Chapter 3: The Order of the Book

THE HUMAN TEXTUAL CONDITION

Among the most deeply influential inventions of the Western world are writing and the tools we use for it. By allowing the spread of culture beyond the time and place of the spoken word, these have affected the course of history more than any other human invention. We refer to the Islamic and Judaeo-Christian cultures as cultures of the book. The phrase is intended to convey the significance of the Torah, the Bible and the Koran in the religious tradition, but it conveniently reflects the way culture at large is a culture of written language. The importance widely attached to the book has, if anything, only increased as a faith-based understanding of the world has had to make room for secular forms of knowledge after the invention of printing. The Enlightenment is rooted in the very book culture originally created by the dominant religions against which so much of its intellectual energy was directed. It could not have occurred without a deep reliance on print.

This 'textual condition' was a long time in the making, but from slow beginnings it grew exponentially. It began with the first forms of manuscript writing, tentatively adopted in a few places in the world at roughly the same time, some 5,500 years ago. From there literacy spread only slowly beyond the arcane use of administrators, clerics, and professional writers. Literacy was relatively widespread in the larger urban centres of classical and Hellenistic civilisation such as Athens, Alexandria, and Rome.[1] Even slaves were frequently taught to read and write so that they could perform scribal, secretarial or librarian duties.[2] However, it took centuries before, in the High Middle Ages, urbanisation began to stimulate literacy on a larger scale, and more widespread education made reading and writing available to a wider cross section of society. The invention of printing with movable type reinforced it in an unprecedented way, resulting in the Western world in what I have called the 'Order of the Book': a culture deeply defined by the codes of print. In spite of the competition of radio, film and television, the Order of the Book has consolidated in our time. The importance of the written word in communication may be said to have culminated in Western society around 1900, before the onset of the fierce competition for people's time and attention of the audiovisual mediums of the twentieth century. At the turn of the century the newly achieved mass literacy had turned print into the most widely available source of news and entertainment—in the shape of cheap novelettes, illustrated magazines, and an unprecedented and never again equalled variety of newspapers, published in massive printruns. Despite the enormous range of medial modalities available through film, television, radio and the World Wide Web, culture has continued to be suffused by text of all kinds. With the continuing prevalence of books as a vehicle for the transmission of knowledge notably in education the written word still holds

[1] Even then, literacy remained well below 10% of the population; see W.V. Harris, *Ancient Literacy*, Cambridge, Mass. and London, 1989, pp. 3-24, 323-37, and *passim*.
[2] See W.V. Harris, *Ancient Literacy*; cf. Horst Blanck, *Das Buch in der Antike*, München, 1992, p. 37; H.L. Pinner, *The World of Books in Classical Antiquity*, Leiden, 1958, pp. 30-31.

a culturally privileged position.

At the beginning of the 1990s, in a matter of just over five years, the World Wide Web took the world by storm. From just a few computers serving static web pages, it grew to a massive network whose size can only be approximated very roughly. The number of Internet users (estimated at 1.8 thousand million as of December 2009) is growing by approximately 250 million a year.[3] The Web is now used for shopping, making airline reservations, watching films, downloading music, listening to radio programmes, and making telephone calls. Yet despite this panoply of functions and modalities, the Web—a textual medium from its inception—remains dominated by textuality in the form of web pages, email, instant messaging, blogs and text files of all kinds, including complete books.[4]

As I suggested in Chapter 1, text has, by dint of our long familiarity with it, become so transparent as to make it all but invisible as a technology. The extent to which we have internalised our textual condition can easily be illustrated. Think of the astonishing ease with which we are capable of assessing unconsciously the purport of textual messages without even reading a word of the actual text. Just to glance at a printed surface is to make a reliable verdict on the nature of its contents, and to interpret it as a letter, a free advertising rag, or a book of a certain import. We truly deserve to be called *homo typographicus*.

In the continuum from print to digital textual transmission I have posited, this textual condition persists. Before examining how digital text found itself a place in a culture already dominated by textual mediums this chapter will take a closer look at those existing textual mediums—manuscript and print. How did they create our textual condition and how did they influence, and continue to influence, the way we see the world? In taking a closer look at the adoption and development of manuscript and print it will be possible to learn something about the mechanisms of medial change. Moreover, if it is true that *how* we transmit knowledge (i.e., through the use of manuscript and print and their distinct possibilities) has implications for *what* knowledge may be transmitted, this should point to the sources of any bias that may occur in the use of these two textual mediums.

As I have suggested in Chapter 2, writing and printing have played a very important historical role in that they have laid down necessary conditions for change. However, the effects come from a mixture of social and technological factors. While the argument about the extent of any causal relationship between the use of—especially textual—mediums and the development of culture is obviously of enormous importance, it has so far proved to be too complex to admit firm conclusions. Society is not the outcome of a historical trajectory leading us from a benighted past to an enlightened present. If something can be learned about this relationship between social and technological factors without falling into the pitfall of a teleological interpretation of history so much the better.

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[3] See 'World Internet Users and Population Stats', http://www.internetworldstats.com/stats.htm.

[4] Available statistics, e.g., European Commision, *European Cultural Values,* 2007 (http://ec.europa.eu/culture/eac/sources_info/studies/pdf_word/values_report_en.pdf), show that email remains the most common online activity, accounting for 68% of leisure time use, while, for example, 39% use the internet to read newspapers (p. 25). By contrast, downloading music stands at 27%, and films and tv at 16%. In addition, of course, all of the non-text modalities, including even the software enabling it all to run, are firmly embedded in textual interfaces.

SOME NOTABLE FEATURES AND EFFECTS OF WRITING

It is now generally assumed that the earliest uses of script tended to pertain to the registration of property and commercial transactions.[5] Developed from tokens and marks representing objects from the external world, graphic symbols were used to register, to count, to represent, and of course to preserve, the records thus created over time.[6] The main drive for the invention was, in other words, economic. The oldest such writing is Mesopotamian. Here text was inscribed in clay tablets using a reed stylus with the characteristic shape that gave the scripts originating there the collective name 'cuneiform' ('wedge shaped'). The first use of that word is found in an ancient Sumerian source which also happens to contain a particularly interesting assertion about the origin of writing. Writing, according to this myth, was supposed to have been invented by king Enmerkar of Uruk for the specific purpose of being able to write a letter.[7] The importance of correspondence in the Sumerian bureaucracy was reflected by the frequent use of (fictional) letters as examples in the writing schools. As a myth of origin the story of Enmerkar's invention is significant if for no other reason than that it stresses the ability of writing to bridge distance rather than any perceived need to preserve records over time—although this was perhaps so obvious as to be taken as read.

Despite the tremendous effort that it takes to learn to write, the technology of writing (and printing) has obtained a lasting and vital place in human culture. It is very difficult to imagine its absence,[8] and such a condition can only be apprehended as through a glass, darkly. Paradoxically, for example, when writing was still novel, its use could be regarded as dangerous for the very same reason as it could now be thought risky *not* to write something down, i.e. that writing things down creates a physical record. As Plato stresses in his *Phaedrus*, the severance of the connection between the originator of the knowledge and the audience leads to danger and uncertainty. The fate of the recorded word is unpredictable. Once words have been put into writing, their author no longer has any certainty as to who will readthem, and when or where:

> Writing allows distortions of address: words meant for two ears only are overheard by others. To record is to relinquish control over the confidentiality and personal destination of the message.[9]

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[5] See Chapter 2, 'Writing/Writing system'.

[6] Script developed from the graphic representation of the physical world; not from speech as used to be commonly assumed (Harris, *Origin*, p. 26).

[7] Enmerkar sends a messenger who is meant to narrate the message orally as well as carrying a written text. See Herman Vanstipthout, 'Enmarkar's Invention of Writing Revisited', in *DUMU-E_2-DUB-BA-A: Studies in Honor of Åke W. Sjöberg*, ed. Hermann Behrens *et al.*, Philadelphia, 1989, pp. 515-24. Cf the myth of Bellerophon mentioned below. In *The Origin of Writing*, Chapter 1, 'From Folklore to Technology', Roy Harris gives various other myths about the origin of writing.

[8] Walter Ong make a persuasive attempt in *Orality and Literacy: The Technologizing of the Word*, London, 1982.

[9] John Durham Peters, *Speaking into the Air,* p. 40. He calls this phenomenon the 'promiscuity' of the text (p. 29 and *passim*).

Today the world has not only grown used to the fact that records have a life of their own, but it has actually come to depend on that fact. Awareness of its independent existence has been integrated in the way written and printed text are treated. In fact society has come to depend on this continued objective existence to the extent that it would be at a loss without it.

Many momentous social effects can be associated with the gradual adoption of writing and the spread of literacy in Western culture. Bearing in mind at all times that such a brief treatment will not be able to do justice to the gradualness and diffuseness of the process, I should like to discuss briefly some of the most prominent of them.

The diminishing role of human memory A popular conception of writing is that it is, in Plato's terms, 'a specific … for the memory'.[10] The frailness of human memory is a notorious, eternal, problem. However prodigious the feats of memory that people may once have been capable of,[11] every writer on the subject, from classical times to the present, has invariably stressed the vital importance of practice. Memory is like a muscle that needs constant exercise to stay fit, as neuro-scientific brain research regularly proves. The need for such constant exercise has steadily declined since the invention of writing as a means to inscribe knowledge that would otherwise have to be remembered.

