

Assignment # 2
A video documentary – document

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Shifting Economies of Book Production

A video Documentary Describing Significance of Pre-Digital Media on literacy and Education

The history of human civilization through the numerous centuries may be divided into three dominant development, each transition developing through periods of hundreds or even thousands of years. These stages to civilization can be categorically classified under three broad headings

- 1) Oral/ speaking/speech
- 2) Drawing or writing
- 3) Printing (Hunter, 1978)

Began with the oral culture based on mnemonics, drawing or writing was invented as a mean to communicate message and information. Also to settle in larger communities and organizations the need to record (for administration and law) and manage information “rather than just express it, grew” with time (Explore: Writing, n.d.)

Methods of recording information have varied over time and space. The writing systems were created autonomously all over the world. Knowledge of some early scripts invented in certain regions was picked up by peoples living in surrounding areas. They would then adopt and adapt them to their own needs and language. Chinese, for example, was adopted in Japan and Korea, though it had to be altered to apply to the languages spoken there (Explore:Writing, n.d.)

“ The most general principle guiding the development and evolution of writing systems is that of serving as an effective means of storing and communicating information, through time and across space, as Innis (1951) and many others have noted” (Olson, 2009)

Since, early writing systems were initially regarded of as means of recording human speech, as transcripts, and shared many of the surface characteristics of speech. However, as writing developed as a separate technology (Linearity and Hypertext, n.d.) ,its unique relation to communication and its properties of conservation through space and time writing has come to play an extremely diverse set of social functions – in commerce, government, literature, and science – as well as in a numerous of smaller scale, local contexts (Olson, 2009). “It is these uses, which have given literacy such significance and the history of writing is in large part how the potentials of writing have been taken up in various times and places. The study of writing, thereby, becomes the study of the uses of writing” (Olson, 2009).

The Power of Writing

Writing in most ancient civilisations was restricted to a fairly small and powerful elite. It was a useful tool in the creation of empires and kingdoms through administration and record-keeping. This great skill was used to record payments of taxes and tributes to kings and rulers, and to keep track of the numbers of tax-payers in censuses. (Explore:Writing, n.d.)

Also, Eric Havelock (1982) once pointed out, the history of writing is perhaps better described as the history of reading. He argued that the invention of marks, their differentiation and elaboration in various contexts of use, reflected the attempt to reduce misreading, to reduce doubt (cited in (Olson, 2009)).Therefore, the study of writing is at the same time the study of reading and their histories are, if not the same history, at least rather intertwined (Olson, 2009) and the concept connects to the notion of literacy.

Writing, means of communication, acquired medium (technology) to process, save and present information in a form of communication tool. Innis & Watson (2007) write about role of media for effectual exchange of ideas that “in the

organizations of large areas, communication occupies a vital place. The effective government of large areas depends to a very important extent on the efficiency of communications. The concepts of time and space reflect the significance of media to civilization. Media that emphasize time are those that are durable in character, such as Parchment, clay, and stone. Media that emphasize space are apt to be less durable and light in character such as papyrus and paper. The later are suited to wide areas in administration and trade (p.26).”

- The medium shapes the message –

[\(Linearity and Hypertext, Chapter 2\)](#)

(If we can read the script we can understand the message)

Books

During writing period we can observe the importance of a range of media such as the clay tablets of Mesopotamia, the papyrus roll in Egyptian and Graeco-Roman time, Parchment codex in the later Greece-Roman world and the early Middle Ages and Paper (Innis & Watson, 2007). In printing period paper can be considered as a medium for block and mechanized printing.

The form, content, and facilities for making and distributing books have varied broadly during their long history, but in general a book can be considered as a design to serve as communication device or object. Book is not only characterized by its use of writing but also the instrument and the material used to inscribe words and symbols. As Christina Haas (1996) puts her thoughts about writing that "*writing is situated in the material world in a number of ways. It always occurs in a material setting, employs material tools, and results in material artifacts*" (cited in (Bolter, 2001)). Also Chartier (1994) has made his point about writing and writing technologies that “whether they are in manuscript or in print, books are objects whose forms, if they cannot impose the sense of the texts that they bear,

at least command the uses that can invest them and the appropriations to which they are susceptible. *...works and discourses exist only when they become physical realities ... This means that ... keen attention should be paid to the technical, visual, and physical devices that organize the reading of writing when writing becomes a book"*(cited in(Bolter, 2001)).

