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Typographical Portabilities: The Designer and User in Communication Technologies

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Declaration

I declare that the work presented in this thesis is my own.

Reference to the work of others has been cited and indicated throughout.

Anastasios Maragiannis

Acknowledgments

A PhD thesis is never an individual endeavour. In particular, being a practice-led research thesis, my work has taken place in a social context and includes several people, whom I would like to thank sincerely.

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Abstract

This thesis investigates how the gradual shift from print to portable screen based technology has impacted typographic communication. The transition from print to portable screen based devices, from material to virtual space, and from the textual to the visual has inevitably altered our relationship to type, as readers and as designers. Virtual typography can be defined as a new form of typographic communication that is reimagining the way we understand type as a visually communicating medium; we have moved from viewing type in print as "voice" to increasingly regarding type in screen based environments "as image". This thesis takes the form of practice-led research conducted as a comparative study that explores the nature of virtual typography, counter to formalised models and established print based frameworks, in order to demarcate the nature of virtual typography in its current form and how this affects the activity of reading and design practices. Virtual typographic communication exhibits a tendency to suspend the constraints underlying conventional understandings and approaches to legibility and readability, suggesting that the communication process is undergoing a paradigm shift. Print typography has been guided by the ideological tendency to fulfil the role of mediator between author and reader; driven by the sole purpose of imperceptibly transmitting authorial messages to a reader. Virtual typography has redefined these parameters in its ability to convey and go beyond the remit of textual language; it has formed a direct relationship between designer and reader and has gone from transmitting messages to acquiring the capability of generating its own messages, partaking in the activity of narrative construction. Virtual typography is neither invisible nor silent rather, it reveals and informs the complex cognitive and perceptual processes involved in communication and the reciprocal relationship between designer and reader. Kinesis combined with interaction in virtual typography escapes the fixity of meaning without suspending it; in contrast it generates the conditions, which enable the creation of a multiplicity of meanings. The original contribution to knowledge and argument of this thesis is that mobile technology has reinvented typography and as a result, the changing landscape and conceptualisation of typographic practices are in turn, redefining the communication process.

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The artworks that are part of this thesis are included and can be viewed with the enclosed DVD and also online with the following link:

www.teraslab.co.uk/phd
Password: **anastasios**

Chapter 1

Introduction

1.1 Setting the Scene

"It is at this juncture that typography may be going through something of a renaissance within applications that carefully respect the typography and integrity of the original print within the wealth of interactive features of the digital" (Waste Land: Touch Press, Ipad, 2011).

My MA Dissertation posed the question: "How can the web accommodate the printed page, and inform the communication process?" (Maragiannis, 2002). It demonstrated the relation between hypertext and print navigation methods. Several years later I encountered the *First Principles of Typography* by Stanley Morison, first published in 1936. It is these principles that provided the motivation for this PhD thesis. My background in design and interactive media has enabled me to integrate visual art and computational technologies. This integration, together with my curiosity to determine and understand how virtual typography has altered the parameters of print based text within the context of communication, or communicating with type, is precisely what this thesis investigates. This PhD thesis is practice-led research, which has been conducted through a series of prototypes and workshops that examine the communication process through the terms: readability and legibility. Currently, typography finds itself at a crossroad between (the old) print and (the new) screen, as the above citation asserts. Viewing typography through the lens of current technologies and through its integration of new media, new techniques and interrelated disciplines, illustrates that it is going through a shift and enjoying something of a renaissance; in this shift it has become something else, something new. One might say that typography has been reborn; it is no longer about printing words, but rather about the communication of the word as *image*.

My PhD research explores how portable screen based technology has impacted on typographic communication in the last two decades or so. It is important to note, that the concept of communication that the research predominantly emphasis relates to the notions of readability and legibility.[1] I argue that portable screen based technology has reinvented typography. As a result, the changing landscape and conceptualisation of typographic practice is in turn, redefining the very nature of how we communicate with typography. The increased use of written communication prompted by portable screen based devices has indelibly changed the way we understand and use typography in our day to day interactions with it and with each

[1] This thesis differentiates between the two terms, taking the position that without this distinction the subject of typographic communication cannot be addressed adequately. I will briefly account for these terms later on in this chapter and more thoroughly in Chapter: 3 (See pp. 76-89).

other. Technology has always had an enormous impact on typography and its practices. Undoubtedly, typography is intimately tied to the mediums that support it, or it exists in; and this is evident when considering that for well over two centuries typography was not conceptually or otherwise distinguished from printing technology (see *Chapter: 2 Contextual Review*). Throughout typography's history, various mediums intervene, determine and alter the terms of written communication by providing it with new ways to deliver and transmit messages. In these changes typography acquires new and different expressions as well as, interesting forms for its readers and users. Though it is important to stress the enormous impact that technological mediums have on typographic practices, it is equally important to stress that the medium (the technology) has a propensity to change, evolve and eventually become obsolete.[2] In contrast, typography continues to evolve and adapt with the times, persevering in shaping the ways we communicate and acquiring new forms of expression. Today, the transition from print to portable screen, from material to virtual space and from textual to visual has inevitably altered our relation to type, as readers and as designers. This thesis sets out to define the nature of typographic communication in screen based portable technology as it is currently unfolding and its effects on design practices and the reading process. In particular, I investigate the ways that readability and legibility, in the context of typographic communication, are affected and altered by portable screen based devices and what this means to the communication process more generally. This thesis asks the following research questions: 'How has portable screen based technology altered typographic practices?' and 'How have these changes, generated by the introduction of virtual typography in portable technology, impacted the communication process for the designer and reader?' I will return to the research questions and aims in a more detailed discussion below in Section 1.4 (See pp. 22).

1.2 Introduction and Background to the Research

The written word is undoubtedly one of the most significant inventions in human history. Writing has evolved from markings on clay tablets, to pen and paper, to the printing press and finally present-day computational technologies, the internet and mobile devices. The nature of written communication is complex and multifaceted; it is an intricate system that has been conceptualised and understood in more ways than one. The basic communicative purposes of the written word and typography have hardly changed since its inception; typography's purpose is to communicate messages. However, the way it is displayed, expressed and its methods more

[2] This will be discussed in *Chapter: 2 Contextual Review* when I discuss the history of typography.

generally, are continually developing. Our understanding of typography has been shaped by multiple definitions and interpretations that have developed alongside its changing methods and the mediums that support its existence. As we shall see in *Chapter: 2 Contextual Review*, sixteenth and seventeenth century understandings of typography defined it as a technology, since printing and typography were only latently distinguished as separate crafts. By the early twentieth century there were two distinct approaches to typography that relate to how it is conceptualised and its purpose.[3] Typographic practitioners/designers and theoreticians (like, Stanley Morison and Jan Tschichold) consider typography as a silent and invisible intermediary between author and reader; and argue that typography has the sole purpose of transmitting authorial intentions and meanings clearly to the reader. Thus, it is unsurprising that their work tends to highlight legibility. Jan Tschichold claims that "Typographic style and layout should not obstruct the transmission of meaning" (Tschichold, 1967: 258; cited in McLuhan). This view of typography understands the reader as passive, detached and objective; the perceptual recognition that the activity of reading involves is described in terms, which reduce the complexities of cognitive and information processing as a simple praxis of "seeing". I will return to a detailed discussion of this view through Stanley Morison's work in *Chapter: 3*. On the other side of the spectrum, early twentieth century art movements' approached typography from the position of art and viewed it as an art-form capable of communicating its own meanings independently to the author.[4] Despite this, according to Mathias Hilner, artistic movements and practices in typography "suffered the requirements of commercial industry" and failed to integrate innovative practice with commercial interests; and "sooner or later fell victim to the conservative constraints of the commercial world" (Hilner, 2009: 29). Thus, the dichotomy that I am interested in and propose in this thesis is characteristic of the shift from print to digital, is in fact a conceptual one. In contrast with practitioners like Tschichold and Morison who view design as an aesthetic (or decorative) element, the current view of design as a form of communication in its own right, emerged from early 20th century artistic practices that have only belatedly become mainstream, as a result of the advent of portable and screen based technologies, and the changing interests of commercial industry (see later in *Chapter: 3*).

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[3] What I am referring to here, relates to a dichotomy in the understanding of typography and its purpose, as opposed to the dichotomy between theory (science) and practice (art) often mentioned by other researchers. Rob Waller in his PhD thesis calls the dichotomy between practice and theory, a "myth of two cultures" and argues that this distinction is gradually dissolving. See: Rob Waller "The Typographic Contribution to Language" (1987) pp.57.

[4] The history of typography and the various art movements that challenged typography's definitions and preconceptions from the early twentieth century onward will be discussed in further detail in *Chapter 2*.

More recent definitions of what typography is and what it does are no less nuanced and diverse. According to Ellen Lupton, "Typography is a tool for doing things with: shaping content, giving language a physical body, enabling the flow of social messages" (Lupton, 2004: 8). Lupton's definition embodies a conceptualisation of typography that emphasises it as a *tool which gives shape and form to language*; she highlights the functionality of typography in that it provides language with its materiality. Others define typography as an *art-form* and yet understand it merely as an aesthetic element that decorates or, embellishes language and linguistic messages (the idea): "Typography is a valuable art because it forms the last element that dresses the idea, its material beauty in the system of writing" (Jean, 2010: 144). This thesis takes a different approach to the definition of typography although, it does not reject the definitions cited above; typography is indeed a tool in visual communication and it is an art-form which has design at its core. However, typographic design is much more than the mere embellishment of words and meanings for purposes of aesthetics, and it is more than a simple tool which provides language with a physical and visual body. In contrast, design today has been reconceived as a method and means of communication in its own right. As Malcolm Barnard in *Graphic Design as Communication* (2006) puts it: "meaning, identity and communication are at the core of every design project" (Barnard, 2005: 16). Typographic design for this thesis is a form of visual communication capable of generating its own messages. Moreover, current typographic practices have reversed the hierarchical roles that dominated traditional frameworks; the current undertaking of design practices have generated a direct line of communication between designer and reader/user, as opposed to the author-reader axis that the previous print based model of typography entailed.[5] Don Norman writes: "Design is a conversation between designer and user, one that can go both ways, even though the designer is no longer present once the user enters the scene" (Norman, 1981: 116). This thesis will argue here and throughout, that typographic design is a form of communication in its own right, partaking in the activity of narrative construction.

Modern typography became "modern" when printing became publishing and typography became design (see *Chapter: 2*). Thus, it is important to distinguish between the circulation of information and its delivery, the former which tends to fall with the technology rather than typography itself, even though the two are interrelated. As regards the relationship between typography and design, this thesis takes the position that virtual typography signifies a new form

[5] I will be discussing these issues in more depth in Chapter: 3 from a theoretical viewpoint and Chapter: 5 in relation to my practice-led research.

of typographic communication, which demonstrates a move from the textual (voice) to the visual (image).[6] The new paradigm under which virtual typography is operating is instructive and can inform our understanding of what typography is and its purpose today.[7] This thesis suggests that virtual typography has acquired a sense of autonomy in screen based virtual environments and plays a more active role in the communication process; where it no longer assumes the character of a passive supplement or a subordinate element to the voice of the author (and this is what I understand by "textual"), the spoken word, to meaning and/or ideas etc. In print typography, readability and legibility relates to the relationship between author-reader and how type *transmits* the messages of the one to the other. In the context of virtual typography this relationship has shifted to include the designer. [8] In some cases, forming a tripartite relationship between author-designer-reader; where design delivers added artistic value and participates in narrative creation. At other times this takes place between designer and reader which removes the authority of the author all together.[9]

In this thesis, virtual typography is considered as having the ability to reveal the inherent properties of written communication and the reading process. Typography is a medium by which human communication manifests itself in visual forms. What virtual typography reveals is that typography is (and always has been) a combination of voice and image. In essence, typography is an amalgamation of voice and image. Author and typographer Jan White writes: "Open your eyes and listen" (White, 2004: 31). The ideological premise that has guided the understanding of typography in relation to print technology has been to pronounce voice (the

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[6] This something that I examine through my practice-led research and one of the findings of "The Typeface Project" discussed at length in Chapter: 5 Practice Methodology.

[7] Virtual typography has taken on a number of different names: electronic type, visual poetry, kinetic typography, and sonic art graphics. Throughout this thesis, I will be using the term virtual typography to describe digital forms of typographic communication and will be viewing it through its correlation with virtual graphics. The term virtual typography will be used as an umbrella term.

[8] It is significant to note that the notions of readability and legibility in this thesis will predominantly refer to the relationship between designer and reader/user in the context of screen based typographic practices; in contrast to mid-twentieth century philosophical linguistic theory, which develops a theory of language that stresses the communicative exchange between author and reader. A discussion of what has become known as the "linguistic turn" in philosophy will be discussed in more detail in Chapter: 2 Contextual Review.

[9] See Chapter: 3 Section 3.4 In-Between Practices Hypertext, E-Poetry and E-books. This section explores the relationship between designer and reader/user as well as, designer-reader/user-author. One example is: Samantha Gorman and Dany Cannizzaro's Pry, an App novella which re-imagines storytelling through interactivity and the reader's participation. In this work, the authors were also designers and created type which plays a part in narrative construction alongside the reader. An example of the relationship between designer-reader that I refer to, is the WasteLand App created for the iPad. The designers took T.S Eliot's poem and created an interactive application that allows readers to experience Eliot's poem in ways that the writer could not have foreseen.

textual) over and above its visual qualities (as image). Even Jan White (above) has reinforced this hierarchical relationship. However, the transition from print to screen is gradually modifying the way we think about and use typography. Throughout this thesis I propose that virtual typography enables us to view "type as an image" and that this has enabled typography to participate in the activity of narrative construction. Here, typography becomes part of the message and more importantly, in certain cases: *is the message.*[10]

FROM PRINT TO SCREEN

This thesis suggests that the transition from print to screen signifies a paradigm shift in the way we understand typography; from the textual (voice) to the visual (image). The introduction of Johannes Gutenberg's printing press to Europe allowed for the reproduction and dissemination of the written word on a mass scale. As we shall see in the following chapter, Gutenberg's mechanical moveable type has been theorised extensively as the catalyst for changes in literacy and wider social effects. Similarly, portable screen-based technology has had an enormous impact on culture and society; particularly, affecting the ways we behave and communication more generally (see later in *Chapter: 3*). If print technology from Gutenberg onward, allows for typographic reproduction and distribution on a mass scale; it is Stanley Morison's *First Principles of Typography* (1930) which, in creating a standard for industry, also added a shade of consistency to typography's use and practice. Modern typography reflected the ideology of creating a universal method of communication. Morison's preoccupation with legibility at the beginning of the last century was due to and justified by the need for industry standards. However, the ideology which guided design in Morison's thinking, assumed a passive, almost automatic, subconscious visual experience. The purpose of design was to remain imperceptible by the reader and the objective of the designer was to support the messages and convictions of the author. [11] Without understanding how ideology and industry (via technology) has guided practice, it is nearly impossible to understand how and why typographic communication performs the way it does today. Paradoxically, this method dominant in print design practices,

[10] There are various ways and numerous examples which illustrate that typography becomes part of the message and in certain cases is itself the message. In the practice-led research conducted for this thesis, typography's tones and images are explored through the prototypes created for "The Typeface Project" which will be discussed more thoroughly in Chapter: 5. For instance, the Phase: 1 Prototype and Experiment: 3 illustrated that typography has the capability of creating different images and emotions, moods or affects. In Prototype and Experiment 5 the participants agreed that certain fonts have images and tones attached to them that determined how something is read i.e., Times New Roman was viewed as serious and sombre, while Comic was perceived as playful and child-like. I will return to the discussion in Chapter: 5 Practice Methodology in further detail.

[11] I discuss this in great length in Chapter: 3.

tends to approach typography from the point of view of visual communication but in reality pays little attention to voice (or the author). Rather, in designing the visual component of type the absolute aim was to amplify voice (authorial articulation) and dull the rest of the senses for the reader.

Print technology through the standardisation of typography, acquired the features of uniformity and consistency which emphasised typography's affiliation with voice and particularly, authorial voice. Throughout this research I propose that the transition from print to screen signifies a paradigm shift that demonstrates a move away from voice (and textuality) toward image; and that this has been driven and predominantly guided by a change in ideology that has been brought about by portable screen based devices. Ruth Blacksell in *From Visual to Textual: Typography in/as Conceptual Art* (2016) situates this ideological shift in the 1960s and 1970s, proposing that it first took place in the art world. She suggests that this historical period manifested a philosophical shift from the notion of "art as object" to "art as an idea". This meant that the idea in art "could be implemented conceptually through language rather than *perceptually through vision*" (Blacksell, 2016: 114). This new critical art position presupposed that the spectator looking at the art was active rather than passive, and could engage with a conceptual notion embedded in the physical work of art. For Blacksell, this shift denotes a changing view of the reader and the activity of reading/viewing as a form of active contemplation. In 1967, artist Robert Smithson articulated it as: "Language to be Looked At and/or Things to be Read" (Blacksell, 2016: 115). Blacksell also connects these ideas to Structuralism and Semiotics; the autonomous art work and "the death of the author" (I will be discussing the idea of Structural linguistics and Semiotic theory in *Chapter: 2*).[12] For this thesis, these ideas had already taken shape much earlier, at the beginning of the twentieth century and a fuller discussion which is explored in more depth in the following chapter gives weight to these ideas. Regardless of the origin or specific time that this shift took place, the change in ideological perspective in art has reverberated and spread throughout the arts and humanities. By the late twentieth century the idea of viewing typography as a *visual language* had become

[12] The reference to Structuralism in Ruth Blacksell relates to Structural Linguistics and in particular, to the work of Ferdinand de Saussure. Structural linguistics has been understood as a methodology of interpretation and analysis and, human culture is understood by way of its relationship to a larger overarching system of structure, primarily the linguistic system. The various interpretations and ideas related to Structuralism and Post-Structuralism will be discussed in more detail in Chapter: 2 of this thesis. The idea of "the death of the author" can be attributed to the writer and literary critic Roland Barthes who argues that meaning cannot be derived from an author's biography and personal experiences. In Barthes' work the author is missing from the work of art (or text) and the reader is brought to the forefront as the creator of interpretation and meaning. For further reading See Roland Barthes Images, Music, Text (1977).

more commonplace. Students at Cooper Union and Cranbrook Academy in the United States were encouraged to "think about art and design in terms of culture and language" (Miller and Lupton, 2016: 140; cited in Blacksell). These ideas are not only still relevant today but also, portable screen based technology has created the right circumstances for typographic communication to be approached in terms of an art-form that is capable of creating its own meanings and ideas. It allows for interaction, kinesis and animation which in turn enable transformation, a change of identity and performativity. The practice-led research conducted for this thesis and in particular, "The Typeface Project" conducted through a series of workshops and the creation of prototypes, examines and provides an alternative explanation to recent studies in dynamic, fluid forms of type and what these effects mean for communication.[13] The changing nature of typography and the expanding capabilities of virtual typography has led theorists, Gerhard Bachfischer and Toni Robertson in their 2010 essay "From Movable Type to Moving Type: Evolution in Technological mediated Typography" to claim that, typography is something we now "engage with" and "is experienced rather than read" (Bachfischer and Robertson, 2010: 1). With portable screen based technology and the interaction it enables, the reader has transformed into a user; and the activity of reading becomes a much more energetic, active and engaging process.

THE PORTABLE SCREEN

Typography has been transformed and reinvented by portable technology; and the changing definition of typography can be attributed, in part, to the design elements that virtual environments and portable devices have enabled and are capable of: interaction, kinesis and animation.[14] The practice-led research conducted for the purposes of this thesis was created in the form of a comparative study between print and screen. The findings of the practice-led research (which I will discuss at length in Chapter: 5) have illustrated the following ideas: First, whereas print tends to understand the purpose of typography as that of *transmitting messages* (ascribed to an author), virtual typography has the capability of *creating its own messages* (See Chapter: 3 and Chapter: both explore this issue). Second, print typography does not have the

[13] The two-part workshop that I have called "The Typeface Project" includes the design and creation of prototypes which, experimented with various features available to virtual type in a comparative study with print typography. These workshops and the two other groups that make up this practice-led research, named: "From Delphi to Paris" and "Moving with Type" will be discussed at length in Chapter: 5 Practice Methodology.

[14] The findings of the workshops are the reason that I argue that screen based portable technology has enabled typography to be understood in terms of visual imagery, or as image. I therefore, define virtual typography as an image and art form capable of communicating its own messages

ability to intervene in the messages it transmits. Whereas, screen based portable devices have enabled virtual typography to participate in the activity of narrative construction (See Section 3.5 pp. 90). Third, printed type cannot mimic expression, intonation and/or emotion in the same way as oral language. Through animation, kinesis and image formation, virtual typography can more accurately imitate the "movements" found in the spoken word; it can create inflection, it can create affects and emotions, and it can engage all of the senses.[15] Fourth, in terms of design practices, we have shifted from issues of legibility that dominated print technology: "how clearly are we transmitting the message" to issues of readability in virtual typography that asks what kind of: "images or meanings typography can create" (this is explored throughout Chapter: 5). If today, we understand typography as something which we can interact with, or change at will; as something that moves that is kinetic and animated, and has the capability to express its own ideas, meanings and affects; as something which can be experienced as well as read; consequently, it is because the nature of typography has changed along with the medium. In short, I argue that virtual typography deals with the reader's experience and concerns readability. Insofar, as readability is defined, for this research, as the engagement with the mechanisms of narrative construction and the process of meaning-making in visual experience.

This thesis takes the position that typography has been transformed by its encounter with portable screen based technology. Such a transformation has shifted the traditional and established boundaries confined to print technology and the new medium. It has redefined the nature of typography as well as, how we understand typographic communication. Semih Delil is right to argue that, "Typography transforms the interior system of language into a visual imagery system" (Delil, 2017: 36). Whereas, the technology is responsible for the way information is distributed and how typography is displayed; typography itself is impacting the ways we communicate regardless of the medium. Mathias Hilner claims: "The growing information overload has led to a change in the use of language. Where there is no time left for reading, we return to the use of images as substitutes for words" (Hilner, 2009: 8) Yet, the physical and virtual environments that we exist in are not mutually exclusive. Behavioural patterns acquired from virtual spaces tend to inform our physical and material behaviour and vice versa. There is a cross-over and the two spaces form a reciprocal relation informing one another. I will be looking at this in the "From Delphi to Paris" group of workshops in *Chapter: 5*.

[15] This is something that I explore in my practice-led research; in particular "The Typeface Project" Phase: 1 (specifically in Prototype and experiment 7). See Chapter: 5 for further information.

MOBILE TECHNOLOGY AND COMMUNICATION

Screen based portable technology has introduced and laid out the premises for mass communication and distribution of information on a global scale, perhaps unlike any other before it. Typographic communication plays a significant role in web and app design. Oliver Reichenstein in his essay, 'Web Design is 95% Typography' argues that the very foundation of web design is typography. He writes: "Optimizing typography is optimizing readability, accessibility, usability, overall graphic balance" (Reichestein, 2006: 2). Communication in early screen based technology was limited to accessing information that resembles or is similar in manner to print. Here, the reader was less active. Portable screen based devices have gradually developed from devices initially oriented towards voice communication, (i.e. the mobile phone) into small and mobile, screen based computers which enable a multiplicity of communicative activities, as well as having non-communicative functions (i.e. alarm clock, calendar, GPS navigation, listening to music etc.).[16] Portable devices are small and light enough to carry everywhere. They have allowed for continual and remote connection, and access to information at all times. With the advent of portable technology, the use of and content on the internet exploded, and much more control was placed in the hands of the reader/user. Typographic communication grew exponentially as social media platforms, blogs and other websites, or mobile applications allow users to exchange information and interact with the typography that they are using to communicate. Typography took on a whole host of new, available features for readers/users, including more interaction, personalisation, kinesis, animation etc.

This thesis considers typography's most basic communicative elements and purposes to rely on two different forms of typographic communication: legibility and readability. These terms will be discussed at length in *Chapter: 3* and addressed throughout the thesis but, I briefly account for their differences here. Typography's material form constitutes its legibility; legibility determines whether letters and text can be read with optimal clarity and ease. Typography's aesthetic form pertains to its readability and can encompass design elements (including layout

[16] The term "portable" or "mobile" screen based device, or technology is used in this thesis to refer to devices such as, mobile phones, tablets and laptops. This research emphasises two aspects of mobile technology: First, its ability for constant connectivity; Second, its easy transfer from one location to another - its portability. A working definition for portable technology can be described as follows: "Mobile Technology is defined as any device with internet capability that is accessible anywhere the user is. Current devices in this category include devices such as smartphones, tablets, some iPods, and laptops, although this list is sure to increase in coming years" (Penn State University Website, 2014) [Accessed: 22/07/16].

on a page) which affects how a text will be read and therefore its meaning(s). I propose that readability relates to and affects the reading process more generally. Throughout this thesis, these terms are distinguished and considered separate elements of typographic communication. However, as I will show through the practice portion of this research, they are not entirely distinct, and in many cases the two terms intersect and form a reciprocal relationship where the one informs the other; I will discuss these issues in more detail in *Chapter: 5 Practice Methodology*.

1.3 Contribution to Knowledge

The main contribution of this thesis is to re-define the field of typographic practice for screen based portable technology in relation to communication, through the ideas of readability and legibility. It neither attempts to design a new framework of rules or principles for the screen, nor, to devise new methodologies for practice in the field. Rather, the outcomes of the practice lead to new understandings and knowledge regarding the nature of virtual typography through a comparative study with print based technology; and by questioning the ways virtual typography is affecting our communicative patterns as a result of its encounter with portable screen based environments. In what follows I will provide an overview of current studies conducted in typographic research in order to illustrate the gaps in the research that the thesis aims to fill.

Gutenberg's printing press had an enormous impact on typographic communication and society more generally, which has been extensively theorized in numerous studies (see Chapter: 2). However, the full extent of portable screen based technologies and their impact on typography and communication has yet to be fully examined. Examining the factors unique to mobile technology, in order to define the new parameters of typographic communication deserves our attention. However, considering that this technology is still fairly new and rapidly, as well as continuously changing it is also considerably more difficult to pin down. As a result, we are still trying to understand how the medium is affecting our communicative processes, and the ways we communicate and interact with typography as well as with each other. This thesis aims to fill this gap, by determining how the transition from print to screen is reinventing typography in practice and theory, and how virtual typography is redefining communication. The practice-led research conducted for this thesis investigates how typographic communication behaves differently in print, as opposed to screen based portable environments and examines how these two different spaces also influence one another. The thesis views typographic communication through the lens of the relationship between designing and reading in the context of readability

and legibility.

There have been several studies that make a substantial effort to investigate and create a new framework (a new set of principles) for the screen. This includes Hilary Kenna's "A Practice-Led Study of Design Principles for Screen Typography: with reference to the teachings of Emil Ruder" (2012) and Joyce Yee's "Dynamic Literature Mapping: Typography in Screen-Based Media" (2003). Both studies claim that the initial project of creating such a framework was later abandoned and the subject matter of their work was refined to provide new methodologies for the subject area; as opposed to an entirely new framework of principles. Similarly, this PhD research had the initial aim to explore and create a new framework of principles of typography for the screen. The aim of identifying a set of universal rules (whether strictly created for the screen or agile enough in order to be transferred to any typographical context) was soon recognized as an immense task for the scope of this thesis. Hence, my research questions and aims were redefined, refined and modified after the data of the first group of workshops ("The Typeface Project") was collected and evaluated. Instead, my research has been driven by the aim to examine the different ways that portable technology has impacted typographic communication and how this is being translated and understood by readers/users and designers, alike.

Much of the research dealing with letterform and typographic communication in screen based technology focuses on research problems relating to legibility and readability, with readability largely being defined as a problem of layout. Some relatively recent PhD research in this area includes: Sofie Beier's "Typeface Legibility: Towards defining Familiarity" (2009) which examines how familiarity affects the legibility of text; Eric M. Weisenmiller's "A Study on the Readability of On-Screen Text" (1999) a study which investigated the readability of fonts on screen through reading rate and comprehension; Scott B. Chandler's "Legibility and Comprehension of On-Screen Type" (2001) is a study that tested the legibility of independent typographic variables against comprehension and reading speed. Legibility studies for screen based technology tend to run into problems and limitations which can obstruct research results. Evaluations of legibility studies from a number of different writers have received critical evaluation. Theorist Michael Macdonald-Ross and designer Rob Waller (1975) amongst others, have pointed out that it is nearly impossible to isolate and study one particular variable since,

typographic variables always interact.[17] Furthermore, they claim that in these types of studies it is not easy for the researcher to judge whether other variables might have influenced their findings. From my own experience with this practice-led research there are several other limitations to legibility studies. This includes many of the studies mentioned; these studies took place before portable technology and therefore take little consideration of the numerous capabilities, for example: multimodal properties, of screen based text. Many of these studies take the activity of reading as a simple or straightforward function which can be tested through reading rate and comprehension. I take a different view. The thesis proposes that the communication process is complex and that we read in more ways than one; while reading rate may aptly examine recognition of patterns and therefore legibility, comprehension is a far more complex issue. Therefore, there is a genuine need for adequate differentiation between the two terms. Readability as comprehension engages a complex array of perceptual and cognitive processes for every reader. However, it is also dependent on factors that a researcher cannot account for or study. Since, it involves the aptitude of the specific reader, decontextualized language and prior knowledge, terminological constraints specific to that reader, being acquainted or unacquainted with cultural or socially specific understandings.

READING

The activity of reading involves a complex process of decoding and recoding; perception is not simply a matter of equating "seeing" with "comprehension". Rather, comprehension involves recognition, reflection and reconstructing meaning. There is a growing body of literature deriving from different disciplines and perspectives, as well as artistic practices that I discuss in more depth in *Chapter: 3,* that examine virtual typography and the task of determining its unique characteristics and properties. Barbara Brownie's study "Fluid Characters in Temporal Typography" (2011) deals with *kinetic typography* as a hybrid form deriving from two separate disciplines: digital animation and typography. She claims that it is typical to find that studies in typography "take for granted the fixed identity of the printed sign, whilst digital animation frequently features kineticism leading to transformation" (Brownie, 2011: 1). She contends that it is for this reason that studies in typography do not offer adequate exploration of typographic forms that change identity and transform. While, Brownie's work addresses legibility, she does not discuss the issue of readability. Mathias Hilner in *Virtual Typography* (2009) also deals with

[17] This has been reiterated by other critiques of legibility research (Lupton, 2003; Lund, 1995; Siess, 1981).

the subject matter of virtual typography, defining it as "text elements" which "change position in relation to one another" (Hilner, 2009: 2). His work introduces different aspects of virtual typography, often dealing with issues of communication but does not frame his arguments within the context of readability or legibility. Other theorists, notably Jessica Helfand in *Electronic Typography* (1997) consider that one of the primary benefits of temporal typography and its characteristics, is that type has become more expressive. As such, the traditional implications and concerns of the static typographer like, legibility and readability are no longer a concern for the temporal typographer. In contrast, this thesis proposes that even though the traditional understanding of legibility and readability that the static typographer was concerned with, has not remained conceptually intact, as in the context of virtual typography, it remains a concern for determining how typographic communication operates in virtual environments.

Virtual typography is indeed more expressive, as Helfand writes; however, this thesis takes this "expressive" quality of virtual typography as falling under the category of readability. Brownie argues that kinetic typographic forms tend to escape "constancy of meaning" and "appear to transform between linguistic and pictorial poles" (Brownie, 2011: 1). Mathias Hilner equates the lack of fixity in meaning with a "phasing in and out of legibility" and concludes that this property indicates a suspension of meaning (Hilner, 2009: 40). The practice-led research as discussed in *Chapter: 5* will provide an alternative interpretation to Brownies' and Mathias' views. The element of kinesis in virtual typography does escape fixed meanings, but this does not necessarily mean that it suspends meaning. Rather, that it creates the conditions by which a multiplicity of meanings is created. Moreover, what Hilner names "the phasing in and out of legibility" and what Brownie understands as virtual typography's ability to transform "between linguistic and pictorial poles" is what I understand as the interplay between legibility and readability in the reading process within the context of virtual typography and its operations (Brownie, 2011: 1). I will return to these issues in greater depth in *Chapter: 5*. The practice-led research conducted for the purpose of this thesis and the subject matter that it traverses, intersects with that of the writers mentioned.

1.4 Research Questions, Aims & Objectives

The research questions emerged out of my experience as a designer and lecturer in Design in the field of Creative and Digital Arts. Over the course of time that it has taken to complete this

practice-led research, the research questions, aims and objectives took a more focused approach as the research evolved and developed through reflection, evaluation and analysis. The original research question asked whether we need to re-write Stanley Morison's principles of typography (1936) and create a new framework that would more accurately reflect typography's shift from print to screen. A second question that stemmed from the first, revolved around the impact of virtual typography on: the reader, the reading process, the designer and the communication process in particular, the terms legibility and readability as they are defined in the field of typography and design. While the second question remained intact throughout the development of this thesis, the first question has been refined for greater clarity.

The objectives of this practice-led research set out to test Morison's principles of typography in screen based environments by examining the notions of legibility and readability. The second objective was to investigate how virtual typography impacts the reader, the designer and the reading process. The aim was to create an experimental framework and/or new set of principles for screen based typography. However, after evaluating and assessing the outcomes of the first group of workshops ("The Typeface Project") and the findings from the critical review of typographic literature (presented in *Chapter: 2 Contextual Review,*) the initial aims were considered too large in scope for the parameters of this thesis. It is important to note that the outcomes of "The Typeface Project" and the initial line of enquiry pursued at the beginning stages have been invaluable to this practice-led research. This project has acted as a springboard upon which subsequent workshops have been formed, as well as influencing and shaping the later aims and objectives of this thesis. The scope of this research in its later stages focused on portable screen based technology and its effect on typographic communication. That is, how the changing manner in which typography operates is also affecting the concepts of legibility and readability. In what follows I describe the existing aims, objectives and questions that have driven the PhD research.

Main Research Questions:

As a result of the aims and objectives that I discuss below, several key questions have been addressed and pursued throughout this study:

1. How has virtual typography been redefined for portable screen based environments?
2. How has typographic practice reinvented the established terms of typographic communication (regardless of the medium)?

Research Aims:

1. To develop the terms upon which to understand the ways mobile technology, as a medium, has affected and informed our understanding and use of typography in its present form.
2. To examine how virtual typography is impacting the communication process and in particular how it is redefining the notion of readability.

Research Objectives:

1. To define the nature of portable screen based environments, its core properties and how these relate to typographic practice and communication.
2. To outline the nature of virtual typographic communication in the context of portable mediums, by examining the properties, which are particular and unique to its various manifestations.
3. To conduct a comparative study delineating the differences between print and screen based typography, in order to understand how this might be affecting typographic practices and communication. Key components of the shift: the difference between voice and image and the textual and the visual.
4. To conduct a review of present thinking about typographic communication in portable virtual environments and its relation to the notions of readability and legibility.
5. To evaluate how virtual typography is altering the process and patterns of communication (more widely).
6. To provide an examination of the present context of typography: its use in practice, and theoretical understanding of typographic communication.

The initial stages of this practice-led research were crucial to this thesis' evolution and its current objectives and aims. While working on the first group of workshops and prototypes/experiments (See Chapter: 5) I set about pinpointing Morison's framework for typographic legibility and seeing how his principles might operate in a screen based environment. I located a number of Morison's principles scattered throughout *The First Principles of Typography* (1936) and created a table which differentiated between philosophical (or theoretical) principles and principles informed by and for the purposes of design (see *Chapter: 3*).

Morison designates all the principles mentioned throughout his work (and without differentiation) as affecting the legibility of the text. It soon became evident that Morison did not distinguish between terms such as, readability and legibility, or between theoretical and practice based principles. This was a perceived shortcoming in his work that I deemed required a more thorough examination, in order to pinpoint the difference between print and screen based typography as well as, appreciate the full impact that virtual typography has been having on the communication process. The growing interest in screen-based text and typography is evident in the ever-expanding research into and arguments about its function. Screen-based typography and especially kinetic text has developed and gradually evolved from the design of film titles. The relatively recent expansion of material deriving from its encounter with animation, sound, as well as, interactive and immersive art forms, necessitates new theoretical structures upon which to discuss typography in its relation to space, time, and in terms of behavioural, or communicative patterns. The thesis is based on a series of experimental workshops, which focus on virtual typographic forms in portable screen based devices and its effects on communication. My practice-led research both engages with and has been shaped by these debates and discussions. However thus far, studies that address the impact of portable screen technology on typographic practices and the effects that this encounter has had on communication, remain relatively scarce. This research fills an important gap in the available literature on the relationship between portable technology and typographic communication. I will now discuss the methods and methodologies applied to this practice-led research.

1.5 Methods and Methodology

The thesis' practice methodology is based on qualitative research and has been largely conducted through interviews, discussions and questionnaires.[18] The advantage of choosing a qualitative approach over a quantitative one is that it offers a more complete description and analysis of the research topic without limiting its scope to numbers. A qualitative approach was the logical and appropriate choice since, it enabled the theoretical aspects of the research to interact with the practice, and form a reciprocal relationship where the one informed the other. This approach enabled the research to open up and be regenerated at every stage rather than limiting its scope; it allowed and made available to me a number of different avenues that I

[18] Interview Questions transcripts and other relevant material can be found in the Appendix (See pp. 263 – 265) Video Extracts of the Interviews at: www.teraslab.co.uk/phd.

could gradually explore and rethink throughout its development.

The research has taken shape, through a series of workshops that took place in various cities around the world between 2009 and 2014. The workshops have been divided into 3 different, yet interrelated groups which explore different facets of screen based mobile technology's impact on typography and the relationship between readability and legibility (or typographic communication) within this context. The three groups have been divided as follows:

- "The Typeface Project" marks the first stages of the PhD research and includes two workshops that took place at the University of Greenwich, London. I distinguish between the two workshops as Phase: 1 and Phase: 2. For this group of workshops I designed a series of prototypes which acted as experiments into the workings of virtual type and by exploring its differences from print. The methodology used for both of these workshops was a participatory design method; where participants views and the perceived shortcomings of the prototypes and structure of workshops were taken into consideration when it came to creating the second group of workshops and prototypes in Phase:2. The common aim of both these workshops was to devise an experimental study exploring how the new properties of virtual typography impact the reading process. The prototypes were designed to experiment with and comparatively study the differences between screen and print; and how these might affect how we read.

- The "From Delphi to Paris" group includes two workshops, one of which took place in Delphi, Greece and another that took place in Paris, France. This two-part workshop examined the difference between physical and virtual spaces; juxtaposing print with screen typography.

- The "Moving with Type" workshops consist of: 1. "The Wasteland Project" that was conducted at the University of Greenwich, London. This project looked at how the experimental application called *The Wasteland,* created for portable technology, deployed virtual typography and recreated the literary work; it asked how typography in this context was perceived, read and viewed. 2. "The Twitter Workshops" was a series of two workshops that took place in Vancouver and Hong Kong (although a pilot workshop/study was conducted at The University of Greenwich, London it is not included here as it was an early prototype). These two workshops looked at the role of

social media and typographic use within virtual social spaces. It examined how virtual typography partakes in the practice of narrative construction.

The workshops conducted for this practice-led research will be discussed in depth in *Chapter: 5 Practice Methodology*. After considering a number of research methods, the following were applied and will be discussed at length in *Chapter: 4 Research Methods*: Participatory Design, Schön's "problem-setting" technique, "The theory of Affordances" and Edmonds and Candy's Evaluation Method. The individual practice-led research projects and workshops took place in different places and have been documented in various formats, including: video, images, sound recordings, written responses and texts. The practice aspect of this research is presented in the form of a short *documentary video* of approximately 20 minutes and *a series of short videos*. Analytic *extended appendices* of the practice-led research workshops can also be found online at: **www.teraslab.co.uk/phd**

1.6 The Role of Practice

The practice conducted for this PhD study can be primarily described as *practice-led research* as defined by Hazel Smith and Roger Dean in *Practice-Led Research* (2009). The writers do not consider practice-led research and research-led practice as two separate processes but, "as interwoven in an iterative cycle web" (Smith and Dean, 2009: 2). Rather, they develop their argument based on the differentiation of practice-led and practice-based research. They argue that practice-led research can be defined as a study which has emerged from academic research that can lead to creative practice. In this thesis, research has informed practice and the practice has informed the research. It is for this reason that the result and process of this PhD thesis can predominantly be described as practice-led.

The difference between practice-based research and practice-led research has been discussed and disputed by numerous writers. According to Candy, a study that falls under the category of practice-led research is one where new knowledge is acquired by means of practice and the outcomes of the practice. In contrast, a practice-led study concerns research related to practice while, the outcomes of that research leads to new knowledge which has an operational function

for practice (Candy, 2006).[19] Practice-based research therefore, contends that the artefact produced is the basis for the contribution of knowledge to research. While a number of practice artefacts (the Prototypes in "The Typeface Project" especially) were generated for the purposes of this research, the knowledge gained from them was in the making of and in the retrospective reflection, and evaluation of the artefact that has created a valuable contribution for this thesis. The artefact itself, was not the source of contribution to knowledge. This is the reason for my adoption of practice-led research (as opposed to practice-based research) as this term tends to describe the form of research I have conducted more accurately. This means that this research is primarily concerned with the nature of creative practices and the outcomes that lead to new knowledge. I have therefore concluded that my research falls under the category of practice-led research.

1.7 Overview of the thesis

Chapter: 1 Introduction defines the terms, boundaries and scope of this doctoral research. In this chapter I have addressed what typographic communication means and how I understand and/or use various key terms throughout this thesis. This chapter provides an account of the subject area that is relevant to the issues concerned and has provided an overview of the research questions, aims and objectives. It has addressed the development of this practice-led research and has explained the need for it, its contribution and thereby the gap in knowledge that it proposes to fill.

The following chapter *Chapter: 2 Contextual Review* establishes the theoretical framework of the field of typography and provides context to this study. In this chapter I discuss the most significant developments in typography from Gutenberg onward, from the perspective of both theory and practice.

Chapter: 3 21st Century Typography Redefining Communication undertakes the task of situating the practice-led research within a current theoretical framework that gives context to *Chapter: 5 Practice Methodology*. In short, Chapter: 3 aims to provide the theoretical context that has motivated and influenced the research. It provides an account of Morison's theoretical and

[19] The two terms practice-based and practice-led are not as clear cut as the above definitions might suggest; there are different definitions, interpretations and contentions about the difference between the two terms that can lead to confusion.

practical guidelines for creating legible type for print based technology. Here, I will discuss the part that Morison's work has played and how it was used in the early stages of the research and in particular, "The Typeface Project". Chapter 3 takes up the issue of differentiating between the notions of readability and legibility, exploring the different facets of the terms and how they are understood and used in this research. Finally, this chapter discusses new projects, which deal with experimental typography and showcase the capabilities of virtual typography. These projects are used as a point of departure for discussing my own work and research.

Chapter: 4 Research Methods is a detailed theoretical description of the research methods that have been employed in the practice methodology. These include: Participatory Design, The Problem-Setting Technique, The Theory of Affordances and Edmonds and Candy's Evaluation Method. To be more specific, the general methodological framework used has been Edmonds and Candy's Evaluation Method, while the other methods mentioned have been used selectively according to the needs of specific workshops. This chapter provides the theoretical background to these methods, while *Chapter: 5* illustrates how these methods were put into practice in my own research.

Chapter: 5 Practice Methodology explains in detail the practice-led research conducted for this thesis. I provide an account for each of the three groups of workshops which, have been named: "The Typeface Project", "From Delphi to Paris" and "Moving with Type". "The Typeface Project" group consists of two workshops which I have distinguished as Phase: 1 and Phase: 2; Phase: 2 being an extension of Phase: 1. I designed a set of prototypes for both workshops that acted as experiments, which tested the process of reading in the context of screen based environments. The main method employed for this group of workshops was a participatory design methodology. Participatory design was implemented by involving the participants in the design of the prototypes. Their evaluations of the workshop experiments and their perceived shortcomings, which were voiced as part of a discussion during the workshop, were used to modify and design the second set of prototype/experiments for the Phase: 2 workshop. The "affordance technique" was used to understand whether the design of the prototypes was intuitive to the user/reader participants and therefore, tested tacit knowledge. The outcomes of the workshops were analysed and evaluated and the findings were then used to inform the second group of workshops, which I have named "From Delphi to Paris".

The two-part workshop named "From Delphi to Paris" investigated typographic space in a comparative study; it explores the two different environments that typography currently exists in: physical space and virtual space. Once again, I applied a participatory design methodology where participants were crucial to the development of the workshop design and its outcomes. The reason for conducting the workshops in two different locations was to develop Schön's method: "problem-setting technique". The third group of workshops named "Moving with Type" examined virtual typography exclusively within the space of portable technology and includes the following workshops: "The Wasteland Project" and "The Twitter Workshops". I used a participatory design method for "The Twitter Workshops". While "the affordance technique" looked to examine tacit knowledge with regard to portable devices and was applied to "The Wasteland Project". Edmonds and Candy's Evaluation Method has been applied throughout this practice-led research. Each workshop and each group of workshops underwent a process of evaluation and analysis that informed the subsequent workshop or group of workshops.

