

THE RELEVANCE OF DISTINCTIVE KINDS OF SUPPORTING MATERIALS

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Summary

One of the most important life support systems is our cultural heritage, that is, our knowledge. In the course of human history knowledge has been preserved in different ways. Some of the first documents of human history were bones and stones. Millions of years afterwards signs and images began to appear. Support materials have ranged from rocks to tools, vessels, weapons, cuneiform tablets, papyrus rolls, codices and nowadays electronic materials. Modernization has always been the consequence of the relationship between acquired knowledge and its preservation. New material and technologies provide new possibilities but also pose new problems. Continual computer innovation and production offer important new ways of preserving shared knowledge but can, however, contribute to degrading the environment in ways we never anticipated.

This chapter focuses on the changes that have accompanied textual support, its relevance for the preservation of knowledge and memory systems and its distribution in a globalized world, from media production to education. It is important to show the consequences of information destruction and environmental degradation and the responsibility for them, offering a reactive approach that involves prevention of such things future.

1. Socio-Cultural Dimension: Knowledge Preservation and Different Types of Supporting Materials.

Preservation of knowledge has been linked to the invention of different kinds of materials for writing, painting, making music, etc. Human creativity and imagination have always played an important role in this process of knowledge preservation. Human

memory is undoubtedly proactive, that is future oriented and imaginative, a quality praised in the arts but which has had trouble acquired the same recognition within scientific discovery, generally ruled by empirical reason. However, together with observation, imagination is the basis of technological innovation and discovery.

One of those fundamental discoveries in the history of humankind was that of language preservation or writing. Language is the very substance of knowledge and the invention of signs and letters became the primary communication media. Language is also the main medium for memorizing cultural processes. Written literature has therefore had an important role in shaping cultural canons, ranging from habits to conducts and also political institutions and even nations.

Both speech and written language constitute themselves following textual principles, that is, pieces of information that are chained or knitted together, following certain rules, in the same causal structure. The act of composing a text may be therefore described as writing whereas the act of interpreting the text is reading.

The different materials used for writing tend to follow this textuality which forms the basis of our own memory patterns. Thus papyrus, the earliest form of paper used by the Egyptians as far back as the First dynasty (2600 BC), was made from the pith of this wetland plant, whose stems were cut length-wise, flattened and overlapped side-by-side in two layers, the second one perpendicular to the first, so that all the horizontal fibers parallel with the roll's length were on one side and all the vertical fibers were on the other.

Papyrus became an important trading commodity in the Mediterranean region. In Greece texts were written on the recto, that is, the lines following the fibers (right-hand page) but papyrus were sometimes reused writing across the fibers of the verso or left-hand page of the folded sheet, or scrubbed and scoured to form palimpsests (from Greek "scraped again"), irretrievably losing the earlier text. Around the 4th century BC a special type of notebook was introduced, serving as memoranda and later for public purposes. As Plato indicates in the *Phaedo*, the technology of the *hypomnemata* constituted a material memory of oral speech, contributing to form the raw material for later writing.

In areas where papyrus was unavailable parchment prepared from animal skins was used. Herodotus mentions that writing on skins was common in his time, the 5th century BC. Parchment had also been used for some Egyptian Fourth Dynasty texts and even in the Assyrian and Babylonian cultures, which impressed their cuneiform writing on clay tablets, evidence of the use of parchment has been found. For example, in the Babylonian Talmud, Moses writes the first Torah Scroll on a split cow-hide. Rabbinic and early Islamic texts were also found on parchment, which was more resilient than papyrus to humid conditions.

In Northern Europe the earliest examples of runic writing were found on rocks and wood, the oldest being that of a comb found in a bog in Vimose (Denmark) and dating from ca. 160 AD. Christianization replaced this alphabet, which shares similarities, such as the angular shapes of runes, with alphabets of Phoenician and Etruscan origin, by the

Latin one. Runes (from Gothic *runa* meaning “secret”) were also found on weapons, such as longbows and arrow heads and ornaments, giving name to the craftsman or the proprietor, but they are believed to be mostly signs to use for charms and divination. The Codex Runicus, written around 1300 AD and containing a number of Danish laws, is one of the few runic texts found on parchment.

Therefore, varied writing materials were used before the invention of paper in Ancient China in the 1st century AD. In Asia different types of wood and bamboo staves were often inscribed. The ancient codices of Pre-Columbian America (Maya and Aztec cultures) were also made of long folded strips of paper made of wood bark or plant fiber with a layer of whitewash. Documents of importance were inscribed on soft metallic sheets such as copperplate because leaves and paper were not as durable in the hot, humid climate. Buddhist manuscripts were inscribed on brass, copper or ivory sheets. Some important Etruscan texts were similarly inscribed on thin gold plates. The Romans used wax-coated tablets that could be reused, codex made of wood for taking notes and other informal writings. However, parchment roll or scroll became the dominant medium for literary works. While other religions preferred the roll, the early Christian writers employed codex made of papyrus, more compact and better suited for people on the move than parchment. Sheets of parchment were also used folded to form codices until the more inexpensive paper was introduced into Europe by way of the Muslims, who had a paper mill in operation in Baghdad as early as 794. It was later manufactured in Moorish Spain.