The earliest known books are the clay tablets of Mesopotamia and the papyrus rolls of Egypt (History of Publishing, 2015). Production and distribution of books not only determined by social and environmental factors but also according to the needs, resources, religious beliefs and the cultural taste of the society. (Explore:Writing, n.d.)

A link to the origin of book

Ancient Writing Technologies

Economies of books

Clay Tokens/ Tablets

Around 3000 BC when the Sumerians made the leap to writing. These early written characters were pictograms ,essentially pictures of the words or their sounds. Later, the Sumerians' picture-writing evolved into cuneiform, which means "wedge writing" in Latin. Cuneiform (ancient script) was written with a wedge-shaped stylus, much like the ones used on today's hand-held computers, onto damp clay tablets, which were then baked until hard. Clay tokens developed for accounting purposes in Mesopotamia in the ninth millennium BC. The system, developed by ancient Sumerians in what is now Iraq, about the time that traditional hunter-gatherers were developing an agricultural way of life, consisted of sets of distinctively shaped tokens used to keep records of sheep and cattle and other commodities such as oil, beer, and grain. *About the fourth millennium, about the time of the growth of cities, the variety of tokens increased, some were pierced so that they could be strung together, and others were placed in envelopes or bullae so that they could indicate a single transaction* (Olson, 2009) The

Sumerians had enormous libraries of clay tablets containing their laws, business transactions, and literature (Early writing, n.d.) Book production by ancient Sumerians, Babylonians, Assyrians, and Hittites, on clay tablets probably continued for 2,000 years. Boys (and very rarely girls) learned how to make a tablet and handle the stylus used to make impressions in the clay. After learning the basic cuneiform signs students went on to learn the thousands of different Sumerian words. The teacher would write lines on one side of a tablet and students would turn it over and try to reproduce them. After training, students could call themselves ***dubsar or scribe*** and they became a member of a privileged class. School tablets have been found in almost all of the private houses in southern Mesopotamia of this date that have been excavated. This suggests that in wealthy families all the male children went to school. (Explore:Writing, n.d.). The nature and volume of the surviving records from Mesopotamia and Asia Minor indicate a heavy emphasis on the preserving function of writing and the book. When the Aramaic language and alphabet arose in the 6th century BC, the clay tablet book declined.

Aramaic gradually became the lingua franca (bridge language or trade language) throughout the Middle East, with the script at first complementing and then displacing cuneiform as the major writing system.

Papyrus Rolls

The papyrus roll of ancient Egypt can be considered as the ancestor of the modern book. Papyrus as a writing material resembles paper. It was made from a reedy plant of the same name in the Nile Valley. Strips of papyrus pith laid at right angles on top of each other and glued together made cream-coloured papery sheets. The sheets were pasted together to make a long roll/scroll. To make a book, the scribe copied a text on the side of the sheets where the strips of pith ran horizontally, and the finished product was rolled up with the text inside. "Scribes wrote on it with a reed pen or brush and inks of different colours". (History of Publishing, 2015). *Papyrus continued to be the most popular writing surface for centuries; both the Greeks and the Romans used it.* (Early writing, n.d.)

The practice of certain Egyptian funerary traditions also promoted the preservation of many Egyptian books (this is due to the dry climate of Egypt, in

which some papyrus rolls survived unprotected for centuries while buried in the desert sands). Due to their belief on life after death, they wrote magical phrases on coffins and on the walls of tombs to guide the dead safely to the gates of the Egyptian underworld. When the space thus provided became insufficient, they entombed (buried) papyrus rolls containing the texts. These mortuary texts are now described collectively as the Book of the Dead. Besides mortuary texts, Egyptian texts included scientific writings and a large number of myths, stories, and tales. *“The Greek historian Herodotus reported that Egyptian embalmers did a thriving business in copies of the Book of the Dead”* (History of Publishing, 2015).

