their way of mending nests was by moulding hard bamboo and wood into pulp.

Because of the conservative policy of the Chinese, the message of such a revolutionary invention was unrevealed to the rest of the world. Later, the paper manufacturing technology was transmitted to Korea and Japan. The Arabians also learned about paper production technology during the war with China in Russia and Turkestan. With the technical support of the Chinese, paper mills were established in Samarkand in the year 750 and the year 793 in Baghdad, Iraq. Gradually, the use of paper spread worldwide. In the year 750, paper manufacturing machines were established in France, and after that, paper production began by machine (Carter, 1955). Since the Chinese are the

inventor of paper, credit for making paper books also goes to the Chinese. Even the Chinese have the proficiency of inventing the system of printing by typing blocks and making books. Books printed by blocks are considered to be the predecessor, and so the use of ancient ingredients decreased gradually.

### **The craftsmanship of pictures and color in the book**

The Egyptians were legendary for developing picture books, in which the pictures were affixed with brief explanatory text. The use of photos, images, portraits, color, and beautification in the book became widespread in the years 400-600. The religious books were ornamented with gold, silver, and other precious metals in particular. The covers of these books were crafted with expensive gems and pearls (Houston, 2016). Besides, the inner pager was designed with drawings and artwork in natural colors. In the year 220, few block prints on silk were found, particularly those blocks also used to print multicolored books (Houston, 2016). In this case, different blocks were used for a particular color.

In some cases, colorful letters were also applied to pages. In the subsequent periods when the use of movable type was practiced, the copper blocks were used for printing pictures—the first printed book with images created in Rome, Italy. Competency in successful adroit art and painting prevailed throughout Europe in the 6<sup>th</sup> century and afterward. The impact was visible in the structures, furniture, and books as well. The concept of conjoining colorful covers in the book appeared in that contemporary period. Covers of all kinds of books, including religious books at that time, were found designed with manual sketches and artworks. Revolutionary changes in the book cover appeared after the year 1820. During that period, illustrations and designs drawn by artists began to be printed on book covers, silk, and canvases. Then, the new concept of printed book covers and modernized book binding started their journey. Other than these, to overcome the obstinacy of using mono-color letters, the differentiation in size and color was brought at the beginning of the paragraph and on different pages. That prevailed novelty in every phase of preparation of a complete book.

### **An early feature of print culture: Books in different appearance**

The Chinese developed all the essential elements required for printing at an early stage; they were the innovator in introducing printed books (printed on paper and ink). They imprinted images from carved seals before the birth of Christ (Sewell, 2003).

In the history of printed books, the *Diamond Sutra* was the most ancient printed book, which was printed with wooden blocks and published on paper. It was published in the year 868, and the name of the publisher was Wang Jie. He had prepared this for worldwide distribution on behalf of his parents. The Paper of this book was made from tree pulp. Impressions of pictures and letters were printed by the engraved wooden block. There were six pieces of large blocks used in producing that *Diamond sutra*. This book was basically a scrolled and folded book of length 16 feet and 1 foot in width. Archaeologist Sir Mark Aurel Stein got it in 1707 from a Chinese monk at Danhuang in northwestern China; it was found in the holy site named the ‘Caves of a Thousand Buddhas (Sewell, 2003). In almost the same era, another Printed book was published in Japan by applying the same technology named *Dhoroni Sutra*. At nearly the same time, sutra and Buddha icons were being printed in Gansu, which was one of the significant areas famous for engraved printing in China (Bos, 2010). Nearly identical specimens of textual printing were found in Japan and Korea, dating from the eighth and ninth centuries. For that reason, the Japanese and the Koreans individually claim to be the earliest printed texts in the world, and these texts were certainly created very near the inception of the printed word. However, in the year 1045, Pi Sheng (Chinese printer) developed a relatively improved method of printing technology in China (Brokaw & Chow, 2006).

