History of Type

by Thomas W. Phinney

Moveable Type
1450-80

Before the printing press, books were produced by scribes (at first, primarily based in monasteries, although by the 12th century there were many lay copiers serving the university market). The process of writing out an entire book by hand was as labor-intensive as it sounds (try it some time): so much so that a dozen volumes constituted a library, and a hundred books was an awe- inspiring collection.

This remained true until the invention of movable type, the perfection of which is attributed to Johannes Gutenberg (although the Chinese had it several centuries earlier, and a Dutch fellow named Coster may have had some crude form a decade earlier). Gutenberg, although a man of vision, did not personally profit from his invention. He worked for over a decade with borrowed capital, and his business was repossessed by his investors before the first mass-produced book was successfully printed — the Gutenberg Bible of 1454, printed in Mainz by Fust and Schoeffer.

Gutenberg's basic process remained unchanged for centuries. A punch made of steel, with a mirror image of the letter is struck into a piece of softer metal. Molten metal is poured into this, and you get type. The type is put into a matrix to form the page of text, inked, then pressed into paper.

Within several decades typesetting technology spread across Europe. The speed with which it did so is impressive: within the first fifty years, there were over a thousand printers who set up shops in over two hundred European cities. Typical print runs for early books were in the neighborhood of two hundred to a thousand books.

Some of these first printers were artisans, while others were just people who saw an opportunity for a quick lira/franc/pound. The modern view of a classical era in which craftsmanship predominated appears unjustified to scholars: there has always been fine craft, crass commercialism, and work that combines both.

To those who have grown up with television, radio, magazines, books, movies, faxes and networked computer communications it is difficult to describe just how much of a revolution printing was. It was the first mass medium, and allowed for the free spread of ideas in a completely unprecedented fashion. The Protestant Reformation might not have occurred, or might have been crushed, without the ability to quickly create thousands of copies of Luther's Theses for distribution.

Many groups sought to control this new technology. Scribes fought against the introduction of printing, because it could cost them their livelihoods, and religious (and sometimes secular) authorities sought to control what was printed. Sometimes this was successful: for centuries in some European countries, books could only be printed by government authorized printers, and nothing could be printed without the approval of the Church. Printers would be held responsible rather than authors for the spread of unwanted ideas, and some were even executed. But this was a largely futile struggle, and most such restraints eventually crumbled in the western world.

Industrial Revolution
1870-1965

Amazingly, the printing press and the science of type cutting had only minor refinements from the late 1600s to the late 1800s. Towards the end of this period, the industrial revolution brought major innovations in printing technology. Rotary steam presses (steam 1814, rotary 1868) replaced hand-operated ones, doing the same job in 16 per cent of the time; photo-engraving took over from handmade printing plates.

Typesetting itself was transformed by the introduction of line-casting machines, first Ottmar Mergenthaler's Linotype (1889), and then the Monotype machine. Essentially, line-casting allowed type be chosen, used, then circulated back into the machine automatically. This not only introduced a huge labor savings in typesetting, (again, on the order of the 85% reduction in printing time), but also rendered obsolete the huge masses of metal type created by the previously existing type foundries.

While typesetting and printing speeds increased phenomenally, so did the speed of punch cutting. In 1885, Linn Boyd Benton (then of Benton, Waldo & Company, Milwaukee) invented a pantographic device that automated the previously painstaking process of creating punches. His machine could scale a drawing to the required size, as well as compressing or expanding the characters, and varying the weight slightly to compensate for the larger or smaller size — this last being a crude form of the optical scaling done by skilled typographers making versions of the same font for different sizes. In optical scaling, the thickest strokes retain the same relative thickness at any size, but the thinnest strokes are not simply scaled up or down with the rest of the type, but made thicker at small sizes and thinner at large display sizes, so as to provide the best compromise between art and readability.

The economic impact of all these advances on the type industry cannot be overstated. For example, in the United States, the majority of type foundries escaped a bankruptcy bloodbath in 1892 by merging into a single company, called American Type Founders (ATF). Ultimately twenty-three companies merged into ATF, making it far and away the dominant American type foundry.

