

Am I Type?

Type on Screen: an uneasy relationship from the beginning

Introduction

I bring into the light of day the precious stores of knowledge and wisdom long hidden in the grave of ignorance. I am the leaden army that conquers the world: I am type!

This was the declaration of the 1933 broadside designed and written by the renowned typeface designer Frederic Goudy. It is an arresting oratory-like homage by Goudy to the predominance of type in the printing and design hierarchy of his day. Reading it now, however, it brings up many questions and contradictions, that Goudy could never have envisaged, arising from the evolutionary twists and turns that typography has undergone in the last twenty years, in particular its emergence and application within screen-based environments such as film, television, desktop computers and mobile communications.

This paper will focus on the nature of the evolutionary change that typography is undergoing in screen-based contexts and will begin to examine some of the problematic issues for designing typography that have arisen as a result of this emergent transition from paper to screen. In this presentation, I will attempt to:

- Define screen media and contexts for typography
- Make an analytical comparison of print typography to screen-based typography.

Today's presentation aims to clarify and define the current context within which my research is situated, by establishing and defining the nature of what 'screen' means in relation to typography and by beginning to examine existing typographic design principles for practice.

DEFINITION OF SCREEN MEDIA AND CONTEXT FOR TYPOGRAPHY

New media theorist Lev Manovich describes contemporary western society as 'a society of the screen' where much of our daily lives are involved with screens in one way or another, whether its working, reading a newspaper, watching movies or communicating with friends and relatives.¹ Screens have rapidly become our primary means of accessing information. Manovich claims that as new generations of both computer users and computer designers grow up in a media-rich environment dominated by television rather than by printed texts, they are preferencing the language of the screen over the language of print. This is the backdrop against which typography in screen-based media will be examined.

Definition of screen

Design critic and author, Jessica Helfand describes the screen itself as possessing a 'complex and variable presence in our daily lives: as a window, linking public space and private space; as an interface, providing closure and exposure; as a mirror, reinforcing the self and enabling reciprocity across electronically linked phone lines'.² This description highlights the inherent problem of defining 'screen' as either a single entity or as having a single purpose. 'Screens' appear to extend their range from painting to cinema screen, from computer desktop to equipment control panels, and from mobile phones to public information displays.

Just as the medium itself is difficult to classify and understand, so too are the multifarious challenges for typographic design within this emergent form.

¹ Manovich L., (2001), *The Language of New Media*, MIT Press, p.72.

² Helfand, J., (2001), *Screen: Essays on Graphic Design, New Media and Visual Culture*, Princeton Architectural Press, p.xiii.

Lev Manovich's genealogy of the screen provides a useful analysis for the purposes of situating screen typography in this research.

He describes the first stage of this development, as the 'classic screen', a flat, rectangular surface intended for frontal viewing, that exists in our normal body space and acts as a window to another space. This other space (inside the screen) has a different scale to our normal space and its proportions (landscape and portrait) have remained the same for centuries from painting to computer screen.

The second distinctive development, Manovich calls the 'dynamic screen', which emerged approximately one hundred years ago and retains all of the qualities of the classic screen except the image it displays changes over time. It brings with it a certain 'viewing regime' that strives for complete illusion, asking the viewer to suspend their disbelief and identify wholly with the image on screen. The viewer must concentrate completely on what they see in the window and the image completely fills the screen. Manovich notes that the dynamic screen is aggressive in its presentation because it functions 'to filter, screen out, take-over, render non-existent what is outside of the frame'³. Typography on the dynamic screen in the form of cinema and television will form part this research context.

The third, and most contemporary, stage in Manovich's genealogy is the 'real-time screen'. It encompasses some of the qualities of the classic and dynamic screen, but is fundamentally different for a number of reasons. Firstly, it shows multiple, overlapping and co-existing images at once and the viewer (now termed user) no longer has to concentrate on one image but on many at the same time and different parts of the image (or windows) can correspond to different moments in time. Secondly, the images can change over time in real-time as users decide and control what information they want to access and how they want to view it. Both of these qualities are fundamental principles of the GUI (Graphical User Interface), which has become a main property of the real-time screen.