The Greeks adopted the papyrus roll and passed it on to the Romans. Although both Greeks and Romans used other writing materials (waxed wooden tablets, for example. In 670 BC Egyptian ports were opened to Greek trade and after 660 BC Greeks were given permission to go anywhere in Egypt. The availability of papyrus favoured the spread of writing but difficulties in locating it delayed encroachment on the strong Greek oral tradition (Innis & Watson, 2007). The notion of writing as social practice (Kostouli, 2009) can be observed from the gradual shift of oral culture towards writing that was slowly influencing the Greek tradition. During the golden age of Athens (Fifth-century Athens) books were known and used but the preferred method of publication was oral. Unlike the monumental Egyptian rolls that sometimes exceeded 100 feet in length, Greek rolls seldom exceeded 35 feet in length (with little embellishment) could be conveniently held in the hands to read (History of Publishing, 2015). It was the time of **limited book production**.

During Hellenistic age, Hellenistic cities Pergamum and Alexandria, emerged as centres of learning. Easy access to supplies of papyrus facilitated development of Alexandrian library. By 285 BC the library established by Ptolemy I had 20, 000 manuscripts and by the middle of the first century 700,000 while smaller library established by Ptolemy ii possibly for duplicate had 42,800. The library was accompanied by the university. Scholars established texts and the authenticity of classical works. Alexandria brought the philosophical or religious ideas of East and West, of India, Palestine, Persia and Greece to a focus. The power of the written tradition made the Alexandrine age one of the “intellect and criticism” of specialists rather than poets and scholars. (Innis & Watson, 2007)

Cheap subsidized supplies of papyrus became the basis of an extensive administrative system as well as large libraries. Ptolemy ii built up monopoly of papyrus by declining its price in spite of general rise of prices in order to increase efficiency in production and lowering prices in home market by increasing them in the foreign market in the form of export tax or ban on of exports (Innis & Watson, 2007). Despite of the fact that the effect of writing was evident in every phase of culture and books were securely established (in the second century) but its circulation was limited to a very limited educated class.

Book production in Rome developed in 1st century BC with Latin literature. Libraries were established to develop the prestige of Rome. By the 4th century Rome possessed 28 libraries with approximately 20,000 rolls each contain Greek and Roman Sections. Municipal libraries were scattered throughout the empire (Innis & Watson, 2007). Romans developed a book trade on fairly large scale. (History of Publishing, 2015) A single bookselling firm with 100 slaves trained as scribes could produce through the use of dictation a thousand copies of Martial (Book ii), a poet, in 10 hours sold at an estimate of 6 to 8 pence and generated 100% profit (Innis & Watson, 2007). In many ways these firms were prototypes of modern publishing houses. "Roman publishers selected the script to be reproduced; advanced money to authors for rights; chose the format, size and price; and develop profitable market for their merchandise." (History of Publishing, 2015) Large scale production and low prices shows a wide distribution market (Innis & Watson, 2007). Book ownership was common among upper-class Romans and private libraries were "considered the necessary badge of distinction for anyone who aimed to high position or social importance" (History of Publishing, 2015)

CODEX (Paged Book)

"During the first two centuries CE (Common Era) only roll was used for literary works" (Clement, 1997). A codex is composed of many books. The written tradition dependent on papyrus and the roll maintained an emphasis on centralized bureaucratic administration (Innis & Watson, 2007, p.129) Romans

started to stitch, sometimes 2nd and 3rd CE, folded papyrus sheets together and bind them between wooden covers into a book form. “ (Early writing, n.d.). The advantages of adapting codex form of the book over roll are:

- ✓ The format is more economical, as both sides of writing material can be used
- ✓ Portable, searchable and easy to conceal
- ✓ Much easier to hold and to read, find page and to flip through

Papyrus as common writing surface or technology of the time had many limitations. “The limitation of papyrus were shown in the use of smaller rolls to preserve a fragile medium and to enhance convenience for reference” (Innis & Watson, 2007). Also it became brittle with age and humid conditions outside the desert could worsen the sheets. Besides, papyrus only grew in the Nile region of Egypt. Parchment (Vellum and parchment are materials prepared from animal skins) offset these inconveniences. “Used on both sides parchment was economical, durable, and easy to transport, to write on, to read and to consult. Ink could be removed and the parchment used again in the form of palimpsests.... Demands for durability in school books and in small popular editions used by travellers were followed by an increase in the use of the parchment codex. The shift from roll to codex was a slow process that took centuries (Clement, 1997). For 400 years the roll and the codex existed side by side. In the 4th century CE, The new writing material facilitated the success of codex.