Also around this time, the "point" measurement system finally reached ascendancy. In the earlier days of printing, different sizes of type had simply been called by different names. Thus, "Brevier" was simply the British name for 8-point type of any style. Unfortunately, these names were not standardized internationally; 8-point type was called "Petit Texte" by the French and "Testino" by the Italians. Such a naming system also allowed wonderful confusion, such as "English" referring both to blackletter type, and a 14-point size; "English English" was thus a 14-point blackletter!

Pierre Simon Fournier had first proposed a comprehensive point system in 1737, with later refinements, but what was ultimately adopted was the later version developed by Francois Ambroise Didot. This put approximately 72 points to the inch (and now exactly 72 points to the inch on most computer-based typesetting systems).

Type Technology
—the Four Revolutions

Photocomposition
1950-85

The first photocomposition devices (the French "Photon" and Intertype's Fotosetter) made their debuts as early as 1944, but didn't really catch on until the early 1950s. Typeface masters for photocomposition are on film; the characters are projected onto photo-sensitive paper.

Lenses are used to adjust the size of the image, scaling the type to the desired size. In some senses this technology was an "improvement," allowing new freedoms, such as overlapping characters. However, it also pretty much eliminated optical scaling (see 2.2, above), because in the rush to convert fonts to the new format, usually only one design was used, which was directly scaled to the desired size.

Digital
1973-

The earliest computer-based typesetters were a hybrid between the above-mentioned photocomposition machines and later pure digital output. They each had their own command language for communicating with output devices. Although these machines had advantages, they also had problems. None of these early command languages handled graphics well, and they all had their own formats for fonts. However, some of these devices are still in service as of 1995, for use in production environments which require more speed and less flexibility (phone books, newspapers, flight schedules, etc.).

In the late 1980s PostScript gradually emerged as the de facto standard for digital typesetting. This was due to a variety of reasons, including its inclusion in the Apple LaserWriter printer and its powerful graphics handling. When combined with the Macintosh (the first widely used computer with a what-you-see-is-what-you-get display) and PageMaker (the first desktop publishing program), the seeds were all sown for the current dominance of computer-based typesetting.

Most high-end typesetting still involves printing to film, and then making printing plates from the film. However, the increasing use of high-resolution printers (600-1200 dots per inch) makes the use of actual printing presses unnecessary for some jobs. And the next step for press printing is the elimination of film altogether, as is done by a few special systems today, in which the computer can directly create printing plates.

Today, although PostScript predominates, there are a variety of competing page description languages (PostScript, HP PCL, etc.), font formats (Postscript Type One and Multiple Master, Truetype and Truetype GX) computer hardware platforms (Mac, Windows, etc.) and desktop publishing and graphics programs. Digital typesetting is commonplace, and photocomposition is at least dying, if not all but dead. Digital typefaces on computer, whether Postscript or some other format, are generally outline typefaces, which may be scaled to any desired size (although optical scaling is still an issue).

There has been considerable economic fallout from all this in typography. Although some digital type design tools are beyond the price range of the "average" user, many are in the same price range as the mid- to high-end graphics and desktop publishing programs. This, combined with the introduction of CD-ROM typeface collections, has moved digital type away from being an expensive, specialized tool, towards becoming a commodity. As a result of both this and the brief photocomposition interregnum, the previously established companies have undergone major shakeups, and even some major vendors, such as American Type Founders, have failed to successfully make the digital transition, and gone bankrupt instead (although at this time ATF appears to be undergoing a resurrection). More recently, even major digital type foundries have--dare one say foundered?--on the shoals of ubiquitous cheap typefaces (even a licensing deal with Corel Corp seems to have been insufficient to save URW++).

Although there is a new accessibility of type design tools for hobbyists and professional graphic artists, the decreasing value of individual typefaces has resulted in a decrease in the number of working type designers per se (both independents and company-employed).

Type Forms

Early Letterforms

Although writing itself can be traced back to several millennia B.C., to Egyptian hieroglyphics and Sumerian cuneiform inscriptions, modern letter forms have their most immediate heritage in Roman inscriptions from around 50-120 AD, such as the one on the base of Trajan's Column in the Roman Forum (114 AD, digital version called Trajan by Carol Twombly for Adobe, 1989).