Chapter 2

Contextual Review

2.1 Contextual Review

In the area of screen based design and typography the term *contextual review*, is preferred to the term *literature review* because it aims to review both, theoretical and practical questions of typographic design and contextualise the integration of both theory *and* practice. This chapter aims to draw together not only theoretical material from the disciplines of art and design literature but also, commercial and promotional practice based conceptual themes and the contextualisation of the ideas related to those themes. The purpose of the contextual review therefore, will be to provide less of a static history, or even a snapshot of culture. It aims to bring together the spheres of history, culture and economics in an overview of typography that illustrates and considers the impact that these realms have had on the theory and practice of typography. Overall, this chapter will include a review of contemporary critical pedagogical approaches, where screen based typography is a substantive focus and include a review of practitioner literature and methodologies highlighting the various contemporary applications in practice-led research, including: sonic arts; visual installations; kinetic typography in digital arts; and dynamic type. The contextual review will then analyse and assess the texts in this section in accordance with and guided by this thesis' central argument, in order to situate the practice and theorisation of the projects that comprise this research, as well as its findings.

The chapter is further divided into subsections and considers a number of historical and contemporary sources from an interdisciplinary perspective, identifying seminal theories and practices that have contributed to the development of typography in a synthesised review. Section 2.2 introduces typography through terminological distinctions and explores definitions through various practitioner as well as, theoretical approaches. Section 2.3 explores the printing foundations of typographic practice, in particular between the 15th and 19th centuries. At these early stages of typographic development, typography is inherently tied to the printing technology that enabled its existence. In its inception, typography was exclusively born out of practice and devoid of theory, yet as its history shows it is precisely printing technology that enabled its discursive analysis and theorisation to emerge, as well as allowing typography to finally disentangle itself from printing and a rise as a distinct field of practice and theory. Section 2.4 traces the first revival of typographic development in the artistic movements of the twentieth century. Seminal theoretical work that has influenced the understanding of typographic experimentation in these art practices, namely the theory of deconstruction is distinguished as an important contribution that has enriched our understanding of the field. Subsequently, section

2.5 discusses how reading and readability are gradually impacted, as a result of the transition from (book) print type, towards screen-based type. This part of the contextual review situates the issues and questions raised in the previous section within the context of current typographic practices. It also attempts to locate the changes prompted by the shift from print to screen within the context of formative discursive perspectives, past and present. The transition from print to screen can be situated within the context and notions of word and image; whereas print necessitates the separation between word and image, screen-based type impose their gradual fusion. This issue is investigated in subsequent sections. Section 2.6 explores kinetic typography from its cinematic beginnings in film titles, through to software developments that digitised type and shaped it in its current form. Section 2.7 focuses on pixilation as that which characteristically defines screen-based kinetic type; typography here, acquires a dynamic form that fuses text and image in ways that were previously non-existent. Section 2.8 investigates the effects of the internet and its various contributions to typographic development; from software, to interactive approaches that have allowed design features to be passed on to viewers.

2.2 Type Practice and Development

The definition of typography varies from writer to writer. Typically, typography refers to material that is printed, published, reproduced, or broadcast, and in its broadest sense: all words, letters and symbols (including numerals) written in conjunction with the earliest forms of drawings (naturalistic images) can be called typography. From this perspective, typography has existed for as long as the written word. Simply put, typography is concerned with the art and technique of structuring and arranging type in order to create visual language (or, the written word); either, for the purposes of legibility and/or readability, or aesthetics. Type and graphic designer Andrea Tinnes, defines type as: "the visual representation of language [that] has a strong impact on both how ideas are presented and how information is conveyed" (Tinnes, 2006). The root of the word typography arrives from the Greek *typos*, "form" or, "impression" and *graphein* "to write". It's origin as practice can be traced back to the very first punches used to create currency and produce seals that inevitably tied the term to *printing*. As we shall see, the practice of typography flourished alongside the invention and evolution of the printing press. In the early twentieth century and in particular in the aftermath of the First World War, typography undergoes what Robin Kinross calls the "the reform of the printing movement" and experiences a first stage of revival (Kinross, 2004: 64). In tracing typographic history we find that attitudes toward typography from Modernism onward, and this is particular visible in the

art movements that defined this era (see later), created the right circumstances for the cultivation of typographic practices and for design to prosper. The definitions and theoretical discourses that have attempted to view typography in its full development, scope, and rich history, have similarly thrived alongside this continually evolving field of study.

Definitions therefore, vary depending on different approaches, uses and contexts, since different theoreticians and practitioners identify the term in relation to their field of interest and/or study. For instance, contemporary artist, Yiannis Stavrou defines typography from an artist's perspective: "Typography is the art and technique of composing printed materials from type" (Stavrou, 2012).[20] The twentieth century also brought about the philosophical movement that has become known as "the linguistic turn". The focus on linguistic theory, as well as textual and literary theory in contemporary philosophy, created a complex post-structural understanding of how we view and engage with language in relation to typography. This is exemplified in Swiss typographer and designer Karl Gerstner, who maintains that whereas, "speech proceeds in time […] writing proceeds in space", illustrating that typography exists as a positive form (through its elements), in the spaces between negative void (or, white space) "upon which the elements are arranged" and unified in visual compensation (Gerstner cited in Meggs, 2005: 56). The writers of *Typographic Design, Form and Communication* go on to say that, "[…] typographic space is the rhythmic and dimensional field in which typographic communication exists" (Meggs 2002:56). Therefore, typography here is defined in terms of communication, although it does so through elements of abstraction and complex philosophical thought, which I will come back to when discussing Jacques Derrida and Ferdinand de Saussure. It is significant that an important element in typography is this multifaceted issue of presenting information in various forms, or even suggestive forms. If typography is an instrument of communication, or a tool for transmitting and presenting messages, it is because it balances issues of legibility on the one hand, and aesthetics / readability on the other hand.

The communicational aspect of typography and in particular, its correlation with aspects of legibility is an issue that is repeatedly emphasised in various studies and especially in the work of Stanley Morrison. He refers to *typographic aid* as a way of maximising the readers' understanding of the text and emphasises the progress and development of typographic design to this end. Morrison's view in his 1936 book *The First Principles of Typography* differs immensely from the

[20] Yiannis Stavrou is a contemporary designer whose work has been influenced by typographic use and design. His work explores variations of typographic elements and their relationship to physical and virtual environments, focusing on the notion of subjectivity and the "other" in typography.

perception of typographic design as it develops in the years after the advent of the personal computer. Yet, the current frame of reference remains tied to the one advocated by Morrison and is therefore still dependent on a print derived framework that continues to reflect typography's print origin, but lacks the complexity to respond to the current challenges that digital typography faces today. Terms that have originated from printing and punch-cutting activities since the emergence of Gutenberg's printing method (including: x-height, counter, baseline, kerning, leading, tracking, and points) are frequently being used to describe screen-based typography. As Wolfang Weingart points out: "new technology has little to do with classical type elements" or typefaces and claims that to "use such alphabets and typefaces on a computer screen is decadent in today's world" (Weingart cited in Long 2005:167-9). While print and screen based type may be based on similar (or even the same) design there are vital differences and variations between the two in the design process and its reception. The digital medium has presented new challenges to the designer (previously unknown to print typography) and undoubtedly, the reader of printed material experiences type differently from the digital user of screen-based typography. The transformation in how we interact, engage and consume typography can be perceived in typographic (practice and design) history and will be addressed in the following sections of this chapter.

The following section will review the history of typography from Gutenberg onward. It will focus on the development of the technological field from the late 19th century to the beginning of the 20th and 21st centuries; providing key information that will contextualise this research.[21] Due to rapid technological developments in the last century, innovative communication approaches changed to a great extent. Sherry Turkle demonstrates this change through the theorisation of HCI and notions like "interaction". She claims, that the development of new technology (i.e. the internet) did not simply change the ways with which we engage with technology, but also with each other (Turkle, 2011). The areas examined in this chapter include screen-based graphics and screen-based typographic forms, digital media and arts, as well as computational technologies, within the context of their relationship to interaction, mobile

[21] Although this thesis does not deal with the political aspects of typographic and technological development, it is important to note that the progression of the field should neither be viewed as linear, nor as a straightforward process that finds no resistance. A noteworthy contribution to these political and social aspects of historical development is Gregory Sporton's Digital Creativity: Something for Nothing (2015). His book brings to the forefront the naïve assumption that technological change is always welcomed and never intervened or opposed by power and authority. He states that, "The assumptions of benign environments for such technological change forget that resistance from all corners is not only possible but likely. From the Catholic Church's Proscribed List to the Chinese government's Great Firewall, most authorities reserve the right to intervene in the pace of change […] (Sporton, 2015: 18).

(portable) technology and the World Wide Web. I will conclude with an outline of the main contributions and contributors in this area of research.[22]

2.3 Typography and Technology: 15th-19th Century

The first major technological change in typography occurred in the Western world with the establishment of the movable type printing press, created by Johannes Gutenberg in the middle of the 15th century. Robin Dodd demonstrates in, *From Gutenberg to OpenType* (2006) how the histories of typography and the printing press coalesce. The colossal technological change prompted by Gutenberg's introduction of mechanical movable type printing in Europe, had a grave impact on type design, but also on culture and society more widely. Dodd's vivid account depicts the development of type and type design from its inception to the present day. This includes, the development of the alphabet in various ancient civilizations and the Chinese conception of the art of papermaking, which was introduced to Europe in the 12th century through the Arabs who had settled in Italy and had adopted and implemented the art from the Far East. The first paper mill in Europe was built in 1270 CE in Fabriano Italy however, Europeans would soon after create their own papermaking methods. Throughout the Middle Ages books were created by hand, one character at a time using quill and reed pens. Manuscripts produced during this time were primarily the work of monks; in some monasteries it was not unusual for monks to have their own desk in a large room named a *scriptorium*. According to Dodd, "You might think of the scriptorium as a modern print shop or, ad agency. Each person had a specific job or responsibility: lay out the book, ink the pages, proofread to ensure an error-free result, colour the illustrations and add gold leaf to special pages" (Dodd, 2006: 13). Clearly, reproducing text and the printing process at large during this time was a long and arduous process; it was the reserve of the church, and the privilege of the wealthy, since scholarly texts were predominantly preserved in Latin (Latin being the only written language across Western Europe at the time) and was not widely spoken, or understood by the average person.

With the development of Gutenberg's metal type printing press in Europe, mass production and the spread of printed books became more commonplace. This had the effect of a sharp increase

[22] Both, Morison's Principles on type legibility and Turkle's insights into how interaction and connectivity have fundamentally created changes in the way we communicate will be dealt with in more detail in the following chapter.

in literacy that broke the monopoly of the literate elite (the church and the wealthy) in education and also allowed for a wider circulation of information and ideas than ever before. The concept of printing, as already mentioned, was not conceived by Gutenberg however, he was the first to develop a process for a mass-producing moveable type; the use of (viscous) oil based ink for the printing of books; adjustable moulds; mechanical movable type; a wooden printing press (adapted from wine pressing) similar to the agrarian screw presses of his time; and the use of paper for printing. His introduction of mechanical movable type to Europe was a combination of distinct technologies that were employed for the creation of a mechanised process that allowed for books to be printed on a mass scale. He therefore, introduced to Europe an era where mass communication was permitted to thrive and he permanently changed the structure of society and the ways in which it functioned. Gutenberg's printing press has been viewed as the catalyst (and perhaps an early predecessor) for the explosion of information and its circulation that we are experiencing today. Peter L. Shillingsburg in *From Gutenberg to Google: Electronic Representations of Literary Texts* maintains that, "What Gutenberg did was to democratise books and other text" in a similar manner to how "the World Wide Web, in the 21st Century […] democratises information" (Shillingsburg, 2014: 218). Hence, Gutenberg's printing press had wider social and cultural affects. Although one of Gutenberg's major works was the Gutenberg Bible, also known as the 42-line Bible, his creation of movable type threatened the status of the political and religious authorities of his time as well as, accelerating the spread of European vernacular languages to the detriment of Latin (as lingua franca). His work disturbed the status quo by allowing for a democratisation of knowledge through the wider circulation of books (and information) and was responsible for the increase of literacy throughout Western Europe. In 1504, Ivo Wittig (a professor at Mayence University) names Gutenberg for the first time as the inventor of typography. With these new technological advances in printing, innovative art and design processes began to emerge.

The technological revolution that Europe was experiencing from the fifteenth century onward, not only created cutting edge technology but also, laid out the foundations for the evolution of typography to come into fruition through Guttenberg's letterpress printing method. In fact, letterpress printing was the standard method of printing until the late nineteenth century and remained in use until the latter half of the twentieth century (despite, the invention of lithography in the eighteenth century and offset printing that came into being in 1903) and has seen a limited revival today. As technological developments were changing rapidly, so were the advances in typographic design and its ever expanding uses. It is significant that the relationship

between printing and typography is not only defined by a common history, but also the correlation between the two histories is tied to such an extent that the two terms have been used interchangeably and only latently distinguished as two separate entities. Robin Kinross in *Modern Typography* [1998] (2008) explains that it was only until the editorial function was split from the workshop (that would become the publisher's office) that printing was properly distinguished from typography. Although Joseph Moxon had made an early differentiation between printing and typography in the late seventeenth century in *Mechanick Exercises (*1683), it had not been theorised and explained in distinct terms until much later. For Robin Kinross, "the difference is between inarticulate practice with the materials of production ('printing'), and conscious shaping of the product, by instruction ('typography')" (Kinross: 2008: 15). Interestingly, Kinross illustrates that it is precisely this distinction that simultaneously (and perhaps paradoxically) functions to articulate and explain the correlation between typography and printing. He claims that the differentiation (mentioned above), illustrates that modern typography is a duplication of sense. That is, when printing became typography it is also when printing became modern, in the sense that it was typography that was enmeshed into the printing process (swallowed up in the enthusiasm over this new technology). It was not until printing became more commonplace that typography took centre stage and the roles were reversed: printing became typography. If Kinross views modern typography as a duplication of sense, it is because he considers printing as a notion, or an idea (as opposed to a technology, or medium) and more precisely as a form of self-referential meta-theory; printing enables the spread of knowledge about its own self. This includes descriptions of its own practices, classifications of its materials and processes. Printing enabled the preservation of knowledge about itself, in order to establish a record of its own history while also, enabling the progress of its function and operations. Hence, though it is important to keep this distinction between printing and typography in mind, it is equally notable that the one has informed the other.

The innovations in technology created from Gutenberg onward, provided the platform upon which contemporary printing technologies are built and has affected current print media, the moving image, sound and functionality, often leading to cross-platform dialogues. Manfred Breede, in *The Brave New World of Publishing* signifies the importance of present day computational technologies as a development of the printing method (Breede 2008). The increasing demand to reach rapidly expanding urban populations with a variety of visual and mass communication approaches has led to finer and more economical products. During the four hundred and fifty years that followed Gutenberg's technological revolution, typographic

technology has changed enormously. Approaches to typography and our understandings of it have changed considerably as a result of the technological developments in innovative interconnection of type. New technology has also affected issues of readability; as new forms (here, I am referring equally to new approaches as well as new mediums) of interactive design emerge, typography has transformed swiftly in the span of a few decades. The transition from physical interaction (moving type on letterpress to create a composition) to screen interaction, necessitates a reconsideration of how we view readability and/or legibility with regards to typography in the twenty-first century.[23]

In the next section, I discuss some of the ways in which typography changes in the early twentieth century; in particular, in its interaction with other forms of technology and its encounter with art and philosophy. I will consider the ways in which typography has been modified to meet the demands of modern times; and its transformation through the social, cultural and technological developments of the last century. I consider the impact that typography *itself*, has had on society, culture and technology and my work; a point emphasised in typography's discursive theorisation in contemporary philosophical thought and its noteworthy interaction and exchange with the world of art.

2.4 Twentieth Century: Typography and Deconstruction

Since the beginning of the twentieth century, there have been numerous movements concerned with the relationship between typography and the visual, prompting (and fusing) typographic experimentation with visual practices. When exploring the origins of twentieth century typography, Italian artist Filippo Tommaso Marinetti, founder of the Futurist movement surfaces as one of the principal sources in the development of this modern aesthetic. Marinetti is perhaps, best known as the author of the first *Technical Manifesto of Futurist Literature* (1912), which sketches out a literary formula that gave rise to, "a revolution in graphic presentation and visual perception" (Cundy, 1981: 349). Futurism was a major influence on other art movements that emerged during this time, including: Dadaism, Constructivism, and de Stijl. The last few decades of the nineteenth century witnessed vast changes in the physical generation of typography, which until then had been affected by letterpress and had remained relatively static for nearly 450 years. The shift I am referring to is from typesetting done by

[23] The distinction between readability and legibility will be addressed at length in the following chapter.

hand, to typesetting done by machine. This event ensued with the invention of the lithograph machine that set lines of type (invented in the United States by Mergenthaler) and the invention of the Monotypecaster in 1889 by British Tolbert Lanston. The Monotypecaster represented the quintessential principles appropriated by the Futurist movement: technology, speed, efficiency and noise all of which, was often used as a metaphor in their work. The Futurists explored every medium of art, including: poetry, sculpture, painting, theatre, music, architecture and (even) gastronomy.[24]

In 1900, Marinetti keen to promote his career as a poet went on tour renouncing the Symbolist movement and poetry of: Baudelaire, Mallarmé, Rimbaud and Verlaine. Nevertheless, his poetry retains traces of the Symbolist tradition and in particular, its attachment to the expressiveness of the figurative *form*, as well as its fascination and disposition towards synaesthesia. In fact, Marinetti's typographic doctrine can be traced back to Stéphane Mallarmés' poem *Un Coup de dés* (1897), which is often characterised as the beginning of modern typography. Mallarmés' experimentation with poetic form consisted of using type to create figurative and emotive patterns that corresponded to his poetry, illustrating the tension between traditional form and radical content.[25] Although Marinetti rejected certain elements of Symbolist poetry (the recherché language, private hermeticism and metaphysical themes of Mallarmé in particular) it is clear that his work was indebted to this tradition by retaining a persistent, and common pursuit to interrogate what he calls, "the mechanisms of signification" (Marinetti cited in Drucker, 1994: 109). However, despite the Symbolist poets' relatively earlier work on typography, it was not until Marinetti that typography gains currency *as a visual element in its own right*. As David Cundy points out in, *Marinetti and Italian Futurist Typography*, "The utilization of typography as a visual element in its own right was first realised by Marinetti whose parole in libertà or 'words in freedom' reflected a reaction to both form and content in Symbolist poetry (Cundy, 1981: 349). Marinetti and the Symbolist poets influenced a generation of artists and seminal movements that materialised throughout the twentieth century and explored typography as an artistic process.

[24] The budding movement of Futurism (its artists, writers and theoreticians) experimented with typography in furtherance of reinventing life and illustrating the ways with which both, typography and life were being altered by new technologies. In many ways, they depicted a new way of life for modern man: man and machine working as one. During the early stages of Futurism, its members included: Balla, Carra, Severini, Boccioni, and Russolo.

[25] Mallarme's experimentation with the tension between form and content illustrates that the truth content of art, consists in negating ideological and commercial meaning on a formal level. The use of forms that are alien to meaning within this context are not meaningless because they gain their content through the negation of meaning. For further reading on Symbolist poetry, see: Eysteinsson and Liska (2007) Modernism Volume 1 pp: 144- 146.

Apollinaire, influenced by both Mallarmé and Marinetti creates what he calls *Ideograms* (1914) and *Calligrammes* (1918) examining the visual dimensions of writing through figurative poetry, which employed typeset words to imitate shapes. Apollinaire incorporated words, letters and phrases into complex visual collages, thereby creating, adding and deriving meaning through the visual spatial arrangement as well as through the words themselves.

In essence, Marinetti's work exposes a reaction to what he considered to be the *typographic harmony* of the page. This harmony highlights issues of legibility and as we shall see in the following chapter, is revived rather than opposed to in Morison's *First Principles of Typography* (1936) several decades later. In contrast, Marinetti's typographic revolution consists of bending the rules and moving away from focusing on the legibility of the text and instead explores typography from the perspective of art. He experiments with colours and fonts, with words and space, and turns words into shapes and images. This exploration of form and content provided him with the ability to augment sensation through "the expressive force of words" (Cundy, 1981: 349). Marinetti's *Words-in-Freedom* (1912) was a poetic art form first and only secondarily a theory and technique. It combines poetic elements with features that are normally characteristic of prose; it freely deploys sound, principally using onomatopoeia (a word that phonetically imitates or suggests the sound that it describes, or refers to) and uses unconventional fonts and characters as well as other typographic effects.[26] Additionally, he used simplified syntax (utilizing punctuation sparingly and/or in unorthodox ways) and often swiftly shifted from one idea or image to another. In other words, Marinetti explored typography through the notion of the *visual* and through the lens of artistic and aesthetic form. His work displays a fascination with and a move towards various visual channels where typography could be examined through artistic practices; he experiments with and discusses, both the theatre and the then novel and emerging medium of cinema. Whereas throughout the fifteenth and nineteenth centuries, Gutenberg revolutionised the text and created a space for multiple voices to be heard and circulated; in the twentieth century onward the emphasis shifts from text to image and there is greater emphasis on the visual (in technology, art and culture) than ever before.

Marinetti uses a variety of visual elements in his typographic works and each is based on a different hypothesis about the character and traits of visual images. Johanna Drucker explores these assumptions in, *The Visible World: Experimental Typography and Modern Art, 1909-1923* (1994) and their relation to typography in Marinetti's work. First, Marinetti employs graphic markings

[26] See in: Marinetti and Flint Selected Writings (1972).

in a form that resembles synesthetic expression (whether through sound, action/movement and other effects) in order to give the impression that its form was immediately and unambiguously comprehendible. Second, he uses a pictorial approach towards mapping the relations of linguistic elements within his work. In other words, he structures particular poetic texts in accordance with visual conventions (as opposed to linguistic conventions) for the representation of space. This particular technique gave the impression that it had an analogous relation to vision, when in fact it was conventional and semiotically coded. Third, he introduces mathematical and diacritical marks within arrangements of alphabetic symbols in order to attack conventional syntax and provide linguistic forms with a mechanised look. By highlighting the subversion of conventional syntactic activity, Marinetti develops a discourse that also explores the relationship between the visual and the verbal (or image and sound).

Drucker claims that, "This infiltration of the symbolic order of language with visual symbols of another (visual) order has a subtly destructive effect. This latter gesture was also intimately intertwined with his project for destruction of the traditional (or, at least romantic) author" (Drucker, 1994: 107). To explain a little further, what the destruction of the author (or, romantic view of the author) refers to, is the activity of removing the author as an authority from the text. Instead, Marinetti moves towards the idea that the mechanisms of signification or of signs, are autonomous and operate as such. This idea, is recognised as an important element to poststructuralist theorisations of language and linguistic philosophy. The discursive analysis of the mechanisms of signification has been investigated at length by linguists and philosophers alike (see below). Marinetti desired to achieve spatial and temporal extension, in order to enable the simultaneous activity of both communication and sensation to take place outside any notion of authorial intent.

In 1916, "The Futurist Cinema" manifesto was already foretelling the eventual downfall of the book (in its material form) and experimenting with effects that would be fully realised in digital poetry. The writers of the manifesto claim that,

> The book, the most traditional means of preserving and communicating thought, has been for a long time destined to disappear, just like cathedrals, walled battlement, museums, and the ideal of pacificism… The Futurist Cinema (interactive multimedia) will ... collaborate in a general renewal, substituting for the magazine–always pedantic– for the drama–always stale–, and killing the book–always tedious and oppressive. (Marinetti et al., cited in Lanham, 1993: 33)

According to Richard Lanham in *The Electronic Word*, the Futurists viewed the book "as static, inelastically linear, sluggish; the new cinematographic form as dynamic, interactive, simultaneously swift. This war on the book chose as its immediate target typographical convention[…]" (Lanham, 1993: 33). As Lanham points out, typographic convention found itself at the firing line of the Futurists "war on the book" this consisted of deconstructing the text and striking against convention. In fact, as we shall see deconstruction becomes a means of both experimentation and critique across many artistic and philosophical movements that gained reverence in the twentieth century. Many of the issues that concerned Marinetti and the Futurists can be viewed within the context of the digitized world we live in today. The image of speed that is deeply associated with the Futurists for instance, can be observed within the context of our increasingly fast paced language. The experience of (rapid) digitised communication and virtual spaces that we have become accustomed to were inaccessible to Marinetti and within the framework of old fashioned modes of media. However, through the use of various techniques and the medium of art he was able to anticipate and create what Anna Katharina Schaffner in *From Concrete to Digital: The Re-conceptualisation of Poetic Space* (2006) calls a *prophetic vision* and Johanna Drucker, a sensibility that is almost *proto-electronic and cybernetic*.[27] The typographical revolution currently taking place, which the renowned app creator *Touchpress* names a "Typographic Renaissance" takes an analogous approach and attitude to type as Futurism did for the early twentieth century.[28] There is an attempt at present, to redefine the text by reconsidering how the digital revolution has changed the way we view texts and books in light of these new technologies. A broader development and aim of these technologies is the aspect of enhancing the reading experience for the twenty-first century reader.

These first attempts to visualise the typographic experience and more particularly, to consider *visual type as an image* enabled the typographic sign to be viewed perhaps, for the first time as having the ability to exist autonomously in space. From this perspective, the typographic sign acquired signification (or meaning) by being part of a visual signifier. These ideas are taken up in

[27] Schaffner argues: "the first to have aimed conceptually for the effects which would be fully realised in digital poetry [were] the Italian Futurists. In 1916 already, F.T Marinetti and his comrades in arms foretold the downfall of the book in their manifesto 'The Futurist Cinema' (Schaffner, 2006: 17). And Drucker maintains that, "Marinetti's transformation of syntax moves towards effects of telegraphic language, condensed, mathematical, and quantifiable. Marinetti's sensibility is nearly proto-electronic and cybernetic in orientation, informed by a sense that time and space were both malleable according to the manipulations representable through linguistic transformations" (Drucker, 1994: 109).

[28] Touchpress is an acclaimed app developer and publisher based in London. It specializes in creating in-depth apps on educational subjects. Touchpress was described by David Ng in Forbes (2012) as creating "living books". Their apps feature many interactive elements and seek to engage readers with a deeper understanding of the subject.

the latter half of the twenty-first century, in what has become known as the *linguistic turn* in recent Continental philosophy. Since Plato, the differentiation between speech and writing has dominated theoretical discourse in their respective relation to the sign. This demarcation is exemplified in *On Interpretation* by Aristotle. He writes:

> Spoken words are the symbols of mental experience and written words are the symbols of spoken words. Just as all men have not the same writing, so all men have not the same speech sounds, but the mental experiences, which these directly symbolize, are the same for all, as also are those things of which our experiences are the images (Aristotle, 2005: 198).

The idea that speech precedes writing is a notion that begins in antiquity and guides linguistic theory all the way through to Ferdinand de Saussure, considered as founder of Structuralist linguistics. The guiding principle here, views writing as a mere documentation of speech. For Aristotle, much like Plato before him, meaning in writing is considered stable and inflexible in the space that it exists in (and is therefore also connected to truth). Speech on the contrary, is viewed as flexible and unstable since, it is time specific and tied to the speaker. Speech in this context takes precedent over writing, since all writing is considered to derive from speech whether it is spoken or not, i.e. thought. However, it is significant that Aristotle also points out that linguistic meaning, whether written or oral, is socially constructed (acquired from experience) and is therefore specific to the culture and social circumstances from which it derives; it therefore differs from culture to culture. While, *the way* we experience denotation (the meaning) of signs is common to all human beings; that is, we experience these as mental images (representations). Hence, signification and meaning(s) here, is understood in terms of visual representation. These views on writing are the springboard upon which structuralism and post-structuralism in the early and late twenty-first century (respectively) derive from and develop.

Any theoretical propositions relating to the character and status of typography as a visual form of written language, must take into account the development of semiotics and phenomenological philosophical thought. As a discipline, semiotics is concerned with the sign processes of creating meaning and is uniquely placed to discuss seminal typographic phenomena. In the early twenty-first century, the Structural linguist Ferdinand de Saussure's study of signs sets out to investigate the deep structures of language as a sign system.[29] He demonstrates that signs are a union of two equivalent components (although in reality signs are not perceived as such): the signifier (the concept, meaning, or message) and the signified (the

[29] For further reading on Saussure see: Bally, Riedlinger, Saussure and Sechehaye, in Course in General Linguistics (1983).

word, as image or sound). He retains the Aristotelian distinction between speech and writing, however unlike Aristotle, he emphasises language as an arbitrary system and argues that all meaning whether in writing, or speech, is unstable and variable. To explain, for Saussure language is inherently arbitrary because the sign is inhabited by two integrally different parts that have no real connection or relation to each other. Hence, the relationship between the signifier and signified is arbitrary and defined by abstraction that occurs from within the sign itself. During the latter half of the twenty-first century, language and Saussure's study of signs in particular, become a major preoccupation for continental philosophy and inform much of what has been identified as Post-structuralist discourse (which, forms a reaction to the Structuralist linguistic theories of previous decades). Extended research on the relationship between typography and Saussurean semiotics has been substantially influential to the field. In particular, and the notion of deconstruction that Jacques Derrida develops throughout his work in reaction to the semiotics of Saussure.[30]

Jacques Derrida's notion of deconstruction is part of a much larger theoretical movement known as Post-structuralism that came about as a response to Structuralism. According to Rick Poynor, "The deconstructive method seeks to undo both a given order of priorities and the very system of conceptual opposition that makes that order possible" (Poynor, 2003: 46). In *Of Grammatology* (2016) [1967] Derrida rightly points out, that language is a system of differential oppositions (binary opposites). He claims through the idea of a metaphysics of presence that one side of the binary is viewed as positive and present, while the other negative and absent (i.e. light versus dark). This is precisely the idea that Derrida's deconstructive theory attempts to undo. Whereas, philosophical discourse from Plato to Saussure reveals a privileging of speech over writing (through the argument that writing as a mere repetition of speech), Derrida

[30] It is significant to note, that the aforementioned interpretation of Saussure's semiotics is the generally agreed upon and primary understanding of his work. However, in recent years considerable attention has been given to the fact that this may be a misreading of his work. Several factors are attributed to this misreading: First, it is primarily assigned to Derrida and psychoanalyst Jacques Lacan; Second, the many competing translations of Saussure's work that were initially acquired and compiled through his students notebooks; Third, Jean Starobinky's work on Saussure and brings to light Saussure's lesser known work on anagrams and paragrammes etc. On the contrary, new readings of his work assign a phenomenological argument to his theory. They argue that the arbitrariness extends between signs (between words) as well as within signs (interior to the sign itself). In these readings, Saussure views the sign as an image and the notion of the arbitrary sign extends between words and not simply within the sign itself. I will not recreate the full scope of this argument here, as it would require a new and full chapter to do so. However, it is significant to note that the main point of the argument lies in the claim that Saussure's sign operates (as image) through the visual, inasmuch as the linguistic order. For further reading on this issue and in particular how it relates to typography, see Johanna Drucker's The Visible Word (1996).

attempts to overturn this binary. Speech he argues, relies on repetition inasmuch as writing since the living memory from which it draws upon is already a type of writing (a recording of socially constructed and inherited language that has been passed on by our predecessors).

What is particularly interesting and relevant to the field of typography is how deconstruction as discussed by Derrida challenges prevalent held assumptions: First, to privilege writing over speech, arguing that without writing (as a record and recording of knowledge) the world would not exist in its current state (i.e. the furthering of knowledge and language itself would not have been possible). Second, he removes authorial intention and argues (in a similar manner to Marinetti) the autonomy of signification. He discusses the mechanisms of signification to be without authorial intention and claims that the writer/speaker is merely retained as a trace in writing. I will only briefly recount here some of the main features of deconstructive theory, which engender the ideas that had already emerged in avant-garde artistic practices that experimented with typography in the early twentieth century. The concept of deconstruction removes the author (as origin and authority) from the work; the work itself (and language more generally) relies on an automaticity that takes on a life of its own (i.e. meaning is disseminated through the autonomous mechanisms of signification) and neither the author, nor the reader/viewer are responsible for interpretation and the meaning-making processes. The text is therefore, always deconstructed by language itself and meaning is disseminated by the former's mechanisms. The techniques employed in various early twentieth century movements, from Marinetti and the Futurists, to Dadaism (which, I will return) had already employed deconstruction as a technique in typographic experimental practices. These artistic practices that brought experimental typography to the forefront, also prompted the theoretical discussion that enabled Derrida (sixty odd years later) to argue deconstruction as the internal (and unseen) processes of linguistic functioning, as that which operates to break down (visible) structures. The art forms created by the Dadaist movement follow in a similar trajectory concerning the deconstruction of language.

The Dadaist movement followed from Futurism and continued to reinvent the ways type was used.[31] As a philosophy, Dadaism was an anti-art movement that challenged the accepted

[31] Dadaism was an early twentieth century avant-garde and anti-art movement that protested against contemporary culture and the academic values of art. It developed in Switzerland, New York and after the 1920s in Paris; although it grew into an international movement that spread across Europe and North America. The Dadaists formed as a reaction to World War One and consisted of artists who were reacting against reason, logic and the aesthetics of modernism and bourgeois capitalist culture. In

definitions of art (the term anti-art had already been coined by Marcel Duchamp in 1913). The movement was formed by Hugo Ball in 1916 with several other artists who had moved to Zurich to escape the terrors of the First World War. It developed in contradistinction to conventional theories of art that were popular during this time; it rejected bourgeois aesthetics and sensibilities and sought to offend. The notion of anti-art is not simply a reaction to art itself but rather, clashes with the nineteenth century idea of "art for art's sake". The Dadaist movement maintained that art is not an end in itself, but rather that art is an opportunity to portray reality (in truth) and as a critique of the times. The movement was heavily involved with the visual arts and typography more specifically. It gave way to unconventional typographical design; mixing fonts, printing vertically and horizontally on a single sheet, using unorthodox punctuation and letter spacing as well as negative white space, randomly employing symbols and signs throughout their pages and photomontage etc. Dadaism's innovative approach to visual communication played a central role in the development of communication design through typography.

While many aspects of the Dadaist movement's style, technique and aesthetic was adopted from the Futurists, Dadaist publications offered a subversive and multifarious new paradigm for graphic design, typography and for deciphering meaning. Their unconventional uses of typographic design provided a novel framework for deciphering or translating meaning, which attached weight to nonlinearity, independence of textual content and was disruptive through double meaning and play on words. Whereas the Futurists glorified the technological progress of the early twentieth century and viewed the war as liberation, Dadaism emerges as an anti-war movement and considers the brutality of the First World War with its unprecedented loss of life, as resulting from technological advances in weaponry, communication, transport systems etc. that fuelled the war machine. The poet Tristan Tzara had claimed "we're not the beginnings of art, but of disgust" (Tzara cited in William Rubin, 1968: 12) However, they did not simply reject technology, on the contrary Dada artists: "projected technologies destructivism into art and turned it aggressively against the sanctified sphere of bourgeois culture whose representatives, on the whole, welcomed the war in 1914" (Huyssen, 1986: 11). Bourgeois ideology had separated the cultural sphere from industrial and economic reality, which hinged on technology; art was valued for its beautiful appearance and disinterested pleasure and was diametrically

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contrast, these artists gave value to nonsense and irrationality and expressed an anti-bourgeois sentiment in their work. For more information see Hans Richter in Dada: Art and Anti-Art (2016) [1978].

opposed to and separated from the ideals of science and industry that were constituted by reason, maximization of profit and technological growth or progress.

According to Andreas Huyssen in *After the Great Divide: Modernism, Mass culture, Postmodernism,* Dadaism's "radical and disruptive moment" transpires:

> In an attempt to reintegrate art and life, the avant-garde did not of course want to unite the bourgeois concept of reality with the equally bourgeois notion of high, autonomous culture […] On the contrary, by incorporating technology into art, the avant-garde liberated technology from its instrumental aspects and thus undermined both bourgeois notions of technology as progress and art as 'natural,' 'autonomous,' and 'organic' (Huyssen, 1986: 11).

Technology was manifested in art objects, often depicting humans as machines, automatons, puppets or mannequins, as a critique of capitalism's technological instrumentality invading everyday life and the human body itself. In many ways, the vast differences between the Futurists and the later movement of Dadaism are expressed primarily through their opposing ideologies. However, in terms of typographic innovation and experimentation the divergences are much less apparent when taken at face value. The Futurists emphasised the artistic process, while the Dadaists questioned the very notions and ideologies associated with art and the times. Both movements shared the desire for a typographical revolution that altered the cultural art scene and helped pave the way for novel uses and practices in typographic design. They transformed the discipline by disturbing textual convention and employed a deconstructive approach towards the text. Consequentially, they created new ways in which to view visual communication at large; including the deciphering of meaning through visual communication and the notion of reader response. The deconstruction of the text and type as an art form continues today in artists like David Carson (that I discuss further down). Perhaps this is why, Rick Poynor in *No More Rules* (2013) views deconstruction as a style, or a tendency to interrogate convention; he argues that it has become redundant in typographic practices and experimentation. However, deconstruction is not merely a stylistic choice of the artist but a process of reading.

The experimentation exhibited within the artistic endeavours of avant-garde movements in the early twentieth century, find expression in the technologies of today. As early as the mid-twentieth century, typographic experimentation with emerging technology (photography, film etc.) and interdisciplinary approaches to practice and design were gaining momentum. This is reflected in one of the twentieth century's most important art schools and art publications:

Bauhaus (1913-1933). Published by Bauhaus in 1925 and 1927, *Painting, Photography, Film*, written by Moholy-Nagy, synthesised photography with typography through a concept he called a *typophoto;* establishing the beginnings of what was to become a central medium of graphic design.[32] Moholy-Nagy claims: "What is typophoto? Typography is communication composed in type. Photography is the visual presentation of what can be optically apprehended. Typophoto is the visually most exact rendering of communication" (Moholy-Nagy, 1980: 33). Moholy-Nagy views photography as an intervention to the linear dimensional movement of typography that had existed since Gutenberg. Instead of viewing and using typography merely, "as an objective means" he suggests, "incorporating it and the potential effects of its subjective existence creatively into the contents" (Moholy-Nagy, 1980: 34). He maintains that typographic materials *themselves* consist of a stout and highly optical materiality, or tangibility that renders the content of communication *directly* visible, as opposed to intellectual representation, which is indirect and invisible. Moholy-Nagy highlights typography's rigorous optical dimension as an element of visual communication in its own right.

The synthesis and encounter of these two visual mediums of communication, illustrates for him, that it is photography that becomes highly effective when employed as typographical material. The photograph may either appear as an illustration beside the words, or as a form of "phototext" in place of words. Moholy-Nagy regards both, as precise and objective representations; here, subjective, or individual interpretations become redundant. In other words, for Moholy-Nagy photography synthesized with typography is the nearest one can arrive at an objective and precise representation of reality (and therefore truth and the real). He states that, typography in this form and rendering, "is constructed out of optical and associative relationships: into a visual, associative, conceptual, synthetic continuity: into the typophoto as an unambiguous rendering in an optically valid form" (Moholy-Nagy, 1980: 34). The intervention of the photographic process extended typography creatively in new dimensions, in both its use or practice, and theory respectively. Moholy-Nagy's work in this area, moved typography one step closer to its modern form but also, altered (despite his contrasting view) the dynamic features of both reading and the conception of the design process on the page as a space. While

[32] Moholy-Nagy's conception and construction of the "typo-photo" is the beginning of a design feature which is prominent today; a synthesis of typography and photography. By bringing these two mediums together, he argues that he elevates the status of typography to a visual medium in its own right. Moholy-Nagy believed that the combination of the two could produce an objective reality that is beyond that of individual and subjective interpretation. While a director at the New Bauhaus in Chicago, Moholy-Nagy promoted this novel attitude and "put faith in photography as an objective extension of the human eye – even in its distortions, photography would tell the truth. Photography would rescue words from their inherent ambiguity and abstraction, cleansing them with the 'hygiene of the optical'" (Lupton, 2009: 138).

his work appears to anticipate a more dynamic form of reader participation, it seems to me that his views and theoretical discourse, in stark contrast dismiss the role of the reader by arguing that the synthesis within the typophoto offers the possibility of a precise and objective interpretation. He therefore seemingly contradicts himself by making the reader redundant; in contrast, reader participation through the act of reading and meaning-making renders the viewer a more active participant.

Artists from around the world for example, the Russian El Lissitzky, the American Herb Lubalin and Czech Karel Teige, among others, also engaged in the deconstruction of typographic language and its uses, as well as the contravention of syntax, but sought new ways in which to render the viewer/reader a full participant in the artistic act in order to enable further interaction and also to aid communication clarity. Suzanne Delehanty in "Soundings" published in *Sound by Artist* (1990) maintains that from the First World War onward, there is a persistent and sustained interest by designers and typographers alike in exploring the issues and correlation between the visual and the use of type; giving them value as unique signs and visual images. The exploration of typography from the Symbolists to Marinetti, from the Dadaists to Surrealism, reveals a rather counterintuitive understanding of typography and the visual arts. That is, typography's primary elements are bursting with graphic images and the visual arts with letters (or text). Delehanty states that, "The words alone as a pure abstraction, like a musical note, gave birth not only to Kandinsky's poetry and to the mystical incantations of Hugo Ball but also to families of secret languages, in which the word lost its original meaning and assumed mutable interpretations in the fictive realm of artistic creation" (Delehanty 1990:28). The artists laying the ground for the reinvention of typography as an artistic practice, were inevitably also engaged in the exercise of reinventing language, often by reducing words until there was nothing left but sound and also by creating nonsensical language that gave way to new theoretical discussions that questioned the practice of meaning making and interpretation as well as the role of the reader in these processes. Textuality is thereby, a creative space that enables the artist to use a wide range of techniques in order to create a variety of typographic forms. Prior to Bauhaus (1919-1933) becoming typographically vigorous, there were noteworthy contributions to visual communication and typography in Holland, Germany and the Soviet Union among others. In Czechoslovakia, the artist Karel Teige wrote his own typographic principles three years before Morison in an essay entitled "Modern Type" (1933). Teige's work is a mixture of

ideas and inspirations from De Stijl and Bauhaus teachers.[33] Yet, in contrast to Morison (as we shall see) Teige's principles called for dynamic and novel forms that emerge through the rejection of traditional ones. His typographic principles are marked by experimentation and have little regard for issues of legibility. This will be made clearer when I discuss Morison and provide a detailed account of the differences between readability and legibility in the following chapter. I will now turn to discuss how typography changed as a result of cultural, social and technological changes and innovation in the twenty-first century.

In subsequent sections, the contextual review deals with the issue of the transition from book page (print) to screen interface as experienced in the last few decades, addressing the main debates and concerns of typography (both for theory and practice). The capability of moving, changing, creating and re-creating, copying and sharing text today, through the (physical) screen renders digital technology an adaptable medium. As a result, we are now exposed to an overabundance of electronic information that has altered the structure of society at large, but has also challenged our behavioural patterns as readers. To explain a little further, the ways we receive data has also changed the way we read; the rapid increase in the production rate of new information, the increase in available channels of incoming information (that are now global rather than local) has meant that we receive more information and faster. In order to escape the overwhelming amount of information that we are bombarded with on a daily basis, we now read faster, at a glance and have very little time, or patience even, to analyse the information that we receive. This does not necessarily mean we read less, we simply read and communicate differently. However, these effects have not necessarily impacted the design process (or the designer) in the same way. I will return to these questions a little further down.

2.5 From Book Page to Screen Interface

The idea that technological changes in the electronic age have altered the very structure of society as well as cognitive, perceptual and behavioural capabilities has been identified and already suggested by various theoreticians since the early 1960s. In *The Gutenberg Galaxy: The Making of Typographic Man* (1962) Marshall McLuhan's analysis on the impact of mass media (the printing press) on human consciousness, illustrates that technologies are not to be viewed as

[33] For further reading on Karel Teige's principles in "Modern Type" See Blackwell [1992] (2013) Twentieth Century Type and Beyond.

simple inventions or tools that people employ but instead, are the means by which people are redefined culturally, ideologically and more generally, how human consciousness gradually adapts and alters. This leads him to argue his well-known adage that: "the medium is the message" (Mcluhan, 1967). For McLuhan, the medium creates a symbiotic relationship with the message that it is transmitting.[34] In other words, the medium is embedded in the message, whereby the medium influences how the message is received or perceived. As already noted, the gradual evolution from the book page to screen surface had already been foreseen by avant-garde movements in the early twentieth century. The development of various technological innovations like photography and then cinema, had already changed the way people consumed and perceived images and read text. Consequently, these two initially distinct areas of sensing and perception, the auditory and the visual, or the oral and the image, are consistently being drawn closer together in technologies that invite all the senses to partake in an interplay of the senses. The technological changes that have brought about significant vicissitudes in how we read and receive information have also led to the questioning of the very notion of reading itself.

Modern conceptions of reading challenge traditionally accepted views; the question of what we read, why we read, or how we read have been problematized and queried by authors, journalists and theorists from different perspectives.[35] As we have seen, questions regarding the act of reading are not new; the problematization of the reading process and related questions have consistently been raised since the very beginnings of Western philosophy. In what follows, l highlight significant theories as well as seminal typographic practices relating to the role of the

[34] McLuhan's book popularized the term "global village"; it refers to the notion that mass communication has enabled a village-like mind-set to be applied globally. By analysing how data is disseminated and its impacts on human consciousness, he accurately identifies that in the electronic age the world is becoming increasingly accessible and more homogenized. He states: "The world of visual perspective is one of unified and homogeneous space. Such a world is alien to the resonating diversity of spoken words. So language was the last art to accept the visual logic of Gutenberg technology and the first to rebound in the electronic age" (McLuhan, 1962: 136). While McLuhan is partially right, his work came before the internet and the plethora of diverse voice and opinions from social media, blogs and other outlets that did not yet exist.