Books prepared and printed by block were abundant in the year 900 throughout Arab and Egypt. Printing by metallic letters in Korea in the year 1392 was famous. This printing technology reached the western countries in the 12<sup>th</sup> century. The demand for books increased vastly among the middle-class literate people of Europe at the beginning of the 13<sup>th</sup> century. Such books were published in the Netherlands and its neighboring areas in 1450. The usage of woodblocks for printing books began in the South Asian regions in the 15<sup>th</sup> century. Successively, the emancipation of knowledge reached the door of mass people from the control of spiritual preceptors. The easy availability of books ultimately gradually created demands among ordinary people. It became challenging to meet the market demand for the woodblock printing method. It alerted people who were thinking of new alternatives. Easy, quick, and cost-effective method of printing to supply proportionate with the demand relation. Subsequently, blocks originated from porcelains, and metal was introduced in printing technology.

### **The era of Gutenberg: inauguration of modern printing techniques**

One of the significant leaps in technology was the mechanization of printing. The invention of the mechanical printing machine had a tremendous impact on the encroachment of civilization. The moveable type has been applied in printing procedures individually in Europe since the 15<sup>th</sup> century. The proficiency of this invention goes to Johannes Gensfleisch zur Laden zum Gutenberg, who is mostly known as Johannes Gutenberg. Before the mid-fifteenth century, books were printed manually by handwriting or block Printing. For that reason, books were rare and expensive, and consecutive reading and learning remained for the rich and leading people. Johannes Gutenberg invented the printing machine with new technology in Mainz, Germany, during 1453-1456; he brought the concept of the printing machine for the first time in the world. In the early period of his life, Gutenberg was employed in a goldsmith workshop, so he could easily have captured the experience of moulding metal. Being a skilled metal moulding artisan, he realized that an alphabet/letter made from metal, not from wood or clay, could be applied for printing procedures. The metallic alphabets are suitable for multiple uses. Aftermath, he introduced the Metallic typeface of the alphabet, oil-based printing ink, and wooden press with exceptionally qualified endeavor. As much as he invented the printing machine whatsoever, Gutenberg really invented the casting matrix to produce letters of the alphabet (Diana, 2008). Few books were published during 1450-1455, among which *The Bible of 42 lines* was the earliest one.

At first, Gutenberg made the casting matrix of 26 English Alphabets, with upper and lower case. Big and small in size, punctuation marks and including other types all together 290 in number. While preparing for printing, Gutenberg considered the Bible and chose the *Gothic* style of Latin language. Johannes Gutenberg engraved opposite impressions of letters, alphabet, and signs on steel stamps and then applied pressure on soft and flexible brass or copper. As a result, the image of the alphabet gets the actual shape termed casting matrix. The next step was to produce the alphabet and signs as much as required by following the procedure of pouring metal mould on the casting matrix. And then, harmonized arrangements of the alphabet, characters, and words as a complete sentence or a page were made. This decorated page was placed on a flat portion of the printing machine, and the page was wiped with oily ink; after that, by applying pressure on the paper, a printed impression of the page could

be realized. At that period, the Bible was copied by writing in hand, and it required enough time and effort. So, the Bible then was too costly and beyond the reach of common people. Gutenberg first published 200 copies of the Bible; each copy contained 643 pages, and each page contained 42 lines, with double columns and coloring letters. The rapid and extensive growth of new printing methods, as well as printed books, took place all around Europe.

After Germany and Italy developed printing inventions and devices, Italian printers started a successful commercial trade of books and printed material. The modern printing mechanism was extended to England in 1476 by William Caxton. He went to Cologne to learn about printing methods and techniques in 1471 (Steinberg, 1996). Caxton published many translated books after setting up his own press in Bruges (Eisenstein, 2005). After returning to England, he also published various fiction and non-fiction books. In 1476, Caxton began publishing books commercially in London for the first time; by 1510, he had printed 35000 copies of books under 13 different titles (Knight, 2009). By the end of the 15<sup>th</sup> century, most Western European cities had a printing press. Nearly eight million books were printed using the printing press (Rubin, 2012). At the end of the fifteenth century, the Printing press gradually spread all over the world.

