Graphic Design

# & Technology

**Graphic Design,** like many other disciplines, is linked to technology at many different levels. Technology affects how designs are produced and it also influences developments in style, art and society as a whole, which in turn are reflected in the form a design takes. Technology also offers designers a variety of media outlets for their projects.

It would be easy to think of graphic design as a discipline that is solely influenced by artistic or academic concerns. However, it is also shaped by advances in technology, which bring new considerations and processes for a designer to utilise and manipulate. Design principles are highly transportable and transferrable through different technological epochs, which are modified and refined along the way.

Technology has democratised design by simplifying production processes and extending access to the tools used to generate designs. Digitisation has revolutionised design so that it can be mass reproduced utilising ever more diverse delivery systems, such as wireless hand-held devices and diverse online mechanisms, as information delivery migrates away from print media.

Technology not only affects the delivery mechanism, but also the design. Images and text can be subject to far greater manipulation and intervention at quicker speeds than in the past. This poses the threat that design may become a form of urban noise where the message is lost and diluted among the plethora of other messages that bombard society.

Advancements in technology open up new avenues of creativity by putting new tools into the hands of the designer or allowing designers to produce work more rapidly. This in turn provides more time for experimentation and can provoke profound changes in the design process. This is evident in how the Apple Macintosh (1984) allowed designers to escape the limitations of the paste-up board.

Newspapers have been pioneers in the application of new design technology, such as fourcolour printing and the use of the Internet. Consumption culture readily adapts to the benefits of technology, this means that traditional media also face a threat from technological developments such as digital media.

Whether technology is a threat or an opportunity depends upon one's perspective and ability to adapt and change. For example, newspaper print subscriptions may be falling, but online subscribers are increasing, allowing newspapers to provide other services to readers.

**Andy Goldsworthy** makes art out of natural elements such as twigs, leaves, stones, snow, reeds, and thorns. He sees his practice in art with nature as a collaboration.

Students can explore his art to discuss the elements of art they see and how they can use natural elements to be creative in their own practice.

Miranda Lloyd is an incredible artist who does both graphic design and traditional art. Many of her works focus on trees and animals. When viewing her trees, you will see a wide range of textures, lines, shapes, and colors. She also tends to create mixed media pieces.

Her work would generate ideas for a classroom discussion on texture, line, and shape. A study of trees en plein air would be a great lesson to accompany the work of this artist as well.

**Digitisation of typefaces**

The use of photocomposition in the 1970s accelerated the type production process as characters could be projected from the screen of a cathode ray tube on to light-sensitive paper or film, which could then be stored in a magnetic memory, overwritten and edited. This period also saw the introduction of dot matrix and digital typography. The introduction of personal computers in the 1980s broadened font development opportunities, allowing for characters to be drawn and amended quickly, while type shapes could be easily copied to form the basis of different letters. The acceptance and use of digital type was assisted by the development of PostScript – the standard used for digital typesetting in the late 1980s. However, this is now being superceded by the Portable Document Format (PDF).

**Open Type**

Open Type – a scalable format for computer fonts developed by Microsoft and joined by Adobe in the 1990s – is now the dominant standard for digital font production. It can support up to 65,536 glyphs in a font and has advanced typographic features. Digitisation has reduced the cost of type to the extent that it has changed from being an expensive specialist tool to a commodity product, which now poses a stern challenge to type foundries. It is estimated that there are now over 100,000 digital fonts available – there may be a lot of choice but as a result, decision-making is made more difficult. Subsequent improvements in technology have increased the speed and power of personal computers, reducing the time needed to create new fonts, many of which have been showcased in the typography magazine Fuse – launched in 1991 by Jon Wozencroft and Neville Brody.

# Typefaces

# *A B C D E*

**Typefaces and fonts**

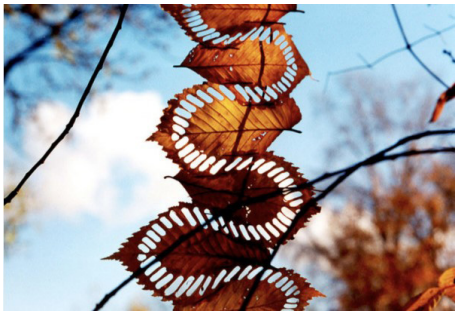
The words ‘typeface’ and ‘font’ are commonly used synonymously although they possess distinct meanings. There is usually no harm in this as the substitution is quite universal. The distinction between typefaces and fonts is arguably more important now that the two seem to occupy the same space. A typeface is a combination of characters, letters, numbers, symbols, punctuation and other marks that share a similar design. A font was traditionally something physical, such as lithographic film or metal type characters (pictured above).