In his *Phaedrus*, which amounts to an exceptionally sensitive and extraordinarily visionary treatment of this issue, Plato discusses writing in terms of the advantages extolled by its proponents versus his own darker suspicions that this *pharmakeion* or 'specific' would bring more trouble into the world than good. The Egyptian god Theuth (or Thoth), Plato has Socrates tell us, 'was the inventor of many arts, such as arithmetic and calculation and geometry and astronomy as well as draughts and dice, but his great discovery was the use of letters'. When this prodigious inventor presented writing to Thamus (the god who was then the king of all of Egypt) he explained that it would 'make the Egyptians wiser and give them better memories; it is a specific both for the memory and for the wit'. To which Thamus sensibly replied:

> O most ingenious Theuth, the parent or inventor of an art is not always the best judge of the utility or inutility of his own inventions to the users of them. And in this instance, you who are the father of letters, from a paternal love of your own children have been led to attribute to them a quality which they cannot have; for this discovery of yours will create forgetfulness in the learners' souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. And so the specific which you have discovered is an aid not to memory, but to reminiscence. As for wisdom, it is the reputation, not the reality, that you have to offer to those who learn

[10] Plato, *Phaedrus* 274e (tra. Benjamin Jowett).

[11] Examples abound; cf James O'Donnell on Jerome (*Avatars of the Word: From Papyrus to Cyberspace*, Cambridge, Mass. and London, 1998, pp. 4-5); Augustine (himself a man reputed to have had an excellent memory) on Simplicius (Mary Carruthers, *The Book of Memory: A Study of Memory in Medieval Culture*, CUP, 1990, pp. 18-19), and Leah S. Marcus on Elizabeth I ('From Oral Delivery to Print in the Speeches of Elizabeth I', in *Print, Manuscript and Performance: The Changing Relations of the Media in Early Modern England*, ed. Arthur F. Marotti and Michael D. Bristol, Columbus, 2000, pp. 33-48, on p. 37).

> from you; they will have heard many things and yet received no teaching; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having acquired not wisdom, but the show of wisdom. (*Phaedrus*, 274e-275b)

As the subsequent dialogue between Socrates and Phaedrus shows, Plato shared Thamus' skepsis, as have many commentators since. In *Prometheus Bound*, for example, Aeschylus, clearly basing himself on the same myth as Plato, has Zeus punishing Prometheus for bringing the alphabet into the world.[12] Paradoxically, the adoption of writing, which is now apt to be regarded as a patent 'specific ... for the memory', in ancient Greece and elsewhere may well have led if not to the 'invention' of memory then at least to an unprecedented consciousness of its significance.[13]

Theuth is not just the god of writing but also the god of death, who keeps a record of the weight of dead souls.[14] The association Plato makes of writing with death—as against 'living memory'—is something he shares with many poets after him. Among the more famous is Horace. His confident claim in his 'Exegi monumentum' (*Odes* iii.30.1) that his poetry, more durable than bronze, has brought him immortality is a familiar topos. But it is easy to forget that, paradoxically, he places no trust whatsoever in writing. The material substrate on which we have come to rely so much for dissemination and preservation he sees as being vulnerable to mould, fire, moths, and other destructive natural forces.[15] For his immortality he relies, not on writing, but on that same 'living memory' that Plato also holds in superior regard. Again, this is strikingly removed from a literate society's attitude to writing. The saying 'verba volant scripta manent' (the spoken word flies, the written word remains) is now usually regarded as a eulogy on writing—'flying' representing an undesirable sort of transience and evanescence. But to apply this to the classical mindset might be a misinterpretation betraying a deep cultural chasm. Homer spoke approvingly of 'wingèd words', and 'verba volant scripta manent' strongly resembles Paul's sentiment in his second epistle to the Corinthians that 'the letter killeth, but the spirit giveth life' (3.6). It conveys the belief that writing is pathetically inert and hidebound, and that it is only the spoken word that is truly capable of reaching across to the person one wishes to commune with. However this may be, outside of administrative, military, and other such utilitarian settings, it definitely took time for the preserving power of writing to become appreciated.

The quantifiability of knowledge As knowledge became available in a tangible form it could also be treated as a quantifiable commodity, and could be collected from various

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[12] Also, 'Documents can be flourished in a comedy of Aristophanes to back up an oral statement with the implication that only shysters would use this resource; the written word is still under some suspicion or is a little ridiculous' (Havelock, *Origins of Western Literacy*, Ontario, 1976, p. 71).

[13] Simonides of Ceos (c. 556-468 BC) is usually regarded as the 'inventor of the system of memory-aids' (Frances Yates, *The Art of Memory*, London, 1966, pp. 17, 43). It is inviting to speculate on the significance of the precise historical moment when he did so, shortly after the introduction of writing in Greece. Could there be a connection with the anxiety provoked by the use of such a material substrate as papyrus for the inscription of valuable thoughts and utterances?

[14] Jacques Derrida, who draws attention to this in 'La pharmacie de Platon' (in *La dissemination*, Paris, 1972, p. 104), also recalls the double meaning of the Greek word *pharmakon* ('specific'), meaning *remedy* as well as *poison* (pp. 108-11).

[15] In 'To His Book', Horace complains of the 'unesthetic moths' eating his books *(The Epistles*, Book 1, xx).

sources. The library of the temple at Nippur that was excavated in the 1890s contained more than 20,000 tablets. Though many of them were of an administrative nature, together they formed an impressive record of the linguistic, geographical, religious, botanical, medical and other knowledge of the Sumerians. But the most famous and most ambitious of the early collecting initiatives was no doubt that of the great classical library of Alexandria. In bringing together, by fair means or foul, all known texts of the late classical world in physical form, it represented an ideal model for centuries to come.

It was only in the era of print, when the unstemmable proliferation of books had made the task of physical and intellectual collecting too daunting, that this form of collecting was gradually replaced by systematic bibliographical efforts. Most monumental among these was the Herculean feat performed by Conrad Gessner (1516-1565), the 'father' of modern enumerative, or systematic, bibliography. In his *Bibliotheca universalis* he aimed to include bibliographic references to all writers who had ever produced scholarly works in one of the languages of science—Latin, Greek or Hebrew. However modest by comparison to the grand Alexandrian enterprise, even this bibliographic vision already proved too ambitious. The sheer volume of information being produced in the Western world had already become forbidding. After having published a further three volumes, Gessner gave up. But bringing together the world's knowledge had become an ineradicable human urge. Having caused the problem in the first place, it was the same technology, printing, that also provided a solution, albeit of a different nature. The massive *Encyclopédie* of Diderot and d'Alembert (35 volumes, 1751-1780) can be regarded as one of the outstanding tributes to man's encyclopedic instinct—as well as a monumental milestone in printing history. After a succession, in the first half of the twentieth century, of visionary but ultimately abortive attempts based on microfilm—notably by Paul Otlet in Belgium and Vannevar Bush in America—the encyclopedic inclination has since gained new perspectives in the internet era (about which more in Chapter 5).

Objectivity As Jack Goody and Ian Watt have suggested, written records encourage 'scepticism … about received ideas about the universe as a whole' to be entertained.[16] The material written record allows observations made by one man to be judged by another, who might be removed from the first in time and space. Objectification in the literal sense of the materiality of the written word thus led to reflexivity, and the possibility of greater objectivity in the figurative sense in which it is now usually understood. A written account may in itself not be much more objective than one that is orally transmitted, but the existence of the account as a written artefact will at least enable comparison with other accounts, allows of correction, and will make it less susceptible to adaptation or corruption over time.[17]

The critical distance resulting from writing is a point also stressed by Eric Havelock in his *Preface to Plato*. In explaining Plato's attack on poetry as an attack on an educational system rather than on poetry as such, Havelock interprets Plato's objection as

[16] Jack Goody and Ian Watt, 'The Consequences of Literacy', in *Literacy in Traditional Societies*, ed. Jack Goody, CUP, 1968, 67-68. See also Jack Goody, *The Domestication of the Savage Mind*, CUP, 1977.
[17] In *Literacy and Orality* Ruth Finnegan illustrates the ease with which oral accounts (in her examples of genealogies) are adapted to new realities (pp. 20-21).

being aimed at rote learning in an oral society. According to Plato, learning by heart poems such as the *Iliad* and *Odyssey* made it impossible to take distance from the opinions expressed in them, and to distinguish properly between opinions and facts. How very ironic therefore that Plato did not recognise the great promise of writing—a technology which he denounced—as a 'specific' against the indoctrination of orally transmitted knowledge.