“The parchment codex was adopted to large books in emphasizing facility of reference and consequently lent itself to religion and law in the scriptures and the code. A permanent medium suited to use over wide areas facilitated the establishment of libraries and the production of limited number of large books which could be copied” (Innis & Watson, 2007)

In case of any writing technology usage , “whether cuneiform tablet, Egyptian papyrus, Greek scroll or Roman codex all writing was copied by scribes, who engraved , inked or carved every word and letter one stroke at a time” (Early writing, n.d.)

Manuscripts, West and Education

During 5th century AD, large scale book trade was collapsed with the fall of Western Roman Empire. Rise of **Monasticism** saved book production in the west. It was time when private ownership of books was not permitted and so it was essential to have communal library. Furthermore, In order to trace the spread of book production in the early Middle Ages we must trace the spread of monasticism. (Clement, 1997). Monasteries carried on the Latin writing tradition in the Western Roman Empire. **Cassiodorus**, established the monastery of Vivarium (540 AD), emphasised the importance of copying texts. St. Benedict of Nursia, in his Rule of Saint Benedict (completed around the middle of the 6th century) later also promoted reading. The Rule of Saint Benedict (Ch. XLVIII), which set aside certain times for reading, greatly influenced the monastic culture of the Middle Ages. The tradition and style of the Roman Empire still dominated, but slowly the atypical **medieval** book culture emerged (Book, 2015).

Following the early examples, monastic houses throughout the middle Ages usually had libraries and scriptoria where monks copied books to add to their collections. “Before the invention and adoption of the printing press, almost all books were copied by hand, which made books expensive and comparatively rare. The monopoly build up by guilds of copyist was also one of the reason of higher book prices. The bookmaking process was long and difficult. Smaller monasteries usually had only a few dozen books, medium-sized perhaps a few hundred. By the 9th century, larger collections held around 500 volumes and even at the end of the Middle Ages, the papal library in Avignon and Paris library of the Sorbonne held only around 2,000 volumes” (Book, 2015)

By the end of 12th century small book production was encouraged by the newly established orders of priests (Franciscans and Dominicans) beyond the monasteries because they had no scriptoria of their own, but had need of books. Thus (they had to obtain their books outside of their orders). At the same time the new universities created a new reading public. New texts, reference works, and commentaries were required for scholastic study, and these works were not the kind produced in monastic scriptoria. The new secular book trade became a licensed accessory of the university, consisting of stationers, scribes, parchment makers, paper makers, bookbinders, and all those associated with making books.

With the rise of universities in the 12th century led to an increase in the demand for books, and a new system for copying books appeared. The books were divided into unbound leaves which were lent out to different copyists, so the speed of book production was considerably increased. The system was maintained by secular stationers' guilds, which produced both religious and non-religious material (Clement, 1997). Additionally, Clement wrote about independent trade outside of the monasteries and universities, by the end of 12th century by university stationers. University stations were free to use outside trade.

In the meantime, "paper became available for use in book production. Though less durable and more difficult to write on than parchment, paper had one great advantage - it was cheaper" (Clement, 1997).

Paper, originated in China, introduced into Europe by Muslims. It required almost 500 years its (paper) way into Europe from Samarkand, as there was little communication between the east and the west. It is not known whether the craft was first introduced into Spain or Italy, each country having its own claimants" (Hunter, 1978). The aforementioned facts reveal how an invention introduced in various regions of the world (in ancient times when means of transportation were not advanced). The new media of the time was then accepted and practiced by the society according to its affordance or characteristics i.e. durability, weight and transportation

During the first centuries of paper making in Europe the demand for paper was slight but after the advent of printing from movable types in the middle of the fifteenth century the demand became greater (to balance demand and supply) and by the end of the century the art of papermaking had assumed considerable proportions and had spread to many places where the craft had not yet been practiced (Hunter, 1978)

Manuscript and Printing in Middle East

By using paper (relatively cheap) as writing material instead of parchment or papyrus the Muslims, in the words of Pedersen "accomplished a feat of crucial significance not only to the history of the Islamic book, but also to the whole world of books" (1984, p.59, cited in Wikipedia)

A number of cities in the Middle Age Islamic world had book production centers and book markets. Yaqubi (d. 897) says that in his time Baghdad had over a hundred booksellers (Durant, 1950 cited in Wikipedia) Bookshops were often situated around the town's principal mosque as in Marrakesh, Morocco, that has a street named Kutubiyyin or book sellers in English and the famous Koutoubia Mosque is named so because of its location in this street.