The GUI completely disrupts the viewing regime associated with the classic and dynamic screen. On the real-time screen, the participation of viewers or users can range from selecting and editing, to reading and viewing, to creating and publishing. The multifarious and customisable nature of viewer/user activity in relation to the real time screen creates an immense density of differing design challenges for typography depending on the type of usage context in question.

Perhaps, it is for this reason, according to new media scholar Jay David Bolter, that the ultimate goal of GUI design seems to be the improvement of the technology to the point of invisibility, so that it puts the viewer or user in touch with reality without the interference of an interface. Bolter describes the quest to create an invisible interface as the search for 'transparency', which he deems an endless pursuit because it is redefined with each new technology.

Types of screens

This research primarily concerns itself with the dynamic and real-time screens and the many guises and hybrids that they manifest. I have begun the preliminary development of a typology of the screen, which aims to focus on three strands of screen development plotted across time. They are; technology – types of screens and types of display technologies for rendering typography; usage contexts including those specifically related to typography; and finally, seminal practical work – ground-breaking examples of screen work that demonstrate aspects of the above two strands. This typology remains very much a work in progress and I have as yet to address the third aspect.

³ Manovich, L., (2001), *The Language of New Media*, MIT Press, p.96.

Looking at the first strand, it is clear that the tension between technological advancement and qualitative display can often be a trade-off resulting in contradictory development. For example, as screen technology strives to match the scalability and portability of paper, the quality of resolution and image display often seems to take a retrograde step. There are stark similarities between the typography on an 1980's VDA monitor and to mobile phones of the late 1990's. The search for improved and higher resolution rendering technologies means equipment may also be more expensive and take longer to reach mainstream use. Plasma television screens versus CRT television screens are one such example. Additionally, different strategies to best render typography on screen have evolved in parallel with computer display technologies, including Post-script and anti-aliasing, TrueType, OpenType and most recently Microsoft's ClearType which is specially developed for improving the legibility of typography on LCD screens.

The relentless march of technological advancement also means that standard formats are constantly being revised and remain in a state of flux. In this respect, it may seem futile to attempt to devise a typology of screen display and rendering technology, except for the fact that the examination helps to identify consistent screen characteristics that seem independent of resolution or device.

Screen-based contexts for typography

I have identified screen-based typography in three broad contexts, cinema, television and computer and telecommunications. It is worth looking at each one in detail.

Cinema

Typically characteristic of cinema is the large scale of the screen and the audience, and for the most part, the purpose of the representation on screen is entertainment, usually in the form of a narrative film. In this context, typography has a rich tradition, dating back to the earliest silent films where title cards communicated key dialogue or events in the narrative through to the golden age of film titles design in the 1960's (spearheaded by Saul Bass, Pablo Ferra and Maurice Binder) and its resurgence in the 1990's (with Kyle Cooper's landmark mini-narrative title sequence to *Seven*). Film studios and director's continue to capitalise on the visual impact of the title sequence to sell the content of the film, convey information and establish the film's identity and mood. Typography in this screen context might be described as largely image-based and interpretative and the audience activity here follows the viewing regime of the dynamic screen.

Television

In many ways, traditional television viewing echoes the regime of cinema, albeit on a smaller scale – the primary purpose remains social entertainment, although educational, information-based programmes and advertisements form a significantly large part of television's transmission output. Typography on television incorporates opening sequences, channel idents, listings, news, information and advertising graphics. Latterly, with the advent of interactive television, typography also plays a significant role in the television's interface representation. The viewer sits some distance away from the screen and operates the television with a remote control.

Computer

The third and most complex context for screen typography relates to the computer platform and its integration with telecommunications. Broadly speaking, a single desktop computer with Internet accessibility probably typifies the nature of representation and usage for typography in this area which may also incorporate a diverse range of mobile PDA's. Typography in this context operates in the realm of Manovich's real-time screen, where the viewing regime is inextricably bound up with the GUI and the type itself may be dynamic, static and changeable, either by the publisher or the user. Typography on the computer screen has many functions and may appear

in many forms, as an integral part of the interface, as webpage content, as a dynamic sequence, or as an editable document. The nature of its representation may be image-based or information based, it may be interpretative and expressive or factual and objective.