Consciousness One of the largest and most controversial claims for writing has been made by Julian Jaynes in *The Origin of Consciousness in the Breakdown of the Bicameral Mind* of 1976. In this influential book Jaynes suggests that consciousness, in the particular sense in which he uses the term, is connected with the development of writing. This sense is that of a process by which individuals are enabled to look at themselves from the outside, so that they becomes capable of seeing themselves as distinct persons with a particular past, and directing themselves towards a particular imagined future on the basis of their own judgments and decisions. Language offers the primary instrument with which to create the potential for this sense of consciousness, but in Jaynes' view it is writing that crucially accelerates the process.[18] This would naturally involve both the objectification and rationalisation aspects of writing discussed above. It leads Jaynes to place the development of this particular type of consciousness squarely in the period in which writing was beginning to gain ground: the second millennium B.C. The famous exhortation to 'know thyself' inscribed in the temple of Apollo at Delphi and variously attributed to a number of Greek sages of the sixth and fifth centuries, would according to Jaynes have been an impossible formulation in an era before writing had advanced to the position it had come to hold by the time of Solon. That was when, as Jaynes claims, 'the operator of consciousness is firmly established in Greece'.[19]

Abstraction and rationality The classicist Eric Havelock was among the first to make the claim, in his *Preface to Plato* (1963) and *Origins of Western Literacy* (1976), that the invention of writing was a condition for the escape out of a mindset dominated by subjectivity and myth to rational and analytical thought.[20] For some decades this remained one of the more hotly debated claims for writing.[21] More recently, Maryanne Wolf has added to Havelock's side of the balance the weight of new research in cognitive neuroscience, psychology, and linguistics to stress the 'increasingly sophisticated

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[18] 'The importance of writing in the breakdown of the bicameral voices [which represent man's preconscious motivation] is tremendously important. What had to be spoken is now silent and carved upon a stone to be taken in visually' (Julian Jaynes, *The Origin of Consciousnes*, p. 302). Compare also Havelock, *Preface to Plato*, notably 'Separation of knower from known', pp. 197-214.
[19] Jaynes, *The Origin of Consciousness, p. 287.*
[20] To support similar claims, Ong cites at great length the extensive fieldwork among illiterates in the Soviet Union of the Russian psychologist Aleksandr Luria in *Orality and Literacy* (pp. 49-55).
[21] Among the more vociferous critiques was that of Ruth Finnegan in her already cited *Literacy and Orality*. Though she strikes a welcome note of caution in the face of a tendency toward a simplified oppositional model in which orality and literacy are in clear-cut opposition (p. 175), her argument is ultimately not very convincing. At the end of the day, the Limba peasants whom she presents as evidence for a capacity of abstract and detached analysis did not, for all that, develop an industrial society or contribute to scientific discoveries.

intellectual skills promoted by reading and writing'.[22] Current neuroscience describes 'the new circuits and pathways that the brain fashions in order to read become the foundation for being able to think in different, innovative ways':[23]

> By its ability to become virtually automatic, literacy allowed the individual reader to give less time to initial decoding processes and to allocate more cognitive time and ultimately more cortical space to the deeper analysis of recorded thought. Developmental differences in the circuit systems between a beginning, decoding brain and a fully automatic, comprehending brain span the length and breadth of the brain's two hemispheres. A system that can become streamlined through specialization and automaticity has more time to think. This is the miraculous gift of the reading brain.
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> Few inventions ever did more to prepare the brain and poise the species for its own advancement. As literacy became widespread in a culture, the act of reading silently invited each reader to go beyond the text; in so doing, it further propelled the intellectual development of the individual reader and the culture. This is the biologically given, intellectually learned generativity of reading that is the immeasurable yield of the brain's gift of time. (*Ibid*., pp. 216-17)

The debate about the cognitive effects of reading and writing has certainly not been concluded. But it seems incontrovertible, for example, that the process of writing fosters—if it does not in fact require—a greater precision of formulation. The realisation that a reader may dissect the verbal tissue of thoughts after gaining access to them in a material form could not but tend to a greater exactness of expression in the writing process. Further, at the very least the *capacity* for rational thought is aided by writing, if only as a result of the objectification discussed above. These are all preconditions for the sophisticated rational thinking on which philosophical and scientific advancement is based.

Indisputably, the literate mindset is very different from the oral mindset. This difference will manifest itself in many ways. Some are obvious, such as the relative importance of memory, which has already been discussed. Walter Ong has suggested that our constant awareness of ourselves as being 'situated every moment of [our] lives in abstract computed time of any sort' is another outcome of literacy. Other effects are a great deal more diffuse and subtle—and thus harder to imagine. Among them are the ways in which the awareness of an essential difference between speaking and writing plays out. As linguists have come to realise in the twentieth century, writing is not speech inscribed but a means of expression in its own right. Writing demands a very different register, characterised, among other properties, by a greater exactness of expression. Writing, as Plato showed so pointedly in the *Phaedrus*, is out in the world on its own, and cannot rely, as speech can, on the help of gesture, facial expression, elucidation on request, etcetera.

All of these diffuse social effects can be mostly attributed to one salient property that distinguishes the technology of writing from orally transmitted knowledge: the fact that writing has a physical, tangible form. That writing involves the creation of a physical

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[22] Maryanne Wolf, *Proust and the Squid*, pp. 217-18.
[23] Wolf, *Proust and the Squid*, p. 217.

object is its most distinctive feature. The invention of writing made it possible in a very literal sense to detach the self from the thought it had. In other words, knowledge could become independent from the person who held that knowledge. And so, for example, Bellerophon could be instructed to carry the folded tablet on which had been graved many 'life-destroying' signs', ordering his own death, as Homer narrates in the *Iliad*.[24] On a larger scale, and less immediately deadly, writing in this way enabled the continuity of culture as well as its dissemination.

That the 'objectification of the word' is the most salient technological feature of writing is not to say that no other salient features are relevant in assessing its effects. The fact that it is a technology—a special skill that must be actively learned—is one of them. The arcane nature of the use of writing by administrators, clerics, and professional writers has already been mentioned in the introduction to this chapter. What this draws attention to once again is that writing is a technology. As such it requires a conscious learning effort, while language is learned by any human child merely by being subjected to it. Unlike speech, writing divided the world—as to a signicant extent it still does—into those who have access to the meanings it inscribes and those who do not. Possessing the faculty of reading and writing gives power. It does so not just by giving access to written sources that remain closed to others, but also by extending the very capacity of the brain to think.[25]

SOME NOTABLE FEATURES AND EFFECTS OF PRINTING

Johannes Gutenberg of Mainz is credited with the invention, in the middle of the fifteenth century, of the technique of printing with moveable metal types. A flourishing trade in manuscripts had existed in Europe for some time, especially after paper, newly introduced in Europe in the twelfth century, became more widely available in the fourteenth, coinciding with the rise of literacy levels. Gutenberg's major innovation was to think of a way to separate the text to be copied into its atoms: the individual characters (letters, abbreviation signs, ligatures, numbers, and punctuation marks). The possibility to correct the text before copying, and to reuse the cut types afterwards, added to the paradigm shift in the copying of texts.[26]

Printing is the first example of modern industrial production. After an initial capital investment in the means of production (a printing press and movable type) a series of identical copies of a product—a particular text—could be manufactured. It was an industrial process which involved a clear division of labour, and resulted in a workflow efficiency that compared very favourably with manuscript production, even with the

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[24] Book VI, 168-69.

[25] Wolf, *Proust and the Squid*, pp. 217. Extending the brain's capacity by exercising it in this way resembles the brain's evolutionary development as a result of exercising the language ability posited by Terrence Deacon (see Kenneally, *The First Word*, pp. 250-54).

[26] In both China and Korea printing with moveable type predate Gutenberg's invention, and may have inspired it (Joseph Needham, ed., *Science and Civilisation in China*, vol. 5, *Chemistry and Chemical Technology*, part 1, Tsien Tsuen-Hsuin, *Paper and Printing*, CUP, 1985, pp. 313-19). China was first with moveable types made of porcelain (around 1040 AD; *ibid*., pp. 201-3), while Korea was the first to use metal type, in the early thirteenth century (*ibid*., pp. 325-26).

already efficient pecia system.[27] For each individual book, the investment in time involved in composing the type was only a few times what it took for a scribe to make a single copy of the text. True, that was only part of the total investment. Besides the initial capital investment in plant and other equipment there was the labour cost of the actual printing process, as well as the cost of paper—recurring and substantial. Even if the cost of paper per copy was no higher than in the case of manuscripts, the total for the entire printrun was now payable before any copies had been sold, while in manuscript production paper only needed to be paid for if and when a copy of a book was made. As this was usually done to order, little risk was involved.

Nevertheless, printing was an extremely efficient means of multiplication, which must have catered to an existing need: that of a growing reading public demanding for more copies to be produced faster at competing prices—without of course forfeiting legibility. Lucien Febvre and Henri-Jean Martin have suggested that 'Gutenberg's contemporaries may have accepted printing as no more than a device for reproducing mechanically the texts most in demand'.[28] The resulting *lowering* of book prices was not necessarily foreseen—let alone intended—by its inventor. Rather it developed gradually, as a side effect of the industrial method, and competition among printers.[29]

As in the case of writing, a number of sweeping social changes have been associated with the printing press. Elizabeth Eisenstein has made a far-reaching claim for the effects of the printing press as an 'agent of change'. In her two-volume work *The Printing Press as an Agent of Change* (1979) she asserts that there are three major events in the cultural history of the West that could not have happened without it:

- The Renaissance, with its revival of classical literature and the impulse it provided for Early Modern Humanism;
- The Reformation, which began with Luther posting his 95 theses on the door of the castle chapel at Wittenberg in the form of a single hand-written note, whose contents and import were rapidly disseminated by the printing press, and which depended on the personal study of the word of God;
- The scientific revolution, which depended on the exactness of print and the ease of access to the record of other people's ideas.