The codex was an improvement over the roll or scroll (made of papyrus, bamboo, etc.) because it took up less storage space, it was easier to transport and allowed sequential access and easier reading. Pages could also be written on both sides and its stable spine, on which the title of the book could be written, made easier the task of organizing documents in a library. Papyrus was fragile when repeatedly folded, thus parchment or vellum began to be used. Manuscript codices were often enriched with border decoration, engrossed initial letters and illustrations. The best known examples of these are the Celtic Book of Kells and the Northumbrian Lindisfarne Gospels from late 7th century which combined Anglo-Saxon and Celtic themes.

2. The Economic Dimension of Text Supporting Materials

Much of the cultural heritage of antiquity was transmitted inadvertently through palimpsests. Texts were often lost because the material was destroyed. Sometimes destruction was due to natural causes such as papyrus decay. But both papyrus and parchment were often scrubbed to form palimpsests. The decline of parchment and vellum trade with the introduction of paper contributed to the scarcity of material and many old codices were destroyed for the sake of writing material. This was the case of many Greek and pagan manuscripts which have only survived as palimpsests. In 691 a synodal decree forbade the destruction of manuscripts of the Scriptures or the Church Fathers. Foreign texts or heretical ones were more susceptible to being overwritten, and the discovery of cleaned, never overwritten parchment suggests that cultural and religious considerations were combined with economic ones.

The codex or book (in contrast to other forms of written and printed material such as brochures, leaflets etc.) was a huge technological advance in the early centuries of the

Christian era. It won its popularity as a means of collecting and transmitting Christian writings. The technology of the codex and the use of papyrus or parchment for the pages allowed large works to be collected this way. It was cheaper, more portable and easier to use. It also permitted non sequential access.

The ability to access material out of order, together with the possibility of longer documents, encouraged the adoption of systems of headings and subheadings. Many of the differences between writing and speaking, which we take for granted, are directly or indirectly the result of the impact of the codex on our writing habits, particularly after the expansion of the printing press.

Block printing pressing sheets of paper into individually carved wooden blocks was first developed in China, where the earliest known printed text dating from 868 AD is a Buddhist scripture known as the *Diamond Sutra*. This technique began to be used in Europe as a means to print the most popular book, the Bible, but it was difficult to carve large quantities of minute text in each block and illustrations proliferated. In 1041 movable clay type was invented, to be replaced by wood and later metal, particularly brass towards the 13th century. All these were individually carved by hand.

In the 1450s, just when the fall of Constantinople in 1453 marked the divide between the medieval and the modern period, a revolutionary event modified the conditions of text production and distribution: the development of mass production molds by a German goldsmith called Johann Gutenberg developed molds (made of durable alloy of lead, tin and antimony) that allowed for mass production of individual pieces of metal alphabetic characters or types, kept in a press (hence the name printing press).. In 1465 an important press was set up in the Benedictine monastery at Subiaco, moving to Rome in 1467. The Aldine Press, established in Venice in 1494 by Aldus Manutius became famous for its celebrated editions of the classics, the development of the compact format book that could be carried in a saddlebag and the introduction of italic type as a means of increasing print density. The most important centers of early printing in the Low Countries were Deventer and Louvain. William Caxton was apprenticed in Bruges before returning to England in 1476 to introduce the first printing press in his native country.

Most genres of writing became adapted to this technology. Systems of headings and subheadings, page numbering, index or table of contents were introduced by 1600, allowing for cross references to be made more easily. In academic and scientific works footnotes and endnotes were introduced to support arguments, offer evidences or clarify some points to the reader.

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Biographical Sketch

Asunción López-Varela comes from Madrid, Spain, where she teaches English and US-American literature at Universidad Complutense. Her interests include the interdisciplinary perspective of the teaching of literature and of research, particularly in their possibilities as a vehicle of interculturality. In her work, López-Varela Azcárate explores the notions of time and space in twentieth-century English and US-American literature and in science. She is a member of the Complutense research group Literaturas Españolas y Europeas del Texto al Hipertexto, LEETHI <<http://www.ucm.es/info/leethi/>>. since 2002 and she is one of the organizers of the multi-university research project *The Politics of Culture: Nationhood, Interculturalism, and Citizenship in the New Europe*, see at <http://www.ucm.es/info/comparativeculturalstudies.org>. Detailed information about López-Varela Azcárate's publications, research, and professional activities can be found at <http://www.ucm.es/info/leethi/index.php>.