The viewer or user may be the audience or author of a computer text, actively watching and reading it, or writing and publishing it. The integration of telecommunications with the computer make it possible for a single user at a single screen to communicate and connect with a multitude of other single users at single screens. This creates a multifarious and distributed community of authors and audiences, which in many ways are not unlike the audiences for cinema and television. The most significant difference is that author and audience may engage in direct dialogue exchanging points of view as well as content.

By uncovering some of the underlying properties of the types of screens that typography may inhabit, it makes it easier to see how these properties may be projected on to, and reflected in, the design of typography on screen. This will form the basis of the next section of this essay.

ANALYTICAL COMPARISON OF PRINTED VERSUS SCREEN TYPOGRAPHY

Typography has been rooted in the tradition of the print medium for over half a millennium and it is only in the last twenty years or so that textual form has become prevalent on screen. The challenge for typography lies in trying to reinvent itself in the image-based medium of the screen that seems at odds with its print origins. This uneasy relationship between typography and screen might be further examined by a critical comparison of the nature and properties of print typography to its screen-based counterpart.

I have chosen to focus this comparison under the four key headings; format, media, reading experience and typographic representation.

Format

If we accept that screen and paper are distinctively single mediums (despite the variety of different types of screen and paper available), the question of format, and subsequently of scale and proportion, is a crucial design consideration for typography in either context. Similarities of scale are apparent, as we might compare the scale of the cinema screen to a billboard, or the mobile phone display to a business card, or even the desktop monitor to a standard magazine publication. (Note we are not comparing contexts of use here). There are possibly infinite variations of the scale and proportion of paper formats, and types of paper, that a designer has the control to specify. In comparison, the number of screen formats available is very limited, and is wholly determined by technological manufacturers. Designers of screen-based texts have to carefully examine and work within the constraints of a particular screen format.

In the print medium, a single page of content is displayed on a single piece of paper, and additional pages may be added as content increases in scale. In screen-based media, all content is displayed within a single screen. This has necessitated the design of a variety of display and access interfaces that try to facilitate differing amounts of content.

The key difference between screen and print formats is highlighted in the interface form through which we access and understand these formats. In the print medium, there has been little change to the page/book interface, from tableau, to scroll, to codex, in over five hundred years. Despite differences in scale or type of paper, the interface for print is pretty much standardised. It is also taught to us early and is very easily learned. We understand how to design and how to read typography in almost all printed formats.

In contrast, as outlined earlier in reference to Manovich's screen genealogy, the interface form of the screen has changed dramatically over the course of its development. We have moved from watching the single moving image of the dynamic screen to multiple and varied activities with

the real-time screen. Each type of screen (mobile, computer or television) and display technology may have an unique interface, and the quality and properties of typography may vary greatly in each. MIT scholar David Small refers to this as a 'complexity barrier' that must be surmounted if typography on screen is ever to rival its printed counterpart.⁴

Media

A comparison of media use in print and screen contexts seems straightforward. Print uses text and image. Screen encompasses text, image, sound and motion.

Given typography's printed tradition, the design and integration of typographic and image-based forms has been thoroughly explored and documented in its five hundred year plus history. In comparison, the design of typography in a multimedia environment that includes sound, motion and interactivity is still evolving. The core contrast here perhaps, is that each media type (text, image, sound, animation) has its own set of unique properties and principles governing its design application. The design of typography in a two-dimensional print environment has been well-traversed and a broad knowledge base of scholarship established. However, this does not hold true for the design of typography in three-dimensional and four-dimensional (time-based or real-time) environments, or for type that is auditory or interactively responsive. In her essay 'Electronic Typography: The New Visual Language', Jessica Helfand considers that to adequately develop this new typography, 'we might do well to rethink visual language altogether, to consider new and alternative perspectives'.

A detailed critical examination of the practical design principles for typography that encompasses the diverse media characteristic to the screen will be the main focus of my future research.