Eisenstein's book occasioned much criticism, which after almost thirty years still reverberates. Though much of it was directed at her methods rather than the substance of her argument, much of the argument unfortunately got drowned in the sea of criticism. In 1976 an English translation had appeared of *l'Apparition du livre* by Lucien Febvre and Henri-Jean Martin of 1958. With its subtitle 'The Impact of Printing 1450-1800' and a last

[27] The pecia system divided the source text in a number of sections so that they could be simultaneously copied (Lucien Febvre and Henri-Jean Martin, *The Coming of the Book: The Impact of Printing 1450–1800*, London, 1976, p. 21).
[28] *The Coming of the Book*, p. 248; see also Jan Willem Klein, 'Ghescreven ofte gheprent: Aspecten van de (Goudse) Middeleeuwse boekproductie', (Written or Printed: Aspects of the Gouda Medieval Book Production) in Herman Pleij, Joris Reynaert et al., *Geschreven en gedrukt: Boekproductie van handschrift naar druk in de overgang van Middeleeuwen naar Moderne Tijd*, Gent, 2004, pp. 67-84, at p. 70.
[29] See, for example, John Man, *The Gutenberg Revolution: The Story of a Genius and an Invention that Changed the World*, London, 2002, p. 217.

chapter entitled 'The Book as a Force for Change', *The Coming of the Book* made claims not all that dissimilar to Eisenstein's, yet it had evoked no such fierce protests. The difference, and a chief point of criticism of Eisenstein's argument, was that Eisenstein had paid much less attention to the technology's social setting.[30] Attributing a certain autonomous agency to the printing press she was accused of displaying unwarranted technological determinism. By treating the printing press as a technology 'sui generis', in fact she placed it outside of conventional models of historical change.

Some technological properties of print

To be sure, without the social embedding of the technology (the definition of the roles of such human agents as authors, printers, censors, booksellers, distributors, and readers) and the acceptance of the conventions of print (for example, its 'registration', 'certification', and archiving functions for scholarship),[31] printing could not have had the effects it had. But though the printing press may not have been the sole agent of change, with its salient technological properties it nevertheless did more than merely create conditions that fostered change: there are some good reasons for regarding it as an 'agent of change'. Which were these properties?

Increased speed of copying The greater speed of copying compared to manuscript production allowed information to be disseminated much faster. Increased speed of copying and the increased number of copies represent two sides of the same technological coin. Printing requires the setting up of type, and a great deal of preparation in make-ready. This investment in the initial stage of production can only be justified if it is in some way made up for later. Admittedly, this is an economical imperative; there is no intrinsic *technical* reason why this would not enable a low speed of copying in a small number of copies—or even the printing of a single copy. However, this would be patently perverse. The process of printing was *designed* to increase both the speed of copying and the number of copies produced.

Increased number of copies Through the increased number of copies a greater number of people could be reached, leading to the record of human knowledge becoming more widely accessible. Equally, as Eisenstein has stressed in her discussion of the religious debate that gave rise to the Protestant Reformation, the printing press soon also started to widen access to *new* ideas. Luther's 95 theses had by no means been the first attempt to reform the Catholic Church. But the fact that this time his original hand-written note could be printed and disseminated in such large numbers of copies so fast gave his ideas a much greater impact beyond the immediate place (Wittenberg) and time (31 October 1517) of

[30] Also, Eisenstein made the mistake of prominently acknowledging her indebtedness to the ideas of Marshall McLuhan, whose unique style—a blend of the apodictic and the oracular—and unconventional form of writing have always caused him to be regarded as something of a maverick by 'serious' scholars.
[31] Adrian Johns discusses these points at length in what amounts to a book-length attack on Eisenstein, *The Nature of the Book: Print and Knowledge in the Making* (Chicago and London, 1998).

their original publication.

Legibility The very fact that printing meant the repetition of identical shapes made print easier to read than most handwriting. Even the earliest examples of printing are mostly extremely legible. The type Gutenberg used for his Bible has been praised lavishly, and the 42-line Bible counts among the most beautiful books ever printed.

Unintended properties of print

It is of course impossible to isolate technology completely from its social setting. Without the socioeconomic motive to recoup costs and maximise the return on the investment made on typesetting, the number of copies made in print might not have increased as much compared to manuscript production. Again, without the drive to make a profit the speed of copying might have grown more slowly. As it was, the drive for speed was a constant socioeconomic factor, further strengthened by a developing explicit social demand for speed, for example in the case of news. Nevertheless, it is significant that these were the properties that were singled out for comment in contemporary descriptions. That texts could be so effortlessly multiplied in so many copies in such a short period, and in such legible letters, without scribal errors, was a source of amazement and admiration to many.[32] Apart from the sheer wonder at the technological achievement that printing represented, speed and quantity are repeatedly commented on. Together with the possibility to correct the set type and to reuse the individual sorts (which woodblock printing did not offer), they were likely the primary incentive for Gutenberg's invention of printing with individual metal types.

For its inventor speed, number of copies, and correctability represented economic motives first and foremost. Yet these same properties could equally benefit various other social interests, such as those of scholars in disseminating new knowledge, and of the Church in disseminating the word of God in more reliable and, importantly, more uniform editions.[33]

But this fantastic new technology of printing, with its intended salient properties of increased speed and quantity (fulfilling an existing demand), also brought along unintended properties, no less salient.

Identity of copies To all intents and purposes all copies produced by the printing press were identical.[34] As we have just observed, such identicalness across individual copies was

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[32] For example, to bishop Enea Silvio Piccolomini who writes to the Spanish Cardinal Juan de Carvajal about the clarity of the type produced by 'that miraculous man in the vicinity of Frankfurt', which he suggests his correspondent might be able to read without difficulty, and even without glasses (quoted in Paul Hoftijzer, *De lof der boekdrukkunst*, Zutphen, 2003, p. 7).

[33] E.g., Ursula Rautenberg, 'Von Mainz in die Welt: Buchdruck und Buchhandel in der Inkunabelzeit', in *Aventur und Kunst: Vom Geheimunternehmen zur ersten Mediarevolution*, Mainz, 2000, pp. 236-47, at p. 240.

[34] Correction on the press, or accidents with the type, frequently caused textual variation, which was, however, usually minor. In the case of Gutenberg's Bible, the decision to increase the print run after the first sheets had already come off the press necessitated resetting of entire pages, using 42 lines instead of the

certainly intended as far as the *text* itself was concerned. It was a property that was particularly welcomed by the Church in its attempts at standardising the liturgy and the text of the Bible,[35] but it offered an efficient antidote more generally to the unrelenting tendency towards corruption of manuscript transmission. However, identicalness of *the individual page* was a coincidental side effect. To some extent it was even an undesirable one, as it made books into industrial, 'off the rack' products compared to the bespoke nature of the manuscript book. Just as it took time when writing was first invented for the concept of permanence of the record to develop,[36] it took time for an awareness of the particular usefulness, especially for referencing and scholarship, of this aspect of printing to emerge.

Conscious cultivation of this salient property took even longer.[37] It was not till around 1475 that Nicolas Goetz of Cologne printed an edition of Werner Rolewinck's *Fasciculus temporum* using page numbers,[38] and it was not until almost a full century after Gutenberg's first printings that page numbering started to become common.[39] Fixation and standardisation (at least across most of a print run) of information on the printed page, both in terms of the substantials and accidentals of the text itself and in terms of the typographic mise-en-page aided textual stability and thereby the scholarship that depended on that.[40] More generally, page numbering, contents pages and indexes could all make use of this feature. They offered convenient ways into the text and made a crucial contribution to the *machine à lire* that the book has since become.[41] The identity of content across copies fostered the growth of bodies of shared knowledge. This led, paradoxically, to both fixity and change: fixity because of canonisation; change because such bodies of shared fact provided points of departure for forays into new areas of knowledge, as the scientific revolution of the seventeenth century evidences.[42]

Increased exactness of information Closely connected with the identity of copies was the greater precision in the transmission of detail that printing enabled. This meant that much greater exactness in the representation of knowledge could be achieved, through the use of

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original 40. However, the variations concern spelling (especially the resolution of abbreviations. See Christopher de Hamel, *The Book: A History of the Bible*, London and New York, 2001, pp. 207-11.

[35] See Rautenberg, 'Von Mainz in die Welt', p. 240; De Hamel, *The Book*, pp. 194-95.

[36] Its potential for permanence was judged much less than that of living memory, and faith in the inscriptional permanence of the material substrate grew only slowly.

[37] There is evidence that the popularity of page numbering in manuscripts was growing from about 1300, while numbering in incunables is extremely rare (just over 10%). Page numbering in manuscripts, which are by definition unique, would obviously serve a different purpose than page numbering in printed books, and so there would be no *prima facie* case for continuity between the two practices. In fact, numbering in printed books may have begun as an aid to printers rather than readers. For a detailed discussion see Margaret M. Smith, 'Printed foliation: Forerunner to printed page-numbers?', *Gutenberg Jahrbuch* 63 (1988), pp. 54-70. Note that the usefulness of pagination depends to a large extent on the genre and nature of the text concerned.

[38] Printed numbering of leaves had already occurred in 1470 (Smith, 'Printed foliation', p. 54).

