seeking a special sort of redemption in the notion that the moral virtue lacking in so-called civilized society may be rediscovered among simple people who are more in tune with nature. Defense of primitive peoples, usually in conjunction with the protection of their forest or desert environments, has become a respectable political commitment for many anthropologists. Despite Marx's rage against populist utopianism, his own material laws of history imagined a return to the perfect altruism of primitive society. This image of our natural selves before we were corrupted by the rise of capitalism was inspired by the ethnographic vision of 'Ancient Society' in North America constructed in the mid-nineteenth century by one of the founding fathers of anthropology, Lewis Henry Morgan. Marxists have been rebuked for urging the violent recovery of this old society without offering any plausible account of its structure. That it should somehow combine the benefits of the scale, technical expertise, occupational specialization and intellectual achievements of modern industrial society directly contradicts most of what has been learned about primitive society.

Today, the idea of the primitive lives on in a schizophrenia of admiration and disgust. On the one hand, popular writers like Robert Kaplan have promised the return of the modern world to barbarism, while anthropologists like Paul Richards explain that what appears as primitive lapses in Sierra Leone or Cambodia is a wholly modern circumstance—the global failures of industrial capitalism. In whatever guise, the concept of the primitive seems irrepressible in our imagination of ourselves, lurking in the shadows as we struggle to detach our vile, ancient bodies from the dream of a transcendent modern mind.

See also: Evolution, History of; Evolutionary Approaches in Archaeology; Evolutionism, Including Social Darwinism; Hunter–Gatherer Societies, Archaeology of; Hunting and Gathering Societies in Anthropology; Tradition, Anthropology of; Tribe

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Printing as a Medium

Printing is a technique for producing all kinds of paper-based records (books, periodicals, musical scores, ephemera, etc.) by means of ink, a press, and reusable characters. It permits the mechanical production of many identical copies, thereby eliminating the corruption inevitable in hand-copying. Printing has had profound consequences in all spheres of social life. In particular, it has often been ascribed a major role in the transition to modernity that took place in the Western world after the Renaissance.

1. The History and Impact of Printing

1.1 The Invention of Printing

Techniques for the mechanical reproduction of texts are not a uniquely Western invention. Such techniques existed in Korea and China hundreds of years before they did in the West. Yet it is in the West that the press had its greatest impact. It is customary to divide the history of printing there into two periods: the hand-press era, lasting from the mid-fifteenth century to the early nineteenth; and the industrial era, beginning shortly after 1800 with the invention of the steam press and lasting into the present. Social scientists' arguments about the effects of printing as a medium tend to

concentrate on the former, in an effort to help explain modernization in terms of a putative 'printing revolution.' But, as will be suggested below, they would often be more aptly applied to the latter.

There is no plausible route by which Asian technologies may have influenced Johann Gutenberg (c. 1398–1468), a goldsmith from the Rhineland town of Mainz who built the first European press, so he may legitimately be called its inventor. At first, his intent was anything but revolutionary. When he constructed his first press, Gutenberg did so as a calculated intervention in the world of commercial manuscript production that already existed. His earliest printed books were designed to resemble manuscripts, and he intended to sell them as such. He also swore his workmen to confidentiality about his new technique, apparently, in the manner of apprentices in any late-medieval craft. But the strategy did not last. In 1462 Mainz was besieged and sacked, and Gutenberg's printing house broke up. His workers went to other towns and set up their own operations. Before long, printers had appeared in a score of German, Dutch, Italian, and French cities, often fostering legends that printing had been invented locally. Venice, Avignon, Strasbourg, and Haarlem created the most plausible of such histories, as a result of which determining the true origins of the press remained a notoriously intractable problem well into the nineteenth century. William Caxton set up his printing house in London at the end of this first wave of expansion. By that time, in 1480 or so, a new European craft was firmly established.

1.2 The Practice of Early Printing

That craft centered on the *press*—a simple, largely wooden machine, capable of being made by semi-skilled workmen and, if small enough, amenable to concealment and transport from place to place. This press would normally be operated in a place called a printing house. Here, a compositor would set type into a frame called a *form*, which would then be placed in the press itself, which two pressmen would operate to make up to 1,000 impressions per day. The resulting sheets would then be dried, and collated to make books. It sounds, and in essence it was, a simple process. But in practice it was hard to sustain. Most printing houses were severely under-capitalized, and depended for their day-to-day survival not on the printing of books, but on that of ephemera and pamphlets—anything, in fact, that furnished regular and frequent influxes of cash. Almost all of these products were destroyed soon after manufacture. The population of books that has lasted to the present day to fill our great research libraries therefore represents an extreme distortion of the reality of early modern print culture.