Although early Latin writing was heavily influenced by these chiseled-in-stone letterforms, over the centuries it evolved into a variety of other shapes, including uncials and the related Carolingian script. It is through this period of the sixth to tenth centuries that we see the development of the lower case (minuscule) letter as a different shape from the upper case (capital).

Type forms similar to what we now think of as "normal" letter shapes evolved from the Carolingian (or Caroline) minuscule. The Carolingian letters are so-called because of their adoption by the Emperor Charlemagne (late 10th century) as a standard for education. Digital revivals of these exist, such as Carol Twombly's Charlemagne (1989).

By the fifteenth century, italics also existed, in the form of a cursive script which had developed in Rome and Florence. However, italics at this time were a completely separate entity from the upright letterforms, as they remained in the early days of printing.

Blackletter

The first printed types exemplify what most people think of as medieval or "old English" lettering, with ornate capitals, roughly diamond-shaped serifs, and thick lines. As a group, these typefaces are called "blackletter." They evolved from the Carolingian by a gradual movement towards narrowing and thickening of lines.

The general sort of blackletter used by Gutenberg in his first Bible is called textura (example). The other sorts of blackletter are fraktur, bastarda and rotunda. Probably the most common blackletter revival typefaces in use today are Cloister Black (Morris Fuller Benton, 1904, from Joseph W. Phinney) and Fette Fraktur.

It is worth noting that although these typefaces seem very hard to read to us today, this is due as much to familiarity as to any objective lesser clarity. Fraktur was in use in Germany well into the 1900s, though it was gradually being superseded by Roman typefaces. The Nazisat first fostered a return to Fraktur, then outlawed it as a "Jewish typeface" in 1940.

Studies from mid-century found that people can read blackletter with a speed loss of no more than 15%. However, there is subjectively more effort involved. Blackletter is today most appropriate for display or headline purposes, when one wants to invoke the feeling of a particular era.

Old Style
Centaur, Bembo, Jenson, Garamond, Caslon

E.P. Goldschmidt, as explained by Stanley Morison, claimed that "the supersession of black-letter was not due to any 'technical advance,' it was the visible expression of a changed attitude of mind." The Renaissance was typified by an obsession with things "classical," in the Greco-Roman sense, which had major implications for typography. The neo-classical letterforms were somewhat more condensed than the Carolingian shapes, but much rounder and more expanded than the blackletter.

Old style type is generally considered "warm" or friendly, thanks to its origins in Renaissance humanism. The main characteristics of old style typefaces are low contrast with diagonal stress, and cove or "bracketed" serifs (serifs with a rounded join to the stem of the letter). The earliest (Venetian or Renaissance) old style typefaces (originally 15th-16th Century) have very minimal contrast, and a sloped cross-bar on the lower-case "e." One such is Bruce Rogers' Centaur (1916), based on Jenson. Similarly, Monotype's Bembo (1929) is based on the work of Francesco Griffo, circa 1499.

Italics at this point were still independent designs, and were generally used completely separately; a whole book could be set in italics. Probably the most famous italic of the period is Arrighi's (1524), which may be seen today as the italic form of Centaur. Likewise, the italic form of Bembo is based on the italic of Tagliente (also 1524).

Later or baroque old style type (17th Century) generally has more contrast, with a somewhat variable axis, and more slope of italic. The most common examples are the types of Garamond and Caslon, many variant revivals of which exist in digital form.

Transitional
Baskerville, Fournier

"Transitional" type is so-called because of its intermediate position between old style and modern. The distinguishing features of transitional typefaces include vertical stress and slightly higher contrast than old style typefaces, combined with horizontal serifs. The most influential examples are Philippe Grandjean's "Romain du Roi" for the French Crown around 1702, Pierre Simon Fournier's work circa 1750, and John Baskerville's work from 1757 onwards. Although today we remember Baskerville primarily for his typeface designs, in his own time people were much more impressed by his printing, which used an innovative glossy paper and wide margins.