[39] Febvre and Martin, *The Coming of the Book*, p. 88.

[40] In *The Nature of the Book* Adrian Johns also stresses the time it took, not just for identity of copies to become a reliable property of print, but especially for the awareness of that property to become sufficiently widespread for it to be generally exploited.

[41] The phrase is that of Paul Valéry in 'Les deux vertus d'un livre', in *Oeuvres*, vol. 2, Paris, 1960, p. 1249.

[42] Mistakes, if they went uncorrected, could obviously mar an entire print run: identity of copies has its downside.

such typically typographic aids as tables and different typefaces, font sizes, and white space as a means of ordering information. The faithful—and with the use of engraving techniques more precise—reproduction of illustrations, too, represented a significant improvement. These were refinements that could be relied on for an entire edition. Uniformity, predictability, consistency, and standardisation were prerequisites for analytical and scientific thinking, but also for improved organisation, as, for example, in bureaucracy. Again, this greater precision was a by-product of printing technology rather than a property designed by its inventor in reply to an existing social demand.

Without the availability of the technology in the first place there would have been no opportunity for these various effects, and so, in a very real sense these unintended properties of printing can be regarded as 'agents of change'. Precisely because they were unintended—side effects, so to speak—it can be argued that at least until such time as their usefulness became recognised, and their properties were consciously harnessed in the 'knowledge industry', a form of agency may be attributed to them. This may not have been enough to cause such major events as the Renaissance, the Reformation, and the scientific revolution single-handedly, but it makes printing rather more than a mere addition to a long list of contributing factors.

Diffuse social and economic effects

One obvious practical consequence of the invention and spread of printing was the growth of a large body of printers, typesetters, correctors, booksellers, and so on. They gradually organised themselves in professional bodies, some existing, such as the scriveners, some new. But intended or unintended, the primary technological features of printing led to further effects, which, though themselves unintended, nevertheless went on to become extremely significant. They may be called the secondary, social, effects of print. They include the following.

Lower prices The lowering of book prices resulting from the shift from manuscript to print removed barriers to the ownership of books, and thereby improved access to the ideas they contained. Ideas and knowledge could thus spread more widely, both formally (through education) and informally. Also, the skill of reading, once acquired, did not have to languish for want of reading materials.

Increased chances of preservation As larger numbers of the same text were produced, that text was more likely to survive in the longer term, as multiple copies were dispersed over collections geographically widely apart.[43]

Diminishing control over access to information More directly consequential, and in line

[43] This in spite of the truth of the book historical dictum that 'the more there were, the fewer there are', referring to the phenomenon that much popular printed matter was so intensively used, or treated so casually, that few copies remain.

with Plato's misgivings about writing, were the fears of both Church and State for the uncontrolled spread of knowledge and information. The institution of censorship was thus a necessary corrollary of the invention of the printing press, even if its effectiveness has always been rather limited.

The anonimity of the eventual reader Diminishing control over access to printed information was an effect that gave rise to mixed feelings, not just an from the point of view of the authorities, but equally from that of authors. From the author's point of view print makes for a still greater degree of anonimity of the eventual reader than in the case of writing. The larger market demanded by the increased number of copies furthered dispersal over a larger geographic area, while selling out the edition might take longer, leaving the text to find new buyers and readers long after the death of the author and the original publisher. This represented an element of uncertainty that was not welcomed by authors who were careful about who they were entrusting with their text.[44]

The expansion of individuality As many commentators have remarked,[45] print was also a major factor in the development of the sense of individuality that marks modern society. More so than writing, print enables anonymous, private intercourse with the text, bypassing the personal contact of oral communication. As, first, reading moved from the public (reading aloud, reading in social settings) to the private sphere and, next, the growing choice of reading matter made the likelihood of two readers sharing the same reading experience more and more remote, the reader's communion with the text served to stress the individuality of the experience.

Termination of the one-to-one relationship between production and consumption Manuscript books were usually copied on demand only. Printing a large number of copies of a book without the prospect of certain sales introduced commercial risk taking into the book trade, and with that the marketing 'push' of the commercial interest of the printer–publisher. This meant that Hermes—the printer's economic considerations—became increasingly drawn into Pallas Athena's cultural and scientific sphere.

Stimulus for new writing What printing did in the first instance was offer wider access to existing knowledge and information. The efforts of the early printers had, unconsciously or consciously, been focused on the preservation of existing knowledge: the further dissemination of the most popular canonical texts. However, as the market for canonical texts became saturated, printers began to cast around for new markets. Soon the printing press became a convenient means to circulate new writing.

Increased speed and spread of dissemination of knowledge leads *ipso facto* to a general speeding up of the process of change.[46] At the same time, as has often been stressed,

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[44] Among the many authors who felt that way about their writing, Erasmus and Spinoza are some of the best-known.

[45] E.g., Ong, *Literacy and Orality*, pp. 130-32.

[46] This has been remarked frequently in more recent times (e.g., by C.P. Snow in *The Two Cultures*, CUP, 1959; Bernard Stiegler, *Technics and Time*, p. 15, or Alvin Toffler in *Future Shock*, New York, 1970).

printing created conditions for conservation and standardisation as much as conditions for change. An often cited example, also mentioned by Eisenstein (*ibid.* pp. 117-18), is the standardisation of language. Education played a significant role here, as young learners were increasingly subjected to standard primers and a more fixed spelling. Also, in combination with the greater attention to substantials (e.g., in text editions) attention to the literal form of texts, the 'accidentals', grew too.

These apparently contradictory effects—change and 'fixity'—that took place over a considerable period of time, sprang from the same medium, and ultimately find their root cause in the same salient features of the technology and the social practices that made use of them: the identity of copies, and increased exactness of information.

Reactions to printing

Not surprisingly, Gutenberg's 'Black Art' was subjected to very similar diatribes as writing had been. The problem of 'unauthorised' access to knowledge that was regarded as dangerous in the wrong hands was only exacerbated by the printing press. The call for censorship was therefore one of the inevitable side-effects of printing. On a more directly practical level, as the abbot Johannes Trithemius (Johan Tritheim) was quick to recognise, printing posed a threat to the livelihood of copying clerks in the monasteries, which meant that a whole way of life would be coming to an end. (The archdeacon in Victor Hugo's *Notre-Dame de Paris*, who is heard sadly exclaiming as he moves his hand from the printed book on his desk to the church outside his window, 'Ceci tuera çela', could have been modelled on him.) It was, however, not just the gainful employment of devout monks in the scriptoria that explains Trithemius' preference for the manuscript book: it was also the love they brought to their work. He wrote a famous treatise in praise of scribes—which he had printed for better effect—arguing that, owing to the spiritual nature of their work, scribes exerted more care than printers.[47]

Especially in literary circles, similar sentiments could be heard. As late as the seventeenth century the spoken word was widely venerated more than writing, which was regarded as but a poor substitute. 'I know what dead carcasses things written are in respect of things spoken', writes John Donne to the countess of Montgomery, echoing Paul in his second letter to the Corinthians.[48] Live speech indubitably comes first in the hierarchy, but manuscript is always to be preferred to print. This is how John Donne expresses his preference for manuscript, centuries after the invention of printing:

> Parturiunt madido quae nixu praela, recepta,
> Sed quae scripta manu, sunt veneranda magis

However, starting from extremely slow beginnings, the process has been going on at least since the invention of writing.

[47] Johannes Trithemius, *De laude scriptorum* (1494). See also James O'Donnell, 'The Pragmatics of the New: Trithemius, McLuhan, Cassiodorus', in *The Future of the Book*, ed. Geoffrey Nunberg (Berkeley & Los Angeles, 1996), pp. 37-62.

[48] Quoted by Richard Wollman in 'The "Press and the Fire": Print and Manuscript Culture in Donne's Circle', *Studies in English Literature* 33,1 (1993), pp. 85-97, on p. 90.

[...]
Qui liber in pluteos, blattis cinerique relictos,
Si modo sit praeli sanguine tinctus, abit;
Accedat calarno scriptus, reverenter habetur,
Involat et veterum scrinia summa Patrum.[49]

Donne in these lines represents the conviction, still widely and deeply held in his day, that the personal care lavished on a manuscript somehow made it more alive than the industrial products of print, and that speech, issuing directly from the mind or memory, was more alive than either.[50] Plato makes the same observation in the *Phaedrus* when he contrasts 'the living word of knowledge' with 'dumb' writing. Note the contrast in this respect between Donne, the poet, and Bacon, the scientist who, not coincidentally, had great faith in the printing press as an agent for the dissemination of knowledge. And apart from economic and literary-cultural reservations, esthetic ones may have played a role. Print is an industrial process. By extension, the book as a product is not just an object, but a disposable commodity.[51]

There were many other, less radically oppositional, ways in which the manuscript tradition continued side by side with printing.[52] The ascendency of print was a gradual affair, and its hegemony was never to be complete.

THE ORDER OF THE BOOK

In spite of all misgivings when they were first introduced, these two textual technologies of writing and printing have gradually increased their hold on society. They have brought about the irredeemably textual condition of Western society. The concept of an 'Order of the Book' that I introduced in Chapter 1[53] offers a convenient shorthand for a culture

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[49] 'What presses give birth to with sodden pangs is acceptable, but manuscripts are more venerated. A book dyed with the blood of the press departs to an open shelf where it is exposed to moths and ashes; but one written by the pen is held in reverence and flies to the privileged shelf reserved for the ancient fathers.' Quoted by Harold Love in *The Culture and Commerce of Texts: Scribal Publication in Seventeenth-Century England,* Amherst, 1998, pp. 152-53. The English translation is Love's.