This being so, printing raised an immediate question: whether culture could be allowed to be defined by commercial necessity. Early modern Europe attempted to answer that question by constraining printing on three social levels: the household, the craft, and the polity (where the polity might be a religious one, such as the Catholic church).

In the first place, a printing house, like most places of work in early modern Europe, was normally supposed to be a residence as well. The master printer generally lived in the same building—as, quite frequently, did his journeymen and apprentices. There was a reason why this was held to matter. It was conventional to believe that the moral structure of the patriarchal household largely guaranteed the legitimacy of practices pursued within that household, and printing was to be subjected to the same moral oversight.

In the second place, printing was also organized into guilds, one of which existed in every major city. To be a master printer was to be a respected member of such a group. Each maintained its own conventions, expected to be honored by all members of the book trade. Violations were identified and remedied by book-traders themselves, generally behind closed doors, so that for outsiders the image of an intrinsically harmonious order of print was sustained. Again, there was nothing strange about this; it was how all early modern crafts operated.

And in the third place, such guilds operated in fragile harmony with regulations imposed by church and state. Chief among these were 'privileges' (patents) and licenses. Privileges were grants of literary property, to use an anachronistic phrase, given out by the monarch or equivalent authority. They conflicted in principle with titles allocated by the guilds internally, which was one reason why they were eventually replaced by copyright conventions. A license, on the other hand, was a permission to print (in Latin, *imprimatur*, 'it may be printed'), granted by an authorized individual to the printer or bookseller. In principle, all works had to be vetted by such an official before publication, but in practice this was rather less severe than the censorship sometimes portrayed by modern historians. Most books were never licensed, and only a tiny minority were pursued for lack of an *imprimatur*. The Counter-Reformation Catholic Church extended this principle of licensing into a systematic *Index of Prohibited Books*, which listed titles the ecclesiastical licensers had decreed too unsound for general readers. Again, while this undoubtedly affected the availability of certain books and authors (Machiavelli and Copernicus, for example) in Catholic lands, protestant publishers quickly realized that appearing on the Index virtually guaranteed best-seller status in their own countries, and they rushed to print large impressions.

In these ways, then, the social order of early modern Europe sought to accommodate the potentially revolutionary new craft. It was never an entirely stable arrangement, and by the late seventeenth century it

was breaking down. In England, first, licensing lapsed in 1695. With it went much of the authority of the local guild, called the Stationers' Company. Nobody wanted outright deregulation, however, and the major result was a hard-won new compromise between state, authorial, and trade interests. It was articulated in the so-called 'Copyright Act' (1710—the term copyright never actually appears in it). This Act became the basis for the entire subsequent history of copyright and intellectual property law. By the late eighteenth century, agitation for reform of printing and literary property on similar lines had occurred across Europe, and in the years around 1800 broadly similar copyright provisions were established in all major Western states; they extended beyond Europe and the colonies in the nineteenth century. The modern conventions of printed authorship thus owe their origin to the existence and instability of early modern attempts to define and regulate printing: to licensing, patents, and the craft practices of printers themselves (Chartier 1992).

1.3 Industrial Printing

The technology of printing remained virtually unchanged from soon after Gutenberg's invention until around 1800. At that time, however, change came rapidly. Not only did the legal and conventional practices governing the industry alter once and for all; so did the technology of printing itself. First came Stanhope's metal press. This was soon followed by the steam press, which at a stroke increased production rates by an order of magnitude. Stereotyping finally made the dream of truly identical copies a reality. And at the same time, the technology of papermaking changed dramatically with the success of Henry and Sealy Fourdrinier's machines in Hertfordshire. Although it never had the iconic status of the steam press, the papermaking machine had as great a role in the changes of this period, and Brunel himself hailed it as 'one of the most splendid inventions of our age.' With the advent of all these new devices occurring within a generation, between 1800 and 1840 printing underwent its own industrial revolution.

The first commercial steam printing was done at the office of *The Times* in London. It vastly increased the print run of the newspaper, quite literally overnight (the management had the machines installed in secrecy to prevent unrest among the soon-to-be-redundant workers, and unveiled them only when they produced their first day's issue). Nor did the improvements cease there: by 1827 *The Times* had new presses that were producing 5,000 copies an hour. Steam printing was understandably slower to take hold in smaller publishing markets, since it required a large capital outlay—Cambridge University Press, for example, was unusually avant-garde among specialist houses in adopting the technology, yet still did not do so for more than a generation. And in general the book publishing business was less immediately affected by industrialization than the newspaper and periodical press. But the advent of industrial technology nonetheless changed printing forever, and vastly increased its social impact.