Later transitional types begin to move towards "modern" designs. Contrast is accentuated, and serifs are more flattened. Current examples of such are based on originals from approximately 1788-1810, and are dominated by British isles designers, such as Richard Austin (Bell, 1788), William Martin (Bulmer) and Miller & Richard (Scotch Roman).

For currently available examples of transitional type, there are many types which bear Baskerville's name, descending from one or another of his designs. Less common today is P.S. Fournier's work, although several versions of it are available in digital or metal form. Although Scotch Roman has been a very common face in metal type usage since Monotype's 1920 revival, it is not a common digital face. Bell, on the other hand, is included in a Microsoft Font Pack, and Bulmer has received more attention since its revival by Monotype in late 1994.

Modern
Didot, Bodoni, Walbaum

"Modern" typefaces are distinguishable by their sudden-onset vertical stress and strong contrast. Modern serifs and horizontals are very thin, almost hairlines. Although they are very striking, these typefaces are sometimes criticized as cold or harsh, and may not be quite as readable for very extensive text work, such as books.

A number of designers, perhaps semi-independently, created the first modern typefaces in the late 1700s and early 1800s. One of the first, and ultimately the most influential, was Giambattista Bodoni, of Parma, Italy. Ironically, historians of type often relate the development of the "modern" letterforms to a then-current obsession with things Roman — in this case the strong contrast and sharp serifs of classical Roman inscriptions.

Today, the most common "modern" typefaces are the dozens of reinterpretations of Bodoni's work (which itself evolved over time). One of the most successful reinterpretations is the 1994 ITC Bodoni by Stone et. al., featuring three different optical sizes. Although little is seen of Didot, a reinterpretation by Justus Erich Walbaum (ca. 1800) sees occasional use.

Sans Serif & Slab Serif
Helvetica

These type forms made their first appearances around 1815-1817. Both are marked by simpler letterforms with (usually) relatively uniform stroke weight, lacking significant contrast, often geometric in underlying design.

The earliest forms of sans and slab typefaces tended to be heavy, often monolithic, display faces, but there quickly evolved a wide range of styles. Although the earliest designs are not much used today, their descendants are common enough.

Sans Serif (a.k.a. Gothic or Grotesque)

Sans serif letters have no serifs, as the name suggests. The low contrast and absence of serifs makes most sans typefaces harder to follow for general reading. They are fine for a sentence, passable for a paragraph, but are difficult to use well in, say, the text of a book. The terminology of sans serif types can be confusing: essentially, gothic or grotesque are both generic names for sans serif (although Letter Gothic, confusingly, is more of a slab serif type).

In sans serif faces, the italics are often, although not always, simply a sloped (mechanically oblique) version of the roman letters, making them totally subordinate to the roman.

By far the most common sans is Helvetica (1951, Miedinger), despite being abhorred by many typographers. Helvetica does have the advantage of coming in a huge range of weights and widths, which makes it versatile, and its ubiquitous character makes it easy to match. Other general-purpose sans serifs include Univers (Frutiger, 1952+), Arial (Monotype), Franklin Gothic (M.F. Benton, 1903) and Frutiger (Frutiger, 1975).

Sprouting from the Art Deco movement in the 1920s and 30s (see Art Deco), radical geometrical shapes began to be used as the basis for sans serif designs.

There are a few other common sans faces which do not fall cleanly into the above categories. Eric Gill's 1928 Gill Sans has an almost architectural quality, and its greater contrast and humanistic design makes it better-suited than most sans serif typefaces to setting bodies of text. The same can perhaps be said of a number of late 20th Century humanistic sans faces (see below)

Slab Serif (Egyptian)

These faces have block-like rectangular serifs, sticking out horizontally or vertically, often the same thickness as the body strokes. There is some debate about the origin of slab serif typefaces: did they originate by somebody adding serifs to a sans face, or were they conceived independently?

But even if they had a separate genesis as a family, it is certainly the case that many of the most common and popular slab serif forms have been created by adding slab serifs to sans faces by the same designer (e.g. Adrian Frutiger's 1977 Glypha from his Univers, Herb Lubalin's 1974 Lubalin Graph from his Avant Garde). Other slab serif faces include Berthold City (Trump, 1930), Memphis (Weiss, 1930), Serifa (Adrian Frutiger, 1968) and Silica (Stone, 1990).