**Digital type foundries**

Digital technology has led to the development of digital type foundries, organisations and companies that use computer software to produce type in electronic format rather than the cast metal symbols that characterised printing from the Industrial Revolution until the 1980s. Digital type foundries, such as Emigre, FontFont and Jeremy Tankard, harness the benefits of digital technology to produce a wide range of fonts, exploring and developing the form of text characters. Digital production has seen an explosion of the number of typefaces available due to the relative ease, speed and low cost of producing and storing them compared to traditional type creation techniques.

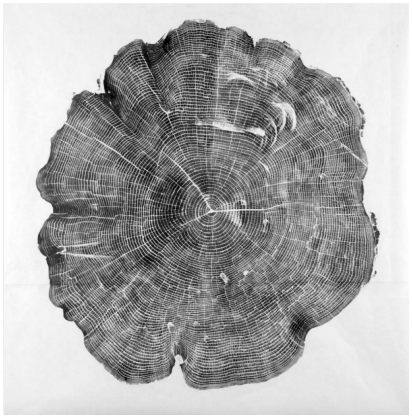
### The impact of digital typefaces

In the digital age, fonts are no longer just physical objects. This means that a designer has more options available regarding font usage, which offer more opportunities for control and manipulation, for example, in terms of leading and spacing.
The image above shows a block of numerals in metal type, which were used for printing text before the advent of digitised type. As these are physical items, it was not possible to overlap type or have negative leading, something that is now taken for granted in the use of computer-generated type.



### Tracking and leading

Type spacing can be altered on both the horizontal and vertical planes by manipulating tracking and leading – two processes that have become more flexible with digital typefaces. Tracking works on the horizontal plane; it is the amount of space that exists between the letters of words, which can be adjusted to bring characters closer together or take them farther apart. Tracking can be reduced to condense space between letters or removed completely with negative tracking. On the other hand, increased tracking adds space, which can prevent characters from touching each other. More specific adjustments can be made in the space between two letters by kerning (removal of space) or letterspacing (addition of space). Leading works on the vertical plane and refers to the space between the lines in a text block. The term originates from the strips of lead placed between the rows of metal type letters to keep constant space alignment – a function digital leading still serves. However, digital type also allows for negative leading, resulting in overlapping or the absence of space between text lines.



### Glyph switching (flipping)

Glyph switching or flipping is where a digital typeface contains multiple versions of characters, enabling a design to create an eclectic look within the limitations of a single character set. Flipping is an example of technology presented in a certain way so as to appear non-technological by including random differences that add a touch of the accidental, such as the random printed marks produced by the wear patterns of letterpress characters. Commands in the PostScript code refer to a random generator that makes the character outlines irregular. The use of glyph switching makes a design look as though it was not produced using current technology when technology is actually facilitating it. There is a certain irony in the fact that the designers of digital fonts are trying to achieve a non-uniform effect, while printers using traditional technology strive to overcome quirks and irregularities in their finish.

### Fonts for screen

Fonts are now designed specifically for use with digital applications such as the Internet. Fonts designed for screen use are created so that they can be used on a wide range of different systems while giving the same performance. The existence of web-safe fonts means website producers can increase the likelihood that the content will be displayed as required. Microsoft produced a standard family of fontsfor Web use. Of these, the following are web-safefonts: Arial, Courier New, Georgia, Times New Roman, Verdana, Trebuchet MS and Lucida Sans. With only a limited range of web-safe fonts available, it is probable that a company may not be able to use its font choices in all arenas. This means the fonts for its offline communications may be different to those used for its online communications. Other limitations of web-safe fonts when used in print applications is that the serifs can be too fine – the fonts can be overly broad and they can fill in with ink when printed.