In fact, many of the attributes that historians and social scientists attribute to the hand press may more properly be assigned to the steam press, in conjunction with mechanical papermaking and stereotyping. Typographical fixity in particular was never as clear a component of hand printing as we tend, anachronistically, to assume—in an edition of perhaps 300–1,000 copies, any number of variations would occur across different copies, as correction would be done on the fly. This kind of variability now ceased. Print runs 10 or 100 times as great as had previously been viable also represented a quantitative leap as great as that associated with Gutenberg. They made possible, indeed in economic terms virtually necessitated, the first national daily press. The development of mass literacy, too, was really much more a phenomenon of the nineteenth and especially twentieth centuries than of the sixteenth and seventeenth; mass education of the kind parodied by Dickens in *Hard Times* relied on steam printing. At the same time, since industrial printing required a great deal more concentration of capital than had hand printing, it encouraged agglomeration and uniformity within the publishing industry itself. The press barons of the twentieth century, with their incalculable influence on social and political life, owed their baronies to the printing techniques introduced in the nineteenth century. In effect, printing had become a branch of factory culture.

2. A Printing Revolution?

Gutenberg's invention had profound social and cultural consequences, and modern historians and social scientists have tried hard to discover what they were. First and foremost, the press produced texts in unprecedented quantities. Lucien Febvre and Henri-Jean Martin (1958), in the first modern work to focus on the history and impact of printing, calculated that the number of printed books soon exceeded the number ever produced in manuscript up to that time. Sheer quantity of this order had its own consequences. Books were suddenly available in unprecedented numbers, in more places, and at lower costs. As they spread through social ranks, people—especially town-dwellers—made these new objects their own. Literacy increased markedly, and that alone constitutes one of the major turning-points in the development of modern social order. But mere numbers cannot explain the more specific cultural consequences of the press. Major *qualitative* changes were also brought about by print. These have been described most exhaustively by Elizabeth Eisenstein (1979). They were of two major

kinds: transformations in the making and appearance of the page, and innovations in the uses of books by writers and readers.

After Gutenberg's brief experiment with imitation, the printed page soon began to look very different from its manuscript predecessor. Typefaces and layouts became standardized. Cross-referencing, indexes, errata, and notes came into use, according to conventions that themselves grew more uniform. Woodcuts and engravings allowed the use of repeatable images, permitting diagrams, charts, and scientific illustrations to be communicated with a security never before possible (Ivins 1953, McKenzie 1986). Hitherto, it had been very difficult to express sophisticated claims in pictorial form, so rapidly did images degrade in the hands of copyists. The simple ability to juxtapose and compare reliable representations of competing claims revolutionized the possibilities for learned work.

This textual 'fixity,' as Eisenstein calls it, affected a number of cultural realms, among which religion and science may be singled out. It is not a coincidence that Luther's reformation lasted, while previous attempts at reform (such as those of Hus, or the Lollards) had withered or been wiped out. The permanence and cornucopic plenty of print made Luther's program impossible to suppress. Indeed, it is in the furore over Lutheranism that some of the most characteristic forms of mass communication were invented, such as the pamphlet and the polemical cartoon (Scribner 1981). And, most fundamentally, only such a machine could truly hope to permit a 'priesthood of all believers' by making the Bible available as an object to innumerable readers.

In the sciences too the advent of print permitted great upheavals. The contemplative natural philosophy of the schoolmen gave way before a newly active interrogation of natural processes, modeled, allegedly, on the practices of craftsmen. Print not only circulated this new natural knowledge but also helped to create it, since printers' homes became 'polyglot households' where scientists of all nationalities could meet and correspond. Print thus helped forge the norm of open communication that is so central to science. And men like Henry Oldenburg secured the status of the new science in novel forms of printed communication. Oldenburg's *Philosophical Transactions*, launched in 1665, survived to rank today as the oldest of all scientific journals.