[35] In a relatively recent article in The Guardian newspaper, Hester Lacey states in The Tyranny of Reading (The Guardian, 2005) that reading a printed book is not vital. Literature he argues, can be a pleasurable past time and though he admits that he is an avid reader himself who takes great pleasure in reading fiction he suggests, that it is not a particularly important, or even necessary activity. In contrast, Malcom Knowles an American adult educator, known for the conception of "The Theory of Andragogym" in Self-Directed Learning (1975) highlights the significance of proactively reading in the edification of critical thinking. It is significant to note that while the act of reading has changed it has not been made redundant with digital technology. In fact, recent experimentation with book forms and electronic, or digitised forms of reading in the arts and humanities, illustrate that reading remains a necessary activity despite the fact that we are now twisting and shaping it in novel and different (previously unknown or undiscovered) forms.

reader and the act of reading; I also outline the typographic innovations that have emerged from industry (including: magazine publications, advertising, graphic design etc.) that have resulted in popularising methodologies and techniques what were initially considered avant-garde and have affected how we view the text and the ways we read. One such technique materialised when fine art was incorporated within articles that were intended for mass-market magazine publications.

Typographic design moved forward in leaps and bounds throughout the last century; not only within the context of experimental art practices, but also through mainstream publications and advertising. Graphic artist Cipe Pineles, was the first female art director for mass-market American fashion magazines, including *Glamour* and *Seventeen*. She landed these jobs after working as an assistant to Mehemed Fehmy Agha, Condé Nast's art director in 1932. Pineles' work drew inspiration from fine art and she commissioned artists like Ad Reinhardt, Ben Shahn and Andy Warhol to create illustrations for articles. Her approach was innovative for its time. Pineles, "rejected the idealised style that was typical of magazine illustrations at the time and exposed her audience to modern art" (Clifford, 2014: 100). Martha Scotford, in her biography of Pineles' life in *Cipe Pineles: A Life of Design* states that:

> During the early 1930s, Condé Nast publications were innovative in their use of European Modernism in magazine design. Typography was simplified and typefaces such as Futura became common. Headlines and text could be anywhere on the page. Photography took precedence over fashion illustration and was introduced large on the page, bleeding off to create 'landscapes' or transgressing across the gutter. Space expanded as purely decorative elements disappeared and margins were opened (Scotford, cited in Mach 1998: 2).

Some of the most identifiable and conventional characteristics of graphic and typographic design in magazine publications today, ensued from forward-thinking ideas that emerged alongside social changes (the expanding middle classes; trade and markets becoming increasingly international; the extended use of advertising; and widespread university education and interest in the arts). Pineles' employed typography as part of the design process; her use of letters in magazines became detached from their unique roles in visual communication (as characters and signs) and instead acquired an individual role, both in their own right and in combination with other letters. The idea behind this experimentation with typographic design was not simply to draw the reader's attention; more importantly, Pineles aimed at educating her young female readers by introducing them to modern art, by creating visuals that interjected photography and illustrations with exciting type and column structures.

Around the same period, typographer, painter and designer Willi Baumeister also stages an encounter between fine art and typography.[36] His contribution to the field of typography comes in the form of both, theoretical and practical work. For Baumeister, it was significant to not pit commercial art against High art, since the two he claims, always already influence and affect one another. He argues that typography consists of painterly elements and thereby maintains that text and picture should not be considered mutually exclusive, but rather should be treated as correlates in the design process. As such, he experiments with pictographs and primitive mark-making techniques that emerge in his paintings in particular, during the late 1930s and early 1940s, where he employs a *non-representational* language of visual codes and symbols. This is readily visible in artworks such as, "The Eidos Pictures".[37] Baumeister's principles and theorisation of non-representational language in the artwork is presented in his work, *The Unknown in Art* (1947). Here, he argues that art should be viewed according to its *visual* components. He therefore, places considerable weight on the notion of the image and the visual aspect of the artwork. Consequently, he places less emphasis on the textual and meaning-making component of the artistic endeavour. He argues that the work of the artist is not to create precise representations, or an accurate copy of material reality. Rather, the artist is an inventor of new values and the artwork should add something formerly unknown to the visual range of its viewer. He states that, "Painting is the art of the visible. From the painter's standpoint, painting is the art of rendering something visible, which becomes visible for the first time through painting and which previously was non-existent, or not at hand and belonged to the unknown" (Baumeister, 2014: 40). The ideas presented in Baumeister's discursive analysis of art and his line of questioning is seminal to theoretical understandings of the artistic process.

Within the tripartite system (the artist, the viewer and the artwork itself) of Baumeister's theoretical analysis of the artistic process, considerable emphasis is placed on the artist as the presenter of something new. The artist, according to Baumeister has a responsibility *to render visible what had previously been invisible.* In this schema, the viewer is merely a witness and passive

[36] Baumeister was committed throughout his work to the artistic doctrine of constructivism. He emphasises the vital role of intuition and the non-rational in both art and life, arguing that nature is the origin of all art. In a similar manner to many (if not all) avant-garde movements around this time, Baumeister's work is highly politicised and acquires a social dimension; providing typography with an element of egalitarianism by perceiving the equal status of letters as a symbol of democracy. The turbulent times that encapsulate the early turn of the century and the concerns and anxieties relating to uncertainty and instability of the political and social arena (in particular in Europe and America,) begin to surface in the work of art movements and in particular in elements of design, as well as, typography. Therefore, it is unsurprising that there have been numerous attempts by both, designers and artists to democratize the typographic module.

[37] Eidos etymologically, refers to form, essence, type or species and related to idea, image and the visual.

bystander. He claims that, "[the] viewer must reconcile himself with what has now been made visible" (Baumeister, 2014: 40). For Baumeister, the viewer must *assimilate* all the *elemental forces* of the visual. In painting, these are represented by colours, shapes, lines, contrasts and relationships that are all strewn across the concrete body of the canvas. By elemental forces, Baumeister means all the non-representational and perhaps, purely visual elements of the image. The artist "constructs" the structure of the image through the readily visible surface components that in themselves escape meaning because they are abstract, but also hide within them invisible forces of the image's plane. In other words, what Baumeister highlights is the figural aspect of the visual, as opposed to the figurative. The figural relies heavily on imagery and association. More precisely, it represents all the elements that exist in the world that tend to escape signification and textual meaning; including: affect (emotion, feeling and intensity), colour, music, shape and relations etc. The theory of art that Baumeister puts forth, explores the tensions in the artwork. That is, between the visible and invisible; between representation and non-representational aspects of the artwork; and argues that *looking* is no longer simply *seeing*. In contrast, *looking* requires active engagement with the artwork. The notion of "looking" in Baumeister conveys what several decades later, post-structuralist discourses discuss through theories of reading and reader response; this has occurred in two different turns and writers. On the one hand, through the linguistic theories mentioned previously (i.e. Saussure, Derrida etc.) and through theoretical investigations on the notion of affect.[38] Aspects of Baumeister's work appear more aligned with the perspective of the latter set of writers and the notion of the visual developed in affect theory.

The notion of letters acquiring significance outside communication and linguistic exchange carried over into the twenty-first century. Evidence can be found in various publications and artistic material; for instance, Giannis Oikonomidis' *Alphabet Symbols* attempts to "approach the letter as symbolic form rather than as an element in a system" (Oikonomidis 2005: 10). For Oikonomidis, letters are forms that "contain an inner imperative" and by this he means that letters are *figural* entities, which have their own physiognomy and their own conceptual characteristics. As mentioned previously, the figural should be taken to mean that the letters of

[38] I do not take up a discussion on the notion of affect theory here, as it is a lengthy discussion that would take the discussion in a different direction. Affect refers to figural aspects of the artwork (feeling, colour, shape, intensity etc.) that escape language and operate through the visual and image. For further reading, see the work of Gilles Deleuze and Deleuze and Guattari (their development of affect theory is scattered throughout their oeuvre); but is predominantly developed in The Logic of Sensation (2003); Logic of Sense (2015) and Anti-Oedipus: Capitalism and Schizophrenia (2013). As well as Jean-François Lyotard's Discourse, Figure (2011). These writers argue in a similar manner to Baumeister that looking is not the same as seeing.

the alphabet denote a form of signification that relies on imagery and association rather than linguistic concepts. The figural in contrast to the figurative relies on images and the visual (as well as, affective elements) that exist outside the latter notion's emphasis on linguistic denotation (as commonly emphasised in the work of Saussure and Derrida, mentioned previously). By emphasising the figural aspect of the alphabetic letter Oikonomidis, attempts to portray the letter itself (not language in general, or meaning) as a *living symbol* that transmits *its own* particular messages. Hence, in contrast to Baumeister who contests the view of the artwork as autonomous and Derrida's argument on the autonomy of signification (meaning) or figurative language, Oikonomidis emphasises the autonomy of the letter through the notion of the figural. He claims that, "The externalisation of the internal content of the letter reveals an abundance of emotions, images and symbolisms. There is no letter, and thus no form, that does not function beyond its structural characteristics as a living organism with pronounced emotional elements" (Oikonomidis, 2005: 10). According to Oikonomidis, alphabetic symbols viewed in this way become extremely interesting to decode (for the viewer) and opens the door for new and expressive forms of design variation (for the designer) thereby, enhancing its communicational properties as well. Although the research conducted in this thesis aligns with some of the ideas presented in Oikonomidis work (i.e. figurality, viewing letters as visual symbols etc.) this work departs from static type form being investigated in Oikonomidis work and explores kinesis in type and reader response in virtual spaces.

British typographer and theoretician Phil Baines, also deals with the issue of symbolism in typographic design. According to Baines, the history of typographic design (in particular during the 1930s and 1940s) reveals a marked difference in typographic approaches in the US and Europe. While, the US favoured a literal approach to typographic design, Europe leaned towards symbolism. As we have seen already, experimentation with typography in art has been given much deserved attention. But as Baines points out, typographic symbolism has also been employed successfully for practical uses. He uses the example of road signs and the traffic system that was put into use in the decades between the 1930s and the 1950s; in 1931 at the Geneva Convention, symbolism was a major point of discussion and later became the subject of the 1949 Geneva protocol. Significantly, Baines and Haslam in *Type and Typography* (2005) [2002] in a discussion relating to the various developments that typography has undergone since its inception, differentiate between typography and language. For them, *language speaks through type*. It is easy to overlook the difference between language and type. Yet, according to Baines and Haslam *type is what conveys the linguistic message* and not the other way around. Hence, type and

language are two distinct elements of the written word, which are tightly interwoven within the very fabric of everyday life that their differences are almost imperceptible. They argue that type's: "messages have so penetrated our psyche that it is impossible to imagine a world without type – a world without books, libraries, magazines or maps, road signs, television or advertisements. Like the wheel, electricity and the internal combustion engine, typography underpins Modern Western life" (Baines and Haslam, 2005: 10). Typography has infiltrated every aspect of modern life and has a multitude of practical everyday uses, more than Gutenberg could have ever imagined in his lifetime.

Modern typography is concerned with the creation of typefaces and their arrangement, in order to convey a message. Though typography has developed considerably since Gutenberg its dictionary definition, according to Baines and Haslam has not caught up. They suggest that it is necessary to define typography according to the times, despite the fact that it is a complex undertaking due to the fact that it is constantly evolving and in the midst of immense change. In a different discussion on the variances between old type and new type design, Baines suggests that, "New typography is about attitude, and arrangement is more important than typeface choice" (Baines, 1994: 9). They claim that old letterforms laid out in new ways are more progressive than entirely new letterforms. However, this is merely one aspect of typographic innovation in its modern incarnation and not entirely true. Here, it appears that Baines is privileging the design element of type, as that which pushes the boundaries of typography and produces progression and new orientations within the field. However, typographic innovation may also come about from new uses. Invalidating his own statement, Baines later claims that "I cannot think of any 'classic' typeface which works well in the digital environment" thereby, calling for new typographic forms (Baines, 1994: 10). In fairness, Baines' work illustrates that typography has always been (at least for him,) a technical endeavour. He confesses that any attempt to theorise it, results in a chiasm between practice and theory. Nevertheless, Baines is among the many new voices to call for new techniques, practices and approaches more appropriate to typography in the new millennium. Other designers, including American designer April Greiman also argue that the old Modernist techniques are outdated and suggests new principles, or what she names, "The New Wave Movement" can promote a more intuitive approach to layout, experimentation with image and typographic placement located outside the boundaries of the grid.[39]

[39] I will return to April Greiman further down.

Undoubtedly, it is necessary that this gradual transition towards screen-based typographic practice is recorded, aptly theorised and persistently updated, in order to reflect the ongoing and gradual shift from the printed to the digital, or from the book page to the screen. The countless influences of today's design solutions have been driven by past innovations (and in particular, in the historical precedence set in motion by the turn of the century avant-garde). Judi Freeman for instance, believes that the development of typography and various attempts made by designers to practice through an interactive typographic environment had already made an appearance in the Visual Arts at the beginning of the 1930s. She argues that the incorporation of words, letters and numbers and the idea of interaction through various theoretical conceptions of reading were already present in and an integral part of painting and occasionally in sculpture in artists, like: Marcel Duchamp, Kurt Schwitters, Rene Magritte, and Joan Miró.[40] Put differently, the new is always created from the old, either as a continuation (in terms of borrowing, or building on what already exists) or as a reaction to previous ideas. According to Joseph DiGoia,

> 'New' New Typography came about as a reaction to the communication credos of Modernism which called for design to be the timeless, minimal, geometric, and self- referential carrier of our messages. In our post-modern society, designers need to be more conscious of the content, expanding problem solving across new territories. Second, […] The advent of computer technology and the ease in which it has made the drawing of letterforms has spurred on many of these new typographic forms. (DiGoia, 2012: Accessed 21/03/2017)

As DiGoia points out, with the advent of the personal computer the boundaries between the typographer and designer have come crashing down, placing typography in the hands of the designer. And yet, the concept or definition of designer is no longer the same. The technological ease that DiGoia describes above, has created the right circumstances for the design process (or at least partially) to now come into the hands of what we would have once called (the passive and inexperienced) viewer. Hence, in the transition from book page to screen we must also distinguish between the designer of the past and the designer of today and the blurring of boundaries between the designer and viewer that we are encountering today.

In 2007 *The Economist* published an article titled "Not Bound by Anything: *Now that Books are being Digitised, How will People Read?' (The Economist, 2007).* The article describes the enormous undertaking of the mass digitalisation of books and examines the impact that the transition from the printed book to the screen has had for the reader and how we read. Big corporations, like Google and Amazon scan printed books for the benefit of creating online libraries that consist

[40] For further information see Judi Freeman in Dada and Surrealist Word-Image (1989).

of public-domain texts. Though the article does not mention what impact this has had for book sales, the creators of Google books have suggested that the intention behind this project never intended to replace the printed version. Nevertheless, the author points out that reading habits are changing; some readers will explore the book on screen and others will use the public domain texts as a sampler before they purchase a printed format. In either case, readers will use the digital version to look for and read specific snippets that interest them. The question that stands out in this article is whether the shift from print to screen is creating the habit of reading in fragments. It appears that we are not reading less but rather, reading smaller segments of more and varied material. This raises another question: if the way we read is changing what are the essential differences between the typefaces we encounter in printed books and the ones on screen?

Visual communicators and designers alike, are attempting (at times ineffectively and other times with some success) to effectively tie together key theoretical notions in the field of typographic design with newer technologies and in particular, portable technologies that render type alterable. The shift from book print to screen type however, has not always run smoothly and in particular when resolving issues of clarity and legibility. Some of the problems encountered range from: making sure that font is legible on multiple devices (laptops, e-readers, mobile phones, tablets, E-Watches and websites etc.); this has been particularly problematic for unifying specific brand platforms (i.e. Apple employed a new font called San Francisco across all its devices for the purposes of unifying the brand name). Problems arising from legibility have been resolved by: using larger font sizes, employing more white space and flat type that removes embellishment for greater clarity. Until recently, screen-based manufacturers have commonly purchased existing typefaces, "a mishmash of fonts to represent the different character and script systems from around the world giving little attention to how theses typefaces work alongside each other" (Benette, 2012). However, manufacturers have gradually begun developing typefaces that have been purely designed for the screen. One such example, is the multi-award winning font Pure, which is the outcome of Nokia's research and development created to be used on Nokia's N9 smartphone. The designer of the typeface, Bruno Maag describes it as having been designed from the very beginning to be a UI font.[41] Thus, printing was always a secondary thought for the creators of Pure. Compared to print, typefaces on portable devices appear to be more challenging to the designer, as there is limited legibility due to the screen size and at the same time there is an immediate impact on the user that affects the

[41] UIFont (User interface) is a class representing a font face and the font size.

reading process. As text becomes increasingly digitised, differences of opinion within typographic design are being voiced regarding what we should call the use and appearance of typefaces on screen. Designer Jessica Helfand claims that: "Unlike book typography, the new screen typography dances; it sings; it shouts; it does somersaults and cartwheels, and then when it settles down, just as you think you have got a hold on it, you mouse over a word and it transforms instantly into something completely different" (Helfand, 2001: 115). In many ways, type on screen transfers the viewer into a world of optical illusion. Screen based type becomes an image, a representation of the printed text; particularly, since there are no physical letterforms but instead computer coding consisting of ones and zeros. More significantly, within the context of this thesis, new portable devices allow users to manipulate type and therefore interaction becomes a prominent feature that has allowed typography to become more flexible. I will now turn to a more extensive analysis of kinetic type and outline its historical development from its cinematic beginnings through to the advent of the personal computer.

2.6 Type becomes Alive

Broadly speaking, kinetic typography has been defined as an animation technique that mixes motion with text; this has been made possible and was popularised with the advent of film and graphic animation. Kinetic typography is not necessarily tied to digital media; it has developed from film titles which explains why it is mainly associated with screen based media. As a term, *kinetic typography* literally translates as '*the art of print in motion'* and encompasses a wide range of screen based communication including: computer and television screens, mobile phone devices, PDA's and car navigation systems etc.[42] Screen-based temporal environments have generated new ways to treat both, writing and type. That is, writing and by extension type, is no longer treated as static, material and concrete, but rather as fluid, processual and transformative. As we have already seen, the perspective that characterises type as fluid has already been extensively demonstrated (albeit, in different ways) in the work of Mallarmé, Marinetti and Apollinaire at the beginning of the twentieth century. The writers of *Typography: An Encyclopaedic Survey of Type Designs and Techniques throughout History* (1998), describe the methods and characteristics of the principles for the production of type in motion. These early techniques consisted of employing still images of text or type on cardboard that had been sketched or

[42] Kinetic typography is intimately tied to motion (which is why it often called 'motion typography') and is characteristically fluid.

painted onto rolls, (although these were also occasionally made from wood) and then filmed as the roll moved in front of the camera.[43] Film titles have come a long way since their early utilitarian applications and have evolved to serve a number of purposes. For instance, in silent film they were used to deliver key information to the audience for the purposes of clarity and therefore, lettering that was easy to read was the primary objective. Film titles that expressed and reflected the various art movements of the time (Art Nouveau, Art Deco and Expressionism) were clearly a source of inspiration. Since, film titles create the primary impression of a film, illustrators have always attempted to evoke the genre and/or subject matter of a film through letterforms. The 1933 film titles for *King Kong* and *Metropolis* (1927) are considered to be pioneering in this respect; both movie titles reflect the cultural trends of the Modernist movement in their use of diagonal lines, geometric shapes and gradients that play on Art Deco forms, which express the cosmopolitanism of cities and modern industrialised society.

From the earliest days of television, title sequences have played a central role in establishing the identity of a show; screen graphics were used in order to introduce typography and graphics in two dimensions so as to catch the eye of the viewer. The visionary designer Saul Bass had been creating movie title sequences since the mid-1950s; and his film titles are still considered some of the best ever created. For "The Man with the Golden Arm" (1955) Bass used an image of a distorted and disjointed arm, in order to portray the story of a drug addict and used white strips that represented needles. Similarly, for the movie "Psycho" (1960) he created film titles that evoked visual tension; the series of moving white bars were meant to set the tone for the viewer to read between the lines and read into the lines. By the early 1960s, most spectators would have become increasingly familiar with motion typography and graphics; in fact, this would have mainly come from their personal lives at home (from the small screen), rather than the cinema. Despite this, television transmission quality was poor, with low resolution and small screens; it thereby could not deliver the same kind of quality as cinematic film. Unquestionably, visual artists as well as graphic designers and even amateur film lovers have drawn on the richness of title sequences in multimedia design history. Title design, or kinetic typography is an art form in itself; contributing to both mood and information. It sets the entire mood for the film and creates the first and last impression. Traditionally the film industry has had two main approaches to film titles: on the one hand, the elaborate and extensive film titles created for example by Maurice Binder, for the early James Bond film series or Alfred Hitchcock's films and on the

[43] This technique seems to have evolved from the lithographic printing method.

other hand, the minimalist and clean titles that are produced for instance, (in contrast) for Woody Allen films.[44]

Digital technology during the early 1980s radically influenced not only typography as a form, but also designing with type.[45] Type began to act as a free physical form with the introduction of computer screen-based publishing. The personal computer empowered designers not only to produce, but also to manipulate letterforms in new and dynamic ways; offering new options for creating type forms and outputting them for various mediums from letters printed on paper, or pixels displayed on a screen. According to Loretta Staples in "Typography and the Screen: A Technical Chronology of Digital Typography, 1984-1997" (2000), "The spatial and temporal opportunities of cyberspace are resulting in even more radical depictions of letterforms that offer expanded formal and stylistic possibilities, while further challenging the norms of reading and writing (Staples, 2000: 19). Staples identifies the introduction of the Apple Macintosh computer in 1984 as that which popularises the "key technologies and concepts that would herald a new typographic age" (Staples, 2000: 19). The personal computer allowed for the dissemination of technologies and ideas; and in particular its associated technologies: bitmapped fonts and dot-matrix printing. The latter was rapidly surpassed by laser printing created by Xerox PARC (Palo Alto Research Centre) and re-invented for its first commercial implementation by IBM in 1976. By the late 1970s and early 1980s, MIT and Stanford university researchers and programmers were already developing new ways to describe and illustrate letters

[44] Undoubtedly, typographic development came about from both the big and the small screen, both of which moved it in interesting and innovative directions. However, it is equally important to note that business and industry also contributed to typographic development. For instance, Xerox understood the importance of typographic design as a branding and advertising tool. In 1997 the corporation emphatically states: "Xerox Corporation stands for exceptional quality, design and engineering. The typography selected for our corporate signature is the result of a careful study to identify a font with those characteristic and with a modern, classic look that will carry us into the future" (Treadwell and Treadwell. 2005: 161). Typography in industry acts as an inexpensive design tool that can create an imposing visual impact and support the message behind the brand. In fact, as Treadwell and Treadwell point out, typography can make, or break a brand's image.

[45] Charles Bigelow and Donald Day in 1983 defined digital type as being: "made up of discrete elements. These elements can be line strokes, pixels, colours, shades of grey, or any other graphic unit from which a letterform can be constructed" (Bigelow and Day, 1983: 106). By defining digital type in these terms, Bigelow and Day concluded that digital typography, "is not new: mosaic tiles, embroidered samplers, and arrays of lights on theater marquees have long represented alphabetic characters as relatively coarse discrete arrays" (Bigelow and Day, 1983: 106). For these two writers what differentiated digital type from its past incarnations is the focus on the: "display device of the cathode-ray tube (CRT), and the requisite digital computer […] needed to control the on-off pattern of the electron beam which articulated letterforms on the screen [and thereby] defined it specifically in terms of computer technology" (Bigelow and Day, 1983: 106).

digitally.[46] In 1975, Philippe Coueignoux created what he named, Character Simulated Design (CSD) and "decomposed the Roman alphabet into a set of primitives that could be recombined to form any letter" (Staples, 2000: 22). A similar strategy was attempted in 1983, by Pijush Ghosh and Charles Bigelow. In 1986, Donald Knuth created the ground-breaking METAFONT, which offered a rich programming language for designing and employing type: "through numerous algorithmic specification of geometrical relationship" (Staples, 2000: 22).[47] In the same year, Charles Bigelow and Kris Holmes created the typeface Lucida, "that satisfied the multiple demands of page and screen through a comprehensive set of fonts suitable for printing and screen display" (Bigelow, 1986: 17). This rapid technological development continued until the following decade and can be consider as the starting point of typographic exploration and creativity at a more personal and individual level.

A few years earlier in 1982, Adobe Systems had founded and launched the innovative software PostScript (roughly around the same time as the introduction of the personal computer). The inventors of the software described it as a: "Page Description Language" (PDL) and was built into Apple's LaserWriter Printer. PostScript made it possible for the first time to print detailed page layouts, including images and text that were arranged and scaled, not according to what the device was capable of, but to a designer's specifications; hence unlike previous technology PostScript was device independent. At approximately the same time, Apple Computer Desktop Publishing Designers began to create their own typesetting with software packages: Quark Express and Pagemaker. Upon the introduction of the Macintosh, a handful of insightful graphic designers, like David Berlow, Kris Holmes and Susan Kare, recognised the aesthetic potential of computer-based typography (Shaw, 2005).[48] As new technologies began to develop they also formed key changes to the understanding of the principles of type; consequently, practitioners' understanding of the principles of typography began to evolve and change as a result of the digital revolution. Typographic practitioners and graphic designers soon adopted the new technology, implementing its new facets for typographic uses.

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[46] Richard Rubinstein in Digital Typography (1988) provides a comprehensive overview of how digital typographic innovation from its inception influenced typographic form.

[47] See: Donald E. Knuth Computers and Typesetting (1986) for more information on METAFONT. In Digital Typography (1988) Rubinstein argues that although METAFONT was a new mathematical expression it never caught on, partly because the mathematical expression that it required was alien and unknown to designers (pp. 141-145).

[48] Susan Kare designed the sans-serif typeface "Chicago" for Apple Computers; initially a city-named bitmapped screen font, it was used for the first Apple Macintosh. For more information see: Shaw, P (2005) The Digital Past: When Typefaces were Experimental.

Type designer and co-founder of graphic design magazine "Emigre" Zuzana Licko, was one of the first to embrace new technology and explore it for the purposes of typographic use and its ever-evolving boundaries.[49] Typography could now be stretched, rotated, displaced and deformed in every imaginable style. Licko and VanderLans used pixelated letterforms, images and pictograms in posters and brochures at first, following the work of April Greiman (who mainly worked with digital type intended for print) and later incorporated video imagery into their work as well.[50] Greiman attempted to re-create the actual look of paper onto screen and began to challenge the principals of the page as the official bearer of the word. Greiman had gained a reputation for merging Swiss formalism with the irreverence of Californian pop style, in order to create an entirely new look and attitude in contemporary graphic design, namely what has retroactively been defined as: "California Swiss" or otherwise, "New Wave" and "Swiss Punk Typography" (Eskilson, 2012). Silicon Valley's influence transformed her work even further, by providing a new formal vocabulary that had been explicitly shaped by digital technology. Within this new environment the *pixel,* becomes an important element to typographic development. More significantly, the *user* who is interacting with the screen is now considered, as important. as the *reader* was for Gutenberg's books. Typography in this setting, expressed a new design philosophy and a new aesthetic that created a vibrant and symbiotic relationship between the textual and the visual.

2.7 Pixel Kinesis

Throughout the 1990s, the dissolution of the word and/or its dynamic fusion with the visual, lay both in the technologies that were becoming more readily available and corresponding attitudes. Early Macintosh software for graphic design editing did not include antialiasing for type.[51] Up until the introduction of Mac II in 1987, the Mac computer only supported black

[49] Typography and various font families rapidly redefined a new era; expressed in publications, such as "Émigré" magazine (1983-2005).The Publication was founded by Rudy VanderLans and Zuzana Licko in collaboration with, the artist Susan Marx and screenwriter Meyjes Menno. Since its very first issue, Émigré became one of the most influential publications of the 20th century. It was primarily characterised as a vehicle for the dissemination of new, dynamic, contemporary and critical typographic ideas. Émigré not only showcased font families designed by Licko and others, but also functioned as a catalogue for purchasing them. VanderLans and Licko lived and worked in the San Francisco Bay area and their close proximity to Silicon Valley influenced their exploration of typography through emerging technologies.

[50] Innovative Swiss designer April Greiman began experimenting extensively with digital typography and imaging, focusing predominantly on printed work. See April Greiman (1990) Hybrid Imagery: The Fusion of Technology and Graphic Design pp. 55-99

[51] In graphic design, aliasing is a recognised problem of type that affects all computer screens and all pixel devices and is concerned with issues of legibility. Antialiasing is a technique designed to provide a

and white monitors.[52] It was only with greyscale technology and then colour that antialiasing developed into a noticeably needed feature; a feature that was later exploited by another innovative product: Adobe Photoshop (introduced in 1990). Photoshop developed into high-end bitmapped graphics software that edited screen pixels and enhanced design creativity.[53] Photoshop offered designers the technology to easily compose images and typography within a single vigorous surface. The amalgamating layers of pixels and different shapes, reduced letterforms to the status of pictograms, or icons. The visual and image based culture that seems commonplace today, was only beginning to take shape. The affiliation between the text and the visual in graphics began blurring the boundaries between letterforms and images, encouraging the development for a new means of communication in visual language and new norms for graphic design to take place. The distinction between text and image however, persevered in software development due to a variety of commercial and practical reasons.

While Adobe Systems emerged as the leading provider in the field of screen based fonts, the company remained focused on printing, which was a priority due to high demand. PostScript did not gain the appreciation, or acceptance of a screen display technology. Despite this, many of their type or font families comprised well-drawn bitmaps that were employed by early designers whose work focused on electronic media. Significantly, the distinction between text and image persisted in software development. Editing tools were capable of either, creating letters as "text" (re-editing these required a keyboard), or as "paint" (these were motionless displays of bitmap) that once created, could only be edited through their individual pixels. Adobe's 1990 Type Manager product contributed significantly to the quality of screen type; it had the ability to smooth and scale type to any size, while employing only a limited "number of bitmaps along with the font's corresponding outline file, both stored in the Mac system folder"

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solution to this problem, either by reducing or eliminating these effects altogether. Antialiasing depends on screens that can display many colours.

[52] For on screen type, antialiasing can function either to reduce or enhance legibility. Although, the eye-brain's perception of letters (i.e. reading) is not fully understood by scientists, it has been recognised that antialiasing can cause screen type to become less legible. Certain adaptations created to remedy antialiasing have contributed to the enhancement of legibility as well as aesthetics of screen-based type. In 1986, IBM developed YODA that had antialiasing text; and the first personal computer to support antialiased type was Acorn Archimides (and its RISC OS operating system). Antialiased text is also called "greyscale text".

[53] Graphics software is primarily bitmap or vector based software; vector-based programs mainly rely on algorithms and mathematical descriptions for designating geometrical forms, shapes and numbers. As a result, these mathematical forms and their interfaces generate various drawings consisting of rounded, or straight-line divisions, with 'handles' that are used to enhance the editing process; operations such as: rotating, skewing and resizing.

(Staples, 2000: 29). It is important to note, that while Adobe Type Manager improved the onscreen look of larger type sizes, significantly smaller sized onscreen type remained a persistent problem. By the mid-1990s with the emergence of the World Wide Web the concerns of digital typography became a wider and more demanding concern. The internet presented the typographic designer with a larger and more complex predicament, since it placed definitive control of typographic appearance in the hands of what used to be the audience or formerly passive viewer/reader. For designers like David Carson whose typographic innovations were representative of the 1990s and still relevant today, he is credited with creating grunge style typography, legibility is less of an issue.

Art director and graphic designer David Carson incited and moved the boundaries of typographic design with his influential work, throughout the 1990s. Carson highlighted experimentation over legibility. His style complied with none of the standards of typography; he ignored grid systems, columns, headings and even page numbers. Carson's style has retroactively been recognised as "dirty" and was rarely legible, provoking his audience to study the work in greater detail and take in what they were observing. His work therefore, continued the dissolution of the word by threatening and challenging the authority of traditional typographic principles. His unconventional approach soon became accepted by the mainstream. It is interesting to note that for Carson, legibility was not to be mistaken for communication; Carson represented a new breed of designers who viewed the painful craft of precision and consistency in typographic design as no longer being the only option for designers. Carson viewed typographic communication through the visual; type as image was able to express raw emotion without necessarily ascribing to ideas of legibility, but by means of the letter as image in its own right (escaping traditional understandings of semiotics). In contrast, other type designers and theoreticians persistently explored the merits of typographic legibility and semiotic elements of type on screen and print (with or without ascribing to the rules and principles of typography).

In *From Technological to Virtual Art* (2007), historian of art and technology, Frank Popper traces the historical development of immersive and interactive new media art from the late twentieth century, to the multimedia, digital and network art available today. While, he argues that contemporary art is a refinement of the technological art of last century, it is also a departure from it since, what is new about new media is its humanization of technology, its focus on interactivity, its multisensory nature and finally its philosophical exploration of the real and the

virtual. For Popper, what distinguishes between the virtual artist of today and the traditional artist of the past is that the virtual artist is committed simultaneously, to aesthetics and technology. He defines virtual art as that which allows the artist through an interface with technology to immerse him or herself in the image, enabling interaction with it. He therefore, identifies an aesthetic-technological logic with the process of creation, where artistic expression ensues from integration with technology.

The history of typographic design has shown that type is more than a collection of arbitrary signs that aims at communicating linguistic information. Throughout its history, type has illustrated vividly that text also communicates visually *as image,* through form, colour and shape. Legibility is therefore only partially significant and should be distinguished from readability. However, as Barbara Brownie points out, screen-based kinetic type has provided us with something additional. She states that,

> […] with the advent of readily accessible time-based displays we now experience type that is capable of more […] it is capable of performance and behaviour. In numerous advertisements, credit sequences and digital artefacts of the past century, practitioners including Saul Bass, Kyle Cooper and Martin Lambie Nairn have demonstrated that in temporal media, type can move and distort, and be subject to cinematic transitions. Type can interact with its surroundings […] and interact with itself […]. All of these articles are readily located under the banner of 'kinetic typography', or 'motion typography' (Brownie, 2012: 175).

For Brownie, new forms of temporal typography are *dynamic*. This means that they can no longer simply be defined with the single characteristic of motion and temporality, since they allow for more complex forms of motion and change. Temporality here, refers to the temporal relationship between word and image. Fluid typography fluctuates between words and images and between legibility and readability, but also adds the dimension of non-verbal expression. These issues will be explored in more detail in the remainder of this chapter by looking at how these have developed alongside changes in available technologies in the last few decades.

2.8 Emerging Changes: Digital Networks & Connectivity

With the introduction and widespread use of the internet and more specifically, the element of interactivity that it allows, the internet has provided the audience with an unprecedented amount of control over what, and how typographic design is viewed. This had a knock-on effect for the designer. William W. Gaver in *Ambiguity as a Recourse for Design* (2003) has argued that where ambiguity is presented as a problem simultaneously, an opportunity for

further development also presents itself. Simply put, as the designer cannot always deliver on the (multiple) demands of the audience, s/he is also given the opportunity and creative space to provide multiple solutions and perspectives for consideration without imposing any of them on his or her audience. Andy Ellison, in *The Complete Guide to Digital Type: Creative use of Typography in the Digital Arts* (2006) analyses the ways that practitioners use screen-based type forms for their creations. In this work he highlights that: "The Internet has allowed designers to create interactive content in ways that were not previously possible" (Ellison 2006, p.136). Interactive content has been made possible with the widespread use and democratisation of technology and the ease of access to digital tools, which allows designers to produce complicated creations and projects with type that would otherwise be very difficult with traditional typographic media. The 1990s can be described as the decade of digital innovation; with the various screen based 'tools' used to develop screen based multimedia products that supported numerous options for media creation and integration. Typographic forms whether immobile or kinetic; with or without video and sound were now collocated within a single environment in order to be composed through various editing software and programming languages.

The Visible Language Workshop at MIT under the guidance of Muriel Cooper, formed a series of experiments that produced prototypes of multidimensional information displays that incorporated type. These workshops developed a radical new interface design for text that permitted the user to fly through three-dimensional textual spaces. It employed infinite zooming and different levels of transparency and opacity; designed to develop a new information landscape. VBL's designers, Lisa Strausfield, Suguru Ishizaki and David Small erected maps, charts and timelines, which users could then use to navigate, so as to simulate the conditions of flight. Subsequently, in 1994 VBL was succeeded by the newly formed interdisciplinary Media Lab research group headed by John Maeda. His Aesthetics and Computation Group worked towards the design of advanced system architectures and thought processes that enable the construction and exploration of the intersection between typography and programming, in order to exploit computer processing without the limitations and constraints of authoring tools. In exploring print and interactive design, Maeda published a series of unusual electronic typographic works that are representative of a new type of designer, the programmer - typographer.[54]

[54] See John Maeda: Flying Letters (1996) and 12 O'Clocks (1997).

Further exploration of digital type, took place outside academic circles. For instance, the design studio headed by Abbott Miller (Design/Writing/Research) designed innovative experiments in three-dimensional letterforms that took digital typography to a new level. Abbott understands the role of the designer today as an intermediary between ideas, images and words. He argues that contemporary computer technology has permitted the creation of new spaces for typographic communication. Exploring the logic of three-dimensional type and the ways in which it escapes convention, he argues that lathing, extrusion and texture-mapping has been definitive feature of new typefaces as well as new interpretation of existing and traditional classics.[55] His work was influential to other designers; Ji Byol Lee's lathed version of Univers and Univers Revolved was featured in New York Times Magazine in 1997, covering the issue of how computing has impacted daily life, but also illustrating screen based type as an image. In other words, the article highlighted the letter as image but also showed how the letter/image was still making its way back (from cyberspace) to the printed page. While, it is true that content created for the screen still finds its way back to print today, much has changed in recent years; for instance mobile devices and applications are created and used solely for the screen, while magazine and other traditionally printed material are creating more online content.

The Internet has provided the opportunity for typographic form to be developed *through* the screen and *for* the screen. Typography's development is no longer within the hands of the designer, or within the jurisdiction of the researcher. Rather, anyone who can access the internet and use it to send and receive messages can also alter its circumstances and environment. As a result of these transactions, it is the Internet's users that generate the Web's content. While typographers can use the Internet to collaborate on type forms and distribute type; websites like, typophile.com or typotheque.com are designed for exactly this reason. According to Jacques André (1999) and Leon Cruickshank and Brian Hughes (1999), the utility of the Internet is to offer a multiplicity of data and platforms that appear solely on the screen. This explains the rapid invention of new fonts for the web. In this context, companies such as Microsoft and Adobe, have expanded the ways in which typography appears on screen. The significance of this expansion is evident in the numerous possibilities that are created for the use and development of typography. According to Microsoft, "Microsoft's Typography group researches and develops fonts and font technologies, and supports the development of TrueType and Open Type formatted fonts by independent type vendors" (Microsoft.com 2017). As a result, there is

[55] See: J. Abbott Miller (1996) Dimensional Typography: Case Studies on the Shape of Letters in Virtual Environments. New York: Princeton Architectural Press, pp. 24-25.

no standard in onscreen type and this has contributed in shaping the web in its current recognisable form. The above statement also reflects the transformation of the web into a more developed and user friendly form. For practitioners, in the last few decades there have been opportunities to expand creativity, especially using type forms on the Internet.

Conclusion to the Contextual Review

To conclude the contextual review, I will briefly account for some of the ideas and discussions that have informed this thesis and its argument. As we have seen, typography is the art and technique of arranging type, in order to render written language legible and/or readable (an issue that I deal with at length in the following chapter). It deals with the art and design of written *symbols* (images and forms) that aim to communicate information and provide a form of contact with others through both, visual and verbal modes. Typography's history illustrates that its development (in practice and theory) relies on two separate apparatuses: the various changing and evolving technologies that it is intimately tied to (whether that's pen and paper, printing, or its digitization in more recent times) and language with its separate concerns, processes and operations. Typography changes and evolves, alongside the advancement of both technology and language. Until the eleventh century, words were written without spaces, as an uninterrupted series of letters, making the continuous script incredibly difficult to read. In fact, reading silently was considered a remarkable talent and writing even rarer still. For instance, in Europe during the fifteenth century only one in twenty (males) had the ability to write. It was not only that Gutenberg's printing press paved the way for mass literacy, changing the way people would read and write, but also the technology of printing enriched language and expanded the number of words available. Consequently, it augmented communication more generally. The word is a symbol combination that when organised in particular ways, presents and transmits messages. This thesis stresses that these messages are always embroiled in the tensions of linguistic mechanisms; simultaneously, visual and verbal, literal and metaphorical, particular to the speaker and communal or common to all who speak the same language. The written word then, is a representation and transmission of meanings and messages that formulate visual representations (thoughts) even when we are unaware (or unconscious of this fact). With the advent of Gutenberg's printing press, typography became the medium that educated and combated mass illiteracy throughout Europe. This continued all the way through to the mid-twentieth century, when women were finally inducted into the educational system. It

is no wonder so much emphasis has been placed on typographic clarity (all the way through to the twentieth century) since, this worked to facilitate the reading/writing process and educate a large portion of the population. The theory of deconstruction has been invaluable in explicating the importance of the written word and language more generally; demonstrating competently that we are linguistic beings with an inherent need to communicate with others. Communication is therefore, social, as the etymology suggests, "common," and views the human condition as the trajectory of social beings that live together in shared spaces. As our environments and mediums communicate through typography alter, so does our communication; we continually find new ways to communicate and share with one another, as I will examine in the evaluation of my workshops.

This thesis takes an interdisciplinary approach and analysis of typography. Modern art's typographic experimentation from the early twentieth-century onward, can be situated in two independent and very different disciplines: the visual arts and literature. Artists and designers have engaged with one another through an exchange of ideas and both are changed by the impact of technological development. Typographers throughout this history have progressively, and increasingly in more recent times, escaped from formulaic convention and principles that have guided them. This is not to say that convention has been entirely abolished; for the purposes of legibility these guidelines remain intact. However, the typographer of today has simultaneously taken on the role of designer/practitioner *and* artist, as discussed in the following chapter. Consequently, the field of typography has opened up and expanded its available avenues for the creation, or adoption of different techniques, approaches and methodologies.

The history of typography illustrates the new reality that people in Europe were experiencing in the fifteenth century was a phase of transformation and transition. Today, certain aspects of screen based and mobile devices have transformed our behaviours and the ways we communicate through typography in the communal and shared space of the virtual. The aspects I am referring to will be discussed in the following chapter and include: the virtual spaces (apps, websites, blogs etc.) that we and others occupy; the social networks that we belong to; the constant connectivity that these devices enable; the widespread circulation of information; and the ease with which, the interaction and dialogue with others is made possible. This thesis argues that digital technology as a medium, which acquires its space through the virtual has once again revived typography in the twenty-first century. This encounter has had the effect of typography reinventing the ways we communicate with the written word. *We are now experiencing type.*

Through interaction and the involvement of all of our sense, we are no longer simply passive readers. The following chapter looks at how typography has altered the ways with which we communicate and the behavioural changes brought about by mobile and screen based devices from a theoretical perspective. Rapidly changing technology has had (or has made evident and recognizable) the immediate impact of typography on reading. This thesis, suggests that the role of the reader/user has changed exponentially, as a result of typography's encounter with new technologies; the reader is now co-creator, co-designer and co-author of the screen page.

This chapter has emphasised the gradual changes in perceptions of typography that have increasingly demonstrated type's participation and contribution to the visual order; its involvement in the meaning-making processes and the creation of images. This (as I will show in the following chapter) is precisely why I argue, that typography in conjunction with new mediums of communication is changing communication and the reading process. I use the word communication to refer to the notions of readability and legibility, which have been a primary concern for typography since the early twentieth century. Although this thesis deals with both terms, it is primarily concerned with the notion of readability and the changes that it has undergone since the beginning of this century. This thesis argues that typography, in its encounter with mobile (or portable) screen based technologies is reinventing the ways we communicate.

Chapter 3

21st Century Typography: Redefining Communication

3.1 21st Century Typography: Re-defining Communication

This chapter will look at how the experience of virtual typography in digital spaces marks a new form of communication that differs from how we used, perceived and understood type in print, before portable devices such as, IPads, ebook readers and smart phones, entered the social scene. It examines from a theoretical standpoint how typography is impacted by mobile devices and how this has affected the communication process for both, the designer and the reader. This chapter aims to demonstrate how typography's encounter with portable screen based technology in the past few decades, has altered the aspects of communication that concern this thesis, namely readability and legibility. This chapter aims to set the stage upon which I demonstrate how the practice-led research conducted for this thesis has contributed to this discussion (see in more detail in *Chapter: 5*).