Paper was not only convenient to use, transport, and store, it was, most importantly, considerably cheaper than papyrus and parchment, probably partly because of the use of recycled rags as raw material in its manufacture. Whereas an early Qur'an copy on parchment is estimated to have required the skins of about 300 sheep, an equivalent amount of paper could be produced much more rapidly, in much greater quantities, and at much lower cost. This transformed the economics of book production, and made possible a great increased in production of manuscript books (Roper, 2010)

This new ease of book production of course played a crucial role in the creation and transmission of scientific and mathematical texts. The Muslim scientists could carefully record and illustrate their findings and theories, and -- in such fields as medicine, pharmacology and dietetics – their prescriptions and recipes. Further copies could then be made, both by themselves and by other scribes.

Gutenberg does seem to have been the first to devise a printing press, but printing itself, that is, making multiple copies of a text by transferring it from one raised surface to other portable surfaces (especially paper) is much older. *The Chinese were doing it as early as the 4th century, and the oldest dated printed text known to us is from 868: the Diamond Sutra, a Chinese translation of a Buddhist text now preserved in the British Library”* (Roper, 2010)

Little more than 100 years later, Arab Muslims were also printing texts, including passages from the Qur'an. They had already incorporated the Chinese skill of paper making, developed it and adopted it widely in the Muslim lands. This led to a major growth in the production of manuscript texts. (Roper, 2010)

There was one kind of text which lent itself particularly to mass distribution: this was the private religious collection of prayers, invocations, Qur'anic extracts and

the "beautiful names" of God, for which there was a huge demand among Muslims, rich and poor, educated and uneducated. They were used especially as amulets, to be worn on the person, often rolled up and enclosed in a locket.

"Nearly 60 examples of these Arabic printed pieces survive in European and American libraries and museums, and an unknown number in Egypt itself" (Roper, 2010)

In the Muslim world itself, manuscripts remained in normal use. Because scribal culture was more pervasive and better established there Muslims were more comfortable with it, and saw no immediate need to adopt printing presses for book production, even after others had done so (Roper, 2010)

The Printed Book

During 15th century, the emergence of a literate middle class (Europe) in the later Middle Ages created a demand for new types of books. These tended to be popular works of a recreational or technical nature, which were often in the vernacular (Clement, 1997).

Around 1450, Johannes **Gutenberg** invented movable type printing press in Europe, along with innovations in casting the type based on a matrix and hand mould (Wikipedia: (Book, 2015)) It was the key invention that "laid the foundation of commercial mass production of books, and with the adaptations and success of the printers and publishers that soon followed" (Johann Gutenberg, n.d.) made books less expensive to produce, most widely available and affordable. "Soon, more people were able to participate in important political, cultural, and religious debates, which led to dramatic changes in society, such as the Reformation. Within 25 years of the printing of Gutenberg's Bible, printing workshops were established throughout Europe, including those in Paris, London, Spain, Poland, and the Netherlands"(Johann Gutenberg, n.d.). By the 18th century, both the ruling classes and some intellectuals in the leading Muslim power among Europe's neighbours, the Ottoman Empire, took measures to establish a printing press of their own – the famous Mütferrika Press, which started in 1728 (Roper, 2010)

The introduction of printing changed the form of books as well as the way in which their content was regarded. McLuhan (1972) called printing the first example of the assembly line and mass production (cited in Bolter, 2001).