But printed texts alone did not change the world; printed texts plus new ways of using them did. Not least, the sheer mass of printed matter required new classification techniques—in effect, a science of bibliography—to master a worldwide 'library without walls.' But more profound was the change in reading practices that print facilitated. From its early days, the *Philosophical Transactions* was the central plank of a new, transnational readership of naturalists, gentlemen, mathematicians, and scholars—the ancestor of today's scientific community. The common readership of such periodicals was rapidly recognized as uniting a novel kind of collective, called the *republic of letters* or, rather later, the *public sphere*. This 'public' was defined by its engagement with print. And with Baconian ambition, it took all knowledge to be its province (Habermas 1962). It marked a decisive break from traditional and absolutist societies. In Habermas' very influential account, it therefore laid the foundations for true socio-political transformation, most notably in the form of the French revolution. In that sense, the 'printing revolution' ushered in by Gutenberg warranted its name.

3. Theories about Print

It was in the context of the Jacobins that printing was first recognized as an explicitly revolutionary force. True, Francis Bacon's salute to the press (along with gunpowder and the mariner's compass) was much cited; yet it was little more than an aphorism. The first fully articulated and contextual interpretation of printing's impact was that of the Marquis de Condorcet (1795), who was seeking to explain the overthrow of the French monarchy. Condorcet sketched out a history of 'the human spirit' in a series of stages, with the invention of the press constituting a major turning-point and effectively making the deposition of the Bourbons into 'the revolution that the discovery of printing must bring about.' In composing this sequence, he became the first writer to chart a trajectory of print-based modernization that saw its effects manifested first in the sciences, and only later in general social life. That trajectory has retained its persuasive power in modern times, but its meaning has been construed in very different ways.

Heirs to Condorcet, modern historians, and social scientists have continued to concentrate their interpretative efforts on the typographical *ancien régime* that came to an end with the dual inventions of copyright and the steam press. Compared with this, the period of industrial printing has received comparatively slight attention. There have been many empirical histories of printing, publishing, and reading in the nineteenth and twentieth centuries, but nothing as influential in social-scientific terms as Habermas or Eisenstein. Indicative is the reception of Habermas's work on the public sphere: most Anglophone readers neglect its second half, which tells a depressing story of the replacement of Enlightenment public culture with industrial mass culture. His story is far more elegiac than celebratory, but one would not realize this to read most of the Anglo-American commentators on *The Structural Transformation of the Public Sphere* (1962).

Where they do not ignore the later history of printing, most scholars simply conflate it with the earlier history, and speak of 'print' as though it were a

single, uniform entity. Probably the most famous and notorious of construals along these lines has been that of Marshall McLuhan (1911–1980), the Canadian literary critic and scholar. McLuhan's *The Gutenberg Galaxy* (1962) and *Understanding Media* (1964) set the pattern for a series of works published in the 1960s that made extravagant claims for the cultural and even psychological impact of print. His works used what he called 'probes'—unsystematic, radical aphorisms delivered scattergun fashion to jolt readers out of the formulaic thinking that, he believed, typography inevitably instilled. The probes worked, in at least one sense. McLuhan himself became a cult figure: Tom Wolfe remarked that he sounded like 'the most important thinker since Newton, Darwin, Freud, Einstein, and Pavlov.'

What McLuhan achieved was to make 'media' the subject of analysis in their own right. He argued that these media, of which print was the archetype, brought the world together, dissolving boundaries. The most important of these boundaries were socio-psychic in character. Indeed, McLuhan's very definition of a medium was that it acted as an 'extension of man,' transcending the material constitution of the human frame. In effect, he believed that the state of media determined not only how humans lived, but what humans were. This he presented as a matter of evolution. In particular, McLuhan portrayed what he called 'typographic man,' namely the kind of being who lived according to the cultural logic of print. Typographic man thought in terms of linear logic and objectivity, because his reference points were fixed texts, in what later became the Eisensteinian sense of fixity. Typographic man was both individualist (he could be sure who he was) and nationalist (he could see the bounds of his community, and tell the difference consistently between it and others). There had been no such being before about 1450. At that point, typographic man had begun to displace 'tribal man,' who had been restricted to local contacts and communication by hand. And in his turn typographic man was now becoming extinct, to be replaced by something else that McLuhan himself left nameless, but who could easily be called 'electronic man.'

McLuhan remarked that it was in the nature of electronic media to integrate with the nervous system itself, establishing humans as nodes on a worldwide network. In effect, the skin itself would dissolve as a social constraint, as neurology became inseparable from sociology. Written in the early 1960s, before the first computer network, it is easy to see why McLuhan has recently been rediscovered by the digerati and labeled a 'prophet of the Web.'