The Clarendons or Ionics are an offspring of the slab serif typefaces in which the serifs are bracketed. These are often used in newspaper work, because their sturdy serifs hold up well under adverse printing conditions. The most famous member of this sub-family is Century Schoolbook (Morris Fuller Benton, 1924-35).

Definitions

Contrast The degree of difference between the thick and thin strokes in a font (if any).

Stress (axis) The angle at which contrast occurs, usually ranging from vertical to a somewhat back-slanted diagonal. This can best be noted by looking at, for example, the letter "O" and noting if the bottom left is thicker than the top left, and the top right is thicker than the bottom right. If this difference exists, the letter has diagonal stress. If the two halves of the "O" are a mirror image of each other, with the sides thicker than the top/bottom, then the letter has vertical stress. If the top and bottom of the "O" are the same thickness as the sides, there is neither contrast nor stress.

Serifs Those "finishing strokes" or "fillips" going off the ending lines of a letter. For example, when the number "1" or the letter "i" are drawn with a bar across the bottom, the two halves of the bar are serifs. If the serif is joined to the letter by a slight flaring out, it is said to be "bracketed."

Note

One must keep in mind that although typefaces may have come into use at a particular point in time, they often continued in general use far beyond that time. Even after the rise of old style typefaces in the late 1600s, the blackletter type was commonly used for setting text for several centuries (well into the 1900s in Germany). With later interpretations of earlier forms being relatively common, the style of a given typeface may belong to a quite different period from that of the typeface itself! Further, many typefaces have very complex histories: a type could have been originally designed in metal at one time, reworked by someone else later, made into a phototypesetting face by another person, and then later created in digital form by yet another designer — who might have been working off of any of the above as the basis of their work.

The classification system used here (old style, transitional, modern, sans serif, slab serif, etc.) has the virtues of being both simple and widely used. However, the precision and artistic accuracy of this system is perhaps dubious: see Robert Bringhurst's Elements of Typographic Style or his article in the first issue of Serif magazine for a more thorough system.

Decorative Type

Fat Faces

The "Fat Face" types were an offshoot of the moderns, intended for display purposes (that is, to be attention-getting for use in large sizes, particularly advertising). The first such types appeared from 1810-1820. They further exaggerated the contrast of modern typefaces, with slab-like vertical lines and extra emphasis of any vertical serifs, which often acquired a wedge shape. Bodoni Ultra, Normande and Elephant are all examples of fat face types which are closely based on early to mid-19th Century originals, and are available in digital form.

Wood Type

Wood type answered some of the needs of display advertising during the industrial revolution. It derives its name from the fact that instead of being made of metal, the type is carved from wood, cut perpendicular to the grain. It is distinguished by strong contrasts, an overall dark color, and a lack of fine lines. It may be unusually compressed or extended. Many wood types have an "Old West" feel, because they are most strongly associated with America in the 1870-1900 period. Some of the wood types most widely available today are those in an Adobe pantheon released in 1990, which includes Cottonwood, Ironwood and Juniper (Buker, Lind & Redick).

Script, Brush, Italic & Freehand

Script typefaces are based on handwriting; but often this is handwriting with either a flexible steel nib pen, or a broad-edged pen, and is thus unlike modern handwriting.

Some common scripts based on steel nib styles include Shelley (Carter, 1972), Coronet (Middleton, 1937-38), and Snell Roundhand (Carter, 1965, based on Snell ca. 1694).

Script faces based more on the broad-edged tradition include the contemporary Park Avenue (Smith, 1933).

There are also monoline scripts, which lack significant contrast in the letter strokes. One such is Freestyle Script.

Brush typefaces look as if they were drawn with that instrument, which most of them were, at least in the original design from which the metal/film/digital face was created. Some of them resemble sign-painting lettering, such as Balloon (Kaufmann, 1939), Brush Script (Smith, 1942), and Dom Casual (Dom, 1952).

Brushwork can also be the basis for script, as with Present Script (Sallaway, 1974) and Mistral (Excoffon, 1953)

Although modern typography typically relegates the italic to a second-class citizenship subordinate to the roman, there are still some italic typefaces designed as such in their own right. The best known is doubtless Zapf Chancery (Zapf, 1979). Others include Medici Script (Zapf, 1974) and Poetica (Slimbach, 1992).