Reading experience

I have chosen the term 'reading experience' to refer to issues relating to the audience interaction with a text, in both print and screen formats. Traditionally readability has referred to how easily a text can be read, while legibility relates to whether or not a text can be read. A wide range of scientific, psychological and typographic research has been published on factors affecting the legibility of typography (Tinker 1963, Dillon 1992, Dyson 2002). There is less formal material available on the study of readability. The scope of readability in this comparison describes the overall sense of the experience of reading a particular text.

Printed material can be read anywhere the reader chooses, on a bus, at a desk, in bed, at the beach. While reading print, the reader's eyes move over the surface of the page, scanning the information, relying on the contrast and rhythm created in the typographic composition to guide them through the text. The surface of the page is still and the typography is static and fixed, presented exactly as the designer had intended, on carefully chosen stock and in a particular type design setting. The reader may hold the printed piece in their hands and control how much time they wish to spend reading a particular page. The scale and nature of the physical paper format will also tell them at a glance how much text it contains. The text is already written and its order decided (executed by the author), the story is waiting to be read. The pace of reading and contemplation of the text is at the reader's discretion. As the reader becomes immersed in the 'reading space' inside their head⁵, the book interfaces gradually disappears.

Let's compare this to the experience of reading on screen. The reader's eye may move or it may be transfixed, scanning over and staring at the light patterns of text reflecting outward from the monitor's screen. The text may be static or dynamic, fixed or changing depending on the nature of representation, whether it is linear and time-based, or non-linear and real-time based or perhaps even a combination of both. The visual presentation on the surface of the screen will mostly likely be moving, either by animated presentation, or reader interactivity via the GUI such

⁴ Small D., (1999), *Rethinking the Book*, MIT PhD Thesis.

⁵ Worthington, Michael, (Autumn 1999), *Entranced by motion, seduced by stillness*, V9, 33.

as selecting, opening, closing, scrolling etc. The reader is more likely to sit in front of the screen and the physical interaction with the text will be usually via a mouse, keyboard or stylus. The reader is dependent on the customised interface of a particular screen text to determine its scale and order. The reading experience on screen may combine watching, reading and exploration through the interface. In this context, it seems unlikely that the reading interface will metaphorically disappear as it does in print.

Recounting Bolter's and Manovich's earlier claims, in a context where the interface is not 'transparent', and the 'viewing regime' is disrupted by the GUI, it is less likely that a truly immersive reading experience comparable to print will emerge. Victor Nell, who has conducted one of the few empirical studies on readability, states the extreme case of immersive reading as 'ludic reading', (from *ludo* in Latin, meaning to play) or reading for pleasure. According to Bill Hill, head of Microsoft's Advanced Reading Technology, if the problem of ludic reading could be solved on screen, to make it as comfortable and natural as it is print, then the same basic principles would apply to any other reading task on screen.

Typographic representation

Typeface

Typography in printed form can be reproduced to the highest resolution and every detail and nuance of a typeface will be rendered accurately. Consider the average 'book quality' image-setter uses 2,500 x 2,500 dots per square inch, or over 6 million bits of information. The average computer screen offers less than 100 dots squared (usually 72dpi or 96dpi), which adds up to about 5,000 bits of information. This is less than 1/1000th of the resolution of the common book, and considerably less than even a common 600dpi office laser printer.⁶ Trying to render the detail of a serif typeface, especially at a small point size on screen is virtually impossible. It is hardly surprising that typefaces on screen seem like poor approximations of their printed counterparts and that legibility remains a key concern.

To date, most research into screen typography has focused specifically on developing better ways to render type within the low-resolution display environment of the screen. These include technologies such as Postscript, TrueType, OpenType and ClearType, or the design on screen specific typefaces, such as Verdana and Georgia (by Matthew Carter) or the wide range of pixel aliased fonts. In 2006, Microsoft is planning to ship six specially commissioned typefaces designed for maximum screen legibility with its new version of the Windows operating system.

