An informal look into the history of digital typography

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Introduction

I have always been interested in printed material, but I didn't begin to think explicitly about typography until about 20 years ago when I adopted LaTeX for drafting and formatting books and papers I write. I still didn't have any interest in the history of printing and typography until I prepared a presentation on Boston printing history for TUG 2012. Since then I have been reading (books, papers, Internet websites) and watching YouTube videos about the history of printing and typography that in time led into the digital era.

For TUG 2016 I sketched some of what I (think I) have learned in the hope that my study and thinking will be useful to someone else who is just starting to dig into this history and that people already knowledgeable about printing and typography history might help me understand better.

Several things became clear to me as I undertook preparing for my TUG 2016 presentation.

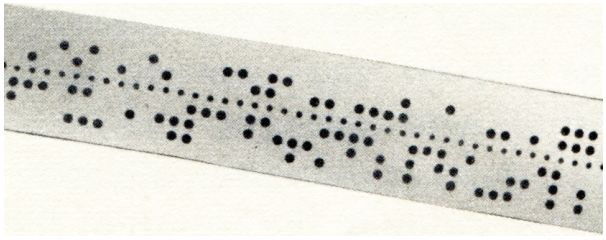
First, I had not previously thought about how printing has long been a massive business throughout the world. It's also a business with broad application: newspapers, periodicals, and books; pamphlets, reports, and legal and financial documents; sheet music; packaging (e.g., on can labels and cardboard boxes); stationery, cards, etc.; announcements, posters, etc.; art reproductions; money, stamps, etc.; cloth, wall paper, etc.; and, from the very earliest days, religious documents of all types. Even as printed materials are being replaced with images on electronic devices, printing remains a massive business. Furthermore, typography seems more relevant than ever, as it now has to address both printed material and a variety of electronic devices.

Second, the dimensions of how printing and typographic activity are accomplished can vary widely:

- large scale production such as big city newspapers; medium or small sized typesetting or print shops; individuals working interactively in their homes on their desktop or laptop computers;
- working with frequent tight deadlines; working with mutually agreed deadlines; working at one's own pace;
- seeking great typographic beauty; putting other considerations first.

One example: big newspapers such as the *Boston Globe* work with tight deadlines, and typographic beauty undoubtedly has to give way at times to more practical considerations. Another example: Donald Knuth being so concerned with typographic beauty that he delayed his work on *The Art of Computing Programming* for years while he developed a typesetting system for his personal use. And there are all combinations in between.

Third, contrary to my naive feeling that the move to digital happened fairly quickly, it now seems to me that the evolution to digital happened over a long time. For instance, many decades before what we now think of as the digital era, the mechanical Linotype machines were being driven by "digital" punched paper tapes, often transmitted by wire from remote locations.



And Monotype casting machines were driven by punched paper tapes since the late 1800s.

To make some sense of this massive field, I find it useful to consider the history of digital typography in terms of four areas that are somewhat overlapping but nonetheless seem able to represent the entire field. My taxonomy is:

1. moving toward digitization of newspapers (representative also of book and periodical publishing and the printing industry more generally);
2. development of digital typesetting for individual interactive use;
3. typesetting algorithms;
4. digital type.

So far my study covers aspects of the first three of these areas in some detail, while merely touching on the fourth area.

Main body of my presentation and paper

After TUG 2016 in Toronto, I prepared the paper based on my presentation there, but concluded that publishing it in *TUGboat* is not the best path. Instead, the current version of the paper has been posted at `tug.org/tug2016/walden-digital.pdf`.

If you are interested, please look at it there and give me your comments. It includes slightly expanded versions of the Introduction here (above) and Reflections here (below) along with more lengthy sections on each of the four topics in my above taxonomy. Section 1 of the paper looks at the history

of newspaper typography up to the era when it became fully digital. Section 2 looks at interactive text processing and composition systems from those that ran on the earliest interactive computers (1950s) through contemporary desktop publishing systems. Section 3 looks at algorithms, particularly the history of justification and hyphenation. Section 4 contains my starter list of topics for future investigation into digital type.

All these sections include lots of references (including some marvelous videos) that for the most part are available on the web for ease of access to other new students of this history. The acknowledgements that were left out of my TUG 2016 presentation are also included. And there is a pointer to a private location of my presentation slides — private because it includes many images I used from around the web without bothering to think about licensing.

I am looking forward to continued investigation of the history of digital type and of the newspapers and equipment suppliers who pioneered the various stages of newspaper processes becoming all digital. So far I have found no single history of the latter topic, but I have been gathering pointers to books, papers, websites, and videos. Thus, I will likely make additions over time to my paper at the above url.

Reflections

As I pulled together my TUG 2016 presentation (and drafted the paper version), I have thought back on what I learned from my look into the history of digital typography. Of course, I learned all the stuff I report in the paper, but also plenty more that didn't fit into the paper. Along the way I formed some high level observations.

- What was happening in the four dimensions of my taxonomy have become more and more overlapping and interrelated as we have moved fully into the digital era.
- It was a continuing revelation to me throughout my study how the evolution to digital has been happening for so long; there has been so much intermixing over so many decades of mechanical, photographic, electronically digital technology.
- There is disintermediation, consolidation and despecialization all over the place. Typesetting and design used to be separate specialties, and now every typesetter is a designer or the reverse.

  For my mother-in-law's oral history that my wife produced in 1982, my wife typed and pasted up a photo-ready manuscript; she went to a photo and offset vendor to have the photos sized right and turned into half-tones and to have her 8 1/2 x 11 inch manuscript pages photo reduced to 6 x 9 and for printing of a few dozen copies; and then she went to a separate place for binding. Today, I can produce a book doing all the photo work myself in Photoshop (and the cover in Illustrator), typeset the book myself using LaTeX, produce a ready-to-print PDF, give it to a big printing company (e.g., Lightning Source) or little print shop (e.g., Copyman in southwest Portland, Oregon), and it comes back printed and bound. At the professional level, some people claim that designers have "replaced" printers as well as typographers.
- More generally I feel that the disintermediation, consolidation, and despecialization has led to a lowering of standards. The word processing and desktop publishing systems (and systems like groff and TeX et al.) put powerful typesetting tools in the hands of every amateur and full-time designer, many of whom are not truly professionals. With a little work, anyone can typeset a book or journal article. This lowering of standards is exacerbated by the myriad formats and display devices that must be supported today, for example, hardcopy, ebook, and HTML formats and digital screens of all sizes.
- I suspect that such disintermediation, consolidation, and despecialization is a done deal, and there will be no turning back in general. However, some people beyond the true professionals will still care about publishing aesthetics even if they like being able to do lots of the steps themselves. I have no illusion that the TeX world will again be important to the publishing world at large. I do look forward to seeing automatic aesthetics (such as the pagination work which Frank Mittelbach described in his TUG 2016 presentation) becoming more available to the TeX world — to the world in which I work; and hopefully a few ideas from the TeX world will continue to migrate into the mainstream systems as they have from time to time in the past.

One concluding thought on the digital world. There has never been a better time for the independent researcher. In addition to traditional libraries (and library networks with inter-library borrowing privileges), we now have vast content available via YouTube, Google Books, and professional society and journal digital archives (some open access), and we have web search engines to help us find things. Our own TUG web server makes a significant contribution in the area of digital typography.

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