The impact that screen based portable technology has had on typography and design has seen a counter effect on the communication process. Research shows that the screen has altered the ways we read and write. In 2008 Harald Weinreich and Jakob Nielson published a study which illustrates that screen based readers, when presented with longer content, read less than 20 percent of the text on screen (Weinreich & Nielson, 2008).[56] Print and screen based technologies, as I will discuss and show in my own practice-led research in *Chapter: 5 Practice Methodologies*, make available different modes and semiotic recourses that shape processes of meaning making in different ways. According to Carey Jewitt, in 'Multimodality, 'Reading' and 'Writing' for the 21st Century' (2005) "Screen based texts are complex multimodal ensembles of image, sound, animated movement, and other modes of representation and communication […] The particular design of image and word relations in a text impacts on its potential shape of meaning" (Jewitt, 2005: 316). Jewitt claims that the multimodal character of the screen offers the writer and reader new potentials both, for reading and the design of the text through engagement with it. The multimodal potential of typographic design and how it affects readability is something that I explore in "The Typeface Project" and through the design process of the prototypes that I created for these workshops. The portable screen has allowed typographic design to flourish and for the designer to take a more active role in the

[56] Weinreich & Nielson's research show that there are a number of different factors that affect the way we read on screen and make it different to the way we read printed material. This includes: small font size, spacing and low contrast. While other researcher's, like Tova Rabinowitz in Exploring Typography explains that reading on screen, unlike print, is inherently more tiring to the eyes which, encourages the reader to scan the page for useful content. See Exploring Typography (2016; pp.218)

communication process that typography entails. This is a very different understanding of the designer's role advocated by typographic practitioners, like Stanley Morison at the turn of the twentieth century (which, I will discuss in depth, later in this chapter). Ellen Lupton writes:

> Digital media enable both users and producers, readers and writers, to regulate the flow of language. As with design for print, the goal of interactive typography is to create architectural structures that accommodate the organic stream of text. But in the digital realm, these structures and the content they support have the possibility of continuous transformation (Lupton, 2000: 36).

According to Lupton, typographic design has proliferated in the media-rich environments of contemporary culture that screen based technology has made possible. In fact, the written word in digital environments has changed in its very nature: "The visual expression of language has grown increasingly diverse, as new fonts and formats evolve to accommodate the relentless display of the word" (Lupton, 2000: 49). Tova Rabinowitz echoing Lupton's statement claims that: "The profusion of new font designs that have emerged in recent years echoes the design productivity of the Industrial Revolution" (Rabinowitz, 2016: 33). The practice-led research conducted for this thesis (*Chapter: 5 Practice Methodology*) explores the changes brought about by screen based and particularly, portable devices on typography and the ways we communicate.

Typography is defined here, as the practice and study of communicating through the written word by means of textual (voice) and visual imagery. In the previous chapter, the Contextual Review, I discuss how typography can be both visually expressive, as well as textually expressive. Yet, the enquiry into the aims and intentions of typography in the communication process is a point of contention among experts within the field and a catalyst for discussion and debate. This is a discussion that I will take up in the following section of this chapter. The aspect of typographic communication that I specifically focus on relates to issues of readability and legibility, and particularly, how these notions impact the understanding of design and the reading process. As I discuss in the following section of this chapter, a dichotomy exists in typographic practice and theory, which does not refer to practice and theory. Rather, the dichotomy that I refer to, demonstrates two diverging lines of thought within typographic theory, that has resulted in informing and generating two types of practices. On the one hand, practioner/designer's like, Jan Tschichold and Stanley Morison, are guided by theories that typography has as its primary purpose to communicate and transmit clearly the messages of an author to a reader. Hence, their practice concentrates on legibility. On the other hand, a different set of practitioners and artists explore typography as a visually expressive art form and

suggest that its stylistic features can enhance the messages that it is trying to convey, as well as generating new messages. These theorists, artists and practitioners, like David Carson, Marinetti and others, discussed in the previous chapter, tend to emphasise readability in typography's communication process.

The next section discusses the differences between readability and legibility, as the two terms are often used interchangeably without adequate distinction. The section will provide a detailed account of Stanley Morison's principles of typography, which have played an important role in the preliminary stages of this thesis and especially in the *Typeface Project* workshops (see analysis in *Chapter: 5 Practice Methodology*). Subsequent sections focus on how mobile technologies have reinvented typography; how properties of existing technology alter how typography communicates, as well as how we communicate through it. I propose that typography is currently located at a threshold between two spaces: print (material) and digital (virtual). I suggest that we are currently in the midst of an unfolding; an in-between stage which, has neither exceeded the old (print) nor, has it fully passed into the new (digital). This will be illustrated by examining how this unfolding is presently being experienced by typography and the ways it is impacting the process of reading. Finally, this chapter includes an important section dedicated to hypertext, e-poetry and eBook art projects. This section will address how the transitional stage discussed in the previous section (See analysis in Section 3.5 of this chapter), is being played out in practice; highlighting some of the most innovative and exciting typographic art projects that are making great strides in exemplifying this in-between stage and the vicissitudes brought about by typography in communication. These projects are introducing novel approaches to typographic communication, engaging the reader in interesting and informative ways. This chapter will provide the theoretical arguments and background that has informed my practice, which I discuss in *Chapter: 5 Practice Methodology*.

3.2 Communication: Readability and Legibility

A significant aspect for communicating with type concerns the issue of distinguishing between *legibility* and *readability*. This is an issue that every designer needs to contend with when making type design choices, and is one of the predominant concerns and debates surrounding the introduction of new typographic forms. In both practice and theory, legibility remains a vital concern in the creation of type in screen based and portable technologies. The debates

surrounding the variances between the terms have generated a plethora of views and definitions that are not always in agreement. Surprisingly, the terminological and theoretical distinctions come from a variety of disciplines and fields of study, including psychology, philosophy and practitioners as well as theoreticians of typography and graphic design. The two terms refer to different albeit, correlated functions of type within the process of communication, which affect both the designer and reader. Broadly speaking, legibility is a function of typeface design and is often treated by designers as a measure of how easy it is to distinguish one word, or letter from another and by extension, blocks of text. Whereas, readability can be applied to the overall reading experience and is a function of how typefaces are employed, it can also encompass many issues of aesthetics. Legibility deals with issues of clarity in the written word. Readability covers broader aspects of the reading process, including the issue of how attractive or inviting a typeface is to read and/or view, and elements of a typeface that hold a reader's attention. Hence, readability is viewed, as dealing with issues of aesthetics and the reading process. It responds to the question of *how we read.*

Miles Tinker, a renowned and internationally recognised authority on print legibility, defines legibility: "as a concern for perceiving letters and words, and the reading of continuous textural material" (Tinker cited in Claire and Snyder, 2012: 185).[57] Tinker argues that legibility concerns how characteristic word forms are perceived. He argues that the shapes of letters must be distinguishable, and uninterrupted reading of textual material should be easy, rapid and accurate. He predominantly focuses on how text can provide maximum comprehension. In earlier writings however, Tinker had used the term readability to define what he later understood as legibility, illustrating that disentangling the two terms was a challenge even to researchers like him.[58] In subsequent work, he argued that readability is the quality that renders a text inviting and easy to read, or even pleasurable to the eye and avoids issues like boredom, or fatigue. Hence, he defines legibility and readability in terms of perceptual and cognitive functions; legibility adhering to clarity of recognition (an issue I discuss further in *Chapter: 5* as *decoding* and *recoding* See Section 5.2) and readability adhering to an aesthetic function, which can be deemed as psychological and subjective.

[57] Miles Tinker was a psychology professor between 1927 and 1959 at the University of Minnesota. Tinker's enquiry on the effects of typographic practice is one of the most extensive ever conducted. Yet, his work remains relatively unknown due to the fact that his work was published in psychology journals that were not available to practitioners in the print industry. His work was exclusively focused on the efficiency of processing by readers; although this resulted in formulating general guidelines and conventions for the designer.

[58] See Tinker M (1932) "The Influence of Form of Type on the Perception of Words". Journal of Applied Psychology pp 167-174.

However, a variety of operational functions can determine whether letterforms are perceived as clear, or as pleasurable. According to Adrian Frutiger,"the foundations of legibility are like crystallization, formed by hundreds of years of use of selected, distinctive typefaces. The usable forms that have stood the test of time are perhaps permanently accepted by human-kind as standards conforming to aesthetic laws" (Frutiger cited in Blackwell, 1992: 172). Frutiger points out, that the principles guiding typeface design have been formed through years (centuries even) of experimentation and use, that can be attributed to familiarity; having grown accustomed to a typeface design by consistently coming across it in all sorts of reading material. Familiarity is often discussed as a contributing factor to the perception of legible type. According to designer Zuzana Licko, "Typefaces are not intrinsically legible. Rather, it is the reader's familiarity with faces that accounts for their legibility. […] typefaces that we perceive as illegible today may well become tomorrow's choices" (Licko, 1990: 12). Licko's view is partly consistent with the theory of language put forth by contemporary philosophical thought and linguistic theory (I discussed this in Section 2.4 pp. 39-49). Language is thought of as a living organism that is in a continual state of change and simultaneously, viewed as socially constructed and inherited from previous generations. This inherent contradiction within language illustrates that typefaces are indeed, not intrinsically legible, as Licko suggests. The propensity for language and communication may be an inherent capability, yet language itself is a skill that we acquire through experience and repetition; we learn how to speak, how to write and how to read. Peter Meterns contends that: "Letters are legible. […] illegible letters do not exist. Illegibility does not exist" (Meterns, 1990: 4). While there is merit in discussions relating to familiarity it is not the only factor that needs to be considered when discussing issues of readability and legibility. Addressing familiarity alone, can oversimplify a complex subject and the productive discussions and debates that have ensued from this line of questioning. Familiarity cannot account for the contemporary explosion of multiple and varied typeface designs that have resulted from screen-based technology.[59] Many of these designs are considered legible but are unfamiliar, as they are new. While many others, conform less to the rules of legibility and yet, are equally communicative and we are still able to read the symbols with relative ease.

[59] It is important to note that a variety of issues have arisen from the explosion of web font design. Ellen Lupton claims: "type designers lashed out against the web font explosion, which raised a myriad of problems. Typefaces that looked great on a Mac fell apart in Windows; variations among browsers and operating systems broke designs […]" (Lupton, 2014: 78).

While legibility can be considered as having more easily measurable characteristics, readability is much more difficult to measure. Readability and legibility refer to two different aspects of the reading process. Legibility deals with clarity and optimal understanding. Readability deals with the reading process more generally. However, can a text be readable without being legible? And is it imperative for type to be legible? The answer to this question depends on how one views the aims, or primary functions of type. Type can be viewed as functioning to provide optimal comprehension. Or, as numerous artists and designers have shown, type can be viewed as an image in its own right with little regard for legibility. Both categories of type are similarly concerned with and address different modes of typographic communication. Director of "Words and Letters" at Monotype Imaging, David Haley claims that,

> Not all typefaces are designed to be legible. Many are drawn to create a typographic statement, or provide a particular spirit or feeling to graphic communication. Some are even designed just to stand out from the crowd. To the degree that a typeface has personality, spirit, or distinction, however, it often suffers proportionally on the legibility scale (Haley cited in Bradley, 2017).

According to Hayley, there is *text type* that is designed to be legible and there is *display type,* which is designed to attract the reader and treats type as an image. Text and display type, constitute (as far as this thesis is concerned) different ways of reading, as well as different elements in the reading process. The term legibility will be used to cover aspects of the reading process mainly dealing with the technical (and measurable) aspects of design that provide it with maximum comprehension. Chapter: 5 takes these issues further and will be discussed as a process of recognition (de-coding/recoding) of character and symbols.[60] Readability is a primary concern in this thesis and is used to refer to the reading (meaning-making) process at large. It adheres to a process which, involves the recognition of patterns and re-constructing meaning.[61] The latter involves a complex perceptual and cognitive process which informs *how we read.* Readability is involved with what Haley describes as display type and addresses the issue of how we read type, when type is presented as an image; readability can be equally communicative without necessarily being legible. These are issues that will be discussed and examined in "The Typeface Project" workshops, where participants were asked to experiment with a series of prototypes that were created to investigate the readability of letterforms and fonts. This will be discussed at length in *Chapter: 5* (See: pp. 115-164).

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[60] See Chapter: 5 Practice Methodology (pp. 136-196).

[61] This is similar to how Mathias Hilner addresses the reading process in Virtual Typography (2009). However, Hilner does not differentiate between legibility and readability; and does not view the process of de-coding as a function of legibility, or re-coding as a function of readability.

Virtual typographic communication is increasingly expressive in visual and emotive ways that remain communicative but are less concerned with clarity and issues of legibility. As we have already seen, experimental designers intentionally create type, which undermines legibility and yet, still argue that illegible text does not influence its communicative abilities. Artistic movements like Futurism, Dadaism and Symbolist poetry created type which meddled with legibility and yet, illustrated its communicatively rich and poignant capabilities (see *Contextual Review*). Nevertheless, legibility remains significant to theories and practices of typography, and practioner/theoreticians like, the aforementioned Miles Tinker, who conducted countless experiments on the legibility of type, as well as the seminal work of Stanley Morison in *The First Principles of Typography* (1936), have contributed equally to the field.

3.3 Legibility: Stanley Morison's Typographic Principles (1936)

The prominent print historian, designer and practitioner of typography, Stanley Morison wrote *The First Principles of Typography* in 1929. In this small but influential text, he sets out to create a range of typographic principles that would come to define typography and become a standard to be deployed by printers and publishers alike, for the purposes of book printing and publishing. Morison was a typographic consultant for the Monotype Corporation (between 1923 and 1967) and for The Times newspaper between 1929 and 1960. Having publicly criticised The Times for its poor quality printing, he was commissioned by the publication to create a typeface that would be easy to read. In response, Morison designed the *Times New Roman* typeface through collaboration with graphic artist Victor Lardent. Together they designed and developed one of the most widely used typefaces in contemporary history (Eye no. 84 vol. 21 2012). The Times New Roman design showed that Stanley Morison had acquired an outstanding depth of knowledge through experience. The main focus of his design was to create a type that provided optimal legibility; readability (and issues of aesthetics) are considered secondary. Times New Roman rapidly expanded and became popular in all forms of book printing and general publishing. In examining every aspect and detail of the typographic process while co-creating the typeface, he used his findings to publish *The First Typographic Principles*. This small essay acted as a guideline for printers, publishers and typographers, enabling designers to create legible typefaces. Morison was a pioneer, not only because his work was used as a standard for printing but because it extended beyond its original use in print and managed to survive and cross over to screen type. Times New Roman has been deployed as a default typeface in numerous applications for Microsoft Windows (especially in its early word processors and Web browsers).

It thereby managed to endure the typographic shift from print to screen. Morison's principles of typography may seem outdated in the contemporary digital world and certain characteristics that he describes are indeed becoming steadily obsolete, yet certain aspects of his work remain relevant today. Within the context of this thesis, Morison's principles have acted as inspiration and have motivated much of the preliminary stages of this thesis' research question. I will be discussing many of these issues in Chapter 5.

Morison's essay *The First Typographic Principles* originally appeared as an article in issue No. 7 of "The Fleuron" published in 1930.[62] It emphasises the notion of typographic legibility, over and above issues of readability and aesthetics. He states that,

> Typography is the efficient means to an essentially utilitarian and only accidentally aesthetic end, for the enjoyment of patterns is rarely the reader's chief aim. Therefore, any disposition of printing material which, whatever the intention, has the effect of coming between the author and the reader is wrong (Morison, 1936: 1).

According to Morison, the role of the author and the reader is a symbiotic relationship where the type designer acts as a *silent and invisible* mediator between the two. Morison argues that the designer's role is to imperceptibly present the author's work and aid the reader's comprehension. Type here, is understood to service the content and the type designer is viewed as the silent and invisible intermediary between author and reader (a discussion that I return to further down). He argues that a typeface which focuses on legibility will not come between, or create a distance between the author and the reader. Rather, legible type removes the gap between the two. Morison's work conflicts with the contemporaneous twentieth century art movements that were gaining weight during the time that he was writing this work. His principles aim at providing a clear and concise guideline of concrete conventions for the typographic practitioner (how to arrange letters, distribute space, layout and control type) so as to "aid to the maximum the reader's comprehension of the text" (Morison, 1936: 1). Within this context, aesthetics is considered "accidental" and immaterial. Although, he does mention that

[62] In 1922, S. Morison with H. Jackson, F. Meynell, O. Simon and B. Newdigate instituted the London Fleuron Society that published a refined typographic journal called "The Fleuron", which was produced in seven volumes between 1923 and1930. Each of The Fleuron volumes contained numerous papers with a variety of subjects including: illustrations, specimens and images, essays by leading authors of typography and book art, as well as, craft movements that were influential during this era. The British journal remains significant due to the influential essays, as well as typographic materials that are still relevant to the philosophy, history, theory and design of typefaces today.

novelty in typographic practice is permitted and even desirable in certain contexts (for political ends, commercial purposes and religious text). Despite this, he maintains that typography within the category of book printing, "requires obedience to convention which is almost absolute" (Morison, 1936: 2). Thus, in stark contrast to the art movements covered in the previous chapter, Morison instead, moves towards the commercialisation of typographic design by providing a standard for industry. When dealing with the principles of typography, I found that Morison's principles are partly methodological and in part philosophical; I have separated and distinguished these (see figure below). For the purpose of this thesis, Morison's principles will be viewed in the light of contemporary innovative processes in screen based typographic design and will inform "The Typeface Project" workshops which I discuss in detail in Chapter 5: *Practice Methodologies*.

It is important to note that while Morison's principles derive from his desire to create a more legible typeface, the terms (as we shall see shortly and in more detail in later chapters) legibility and readability, tend to overlap in his work. Morison created the Times New Roman typeface as a paradigm for legible type and the guidelines (or principles) derive from his experimentation with creating this typeface. Yet, his principles tend to explain how to use type and combinations of type in order to make a page (overall) more readable. Hence, he often takes readability to mean legibility. As I show in *Chapter 5* and discuss in more detail further down, this is one of the early findings to come out of the *Typeface Project* workshops.

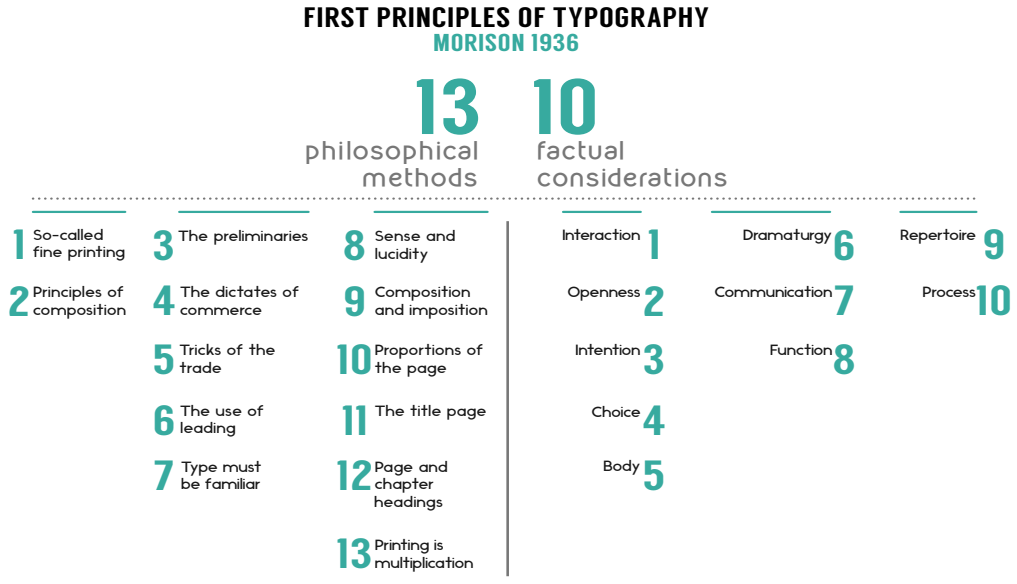

Figure 1: Mapping the First Principles

As analysed, typographic design was at the forefront of early twentieth century art movements (See *Chapter: 2 Contextual Review*). Type as a graphic (visual) element in its own right, was explored. In contrast, Morison moved towards standardising typography for printers and publishers day to day book production; he therefore created a paradigm for type and text through convention, by determining which characteristics produce optimal legibility. As McLuhan points out, in *The Gutenberg Galaxy* (1980) "The invention of typography confirmed and extended the new visual stress of applied knowledge providing the first uniformly repeatable commodity" (McLuhan, 2011: 329). Morison maintained that in order for a type to have a "future" it: "will neither be very 'different' nor very 'jolly'" for, "type design moves at the pace of the most conservative reader. The good type-designer realises that, for a new font to successful, it has to be so good that only very few recognize its novelty" (Morison, 1936: 6). For Morison, typography had a clear purpose; its main aim is to communicate effectively and aid the reading process "at the pace of the most conservative reader". Literacy was still changing in Continental Europe during the 1920. In fact, it was not until the second half of the twentieth century, when the female population was inducted into mass education that literacy began growing exponentially. It is therefore, unsurprising that Morison is focusing on issues of legibility, since clarity and consistency remain a significant aspect within the educational context and the growth of literacy during this era. This view guided his practice and the purpose of typography was driven by the aim to *transmit* the messages of the author. Morison's view of typography is indicative of his understanding of reading which, tends to conceptualise it as a simple activity of "seeing" and the role of the reader as a receptor of authorial messages (as intentions). The role of typography in this formulation becomes a medium which facilitates the (author-reader) relationship.

Whereas, Morison attempted to draw the reader and author closer together, he separated the artist from the printer when he argued that: "No printer should say, 'I am an artist, therefore I am not to be dictated to. I will create my own letter forms,' for, in this humble job, such individualism is not helpful to an audience of any size" (Morison, 1936: 5). Even the aesthetic elements outlined in his principles are prescriptive. He claims, "The craving to decorate is natural, and only if it is allowed the freedom of the text-pages shall we look upon it as a passion to be resisted. The decoration of title-pages is one thing - that of a fount to be employed in books is another" (Morison, 1936: 20). He goes on to say that the necessities of the mass-produced book require uniformity and that, "the typographer's only purpose is to express, not

himself, but his author" (Morison, 1936: 22). In many ways, the role of the typographer (or printer) for Morison, is predominantly utilitarian and he therefore, limits this role to that of presenter of the author's work. In fact, the artistry of type is understood as secondary to the art of writing and authorship. Morison refers to the typographer as both "space controller and reader" and distinguishes between typographers and type designers. He therefore, provides some insight into how he views the reader: the reader is a passive receiver of the author's work. The typographer/practitioner has only slightly more authority than the reader since, he is in control of the composition, imposition, impression and paper, which places him in a "laboratory of limited pieces" where they can create representations that are intended for public consumption. The value in Morison's principles now, is in providing a process for the typographer and printing method through the experimentation of what might be called "micro" (as well as, certain aspects of "macro") details. Undeniably, there is an art in his design principles but a different kind to the one in artistic practices and art movements that were gaining currency during the time of the article's publication in 1936. His methodologies may lack artistic freedom but aim at fine-tuning his craft instead. He himself views his typographic principles, as providing a counter-balance to the leading exponents or advocates of technocratic structures that until then had organised designers and their methods.

Morison's view may appear conservative, prescriptive and uninterested in experimental forms of typographic innovation. However his work, and more precisely his Times New Roman typeface attests to the fact that he was not averse to experimentation; the typeface underwent a myriad of experimentations in order to arrive at what he considered an optimally legible or comprehensible type design. Rather, it would be more accurate to draw the inference that the kind of typographic experimentation that interests him is for the purposes of comprehension (as opposed to artistic, political or aesthetic means). Morison was not opposed to technological and typographic innovation. His experimentation may have culminated in creating a blueprint, or standardized method of typographic design for book printing that could repeatedly produce and reproduce text that was optimally comprehensible (as well as, ease for the designer, printer and publisher) yet, those rules were neither rigid, nor stagnant. For one, typographic conventions were deployed (as we have seen in the previous chapter) by the artistic movements of the early twentieth century as a point of contention, thereby increasing artistic experimentation and creating a platform for discussion. We can identify two different and main types of exploratory methods that organise Morison's study. Firstly, he seeks to find a way to present and articulate

the principles that he accumulates; by outlining the principles of typographic practices he creates the space, which enables a discussion to open up regarding the immediate and everyday practices of typography to be defined and questioned. The second approach outlined in this book, engages with practice based applied research methodologies that include: legibility (as well as readability) issues, historical evidence, and social-methodological approaches. In other words, Morison's practice informed his theory and vice versa. Morison's contribution overall to the discourse on typographic principles is mainly concerned with how typography is to be deployed by designers who are operating within this area and not so much on the effects that derive from the social technological system. Morison's influential first typographic principles are still applied in today's typographic use, design, style and development.

Stanley Morison's view in *The First Principles of Typography* embodies a definition of typography that expresses its paradoxes, as craft and design, art and commercial enterprise, practice and theory; through the inclusion of strategic thinking and creative tactics that specify the various components of the typographic process including, the roles of the author, creator and reader that are considered distinct and separate, but also form reciprocal relations. Perhaps, one of the reasons why the *First Principles of Typography* appeals to designers and typographers is that this essay and its content appear to be an updated (for each time) manual, artefact, and possibly a generation guide for typography.

It is significant how these principles can be adapted and how they translate within the context of screen based (portable) technologies and what implications these might have for the designer and the reader/user. The widespread use of portable devices, the exponential growth of social media platforms and the many applications and websites that keep us occupied and permanently connected at all hours of the day, reveals a cultural and social transition in how we now engage with the written text and others. This (as we shall see in the rest of this chapter) has had grave effects on typography and the ways we communicate. To be more precise, typography in its current phase is changing aspects of the communication process which fall under the notion and category of readability.

3.4 Readability: In between the Material (print) and Virtual (digital)

This thesis locates typography's present standing, as occupying or existing *between* two spaces: the material and the virtual (or between print and digital). This is reflected in

contemporary art practices which fuse print with digital technology to create innovative work in the field of typography. Marshal McLuhan's central ideas and concepts are key here. What he calls the, "typographic man" is a concept which exposes the evolution and changes but also, challenges that typography (and the printing press at large) present with regard to the communication process. In *The Gutenberg Galaxy: The Making of Typographic Man* [1962] Marshal McLuhan analyses the various transformations that had taken place in European culture and human consciousness as a result of the enormous impact of mass media and particularly the printing press. He identifies the electronic age as an *in-between* stage comparable to the Elizabethan era which, "had advanced into the typographical and mechanical age" (Mcluhan1980:1). If the technological era has something in common with the Elizabethan era it is because similarly, "we are experiencing the same confusions and indecisions which they had felt when living simultaneously in two contrasted forms of society and experience" (McLuhan, 1980: 3). According to McLuhan, we are at a crossroad of a cultural divide. That is, between the old Modernist culture and the Postmodern age which, has been transformed by new forms of media (information, cybernetics and computers); all of which have significantly modified the social arena and the older typographic culture that has provided the framework and/or structure which, remains a persistent and important element of our existing reality.

However, while we share with the Elizabethans the experience of a shifting cultural framework, the ideological structures that shape our consciousness and the ways we interpret our reality has entered a new phase. McLuhan maintains that whereas, "The Elizabethans were poised between medieval corporate experience and modern individualism, we reverse their pattern by confronting an electric technology which would seem to render individualism obsolete and the corporate interdependence mandatory" (McLuhan, 1980: 3). There are several points to unpack here. This view is consistent with what he has described with the term "global village". That is, technology has contracted the globe and transformed it, physical distance has been eliminated and social spheres have expanded. In many ways, he anticipated the internet as a medium that would increasingly create communal and shared spaces of social existence, where individualism has (partly) lost its rank. However, he points out that simultaneously our dependence or, *inter-dependence* (since, the one upholds the other) on large corporations (like, Google, Ebay, Facebook, Amazon or Microsoft) has increased and is a mandatory component in order for these shared spaces to remain in existence.

McLuhan had predicted before the existence of the internet that: "the next medium, whatever it

is may be the extension of consciousness – will include television as its content, not as its environment, and will transform television into an art form (McLuhan, 1980: 52-53). The understanding that "the next medium" would function as an "extension of consciousness" is consistent with McLuhan's well-known phrase: "the medium is the message". The interplay between human interaction and technology illustrates that the medium is no longer entirely separate to and external from human beings. Rather, the medium is internalized and incorporated within oneself, becoming an extension of our senses. The extended use of mobile technologies is particularly pertinent to this point. The mobile phone is typically always with its user and rarely separated from its owner (and it is always ready for use at all times). He maintains that, "Now, in the electric age, the very instantaneous nature of co-existence among our technological instruments has created a crisis quite unique in human history. Our extended faculties and senses now constitute a single field of experience which, demands that they become collectively conscious" (McLuhan, 1980: 5). Communication is therefore, heralded into new forms of collective existence. Mobile devices, social media platforms and other applications and/or websites, engage users in different social and communal activities that have changed communicative exchange. At the same time, these entities have also enabled a multiplicity of voices and opinions to be heard. As a result, we seem to have less of a collective consciousness and more access to shared interests in wider social spaces. McLuhan is clearly interested in exploring how technology was changing the social arena, politics and culture and how it is directly impacting human consciousness and behavior. For him, it is much easier to isolate and understand technologies that are slow. In contrast, today technology functions faster than ever before; sight, sound and movement are now concurrent, immediate and global in their nature, making it much more difficult to fully grasp the transitions that are taking place, or even provide a comprehensive study.

Technological changes have altered our lives profoundly; we live in big cities, where speed informs our behaviour and our communication with others. Our continuous use of screen-based and in particular, mobile technologies (I will discuss this in more detail further down in this chapter) on a daily basis has modified how, what and why we read and write. McLuhan is right to point out, the all-consuming impacts of modern technologies. Historically, the technologies of reading and writing have always been shown to be dynamic. Today, reading and writing is once again changing. In the digital age we have reinstated our capacity to read in accordance with our daily onuses. As Kevin Kelly points out: "digital screens illuminate our lives. Letters are no longer fixed in black ink on paper, but flitter on a glass surface in a rainbow

of colors as fast as our eyes can blink. We are now people of the screen […] these newly ubiquitous screens have changed how we read and write" (Kelly 2010). Yet, the existing technology has paradoxically transformed communication in both, more invasive and yet more personalized as well as, creative ways. User's experiences with screen based technology and aspects of communication that deal with readability are often contradictory in terms.

The prominent feature of mobile technologies is that they are typically handheld and portable screen based devices (i.e. mobile phones, tablets, laptops or e-readers). Although the initial development of mobile phones was to provide communication services (a portable telephone) its development and added features has offered its users more creative ways to connect with others. Portable screen based technologies have evolved into mini personal computers, which keep us constantly connected through wireless internet and with various software (interface, apps etc.) and in-built hardware (i.e. cameras) enhance the communication process and the ways with which we communicate. What made mobile devices integrally different to home computers is both, the feature of mobility and the feature of constant connectivity; both, have generated their own inconsistencies (contradictions) and tensions in how user's experience communication with others: The power to connect with others *independently* of space and time has created new forms of *dependency* (i.e. constantly checking social media). Users can choose when to *engage* in a discourse (i.e. comment in a news article, or send a tweet), yet this continuous dialogue within virtual environments requires a *disengagement* from our real and material realities. *Private* communication can easily be made *public* through sharing in social media, though this can be used for private gains; the boundaries between public and private are increasingly being confused.

Unmistakably, portable screen technology has changed the ways we communicate. According to Sherry Turkle, "We expect more from technology and less from each other […] Technology appeals to us most where we are most vulnerable" (Turkle 2012:TED Talk). Turkle observes that screen based technologies and in particular portable devices are turned to for companionship at times when what we most need is each other. Although we are constantly connected and part of communal spaces where we can communicate at the touch of a button, we are increasingly alone (or lonely). In 1984 she published, *The Second Self: Computers and the Human Spirit*, where she observes the changing relationship between technology and people especially since the integration and wider circulation of computer technology. Since Turkle's 1984 research relating to rapid technological innovation (an idea that still runs through her work

as she still analyses these characteristic changes today) the phenomenon of swift technological development has extended to connectivity and interactivity in diverse gadgets that can zip from place to place and connect to different networks at the beat of a button or a swipe.[63] Turkel's presentation at a TED Talk in California "*Connecting, but Alone?" (2012),* examines how human beings as users of technology have become obsessed with finding new ways of communicating through their devices. She argues that portable devices have enhanced the communication experience and allowed us to travel through and with information. The roles of designer and user (reader) is transforming. When considering the role of the designer and the influence of the user over time, she argues that there is an increased influence of the latter over the former. She argues the complexity of issues that the designer must now contend with; information that is created to appear on screen needs to be adjusted to each portable device, taking into consideration: the size, the space, the interaction and time, in relation to each user. Despite the difficulties this involves she argues that, digital technologies have allowed us to have more control over everything, from our personal physical navigation within the world, to the ways with which we find and use information. This in turn, informs our understanding of the world and our environment.

While, the way we read on screen has ultimately modified the reading process, we remain in an in-between stage, where the printed book still remains an important aspect of life. Readers, while welcoming the new generation of electronic reading devices, still buy paper copies of books in the main. However, the pace of the shift towards the digital has taken many people within the industry by surprise. Time and again, the conversation leads to blanket statements about 'the end of books' where little attention is paid to the vast potential for new hybrid forms of text (see following section on Hyper-text, E-Poetry and Ebooks) and the fundamental shifts in the writing-reader axis that new technologies are enabling. Attributing too much agency to technology is often tantamount to the abdication of (subjective and collective) responsibility and what concerns this thesis is broadening the discussion toward notions of collaboration and creativity. The digital revolution is transforming the ways that people create and distribute art. Inexpensive, professional-quality technologies like, digital cameras and camcorders, photo and video editing software, MP3s, as well as, digital music recording and manipulation, and even word-processing make it possible for more people than ever before to create art with high

[63] In 2010 Google published data demonstrating that the amount of global mobile data through different devices was three times the size of the entire global Internet in the year 2000. Users communicated throughout their device or read text that has been moderated in other devices, different from the one they owned. Their report at the time, also suggested (the highly ambitious claim) that by 2015 nearly every single human on earth will have a portable device.

production quality. The Internet gives creators a means of low-cost distribution. This combination of digital creation and online distribution is extremely powerful. Online artistic production, supported by digital technologies, enables artists to create works and distribute them to diverse audiences and to receive direct feedback. What is more, the reader takes a more prominent position and is an active participant in narrative construction. This is something that I explore in the Wasteland Project (See *Chapter: 5* pp. 164-181).

3.5 In-Between Practices: Hypertext, E-poetry and EBooks

Digital poetry is a form of electronic media that consists of numerous forms; some of these include: hypertext, kinetic poetry, computer generated animation, interactive poetry, digital visual poetry and many others. Great strides have been made towards typographic experimentation in digital poetry and literature in its various forms. As we shall see, experimental projects in these areas are often integrative and multidisciplinary; a single project can include elements of hypertext, kinetic poetry, interactivity etc. and take its subject matter from various disciplines and fields of study. The term *hypertext* was coined by Theodore Nelson to denote the phenomenon of text displayed on screen, or electronic devices that allow for references (hyperlinks) to other texts, which a reader/user can access easily and quickly. In literary studies digital poetry has been linked to the genre of electronic literature that is characterised by the use of hypertext links and as a connected network of nodes that readers are able to navigate in a non-linear fashion.[64] As Christopher Keep points out, "Hypertext allows for multiple authors, which in effect means the blurring of the author and reader functions, as well as enabling extended works and multiple reading paths" (Keep, 2000). More recently, in printed and electronic journals, as well as type specimens (since the 1990s and early 2000s) the terms *Hyperaction* and *Hypertext* have been used interchangeably to denote a new technique that corresponds with contemporary developments in the fields of screen design, typography and applied digital arts. When today's practitioners and scholars of typographic and digital media, and graphic design speak of hyper action, they are referring to this new typographic communication experience through the networking environment.[65] My own practice-led

[64] Nelson popularized the notion of hypertext in Literary Machines (1987). His vision involved implementation of what he called a "docuverse"; a globally distributed electronic library of interconnected documents.

[65] For example: Bob Gordon (2001) in Making Digital Type Look Good pp. 162, 165, 166. James M. Nyce (1991) in From Memex To Hypertext: Vannevar Bush and the Mind's Machine

research explores the use and effects of hypertext in two different projects: The Typeface Project and the Wasteland Project (See Chapter : 5 pp. 117-154 and pp. 164-181 respectively).

According to Jay David Bolter in *Writing Space: Computers, Hypertext and the Remediation of Print (2001),* hypertext emerged with the rise of the personal computer and the advent of the World Wide Web as a remediation of print. Bolter's area of expertise is to a great extent, the evolution of media and the role of computers in writing more specifically. The notion of *remediation* is the title of a book co-authored with Richard Grusin, *Remediation: Understanding New Media* (1999) and describes how new media is always created by building upon previous technology and knowledge. For instance, they argue that photography is the remediation of painting and film is the remediation of theatre. Bolter in *Writing Space* argues that, while hypertext and electronic books are a remediation of print, hypertext has characteristically redefined the text. He argues, "Where printed genres are linear or hierarchical, hypertext is multiple and associative. Where a printed text is static, a hypertext responds to a reader's touch. The reader can move through a hypertext document in a variety of reading orders" (Grusin, 2001: 42). Hypertext is multilinear and interactive, however as Grusin is quick to point out, electronic hypertext also seeks to pay homage to the medium that it remediates (or seeks to refashion) and acknowledges its debt to printed forms, which it also rivals. Richard Lanham in "The Electronic Word" (1989) is in agreement with Bolter, arguing that hypertext demands an active reader and blurs the distinction between author and reader. Hypertext (even in its most restrictive forms) invites the reader to pick and choose his or her way from node to node, therefore determining how the text is to be read. Hence, it is not possible to be a passive reader of hypertext; the reader is given the freedom to annotate existing text or add entirely new text to the network; to create new links between text; and is able to change the appearance of everything including altering font. As a result, the reader is viewed as (at the very least) a co-author of the text and at times the primary author. Lanham claims:

> The interactive reader of the electronic word incarnates the responsive reader of whom we make so much. Electronic readers can do all the things that are claimed for them--or choose not to do them. They can genuflect before the text or spit on its altar, add to a text or subtract from it, rearrange it, revise it, suffuse it with commentary. The boundary between creator and critic (another current vexation) simply vanishes (Lanham, 1993:6).

Hypertext, according to Lanham (in contrast to print) has reawakened the senses and introduced the reader to a new, and perhaps more stimulating way of processing and retaining information. The general consensus is that hypertext is much more fluid than print; is multiple and enables

change in ways that print was unable to previously offer. In recent years there have been some notable projects and work done in this area that are worth mentioning.

The practice research project "Connected Memories" (2009) by Dr Maria Mencia, explores oral histories through the use of technology and its ability as a medium, (through interaction and participation) to perform and share narratives.[66] Interestingly, Mencia's project, explores how technology (and electronic poetry) can work in tandem with the experience of the oral storytelling tradition. The project illustrates how the role of the oral tradition has a place within developing technologies. By creating a web of semantic and spatial associations of keywords and narrative fragments that can be viewed as tags in a database, the interface connects and strengthens the various individual voices in a collective and shared space. The installation evokes a sense of the oral sources as a visual echo, where narrative shifts from the semantic linguistic meaning to the visual, creating a poetic space of both, readable and visual textualities. Similarly to the oral storytelling tradition, the sharing of experiences in this piece are immediate and the text itself is in a constant flux of becoming. In terms of typographic use, the project approaches the text through a series of experimentation and questioning of the uses of screen-based type and principles as well as, the users experience and interaction.

Another research example that showcases this transition is Amaranth Borsuk's, "*Between Page and Screen" (2012)* project which, reinvents visual poetry through the display of hieroglyphs that can only be read through the eyes of computational robotic translation.[67] It explores the place of the printed book (in its materiality and physical form) and the process of reading that it involves in terms of the visual and animated digital practices. The experiment illustrates a (seemingly unlikely) marriage between the printed and the digital, and how these have been affected (and updated) through the use of portable screen-based technologies. All pages of the book include abstract geometric shapes that have no alphabetic elements and therefore no text. The book can

[66] This project consists of a series of extracts from interviews of refugees living in London, stressing the connection between them through the idea of a shared memory. The interviews are compiled in a database and linked by common key words. In order to represent the fractured realities and the formation of connected memories, viewers interact with the installation by clicking on the coloured activated common key words. These generate extracts of narrations from the various participating refugees. The installation also includes a microphone, thereby inviting viewers to read aloud and share with other viewers the experience of performing the work through their reading.

[67] The project is an interesting marriage between the printed book and digital technology. The physical book has no words, only black and white geometric patterns that when coupled with a webcam conjure up the written word. When reflected on the screen, the reader will view him or herself holding the open book, while the language comes alive by shape-shifting with the turn of every page.

only be read through the use of a webcam and screen-based devices. Its readability is dependent on the screen, rather than the pages of the book itself. However, the text that appears "does not exist on either page or screen, but in the augmented space between them opened up by the reader" (Borsuk & Bouse, 2012).The project reveals a contemporary example of an avant-garde response to the shift between print and digital; anticipating the development of electronic text in more flexible, dynamic and energetic ways. This work appears to be consistent with, or perhaps a modern remediation of Guillaume Apollinaire's work in *"Il Pleut"*.[68] It forms parallels with Apollinaire's work in that, the designer is attempting to portray the motion of rain by intentionally omitting letterforms; while the missing characters indicate that the letterforms are influenced by the speed and form of the rain and are flying into a 3D space. While, the use of portable devices here, is a key characteristic which, places the readability of the text within the hands of the reader.

Eduardo Kac, a contemporary artist and theoretician creates holographic poetry, (otherwise called: Holopoetry, Hypertext and Hyperpoetry). The holopoem is a virtual text that moves and changes as the reader moves through it. His holopoems are neither presented on paper, nor can they be defined as screen-based. Rather, they are fluid and temporal characters that provide temporal experiences as viewers navigate around them in gallery spaces. The letterforms in the poem are sensitive to the viewer's movement; the movement of the viewer/reader alters the text and his or her experience. The text here is in a constant state of becoming, or to put it differently, it is in process and responds and corresponds to the human body. If print provides textual meaning with constancy, Kac's holopoetry renders meaning fluid, often changing into abstract shapes, objects or scenes presenting multiple meanings and constantly evolving into something other. Kac's work demonstrates that text in art and visual hypertext can explore the fusion of words and images, as well as illustrate the word as image. Connectivity through digital media becomes an essential part of contemporary design and it is impossible to ignore typographic influence in this field. Typography has proven to encompass multiple communication mediums and media, as well as numerous creative and non-creative industries; highlighting the distinctive new experience of how a user interacts with the screen. For example, the introduction of the ipad opened up the question of 'how the qualities of a book and the experience of reading can be adapted to the manipulation of text and image on screen'. A case in point is how Touch Press has partnered with "Faber and Faber Digital" for *The Waste Land*

[68] In "Il Pleut" Apollinaire displays the words on the page vertically in order to illustrate that they are literally falling like rain drops. The text develops a static kinesis on the printed page that reflects the contextual meaning of the poem.

(2011) project that reimagines T.S Eliot's poem.[69] This application was used as part of a workshop in my practice-led research called the Wasteland Project; examining the effects of mobile technology and the experience of reading. I will be discussing this in more detail in *Chapter: 5* in Section 5.4 Moving with Type.

Samantha Gorman and Danny Cannizzaro's *Pry*, is an App novella which, not only explores what and how portable technological devices can add to the long tradition of storytelling but also, reimagines the form of the eBook. This interactive film-novel hybrid eBook was composed to be read and viewed on tablets, or other portable devices. For the creators of this project, other interactive eBooks mimicked print conventions and treated interactivity as an add-on feature. In contrast, *Pry* was created for the platform that it exists in and uses both, the advantages and constraints that the iPad offers in new and interesting ways. A priority in the creation of the App novella was to create reading gestures that were integral to the story. Pry invokes expanded cinema, haptic gesture, interaction design and literary arts as part of its storytelling. The story's narrator illustrates how human memory and thought is fragmented and open to interpretation. Textual fragmentation, the gaps in human thought processing and memory are invisible constituents to every story that allows for a multiplicity in interpretation and defines the very act of storytelling. In short, Gorman and Cannizzaro aim to reveal the gaps that exist between image and language. For the creators of *Pry* creating a story that leaves interpretation open, is an essential part of what they would like their reader to experience and enabling the reader to interact with both the story and James (the protagonist). Various mediums are used: video provides a picture into James' external world, while text provides a window into James' mind and is an expression of his interior world, his thoughts. The various interactive features embedded within the story allow the reader to pry James' eyes open or closed and the reader uses their own hands (or fingers) to help James' read a bible. The second chapter is an endless flow of text that is deployed to stir up the feeling in the reader of being overwhelmed. Touching and tilting the screen places the reader in the position of the protagonist. While, using the interface the reader decides how long the protagonist focuses on his external or internal world. The reader is allowed to switch words at will thereby, enabling

[69] According to the creators of this e-poetry project: "The Waste Land for iPad brings alive the most revolutionary poem of the last hundred years for a 21st Century audience. A wealth of interactive features illuminate T. S. Eliot's greatest work […] This digital edition carefully respects the typography and integrity of the original yet offers spectacular new ways to explore the significance and influence of the poem" (Apple Science website, accessed June 2011).

him or her to engage in exploratory reading experience. At the same time, the story has the ability to modify itself even as it is encountered, illustrating that the reader is affecting the story inasmuch, as the story affects the reader. Interactivity here, is used to service the story and *Pry* reveals a synergy between touch-screen materiality and text (or prose). It illustrates that the act of reading (and especially in these hyper interactive environments) is a cohesion of haptic and cognitive processes. All the senses are engaged and the reader is prompted to see, think, feel, act and explore as well as, experience the protagonist and at the same time, be the protagonist of the story.