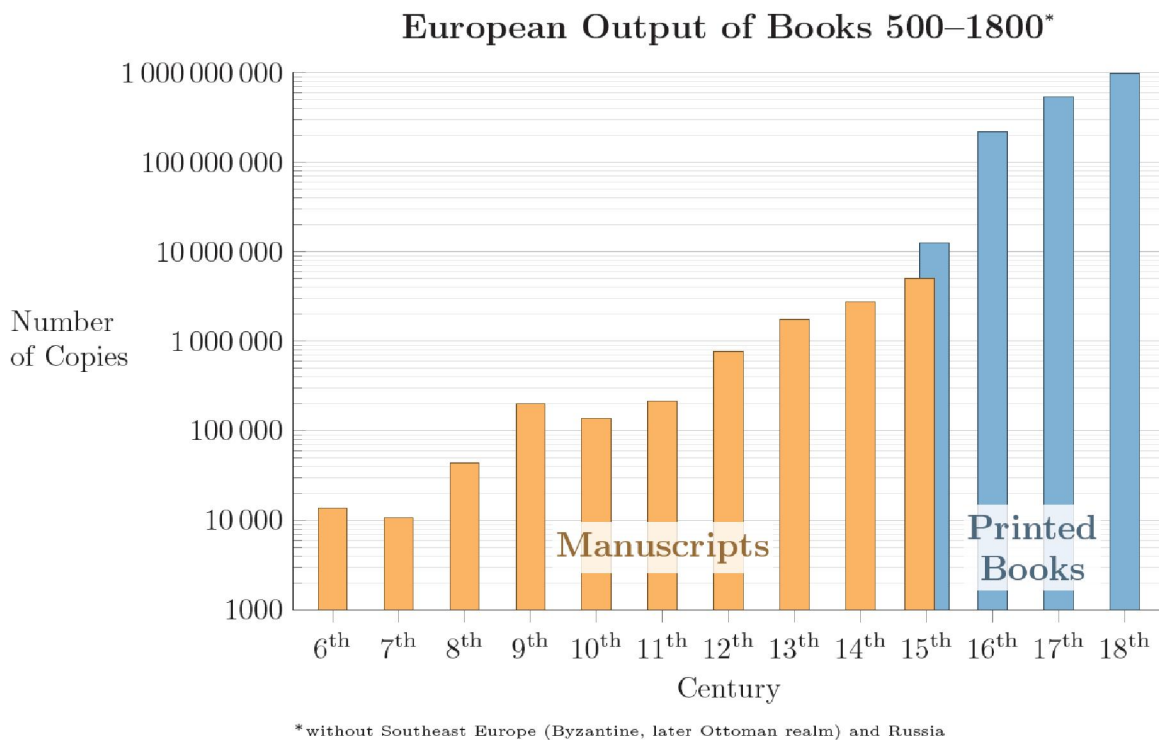
Mechanized printing has brought speed of processing and increase in productivity that has risen the knowledge resources and resource accessibility. Both the number of printed materials and the speed of their printing saw dramatic increase. For instance, according to Innis, in France in 1538 the printing speed was 20 to 200 leaves per hour. “With the introduction of steam power in the industrial revolution, the rate of production increased dramatically. Between 1814 and 1853, the “production of newspapers was increased from 250 to 1000 copies an hour, then to 12000 copies an hour” (Innis, 1950 cited in ETEC 540 course contents). “The printing press accelerates the rate of information production from approximately 200 pages an hour to approximately 768,000 pages an hour” (course contents). As technology evolved, inventors adapted these new technologies to revolutionize printing. Steam engines and, later, electrical engines were incorporated into the design of printing presses. In the 1970s, computers were integrated into the printing process.

“Today, printing is very different from the process used in Gutenberg's workshop. By modern standards, Gutenberg's printing process may seem slow and tedious; compositors put type together by hand, and a skilled compositor could assemble 2,000 characters or letters in an hour. A computer can arrange the same number of characters in about two seconds. Today, more words are being printed every second than were printed every year during the fifteenth and sixteenth centuries.” (Explore:Writing, n.d.)

Since writing has changed human perception (Ong, 2002) whereas mechanization has changed the learning culture and has made knowledge reachable and thus created new opportunities and business options. In short, mechanization has acted as catalyst and cultivated economic and social change by increasing book production, lowering books' cost (Wikipedia; History of Printing) books became cheaper and more affordable to broader sectors of society. Leslie White envisioned effect of technology and articulated her thoughts as ‘we may view a cultural system as a series of three horizontal layers: the technological layer on

the bottom, the philosophical on the top, the sociological band in between... The technological system is basic and primary (as cited in Chandler, 2014). [I think technology is an independent function that sets the flexible boundaries for a society and for a culture to grow and that has brought linear social and economic change (economic first)]

Shift in a primary function will ultimately change “values” of the dependent functions.



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