### **The Book revolution: A journey of modern book\_\_\_\_\_**

The worldwide expansion of the printing press and books helped to spread and distribute ideas and knowledge to mass people. The book appeared with a modern shape and Structure. It became cheaper, easily available, portable, small in size, and mostly reachable to mass people. That was a threat to the power of the ruler. Because, at that time, the strength of knowledge was superior to that of weapons. Within the year 1500, printing, publishing, and marketing of books began all over Europe. At that time, printing presses were established in more and more cities worldwide (Lyons, 2011).

Books printed and published before the period 1450-1501 were named *Incunabula*. These books were similar to manuscripts because manuscripts were strictly followed when printing and designing the pages of the book. Around 150 books (titles) were published annually from England in the 16<sup>th</sup> century. In 1958, Lucien Febvre and Henri-Jean Martin estimated that about 20 million books were printed in Europe before 1500 (Frederick, 1998).

Simultaneously, the number of publishers was more than a hundred. By this time, some changes and novelty appeared in the design of books. Also, modernity, methods, and appliances were added to the book's settings and printing of pictures. The most worth mentioning contribution in the field of printing and publishing of books in this century was the imaginative changes and traditions in making a suitable alphabet. In the second decade of the 16<sup>th</sup> century, printed book covers with the title of the book were included. The print revolution was noticeable by the middle of the sixteenth century. As Feather stated, the transition from scriptorium to printing house was more than merely a change from one form of book production to another (Feather, 1988). Gradually, the printer's line (the printer's name, publisher, date, and place of publication) and the sales information were mentioned in the preliminary pages. Books of the 17<sup>th</sup> century achieved proficiency in size and shape. Printing technology reached in the USA In 1638 and consecutively improved with modern equipment.

### **Industrial Era: book as a commodity**

Though enough changes and improvements occurred in the printing procedure in the succeeding following centuries after the Gutenberg era, the principal method of printing remained almost the same. Books became a commodity in the industrial period. Commercial inspiration prevailed in the history of printing and publishing. The increase in the literary trade also directed writers, publishers, and readers to consider the book a market product. At that time, division of labor was needed and accordingly took place in the manufacturing procedure of book publication like other commercial commodities. Connections of diversified experts and professionals ensued in the process of book printing and publishing. Hence, the author writes and handover the manuscript to the publisher. The publisher brings it to the editor, who revises, considers, corrects, and eliminates the manuscript; the compositor takes up the script to compose, and then the printing work begins, after the corrections of the printed script, the final production initiates. After the completion of binding works, the sales unit starts sales managing and controlling. In the nineteenth century, books gradually adopted the newest printing, binding, and illustration technologies in the industrial era and were created to incorporate the profession (Casper et al., 2007). As a result, every step of manufacturing a book gets more accuracy and excellence; simultaneously, productivity gets speed.

### **Transformation of the book in modern shape and size**

Books got the impression of modern shape and size after the Industrial Revolution. Growth in both inhabitants and literacy also elevates the thirst for books. The shift in the reading population and extensive consumption of books led to established and improved machinery in the printing industry. The change began with Linotype and Monotype machines for quicker manufacture of printed books. Efforts were underway to make the printing system easier, more comfortable, and more cost-effective. In 1796, German writer Alois Senefelder developed lithography. It was a profoundly new printing technique since Gutenberg's invention of the movable typing technique. In 1884, the linotype was invented and patented by Ottmar Mergenthaler. After the insertion of the linotype, monotype methods were added to printing technology as another improvement in printing in the 19<sup>th</sup> century. In 1887, American inventor Tolbert Lanston established the prototype of the monotype machine. The specialty of a monotype machine is that it sets individual letters of the type in a line instead of a sequence of type like a linotype machine (Lyons, 2011). This method has simplified the composing procedure. Subsequently, the invention of offset printing was a landmark. American printer Ira Rubel established the first offset lithographic press in 1905, which was made by the Potter Printing Press Co., which is considered a significant chapter in the history of the printing industry. In 1906, George Mann & Co. of Leeds introduced and patented a highly successful offset press designed by Arthur Evans. The technology of the offset printing machine is to transfer the positive content from the Tin Plate to the Rubber blanket as a negative image of the content and, after that, prints the impression upon paper. In which the paper-carrying cylinder made two revolutions for every turn of the blanket and plate cylinders (Frederick, 1998, p-136).