Another notable interactive e-poetry app and project created for portable technologies is a collaborative work by Kate Durbin, Amaranth Bursak and Ian Hatcher's called *Abra* (2016). According to its creators, *Abra* is a touch-based "magical poetry instrument/spellbook" that aims at getting the smart phone generation to create, read and enjoy e-poetry on mobile devices. The project merges physical and digital media, which integrates a hand-made artist's book with an iPad app. It encourages users to play with the notion of an illuminated manuscript; readers are invited to touch the surface of the page, interacting with thermochromic ink and letterpress. Here, the co-creaters of Abra are referencing both the earliest impression of typography on clay tablets and the surface interaction that is required of a touchscreen. The page consists of apertures which, gradually reveal the undulant text on the screen below. The poetry itself is in flux, it grows and mutates, it coalesces and disperses the language that it is made up of; obscuring the boundaries between text and illumination. The reader is treated as a collaborator, feeding the poetry with his or her own words, thereby mutating the book further and creating new juxtapositions within the linguistic realm that it exists. This project with the help of portable technology reveals aspects of language that are often marginal to the reader. That is, language is a living organism (very much like a body) that changes and evolves as it comes into contact with others; the human and social contribution to the evolution of language and communication; and at the same time that these changes are more often than not unpredictable and susceptible to factors outside the individual, thereby belonging to the communal (a common and shared space) which, is precisely the very basis of how we define communication.

Conclusion

Undoubtedly, portable and screen based technologies have increasingly changed the ways that we interact and view type while, even our role as readers to (or towards) users has altered the course of typography and its development in the twenty-first century. This has had an inevitable impact on the communication process. The cultural shift has resulted in some very interesting art projects that exemplify this in-between or transitional phase from print to digital, which in turn reveals how communication and in particular, readability is effected. However, it is significant that while type is given a remodelling in its encounter with virtual environments, this has extended off the computer screen and back into the physical realm as well. Manovich in *The Language of New Media* (2001) discusses new media's reliance on conventions of old media, such as the rectangular frame and mobile camera and shows how new media works to create the illusion of reality, address the viewer and represent space. He demonstrates how categories and forms unique to new media, such as interface and database, work with more familiar conventions to enable a new kind of aesthetic.[70] Similarly, Bolter and Grusin in *Remediation* (1999) argue that new media achieves its cultural significance by paying homage to older forms of media, like film and television. Typography in the digital era is no longer limited to the hand of the printer or the typographer. Its reach has spread to anyone who can access the software. Consequently, typography has played an important role in the proliferation of graphic design and graphic form. It has challenged the role of the viewer and the designer, which were previously considered distinct entities. Screen-based typography has also challenged our sensibilities in the communication process. That is, visual communication today distinguishes between the readable and the legible. All of these issues and more, have been taken into consideration for the practice portion of this research that I come back to and discuss in more detail in the following chapters.

While screen based typography shifted the design of typefaces from woodcarvings and metal castings to computer software and tools like bitmaps, vectors, Glyphs, FontLab etc. (see Chapter: 2) the one became an extension of the other; where principles for type were extended from print use to the screen. Morison's Times New Roman typeface is a prominent example of this extension. The widespread use and creation of applications in portable technologies in the last few decades has created an explosion in type design. Clarity or legibility is less of an issue (as

[70] Although Manovich does not specifically deal with type, his theories are relevant to typography in new media.

is familiarity) in the creation of these designs, while readability has undergone vast changes. Typography has become an important aspect of brand identity for online gaming, websites, social media, smartphone applications, businesses' and their online presence, as well as for individuals' (like, bloggers). This affluence of type use in society today is an acknowledgment that we now consider it an art form that can influence what it communicates and the images it can provoke. In short, typography has gone from transmitting messages to creating messages. This is precisely why this thesis takes the position that typography is both "form" (image) and "graphein" (to write). Part of the expansion of typographic use and design in recent years can be put down to smart phone and portable applications. The demand for high quality fonts that can be accessed easily has created a plethora of new designs that can be accessed from external foundries without resorting to default system fonts. Type is now part of the story and can help tell the story; it is neither silent and invisible, nor a mediator of content. New web standards have been created in the service of "responsive design". Responsive design tackles a common problem that designers have been faced with. Cyrus Highsmith asks: "How do you design responsive typefaces that can change based on the device being used, whether they're being used as a headline or caption or the size of the page they're on?" (Highsmith cited in Flaherty for Wired Magazine, 13 April 2013; accessed 26/10/2016). An example of a responsive design according to Highsmith, is Travis Kochel's *Chartwell* which, is an interactive font that allows designers to create quick charts, graphs and spark lines, simply by typing.

Another issue and concern relating to the readability of type on screen is translatability. Local businesses with an online presence are now part of a global stage. This means that typography and its use as a tool in branding should translate culturally and linguistically. The complexity of creating, or using a design that can appeal to investors, stockholders and customers (which may have different ethnic or cultural backgrounds) is part of the changing landscape of commerce that presents new challenges in the communication process. In contrast to Morison who viewed the job of the type designer as a silent mediator between author and reader, the role of typography today has changed in its communicative purpose: we are now prompted to *experience* typography as interactive users in the reading process and typography is capable of generating messages (co-creating and partaking in narrative construction). Noticeably, this is the message that we are getting from the increasingly interactive new art-forms mentioned in the previous section (that are also pedagogical in nature). These have arisen as a result of mobile device applications and clearly aim to engage the reader, inviting him/her to participate in a setting which is creative and educational. These projects are providing new platforms upon which, the

arts and humanities can be experienced in new and exciting ways, in particular by newer generations of designers. I have spent some time in Chapter: 3 discussing readability and legibility as it impacts on how my practice as a designer developed and the methods for the workshops were derived. I will now turn to the methods that have used for the methodologies of the practice-led research conducted for this thesis.

Chapter 4
Research Methods

4.1 Research Methods

This chapter outlines the methods that have been used for the practice-led research and its methodology. It marks the beginning of the main body of investigative work that has been implemented in the workshops conducted for this thesis. It describes how the methods created a series of workshops, conducted between 2009 and 2014 in collaboration with design students, educators and professional practitioners, ten workshops were assembled and analysed as three distinct groups each with a different focus.

The first set of workshops (Group A) are entitled the *Typeface Project.* They are a series of 2 workshops; the first a workshop at the University of Greenwich which I distinguish as Phase: 1; and the second also took place at the University of Greenwich and has been named Phase: 2. These workshops experimented with prototypes that I had created, in order to explore the traditional principles of typography chiefly, the ones that were proposed by Stanley Morison. The second group of workshops (Group B) which have been named *From Delphi to Paris* were the product of a two-part series that explored typographic design from the perspective of *space*. Both, the workshop piloted in Delphi, Greece and the subsequent workshop in Paris, France explored the relation between type and space; that is, physical and virtual space and how these impact the process of communication and design. It explored the question within an experimental setting through participatory (creative) design and viewed how type may be thought of as an image within both physical (material) space and virtual (on-screen) space. Here, the complex notions of space, motion, body and image are examined in relation to type and the reading process. Finally, (Group C) focuses on typography within the context of interactive, online and portable technologies; it enquires into the notion of "reader as designer" but solely within the context of virtual environments. The workshops included in this third Group are: a two-part series of *Twitter workshops* and *The Wasteland Project* workshop. The aim and purpose of this series of workshops was to explore type within virtual environments more directly. I considered how aspects of *motion, (*which the use of portable technology allows) continually alter not only the physical environment of the reader but his or her perception of type and the process of reading. The Twitter workshops deliberated the role of communication within the context of live (in motion) streaming and kinetic typography. While the Wasteland Project considered how type is being reinvented with portable technology. I will come back to descriptions of each group in further detail. The methods that have been used here, created a structure for the (individual) workshops and enabled the research to be consistently assembled

and evaluated. Methods and methodologies form an integral part of this thesis' practice. The rationale of the various methods and methodologies are outlined fully. Some aspects of the methods used have evolved, adapted and changed over the course of the groups of workshops conducted. This chapter reviews some of the most prevalent and current methods used in the practice of the field and this thesis more specifically.

The purpose of this study has been to obtain a clearer understanding of current practices within the field of typography in its current development and evolution. The analysis of this practice-led research will focus on the data provided by the participants and on the application of type in screen based typographic design and interactive media environments. This study will centre on how new media affects established design processes in terms of clarity, creativity and user behaviour in the communication process. If one is to succeed in understanding the unique potential of the development of typographic form, it is important to bear in mind the conditions in which new media and new technologies influence the design process and how this translates, or subsequently impacts the user and the reading or, communication process. Therefore, the purpose here will be (at least in part) to produce a comparative analysis of the structural features of typographic design in new media, as opposed to old design processes. Since we are still in the midst of the transition between print and screen based technology, I am particularly interested in type uses and creative artworks that experiment with the in-between (or transitional) space. That is, between material (physical) and virtual (screen) based environments. As already noted in Chapter: 2, there has been a wide range of projects that are experimenting with type and recreating it by using both old and new technologies in novel and unexpected ways. It seems that it is this transitional space that we currently find ourselves in (and are creatively experimenting with) that reveals the ways with which typography is changing communication and exchange today, while also providing insight into how we might be communicating in the future. Mobile and screen based technologies may have reinvented and reinvigorated typography for the first time in centuries. Simultaneously, typography is reinventing and rapidly changing the communication process on a large scale.

Several research methods and methodologies have been used in the practice portion of this research. This thesis has adopted, experimented with and tested various interdisciplinary research methods within the context of interactive screen based typographic environments; in order to view how the communication and reading process is changed, particularly in portable screen based technologies. These methods include: *Participatory Design* and *Co-Design* principles,

James Gibson's *Affordance* technique, Schön's *Problem Setting* method, Edmonds and Candy's evaluative methodological approach. I will be providing a detailed account of what these methods entail and will illustrate how these have been incorporated and embedded into the practice-led research in the following chapter. Each method employed as part of the methodology will highlight terms and notions of central concern, including: the idea of "reader as designer", intuitive design and interactivity. I will outline four methods that have informed and shaped the methodology. The first and second methods that I describe here, involve a co-design approach to the workshops. The first method is *Participatory Design and Co Design*, which has determined the general framework and attitude I have towards participation and the participants of the workshops conducted. The second is Norman's theory of *Affordances*, which is a participatory, or co-design method that includes participants in the design process, in order to examine concerns of intuitive design, usability and interactivity. The third method I describe and implement here, is D.A Schön's *Reflection in Action* and *Problem Setting Method*. This method addresses how I conduct myself in these workshops; and involves my own (as a researcher and designer) tacit or intuitive knowledge that arises in response to surprise incidents and improvising solutions on the spot. Schön's method also involves re-framing problems (observing unintended consequences) and reflecting on issues by iteratively providing solutions in subsequent workshops. The forth method has been used for the evaluation and analysis of this PhD research. Edmonds and Candy's approach to evaluation in *Trajectory Model of Practice and Research* has been employed as part of the evaluation methodology and to analyse the outcomes of the workshop groups and the practice as a whole.

4.2 Participatory Design and Co-Design

This thesis takes a participatory or co-design method as its principle methodological framework.[71] In recent years, the terms participatory design and user-centred design have been used interchangeably. However, there is a crucial difference between user-centred design and participatory design as working methodologies. While, the former assumes that the design work is done on behalf of the user, whereas the latter method (participatory design) assumes that *the work must be done with the user*. This thesis (as I will go on to show) takes the participatory design

[71] Co-design is explained as an umbrella term for participatory design, co-creation and open design processes and has its roots in the Scandinavian conception of Participatory design of the 1970s. This thesis takes co-design as an umbrella term that includes participatory design. It will however, use the term co-design to describe other methods of co-creation that are not necessarily related to participatory design specifically.

and not a user-centred design approach as part of its methodological structure. Participatory design describes a wide range of research methods and approaches in a number of different fields of study, although in the field of design, it is commonly used in areas dealing with communication.[72] Yet, as Clay Spinuzzi claims in "The Methodology of Participatory Design" (2005), the sheer size of its application has: "often come at the price of imprecision. It's hard to find a good methodological explanation of participatory design" (Spinuzzi, 2005: 163). Due to its wide reaching scope, participatory design is often discussed as a *research orientation*, or even a *field* rather than a methodology. When discussed in terms of a research methodology it is often associated with user involvement. This has entailed some confusion as to what participatory design is and how it can be used. In what follows, I will clarify how this thesis defines participatory design and the ways in which it was put into practice as a working structure for this thesis. This thesis (in a similar manner to Spinuzzi) argues that participatory design can be defined as a rigorous research method and applied as a methodology that can be definitively defined and placed within a fully operative framework for implementation in practice-led research. To explain, participatory design is a method of attaining knowledge through practice (by doing). It is an empirical method, which aims at acquiring knowledge through the senses, through observation and experimentation. Spinuzzi describes participatory design: "as a way to understand *knowledge by doing*: the traditional, tacit, and often invisible ways that people perform their everyday activities. Participatory design *is* research" (Spinuzzi, 2005: 163; emphasis in original). This thesis defines participatory design as a research methodology, which enables participants to actively be involved in the research and the knowledge derived from the research. The role of participants in this method is highlighted. They provide tacit knowledge through intuitive and interactive practices or activities.

The idea of design as research operates by drawing on various research methods that facilitate elements of intuitive use and interactivity. To explain, the various research methods included in the participatory design methodology employed are: diverse professional backgrounds that provided varied interpretation, interviews, analysis of methodology and the analysis of the artefacts in question. While these methods are employed to produce the emerging design, the design itself simultaneously constitutes the research results (and thus, the theoretical aspects) through co-interpretation that occurs via a dialogue between the researcher/designer and the

[72] Participatory design has been applied in philosophical and pedagogical work in technical communication; in technical communication research; And participatory design prototypes are used as a vital part of iterative usability.

participants/users (or readers). This is precisely why, the workshops conducted here, have been considered as a *series*, or *in continuity* (where the one informs the next), rather than separate entities. To be exact, this thesis takes participatory design as a research method, not only because it allows multiple voices to be heard and involved in the design process, but also because it allows for a reciprocal relation to be formed between myself as the researcher and the participants of the practice-led research. Hence, I argue that the methodology implemented in the practice informs the dialogue between practice and theory, and ensures that the interaction between them will enable the end users and the end product to be intuitive and communicative, thereby enhancing the reading process.

Another characteristic of participatory design incorporated into the framework of this thesis, is participatory design's attempt to explore silent and invisible aspects of human activity. Pelle Ehn maintains that participatory design attempts to direct a course which is "between tradition and transcendence" or to put it differently, between participants' tacit knowledge and the researcher's more abstract and analytic knowledge (Ehn, 1998: 28). Participatory knowledge undertakes the aspects of a participant's tacit knowledge and examines them in a productive and ethical manner, through an iterative design partnership that enables both parties to refine and develop the comprehension of the activity. This can also include the arrangement and organisation of the work, or rather in the case of this thesis, the workshop environment. As we shall see in the following chapter, the participants were included in several aspects of the workshops organisation and arrangement. I will be looking at the various aspects of participatory design in the arrangement of the workshop environment in more detail further down. However, it is important to note that it is precisely this idea of tacit knowledge (although hard to pin down and describe; let alone categorise, define, systematise, or quantify and formalise) that this thesis considers intuitive for the end user. While the idea of tacit knowledge as something that is hard to define and develop could be viewed as one of the limitations of participatory design, it simultaneously makes up for it by bridging the gap between involved, practical understanding on the one hand and detached theoretical reflection on the other. In fact, participatory design's strength is precisely, that it bridges the gap between practice and theory.

What interests and concerns the specific aims of this thesis is the communication process in relation to typographic design. The interaction between researcher and participants that participatory design necessitates has enabled co-design (and this is particularly true of digital and

mobile technologies) to become a major aspect of the design process. This has resulted in creating better, more intuitive and easy to use products where the user can direct the design. I will be looking at mobile technologies and participatory design in relation to the notion and process of reading, with the third group of (Group C) "Moving with Type" workshops. Since a central part of the methodology investigates diverse forms of screen-based typographic practices in digital media environments that relate to mobile communication technologies, I focus on those aspects of typography that can only exist on portable or mobile screens. Various aspects of participatory design were used as a methodology for the practice-led research conducted. In particular, I applied this method in the first group of workshops named The Typeface Project. Participatory design was used to design both sets of prototypes created for Phase: 1 & 2. The feedback from the initial questionnaire was used to design the first set of prototypes in Phase: 1. The experiences and feedback of the participants from the first workshop (Phase: 1) were used to design the second set of prototypes for Phase: 2. This will be discussed in more detail in the following chapter.

4.3 Affordance Technique: Intuitive Design and Usability

The notion of affordances initially derived from ecological psychology; proposed by James Gibson in 1977 to signify action possibilities that are provided to the actor by the environment. The notion was introduced and implemented to the area of design and HCI in particular, by Donald Norman in 1988 in *The Psychology of Everyday Things*. Norman uses the notion of *affordances* to mean the design aspect of the object can suggest how it should be utilized. He writes:

> The term affordance refers to the perceived and actual properties of the thing, primarily those fundamental properties that determine how the thing could possibly be used […] Affordances provide strong clues to the operations of things. Plates are for pushing. Knobs are for turning. Slots are for inserting things into. Balls are for throwing or bouncing. When affordances are taken advantage of, the user knows what to do just by looking: no picture, label or instruction needed (Norman, 1988: 9).

Norman's definition of affordances considers both the actual *and* perceived properties of an object's utility. In other words, the affordance of a ball takes into consideration its shape, its material, its weight etc. as well as, the perceived suggestion as to how it might be employed. It is clear that Norman's view on affordances is in conflict with Gibson's original use of the term, since he (Gibson) does not include the perceived properties of an object's use. According to

Gibson's definition of affordances it should be taken to mean, "an action possibility available in the environment to an individual, independent of the individuals' ability to perceive the possibility" (McGrenere and Ho, 2000: 179). Gibson views affordances as independent of an actor's perception with regard to an object's use or purpose. He does not distinguish between cultural and natural environments. In fact, he warned against making any such distinction. He claims that, "it would be a mistake […] to separate the cultural environment from the natural environment, as if there were a world of mental products distinct from the world of material products" (Gibson, 1979: 130). There is an aspect of Gibson's view that refuses to create a clear-cut distinction between natural and cultural environments, which indeed holds true. The natural world is often understood as primary and what exists or existed prior to human intervention, or environmental influence.[73] Norman's distinction between perceptual and material (or cultural and natural) is a manifestation of a deeper subject-object dualism that has merit (in particular, when looked at in a design setting). For Norman, the term natural refers to the world (or object) separate and distinct from human (or subjective) perception, whereas culture is understood as a product of mental processes. Hence, Norman overturns the binary between subject-object illustrating that within the design process subjective perception is equally, if not more important than objective properties. The perceived properties of the object will likely influence and determine how it is translated (understood) and its usability. The issue of space and environment in relation to type design and interpretation will be viewed in more detail when I discuss the workshops included in Group B that took place in Delphi, Greece and Paris, France. Both workshops enquired into issues of space and its relation to type design. I will come to a more detailed discussion in the Practice Methodology in the following chapter. However, I now turn to discuss issues of use in relation to affordances.

William W. Gaver contributed to the framework of affordances, by distinguishing between affordances and the available perceptual information about them. In distinguishing between the two, Gaver also clarifies and makes a distinction between usefulness and the usability of an

[73] Gibson is correct to assume (at least from one point of view) that this sort of differentiation can be misleading. The human body for instance, is viewed primarily as biological and natural. Cultural and environmental aspects are considered secondary and supra-added (with time) to the body (altering it and changing it from its original state). Yet, the body begins changing the minute a person is born; for example, we are not born with the ability to speak, or walk, or feed ourselves. All of these are the result of cultural and environmental constructions. Even the natural world is not necessarily entirely untouched by human perception, since it is disturbed by the presence of human culture (or even animal culture). Whereas, Gibson is right to point out that any such distinction should be touched upon with trepidation, Norman points out that there is a deeper subject-object dualism at play within the design process. While, subject and object remain distinct entities in his definition, they also form a correlative relationship that can in fact, create a better design.

object. The designer will create affordances for the purpose of usefulness or utility (matching the aims of the user) and improving the usability of a design by using the information specified in the affordances (acquired from perceptual information). Hence, the affordance technique focuses on issues of: use, usefulness and usability. Within the design process these are separate concerns that drive the question: 'What is a good design?' It seems that a lot of the time a good design, especially in todays' screen-based, or technology driven world is considered to be *an intuitive design*. This is precisely why the concept and technique of affordances was swiftly picked up by HCI and interaction design. For designers of interactive technologies the notion of affordances denoted a promise to use the power of perception in order to make everyday things more intuitive and usable. In fact, the theory of affordances is considered a central conceptual paradigm in HCI research and is viewed as a basic design principle in this field of study (Rogers et al., 2011). It has also been found extremely useful to designers of graphical user interfaces, who by using this technique, can more easily and freely define the visual properties of the objects that they create. For instance, clickable buttons, tabs, hyperlinks and swipe motions for touchscreens, as well as sliders that can be dragged (and many other elements) that we have now become accustomed to with on-screen software technology have come from this design principle. In many ways, the notion of affordance is of interest precisely because it has enabled the user to become a designer in two distinct ways: First, if the design is not intuitive or user friendly, the user directs the designer and the design process towards a more intuition based design. Second, it has enabled (by facilitating) users to take charge of how they view on-screen text and participate in the design process; by being able to change, re-create or even create from scratch, something that was previously inaccessible to the user (reader). Issues regarding intuitive design relating to screen-based portable technology and its impact for typographic design have been considered and used in the Typeface Project (Group A) and in the third group of workshops (Group C) which includes: the three-part Twitter workshops, and The Wasteland Project.

4. 4 D.A Schön's Reflective Activity and Problem Setting Method

Donald A. Schön's *reflective activity* and *problem setting* methods have been used to observe how I myself conducted the practice methodology. It is a method that demands that the researcher, or designer observes him or herself and record how s/he reacted in a problematic situation that might reveal tacit knowledge that is brought into the practice-led research. This

denotes what Schön calls *reflection-in-action,* which requires a re-framing of the problem and enables the facilitator (research, designer) to see the problem in new ways. D.A Schön is one of the few researchers' in recent history to introduce a new approach to cognitive design theory. His views on design originate from an educational perspective; he was an educator and throughout his career was employed by various Universities in the US as a Lecturer. Schön formulated the idea of *Reflective Activity* and related notions like, "reflective practice," "reflection-in-action," and "knowing in action" as a way of understanding and analysing collaborative design from a social perspective. He defines "Reflective Activity" as "the activity by which [people] take work itself as an object of reflection" (Falzon et al., 1997; cited in Mollo and Falzon, 2004: 532). Schön's theoretical work on collaborative design is in many ways a theoretical analysis of participatory design from a pedagogical framework; he considers the (collaborative and co-designed methods) that we use to learn, attain knowledge and teach. In *The Reflective Practitioner* (1987) he writes:

> When a practitioner reflects in and on his practice, the possible objects of his reflection are as varied as the kinds of phenomena before him and the systems of knowing-in-practice that he brings to them. He may reflect on the tacit norms and appreciations that underlie a judgment, or on the strategies and theories implicit in a pattern of behaviour. He may reflect on the feeling for a situation that has led him to adopt a particular course in action, on the way in which he has framed the problem he is trying to solve, or on the role he has constructed for himself within a larger institutional context (Schön, 1987: 62).

Schön views the complexity of the work involved in reflection. In fact, he takes the reflection as the main work of the educator. Related to the notion of "Reflective Activity" he names, "reflection-in-action," where: "doing and thinking" are complementary. Doing extends thinking in the tests, moves, and probes of experimental action, and reflection feeds on doing and its results. Each feeds the other, and each sets boundaries for the other" (Schön, 1983: 280). Reflection and action are viewed in motion and form a reciprocal relationship, where the one informs the other.

In the field of design his notion of reflective-practice offers an alternative way to view knowledge as neither set and complete (what he calls "molecular knowledge") or even as a product, but rather as a reflective form of learning (or knowing) in action (or while doing). He claims that,

> Competent practitioners usually know more than they say. They exhibit a kind of knowing in practice, most of which is tacit […] Indeed, practitioners themselves often reveal a capacity for

> reflection on their intuitive knowing in the midst of action and sometimes use this capacity to cope with the unique, uncertain, and conflicted situations in practice (Schön, 1983: 8-9).

According to Schön, the capacity to respond to a surprise incident by improvising on the spot is reflection-in-action. While, knowing-in-action is the capacity to respond to that situation by applying previous knowledge and thereby exhibiting that we know are able to adapt (or retain) knowledge which is tacit and not always immediately visible until a situation arises. Schön's various related notions provide an essential distinction between: "knowing how" and "knowing that"; the former is a loose and flexible understanding of something (more reflexive and involved in practice), while the latter is a more fixed form of knowledge that has less room for re-consideration. For him, design is one of many activities that involves reflective practice. In his own work, Schön created a study which, investigated design students learning with experienced designers, conducted in "reflective practicums such as the design studio in architecture" (Schön, 1987: 313). In his analysis, he adopts an ethnographic-inspired and workplace-orientated perspective within an educational setting, providing as much detail for specific situations he faced, in order to illustrate the central role of reflection-in-action in educational and professional practices. He argues that in these settings designers *frame* and *reframe* problems that they encounter and in the effort to solve the problem by re-framing it the practitioner "yields new discoveries which call for reflection-in-action" (Schön, 1983: 131-132).

In one of his very first papers to emerge dealing specifically with design, he states that he treats the practice of design not as a form of problem solving (which he considers as a given) but in terms of *problem setting,* a process which he maintains is often neglected. According to Schön, "with this emphasis on problem solving, we ignore problem setting, the process by which we define the decisions to be made, the ends to be achieved and the means that may be chosen. They must be constructed from the materials of problematic situations which, are puzzling, troubling and uncertain" (Schön, 1983: 39-40). Central to Schön's understanding and conception of design is: naming, framing and moving. He defines "Problem Setting" as: "a process in which, interactively, we name the things which we will attend and frame the context in which we will attend to them" (Schon, 1983: 40). Here, problem setting can be viewed as emerging from a given set of problems that are however, re-framed. Through a process of reflection-in action problem setting is the process which enables interaction with the specific environment, situation and setting that enables the designer to view the problem in new ways. Problem setting therefore, defines the process by which the designer can see things in new ways. He argues that his observation should not be viewed in the same manner as the familiar image

of the designer searching within the dimensions of his/her problem space, in order to create or invent the moves for which s/he finds solutions. Rather, he concludes that problem setting is defined by a "seeing-moving-seeing" sequence that is iteratively applied on "design snipets" (Schön and Wiggins, 1992: 136). Schön's method was used for the first group of workshops "The Typeface Project". The participants of these workshops were provided with little instruction for navigating the prototypes, in order to examine tacit knowledge.

The main reason for conducting the workshops in various places was to explore the possible understandings and challenges of developing a process of design through diverse environments and what Schön names "problem setting" (Schön, 1988:181-190). In *Designing: Rules, types and worlds* (1988), Schön sets out to illustrate that design is not simply a form of "problem solving" or, "information processing". Instead, he argues that the much neglected issue of "problem setting" should be emphasised as part of the design process. In real-world practice, problems do not always present themselves to a practitioner as a given. Hence, he argues that problem-setting, through the construction of problematic situations is a vital part of the process. For Schön, "problem-setting" is an interactive process for, in this setting we not only name the issues that we will attend to, but also create a framework for the context in which they are attended. The "problem setting" technique was a method used for: "The Twitter Workshops". The research in this thesis seeks to understand the use of portable devices in diverse environments, focusing on the user; my workshops intended to reveal a significant paradigm shift within new technologies that renders *the user as designer*. Each workshop presented its own challenges and problems, as well as surprise results that were (used and) taken into account when considering the next workshop in the specific group or series. It is important to note that this method was not used as a general framework or an evaluative method of analysis for this thesis as a whole. Rather, it was employed for the purpose of re-evaluation and re-construction of each workshop in a series. The methodology used for the evaluation of data derives from Edmonds and Candy (2010).

4.5 Edmonds and Candy: Evaluation Method

The methodology used for the analysis of the outcomes of this research will be based on the work of E. Edmonds and L. Candy's "Relating Theory, Practice and Evaluation in Practitioner Research" (2010). The focus of this paper is on research practice in areas of HCI and fields that deal with interaction more generally. The "Trajectory Model of Practice and Research"

described by the authors of this paper operates as "a model of practice-based research that represents the relationship between theory, practice and evaluation in cases where the practitioner follows a specific trajectory or route influenced by individual goals and intentions" (Edmonds and Candy, 2010: 470). The trajectory of research practice as Edmonds and Candy see it consists of three elements: Practice, Research and Evaluation. Each element entails and involves a variety of different outcomes and activities. The principle outcomes to derive from Practice are Works (W) which includes artefacts, installations, exhibitions, performances, etc. The main outcomes that originate from Theory are: Criteria (C) (design strategies) and Frameworks (F). Lastly from Evaluation come, Results (R) (Edmonds and Candy, 2010:470). See Figure: 2.

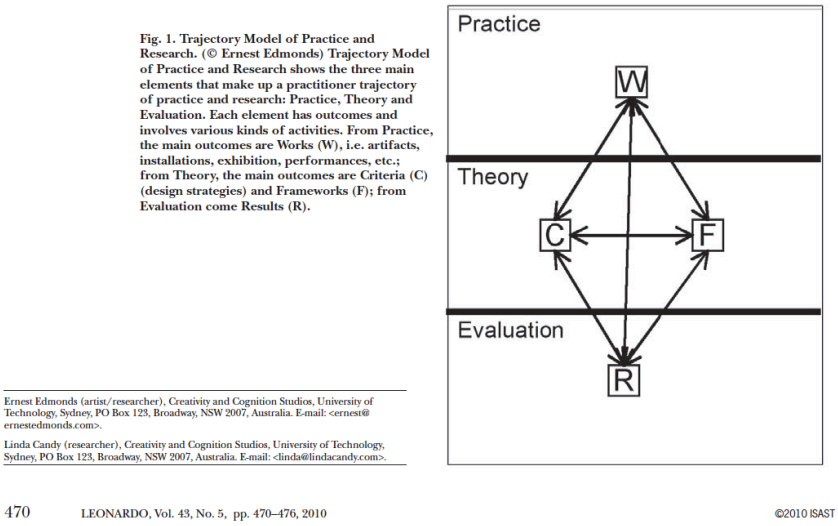

Fig. 1. Trajectory Model of Practice and Research. (© Ernest Edmonds) Trajectory Model of Practice and Research shows the three main elements that make up a practitioner trajectory of practice and research: Practice, Theory and Evaluation. Each element has outcomes and involves various kinds of activities. From Practice, the main outcomes are Works (W), i.e. artifacts, installations, exhibition, performances, etc.; from Theory, the main outcomes are Criteria (C) (design strategies) and Frameworks (F); from Evaluation come Results (R).

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Figure 2: Trajectory Model of Practice[74]

According to Edmonds and Candy, there are two trajectories for practice and research. The first examines the situation where the theory drives the practice. In this case, theory is applied to the practice and the theoretical knowledge is used to form and shape the evaluative process. The second trajectory is one in which the practice drives the theory. In this type of trajectory research questions and design criteria are derived by virtue of the creation of works that leads to the development of a theoretical paradigm that assists in evaluating the results of practice (See Figure: 3). However, as the authors of the paper note it is of vital importance to stress that a

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trajectory of practice and research: "is far from a linear, stepwise set of activities that moves inexorably toward an intended goal. In reality, even under the time constraints of a research program, practice is interwoven with the other two elements: theory and evaluation. Sometimes the theory comes first, but often the need for it emerges as the practice process continues" (Edmonds and Candy, 2010: 471). For Edmonds and Candy it is not a question of whether practice should lead theory or whether theory should drive practice. Rather, they are more interested in developing an understanding of the role of evaluation in practice-led research and how each trajectory drives the evaluation differently while producing different frameworks.

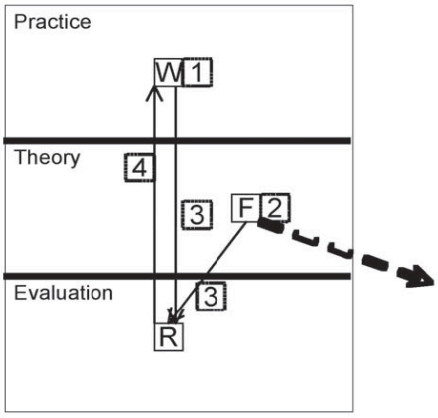

Fig. 2. Trajectory Example 1: Theory Drives Practice. (© Ernest Edmonds) Theory drives Practice for the most part in the research process of this particular practitioner.

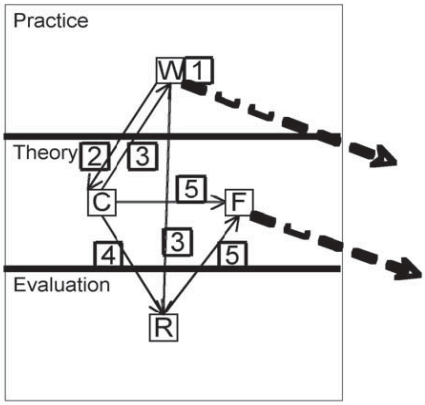

Fig. 3. Trajectory Example 2: Practice Drives Theory. (© Ernest Edmonds) In this example, creative practice is the main driver of the research, although it has to be noted that theory about sound synthesis and physical modeling was important to the practitioner's design of the works.

Figure 3: Trajectory Model of Research[75]

For Edmonds and Candy, evaluation always informs practice and "has a particular role defined by practitioners themselves in order to facilitate reflections on practice and a broader understanding, for example, of audience experience of artworks" (Edmonds and Candy, 2010: 472). Evaluation consists of direct observation, monitoring, analysis, recording and reflection that aids in generating understandings that surpass informal reflections on personal experience. They argue that practitioner frameworks, particularly those whose work falls within the field of

[75] Fig. 2. Trajectory Example 1: Theory Drives Practice. (© Ernest Edmonds) Theory drives Practice for the most part in the research process of this particular practitioner.
Fig. 3. Trajectory Example 2: Practice Drives Theory. (© Ernest Edmonds) In this example, creative practice is the main driver of the research, although it has to be noted that theory about sound synthesis and physical modeling was important to the practitioner's design of the works.

interactive art systems employing forms of digital technology, are involved in a cyclical process; the practitioner puts theoretical knowledge into practice and revises the theory according to the outcomes. In other words, "Theory and practice are intertwined in the development of their art. Research questions and issues come naturally from the practice, and it is often a small step to articulate the context and methods associated with practice" (Edmonds and Candy, 2010: 472). Hence the methodologies developed through practice, are in constant revision and have an enormous impact on how a framework is applied and how it is altered as a result of experience.

This thesis primarily deploys the third example in Edmonds and Candy's practitioner framework trajectories: "Theory and Practice Reflexivity" which, is a framework for collaborative practice. This thesis highlights interaction, participatory design and inter-disciplinary collaboration. It has much in common with what they call an "experiential approach" to the practice-led research. The tools and techniques used in the workshops are taken from Schön's method of "reflection-in-action" and "problem setting". The methodological framework for evaluation driving the practice (and) research trajectory of this thesis, in relation to Edmond and Candy's three part process can be considered as follows.

Edmond and Candy's method for evaluation of practice-led research has informed the methodology that I have used for analysing the outcomes of the workshops. The three part process that they describe and examine is not a linear chronological order. But rather, involves the activity of going back and forth between the three terms as and when necessary. Theory informs practice, practice informs the theory, evaluation informs, both practice and theory and vice versa. What Edmonds and Candy's methodology for evaluating practice-led research illustrates is that theory and practice are not mutually exclusive elements. Rather, they are complementary and form a reciprocal relationship where the one always informs the other. What participatory design (or co-design more generally), Schön's theory of "problem setting", Gibson's theory of "affordances" and Edmond and Candy's theories have in common is the inclusion of a third, and integral component to the practice-led research process. Although, the term varies from writer to writer all include the aspect of evaluation and reflection. This evaluation informs subsequent practices and workshops.

This thesis takes different characteristics of these methods and implements them in different parts of this thesis (as elaborated above). However, it also takes two broader components that these methods share that relate to two distinct types of interaction involved in their individual

methods. First, the interaction and two-way relationship formed between the researcher/designer/practioner and the participants. Second, the researcher's role as mediator in an interactive approach involving: practice, theory and evaluation. Through its methodology this thesis explores the reciprocity between practice, theory and research as it plays out in multifaceted ways.

Data collection and analysis

All workshops, interviews, presentations and briefings were recorded in various formats and with various methods. However, the final practice documentary video, will only include certain points that focus on the main characteristics and outcomes of this research. A series of short videos that include the interviews of the workshops can be found here: **teraslab.co.uk/phd.** {Password: anastasios}

Chapter 5

Practice Methodology

5.1 Practice Methodology

The purpose of this chapter will be to provide a systematic study and analysis of the practice-led research methodology used to ask how contemporary mobile and screen-based typographic practices have altered patterns of communication. The methodological framework applied to the practice-led research has resulted from the research methods described in *Chapter: 4 Research Methods* and the research questions were formed through the various theoretical strands and open questions discussed in *Chapter: 3 21st Century Typography: Reinventing Communication*. This chapter aims to answer the following question: How has mobile and screen based technology altered our understanding and use of typography? And how have these changes impacted communication?

The practice-led research conducted, aims at exploring how portable screen based technology has changed the way we view and engage with typography and how the current view has impacted the communication process (in terms of both, legibility and readability) for the designer as well as, the user/reader. The workshops have been separated into three distinct, yet interrelated groups that examine the relationship between typography and communication. The three groups are: "The Typeface Project", "From Delphi to Paris" and "Moving with Type". My practice-led research methodology has rested on several methods (as discussed at length in the previous chapter) including: participatory design and Edmonds and Candy's evaluation method. The methodology that forms the framework of this practice-led research is Edmonds and Candy's "evaluation method". This method was used to evaluate the outcomes of each group of workshops. The retrospective analysis was then used to form the line of questioning and structure of the next workshop and/or group of workshops. A participatory design methodology was implemented in the creation of the prototypes and workshops of "The Typeface Project". Schön's "problem-setting technique" has been used selectively and according to the needs and requirements of particular workshops. More specifically, it has been used in the "From Delphi to Paris" workshops, the "Twitter Workshops" and "The Wasteland Project". The primary reason for conducting these workshops in various places around the world was to examine the possible challenges that diverse environments can present.[76] In this chapter I will explain more thoroughly the part each of these methods have played in my methodology,

[76] The practice has also been informed by more specific methodologies that came about organically; these were often based on my own judgment and understanding of the needs of the specific project. These will be discussed in the Methodology section of each workshop.

including the ways they were implemented and whether I found the theory to be in agreement or in conflict with the practice.

Each section of this chapter will describe the practice-led research methodology of each workshop and group. Each section will be divided into the following sub sections and will provide: a background of the specific theoretical views and thinking underpinning the practice-led research of the group; a detailed description of each workshop; an account of the methodologies used; an evaluation of the outcomes, including problems faced and how these issues were dealt with in subsequent workshops. Finally, this chapter will conclude by providing a more general evaluation of the findings and outcomes and the main argument. I will now turn to the first group of workshops, "The Typeface Project".

5.2 The Typeface Project Workshops (Group A)

Background and Theoretical Views

The initial research questions that instigated this investigation, enquired into whether Stanley Morison's principles of typography can still be viewed as relevant today and if we are in need of new typographic principles that reflect the shift from print to digital as it is presently unfolding. In other words, how useful or important is it to hold on to a set of typographic principles as a resource for designers and as a strategy that provides support to the communication process (relating to issues of readability and legibility) in the creation of type. The second question that stemmed from this one was: 'How is typography, the act of reading and the reader, the designer and researcher impacted by the shift from print to digital text?' In short, have the numerous features now available to users/readers of portable and screen based technology also altered the role of the designer, the reader and the reading process? These questions were constructive in creating the initial workshops and in particular, the first group entitled "The Typeface Project".

At this stage (during the development of "The Typeface Project") I was interested in what the creation of a new "standard" for screen based typography might mean today.[77] Morison's principles for print based type were established almost a century ago for a different technology and era; Does typography then, need to rethink some of the existing principles or, do we need to establish an entirely new set of principles? These questions express the line of enquiry that was pursued in the early stages of this research and workshops. As we shall see, some of the questions that dominated the early stages inevitably changed and/or developed over the course of this research. Nonetheless, these were important questions that helped shape my view and acted like a springboard for subsequent groups of workshops and the main argument of this thesis.

It is important to explain how Morison's principles were used. "The Typeface Project" reflects the early aims of the line of investigation. Both workshops (phase 1 and 2) have in common the testing of Stanley Morison's principles of typography (outlined in *Chapter: 3*) in screen-based environments. I differentiated between two aspects of his thought; Morison's principles can be divided between those that form specific guidelines that relate to the creation of type in practice (thereby, informing the design process) and those that form a set of philosophical (or ideological) views *that guide the former*. For instance, Morison's practice was informed by the view that a typographic designer must create type that acts as a silent and invisible intermediary between the author and reader. For Morison, type must act as a *neutral* transmitter of authorial intention and meaning, by striving to remain imperceptible. My own philosophical orientation and theoretical understanding of typography arrives from a more contemporary view. That is, I view *type as an image and art form in its own right*. From this perspective, type need not be invisible or silent. Rather, it has the potential to play a more active role in the meaning making process by enhancing the semantic properties of the text. Hence, type as I see it can contribute to the creation of narrative by having the ability to create its own images and therefore its own affects,

[77] Currently, the limits and boundaries of typography are being pushed. Typography's passage from print to virtual is not confined to a particular location, society, or culture. Rather, it is a global phenomenon that must take into consideration the behaviours, cultural modes of thinking, and the existing communication processes and languages of diverse people. It therefore begs the question: 'Does an increasingly global world require a more homogeneous system of communication; one where people with different backgrounds are inclined to view text and type in a similar manner? And is this the reason why typography is increasingly understood as an image?'77 Or, 'Does it require a more heterogeneous form of engineering and design, where design is agile and text is easily alterable by the user, thereby making ethnographic background irrelevant to the application or system's usage?' While, we seem to be moving in the direction of the latter with the gradual increase of personalised elements incorporated into the design of type and text, unquestionably, design principles remain useful to type designers as a general framework (see later).

feelings and moods. If Morison places a considerable amount of significance on issues of legibility it is because he argues that legible type can transmit the purpose, truth or intentions of the author more clearly (see *Chapter: 3*).

My own view has been shaped and is more in line with the semiotics and philosophical theories of language put forth by Structuralism and Post-structuralism (see *Chapter: 2*) although, it is important to note that these theories have also shown to be limited in relation to screen based and mobile communication (see later). These theories (as already discussed) assert that the text is always multiple; the work is considered authorless; that language is an autonomous system where words are in a constant state of play; and that the truth of the text (the author's intentions) are not capable of being transmitted to the reader as the author intended since, language takes flight as soon as we try to pin out down; while others have argued that polysemy in language enables multiple readings, interpretations and meanings to be generated. The possibility to create *meanings* as opposed to a singular meaning is a constructive and beneficial practice that can help provide multiple solutions to problems and varying points of view or, perspectives that incite dialogue. Hence for me, creating legible type which does not interfere with the author's truth or intent is neither entirely possible, nor desirable. By understanding type as image, both the literal and metaphorical interpretations of the text can be given a new life; the designer and the reader are provided with a more active role in the construction of narrative, making every text a collaborative work. In contrast, Morison views the active participation of the designer as a hindrance to the relationship between author and reader. Instead I argue here, that the designer's contribution can result in a more meaningful relationship between the two. Therefore, from my perspective screen based typography highlights what theory and art had already articulated in different forms in the early and mid-twentieth century. That is, the view that type is expressive and can create a multiplicity of meanings through images and affects, while providing the reader and designer with a much more active role in the entire process of communication. Before I move on to a detailed account of the workshops, I will explain how Morison's principles were used specifically for "The Typeface Project" and to what end.

"The Typeface Project" workshops were intended to view how typographic communication (legibility and readability) is affected by digital (portable screen based) environments. I was not planning on isolating and examining each variable of type design separately (i.e. size, leading, kerning etc.) as a way of determining optimal legibility. Rather, I intended on exploring the typographic communication process with respect to Morison's principles, by contrasting screen

based type with print based type and by examining the correlation and divergences between the notions of readability and legibility.[78] The prototypes were designed to experiment with new features available to mobile and screen based technology so as to understand how typographic communication has been effected by the medium, but also to understand in what ways communication patterns are being transformed during this transitioning period from print to screen.