[50] Ben Jonson, overseeing the production of his own monumental *The workes of Benjamin Jonson* (1640), was clearly of a different opinion, but in that respect he was considered by many contemporaries a pushy renegade.

[51] It has been suggested that bibliophiles who wished to remain faithful to the manuscript hired scribes to turn the text of any printed book they wanted to add to their collection back into manuscript. It is doubtful if by such a desperate act they managed to breathe any more life soul into the text. Eisenstein discounts the notion that snobbish prejudices against printed books as 'vulgar machine-made objects' were widespread (*The Printing Press*, pp. 48-49), yet she admits that 'a large number of the manuscripts made during the late fifteenth century were copied from early printed books' (p. 51). The reason may of course have been simply that the printed book was no longer available, or because it was cheaper if one did the copying oneself.

[52] See, for example, G. Dicke and K. Grubmüller, eds., *Die Gleichzeitigkeit von Handschrift und Buchdruck* (Wolfenbütteler Mittelalter-Studien, 16), Wiesbaden 2003; Harold Love's *The Culture and Commerce of Text*; David McKitterick, *Print, Manuscript*; Arthur F. Marotti, *Manuscript, Print, and the English Renaissance Lyric*, Ithaka, 1995.

[53] As I mentioned there, the phrase was inspired by the title of Roger Chartier's *L'Ordre des livres* of 1992 (translated into English by Lydia Cochrane as *The Order of Books: Readers, Authors, and Libraries in Europe between the Fourteenth and Eighteenth Centuries*, Stanford, 1994). *The Order of Books* talks of the

whose entire social fabric is defined by the textual codes of manuscript and print. What I mean by that is roughly as follows. The Order of the Book presupposes widespread access to a formal education based on book learning, and a high literacy level. On this educational foundation is based a more general social dependence on literacy. Literacy is needed to be able to function in society. In other words, literacy does not just offer access to the formal knowledge that is contained in books, it enables people to participate fully in all aspects of social life. For such full participation it is necessary for everyone to have access to the information contained in newspapers, periodicals, signs, manuals, guides, contracts, advertisements, printed tickets, pamphlets, broadsides, timetables, programmes, and other manifestations of writing and print. The more the Order of the Book advances, the more generally engrained becomes the ability to engage with the form of the book as a 'reading machine', i.e. as a technology that is expositionary and linear in nature, which requires a certain mental concentration and patience. This ability could be termed a 'meta literacy': an understanding of the relationship between form and content, and the ability to appraise the status and value of printed information. Furthermore, the Order of the Book is based on a written legal code and written contracts. It tends towards representative democracy with universal suffrage, based on the assumption of universal accessibility of relevant knowledge; and to freedom and pluriformity of the press. This is usually complemented by a high symbolic value being attributed to books (in our time expressed through, for example, government policies).

The Order of the Book has its roots in the manuscript era, but the widespread literacy it presupposes could not be achieved before the era of print. Even then growth was slow. To measure the extent of its diffusion it is not enough to take into account quantitative data such as the literacy ratio and book production statistics, but also qualitative ones that may be much harder to measure. The ease with which people read, for example, depends also on the degree of exercise required by a given society: how necessary is literacy if one wishes to be an integrated member of that society. Also crucial is the exact role of reading and writing in the education system, one vital factor being whether these skills are taught early enough in a child's development.[54] Though more precise estimates could be made, depending on the criteria used or the countries or regions one focuses on, it is not until the second half of the nineteenth century that the Order of the Book could be said to have generally arrived. In spite of the host of new mediums that have assaulted its position from the late nineteenth century it has persisted to this day. It has in time been served by all of what we have called the textual mediums: manuscript, print and digital text.

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order that governs the world of books, and the way in which books and libraries manage to represent—or fail to represent—the world at large. However, where Chartier chiefly discusses the world of books itself, I will be taking the liberty to suggest also a reverse relationship, with the order that characterises the world of books in fact having come to determine largely the order that obtains in (Western) society. I think Chartier himself hints at the legitimacy of such a view when he writes in his Epilogue: 'If the object that has furnished the matrix of this repertory of images (poetic, philosophical, scientific) should disappear, the references and the procedures that organize the "readability" of the physical world, equated with a book in *codex* form, would be profound as well' (p. 91).

[54] Havelock, *Origins*, pp. 22-24; Wolf, *Proust and the Squid*, p. 20. The period of literacy in ancient Greece and Rome described by Havelock did not achieve anywhere near the almost full literacy achieved in the West by the turn of the twentieth century. The resulting forms of democracy were correspondingly different.

A vast infrastructure for the production, distribution and consumption of first manuscripts and then the printed word, growing both in size and extent, supported the process by which the Order of the Book became socially established: printing shops, bookshops and bookstalls, libraries and archives. Politically the flow of knowledge was checked by a system of imprimaturs and bans, privileges and censorship. Intellectually it was governed by an intricate system of bibliographic control. The Order of the Book is one in which the organisation of knowledge is defined by the literate mindset. Countless mechanisms were put in place to achieve this. Catalogues, bibliographies and other book lists assured that the existence of books was made known, that books could be found in bookshops or borrowed from libraries. To ensure that passages in the text could be located, the knowledge contained in books was harnessed by page numbers and tables of contents, by footnotes and indexes. Facts could be looked up in massive compendiums and encyclopedias, organised according to alphabetic or analytical principles.

The use of these systems was taught in schools and universities, initially only to the privileged few but, however rudimentarily, to ever more people as education eventually became regarded as a key to prosperity and general civilisation. The Republic of Letters that came into being in the Renaissance had many descendants in various forms of intellectual society: networks of early scientists, connected through correspondence and learned journals, academies, salons, the *sociétés des gens de lettres* of the Enlightenment and ultimately the modern university. In the seventeenth and eighteenth centuries intellectual and social ferment was based on the publication of an endless flow of tracts, pamphlets and newspapers that were read in coffee houses everywhere. This gave rise to what has become known as the 'public sphere', the hallmark of the modern democratic state.[55]

The establishment of the Order of the Book happened quite slowly in Europe. At times progress was virtually imperceptible. A look at the history of the United States by contrast brings both the Order of the Book and its democratising tendency into sharp focus. It also offers an excellent illustration of the connection suggested earlier between writing (and, *a fortiori,* print) and rationality. Neil Postman has referred to the US as 'the first nation ever to be *argued* into existence *in print*':

> Paine's *Common Sense* and *The Rights of Man*, Jefferson's Declaration of Independence, and the *Federalist Papers* were written and printed efforts to make the American experiment appear reasonable to the people, which to the eighteenth-century mind was both necessary and sufficient. To any people whose politics were the politics of the printed page, as Tocqueville said of America, reason and printing were inseparable. We need not hesitate to claim that the First Amendment to the United States Constitution stands as a monument to the ideological biases of print. It says: 'Congress shall make no law respecting the establishment of religion, or prohibiting the free exercise thereof; or abridging freedom of speech or of the press; or of the right of the people peaceably to assemble, and to petition the government for a redress of

[55] Jürgen Habermas, *The Structural Transformation of the Public Sphere: An Inquiry into a Category of Bourgeois Society*, Cambridge, 1989. See also Asa Briggs and Peter Burke, *A Social History of the Media*, 2nd edn, Cambridge, 2005.

> grievances'. In these forty-five words we may find the fundamental values of the literate, reasoning mind as fostered by the print revolution: a belief in privacy, individuality, intellectual freedom, open criticism, and community action.[56]

American society is based on the presumption not only of widespread if not universal literacy but equally on the unrestricted access to all ideas promulgated by the press. 'There is not a single line written by Jefferson, Adams, Paine, Hamilton, or Franklin, that does not take for granted that when information is made available to citizens they are capable of managing it.'[57] Complete freedom of the press is a precondition for the project of a democratic republic.

The new institutions that were forged in America after the constitutional break with Britain were thus not just politically new. They were suffused by a post-Enlightenment frame of mind in which equality replaced class, and decisions were informed by rational thought instead of by custom and convention (such as the British legal code with its Roman law roots). In creating the American Constitution James Madison was thoroughly influenced by Rousseau and that monument of print, *l'Encyclopédie*. In Europe in the meantime it was never a foregone conclusion that the democratising tendency of the Order of the Book was indeed the way forward. Repression of all dissident thinking continued, through various forms of secular and religious censorship, including the *Index librorum prohibitorum*, which remained in force till 1966. The American experiment, by contrast, was able to make a fresh start on the inspiration of the intellectual ferment of the European Enlightenment.

Still today 'mere book knowledge' can be disparaged by practitioners of skills that are best transmitted orally. But the broad stream of knowledge flowed increasingly through formal schooling rather than an informal oral tradition. Such formal schooling is a precondition for the broad basis of shared knowledge that an ever more 'knowledge-intensive' society has come to depend on. It is also a prerequisite for being able to choose a different path through life (a different career, say) from that customary in one's immediate social sphere, especially one's parents, and thus it is an instigator of social change. Of course even as print made its triumphal march, oral and manuscript transmission of knowledge persisted, but their relevance diminished over time.