After World War II, the first successful photo composition machine was developed in 1946. With this technology of typesetting, page images are prepared for printers instead of metallic type lines like photocopiers. Gradually, the invention and development of photo composition procedures advanced with output speeds (about 36 million characters an hour) (Frederick, 1998 p-138).

Considering and realizing the necessity of important information and particulars were included in the book's inner pages at that period. Besides, diversity in bookbinding had another essential perspective of preparing



books also appeared. Hardcover binding was exclusively used till the 19<sup>th</sup> century. The first paperback cover was printed in 1832. During World War II, publishers had experienced reprinting and distributing large numbers of books, and after the war, they began to develop mass-marketing techniques for paperbacks (Frederick, 1998). Then, paperback covers became famous worldwide for the new and more accessible production; also it is simple to carry and comparatively cost-effective. Simultaneously, glue binding became more acceptable than thread sewing. Besides, four-color offset printing machines and automated bookbinding machines were introduced in the printing sector in the 20<sup>th</sup> century. The extraordinary improvements in concept and technology have occurred over the last few decades. The field of printing and publishing has established this industry as an essential sector in the global business platform.

### **Steps towards the computer era**

The arrival of Computers has transformed the technique of the book publishing process. Technological advances were enhanced in the 1970s. Commercial usage of the microprocessor by Intel Corporation began in 1971; with the introduction of some helpful computer programs, publishing became easier. Many Publishing companies are replacing their older printing systems with new technology instantaneously. Computer composes, layout, and make-up with all other pre-press activities became more accessible and available because of that advantageous juncture of opportunities. Gradually, the computer became the most popular and helpful device in the printing sector. Desktop publishing began with the support of computers. Printing and the whole process of the pre-press section for publishing a book, including designing and page make-up, Illustration and image processing, cover design, and printing, are now entirely computer-based. Reviewing a book becomes more convenient and efficient if it can be checked through a computer file. Proofreading and referencing are much simpler in a digital file when editing a book text. As David Staley stated, the computer may be more like the printing press than we ever imagined (2003).

The Journey of reading a book by using a computer other than a printed book came into existence in 1985. The 'Academic American Encyclopedia,' an institute in the USA, first published an encyclopedia compatible with reading on a computer. Except that there were audiobooks available in the markets.

Features of the Internet incepted in the USA in 1989. In the 21<sup>st</sup> century, the marketing of books online has become popular globally. Amazon began providing home delivery services for books in developed countries through drones. Entrance into the digital era became more accessible after the advent of Google in 1996. Google introduced a book project in 2002 in which opportunities for reading books were opened through scan and PDF formats. These modifications and changes do not affect the fundamentals of the book, its needs, and demand.

### **E-Book: book in the digital period**

With the generosity of computers and technology, the most modern appearance of a book is an E-book or Electronic book. E-books were originally just digital copies of books someone typed up and put on the Internet (Li, 2013). Digital books consist of typical elements of printed books, such as text, pictures, or graphs. However, these elements are equipped with audio, animation, video, and hyperlinks so that the information in the digital book is more affluent than the use of the printed book.

In 1930, the idea of the e-book or e-reader came to writer and producer Bob Brown. He wrote a science fiction article about that type of invention titled *The Readies*. Then, Robert Busher, in 1946, had a vision about the electronic book. The Journey and the procedure of materializing the concept of the digital book were expanded after the successful completion of the e-book. Andreas van Damm, who coined the term Hypertext System in 1967, and Michael S. Hart, who founded 'Project Gutenberg' in 1971, were primarily renowned for developing the concept of e-books (Ballatore & Natale, 2016). Hart digitized the *U.S. Declaration of Independence*, which became the first e-book in the world. The Voyager Company published expanded books on CD-ROM in 1985, and in 1993, Digital Book, Inc. offered the first 50 digital books on the floppy disk (Robertson, 2013).

