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Learning to live with the 20th century: printing museums in the wake of the digital revolution

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What should printing museums do about the 20th century? Can they take on board a century of technical, economic and design innovation in order to meet the needs of a general public which has become increasingly aware of the importance of graphic communication thanks to everyday use of the personal computer? I would like to suggest that in order to answer these questions we need to rethink the 20th century and take a new look at the changes which have taken place in the production and consumption of print over that last hundred years. In particular, I would like to suggest that a fuller understanding of the 20th century has to take account of the gradual convergence of printing, office document production and data processing techniques: a phenomenon that has profoundly altered the very definition of typography and graphic communication.

In the 1960s, before the extraordinary irruption of digital techniques in the graphic arts, no one, not even the best-informed commentator could have imagined the desktop publishing and digital prepress techniques which we take for granted today – not to mention digital media such as CD-Roms, internet, mobile phones, and electronic paper. Forty years on, we not only take for granted the powerful graphic tools that the average personal computer offers us: whether we realise it or not, we are already in a position to start putting the so-called digital revolution into some kind of a historical perspective.

Clearly, print culture is going through a period of major change because of digital technology. But we shouldn't forget that printing was one of the very first non-military applications of computers after the Second World War, and that we already have half a century of computer applications in the graphic arts behind us! The first scanner was introduced in the late 1940s; computer typesetting in the mid 1950s; and in the 1970s manufacturers of graphics arts equipment enthusiastically adopted newly emerging microelectronics technology. Fifteen years later the printing industry was again turned upside down by desktop publishing and the first tentative steps toward digital prepress. Thanks to micro-electronics, science fiction became industrial reality.

One unexpected consequence of the digital revolution is that print production has been democratised, at least in part. Nowadays, anyone equipped with a Mac or a PC can be a typographer, a graphic designer, even a publisher – for better and for worse. As for printing and book museums, the democratisation of print production has been a windfall. Digital technology has radically redefined the frontiers of print production, with the result that a large part of the population of developed countries now has daily dealings with what professional printers call typography and page make-up. All of a sudden, printing museums find themselves faced with a wide range of visitors who are increasingly aware of typography and graphic design: visitors who are highly curious about the world of graphic communication that for five centuries was jealously guarded by printers and publishers.

Paradoxically, one of the key features of print media is their invisibility: by which I mean their tendency to keep out of the limelight in order to facilitate the transmission of the message which their principal purpose. One of printing museums' missions is thus to make the invisible visible; to offer their visitors the means of decoding the myriad forms of graphic communication; to give them an insight into the ways in which major cultural vehicles such as books, prints and the press have evolved over time; and to provide an insight into the role played by the seemingly mundane everyday printed products such as labels, packaging, catalogues, billheads (and, why not, bus tickets?) which accompany us from the cradle to the grave.

Thanks to their historical collections, printing museums are in a position to put the so-called digital revolution and its consequences into perspective.

Unfortunately, the debate which has been raging now for nearly half a century concerning the future of print culture in the electronic era is more often than not dominated by a simplistic opposition between "the book" and "new technology". Such an opposition is, however, seriously undermined by the rather embarrassing fact that the book is no longer the driving force of graphic communication – neither in terms of industrial production, nor in terms of graphic creativity! It stopped being the driving force of graphic communication sometime in the early 20th century. And to make matters worse, it also has to be pointed out that the history of graphic arts technology in the 20th century remains for the moment largely unwritten. With the result that we really should be asking ourselves whether the terms of the debate about print and digital will not have to be fundamentally revised in the very near future.

Faced with the apparent complexity of the technical changes that accompanied and stimulated the multiplication of the forms and uses of print over the last hundred years, many printing museums prefer not to get too involved with the 20th century. Most are loathe to look beyond the traditional techniques that were used during the craft and early industrial periods of the printing trade. The craft period was, after all, marked by some of the most prestigious printed products such as incunables, prints and the works of Humanist printers and booksellers, not to mention the artist's book and fine bibliophile printing which were (and remain) the final expression of traditional craft techniques.

Likewise, letterpress printing and the power presses of the industrial period have an undeniable attraction for the general public. It is infinitely more difficult to go into the detail of four-colour printing, electronic photoengraving or PostScript, or to explain the applications of computers to the graphic arts, a field of technical innovation which seems to translate visually as an endless series of almost identical machines which seem to change little, apart from their colour, from one generation to another.

The 20th century is also generally thought of as being infinitely more complicated than the 19th because of the number of processes involved and the scale of operations. Such a point of view rather overlooks the fact that the 19th century was just as complicated as the 20th and that the number of techniques which were used commercially at one time or another is almost incalculable, especially in the field of the reproduction of images. It also overlooks the fact that the 20th century does not have the monopoly on huge industrial installations (the 19th-century daily and periodical press provides an obvious counter-example).

But with the passing of time printing museums have come to terms with the 19th century. They have made a draconian selection among the vast range of techniques used in the 19th century, retaining only a handful of machines and processes – the most useful from an educational point of view; the most prestigious; or, quite simply, the easiest to put on display.

The consequence of this reticence with respect to more recent techniques is that in most European and North American printing museums, the 20th century is remarkable principally for its absence!

The reluctance to fully grasp the implications of the 20th century is reflected in the typology of printing and book museums, which, at the risk of over simplification, can be reduced to four main categories.

The first category covers museums which are mainly devoted to printing technology and whose collections of printed documents generally cover a restricted period or geographical area, or a particular type of product. (Some major museums of technology also have sections devoted to printing, but in most cases there is little attempt to situate technical progress within the general evolution of the forms and uses of printed products.)