Art Nouveau

The late Victorian era, from 1880 to World War I, was characterized by this ornamental style of art, with its organic, asymmetrical, intricate and flowing lines. This "Art Nouveau" (French, meaning "new art") produced similarly distinctive typography, which saw a revival during the 1960s.

There are a fair number of digital revivals of art nouveau faces, although few are widely used. Some of the more common digital art nouveau typefaces are Arnold Boecklin (Weisert, 1904), Artistik, Desdemona, Galadriel and Victorian.

Art Deco

If Art Nouveau was about finding beauty in organic intricacy, Art Deco was perhaps about finding beauty in geometric simplicity. First appearing in the 1920s and 30s, Art Deco made a comeback in the 1970s and 80s as well.

Almost by definition, Art Deco meant sans serif type. The most common such face is Avant Garde (1974, Lubalin), which is striking but hard to read at length. A more graceful geometric sans is Futura (Renner, 1927-39). There are also more quirky faces in this category, such as Kabel (Koch, 1927-30). A recent popular Art Deco display face is ITC Anna (1991?).

Synthesis

Many of the most interesting typefaces of the twentieth century does not fit any of the above categories, or at least not easily. The reason is that they reflect not merely a single style, but cumulative experience, and the merger of different styles. This is perhaps true even of that most mundane of typefaces, Times New Roman (Lardent/Morison, 1931), which has old style, transitional and modern elements.

Synthesis and Serif Type

Although there are many practitioners of this synthesis, the most famous is Hermann Zapf. His Palatino (1948) and Zapf Renaissance (1987) are modern typefaces with the spirit of Renaissance letterforms. Melior (1952), Zapf Book (1976), and Zapf International (1977) all reflect an obsession with the super-ellipse, a rectangulated circle, as the basis for letter shapes.

There have also been many modern revivals of old style which, while close to old style in spirit, are not direct revivals of a specific original, and show modern influences in the proportions or letter shapes. These include the Granjon-inspired Galliard (Carter, 1978) and Minion (Slimbach, 1989).

Synthesis and Sans Serif Type

After 1950, many designers began to explore a wide range of starting points as the basis for sans serif designs. Aldo Novarese's Eurostile (1964-5) takes sans serif forms and distorts them towards square and rectangular shapes. Zapf's 1958 Optima is a masterful blend of sans serif shapes with Roman and calligraphic influences. Shannon (Holmes & Prescott Fishman, 1981) is a sans serif based on Celtic manuscript proportions. Several designers have reinterpreted ancient Greek lettering for a modern sans serif alphabet: most popularly Carol Twombly's Lithos (1989), and most recently Matthew Carter's Skia GX (1994). Koch's Neuland (1930?) has a rough-hewn strength. Hans Eduard Meier's Syntax (1969) is one of the earliest sans typefaces which clearly echo renaissance roman letterforms. More recent sans faces often draw on a humanistic background, from Spiekerman's Meta to Vereschagin's Clear Prairie Dawn.

Grunge

The most recent typographic wave is one which has sometimes been called grunge typography, after the musical movement originating in Seattle. Although it is far too early to judge the ultimate impact of grunge, I see the form as the merger of the industrial functionalist movement called Bauhaus (contemporary with Art Deco, named after the architectural school) with the wild, nihilistic absurdum of Dadaism. Grunge, like many typographic/artistic movements before it, is a rebellion; but this rebellion denies not only the relevance of anything previous, but sometimes even the relevance of legibility itself, in the belief that the medium *is* the message.

As grunge type designer Carlos Segura of T-26 says, "Typography is beyond letters. Some fonts are so decorative, they almost become 'visuals' and when put in text form, they tell a story beyond the words — a canvas is created by the personality of the collection of words on the page."

Grunge typefaces and typography are seen in magazines such as RayGun. Some examples of grunge typography are the work of Barry Deck (Template Gothic, Cyberotica, Truth), Nguyen's Droplet, Goren's Morire and Lin's Tema Cantante.