By the middle of the nineteenth century both the diffusion and the status of the written word had risen to unprecedented heights. There was tremendous optimism about the improvement of the human condition through literacy. Regarded as a symbol of civilisation, the book was placed on a pedestal. The ideal of civilising and improving the lot of the lower classes inspired, each in their own way, at first the more enlightened bourgeoisie, and later the socialists. Unless one was at home in the world of books and learning there was no place in the halls of power. Mass literacy moved democracy from the partial, class-based democracy of the beginning of the nineteenth century to the popular democracy, based on universal suffrage, of the beginning of the twentieth century. In a spiral movement, two factors drove up the position of print in the nineteenth century. On

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[56] Neil Postman, *Technopoly: The Surrender of Culture to Technology*, New York, 1992, p. 66 (emphasis in the original).
[57] *Ibid*, p. 67.

the one hand technological improvements in printing (for example, the invention of cylinder presses, and the use of steam power) and paper making (mechanisation, and the use of wood pulp instead of rags) made print cheaper and brought it within wider reach, thus suffusing society with a strong incentive towards increased literacy. On the other hand, increased literacy, resulting from improved education, and such factors as better lighting and increased leisure time, fed the demand for print.

Under these conditions print could, and did, become cheaper, going some way to meet the demands of the newly literate masses. In line with the rise of a consumer market at large, the market for print became increasingly sensitive to consumer demand. Lower prices were complemented by entirely new genres, aimed at reading for popular entertainment. Detective novels, suspense, horror, kitchen novelettes, cartoons, and other new forms of sensational literature were mostly intended to be consumed only once, and so could only exist if they could be sold sufficiently cheaply to make them disposable. (Inversely, the investment in the new and much faster cylinder presses caused their owners to cast about for ways in which to make them profitable through publishing more popular reading matter.)

With this 'descent of print' into society the nineteenth century saw the decisive transition from intensive to extensive reading. Instead of returning to the same few familiar texts, consumers discovered the delight of the new. But printed matter of all kinds became more prevalent, and as more printed information of all kinds had to be absorbed, typographers looked for means to help *homo typographicus* to process their reading more efficiently. The nineteenth-century 'invention' of boldface type to add to the existing roman–italic contrast nicely illustrates the point. This has been explained as a belated response to a longer-felt social need—now become more pressing in an era in which people were subjected to print so much more intensely—for greater emphasis rather than simple distinction. Employed especially in lists, tables, dictionary entries, language primers, and other such highly articulated text forms, bold type took a prominent place in the graphic representation of structure in text. Facilitating a faster interpretation of the structure of printed material, it was highly useful in a society increasingly drenched in print, but was especially helpful for the broad classes of newly literates to whom reading was not yet a second nature.[58] The wide adoption of bold type is thus illustrative of the growing dependence on print, and so the 'bold idea' can be said to have made its own modest contribution to the establishment of the Order of the Book.

Among the fastest-growing print products of the nineteenth century were newspapers and periodicals. Family magazines, and special-interest ones, such as boys' magazines, fashion magazines for women or sports magazines for men were especially popular in an illustrated form, with much pictorial (increasingly photographic) content and often large advertising sections. As far as newspapers were concerned, long-distance communications such as the telegraph and telephone made it easy to bring not just local news, but also news from other parts of the world. International news had always been of obvious use to governments and merchants, but it would have been hard to predict the immense popular appeal of news. News became one of the most ubiquitous forms of

[58] Michael Twyman, 'The Bold Idea: The Use of Bold-looking Types in the Nineteenth Century', *Journal of the Printing Historical Society* 22 (1993), pp. 107-43.

popular entertainment. Despite the fact that most of their contents had no practical usefulness to the majority of their readers,[59] by the turn of the twentieth century the consumption of newspapers had reached staggering proportions. In Paris in 1910, with a population of around 2.5 million, 5 million papers were printed every day. In 1900, *Le Petit Parisien* alone printed 1.5 million copies daily.[60] The phenomenon of a medial form intended and developed for a small professional market being discovered and adopted by the general public is one that we will encounter again in the case of the digital medium.

Until the arrival of 'the new media'—film, radio, television—the position of print for the provision of news, entertainment and education was unassailable. But from the turn of the twentieth century these new mass media began to compete for leisure time and attention, and the death of the book has been announced again and again.[61] However, though the printed word has indeed had to concede space to the new media, it has not disappeared—nor indeed has it even diminished significantly in importance. In fact, the Order of the Book is hardly less vital today than it was in the nineteenth century. As we now realise of course, mediums rarely completely disappear. But books and print did have to redefine their place each time the constellation of mediums changed with the arrival of a fresh competitor.

Various factors have contributed to the continuing vitality of the Order of the Book. To begin with, by the turn of the century the products of the printing press had become a major source of entertainment. Apart from newspapers, the new genres of detective fiction, popular romance, and other popular reading matter already mentioned, new publication forms, such as high-circulation (illustrated) magazines, pulp literature, and comic books, did much to consolidate its position. From an advocacy of literacy point of view the spread of popular reading around the turn of the century might be said to have happened just in time. If the position of books was under attack, this was especially from the new media's competition for leisure time and entertainment. Even in this regard print had by this time clearly gained a relatively strong status. But that it could continue so strongly was perhaps somewhat surprising in view of the greater challenge reading presented compared to the ease of watching and listening, which did not make the additional mental demand reading does. Especially in terms of entertainment the new

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[59] A point made eloquently by Neil Postman in *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*, [original edn 1985], London, 1987, pp. 65-81.

[60] Catherine Bertho, 'Les concurrences', in *Histoire de l'édition française*, vol. 4, *Le livre concurrencé 1900-1950*, ed. Henri-Jean Martin et al., Paris, 1986, pp. 23-35, at p. 23.

[61] Among the first to predict the coming demise of print was Tommaso Marinetti, to whom it was obvious that 'The book, the most traditional means of preserving and communicating thought, has been for a long time destined to disappear, just like cathedrals, walled battlement, museums, and the ideal of pacificism... The Futurist Cinema ... will ... collaborate in a general renewal, substituting for the magazine–always pedantic– for the drama–always stale–, and killing the book–always tedious and oppressive' (from 'La cinematografia futurista', *Italia futurista*, 11 September 1916, cited by Robert Gross in 'Communications Revolutions: Writing a History of the Book for an Electronic Age', *Rare Books & Manuscripts Librarianship* 13, 1 (1998), 27-43 (also at http://www.ala.org/ala/acrl/acrlpubs/rbm/backissuesrbmlvol13no1/gross.PDF). But then Marinetti *wanted* the book to disappear. Edward Tenner reports that 'In 1895, even before the commercial success of Thomas Edison's phonograph, a pair of French satirists only half-jokingly published a chapter on "The End of the Book" that predicted its replacement by audio mediums. The authors even included a drawing of a climber on a mountaintop with a proto-Walkman' ('Rebound', *Boston Globe*, 24-26 April 2004). See also the example of Octave Uzanne in Chapter 6 below.

media were a very appealing alternative to reading for pleasure. Then again, audiovisual mediums also reinforced the printed word in various ways. There were listening and viewing guides; the new media popularised books through dramatisations, serialisations and other adaptations, and simply through their attention to the world of letters at large.

Then, too, print never ceased to develop technologically. The major twentieth-century innovation in printing technique, offset lithography, was based on the late eighteenth-century invention of lithography—a planographic form of printing. Offset lithography offered a range of advantages, such as a cleaner and faster work process, and cheap storage of printing plates, and a convenient way to combine illustrations and text. In conjunction with phototypesetting it was to become a powerful force in the democratisation of print production from the 1970s on. In the meantime the demands of ever more complex bureaucracy and administration in business and government were also making a substantial contribution to the continued hegemony of the Order of the Book. The typewriter, telex, fax, offset printing and such all helped to shore up the textual underpinnings of society.

Then in the last quarter of the twentieth century what has been perceived as the next major challenge to the Order of the Book presented itself: the advent of the digital medium. In the sense that it encompasses a huge world of digital entertainment, the digital medium can be regarded as yet another attack on the supremacy of print. There is, however, also a major difference, in that the computer, unlike the mass media—radio, film and television—is itself also a textual medium, at least in part. Although numbers, obeying to a strict mathematical logic, were more obviously computable than text, eventually text showed itself amenable to being made computable too. As will be seen in the next chapter, it took a while to discover why this was even useful, and how it could be done. At a time when typewriters seemed efficient enough for the work they were actually used for it was not easy to see what would be gained by 'computing' text.

As the next chapter will show, one prominent, and somewhat surprising outcome of the advances in digital technology was the tremendous ease they brought to the production of conventional books, especially through DeskTop Publishing (DTP). Even more significantly, digital technologies are enabling entirely new production processes. Digital printing and printing on demand is a hybridic production process. Using a digital file that can be manipulated in various ways and distributed across the internet, this process combines the advantages of virtual digitality (about which more in Chapter 5) with the option that it can be turned into a physical book at any time and in any number of copies. By making it easier for books to be produced in limited print runs this enables the publication of books that would not otherwise be published at all, and allows books to remain in print long beyond what would have been possible with conventional printing techniques (Chapter 5). The same file, or a derivative, also serves as an e-book, which may be read on a dedicated e-book reader, but also on a computer, PDA, mobile telephone, or other screen.[62]

[62] E-books have not been hugely successful so far, but the current generation of e-readers, using e-paper/e-ink, may well change this. The 'screen' used by e-paper is reflective, like normal paper, and has a contrast and definition resembling those of print. It thus solves many of the problems usually associated with reading from screens.