Yet McLuhan's arguments were ultimately too faddish in their tone, and too determinist in their content, to remain convincing beyond their bare outlines. Criticisms soon started to mount up (an influential example is Jonathan Miller's short 1971 introduction, which leaves little doubt where its author

stands). There are few social scientists or historians today who would openly acknowledge McLuhan as a leading influence on their representations of print and its consequences. But that influence is nonetheless real. For the most part, it is refracted through the historical analysis of Eisenstein. Eisenstein's careful arguments about the impact of the hand press gave empirical weight to McLuhan's aphorisms. Through her, his proposals have gained academic respectability. An example is Benedict Anderson's widely-praised account of nationalism (1983), which rests on an explicitly Eisensteinian argument linking print to time reckoning, and thence to consciousness of national identity. Similarly once-removed arguments of this kind can be found in many of the analyses of 'print culture' to have appeared in the 1980s and 1990s.

Yet there is one important respect in which current trends in sociological and historical research are starting to depart consciously from this approach. This is the move towards an empirical history of the practice of reading. The immediate origins of this trend lie in France, where the postwar enterprise of the history of the book was born. The spur came from the responses of both history and sociology to the dominant *Annales* school. In both fields, a realization took hold in the later 1970s that quantitative social-scientific accounting failed to capture something fundamental about the cultural impact of print. At the same time, Pierre Bourdieu (1979) was emphasizing the importance of active cultural appropriation by readers of the press rather than passive cultural reception by those readers (Hoggart (1957) had earlier made similar arguments for an English readership). By the early 1980s it looked as though attention to the varied ways of using books, building on Bourdieu's approach, might stand a chance of seeing what the quantitative *Annalistes* were clearly missing. Since then the history of reading has become a burgeoning field in its own right.

The leading proponents of the history of reading have been cultural historians like Roger Chartier in France and Robert Darnton in the USA, who have pioneered the reinterpretation of the French Revolution in these terms. Chartier in particular objects to the determinism about print that is implicit in the work of Habermas, and would direct attention more to changes in reading practice in the eighteenth century (Chartier 1990). In particular, he argues that it is hard to understand how the scatological and pornographic literature that admittedly flooded eighteenth-century France was intrinsically more devastating to the priesthood, say, than the rich seam of libels that appeared in Luther's day. Instead, Chartier would point to a newly skeptical and extensive practice of reading that was devoted to these materials, making them far more damaging in use. This practice contributed substantially to the desacralization of kingship. It hence made regicide possible, and with it the origins of modernity. In this light, the printing revolution

needs to be redefined as part of a broader reading revolution (Cavallo and Chartier 1999).

As a result, research into printing as a medium is today leaving behind quasi-determinist accounts of print exerting some kind of cultural 'logic' on societies, and towards empirical and historical research into the different ways in which societies have made use of the technology and its products. Important examples include the national histories of the book now being published in Britain, the USA, and other countries (Chartier and Martin 1982–1986; Amory and Hall 1999; Hellinga and Trapp 1999). D F McKenzie's 1984 study of a decisive cultural encounter mediated by print in his native New Zealand shows how this modern approach can influence anthropological understandings as well as historical. In McKenzie's terms, excessively schematic talk of 'print logic' is being replaced by a properly contextual 'sociology of texts' (McKenzie 1986). It is interesting to speculate whether, with print logic thus banished, the use of 'print culture' as a catch-all explanatory device may eventually fall into abeyance too. And that may happen, not coincidentally, just as the advent of electronic media signals the end of half a millennium in which print was the predominant communicative medium.

See also: Communication: Electronic Networks and Publications; Literacy and Illiteracy, History of; Mass Media, Political Economy of; Media and History: Cultural Concerns; Media Effects; Media, Uses of; News: General; Radio as Medium; Television: General

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Prison Life, Sociology of

The sociology of prison life concentrates on thick descriptions of the actions and accounting practices that make up the distinctive social organization of a prison. Chief amongst its preoccupations have been how administrators and staff strive to maintain an authority which can never be wholly legitimate in the eyes of their captives; how, in turn, those captives contend individually and collectively with conditions of deprivation and adversity, including the adversities inflicted by their fellow inmates (Morris and Morris 1966, pp. 168–9); how a negotiated social order can emerge out of the exchanges between the two; and how, as a result, prisons manage to persist at all.

The proper study of prison had to await the emergence of universities and other institutions that could sustain social research, deploy some form of fieldwork as part of its methodology, and appreciate