With this in mind, Morison's principles were not implemented in this practice-led research in order to understand issues of legibility/readability as he himself describes and understands them in *The First Principles of Typography*. Rather, the idea was to view Morisons' principles in relation to typographic communication as it is developing in the transition between mediums. That is, by examining the differences between print and screen, readability and legibility and by examining how the reader, writer, author and designer are impacted by these changes. The prototypes created for "The Typeface Project" intended to view how Morison's principles could be understood within a screen based environment (as opposed to print); including his practice derived principles and his philosophical ones. The prototypes experimented with all the features available to screen based type (interactivity, motion/kinesis, virtual space, 3D graphics, sound etc.) The prototypes also provided the user/reader with the same type of control that today's screen based users have when experiencing screen-based type on their devices. This resulted in viewing how type might overturn the hierarchical relationship between author and reader, while also observing how these roles might no longer be clear-cut, or set roles (as they would have been in the past with print based type). Finally, Morison designed his principles primarily to increase the legibility of printed text, while readability is only marginally covered and treated as subordinate to aspects of legibility. In contrast, "The Typeface Project" intended on examining the principles in relation to communication and therefore both legibility *and* readability. The

[78] "The Typeface Project" and the design of the prototypes (in both its phases) worked on the assumption that Morison's principles (his practice) was informed by a set of ideological (or philosophical) perspectives that were formulated based on the circumstances, technology and needs of his day; and more importantly that these were in fact what guided his practice and not the other way around (practice informed ideology). Hence, by better understanding the cultural shift in ideology that has formulated our understanding of typography today, we might better understand how typography's current needs have changed and ultimately develop practices that better suit those needs. This thesis does not treat type as a silent and invisible intermediary that transmits the message of the author to the reader. Rather, it identifies that the transition from print to screen has indelibly altered our understanding and relationship to type. The conceptualization of type as image today, corresponds to a cultural, or ideological shift in our understanding of typography as it currently operates in portable screen based devices, which impacts the communication process.

workshops (as we shall see) problematize these notions as they are stated in Morison's *First Principles of Typography* by viewing them in the context of screen based technology.

In what follows, I will provide an outline for each of the workshops and describe the methodology and experiments in detail. I will also discuss the restrictions, limitations and questions that I encountered and how these were dealt with and/or corrected in subsequent workshops.

METHODOLOGY

The workshops that form "The Typeface Project" include two workshops conducted at the University of Greenwich, London (distinguished as Phase 1 and Phase 2). An outcome of these workshops was an exhibition (2002) that took place at the V&A Museum in London (see later).[79] "The Typeface Project" marks the initial stages of my practice-led research and was principally an attempt to specify and explore the different facets of my research questions. The practice methodology for this project included a questionnaire and the creation of prototypes. The interviews and discussions that were filmed, were useful for the evaluation and analysis of the outcomes of each workshop, and provided insight into problems and limitations which would later be revised.

Questionnaire: A questionnaire was circulated to eighteen teachers and fifty-two students at the University of Greenwich, London. The data collected was used in the thesis to identify current practices and how people with knowledge in the field considered the impact of computational technologies in typographic practice. The survey helped formulate the criteria that would be used for the design of the first set of prototypes. Hence, the questionnaire was used as a participatory design methodology. Since I was examining the design principles of typography it seemed logical to me, to choose participants with knowledge in the field. A full list of the questions can be found in the Appendix (See pp. 206). Some of the questions that were included in the survey were:

1. How do you understand the use of screen based typography?

[79] The exhibition at the V& A Museum in London is not considered as a workshop, nor did it have an impact on the findings and outcomes of "The Typeface Project" group.

2. How do you understand the difference between readability and legibility in typographic communication for screen based environments, as opposed to print?
3. Do you have any suggestions of other approaches to typographic communication that need to be explored?

The comments derived from the feedback, especially those regarding the needs of typographic research and study were indicative of what students and academics alike, felt missing in the field. For instance, one participant wrote: "The use of typographic elements in virtual space need to be further researched [but in such a way] that the audience may be able to interact and be part of the communication process" (Barisani 2009). This comment illustrated a common sentiment among the students and academics who filled out the questionnaire. Many agreed that the design process should arrive from communication between users and designers so that screen based type design is user friendly and based on what the end user finds useful or desirable. Much of the feedback also highlighted the role of the type designer as a visual artist and the contemporary understanding of *type as image*. One participant wrote: "Typographic elements, not just as letters but as forms, help the creation of polymorphic structures of visual art, in order to express further the personal emotions and needs of the visual artist" (Burmistrov 2009). The perspectives expressed in the questionnaire were diverse but also, had common elements. The common elements derived from the feedback were used to design and shape the prototypes and improve usability. As mentioned previously, it had not been my intention to treat these comments as rules and/or spin them into a uniform theoretical framework as this would be a monumental and potentially misguided task. Instead my goal here, has been to take these diverse approaches and find some common patterns that will help strengthen the research and shed light on the relationship between the tangible material space of print and the virtual (and shared) environment of screen based typography and our understanding of it.

Prototypes The prototypes and user testing were an essential part of the evolution of this project. The prototypes were created with a participatory design methodology in mind. I used the questionnaire to search for patterns and common themes that might emerge from the data. The prototypes were used in the following ways: Firstly, the prototypes formed an integral part of user testing that incorporated participatory design as a methodological framework for the establishment of the project. In other words, the prototypes helped me understand the requirements of the practice-led research in a controlled environment (for the purposes of the study) through feedback from user experience and ensured that the project remained

collaborative and participatory. Secondly, it enabled participants to be actively involved in the future development of the next set of prototypes and workshop (Phase: 2). In short, user experience and feedback helped locate limitations of the project and also helped create better solutions to problems that were faced in the design of the prototypes and the structure of the workshops. Thirdly, the prototypes enabled users (participants) to be actively involved in the development of the project and understand screen based type by incorporating *tacit* knowledge derived from their own every day experiences with screen based technology. Each of the prototypes designed for Phase: 1 will be described in further detail below. I now turn to the first workshop of "The Typeface Project".

I Overview of Typeface Project Workshop: Phase 1

In 2009 I began working on the first workshop of the "The Typeface Project" group (Phase: 1). This workshop took place at the University of Greenwich, London in November 2009 (See workshop Lesson Plan in Appendix for more information). It included nine experiments that corresponded to nine different prototypes that had a common objective: each experiment endeavoured to showcase the different potentials for letters and words by exploring how the existing principles of typography created for print, transition and behave in screen based environments. The participants were prompted to share their experience of typographic exploration within screen based design by investigating the communicative function throughout the workshop.

I set about planning the event before I invited participants to partake in the workshop. The 12 participants chosen for this study were students from the University of Greenwich, London. Students (appendices) were preferred due to their knowledge of the field, as this workshop intended to explore and experiment with typographic design principles. I corresponded via email directly with students and set up an online registration form, in order to have a complete register of who would be attending. This provided some practical knowledge regarding how much space, tables and laptops I would need to set up. Before the workshop took place, I sent the participants a workshop structure and an agenda for the day. I also sent them a structure of Morison's typographic principles as I had distinguished them (see appendix). The workshop outline included some questions for the participants to consider in preparation for the workshop. The workshop was documented with audio, visual materials and videos by a crew of

film students who did not take part in the workshop experiment.[80] The information gathered was made available to participants immediately after the workshop as agreed at the beginning of the session, in order for the participants to have a better understanding of the data collection, and how the data will be used in the thesis.

During the workshop, the participants were asked to work independently on separate laptops in the same space. My role was to observe and record the event and I also helped with the filming and interview parts of the workshop. I did not give the participants instructions and instead, I let them explore the prototypes on their own. The "affordance technique" was put into practice in this first workshop.[81] By allowing participants to explore the prototypes on their own, I was able to determine the usefulness and usability of the design, as well as, whether it was intuitive. The participants were presented with nine exercises / nine prototypes) to work through (a detailed explanation will be provided further down). The same technique was used to test tacit knowledge by allowing them to explore without instruction. They could decide which to do first, and decide what names to give each. In fact, the names given to each prototype (see below) were provided by the participants in the discussion at the end of the workshop. It is worth noting, that the discussions held at the end of the workshop were directed; I asked questions that were focused on and specifically related to this group of workshops' inquiry and its aims/objectives (which can be found in the Appendix pp. 206-210).

When the prototype experiments (that I discuss at length below) were completed, a discussion ensued where I briefed the students about the process that they had taken part in and the project more generally. I presented them with a set of cards that provided them with extra information and reading materials (to take home) regarding typography's transition from print to screen. I also supplied them with post-it notes and encouraged them to write notes that expressed their thoughts and ideas on the prototypes and the workshop. A series of one-to-one interviews and open discussions took place during this workshop; these were recorded and have

[80] Before the workshop took place, participants were informed that it was part of the practice-led research of a doctoral thesis. I asked for permission to document the process with audio-visual. All participants were asked to fill out a form to approve the use of materials gathered from the workshop.
[81] The affordance technique was used to examine tacit knowledge and intuitive design in the prototype experiments. As discussed in Chapter: 4 tacit knowledge refers to the idea that we are capable of or possess skills, ideas and experiences that we may find difficult to express/ or are unaware of. According to the Affordance Technique this kind of knowledge can be revealed in practice.

been used for the evaluation and analysis of this project and its objectives (All recorded material can be found on the terras.lab.co.uk website).

Designing the Prototypes The prototypes were designed to explore the core structure of Morison's principles as they appear in *The First Principles of Typography*. To be more precise, the aim was to understand how the principles of typography have been affected by screen based (virtual) environments, with all of its features including: interaction, kinesis, etc. in mind. The prototypes investigated how in turn, this has affected communication and the notions of legibility and readability. The prototypes designed for Phase: 1 looked at how letters, words, symbols and sentences have been affected by current technology. It did not use larger amounts of text; in retrospect this was identified as a limitation and became a concern for the Phase: 2 workshops (see later when I discuss Phase: 2).

The objective behind the creation of prototypes was to test and get a better understanding of how design students' understood the role of type design in screen based technology today. I developed the 9 prototypes with key elements from Morison's typographic principles in mind. These included practice based concerns (i.e. *Size, Kerning, Leading, Measure, Tracking, Glyph, and Hierarchy)* and the ideological assumptions that guided his practice (i.e. legibility, clarity, intention, truth content and transmission of meaning). The diagram below illustrates the various aspects of type design practices that concerned Morison.

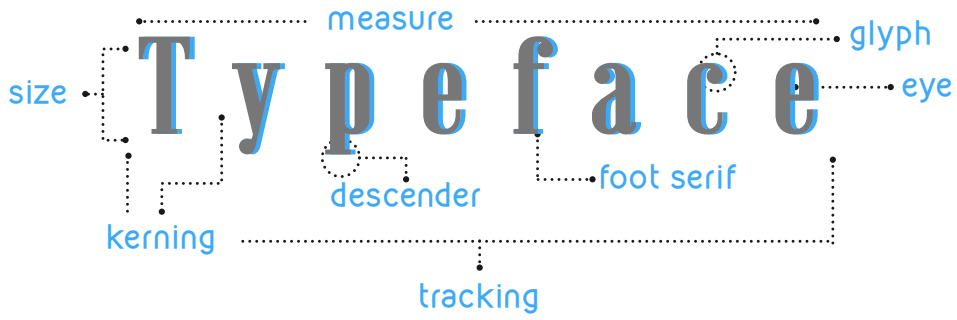

Figure 4: Typeface Structure (Morrison, 1936)

The prototypes did not test each of the properties derived from practice based concerns separately (see above). Rather, different prototypes meddled with a number of different practice based principles (as prescribed by Morison), in an attempt to explore both legibility and readability in screen based type. Some of these properties featured more prominently than others in the prototypes. For instance, the testing of the effects of size, kerning and tracking on

screen, featured in a few of the prototypes and at other times the use of different fonts to experiment with all of the aspects mentioned above.

I would like to emphasise that the prototypes were used to examine aspects of readability (layout and semantics) *and* legibility, in the context of the differences between print and screen based typography. The main aim was to take the principles and present them and/or treat them differently to the way that they are usually understood and presented in Morison. Hence, instead of viewing (for example) the size, kerning or leading as what can enhance or impair the legibility of text, I instead viewed how using these features can enhance readability when used in new ways (made possible by screen based technology). And how these might add to the literal as well as, the metaphorical meaning of a word, regardless of legibility and in opposition to what Morison had proposed. When planning these workshops I hoped to achieve an understanding of how we can use the specific principles in screen based technology in a way that helped enhance the reading experience, even if the legibility of the text, or word was compromised. I will now turn to look at each of the nine experiments and prototypes in more detail.

Prototype & Experiment 1 (Typologies): The first prototype displayed a list of design variables and concerns in Morison's typographic principles on the left hand side of the screen (as I had distinguished them). These were attached to different letters that made up the word "typeface". The letters that spelled "typeface" moved independently in a vertical direction. The vertical movement of the letters was automated and could not be controlled by the participants. However, the participants were able to control the movement of the letters horizontally and therefore, could create new words out of the existing characters by moving them around.



Figure 5: Typologies [visit link for interaction with the prototype teraslab.co.uk/phd/typeface]

This experiment explored the idea of legibility and readability. Each of the letter forms meddled with aspects of legibility by incorporating screen based design features that do not comply with what Morison had proposed as legible type (3D letters, symbols, shadows, tilting etc.) The participants intuitively moved the characters around to spell other words. In the discussion that ensued, the participants highlighted the differences between the automated (vertical) movement and the control of movement (horizontally) through interaction. They mentioned that type remained legible precisely, because they had control of the horizontal movement. The participants claimed that had the kinetic type been completely automated (and without interaction) that this would have affected the legibility of the word. Hence, this prototype/experiment opened up questions relating to the standing of interaction and kinesis in screen based typographic design. In particular, whether interaction enabled kinesis to be more communicative and what aspects of legibility and readability were being affected by kinesis.[82]

Prototype & Experiment 2 (Experiencing): The participants were presented with a random set of words and symbols. They were then asked to combine the words to form a sentence that describes them. Each word and symbol had a different font but these changes only appeared by interacting with the words and placing them in the empty box below. In other words, the movement of the word, or the action of interacting with type also transformed the words into something else. Participants were able to move the words around the box in any location that

[82] These questions were subsequently incorporated into the design and experiments conducted in Phase: 2 of "The Typeface Project" which I will come to shortly.

they preferred. The option of printing was also made available to them and by printing their work they had the opportunity to observe, evaluate and compare the final outcome with other participants at the end of the workshop (see next page). This prototype aimed to investigate the difference between print based type and screen based type.

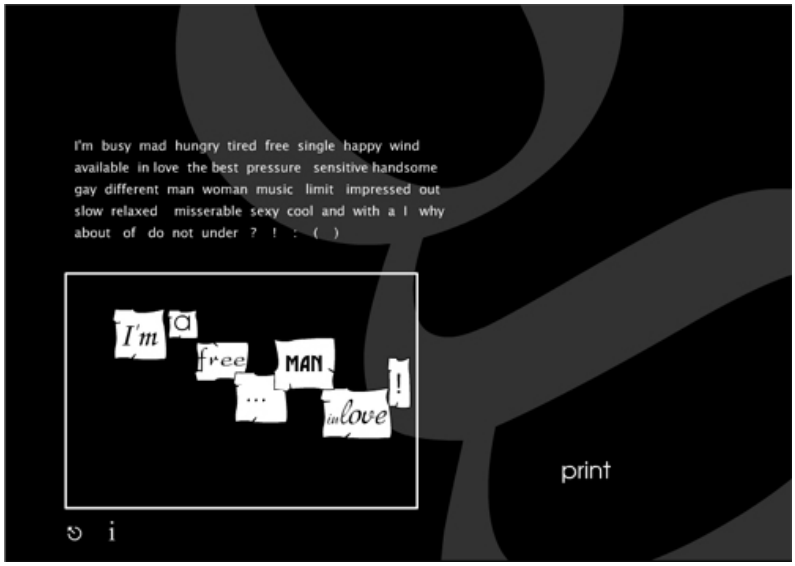

Figure 6: Typeface Experiencing [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/experience.htm]

The idea behind this experiment was to look at the differences between print and screen and observe how type is understood and perceived in each setting. Notes taken from the discussion at the end of the workshop illustrated that the participants viewed type on screen differently from print. For one, they agreed that screen based environments enable interaction with type in a way that differs exponentially from print. One participant stated that, "Type on screen is much more interactive, in the sense that you feel like you can control what is going on rather than on paper – [where] it [type] is kind of set in stone or, in ink rather". The participants determined that the ability to move, choose, and play around with the words on screen (in potentially infinite ways – though the options here were finite) allowed them to *experience* type rather than simply reading it. Another participant added that the idea of experiencing virtual type can be understood as being more immersive. This led them to name this prototype "experiencing". A surprising result of this experiment (to me) was that the majority of participants opted to print their work, despite their enthusiasm with regard to screen based interactivity. When asked why they used the option of printing, a variety of reasons were given, including: that it gave them something tangible that they could refer to, or look at in the future and remind them of the experience, as well as compare their own work with other participants. But also, printing the work allowed them to understand it as a finish product, as opposed to the screen based version

which gave them the possibility to re-work and revise the work and therefore, gave the impression that it remained "unfinished". This experiment allowed me to understand and later, to further explore the differences between the reader (of print) and the user (of screen) as part of a cultural shift that has changed the ways we understand type and the ways we communicate with type. Virtual typography is viewed as more malleable, fluid and changeable, in opposition to print which is viewed as set.

Prototype & Experiment 3 (Feeling): This prototype experimented with the idea of using kinetic typography to create different moods, feelings or affects. Participants were asked to type a word in the allocated (boxed) space on the screen and watch multiple representations of the same word appear. Although the word always remained the same (as does the meaning), various effects were used to create different moods. The participants were then asked to note how each representation and/or kinesis affected the meaning of the word and what aspect of communication it might be disturbing. Thus, this prototype experimented with what A.P. Baines and A. Haslam in *Type and Typography* describe as, type having the ability to express emotions and evoke feelings. They write: "Typefaces can […] be manipulated in more expressive or painterly ways in order to convey an emotion or evoke feeling" (Baines and Haslam, 2005: 126).

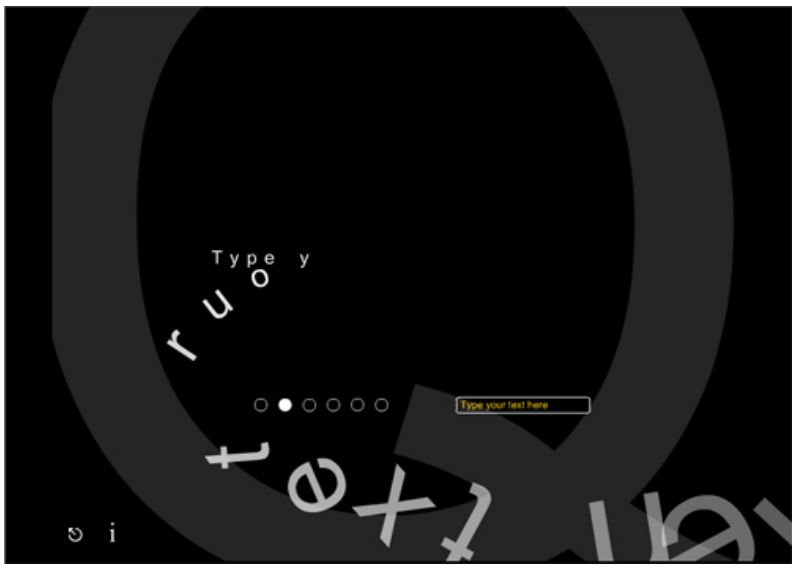

Figure 7: Typeface Feeling [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/feeling.htm]

In the discussion that followed this experiment, participants expressed an interest in how kinesis in screen based typography was not simply limited to a change of location (its movement) in relation to other elements on the screen. But rather, how that movement transformed type (that

kinesis enabled the shape and size of type to be altered in a continual movement) and therefore, changed its identity. When asked what this movement and change of identity entailed they argued that it created different feelings and moods. One participant commented: "Movement adds another way of communicating to your audience. Screen based typography can create emotions and feelings through kinesis – kinesis informs the text". The participants called this prototype "feeling" because they agreed that the different variations of how the word was presented, created a different image of the word each time and in doing so, altered how they felt about the word. Though the formal (dictionary definition) of the word remains the same, a number of different "metaphorical" meanings could emerge, as the image changed and created different affects. However, they also noted that by transforming in shape, size and form, the word's literal meaning could also be enhanced. This was a particularly interesting and insightful understanding of kinesis, and the questions that arose here were used for further research in Phase: 2.

Prototype & Experiment 4 (Inspiring): This experiment used a single letter (the small "a") that multiplied itself through interaction and movement in order to be used to write, or draw on screen. Hence, the interaction with this single letter could be used to create an image, another letter, or an entire word. This prototype experimented with the idea of using type as an image and challenged the idea of legibility in screen based environments. The aim of this prototype was to examine how virtual type can challenge the typographic communication process, in particular, the notions of legibility and readability.



Figure 8: Typeface Inspiring [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/inspiring.htm]

A word is usually the outcome of a combination comprising of one or more letters. A part of this experiment engaged with the unconventional idea of using a letter to create images. The participants named this experiment "inspiring". The prototype experimented with the idea that a letter can be more than a letter; it can be an inspiring tool that can create another word, or an image, which could prompt creative engagement with type. One participant created a face and commented that in this experiment the letter on the screen could be compared to a brush on a canvas. The discussion at the end of the workshop, centred on the differences between reading type on paper and viewing type on screen, and how these two functions are carried out differently depending on the medium (print and screen). This prototype conjured up the idea that there are two types of reading, or perhaps two ways with which we now understand typography: reading voice (print) and reading images (screen) and how the two types of reading might differ. When mentioned that these might not be two different or conflicting activities, but two parts of the same process (of reading) which inform one another, the participants felt that if this was the case it was made more noticeable when interacting with type on screen. The question regarding "how we read" and "what the reading process entails" was picked up in Phase: 2 for further inquiry.

Prototype & Experiment 5 (Differentiating): The participants were asked to type a word on the screen. The word was then presented in five different ways by using five different fonts. The fonts chosen for this prototype included some of the most widely used and familiar fonts: Times New Roman, Arial, Courier, Comic and Avant G. The emphasis here was less on the word itself and more on how the font (given that these were known and familiar) made each of the participants read the word; taking note that they most likely had preconceived ideas about particular typefaces. A part of this experiment aimed to test how the same word displayed with a different typographic design can create a different feeling; it can be perceived as more playful, or formal, or serious and provoke a number of different stylistic "images" or "tones". The word can also be considered either more or less significant by altering fonts and sizes. Another part of this experiment tested how familiar fonts came with preconceived notions due to our experience of having come across them repeatedly in particular settings.

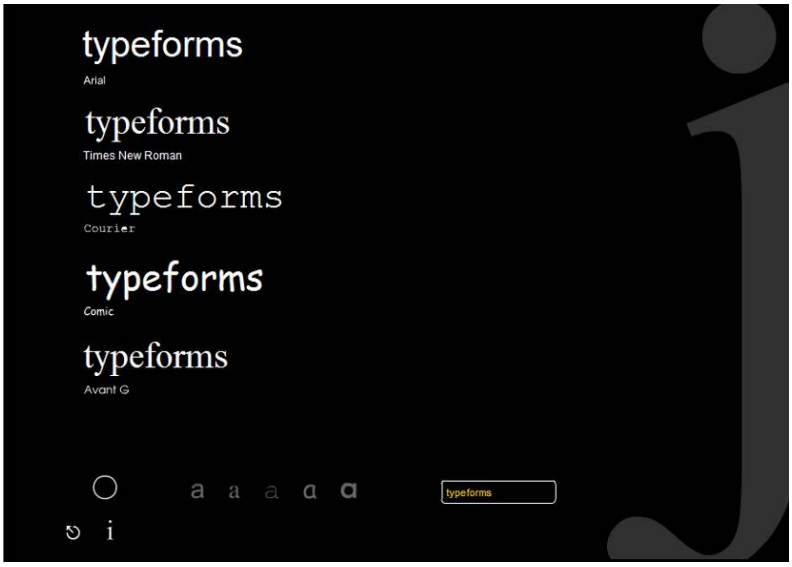

Figure 9: Typeface Differentiating [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/different.htm]

In this experiment participants illustrated that they had set views on different fonts and that these views were common to all of them. In other words, different fonts had different stylistic images associated with them. For instance, all the participants viewed Times New Roman as more formal and serious. However, it was not particularly clear whether this font was viewed this way because we are used to seeing it in serious literature (newspapers, printed books etc.) or, because its own physical appearance and properties make it appear formal and sombre. Comic was viewed by all the participants as more playful; however is that because we have grown accustomed to viewing it in less serious literature? The creation of this font was indeed, inspired by comic books. However, is 'familiarity the most important aspect in this identification?' or 'Is it the less rigid lines, the spacing and other notable features that provide it with a look which makes us feel it's more playful or childlike and therefore less serious?' These questions were discussed and participants agreed that it was most likely a mixture of both these reasons. An important point brought up in relation to this experiment was the difference between various images that typography can create; they used the term "tone" and "style". Although each font was very different from the other, it was not legibility that differentiated them (since they were all considered equally legible) inasmuch, as readability (how it was read and/or perceived in terms of style). It was agreed that preconceived cultural notions and familiarity were likely to influence what we thought of each font. It was also commonly held that the different styles were not affected by the medium; it made no difference according to the participants whether it was encountered on screen or on the printed page.

Prototype & Experiment 6 (Transforming): This prototype experimented with interactivity and kinesis in virtual typography. Participants were asked to type a word on the screen and in doing so, were then able to change the size, transparency and rotation of the word in a similar way that they are accustomed to doing with screen based type. This experiment was focused on looking at how screen based type provides the viewer/reader with more control than print. It allowed type to be extended beyond the traditional boundaries and limitations of its appearance on paper. This prototype was created to view how screen based type might better be controlled and adjusted by preference. More importantly, the prototype examined how giving "more control" to the reader/user could alter communication (legibility and readability) and/or meaning of the word.



Figure 10: Typeface Transforming [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/trans.htm]

The participants suggested that the name of this prototype should be "Transforming"; this is because interaction and kinesis allows words to transform, according to personal preference and even according to environmental circumstances (i.e. reading at night, on the go etc.) The participants agreed that the ability to control how they viewed text on screen was a desirable feature. One participant said: "Type is a lot more customised on screen, you can do a lot of things like underline, make it bold and you can change the general aesthetics of it a lot more. It helps give variation". They argued that type on screen allowed them to view it less as something static and unchangeable and more as something that can be creatively developed as an image and changed at will. If print is viewed as something static and constant it is because (and regardless of the style of the typeface) it is conceived as an unchangeable voice which is always

attributed to an author. They commonly agreed that this experiment made them feel that in contrast to print, type in a screen based setting is more performative and expressive. It was mentioned that the ability to have control of type on screen, meant that you are able to adjust print based type for the screen so that it can become more legible. Moreover, the personalisation of type in screen based settings enabled them to feel that they were active participants in screen based text, as opposed to passive observers in print based text. An open question derived from this experiment (and other prototypes previously mentioned) was whether we tend to associate voice in print with something static (and attribute it to a single author), while associating virtual type to images that are viewed as fluid and collaboratively created.

Prototype & Experiment 7 (Learning): This prototype was created as a "visual dictionary". Upon clicking each word on the left hand side of the screen, the word would unfold and become a visual representation of its meaning. The appearance of type here, was created in the form of an image that was used to reflect (or mirror) its meaning. The objective of this experiment was to challenge the notions of readability and legibility in the context of screen based type. The type used in each of the words did not adhere to the rules of legible type. However, the prototypes aimed to enhance the literal meaning of the word by making it more readable (regardless of legibility); Thus, blurring the boundaries of legibility and readability.



Figure 11: Typeface Learning [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/learning.htm]

In the discussion following this experiment, the participants stated that the performative properties of kinetic type on screen could contribute to the literal meaning of the word. They argued that this is a feature that is impossible for print technology due to the static page. The participants named this prototype: "Learning". A number of different features enabled the type on screen to enact its meaning (i.e. something heavy presented as something large that collapses under its own weight) in a way that cannot take place in print based type which is static. The visual dictionary presented words in ways that could be viewed as illegible yet, the word was entirely readable. It was agreed by the participants that the virtual type dictionary with its performative (kinetic and animated) properties enhanced the literal meaning of the word. Therefore, readability informed legibility in this case. Another example was the word "Digital" (as displayed above). The word had many features that break with Morison's principles in creating legible text. Yet, the image was created to remind the participants of some of the first digital/computer generated fonts. Regardless of legibility, the word presented the participants with a visual representation of the meaning of the word; they claimed that it added to the words' communicative properties (rather than hindering communication).

Prototype & Experiment 8 (The 3D Experience): We are used to viewing letters in a 2D space, while disregarding all other dimensions; this is mainly due to the fact that we are accustomed to the flat space of paper and printing technology. However, in screen based mediums a letter can be represented in a 3D environment. This prototype allowed participants to explore and experiment with letters that were 3D and decide which of the letter's hidden aspects they wanted to explore. It enabled varying viewpoints and different perceptions and meanings to ensue. This prototype explored the different facets of letterforms in virtual environments as a fundamental difference between screen and print.

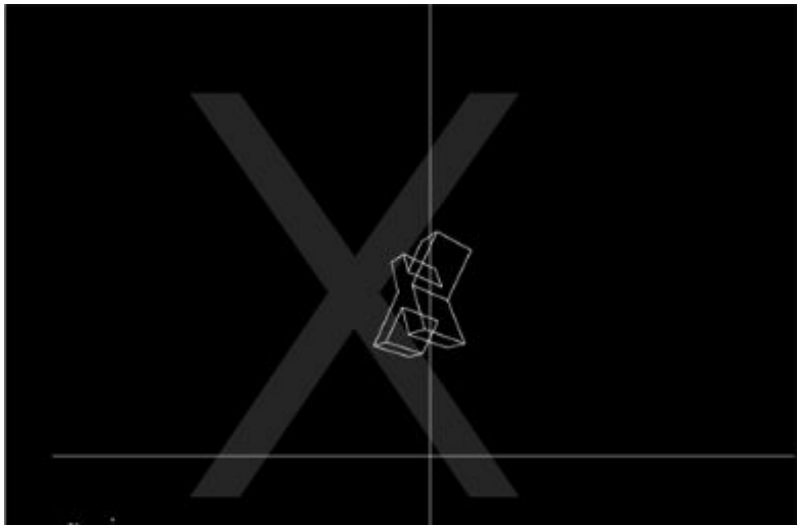

Figure 12: Typeface 3D Experience
[visit link for interaction with the prototype teraslab.co.uk/phd/typeface/3dexperience.htm]

According to the participants, this prototype provided them with the ability to view the different facets of a letter by looking at it from different angles. Although we don't normally view letters in this way, it challenged their perception and understanding of how we normally recognise letters from only one angle. From a different vantage point they noticed how one letter might not be recognizable from another; for instance the small letter "n" could be taken for a "u" and "q" for a "p" etc. By having the ability to view the letters from different angles we also have a change of perspective. This prototype formed a lively discussion relating to the more general understanding of 3D screen based typography and its ability to create images and meanings through depth and kinesis.

Prototype & Experiment 9 (Play): This prototype was named "Play" by the participants. It experimented with the differences between static type and kinetic type *on screen*. The participants were asked to type in a word and three different presentations of the word would appear: A static version, a kinetic version and one where the word was boxed and presented as separate letters. The idea behind this prototype was to create a game, as a different way of viewing the differences between static, animated and interactive text. Only by playing and interacting with the type on screen were the participants able to see certain features; for instance the static version of the word was made up of smaller letters but this was not visible until you zoomed in on the text.

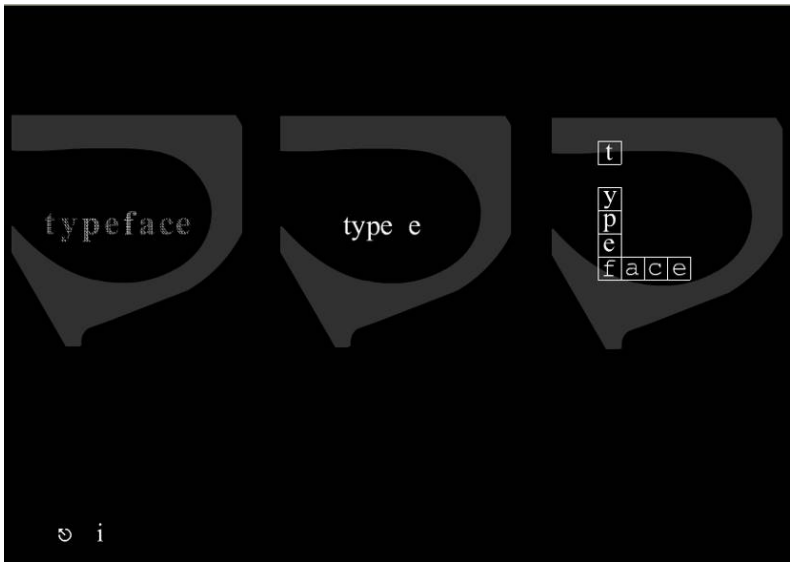

Figure 13: Typeface Play [visit link for interaction with the prototype teraslab.co.uk/phd/typeface/playing.htm]

The participants generally saw this experiment as a way of exploring the design process; as a form of experimentation, presentation and playing with different aspects and features of screen based type. The participants agreed that static text on screen is not the same as static text displayed on the printed page. The medium (of portable screen technology) allows the user to explore type through interaction and for instance, come across a surprising element (as with the zooming in here), which is different to the way we interact with paper.

II Outcomes and Analysis of Phase: 1

Summary of Important Outcomes:

Prototype & Experiment 1: Kinetic type remained legible precisely, because participants felt they had control of the movement. This prototype and experiment illustrated that interaction can enhance the legibility of virtual type in screen based environments by allowing for more personalisation and control. In contrast, kinesis without interaction can (in certain cases) suspend meaning and the reading process. The relationship between kinesis and interaction informs the relationship between legibility and readability. Kinetic text can become illegible (without interaction) while, interaction contributes to the readability. Hence, whereas the notion of legibility informs design practices, the user/reader and the ability to interact with the text informs its readability.

Prototype & Experiment 2: This prototype determined that printing gave the impression of a finished product. This was the very opposite of how they understood virtual type which, gave the impression that it was unfinished, fluid and changeable since the participants were able to re-work and revise the work (potentially endlessly). Does this difference between the two, inform the perception that printed type can be considered as a voice attributed to an author and screen based type as an image which is collaboratively created (including the reader's own active participation)?

Prototype & Experiment 3: This prototype illustrated that kinetic typography in screen based environments and the variations it allows, has the capability to create different images. In doing so, it also creates different feelings, moods and affects. This experiment illustrated a strong relational connection between type as image and its ability to incite affects and feelings.

Prototype & Experiment 4: This experiment opened up questions regarding the difference between type as voice (in print) and type as image (in screen); should voice and image be differentiated as two separate elements of typography and the reading process and thus, as two different ways of reading that mark the difference between reading print and reading on screen? Or, should they be viewed as two stages in the reading process common to both print and screen? Also, how do these (voice and image) inform one another?

Prototype & Experiment 5: The participants had particular associations tied to specific fonts (and font families). These familiar fonts present a different stylistic "image" or "tone" that is associate with them. All of the participants had a common perception about each font which, they argued was consistent regardless of the medium. Hence, whether they were viewing Times New Roman on screen or on print their perception of it remained the same (it was viewed as serious and formal). A particularly interesting result of this experiment was what the participants understood by the notion of style, image and tone in this context. They illustrated that they tended to associated "tone" with voice. The participants appeared to understand "tone" here, as something different to intonation (which, is encountered in oral speech) and different to voice (the author's intended meaning). Rather, they used "tone" to mean image, or how we might understand images in the form of "branding". In short, each font had an "image" which was consistent and common across all the participants. What then is the difference between tone and image in the reading process and how does virtual typography challenge our understanding of it?

Prototype & Experiment 6: This prototype explores how more control being in the hands of the viewer/reader alters the communication process and/or meaning of a word. This experiment illustrated another difference between print and screen based typography. Type on

screen allowed the participants to view virtual type as something less static and unchangeable, as opposed to print. Screen based type was viewed as an image which can be developed and changed at will. However, it also illustrated that by placing more control in the hands of the viewer/reader screen based type can be adjusted in order to render it more legible. As previously mentioned, an open question that derived from this experiment was whether we tend to associate voice in print with something static and attribute it to a single author, while associating virtual type to images that are perceived as fluid and can be shaped by collective authorship.

Prototype & Experiment 7: This prototype challenged the notions of legibility and readability. It illustrated that kinetic and animated type could contribute to the literal or formal meaning (dictionary definition) of the text, regardless of whether type was optimally legible or not. In this particular case, readability informed legibility and added to the meaning of the text.

Prototype & Experiment 8: This experiment challenged the way we normally perceive, understand and recognise letters by allowing different viewpoints and angles to emerge.

Prototype & Experiment 9: This prototype highlighted the differences between on-screen static text as opposed to static print text. The medium here, plays an important role since the reader/user is able to explore static text on screen through interaction. The participants illustrated that the screen provides the reader/viewer with a lot more control and therefore allows for more variation and personalisation; whereby the hierarchical relationship between author/reader and author/designer is overturned, and the boundaries are blurred. In many ways, screen based type side-lines the former authority of the author in typographic design practices.

CREATING NEW PROTOTYPES (For Phase: 2) In completing Phase: 1 of "The Typeface Project" workshop I found that the relationship between readability and legibility in typographic communication required further investigation. By reflecting and evaluating on the experiments conducted for the first workshop (Phase: 1), I came to the conclusion that certain prototypes (and the questions they were asking) had more potential than others and could benefit from further examination. This was the primary reason for deciding to create a new set of prototypes.

The discussions and interviews that took place directly after the experiment with the prototypes created for the Phase: 1 workshop were evaluated and the results taken into consideration when designing the next workshop and the new prototypes for Phase: 2. In the discussion that ensued after the workshop experiment the participants were asked to provide their own suggestions as

to what they felt was missing from the experiments. The participants held the opinion that the next prototypes could include sound more purposefully, in order to view how type and sound operate together in screen based environments. The inclusion of sound was thought to be an added feature that could more realistically encompass and represent our everyday use of screen based devices. Another limitation of the first set of prototypes that I identified was that larger texts needed to be included in the experiment in order to better understand the notions of readability and legibility. The questions and issues derived from this workshops were considered when designing the second set of prototypes for Phase:2.

Overview of Typeface Project Workshop: Phase 2

The second workshop conducted for "The Typeface Project" in November 2010 also took place at the University of Greenwich, London (The Lesson Plan is available in the Appendix pp. 211-219). I have distinguished this workshop as Phase: 2 and consider it to be a continuation and extension of the work conducted for the first workshop. As mentioned, the suggestions of the participants in Phase: 1 (using a participatory design methodology) in conjunction with my own evaluation at the end of the workshop (using Edmonds and Candy's Evaluation method) formed the groundwork for revisions and design of the second set of prototypes/experiments used in Phase: 2.

METHODOLOGY

The participants chosen for this workshop were a dynamic group of 12 undergraduate students. This included year 2 Graphic and Digital Design students and year 2, 3D Digital Design and Animation students. The reason for inviting 2nd year students, was because the aims and objectives of this workshop required participants to have knowledge of the subject area. The group of 3D Digital Design and Animation students had an understanding of 3 Dimensional Space and knowledge of Cartesian coordinates which are crucial to their own subject area. The Graphic and Digital Design students had not yet worked with interactive typography or animation, however their understanding and knowledge of the basic principles of typography had already been established in their design process at this stage of their education. In total, there were seven male and five female students taking part in the Phase: 2 workshop and their ages varied, ranging from 19 to 27. All of the participants had various cultural backgrounds and

for 60% English was a second language. The participants had not attended a similar workshop before. As we shall see, the second set of prototypes experimented with more complex ideas and for this reason I decided to provide some instruction and clarification where necessary. Again, it is worth noting that the discussion at the end of the workshop was directed to cover questions that were significant to the aims of this project.

For the Phase: 2 workshop I designed 4 new prototypes: *Visual Structures, Sound & Motion, The Rhythm of Language* and *Text and Letters*. These prototypes were created to address the problems, limitations and open questions that came about from the previous workshop. They were therefore designed according to participant feedback and my own evaluation of the outcomes of the Phase: 1 workshop. The prototypes/experiments in Phase:1 intended to investigate Morison's understanding of legibility and readability, however what they illustrated quite clearly is that the notion of "reading" is a far more complex process than Morison anticipates in his work. What's more, the work and analysis derived from the first set of prototypes illustrated that virtual typography complicates the reading process even further, by adding features not available to print. Typographic communication in digital environments appears to make noticeable the inherent qualities of language; the complexities of reading and the communication process more generally. I will now turn to a discussion of the prototypes created for the Phase:2 workshop.

Prototype & First Experiment: Visual Structures

In this prototype, letters were set to move across an empty screen and finally arrange into the word "typography". This prototype used kinetic type but did not allow for participant interaction. Its purpose was to test the difference between kinetic type that allows participants to control type through interaction and kinetic type that could not be controlled by the user/participant (no interaction). The aim of this experiment was to extend the questions that had arisen from Prototype: 1 (Typologies) in the first workshop, by exploring the notions of readability and legibility through the lens of interaction. Hence, the prototype experimented with the idea of "decoding" as part of the reading process and what this might entail. It asks the question: 'How does kinesis and/or interaction alter the reading process?' In this prototype, the participants were simply spectators and/or observers. I considered this prototype to be an experimental investigation into the limits of legibility and readability in relation to kinesis.

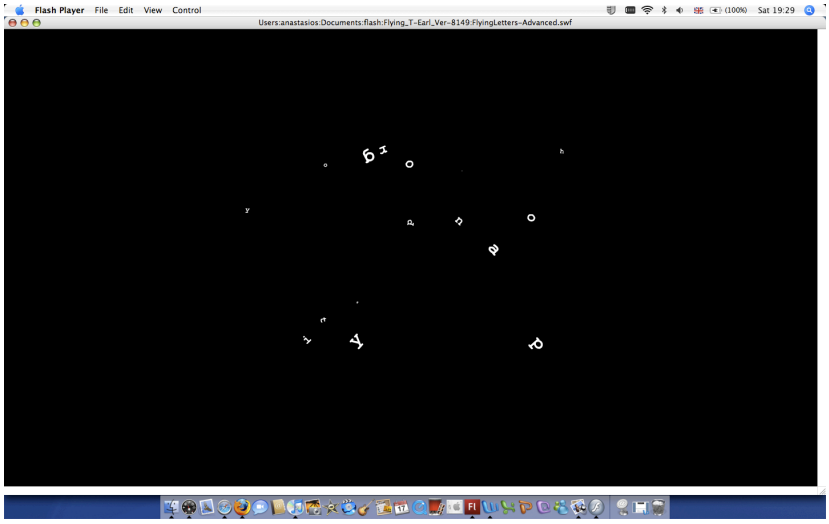

Figure 14: Visual Structures [visit link for interaction with the prototype teraslab.co.uk/phd/typeface2/kinetic_readability]

In the first prototype and experiment of this workshop the letters moving about on the screen can be seen as carrying ambiguous information until the letters finally arrange themselves into a readable pattern (or word) which carries meaning. Although the letters are in themselves recognizable, they do not carry meaning because they form no pattern as long as they are moving. This prototype produced a number of evident observations by the participants. However, it also led to some interesting insights during the retrospective evaluation and analysis of this experiment. In the discussion that followed this experiment, the participants all agreed that even though they could recognise the individual letters moving around the screen (and were therefore legible). Nonetheless, it was not until the characters formed into a recognizable pattern and *stopped moving* that they were able to provide the text before them with meaning and/or consider it readable. The process of reading therefore, starts when movement stops. The process of reading forms a process of "decoding" which, begins in recognising letters and then combination of letters that create recognizable patterns. These recognizable patterns (or relations) are what make words readable; yet, continuous movement which is outside our control does not allow for this to happen. One participant claimed, "The letters were legible but the text was unreadable until it formulated the word typography." The prototype and experiment named "Typologies" (see Phase: 1) tested kinetic type that allowed control through interaction with the text. The participants did not perceive the "Typologies" experiment as being devoid of meaning. In contrast, this experiment "Visual Structures," gave the participants

the impression that the kinetic type on screen was lacking meaning, up until the point that it settled into a pattern that they could recognise, decode and therefore read.

Retrospective evaluation of this prototype and particularly when contrasted with the participants' reactions to the previous prototype led to some insights about how we might differentiate between the observer/reader in printed type and the user/reader in screen type (particularly with portable technology which allows more interaction than ever before). While also viewing how kinetic text that allows interaction (which, I interpret here as some form of control or, active influence on the viewing material) is different to kinetic text which restricts interaction. While, kinesis combined with interaction can enhance readability and legibility, without interaction it can have a negative impact on both, the readability and/or legibility of text producing even less control than print technology.

Prototype & Second Experiment: Sound and Motion

This prototype was the product of a number of different issues, questions and suggestions that emerged from the previous workshop (Phase: 1) and various prototypes. The "Sound and Motion" prototype experiments with hypertext and sound within the context of screen based type and communication. The participants were asked to click on the Greek phonetic alphabet (the hyperlink at the bottom part of the page); this made the letter appear in conjunction with sound. The Greek alphabet was used deliberately, for it represents both a letter (phonetics) and in some cases as a mathematical symbol (as image). It can therefore, operate in more than one way and can represent an entire narrative (if you are familiar with its meaning in mathematics). The size and movement of the letter was synchronised and changed according to the sound. Therefore type here, operated according to the rhythm of the sound. The aim of this prototype was to examine the difference between voice (as sound) and image in the reading process. It investigated how a singular word contains both phonetics (intonation, tone, voice) and images (meanings, affects etc.); it also examined the difference between a hyperlink and other types of interactivity in virtual typography. For instance, interacting with type on screen where all information is made available to you at once, is different to the way a hyperlink operates. Clicking on a hyperlink illustrates a delay in the communicative function since hyperlinks have the ability to hide and reveal information. A hyperlink can be thought of as a way of retrieving temporarily hidden information.