Screen legibility has been well researched by Dillon and more recently Dyson, the findings of which are too numerous and detailed to cite here. In summary, the appropriate choice and size of typeface (sans serif with large x-height), the number of words in a line, spacing between words and lines of text, the colour of text against its background etc, remain as much a consideration for screen typography as they do for print. The parameters affecting these issues are of course different in each medium. Other aspects specific to screen include rendering issues such as anti-aliasing, the impact of dynamic elements and the ability to navigate a text interface. Dyson notes that the term legibility might be extended to include issues of 'usability'.⁷

Composition

It is worth comparing the differences in typographic composition between print and on screen. As mentioned earlier, a designer can specify any format they wish in which to compose their design. Once chosen, the edges of the page become a definitive boundary governing the placement of typographic elements. The 2D flat surface of the page focuses relationships of size and placement on the x and y axis.

⁶ Sassoon, R., (2002), *Computers and Typography 2*, 'Computer screens are not like paper: typography on the web' by Ari Davidow, Intellect.

⁷ Dyson, M., (2002), *Legibility on screen: what do we think versus what do we know?*, *Proceedings of the 1st international conference on Typography and Visual Communication*, Thessaloniki, Greece, 26-30 June 2002, Thessaloniki: University of Macedonia Press, 2004, 249-256.

On screen, the designer will usually work with a number of fixed sizes or resolutions that relate to specific screen types, such as computer (800x600dpi, 1024x768dpi) television (PAL 768x576dpi or DVPAL 720x576dpi) or mobile (120x130dpi up to 640x480dpi etc.). For the most part the proportions and aspect ratio on screen is 4:3 landscape orientation. This is the frame within which typography can be composed on screen. Considering how to compose multiple pages of text in the single frame of the screen is the key difference to composing type in print. Designers on screen have to consider dynamic strategies for composition such as animation, layering, scrolling and scaling. The time-based nature of these strategies also means that the composition frame appears to be the viewing window that captures different moments of the composition. The screen edges are not the boundaries, as the composition begins and continues outside of the frame, passing through in a form guided by animation or viewer interaction.

The screen also possesses an intangible quality because of the virtual space inside it. It means that composing type in this virtual space can be considered on the x, y and z axes. Time might also be considered the fourth axis. The complexities of managing typographic elements across these four relationships is a challenging contrast to the two dimensional composition of print.

Hierarchy and Structure

Following naturally from composition is a discussion of typographic hierarchy. Traditionally designers have used the nuance of typographic expression via different weights and size, coupled with logical, and linear ordering to denote the informational hierarchy within a printed piece. In contrast, there is a limit to what the pixel can render on screen and the nuance of typographic expression, especially hairlines and serifs, are inevitably compromised. The advent of 'hypertext', which Bolter calls 'the typography of the electronic medium', has also challenged the traditional linear ordering of text, making it possible to create layers of additional meaning accessible through programmable associative links within the text. Hyper-linking between different texts facilitates multiple entry and exit points to and from a text, resulting in a seemingly non-linear structure. It can often be difficult for users to understand and follow the hierarchy (if indeed one exists) of a digital text. This variable form coupled with the dynamic and aural properties of multimedia combine to create a confusing palette for the designer to choose from. Jessica Helfand aptly sums up this challenge questioning the value of typographic choices such as bold and italics, 'when words can dance across the screen, dissolve, or disappear altogether?'⁸

Outside of designing the form of text on screen, designers should acknowledge that the culture of screen is different to the culture of print. In her book, *Thinking with Type*, Ellen Lupton, stresses that the impatience of the digital reader arises from the cultural habits of the screen where users expect to feel 'productive' not contemplative, 'they expect to be in search mode, not processing mode'.⁹ Typography in this context seems to be more about alleviating the experience of prolonged reading on screen rather than encouraging it, as designers are expected to serve up byte sized chunks of tantalising typography to whet the appetite of browsing readers.

With this in mind, designing typographic hierarchy on screen is not as seemingly straightforward as it is in print.

Delivery

Print designers can generally feel secure that the finished manufacture of their design will manifest itself exactly in the same form they specified. They have detailed control over each stage of the design and production process, with the exception of final printing, but even then a conscientious designer will press check the first proofs of a job to ensure its accuracy. It is difficult to compare this process to the design and production of screen typography because of the multifarious nature of both screen hardware and design contexts.