Interestingly all these new digital communication devices, such as the PDA or mobile telephone, once again did not just challenge literacy, they also contributed to shoring it up, though not necessarily in the same way as the earlier new media had done. Rather than looking for the print medium to provide all sorts of support functions, modern digital communication devices have themselves textual interfaces (think of menus) or in other ways require literacy to operate them. More significantly, they are frequently used for textual forms of communication. Take the example of the mobile telephone. It is now standard equipped with a camera and music player, but it is also used for SMS, browsing, email, and for a host of other text-based services. Computer games, chatting, email, the WWW, etcetera, all require reading and writing skills. The reading of books may have been in decline for some time.[63] However, purely 'functional' reading (the reading you do when you are really doing something else) is, if anything, probably on the increase.

Despite the barrage of new media in the twentieth century then, books have remained, to this day, the standard by which all else is judged. Socially, the seriousness associated with books and book learning is inculcated from an early age. Here the status accorded to the book in education is decisive. There is no doubt that compulsory education, now standard in all Western countries, did most to promote the book structurally and formally, and to safeguard the position of reading. Thus the authority of books, based on the trust they inspire, is likely to remain a crucial factor in the foreseeable future. Film, radio, television changed the medium landscape,[64] but the textual tower still stands to dominate it. The use of audiovisual mediums in the classroom always remained a form of icing on the cake, almost a concession to the need to prepare children for the existence of a less culturally elitist society outside of the classroom. It has never seriously challenged the position of the book in the curriculum. Even today the reliance on books has hardly diminished yet. E-learning is still at an experimental stage. Even apart from print mediums, text is everywhere. The daily barrage of textual signs, advertising leaflets, forms, food packaging, subtitles, instructions, and so on shows no sign of abating.

But over and above al this, it seems as if print and writing were able to offer something that other mediums do not. Certainly it tends to be assumed that the printed book and reading represent essential values of some sort, even if we may be hard put to say what these might be. The linearity that facilitates argument and narrativity; the concentration and patience that reading requires; the solitary contemplation it promotes; the purely linguistic nature of text: these may all be ingredients. Research into the elusive benefits of reading as a way to transmit knowledge is beginning to be carried out in a more systematic way only now, as traditional forms of reading and literacy are increasingly coming under threat. In *Proust and the Squid* Maryanne Wolf shows 'how inextricably related knowledge and literacy are' (p. 220), and attempts to name some of the values literacy brings, citing research to back up the claims that they are indeed dependent on our textual condition.

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[63] See, for example, the statistics in the regular surveys by the U.S. National Endowment for the Arts on reading. The latest is *To Read or Not To Read: A Question of National Consequence*, 2007. The decline must be seen in the context of the appearance of other mediums.

[64] Many commentators have identified ways in which these mediums have thoroughly changed society. Cf Postman, *Amusing Ourselves to Death*; McLuhan.

A recent RAND report about 'the benefits of the arts' focuses especially on literary (book) reading, citing philosopher Martha Nussbaum, who 'claims that great literature is better suited than philosophy itself to conveying "the value and beauty of choosing humanly well"'.[65] The report suggests for example that literary reading offers an 'expanded capacity for empathy' more complex than that offered by games:

> There is a startling economy at work here, a two-way street, inasmuch as the books we read flow inward into us, add to our stock, enrich our perceptions, stir our inmost feelings; yet art and literature also, quite wonderfully, draw us out, hook us up (imaginatively, emotionally, neurally) into other circuits, other lives, other times.[66]

Such analyses remain rather limited and tentative. It would be worth examining more structurally, not only if reading and writing offer unique values of some sort, but also if there is a difference in this respect between printed and digital mediums.

Most people today would agree that writing, printing, and literacy are beneficial to the individual and society. This was not always the case. Only in the nineteenth century did this notion really become widespread. At least to an extent this probably testifies to the very human fear of change. And perhaps the critics had a point with their reservations about the impact of these two technologies. For better or for worse, they have certainly shown themselves to harbour, like Pandora's box, unintended properties, with social consequences that could not only not be foreseen, but more ominously, could not be undone. But more important than the question of good or bad, optimists and pessimists alike have been incapable of imagining most of the large-scale social changes that can be recognised in retrospect. Plato may have been right about the effect of writing on memory, but even his visionary insights failed to imagine the impact writing could actually have on culture and society. The famous statement confidently made by Douglas Hartree, professor of mathematics at Cambridge in the 1950s, that five computers would suffice to satisfy the world's computing demand is[67]—*mutatis mutandis*—no different than, say, the sixteenth-century attitude to the printing press. The brawl between Fust and Gutenberg was, at least partly, based on the idea that there was not enough room for more than one printing establishment. No one could have predicted either those massive changes in our world view or the role print has come to play in everyone's daily life. The circulation and effects of print were initially restricted by limited literacy, and when that threatened not to be enough, by a system of tight control by government and church. The mass literacy of today, complemented by a mass market for print that caters for any taste in any social group would have been as unthinkable then as the notion of individually owned personal

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[65] Quoted in Kevin F. McCarthy *et al*, *Gifts of the Muse: Reframing the Debate About the Benefits of the Arts*, Santa Monica: RAND Corporation, 2004, http://www.rand.org/pubs/monographs/MG218, p. 49, n. 15.
[66] Arnold Weinstein, *A Scream Goes Through the House: What Literature Teaches Us about Life*, cited in *Gifts of the Muse*, pp. 47-48. The same point has been made by Susan Greenfield, for example in the BBC World programme *The Forum*, 20 April 2008: children who are insufficiently exposed to reading experiences because they spend six hours a day behind computer screens gaming simply lack the neuronal pathways for empathy. Even if the game should be technically about rescuing a princess, the focus is not on the plight of a human being in danger, but on winning the game. See also her *Tomorrow's People: How 21st-Century Technology Is Changing the Way We Think and Feel* (Penguin, 2004).
[67] See Chapter 4.

computers connected to a global network would have been in the 1950s or 1960s. Though neither today's massive consumption of print nor the ubiquity of personal computing were foreseen by anyone, both have actually come about—with all the social consequences associated with them. Just as print has become totally embedded in the very texture of society, the same is now happening with the computer.

In all this one recurring prediction is never fulfilled. However threatening the first appearance of a new medium may be, the newcomer—be it manuscript, print or digital text—never manages to kill the existing means of mediation. Whatever the effects of the printing press, what it did not do was spell the end of the manuscript: existing mediums are rarely made redundant by new mediums.[68] Plato did not foresee how writing would develop from what he saw as an alternative to speaking to an entirely new form of communication with rules of its own (exemplified in the large-scale shift from poetry to prose). Similarly, neither film nor the radio, nor the television, were able to cause the demise of the printed book. (Of course they were not designed as alternatives to the book, but they were regarded by many as a threat to many of the book's functions.) The digital medium, on the other hand, offers a more pointed threat. The e-book readers on the market so far have not managed to offer a satisfactory substitute for the printed book. The screens have been too small, the devices too clumsy, and the interfaces not intuitive enough. But it will be just a matter of time before these problems are solved, and digital text forms may offer viable competition to print. Yet the chance that the digital mediums will succeed in making print obsolete where the earlier twentieth-century new media failed is slim.[69] What happened then, and what we are likely to witness again, is a period in which functions were redefined and redistributed, until after some time a new balance ensues. That print will become less prominent in this process is likely; that it will disappear altogether less so. What can be seen in this redefinition and redistribution of the medial roles is that the definition of literacy changes. It can be confidently predicted that that is what will happen again with the introduction of digital forms of textual transmission.

In these circumstances, the conclusion seems inescapable that it is inordinately difficult to make any predictions about the social consequences of medial change. Not only is there a huge number of factors involved in medial development, but they may combine in all sorts of unpredictable ways. The significance of features designed by inventors pales in comparison with the unintended and unimagined consequences of other features, whose existence had often not even been suspected. Actual developments rarely happen as they were foreseen, and always much more slowly than would seem necessary in retrospect. Nevertheless, the evidence is there that mediums decisively influence our relationship to the world around us. A deeper understanding of the salient technological properties of mediums does help us to account for and understand the social effects better. This is obviously the case in retrospect, with the invention of writing and printing, but the same method can be applied to the technology whose meteoric development can be

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[68] The telegraph and the telex are exceptions.

[69] It seems somewhat premature to talk of the 'late age of print' (e.g. N. Katherine Hayles, 'The Condition of Virtuality', in *The Digital Dialectic: New Essays on New Media*, ed. P. Lunenfeld, Cambridge, Mass. and London, 1999, pp. 68-94, on p. 87), as if the days of print were already counted.

observed right now: the digital medium. That is what I propose to do in the next two chapters. First I will examine the birth and early development of the technology itself (in Chapter 4), and then its salient features and their social consequences (in Chapter 5).