The second category covers those museums that are devoted to specific type of printed product such as books, prints, publicity or packaging. Although these museums are often very open to traditional craft printing techniques, they are generally much more reluctant to get involved with industrial processes of the 19th and, especially, 20th centuries – a reluctance which can become a veritable allergy which it comes to contemporary digital techniques.

The third category covers the major heritage libraries which often devote a significant part of their activity to temporary or permanent exhibitions of their collections. It is rare, however, that printing techniques play a major role in such exhibitions.

The final category concerns heritage workshops: print workshops, educational workshops, private presses, State or private collections. Though their collections are often not very accessible for the general public, such workshops play a vital role in the conservation and transmission of traditions craft skills and are an essential resource for printing and book museums.

Despite the variety of museums which exist within this (certainly oversimplified) typology, it has to be said that most museums tend to concentrate either on printing techniques or on printed products. Few museums structure their permanent collection around the dynamic reciprocal relationship that exists and has always existed between the evolution of graphic arts technology and the forms and uses of printed products. Those museums which succeed in doing so generally limit their analysis to a more or less specific period (the craft or industrial period for example), or to a specific field of production (books, prints, lithography or packaging...).

A major opportunity is thus open to printing museums that are willing and able to widen their field in order to give a broader view of the evolution of graphic communication and meet the many questions raised by the successive revolutions (technical and other) which have marked the production and consumption of printed and graphic products in the 20th century.

But before taking on the 20th century, we first have to solve a problem relating to the way in which we divide the history of printing into periods.

Generally speaking, we divide the history of printing into three periods:

- the craft period which stretches from Gutenberg to the end of the 18th century;
- the industrial period, which starts with the first power presses at the beginning of the 19th century and which finishes ...sometime after the Second World War;
- finally, the digital period, which for most people begins somewhere in the early 1980s.

The problem with this periodisation is that the changeover from the industrial to the digital period becomes rather vague when we come to look at it closely. For it tends to gloss over the first half of the 20th century, which is thought of simply as a period of improvement of a series of techniques and production methods which essentially belong to the 19th century. It's as if, from a technical point of view, nothing happened between the opening years of the 20th century and the irruption of microelectronics in the 1980s.

In reality, it was during the first half of the 20th century – marked by the rise of mass production and consumption and major changes in the forms and uses of printed products – that the necessary conditions were created for the irruption of digital techniques in the graphic arts.

Or to put it another way: the digital revolution did not fall out of the trees fully fledged! Neither was it invented at Xerox Parc or with the Macintosh! Rather it should be seen as part of what some historians of technology call a “technological path” which began at the beginning of the 20th century, and which is characterized by generalized process of dematerialisation – in the first instance of the techniques themselves; and then of a certain number of forms of graphic expression which were originally paper-based.

The digital revolution also forms part of a more general process of convergence of three hitherto distinct fields of technical and economic activity: printing, office document production and information processing. A convergence that in the course of the “long 20th century” profoundly altered the production, distribution and reception of print media.

Thus, during an initial period – from the 1880s through to the eve of the Second World War – the dematerialisation graphic arts technology was based on the adoption of processes compatible with photography: lithography, photoengraving, rotogravure, offset, screen printing. The adoption of these processes progressively reduced the dependence on hot metal in printing.

The next stage in the process of dematerialisation was to substitute information for matter.

In the field of text assembly coding techniques, punched tape and networking were all used in printing before the Second World War. Likewise, phototypesetting and computer typesetting were introduced nearly twenty years before microelectronics.

In the field of image processing the links in the chain of substitution of information in the place of matter, pre 1980, include the belinograph, electronic engraving, the facsimile transmission and electronic scanners.

Technical innovation of course played an important role in the convergence of printing, office document production and data processing during the 20th century – and many other techniques could be mentioned in this respect, such as the keyboard, the office duplicator, the proportional-spacing typewriter and the exploitation of data bases as a source of virtual documents (the latter as early as the 1960s). Technical innovation is not however the whole story.

Even more important has been the redefinition of the very notion of graphic production and of the frontiers between the printing and communication industries ; between document production and intellectual work ; between typography, graphic design and digital media ; between printed and virtual documents. In the end, technical evolution is as much the product as it is the moving force of the evolution of graphic communication.

What conclusions can we draw from these remarks on the current typology of printing museums?

Firstly, we need scotch the oft-quoted dichotomy between old books and new technology. Without wanting to minimise the cultural significance of culturally prestigious printed products such as books and prints – whose importance is, fortunately, completely disproportionate to their situation in economic and industrial terms – the time has come to consider the evolution of the full range of printed products, from the most noble to the most modest: commercial catalogues as well as books; postage stamps as well as prints; fanzines as well as daily newspapers of record; orange labels as well as book plates; mail shot publicity as well as Toulouse Lautrec posters.

A vision of print media that only considers prestigious or politically important products like books, prints or daily newspapers, and that largely ignores technical innovation and the evolution of forms and uses of print in the 20th century, can only provide a partial understanding of the history and current state of graphic communication.

A second conclusion is that in order to put the digital revolution and the last half century of graphic communication into perspective, we first need to reconsider our view of 20th century printing history as a whole. As we have seen, the so-called digital revolution is rooted to two key phenomena: the dematerialization of printing processes and the convergence of printing, office document production and data processing.

Given that the history of printing in the 20th century still remains largely unwritten and that the digital revolution is already almost half a century old, it is urgent to establish a reliable historiography of 20th century graphic arts technology.

Just as we did for the 19th century, printing museums have to identify the key features of the development of 20th-century graphic arts technology and offer a coherent vision of the impact of digital technology on print media. It will certainly be a painful task, for such a vision will necessarily be somewhat simplistic. That said, the vision of 19th-century printing history currently offered by printing museums is perfectly viable and there is no reason to think that we will be unable to develop an equally convincing approach to the 20th century.