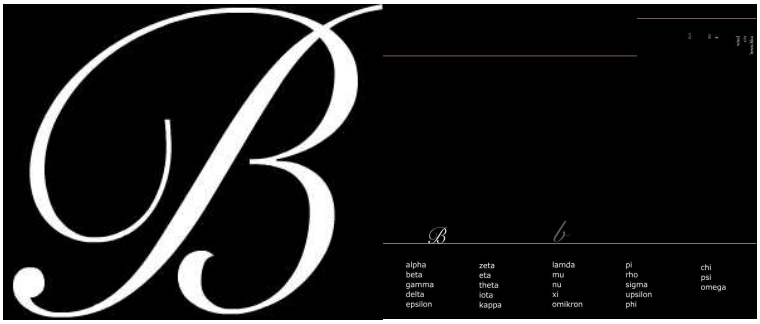

Figure 15: Sound and Motion [visit link for interaction with the prototype teraslab.co.uk/phd/typeface2/hypothesing]

In the experiment with this prototype, participants had several noteworthy observations in the discussion that followed. The visual representation of the letter (moving according to the sound) could be understood as something that signifies sound (or voice / phonetics) in a form comparable to intonation which, we encounter in oral language. Hence, virtual typography here was considered immersive and experienced in a way which is similar to oral language (but not possible in print typography). One participant mentioned that the letter moving according to the sound was a much more accurate way of representing visually "all the ups and downs" (intonation) present in spoken language. Hence, virtual typography has the privilege of using kinesis to mirror intonation which is available to us only in the form of a real voice. Although kinesis cannot quite replicate the complexities of intonation in oral language it does have similar abilities, which is to invoke images in the form of affects, intensities and feelings in a similar manner to the spoken word. These features in virtual typography can enhance the reading experience and even an author's voice. As some of the participants noticed the same letter could also be interpreted as a mathematical symbol; they recognised it as a different form of visual representation (a different type of image) which is representative of numerical digits (the Greek letter Pi, for instance) and has a semantically rich narrative for mathematics. Hence, the participants illustrated through various interpretations that words not only contain different forms of images that are capable of generating meanings (and different types of meaningful content) but also that we read in many different ways.

Finally, the use of the hyperlink illustrates how we move from phonetics (signals) to recognizing patterns (by retrieving information) in a process of decoding/recoding. The part of the communication process which appeals to the semantic properties of a word (making connections) or, creating meaning is a process of re-coding. Hence, the communication process involved in typography is a shift from decoding to recoding. Decoding entails legibility, while

recoding entails readability and the process of creating new meanings. Both elements of this process are communally derived (through shared language); but re-coding (and how we read) is an individual process, unique to each person and his or her personal experience.

Prototype & Third Experiment: The Rhythm of Language

In this prototype, the participants could change the numbers in the box and as a result the rhythm of the words would also change in the way that they were represented across the screen. The idea behind this prototype was to investigate how a discord between sound and image as well as, constant motion in screen based type might prove to suspend the normal flow of sensation and communication and result in confusion. The constant movement of type was set to interrupt the attention of the participants, so as to look for fixed points in order to make sense of it. Would the participants recognize these patterns merely as shapes? Hence, what are the limits of kinesis, animation and interaction in virtual type and how do these affect communication and the process of reading?



Figure 16: The Rhythm of Language [visit link for interaction with the prototype teraslab.co.uk/phd/typeface2/informing]

In this experiment/prototype, the participants could control the text on the screen by typing in numbers which altered the sound and movement. The type on screen in this prototype had the ability of changing through continual movement. The communication process as described in

relation to the previous prototype (as a process of decoding and recoding) broke down in this experiment. Participants claimed that the constant movement was confusing and created a situation where their attention was dispersed in an attempt to pin it down and make sense of it. Hence, constant movement that does not settle into a pattern we recognise suspends both legibility and readability in text. What is more, the interactive element in this prototype/experiment did not give them a sense of control. The participants generally agreed that this prototype made them feel like observers (viewers) and not readers. The patterns were viewed by the participants as abstract, more like shapes and signified for them a breakdown of communication.

Prototype & Fourth Experiment: Text and Letters

This prototype was designed to explore the notions of legibility and readability in the context of larger texts. The participants were presented with a text, where movement of the mouse acted like a magnifying glass. Interaction with the text made the words change in size (enlarge) and become distorted, changing the opacity of the text and therefore its legibility. The font used for this experiment is part of the computer structured "Verdana" family, designed by Matthew Carter for Microsoft in 1996; it was used because it is considered basic and optimally legible. This prototype aimed to extend the investigation relating to the notions of readability and legibility. Readability is often associated with the layout of a text and legibility with opacity or clarity of letters which assist in transmitting information. This prototype experimented with the idea that by magnifying the type on screen (which in previous prototypes improved legibility) we are also distorting and losing opacity of the text.

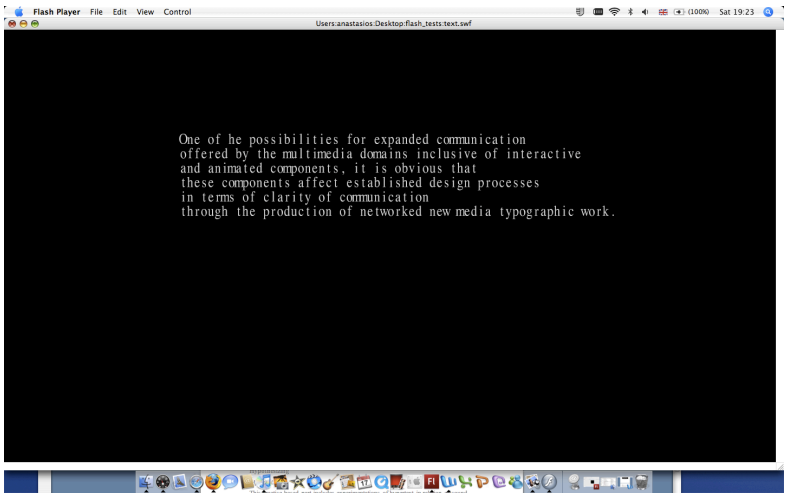

Figure 17: Text & Letters [visit link for interaction with the prototype teraslab.co.uk/phd/typeface2/kerning]

In this experiment the mouse function which, enlarged the type on screen operated as both a highlighter and a distorter of the text. The participants held the view that it forced them to slow down their normal reading patterns. It thereby increased readability by forcing the participant to slow down, examine the word and reflect, but also in doing so they claimed that it altered the legibility of the text making it less legible.

Outcomes and Analysis

SUMMARY OF IMPORTANT OUTCOMES - PHASE: 2

In my analysis, prototype 1 (of Phase: 2) illustrated that the participants viewing the movement of type on screen were simply passive spectators until the letters formed a word. In other words, there was a moment when they were viewers (when type was moving) before they became readers. In prototype: 3 (Phase:2) the participants remained viewers without passing over to or, becoming readers. The first prototype therefore, determines how the viewer can only become a reader once the typographic forms become recognizable and therefore readable. In contrast to contemporary terminology which tends to associate the user of screen based and portable technology with "viewing" or the "viewer" I argue here, that legibility is concerned with "viewing" (decoding the letters) and readability with "reading" (recoding the letters into meaningful patterns). Hence, before we become readers in the communication process we tend to be viewers/observers of symbols. The correlation between readability and legibility is two–

fold; legibility and readability form a reciprocal relationship in a two-part process, even though the existence of the one does not ensure the other. Typographic communication involves a complex process of re-constructing and creating meaning (decoding-recoding) that goes beyond a simple understanding of the author's intention. This involves emotive and intellectual reflection which elicits a response. Unlike print, virtual typography allows for words to transition and change. It thereby, continually challenges the viewers' ability to predict the information before them with any certainty and this can enable new meanings to be devised. Virtual typography reveals a (metaphorical) visual representation of the evolution of words; illustrating that they are in a state of constant becoming (change) which, is indeed an inherent property of language.

With the prevalent philosophical theories put forth by structuralism and thereafter, poststructuralism, the idea that typography can be understood as the visual presentation of oral (spoken) language collapsed as a dominant theory. However, it appears to me that virtual typography is increasingly trying to mimic the various operations, quirks and complexities involved in the spoken word; illustrating the limits of these theories and perhaps a difference between print and virtual typography that was unforeseen during the early and mid-twentieth century. Virtual typography today has the capability of mimicking voice, as intonation and can incite affect in a similar way as intonation. From this point of view virtual typography does not overturn the binary between spoken and written language but flattens it out by illustrating that all language is an amalgamation of image and sound.

The Greek alphabet in experiment and prototype : 2 was used precisely because it can be seen to have properties of phonetics (pure sounds) like any other letters in an alphabet, but also because they can act as mathematical symbols which, allude to semantic properties beyond phonetics. The purpose of this prototype was to investigate the relationship between hypertext and kinetic typography by looking at the difference between voice and image in the communication process. Though both hypertext and kinetic type share the feature of existing (solely) within virtual space, they tend to operate differently and temporally as mentioned by Mathias Hilner in *Virtual Typography* (2009). *Hypertext* fragments the context (information) of a text between a word and a link which can be accessed through interaction with the screen. It can therefore, be thought of as having a fragmented temporal structure as well as context. In contrast however, *kinetic typography* reinforces the idea and sense of a temporal continuity. How does this relate to reading and the communication process more generally? The reading process (as mentioned previously)

is a complex process of decoding letters and recognizing the arrangement as something meaningful (recoding). Reading is therefore, not an automatic process but one where a delayed response occurs, as well as, a transition between translating a word phonetically and understanding the arrangement as something with meaning. This meaning is tied to an image which is culturally constructed and relative to its context. Hence, hyperlinks and hypertext tend to reveal a process which is inherent to reading. Kinetic typography in contrast, illustrates type as the amalgamation of sound and image and gives the illusion that they appear simultaneously. Although, the letters in this prototype were not semantic (meaningful) but semiotic (signifying), if taken as mathematic symbols (as one participant called Hannah does) they become semantic, as well as semiotic. What was previously viewed as a pointer was reinterpreted by the viewer as semantic (meaningful).

An outcome of the Phase: 1 & Phase: 2 workshops was an exhibition at the V&A Museum in London. It was arranged several months within finishing the second workshop at the University of Greenwich (Phase:2). The exhibition showcased both sets of experiments and prototypes to members of the public. It was not intended to provide any outcomes for the purposes of this practice-led research. The outcomes (which I come to shortly) of the two Phases of "The Typeface Project" were evaluated, analysed and used to form the subsequent group of workshops named "From Delphi to Paris". In this group I extended the examination into the differences between print and screen, by exploring the difference between physical space and its relation to the virtual. "The Typeface Project" outcomes acted as a springboard upon which I built all subsequent workshops.

III OUTCOMES AND ANALYSIS OF TYPEFACE PROJECT

The "Typeface Project" was never intended to be a study which isolated and tested certain variables (i.e. type size, line length etc.) against what we might consider an optimally legible text. Rather, it experimented with the potential of screen based typography and its communicative properties, as well as its differences from print. It tested how participants felt, perceived or understood letters and symbols that could move, grow, and represent or create images, meanings, and feelings/moods. It looked at how the notions of readability and legibility were affected by screen based technology and how our everyday experience with it has created a

cultural shift and growing familiarity with the new properties of screen based type that have affected Morison's principles from both an ideological and practice perspective. An added feature of the prototypes created for Phase: 2 was sound. Although sound does not play an important role in the investigation conducted here, it was used here in order to explore what we mean by reading; the difference between voice and image; the correlation and differences between readability and legibility within the context of screen based typographic communication.

After completing the project the question which formulated the early enquiries into Morison's principles was refined. The old typographic principles used as a general guideline remain relevant for producing legible type. Given that a lot of what we are now viewing on screen is under our control and virtual type can be personalised to a large extent, creating optimally legible type is less of a concern than in Morison's time. It was generally agreed by all who participated in "The Typeface Project" that we can use the same principles but more flexibly; this is evident in that various fronts, including Times New Roman, transitioned from print to screen with relative ease. The participants of "The Typeface Project" shared the sentiment that a whole new set of principles are not required to adapt print based type to the screen based medium. A participant named Alastair T. sums this view up in one of the interviews. He says:

> There are things that can be done now that we weren't able to in the past because with the technology that we have now you can rotate the text, you can resize it at will, you can change the spacing and change the font. Creating new principles for text simply because it's in a new format… getting rid of the old ones and creating new ones – you could instead keep the old principles in the back of your mind every time you're creating type. They worked for a reason (back when they were in 2D format) now that it's 3D - the same sort of principles still apply. You can't just have random spacing […] it still has to be readable at the end of the day.

Most participants of the Phase: 1 workshop viewed Morison's principles more like a general guideline, rather than strict rules to adhere to; it was a commonly held view that legibility was a separate issue to creativity, aesthetics and readability. My own observations during the experiments and the analysis of the recorded interviews confirm this point of view. However, "The Typeface Project" illustrated that it is readability that seems to have undergone some of the most dramatic changes and is the part of the communication process that primarily concerns virtual typography and this thesis' research. Legibility concerns the clarity of type; readability however, is the transmission of messages and this can be accomplished in many and varied ways. Readability determines *how we read*; it determines how type (and text) is delivered to the

recipient, the meaning(s) or interpretations that we derive from the text and the feelings or affects that a text or type creates. It is readability that has since the last century transformed typography; and the focus on readability has enabled virtual typography to move from voice to graphic image that is on equal par to any other art form. These workshops not only illustrated that the reading process is a complex system of communication but that we read in many different ways. We read images that are conducive of meaning but are not optimally legible; and we can read "voice" or recognise letters which can be legible and yet less readable. The participants' reactions to the prototypes illustrate that voice and in particular, the voice of the author is associated with print typography, whereas image is associated with type on screen. Yet, typography consists of both image and voice (I will return to this issue shortly). If the purpose of typography in print was considered to be the *transmission of messages* (see Morison); the new purpose of virtual typography for portable screen technology is to *create messages*.

As we have seen throughout the experiments with prototypes conducted for "The Typeface Project", virtual typography differs from print by allowing its viewer/reader to interact, change and personalise the text before him/her. The prototypes used virtual type in a variety of different ways in order to examine the concepts of readability and legibility in the context of typographic communication. Typography is the visual representation of language or text, consisting of sound and image; while the act of reading is a by-product of written communication. Yet, reading is not simply an act of recognizing symbols (legibility) though this is an important element. Reading is a complex process of decoding/recoding the text both as image and sound (voice). Kinetic virtual type can enact meaning and thereby, enhance readability and the communication process. It can also mimic "tone of voice" (intonation), incite feelings, affects and moods in ways that are impossible for printed typographic communication. Virtual typography is increasingly exhibiting more complex behaviours that escape the fixed definitions and purposes of typography (that informed print type) as well as, the notions of legibility and readability. "The Typeface Project" illustrated that virtual type places less significance on legibility because it uses readability to reinvent what we understand by the reading process. To be more precise, virtual typography can make type less legible yet, more readable due to its ability to create images and affects which contribute to meaning. This thesis therefore agrees with other writers in the field that consider the relationship between virtual (or dynamic) typography and legibility, and argue that specific letter recognition (or optimally legible text) is less significant to the screen as it was to print. Barbara Brownie for instance, claims that: "Fluidity can be alternatively defined as the phasing in and out of legibility. When letterforms

transform as they do in fluid typography, they necessarily cease to be legible. […] the issue of specific letter recognition becomes less important than the wider issue of paradigm recognition" (Brownie, 2015: 57). Brownie does not differentiate between the terms legibility and readability. Although she claims that legibility is only partially (or temporarily) significant to fluid typography, the reading process is deemed as vital, to the perception of fluid type. In the virtual typographic framework of communication, she argues that locating a letter is as important as identifying its meaning. What Brownie calls "the reading process" largely consists of "how we read" and the meaning making process is compatible with what this thesis defines as readability. The outcomes and findings of "The Typeface Project" have illustrated that in the context of virtual typography (and in particular, in the context of portable screen technology which I discuss in later workshops) legibility is indeed less important. It is argued that while legibility has indeed lost some of its significance with virtual typography, readability has gained in importance. By differentiating between the two terms and understanding how readability operates in the context of screen based type we can also get a better understanding of what the reading process entails and the changes in the communication process that it involves. "The Typeface Project" illustrated that virtual typography in fact, reveals the complexity involved in the communication process and that we read in more ways than one.

Writers like Tim Gaze and Mathias Hilner among others, view kinesis in virtual typography as having the ability to suspend legibility; Brownie calls it a "phasing in and out of legibility" (Brownie, 2015: 52); Gaze calls it "asemic" typography and understands it as a continuum that exists "between abstract image and legible writing […] or between text and image" (Gaze, 2011: 13); and Mathias Hilner claims that virtual typography displays "variable levels of legibility" (Hilner, 2009: 50). A certain amount of legibility is required in order for a text to be readable. However, the rules and principles that prescribe what make a text more legible are far more flexible than they were in the early twentieth century. The participants of "The Typeface Project" agreed that when creating type we can have the general principles in mind but we can use them in ever more flexible ways. These writers quite rightly identify virtual typography as occupying a space between text and image, which tends to "escape the constancy of meaning as they appear to transform between linguistic and pictorial poles" (Brownie, 2015: 1). Unlike the aforementioned writers however, this thesis argues that typography past and present, print and virtual has always occupied this position between text and image. This position (between text and image) is not specific to virtual typography but what virtual typography reveals about the

ways we communicate and its processes.[83] Instead, I would argue that virtual typography tends to highlight image over sound (in contrast to print). Furthermore, I identify what Brownie understands as virtual typography's ability to change identity and transform, as virtual typography's ability to partake in the process of narrative construction; and consider this a unique attribute of virtual typography that could not have existed in print.[84]

This is not to say that virtual typography and kinetic type in particular, has no limitations. What I observed through various prototypes and experiments is that kinetic type can add to meaning (acting as an enriching supplement) but it cannot create meaning if it remains in a perpetual state of movement. We require stasis because it enables us to recognize and decode the information and patterns before us. Hence, continual movement (kinesis) renders the characters on screen unreadable (though legible) and it is only when stasis "kicks in" that we are able to discuss the letters as "meaningful" and/or readable. Hence, the prototype experiments illustrated that while letters can be legible they may not be readable. This is because readability involves a complex process of communication, while legibility functions as an issue of clarity. For this thesis and in the context of screen-based portable technology, readability is the function in typography that allows for the formation of images and is aligned with typography's ability to partake in narrative construction (become fluid and change identity); this occurs predominantly through interaction *and* kinesis (and disregards the paradigm of optimal legibility). Interaction here is essential, because it enables the reader/user to create stasis and ignites the reading process. Despite this, a certain degree of recognisability of letters (legibility) and words/meanings (readability) are required for the purposes of clear communication, or what Hilner calls "variable levels of legibility" (Hilner, 2009: 50).

Finally, I sum up various outcomes and findings of "The Typeface Project". The prototypes and experiments in Phase:2 of "The Typeface Project" led me to several observations regarding Morison's principles and the status of the terms legibility and readability in screen based environments. First, Morison had proposed that optimally legible characters enabled the meaning of the text to be delivered without interference to the reader. However, what the

[83] These terms have already been specified in Saussure (and in particularly the phenomenological interpretations of his work). The sign is viewed as an amalgamation of signifier and signified (sound and image). See Chapter: 2 for more information.
[84] These are all issues that will be discussed and addressed in later workshops; used as part of Edmonds and Candy's evaluation method.

prototypes showed was that although the letters were identifiable (as letters) and therefore legible they were not readable until they situated themselves in a recognizable and therefore readable pattern. Hence, legibility does not act as a certainty of readability and is not the only factor that guides the reading process. Undoubtedly, Morisons' discussion is not limited to a guideline that merely examines the creation of legible letters or characters. He also discusses how to organise a text on the page and combine type. In other words, though he tends to use and emphasise the term legibility, he is doing so even when he is discussing issues of readability. Morison therefore does not adequately differentiate between the two terms and tends to take legibility for readability in many cases.

In *Chapter: 2* I have shown how art in the twentieth century was involved in creating and incorporating type into other art forms. Screen based technologies have transformed typography and provided it with the status of an art form more than ever before. In particular, the widespread use of mobile technologies has not only aided in typography's development but has changed the ways we use and the ways we understand it. Unsurprisingly then, the impact of technology on typography has had a counter effect on communication more generally. This thesis explores how computational and in particular, mobile technologies have impacted typography, textuality and the communication process more generally. I will mainly focus on aspects of readability and how the treatment of type as image with the advent of computational technologies has transformed the reading process for the reader/user. In short, this thesis asks how typography is being reinvented by mobile technologies. The next group of workshops were conducted in two parts and named "From Delphi to Paris". Both of these workshops explored typography in relation to space. The workshops asked how typography in digital environments affects the notion of communication within a creative space. Morison's typographic principles had no particular relevance to these workshops. However, what was explored in much more detail was the different ways type communicates within physical and virtual spaces; further explored, the impact of typographic design in the shift from print to digital. The final group of workshops have been named "Moving with Type" and consist of a two part series of "Twitter workshops" that took place in three different locations (Hong Kong and Vancouver) and "The Wasteland Project". Here, there is an emphasis on how type operates within interactive, online and portable technologies. These workshops were designed to look at how mobile technologies (and motion) are allowing for more participatory design and altering the landscape of communication, especially the process of reading and issues of perception.

The participants of "The Typeface Project" demonstrated that type which is animated and interactive allows semantic qualities to emerge and even multiply. Hence, a word's readability was perceived as a separate issue to legibility, although both came under the umbrella of communication. Typographic communication in digital spaces can be thought of as having the ability to go beyond legibility in order to communicate. Kinesis and interactivity seem to recreate type in the digital era, in a form which is akin to the images created by an artist. This has meant that readability (*how and what type communicates*) takes precedence over legibility in the communication process. Thus, I will argue here and throughout this thesis that the notion of readability corresponds to and is correlated to the idea of: "type as image". One participant quoted the well-known idiom that: "A picture is worth a thousand words". I took this to mean, (while also carrying it forward for subsequent workshops) that a single word that treats "type as image" can communicate much more than a single definition or even ten. Rather, it can contain within it an entire *narrative*. In fact, it goes beyond that in its ability to partake in the process of narrative construction by having the capability of changing identity and transformation. It is this aspect of readability, the activity of creating meaning and constructing narratives which, differentiates the notion of readability from legibility in this thesis.

5.3 From Delphi to Paris Workshops (Group B)

The objective of the "From Paris to Delphi" workshops was to explore the transition from print to virtual typographic communication through the notion of space. There is little attention paid to the vast potential for new hybrid forms of text, and the fundamental shifts in the writing-reader axis that portable screen based technologies are enabling. The workshops that were conducted for the "From Delphi to Paris" group investigated the transition from physical space to screen based environments and how these affect and inform the terms readability and legibility. The purpose here has been to understand how human bodies interact with their physical environment and translates that into how we interact with virtual environments and screen based typographic communication. This as we shall see was the starting point for exploring portable devices and typographic communication in the third group of workshops named "Moving with Type".

THEORETICAL BACKGROUND

As the title suggests, the workshops entitled "From Delphi to Paris" (Group B) took place in two locations Delphi, Greece and Paris, France. The main focus of this group has been to investigate how the transition from physical to virtual space has impacted typographic communication and in particular, how it can inform our understanding of readability and legibility within the context of design. The workshops included students from various fields in the creative arts and asked them to explore creative visual forms of type design that examined the transition from physical to virtual. In short, the study looked to extend the investigation (of the previous workshops) into the differences between print and screen based type, in order to understand why virtual typography should be considered a new form of typographic communication.

At present typography occupies two different spaces, namely the physical space of print and the virtual space of the screen. This is not to say that they are mutually exclusive spaces, since we repeatedly experience countless examples where the two interact. However, by distinguishing between the different behavioural patterns and ways of communicating that is conducive of each space, we can examine why virtual type can be addressed and defined as a new form of communication, which has been reinvented by portable screen based technology. The advent of the internet and virtual spaces has affected the ways we communicate information and with one another. Virtual space has enabled users to publish any content without control. On the one hand, there is a decentralisation of power which has allowed the internet to grow in different directions and unexpected ways with little censorship or centralised control. On the other hand, information accessed online is viewed with a certain amount of suspicion; as we shall see in the "Moving with Type" workshops, much (but not all) of the information sourced from the internet is viewed as opinion rather than fact, as inconsistent and fickle rather than a trustworthy source of information and knowledge.

In recent years, the relationship between geography and electronic based communities has received considerable attention. Virtual spaces overcome physical boundaries. Information is distributed and disseminated on a global scale and we are no longer restricted to our local geography. The non-physical space of the internet accomodates people in disparate locations, with different cultures, forming social groups with similar interests, in spite of geography. Hence, the virtual space of the internet has created virtual communities and virtual social spaces.

Furthermore, the ability to distribute information fast on a global scale has had counter effects on reality and the way we live. Mass gatherings organized on social media (i.e. Facebook events) reach more people and create communities which begin in the virtual, but end in physical spaces. The experience of the event can then be recorded through portable technology and discussed on the same social media websites. In short, this is merely one example where the interaction between the physical and the virtual takes place. More specifically, this is an instance where the virtual has an impact on the physical and vice versa. In some ways you are experiencing the event in both spaces in different ways.

Virtual spaces have overcome the limits of geographical and cultural boundaries, not only by allowing people to connect and distribute information globally but also, by dealing with the inherent boundaries of multilingualism. Virtual typography allows for multicultural and multilingual communication. Regardless of language and cultural barriers, virtual typography through writing and visual communication has allowed international communication to effectively materialise in immaterial spaces; where the medium acts as an intermediary between people who would otherwise be unable to communicate.[85] Hence, the workshops here, discuss the impact of culture in global communication and how this influence the design process. The following workshops brought together student participants from a number of different creative fields with different cultural backgrounds. I will now discuss the methodology of the "From Delphi to Paris" workshops. It is important to note that the two workshops were identical in methodology and the participants were the same for both workshops.[86]

[85] There are a number of reasons attributed to why the internet has had to overcome the barriers of multilingual communication. John Hudson has argued that typographical design at the turn of the millennium has had to deal with industry's desire to position (and sell) products on an international scale and therefore in societies that speak different languages. For Hudson, overcoming these challenges has been the catalyst to create solutions for crossing linguistic and cultural boundaries in our communication processes. Hudson is a designer and expert in multilingual environments. For more information see J. Hudson, 'Unicode from Text to Type', in John Berry (Ed.), and Language Culture Type. International Type Design in the age of Unicode,(2002) Association Typographique Internationale / Graphis, New York, pp. 24-44

[86] I therefore will not be distinguishing between the workshops as this would be repetitive and unproductive.

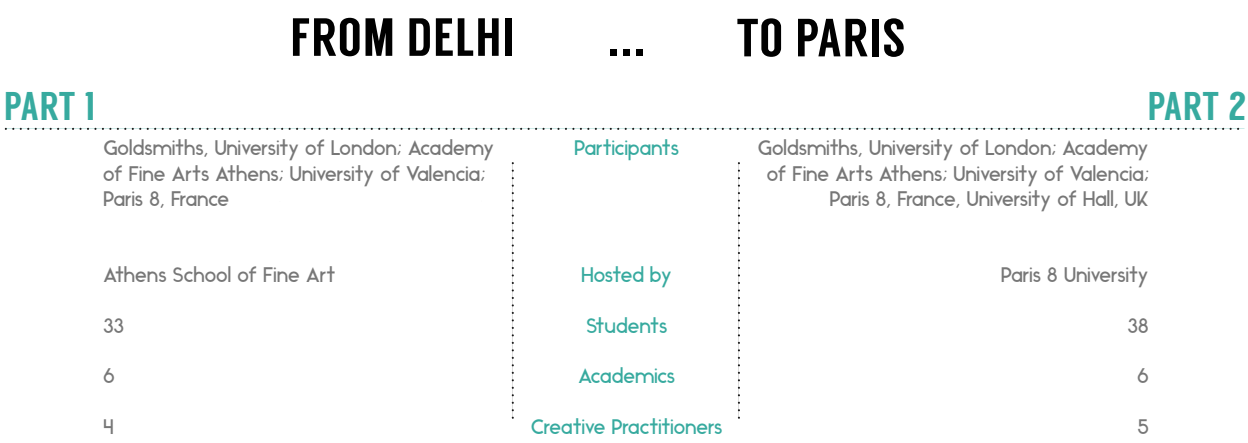

Figure 18: Mapping participants in Delphi and Paris

METHODOLOGY

The workshops took place in two different locations. The Delphi workshop took place in the Spring of 2011 (IP European programme) in Delphi, Greece and just over a year later in the Summer of 2012 the workshop relocated to Paris, France under the same IP European programme. The participants for both the workshops were almost the same and the two workshops explored the same issues and ideas. The table on the previous page indicates information about the participants in each location. The decision to involve multicultural participants and to conduct the workshops in two different cities was developed as part of the methodology and incorporates Schön's problem setting technique and method. At Delphi there were 33 students that participated, 6 Academics and 4 Creative Practitioners. In Paris there were 38 student participants, 6 Academics and 3 Creative Practitioners. The participants and organisers of both workshops were the same, except that there were a few additional participants in Paris. Many of the participants were involved in European education (Universities and Art schools); they were an international group with different ages and backgrounds. Some of the participants were students in Fine Arts programmes, some were in the field of Design, others from Arts and Computational Technologies and several were graduates and experienced creative practitioners/designers. From Goldsmiths, the students were involved in both computational art and design; from the Academy of Fine Arts in Athens, the students were from a multi-media Fine Art background; from the University of Valencia the students were training in Computer Science and various Art programmes.

The workshop in Delphi, Greece was part of a larger event that had a common theme entitled, *Physical to Virtual.* The event hosted a series of workshops over a seven day period, organised by various academics and students. Particular emphasis was placed on the location of the workshop and the space where the workshops would take place. We eventually settled on the Athens School of Fine Art, Delphi. The choice of Delphi as a location was interesting to the organisers of the event, since it took into account and questioned whether the participants would be influenced by the environment that they were presenting in and the mythological elements and history of the specific location. My colleagues and I began planning the workshops several months prior to the event. As I was already aware that the Delphi workshop would be duplicated several months later in Paris, France I set out planning the two events in parallel. Both events were recorded and filmed for documentation and analysis purposes. The "From Delphi to Paris" workshops presented several noteworthy examples of typographic communication exploring virtual and physical space. The participants created typographic forms and used virtual and physical space to explore the different ways we use these spaces to communicate. I discuss some of the micro-projects later. The participants were briefed about the workshop several days before they arrived in the respective locations and had time to work on the project in the time frame that the workshops took place (see outline in Appendix pp. 223). The workshop structure was informed by a participatory methodology, whereby the participant's individual projects organized subsequent workshops over the week and even (as we shall see) over the course of the day.

WORKSHOP OVERVIEW

The "From Delphi to Paris" workshop investigated the difference between physical and virtual spaces and how each of these spaces uses typographic communication differently, also how they might inform one another. The participants were asked to create a project based on the brief (see above) and present to the other participants on the day of the workshop. As the students were from different fields in the creative industries they produced different experiments that understood the transition from the physical to 3 Dimensional virtual spaces and environments, and how these affect the communicative space of typography from their respective fields and understanding. My role in these workshops was to organise the structure of the workshops and oversee their projects. I asked them to form their own groups and create their own work following the brief that was supplied to them. I co-led their projects after they planned and

developed the concept so that they could stick to the brief as closely as possible. I guided their projects according to the findings and outcomes of the previous workshops and the aims and objectives of the "From Delphi to Paris" group of workshops. Therefore, a participatory design methodology was implemented into this set of workshops as well as the previous. I will now turn to the most important projects to come out of both the Delphi and Paris workshops.

OUTCOMES

(Delphi) Participant Project: James T

James T. is a student of Arts and Computational technologies at Goldsmith's University, London. This project took shape before the participants were allowed into the room where the workshop projects were being presented in Delphi. James interpreted my brief in his own personal way; he designed the physical space of the room with the chairs facing various directions (not all facing the projector). Depending on where participants took a seat they faced a different direction; others had a wall in front of them, others had other participants in front of them, others were looking straight at the projector and others had the projector behind them. Before gaining access to the space they were asked not to move the chairs. The project looked at how perception is dependent on our physical location; and how the body interacts with and adjusts to its environment. This experiment was interesting from various points of view: First, as a participatory methodology where his work affected how all the rest of the projects were to be perceived. Second, he played with the idea that the chairs in the specific room formed a "H" shape. Third, he explored the idea that our point of view is guided and informed by the position of the physical body, the physical location and environment around us, as well as the limitations and restrictions in that environment that can make us "read" something differently. He treats the physical space of the body and the external environment as two forms of textual landscapes that inform our perception, "our reading" and the way with which we communicate. Since the participants could not alter the direction of the chairs in the room, they adjusted their own bodies in order to be able to follow the presentations of projects. We tend to consciously and unconsciously adjust our surroundings and objects (whether a book or screen technology) in

order to see better, or even read better in situations which are limiting (i.e. light conditions outside with tablets and/or near/far sightedness with books). These conditions tend to be issues which affect legibility rather than readability. In my analysis, this project explores physical space, the physical object and the physical body and how these work in tandem to inform legibility even for virtual spaces (how we accommodate the physical world around us in order to better perceive, understand and read). Hence, in this case physical spaces tend to inform other physical spaces as well as, virtual spaces. Another interesting aspect of this project that seems to form a pattern and recurring theme amongst the participants of both Delphi and Paris is the idea that we tend find letter forms in our physical spaces even when we do not recognise them as such. Several other projects demonstrated a similar idea; I will come back to an analysis and evaluation of this recurrent theme further down.

(Delphi) Participant Project William R & Ronin C:

William and Ronin both come from a Digital Design background and were students at Goldsmith's University. For this project, William and Ronin used Google's translation application (*Google Translate)* to translate a poem into ten different languages (English, French, German, Italian, Greek, Korean, Spanish, Portuguese, Japanese and Chinese). They created a process by which the poem (Homer's Pythea) was translated from English to German, then German to French, from French to Italian and so forth; finally translating it back to English. William and Ronin printed all the different translations of the poem and displayed them for the participants of the workshop. The project illustrated a transition from print (the poem) to screen and then back to print again. This project explored the communication process through a function only available to screen based devices and therefore only available to virtual type: the process of translation.

This project was interesting because it looked at how virtual type crosses linguistic boundaries at present. Google translate operates by translating a text word-for-word. It looks at the literal definition of a singular words and puts them together in sentences. What it does not take into consideration is metaphorical language, turn of phrase, the possibility of multiple definitions in a singular word etc. In other words, it does not conceive the various linguistic mechanisms that operate through language and make it "readable" and not simply legible. If the concept of legibility is the idea that we can clearly demonstrate and transmit a message or an idea (through intent) to another, it cannot be done so by simply creating clear letterforms or optimally legible fonts. In short, legibility alone does not make a text legible, rather it needs to be informed by

"meaning" and "context" and hence readability. This project was indicative of how legibility and readability interact and inform one another as two separate but mutually significant parts of the communication process.

The Google Translate function therefore, oversimplifies language and communicates in a way which is not how we normally and naturally have developed our reading and communication process. The problem with this application is that while it takes into consideration the legibility of the text (the idea that we can directly communicate our intention to others) it does not consider issues of readability ("How we read? and How we understand?"). What this shows is that the relationship between legibility and readability is reciprocal in the communicative function. That is, the communication process is a two-way function and when it is not treated in this way communication tends to break down. As we move forward some of these issues in digital translation will undoubtedly be corrected. However, given that language is an ever-evolving and constantly developing system, much like a living organism, how will we keep up with the changes? And what can we do about the cultural expressions, metaphors, similes, analogies, and turns of phrases that belong to one culture and language but cannot be directly translated within another? Culture shapes our language and language shapes our culture. Is it possible to hold on to the fabric of different cultures, linguistic quirks and local dialects while finding ways to communicate with each other despite them? In the analysis of this project I would like to highlight how virtual typography has emerged as a new form of typographic communication that makes certain aspects of language more visible. That is, the relationship between legibility and readability as two separate, yet mutually significant mechanisms in the communication process that inform one another and both the reading and design process.

(Paris) Participant Project Ricardo S & Janis C:

Ricardo and Janis were Fine Art students at the University of Barcelona. This project created by Ricardo and Janis was an experiment with the letter "S" and was used to explore a recurring feeling that one of the two participants had associated with it. The pair created an animation of a woman who transforms into various forms which take the shape of the letter "S". At first the woman breathes out an "S" form and her body too takes the shape of an "S". This image then dissolves (fluidly) into a horizontal "S" shape which looks like a wave or takes the shape of a mountain. This project, is very similar to other projects that look at how letters can be found in our everyday environments. See above the experiment with the chairs and the letter "H"; see also experiment below which looks at how the letter "D" can be found in physical objects and

our natural environments. All three projects illustrate that even though letterforms are constantly around us in one form or another, we do not interpret them as such. We tend to recognise letters as something we find in a particular context, or in particular mediums/objects. These are familiar settings where we have been trained to read and see letters. Hence, whether we perceive something as a letter has a lot to do with the context we tend to find it in; this is one way that the physical environment informs how we read and perceive something. This idea destabilises the boundary between legibility and readability and depicts that in this case, the meaning we provide something with is content driven (an idea that I come back to in my discussion of future direction in the Conclusion of this thesis and in relation to "The Symposium"). However, it is also important to note that these very same projects also show that a typographical shape that does not conform to convention is not considered writing.

(Delphi) Participant Project: Maria X. & Galatea G.

The participants of this project came from a Design background and are students at the Academy of Fine Arts, in Athens and explored the letter "D". They presented a number of images of physical objects that take the shape of a "D" and naturally forming "D" shapes found in physical space. They then presented a number of "D" shaped mirrors on the ground, which were placed on the ground and cleverly used sunlight to create shadows on a wall. The "D" shaped mirrors took a different form, as shadows on the wall. The presentation concluded with the following message: "D-Topology: the on ground formation of D through mirrors differs from the light result of D on the wall. Sunlight and air change the way mirrors are put on the ground in order to form D. Mirrors were used as the key man had at his disposal to link the real to the virtual". The student participants took the mirrors for something real (physical) and the shadows on the wall for something that resembles or is an analogy for the virtual. The project illustrates that in the transition from real (physical) to virtual a transformation can occur. The mirrors denote something which is capable of semblance (reproduction/copy). Yet they also illustrate that in the passage from physical to virtual, various (natural in this case) elements affect how the copy will turn out by changing it. In much the same way, I argue here that typography's passage from print (physical) to screen (virtual) a transformation has taken place. Virtual typography can be defined as a new form of typographic communication that has changed the way we communicate with it and with one another.

OUTCOMES

The outcomes of the Delphi and Paris workshops were evaluated and analysed and helped form the objectives of the next group of workshops. I will provide a brief summary of outcomes here. In the following set of workshops, which I call "Moving with Type" I look at how portable technologies are informing typography; and how virtual typography is affecting behavioural patterns in the communicative process. The practice-led research workshops conducted in the "From Delphi to Paris" group showed that the use of typographic elements, either as a part of a composition or as a method to communicate through writing is affected by the different directions of the reading process. The workshops in this group, demonstrated that physical space is constituted as a hybrid that merges digital and physical worlds into new forms. The virtual world has been incorporated into the material world seamlessly, while the edges between the two are seemingly invisible without closer analysis. The body itself appears to occupy both spaces at once; we occupy one physical space in the material world while also maintaining a presence in the virtual world. The growing use of mobile technology fluidly (in both temporal and spatial terms) transports our own physical bodies from virtual to physical and back. Portable technology is particularly important in this respect because we move seamlessly from socialising through our screen to interacting with the world around us; hardly noticing that we are in fact moving between physical and virtual spaces constantly and consistently. The "From Delphi to Paris" workshops opened up questions regarding the ways we communicate in virtual spaces and asked how virtual typography is developing and changing our communication by altering communicative patterns. This was the main reason for instituting the third and final group of workshops that intended on examining the effect of portable screen technology and virtual typography on communication, more closely.

5.4 Moving with Type (Group C)

The workshops included in this group are: "The Twitter Workshops" and "The Wasteland Project". All three projects explore the relationship between virtual typography as a new form of typographic communication and portable screen based technologies. Each of the workshops in the "Moving with Type" group examine different aspects of virtual typography; they look at how portable technology has influenced the way we use and interact with type; the correlative nature between "type as image" and "design as communication"; and take a closer look at the

notion of "type as image" by investigating virtual typography's potential to tell a story and/or construct a narrative. This group was an extension and outgrowth of the previous two groups and their outcomes. The workshops in this group have a common thread; they seek to answer the following questions: 'In what way do portable or mobile technologies guide the way we read and behave with type?' and 'How does virtual typography affect readability, legibility and the communication process at large?'

THEORETICAL BACKGROUND

Today, smartphones are commonplace objects and being on the move, while using a mobile device is an everyday occurrence that contributes to the rhythm of a city. We now live in a world where constant connectivity drives our behaviour and as a result, the communication we have with others. An important aspect of the "Moving with Type" group was to investigate our role as readers/users of typography in relation to portable technology. In the following workshops I investigate which properties and changes in typographic communication can be attributed to the medium (portable screen based devices) and which to typography itself.

More websites are now loaded onto smartphones and tablets than desktop computers. This can be attributed to the growth of high-speed mobile networks and more powerful smartphones that allow us to do more with a single device; our phones have replaced digital cameras, alarm clocks, organizers, we now shop with our phones, use them for social interaction, to access information, for entertainment etc. Given that all of these functions can be carried out by a single device that we can carry in our pockets and can be accessed at the click of a button, mobile and other portable technology has allowed the content of the internet and applications created specifically for mobile phones to grow exponentially. This is because we now rely on mobile devices to enable convenience and usefulness in our everyday activities. This thesis argues that, smart phone mobile devices have been the catalyst for expanding written forms of communication, have altered our reading habits and as a result, the way we understand and interact with typography. A recent study by the British Library(Online Data Archive 2014) found that new forms of reading are emerging; we read smaller bite sized information on screen, often switching back and forth between applications. Another finding in the same study showed that we are now writing more and writing in public spaces for strangers; there are approximately 25 million bloggers around the world. If we are writing more, perhaps we are also reading more,

albeit differently.[87] Mobile technology then, has allowed for the exponential growth of typography in use and has expanded and changed our roles as readers, as well as, the reading process. Electronic communication has evolved by responding to touch and gesture. Portable technology and more particularly, the *touch screen* has permanently altered the way we understand and interact with typography. The landscape of digital type design is changing as a result of the medium. Yet, it is important to keep in mind that typography itself is a medium by which written communication is conveyed. Typography has always been reliant on different technologies and virtual typography is no different. Virtual typography is intimately tied to the technology that has enabled its existence, but it is also autonomous to these technologies, since it will carry on existing, evolving and developing even when the technology has changed or become obsolete. It therefore, has the capacity to outlive the various mediums that host it. This thesis argues that portable technology is reinventing typography and in turn, virtual typography, can be defined as a new form of typographic communication which, is reviving the communication process at large. If portable screen based technology have enabled us to view type (not only as voice but also) as image, it is because the nature of type design has also transformed; we now comprehend and think of design as communication. As I have already mentioned throughout, the concept of communication that this thesis addresses is limited to the notions of readability and legibility. How we understand these terms within the context of visual communication and virtual typography is intimately tied to narrative construction.

A key feature in the line of questioning that runs right through the "Moving with Type" workshops concerns investigating virtual typography's relationship to narrative. To be more specific, the workshops in this group explore the notion of *"type as image" within the bounds of "storytelling with type"*. In this group of workshops I question the difference between communicating with type in print (fixed and static text) and type on screen (fluid virtual type) as a difference between *narrative forms* which have had important implications for the notions of readability, legibility and reading.[88] As repeatedly mentioned, this thesis takes the view that type is more than the *neutral* mediator and/or visual representation of an authors' voice. Instead, I

[87] The practice-led research in this group of workshops does not test this hypothesis or question. It was deemed too big of an undertaking for this thesis and work; it would also have moved the thesis in a new direction outside the scope of typography; changed the nature of the practice-led research from qualitative to quantitative; and finally it would have required a much larger sample of participants and recourses that were unavailable within the limits of a PhD thesis. However, undertaking a collaborative study of this sort could be considered for future research, insofar as it remains within the boundaries of type communication.

[88] My use of "narrative form" here, concerns the way we use type to create narrative. This has had profound effects on readability, or "how we read" a text and marks a sharp difference from how we previously (or even currently) confront text in a print format.

have taken the position throughout that screen based typography has gradually and increasingly shifted our general understanding of typographic communication towards the idea of "type as image". Virtual typography has enabled communication with type to take shape in more interesting and expressive forms; these are often associated with the features made available by portable and touch screen technology (including: interactivity, animation, kinesis etc.) and liken virtual type to "images" as opposed to voice (which, we are accustomed to linking with print typography and technology). Although these are significant changes in typographic communication made possible by portable devices, it is important to note that expressive typography is not a new concept. Expressive typography has been available in different forms well before the advent of the computer, or the internet (see Chapter: 2 Contextual Review and the artistic movements at the turn of the last century). Hence, these workshops ask the question: 'What about the notion of "type as image" makes it different today, as opposed to almost a century ago?' The workshops in this group aimed for a better understanding of what we might mean by "type as image" in its present form.