For example, a web designer has to consider a range of technical constraints; what screen friendly typeface to use and what development environment (html/asp and css, or flash and font

⁸ Helfand J., (2001), *Screen: Essays on Graphic Design, New Media and Visual Culture*, Princeton Architectural Press, p.107.

⁹ Lupton, E., (2004), *Thinking with Type – A critical guide for designers, writers, editors and students*, Princeton Architectural Press, p.74.

embedding) to produce the design. After these decisions are made, it is likely that a designer will rely on a programmer to build some, or all of their design on screen. Assuming this reaches a satisfactory conclusion, the designer still has no control over who will access the website, how it will be accessed or if the audience will access and view the design in the way it was originally conceived. Because the final delivery mechanism is variable and the viewer may also intervene in it's the final transmission, designers must be willing to compromise absolute control over the final design outcome and to perhaps to consider design as specifying the optimum set of aesthetic variables to work in this framework.

If we think back over the issues discussed in this paper, and then consider Goudy's broadside 'I am Type', one can't help thinking that the qualities of type on screen seem far removed from Goudy's personified description of a leaden army of printed type. One wonders, if Goudy were considering today's army of typographic bits on screens that are pervading the world, and writing a similar piece whether he wouldn't entitle it Am I Type?

BIBLIOGRAPHY

- Baines P. & Haslam A., (2002), *Type & Typography*, Laurence King.
- Bellantoni J. & Woolman M., (1999), *Type in Motion – Innovations in Digital Graphics*, Thames and Hudson.
- Bellantoni J. & Woolman M., (2000), *Moving Type – Design for Time and Space*, Rotovision SA
- Bolter, J., & Gromala, D., (2003), *Windows and Mirrors, Interaction Design, Digital Art and the Myth of Transparency*, MIT Press.
- Bringhurst, Richard, (2001), *The Elements of Typographic Style v2.4*, Hartley and Marks.
- Diexmann T. & Gremmler T., (2003), *Grids for the Dynamic Image*, AVA Publishing SA, Switzerland.
- Dillon A., (1992), Reading from paper versus screens: a critical review of the empirical literature, *Ergonomics* 35 (10): 1297-1326.
- Dyson, M., (2002), Legibility on screen: what do we think versus what do we know? Proceedings of the 1st international conference on Typography and Visual Communication, Thessaloniki, Greece, 26-30 June 2002, Thessaloniki: University of Macedonia Press, 2004, 249-256.
- E-ink, (March 2001), What is Electronic Ink, www.eink.com.
- Helfand J., (2001), *Screen: Essays on Graphic Design, New Media and Visual Culture*, Princeton Architectural Press.
- Heller S. (ed), (1998), *The Education of a Graphic Designer*, Allworth Press, *Computer Don't Speak, Type Does*, by Michael Worthington.
- Hill B., (1999), Osprey: The Magic of Reading, Microsoft research paper, also presented at Poynter Type conference, November 2004, Florida USA.
- King E, (Summer 2001), *Digital Type Decade*, Eye, Vol. 10, 40.
- Lupton, E., (2004), *Thinking with Type – A critical guide for designers, writers, editors and students*, Princeton Architectural Press, New York.
- Manovich L., (2001), *The Language of New Media*, MIT Press.
- Sassoon, R., (2002), *Computers and Typography 2*, Intellect.
- Shaw, J. & Weibel, P., (ed), (2003), *Future Cinema: The Cinematic Imaginary after Film*, MIT Press.
- Small D., (1999), *Rethinking the Book*, MIT Phd Thesis.
- Sobchack V., (Fall 1999) *Nostalgia for a Digital Object: Regrets on the Quickening of QuickTime*, *Millennium Film Journal* No. 34.
- Tinker, M.A., (1963) *Legibility of Print*, Ames, Iowa State University Press.
- Worthington, M., (Autumn 1999), *Entranced by Motion, Seduced by Stillness*, Eye, V9, 33.
- Worthington, M., (Autumn 2003), *Gertsner's curious compendium is a dense brick of knowledge*, Eye, V13, 49.