The marketing of e-books was incepted in 1992-1993 and was named 'Incipit.' In the subsequent years, digital book Inc. bible o Bites, C&S Amazon had played a vital role in publishing and marketing e-books online. The reputation of the pioneers had influenced other organizations like Sony, Bookin, Bernd & Noble, APS Kobo Ink, and Google largely to participate in the competitive market. On November 19<sup>th</sup>, 2007, Amazon brought an e-book reader of 6 inches in length, 'Kindle,' into the American

market, and only within five and half hours, the whole stock was exhausted. Next year, in 2008, Amazon brought e-book readers into the market with improved technology. On October 19<sup>th</sup> of, 2009, e-book readers were marketed in hundreds of countries, and now it has reached almost every country. Sony also started marketing e-book readers in 2015.

The e-book is a book that needs only a device to read. It does not require a press to print neither need any hobnob of ink and dust nor another substance. Typography, typesetting, make-up, layout, and all other proceedings are computer-based. Even sales promotion, sales management, and total marketing are done online. Buyers collect their requirements, apply online, and read readers using a computer e-book reader, mobile phone, palmtop, or tab. With the generosity and technical support of science and technology, a small book-sized device consists of contents as huge as a library could be roaming around comfortably keeping in hand palm. And this facility has proved propitious and has disseminated the e-book. The e-book is cheaper than the paper book because of the lower cost of making, promoting, marketing, and production. It is easy to handle and carry, available and simple to download and collect from open sources, and with the support of the internet, it is easy to purchase. Simultaneously, other additional technologies like Wi-Fi, Bluetooth, and book sharing applications have increased the acceptance of e-books. Subsequently, this new technology was listed as a remarkable innovation because of its instant accessibility, more available storage system, convenience, and completely revolutionized marketplace (Li, 2013).

### **Book: The Magnitudes**

Immediately after introducing the e-book and audiobook, the interactive book was added to the provisions that can respond spontaneously to the reader's questions and inquiries. However, many experts and technocrats predicted paper books would be inadequate very soon after this unprecedented invention and its easy obtainability.

In *The Future of Book* (a collection of essays published in 1996), editor Geoffrey Nunberg stated that 'prophecies of a future where printed books had been superseded by electronic media, (1996). Inevitably, other reversed groups of experts anticipated paper books to be the co-part in the journey of technological improvement, changes, and reforms of books. The quantities of printed book sales have increased in the digital era, as communications and searching technologies support much more

widespread browsing and buying, with online discussion groups and internet book sites (Robertson, 2013). Printed books and print culture are still central elements of cultural life, although patterns of use, marketing, and consumption change (Thompson, 2010).

## Conclusion

From the clay book to the modern e-book, it was a prodigious journey of books human beings could not even think of 500 years ago. The concept of the printing press was beyond imagination in the early period of the paper book. Computer-composed technologies are a fairy tale to an ancient printer who used chisels to cut and size metal to produce the alphabet, and it is even far from his dream. Today's 'computer to plate printing method or 'computer to print' method might have seemed like the activity of another planet to those ancient printers who used grape press machines for book printing. Obviously, the interactive book might be science fiction to those ancient storytellers who never could think about a written book.

The innumerable changes and reformations of the book will take place in the near and far future, and it is not unlikely that it may even blemish the image of modern e-books or interactive books. What will be the future of the book, or What will be the future book look like, is not certainly known, but the means of reading, besides the reforms and improvement of books, are a particular and continuous process. But the fact is this. Indeed, books shall remain as the everlasting precedence of human civilization whatsoever the shape, size, kind, and form of the book may be; books will always be there.

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