I THE WASTELAND PROJECT WORKSHOP

The main purpose of this workshop was to investigate the relationship between portable screen based technology and typographic communication in innovative electronic literature. This workshop tested *The Wasteland Application* which is a digital version of T.S Elliot's famous poem, *The Wasteland*. What was interesting about this application was that this was not a digital literary work created for the screen. This was a literary work which, years after its circulation in print, has been adapted for the screen. The poem is a notoriously difficult literary work and this was taken into consideration by the application's designers in the transition from print to screen. Its designers' looked at ways to make the poem more accessible by adding features that were useful to understanding the poem; by making it more playful and interactive; and by using more creative features (sound, performance, readings, a copy of the original manuscript etc.) that would make it a less arduous reading experience. "The Wasteland Project" workshop investigates in what ways portable (touch screen) technologies have impacted the way we read and behave with virtual type.

METHODOLOGY

"The Wasteland Project" workshop took place at the University of Greenwich and the participants chosen were both present and former students. The student participants were attending the Department of Creative professions and Digital Arts. I also invited former students that had participated in "The Typeface Project" workshop and who were now working in the creative industries. The decision to include participants from previous workshops was made on the basis that they would already have some understanding of my practice-led research and its general thematic.

This approach and decision created some issues regarding the organization of the workshop. A number of former graduates who were invited to participate were unable to attend, while others had moved back to their home country. Five graduates that participated in the previous (The Typeface Project Phase: 1 & 2) workshop responded and accepted my invitation. Another issue encountered during the organization process of this particular workshop was finding a day when everyone would be available. I finally settled on a Saturday, so as to accommodate the participants who were working during the week. Also, some students were happy to attend the workshop but were reluctant to be part of the filming. For the students that did not want to be filmed I took notes of their experiences and their responses to questions during the discussion and interview process that was scheduled for the end of the workshop. After several months of arrangements I managed to bring together 13 participants to contribute to the workshop.

In preparation of the "The Wasteland Project" workshop, I sent out an email to all participants in order to brief them about the workshop requirements and structure of the day. All participants were asked to bring their own portable device to the workshop (their mobile phone, iPad etc.). During the workshop my role was to organise, inform and facilitate the process of the workshop. I will come back to this in more detail further down. The table in the Appendix (See pp. 233-249) shows the structure of the participants and background information.

OVERVIEW

I began working on "The Wasteland Project" in April 2014 which took place at the University of Greenwich, London and outdoors in the Greenwich area. In this experiment 13 participants

took part; some were students and others were industry professionals. The aim of this workshop was to look at the ways our everyday use and interaction with portable technology has altered the way we understand virtual typography (in motion and in interaction). The workshop intended on testing the experience provided by *The Wasteland* application, which is a digital version of T.S Elliot's infamous poem created by the innovative publishing firm *Touch Press* in partnership with *Faber & Faber*.[89] The idea behind the application according to its creators was to create a "living book" with a multitude of interactive features that would potentially set the bar and define future publishing, particularly for literary works. *The Wasteland* app provides the full text of the poem and a whole host of other interactive features, including: interactive notes that aim at helping the user to understand the poem's many difficult and metaphorical references; a filmed performance by Fiona Shaw that is synchronised to the text; several audio recordings presenting readings of the poem including two by Eliot himself and others by Alec Guinness, poet Ted Hughes and Viggo Mortensen; the readings (the sound) work in tandem with the text (the image), in that the text is highlighted as its being read; the application contains over 35 expert video perspectives on the poem that include contributions from writer Jeannette Winterson, Seamus Heaney, Craig Raine; and it also contains images of the original manuscript illustrating the editing process under Ezra Pound. All of these interactive elements aim at creating a more pleasurable reading experience for users and help make the poem burst into life. But more than that certain features like the notes, the expert perspectives and the facsimiles of the original manuscript and Pound's annotations are useful to students and educators alike.

"The Wasteland Project" workshop utilized the Touch Press and Faber & Faber application by asking participants to explore the literary work on their mobile devices while walking about doing normal everyday activities. Hence, in contrast to previous workshops which used a fixed location, a large section of this workshop was to use the application in movement. By using portable devices as they are intended to be used the workshop attempted to mimic the conditions we experience in our everyday use with similar apps. The workshop took place on Saturday 7th of November, 2014 and was scheduled to last between 10am and 6pm. The layout of the workshop was designed as follows: A one hour presentation that provided the participants with information about the project and the app, as well as, an outline of how they were expected to go about the experiment; they were given a set amount of time to explore the application while in motion; and finally they were asked to return to the studio were a discussion

[89] T.S Eliot's poem The Waste Land was first published in 1922 and is considered to be one of the most significant literary works of the twentieth century.

and interviews would take place. I instructed the participants to meet at a studio space at the University of Greenwich. At the opening of the workshop I introduced *The Wasteland* application and I briefed the participants regarding the workshop structure and the day's organization.

This project took some time to organise, as I anticipated that certain aspects of it were going to be "tricky". From the outset, I identified issues with documenting a process where participants were not organized within a fixed space, but free to move around. The night before I arranged the space of the studio and set up the projector screen, in order to facilitate the next morning's presentation that would brief them about the workshop and the project more generally. The following morning I arrived at the studio space early to meet the film crew, in order to discuss the details of workshop's audiovisual documentation. This workshop had two significant matters that we had to solve: the recording and documentation of each participant in movement and more generally, filming outside. After a discussion with the film team we mapped the studio space and positioned the cameras, microphones and lights. As we were unable to film all of the participants at once, we decided that we would attempt to follow some of them and film others when we encountered them out and about in the area. The overall introduction, presentation and briefing took approximately one hour. We arranged to gather again in the same studio at 3pm to discuss some of their experiences. The film crew and I followed the participants however, as the day unfolded different members of the group followed distinctive pathways. Some of them formed small groups, some others walked around by themselves and tracking all of them at once, proved difficult as expected. However, as the film crew and I walked around we encountered many of them at different moments. The participants used their devices exploring the application throughout the day. Upon returning to the university studio a discussion relating to their experiences took place and the workshop finished at 6pm. The filming and documentation of the outside portion of this experiment proved difficult and made observation problematic. However, they were able to deliberate on their experiences of the application in discussion and therefore, documenting the last portion of the workshop was invaluable to the evaluation and analysis of this project.

OUTCOMES

The thirteen participants examined the different aspects of this application and responded to questions in an interview process and discussion that took place after the workshop experiment

had taken place. The discussion was partially directed with a set of questions that I had prepared beforehand. However, I also allowed the conversation to move freely by not intervening in the dialogue between the participants too much and in particular, at times when opposing opinions created fruitful discussion and insight. The participants were asked 'How exactly does the technology we use to read change the way we read?' and 'How does reading on screens differ from reading on paper?' More than half of the participants in this workshop preferred reading large texts and literature more specifically, in book format. But also, more than half argued that virtual typography is more emotive, can challenge our views and perceptions and add to the semiotics of the text.

There was a clear difference between the participants who were readers of literary works and those who did not tend to read literature. The avid literary readers agreed that depending on what they were doing: whether they were on a plane, or a train, a bus, or in the street determined whether they preferred to use their portable devices, or instead carry a physical copy of the book. One participant in this category said: "On the plane I prefer reading on my device. When I'm on the train I prefer to take a book". The portable device was considered more convenient as you could potentially have access to thousands of digital books. Whereas, on the train or in the street she preferred to carry a physical copy of the book, since she claimed that she did not have to worry that she might lose it. A different participant who did not read literature and expressed a dislike for reading literary works, commented that he prefers reading in digital formats at all times.

Regarding the usability of the application, it was generally agreed upon that it was user friendly, easy to read and used typography that was simple and legible. One participant however, identified this simplicity and legibility in the type to be devoid of affect. He states: "Typography can create emotion. But in this particular case typography is more designed to give out information, easy to read, straightforward and it's not really about sending a message but delivering the text and making it easy to read – easier and user friendly."

The Wasteland application had different features relating to sound (audio) that the participants could explore. This included different readings and performances of the text, as well as, critical insights by various authors. The use of sound alongside the image of the text enabled participants to detect the two-fold nature of typography: sound and image. The audio was considered a positive feature by all participants. Some used it as intended; they listened to the

text being read. Others used the audio feature without actually listening to it. Instead, they followed the audio tracking the text and read alongside it by following the highlighted sections without the use of sound. All participants agreed that depending on the reading of the text, they had a different emotional response. The emotional response itself was subjective and preferences for individual readings varied according to the subjective aesthetic preferences of each participant. A participant claimed that:

> Typography can create emotions, the fact that it's interactive makes it more of a personal experience. Even with the part where it narrates it for you, when it reads it out – I love that because I hate reading. I'm much more of a visual person, I would never read something like this, so I went straight to the audio and the videos because I'm more visual. The audio especially and the fact that it's going along with each line highlighting the text was great for me because I could follow it and gave different expressions to the poem depending on the reading.

Although this participant claims he is a more visual person and turned immediately to the videos, he also preferred the audio to reading the text himself. It is interesting that he identifies the readings (that is, the sound and audio) to be more affective in nature than the textual semantics of the poem; he identifies the audio (sound) as part of the visual aspect of typography as opposed to the written text itself. In my own evaluation of this participant's view is that he understood the audio as a feature made possible by screen based technology and therefore, aligns it with virtual type, even if strictly speaking audio does not correspond to the visual or written elements of text.

This workshop discussion addressed the topic of designing engaging interactive environments for portable screen based devices by using typographic communication as part of narrative creation. The design of *The Wasteland* app resides at the intersection between an interactive digital design which, allows its reader to move freely in its space and print material (the original annotated manuscripts by Ezra Pound) that enable the reader to get a sense of the original and unedited work. Though the printed material is displayed on the screen it does not operate in the same sense as the poem itself, which is interactive and engaging by encouraging exploration of meaning (through the hyperlink notes) and exploration of the application itself (through its various features and extra material). The original manuscripts work very much like a tangible or physical book as you are not able to interact with the text (except to zoom in). In contrast, the digital version of the poem had many interactive features which enabled the reader to engage with a text which was previously inaccessible to most; the poem is heavily loaded with footnotes and symbolic references that require the reader to look references up, research and interpret. *The Wasteland* application provides the reader with notes, explanations and critical insight into a

poem which was previously inaccessible and laborious to read. As an interactive environment the application guides the reader by adding researched notes, reflection by experts and therefore, opens up the discussion by guiding its reader and providing him or her with more information. One participant said: "I usually prefer reading books because it's a bit more personal and there are no distractions. But this app works a bit like a book […] I don't think it distracts, it offers some perks where you can go deeper into the text and understand it better." Another participant claimed:

> You'll probably learn more about it [the poem] from this process than you would with the book. You can still get your own interpretation from your own personal experience and semiotics. Although you can get diverted with it - it's not going to take you away from what it initially means if anything it will probably put you in the perspective of what it does mean.

The Wasteland is an experimental, hybrid form of literary work that uses the idea of "expressive typography" to create stimulating visuals and audios alongside a simple font which the participants agreed makes the text optimally legible. Although the idea of "expressive typography" has been around for a long time, there are vital differences between expressive type in print based technology and in screen based typographic communication, which primarily affect the readability of the text. For one, screen based typography created for portable device applications have placed a lot of control (of the viewing experience) in the hands of the reader/user. From one point of view of the general rules for legibility still apply for the designer; as one participant stated, "The text needs to follow design principles (at least to some extent). It would otherwise be illegible". But more than that, the very details that make one font more legible than another have been placed in the hands of the reader/viewer since, the viewing experience today allows for increased personalisation (changing fonts, or font size etc.). When asked about the difference between paper and print with regard to legibility, the participants agreed that legibility still plays an important role and guides our viewing experience for large amounts of text (i.e. a literary work). However, it is the notion of readability which has undergone some vast changes. The majority of the participants of this workshop agreed that the typography used for the digital poem was simple and legible. However, its readability (how its read, its layout and the host of interactive features) require us to read and engage with the text differently. One participant did not like the way the application guided the meaning and had too many distracting options that she argued, meddles with the reading of the poem in a linear and orderly manner. She says:

> I prefer the physical form of the book. With an app there are so many different ways of looking at it, whereas with the book in its physical form you have it before you in its right order. With the app [the poem] is in different orders and there is so much information. With the poem as a book, you read it how it's meant to be read and from that you take your own understanding. Whereas with the app it's directing you in the way you should understand it I feel.

The same participant later adds that, "With the app you're going to click on, or touch the screen and you are going to go somewhere else and then it's diverting you to images and audio. You're being guided to particular interpretations. You are not using your own interpretation of the poem and that's what poetry is about." The uses of smart phones have given us a wealth of new reading material and constant access to it. However, much of the reading material which is accessed on a daily basis tends to be smaller in length. Text which is smaller in length can still be readable even if the legibility of the text is not optimal.

Summary of Important Outcomes

- More than half the participants expressed a preference for reading in book formats (paper and print) than screen, particularly with regard to larger or bulkier texts and literary works. They argued that reading large amounts of text on a screen is more tiring than reading on paper; arguing that it was both physically and mentally taxing. Although the application tested included pagination, the participants who preferred the printed page felt that with the screen they were unable to understand where they were in the text and found that various interactive features were distracting (competing for their attention and moving them in different directions).
- The participants who preferred reading physical (material) books pointed out that they viewed the text on screen as endless despite pagination. Whereas, book formats allowed them to know where a text starts and where it ends more readily. This at first may appear counter intuitive, since reading on screens tends to highlight visual communication, however when holding a book we know exactly how many pages we have read (on the left) and how many we are going to read (on the right). The physical book allows us to navigate where we are in the text. This claim was similar to the one made by the participants of "The Typeface Project" Phase: 1 (Prototype and Experiment 2). The participants in that experiment felt that a printed page signified a finished product, while with the screen they felt it was unfinished and could endlessly be revised and changed.
- More than half the participants of this workshop claimed that they preferred that the

screen gave them control over the legibility of the text (making changes to the size, zooming in etc.).

- Exactly half the participants argued that the application's notes and explanations were useful and helped them to get a "deeper understanding of the meaning of the poem". While the other half preferred the book format because it allowed them to make their own personal associations, easily make notes in the margins and highlight what they personally thought was interesting or important.
- All of the participants viewed "narrative construction" as an important element of virtual typography. They all agreed that virtual typography communicates differently to printed text; through images, emotion, and interaction. The images that virtual typography can create are different to the semantics of words.

"The Wasteland Project" workshop illustrated that we are indeed in a stage of transition. Despite the enthusiasm for virtual typography, the participants illustrated that our reading habits are only changing slowly and gradually as are our views regarding how we understand type. At the same time, a life-time of reading habits adopted from the printed page are ingrained within us. We thus, find ourselves feeling overwhelmed and disoriented when confronted with the screen. The large majority of participants felt that virtual typography has more potential than the set and limited options of print and that experimental literature like, *The Wasteland* application work to improve our reading experiences on screen. Perhaps, had this experiment been run with much younger participants, who have less experience with the printed page, the results yielded might have been different.

The idea that virtual typography is capable of creating its own images is akin to "design as communication" and narrative construction (see "The Symposium" in the Conclusion of the thesis). Narrative construction can occur through two separate processes: First, through typographic design, where design is created to communicate through images. Images are not a set of definitions rather they are entire narratives which are capable of producing affects, ideas and meanings. Second, through the process of reading and interpretation; reading (see "The Typeface Project") involves a process of decoding the text (recognizing combinations of letters as meaningful) that gives way to a process of recoding. That is, reconstructing meaning and assigning a narrative which makes sense to the reader and provides the interpretation with coherence. The process of reading therefore, involves an inherent process of creating narratives

(interpretations, meanings) that are subjective to the reader and fit in with his or her worldview. With print typography the decoding / recoding process involves breaking down and re-building the semantic qualities of text. While with virtual type the same reading process involves decoding and recoding type images *together with* semantics.

III *Twitter: A Practice in Writing* Workshops

THEORETICAL BACKGROUND

The "Twitter: A Practice in Writing" workshops investigated how screen writing and screen reading have been affected by the widespread use of portable screen based technology and social applications. Mobile technology and social media platforms are challenging conventional methods of reading and writing as well as our conceptualization of communication more generally. I will come back to this, but first I would like to briefly account for the link between portable devices and application design. Mobile technology and social applications are not mutually exclusive, since device-specific features such as cameras, sensors, location and context awareness are being taken into consideration in the development of social applications. It is also important to note that various applications such as, blogs, video and photo sharing as well as social media and networking, which are created specifically for portable technology have steadily incorporated the role of the user into the design and appropriated it for the purposes of co-development and/or, co-design. This is particularly evident when considering the growing personalizable elements in typographic design, which have been firmly placed in the hands of the user. In recent years, social media websites have moved beyond the simple exchange of information and mobile technology for its part has moved beyond its capacity to enable us to access data and networks "anytime and anywhere". Rather, portable technology and social media have progressively shifted, "towards an integration of technologies into meaningful cultural practices that are contextualized in particular communities, cities and spaces" (Froth, Forlano, Satchell and Gibbs, 2010: x). As a result, this has given rise to a more collaborative, open, personalized and therefore, a more participatory experience of the internet than was previously possible; engendering new emergent forms of creative engagement. Mobile screen based technologies and social applications are redefining how typographic communication is utilized and understood on a much larger scale than ever before by transcending national and cultural borders.

What interests this thesis is how mobile technologies, as integrated technologies, help us engage creatively in meaningful practices and how this has impacted and altered (typographic) communication. "The Typeface Project" illustrated that we read in more ways than one; I argued that readability is the part of (typographic) communication which is continually being challenged and this can be seen as a by-product of the shift from "reading voice" in print, to "reading images" on screen. In the "From Delphi to Paris" group of workshops I examined how typographic practices are spatially constituted in the context of screen based technology and argued that typographic space has been reinvented as an "in-between" space, a hybrid that merges physical and digital spaces into new communicative forms. Virtual spaces here, were seen to overcome the limitations of material boundaries but simultaneously can be viewed as a blurring of boundaries, which can be deemed (seemingly) as invisible without closer analysis. As a result of the outcomes of the previous two group of workshops, the "Moving with Type" third group, aimed to look at the effects and relationship between portable screen based technology and typographic communication more closely. It intended to extend the line of questioning formulated in the previous two groups and attend to open questions. While "The Wasteland Project" examined how screen based literary works created specifically for portable devices, can reframe narratology and illustrates the ways virtual typographic communication has impacted communication in terms of meaning creation. The "Twitter: A Practice in Writing" workshops looks at these same questions but predominantly from the point of view of writing and narrative construction, with virtual type in the space of virtual communities made possible by social applications. Twitter is a good example of a social media platform that is contributing to the radical changes in the ways we interact and communicate with typography and therefore, with each other. Twitter restricts its users to 140 characters. It therefore, imposes limitations on the communicative process which arguably propels us to creatively engage with type in ways that extend the readability of our messages, without necessarily inhibiting the meaning of what we are trying to communicate. The "Twitter: A Practice in Writing" workshops investigate how integrated technologies and typographic communication are being used in the context of narrative construction and how these are affecting the ways we read and write. The workshops took place at City University Hong Kong and Simon Fraser University in Vancouver. The workshops intended to explore the impact that mobile technology and social applications are having on the development of narrative construction as a collaborative onscreen practice and experience; while also, examining how the writing/reading process was affected by Twitter's

restriction to 140 characters.

Social media marks a relatively new social phenomenon which we are still exploring. The "Twitter: A Practice in Writing" workshops viewed the limitations imposed by *Twitter* as key. These restrictions were considered in light of and similar to the ones explored by the group of writers, poets, artists and mathematicians (founded in the 1960s) known as Oulipo or, Workshop of Potential Literature restrictions. This group of writers and thinkers were interested in the notion of "constraint" and the idea that restraints and limitations can be used to trigger ideas and can be a source of inspiration. Through the notion of restriction they sought to create new structures and locate new patterns related to narrative construction. Rules and constraints do not have to be thought of as limiting, as they are an inherent property of writing. For instance, the rules of the short story result in the creation of a short story and the rules of a sonnet result in the creation of a sonnet. Hence, the rules and constraints present in any literary genre or any other kind of writing is a productive and creative process. With the increased use of smartphones and portable devices, the Web has gone from being a mere informational navigation tool towards community and communally created social spaces, marking a new form of communication and interaction with the screen and with others. For the purpose of these workshops, we assumed that the constraints and limitations imposed by Twitter can be viewed as rules, or even like the rules of a game. In particular, the workshops investigated whether these restrictions could be seen as a means of triggering new ideas and as a catalyst for new forms of communication that might have long lasting effects in recreating behavioural patterns for its users. Social media platforms reflect a world which is in flux; information is disseminated rapidly and extensively (globally). The "Twitter Workshops" examined Twitter as a social space which enables new and creative engagement for visual communication and creative writing practices. Twitter, not only provides a platform for social interaction but also, enables the creation of narratives of the self and the construction of subjectivity and identity. All of the aforementioned theoretical material was taken into consideration when designing the workshop.

METHODOLOGY

"Twitter: Writing in Practice" was a two-part workshop that took place in two different locations. The first was conducted at City University Hong Kong and the second at the Simon Frasor University in Vancouver, Canada. The workshops had the common objective of exploring the idea of new forms of collaborative writing and new forms of reading in virtual

social spaces and the impact that these have on typographic communication. The brief for participant selection (for both workshops) regarded any person with an interest in writing a suitable candidate; regardless of age, or background and previous experience of a similar type of workshop was not deemed necessary. Social media platforms and Twitter in particular, brings together people with similar interests regardless of cultural or professional background and age. The workshops intended on replicating the organically formed composition of groups and people in virtual social spaces like Twitter for the practice-led research experiment in this two-part workshop. I include the full list of participants for both workshops and background information below.

For the workshop in Hong Kong there was a total of 14 participants and for the workshop in Vancouver, a total of 18 participants. The workshops brought together different age groups, professions and different backgrounds including, artists, designers, scientists, academics and other disciplines, all of which had a common interest in creative practices, creative writing and visual practices. The participants did not know one another. Part of the brief was that the participants had to have a twitter account, as well as some basic knowledge of social media. The first of the "Twitter Workshops" took place in Hong Kong in 2014. The second workshop took place in Vancouver in 2015.

The brief provided to the participants for the workshop exercise was the same for Vancouver and Hong Kong (see below). These were half-day workshops, scheduled to last approximately 3 hours depending on time and space availability. The structure and requirements of the project was the same for each city and included the following: the participants were asks to bring their own mobile or portable devices into the workshop (mobile phone, laptop, iPad or tablet); a computer lab where a projector was installed for the presentation scheduled to take place at the beginning of the workshop; internet access was mandatory; and finally audiovisual recording equipment in order to film the workshop and its process. I supplied the participants with printed materials at the end of the workshop. I provide the "Brief of the Workshop Exercise" as it was given to the participants and I describe the objectives of the workshops and the research questions they were both intended to examine. (See Appendix pp. 234-249)

THE TWITTER WORKSHOPS: OBJECTIVES

The first steps of this workshop devised ways of dismantling some of the most obvious and accepted connections between words, colours, shapes and ideas. The next step was to re-connect these elements in new ways. By recombining the elements in ways that have never been linked before, the words, colours, ideas and shapes would trigger new extensive connections and "meaningful associations" in the creator and others. The objective was not to create nonsensical associations but ones which trigger novel juxtapositions of previously disparate elements. The workshop aimed to function as an ongoing series of experiments that would further our understanding of the nature of writing on screen and capture the elusive moment when thoughts turned into words. It aimed at challenging our most basic conceptions and connections.

OUTCOMES

Prior to the experiment a presentation took place, where participants were informed on the subject matter and the experiment. This occurred in both locations/both workshops.

Hong Kong & Vancouver Overview

The first workshop took place in Hong Kong and the second in Vancouver. I will not distinguish between them at this stage, since both workshops operated in a similar manner. I will note further down what was thought to be a limitation of the first workshop and corrected in the second. For both workshops, participants were asked to form groups or pairs. Each group of participants was asked to write something within the limits of 140 characters and publish the tweet. The groups did not interact with one another and each group was free to create and compose whatever narrative they wanted without influence by the rest of the group. When all the participants carried out this task, the tweets were collected via email and printed. They were then assembled into one piece and built up as a single narrative. The order of the narrative was temporal; the first participants to tweet came first and so on and so forth, gave the narrative its composition. We did not try to edit the narrative, or provide it with particular meanings. The obvious outcomes of the experiment was that the final outcome was overall nonsensical, albeit

not entirely. It resembled something like a poem, where each line made sense but an overall meaning to the text was open to interpretation. Moreover, as the participants were limited to a certain amount of characters they creatively used abbreviations, acronyms and emoticons to extend their writing (typographic symbols used to display facial representations that are used to convey emotion in a text only medium). This was similar to the way that they usually expressed themselves in the context of online communication and was an expected result. Another anticipated result was that depending on the background of the participant they had different styles of writing.

The Hong Kong workshop did not include a discussion at the end. A discussion was retrospectively thought to have been beneficial and was corrected in the second "Twitter" workshop in Vancouver, where a discussion was made part of the workshop process. Moreover, the Vancouver workshop displayed the end narrative on a screen where the participants could later actively engage and interact with the narrative that they had created collaboratively. The discussion at the end of the workshop in Vancouver illustrated that the participants were to provide the text with different interpretations and meanings.

The outcomes of the "Twitter" workshops illustrated that social applications are pushing the boundaries of conventional understanding of what it means to read and write. Twitter for instance, through restriction is extending the writing process by forcing us to invent new ways to say more with less writing; and thereby communicate differently. Social applications are therefore, re-inventing the ways we are communicating and writing. We are now using more typographic symbols in the form of emojis, more acronyms and more images in the form of emoticons. The ways we write is effecting the way we read. We are now reading faster, smaller amounts of text, more briefly and deconstructing a text the way we would a novel or other printed material occurs less in our everyday communication. Our communication through screen based portable devices and social applications is enabling private thoughts to be publicly projected.

Conclusion

Reading is a highly creative activity which involves complex perceptual and cognitive processes, which traditional frameworks and the principles of typography, like Morison's, do not anticipate. Virtual typography reveals some of the hidden or unconscious processes involved in the practice of reading and alters the terms of typographic communication for the designer and the reader. Past conceptualisations of typography conceived it as a tool with the aim or purpose of mediating the relationship between author and reader. This relationship has been reimagined in the 21st century; typographic communication in the context of portable screen technology involves a direct relation and conversation between the designer and the reader/user. This is due to the fact that portable screen based technology has altered the ways we understand and communicate through design. Design has been reconceived as something other than a mere aesthetic, or decorative element which is subordinate to the content or message conveyed and attributed to an author (voice). Current practices in typography view design as communication. Portable screen based technology has transformed the traditional frameworks and relationships between designer and reader by placing more authority in the hands of both; the user/reader, by enabling interaction and personalisation and the designer, by allowing for more creative artistic practices into typeface design. The relationship between designer and reader within this context is informative.

Virtual typography presupposes its own autonomy, by redefining the role of design practices and the position of the designer within these practices. Since creative design does not adhere to strict rules, it reveals that we potentially read in more ways than one. Virtual typography increasingly creates images out of text and vice versa. It generates images which are figurative and other times, images which are abstract. As readers, we are capable of engaging with different types of information and diverse forms of communication. Portable screen based technology has enabled typography to become active in the process of narrative construction. Hence, the designer is involved in a direct conversation with the reader, where both are active in a co-creational process of meaning; and it is this active involvement of the designer (that contributes to this process through creative design and practices) which in turn, has revealed that today's reader is capable of reading in numerous ways. Virtual typography illustrates that we do not passively acquire meaning directly from the author. Rather as readers, we actively participate in the meaning-making process where we deconstruct typographic symbols and characters (legibility) and reconstruct text and images (readability) into patterns that we recognise as meaningful; before contextualising derived meanings in more subjective and unique ways. It is this complex process which allows for multiple meanings to materialize. The boundaries

between author/reader and their separate roles have become increasingly obscured in virtual environments, while also allowing for more collaborative work to emerge.

The aim of this research has been to examine how typographic communication has been affected by the introduction and widespread use of portable screen based technology, for the reader and the designer. This thesis has examined the meaning of the terms readability and legibility and their respective positions within typographic communication, past and present; and has investigated the reading process as it emerges in screen based portable technology. Typography's encounter with mobile technology has undoubtedly had a significant impact on the way we communicate with typography. It has not only changed the way we interact with written communication, but it has also changed the way we read. This study has opened up new questions and scope for future research into the notion of type as image. The nature of image based typographic practices remains new to us and is continuing to evolve and develop along with the medium and our own understandings of it. An interesting question to come out of this study has been, whether type in the form of images (as symbols, iconography etc.) can cross cultural boundaries and eliminate misunderstandings and misperceptions between diverse people. This remains an open question that could be further investigated in future research.

Future Directions

The culmination of the practice-led research resulted in a round table discussion with industry professionals and academics named "The Symposium" which brought together various professionals with different backgrounds and interests in the field, including: design, publishing, research, ecommerce and academia. The main objective of the discussion was to create a platform to incite dialogue among experts in order to address the different concerns and views that currently form our understanding of typographic communication.[90]

The round-table discussion for "The Symposium" workshop addressed different issues and concerns relating to virtual typography and communication, in screen based portable devices. The parts of the dialogue that I will focus on below will be a synopsis and limited to the issues that concern this thesis. I have divided these topics under two main questions: 'Are we able to

[90] The round table discussion took place at the University of Greenwich For information on Participation and other materials See Appendix (pp. 251-256)

create a common language for the purpose of having a standard for virtual typography?' and 'How do we understand virtual typography in relation to narrative construction?' I will reproduce some of the discussion here in all its nuances and also include my own observations, understanding and evaluation.

Creating Standard: A Common Language

A concern expressed by all the participants attending "The Symposium" workshop was whether we need and indeed, if it is possible to create a standard for virtual type, in the same way that it was created for print technology. The problem with creating a standard for virtual type has several fundamental issues associated with it. Firstly, the task of creating and applying a standard across all disciplines and industry departments that deal with virtual type for mobile screen technology (and who at present are working independently of one another) is an enormous undertaking. Secondly, unlike its predecessor (print) which remained relatively fixed for hundreds of years, virtual type is continually changing and is constantly being adapted to mediums that host it which, are also changing in specifications (year to year). How then, do you create a framework for something which is in constant motion and is still evolving in new and unexpected ways? The participants of the workshop generally agreed that there is no need to establish a new set of principles for virtual typography. Dave Dunlo, Creative Director at ELSE London, made the point that the principles of typography have generally stayed the same: "you still need something that is legible, readable, with a good layout."

Yet, the participants of this workshop illustrated a concern for the lack of a unified language with which, all the different industry professionals could communicate that could perhaps translate into better design. This was especially true for several participants who worked in industry and e-commerce. For others, creating a new standard for virtual typography was either not possible, or an unnecessary task. According to Nadine Chahine, Monotype, "Standards require a formality that necessitates that everyone is in agreement, given that there are many different points of view and opinions people are not always going to be in agreement on what should, or should not be an industry standard." The dialogue between participants illustrated that most agreed that it is much more difficult for a type designer to control how the text is going to be read; the dynamics of the portable screen are continually changing. From external environmental factors and conditions which affect the screen, to how a reader chooses to read the text by meddling with the screen's many (and changing) features; the type designer can be

thought of as a reader, inasmuch as the reader a designer. Since, these dynamics of the portable screen are in a perpetual state of change, type design is facing a new problem that did not exist with previous technology. It was much easier to create a framework for the print medium. Another aspect to emerge from this discussion was if a standard was to be created and taught right now to students (future professionals), it would only be implemented in years to come. Given that a few of the participants were academics and involved in education, it was questioned whether such an undertaking would be valuable, given the rapid and continual changes in virtual typography and screen based portable devices. Stacey quite rightly pointed out, that the current method in education was to teach students to be agile and not be taught with the technology (which is constantly changing). She argues "students need to be taught through design rather than technology." It was suggested that instead of a standard (or rigid framework) perhaps a *process* could be put into place that would work as a common ground amongst all working in the (very wide) field of design. However just like creating a standard, putting a process in place can be very limiting and will not find agreement across all design disciplines. It was pointed out by one participant, that a process which was finalized in a physical form (perhaps a book) for generations to come, would soon find itself outdated, precisely because of the rapidly changing conditions of mobile technology.

I would like to point out here, a noticeable difference in how participants discussed print and virtual type, even though it was not articulated as such. Whenever the discussion turned to print, I was given the impression that it was valued as something which produced longevity and a type of endurance (a finished product); which I find to be a common sentiment amongst participants of other workshops, including "The Wasteland Project" and Phase: 1 of "The Typeface Project". I have found that though print gives the impression of being a finished product and as having longevity, even when it outlives its content (and the information becomes outdated) we tend to associate it with providing us with trustworthy information. Whereas virtual type, is viewed as something which is perpetually changing, in constant movement and perhaps lacking in the credibility of its content, since it is continually being updated and revised; it therefore appears to give the impression that screen based content has an expiration date, or even that it is fickle. The participants agreed that something that starts online and ends up in print can be a pleasantly disorientating experience (as we are used to the exact opposite). Janice pointed out that this might be a similar concept to buying a limited edition vinyl, while Stacey compared it to retro typefaces that make a comeback. Perhaps we place value on print as a medium because we are familiar with it, or perhaps it is because we are already nostalgic recognizing its imminent

decline. Finally, it was agreed that there are already a lot of existing standards for type in place. As long as they are used flexibly they can be adopted for onscreen type as much as print. Although the same principles of print apply for type on screen, they apply in slightly different ways; we thereby need to solve problems depending on the medium and with agility.

Virtual Typography and Narrative Construction

Dave Dunlop brought up the interesting topic of virtual typography's relationship to narrative construction. He claimed: "Digital and mobile in particular, affords us to experience story-telling in new and different ways, which I think is really interesting." He goes on to say that we are now gradually, "moving away from empty shell frameworks of CMS's (Content Management Systems) which clients populate with text at the end, the art now and hopefully moving forward in the next few years we will be designing more around content, rather than content around design." The other participants agreed with this perspective. Janice argued that design needs to be content driven, where narrative construction works in tandem with the type design. As we have already seen in Chapter: 2 in the Contextual Review, kinetic type design since its inception (in film titles) has been "content driven". Kinetic type was shaped by the understanding that design is communicative (as much so, as semantics). My own view is that this may not necessarily be a new concept (though until now it has been limited to particular circles and art forms) it is now starting to gain currency in the experience and design of "everyday" typography. Both, Dave and Janice argued that for narrative construction to take place effectively, type designers will have to collaborate with writers and in particular, writers of different languages in order to address cultural and linguistic differences.

Nadine who works quite closely with the automotive industry discussed how new designs for the car industry are now looking into virtual type for augmented reality. In this industry, augmented reality is being developed together with virtual type, where signs are projected on the windscreen although it appears to the human eye to be imprinting or projecting typography on our physical reality (and changes according to perspective). Similarly, google glasses also project information (typography) on our physical reality (this is what it appears to be doing). Although "right now we are talking about typography which is on one digital device or another the technology is already changing" Nadine says. Even though at present, typography is not interacting with what is in the background or, what is behind the device/screen, we are already

in a phase where this is changing. Janice added that age needs to be factored into typographic design for hybrid systems. The discussion regarding the future development of typography in new hybrid systems, mediums and spaces highlights that virtual typography is neither tied to a particular medium, nor should it be viewed as something without agency and effects of its own. It is for this reason that I argue here, that mobile screen based devices have reinvented typography and in doing so, virtual typography as a new form of typographic communication is transforming the communication process.

Undoubtedly, the portable device through its dominant property of mobility which, in turn has provided us with continuous "connectivity" has changed the way we communicate immensely, as we are now communicating with text more than ever before. It is therefore unsurprising that typography has come to the forefront of our communication and has blossomed as a result. Evidence of this can be found in the exponential growth in typeface design, creativity, features and options for the user/reader. While these are the ways that technology has impacted typography, the question I ask here is 'How has typography (as a result of its interaction with the medium) impacted communication?' The groups of workshops that I have conducted for this practice-led research: "The Typeface Project, "From Delphi to Paris" and "Moving with Type" illustrated that the difference between physical (print) and virtual (screen) spaces, is intimately tied to the notion of readability and narrative. Portable screen based technologies differ exponentially from print because the former has enabled typography (through image formation) to be able *to communicate its own narrative*. The text is no longer limited to semantics, or the author's intent (textuality, as it is defined in semantics and semiotic theory); what portable and screen based devices have allowed for, is "storytelling *with* type" through image formation and with the designer front and centre. To be more precise, I argue here, that it is not the technology which has altered the ways we communicate but rather, it is typography itself which is altering the communication process at large. This is not to say that portable and screen based technology has not played its part. Undoubtedly, portable technology has enabled the various features and set the conditions (as well as, the limitations) of digital space that have allowed typography to both, bloom and behave differently. However, I argue here that current technologies have changed typography and that typography in turn, is now changing how we communicate. For instance, typographic communication today is capable of inciting emotional responses (this is not a feature of the technological medium) but of typography itself, which has resulted from type's capability to enact and create its own images through inventive design. The activity of storytelling with type, both from the perspective of the designer and the reader has

been transformed. Various features enabled by portable screen devices enable typography to become more expressive and affective than in print. Whereas print highlights the voice of the author as the storyteller and the reader as the interpreter of textual semantics, screen based typography tells its own story with type (not despite type); screen based portable typography corresponds to "design as communication". Typography's ability to enact meaning in forms which do not strictly adhere to the principles of legible type, has shown to have the ability to enhance readability and in doing so can also improve legibility, or the activity of clearly demonstrating one's purpose to others. This is the reverse of the thesis proposed by Morison in the 1930s.

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Appendix A

Typeface project {*Phase 1*}
Greenwich, London

Table A.A.1

Research Workshop Plan | Outcomes | Structures | Participants		
Session Time 120 minutes Session	**Date:** **November 2009**	Titled: **Typeface project** *[Phase 1]*
Location	University of Greenwich | Old Royal Naval College Campus |London	
Aims	- Are we in need of new typographic principles that reflect the shift from print to digital? - How is typography, the act of reading and the reader, the designer, and researcher impacted by the shift from print to digital text? - How does the screen affect readability and legibility? - What would a new "standard" for screen based typography look like today?	
Purpose of the session	To examine the difference between print and digital text in relation to typographic principles (MORISSON 1936). This will be tested through the prototypes created for this workshop.	
Outcomes	The method used for this workshop will be participatory design. This will be done through the questionnaire that will help shape the design of the prototypes. While the workshop and the participants experience will help shape the next phase of the Typeface Project (Phase: 2). An anticipated outcome of this workshop is insight into the differences between the ways we interact with print and screen and how this affects the reading process (and comprehension).	
Previous knowledge assumed	This session will offer participants the opportunity to explore the differences between print and digital typography, from the point of view of the designer and the reader respectively. Affordance technique (Gibson) will be put into practice by not providing too much instruction, in order to test the participants tacit knowledge and whether the design is intuitive. It is assumed that we confront the printed page differently to the screen page although we are not always aware of this.	

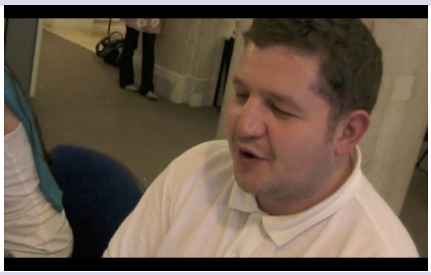
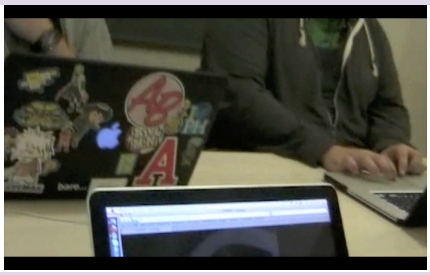
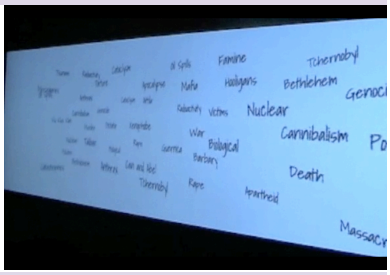
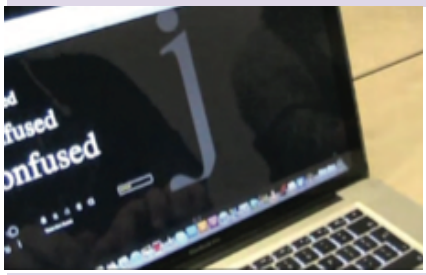
Research Workshop Structure	1. Introduction and meeting the group 2. Exploration of prototypes 3. Discussion: Summarising and reflecting on the session
Materials	Laptops for each participant, yellow post-it notes, a big screen or projector, Tables and chairs.
Recording data	A film crew will be appointed to record the event. For more information about recording styles and structure - Audio recording, video recording, photography

Table A.A.2

List of Participants				
No	**Background**	**Origin**	**Age**	**Previous knowledge about this research?**
2	Graphic & Digital Design Year 2 students – UoG	UK UK	19, 18	NO
5	Graphic & Digital Design Year 3 students – UoG	UK GR UK UK UK	20, 19 21, 20 19	NO
3	3D Digital Design Year 3 student - UoG	Romania FR	20, 23	NO
2	3D Digital Design Year 2 student - UoG	Italy UK	19, 20	NO

Table A.A.3

Documentation of the research workshop in a series of photos and videos

		
Participants Exploring Prototypes	Commentary	Overall Group Discussion
		
Participants thinking / feedback	Exploring Prototypes	Screening on one of the prototypes
		
Participants Exploring Prototypes	Comments session	Introduction Research Workshop
		
Prototypes in Action	Evaluation	Participatory Session

Appendix B

Typeface Project {*Phase 2*}
Greenwich, London

Table A.B.1

Research Workshop Plan (phase 2) | Outcomes | Structures | Participants *Continuation and extension of the work conducted for the first workshop*		
Session Time 120 minutes Session	**Date:** November 2010	Titled: **The Typeface Project** *[Phase 2]*
Location	University of Greenwich | Stockwell Street Campus |London	
Aims	The outcomes from Phase: 1 were used (Edmonds and Candy's Evaluation Method) to design a new set of prototypes that would further test open questions and suggestions made by the participants (participatory design method). This includes: 1. The effects of kinesis and interaction on the reading process. 2. Do we approach the printed text (and type) as authorial voice (and as something set and finished) and screen based type as image which, is fluid and alterable? (See outcomes of experiment 2). 3. What does the reading process entail? Should voice and image be treated as two separate elements of the reading process, regardless of whether we are reading on screen or in print, or as two different ways of reading? (See outcomes of experiment 4). 4. What is the difference between "tone" and "image" in the reading process and how does virtual typography challenge our understanding of it? Understanding Morison's principles on legibility and readability through prototypes. To explore the notions of readability and legibility through the lens of features available to screen (interaction, animation, sound, kinesis).	
Purpose of the session	To further examine the difference between print and digital text in relation to readability and legibility. Further explore the questions derived from Phase: 1.	
Outcomes	The anticipated outcomes of this workshop are to provide answers to the aims stated above. An open questions from this workshop will be re-framed and refined for the following group of workshops.	

Previous knowledge assumed	Phase: 2 workshop for: "The Typeface Project" is considered a continuation and extension of the work conducted for the first workshop. METHODOLOGY As mentioned, the suggestions of the participants in Phase: 1 (using a participatory design methodology) in conjunction with my own evaluation at the end of the workshop (using Edmonds and Candy's Evaluation method) formed the groundwork for revisions and design of the second set of prototypes/experiments used in Phase: 2. As we shall see, the second set of prototypes experiment with more complex ideas and for this reason I have decided to provide some instruction and clarification where necessary.
Research Workshop Structure	1. Introduction and meeting the group 2. Exploration of prototypes 3. Discussion: Summarising and reflecting on the session
Materials	Laptops for each participant, yellow post-it notes, a big screen or projector, Tables and chairs, Hand written and printed notes have been provided to the participants.
Recording data	A film crew will be appointed to record the event. For more information about recording styles and structure - Audio recording, video recording, photography

Table A.B.2

List of Participants				
No	**Background**	**Origin**	**Age**	**Previous knowledge about this research?**
4	Graphic & Digital Design Year 2 students – UoG	Italy China UK UK	20, 19, 19, 21	NO
3	Graphic & Digital Design Year 3 students – UoG	UK Greece Italy	21, 20 27	NO
3	3D Digital Design Year 3 student - UoG	Romania France Bulgaria	22, 23 22	NO
2	3D Digital Design Year 2 student - UoG	UK Lithuania	20, 20	NO

Table A.B.3

Research Workshop: Typeface {*Phase 2*} (morning and afternoon sessions)



Introduction of the workshop and Participants



Observation / Using the Prototypes



QA with Participants



Observation / Using the Prototypes



Experiencing Prototypes



Observation / Using the Prototypes



Afternoon session / Introduction



Handing notes in regards to prototypes



Participants writing notes



Participatory Design Process



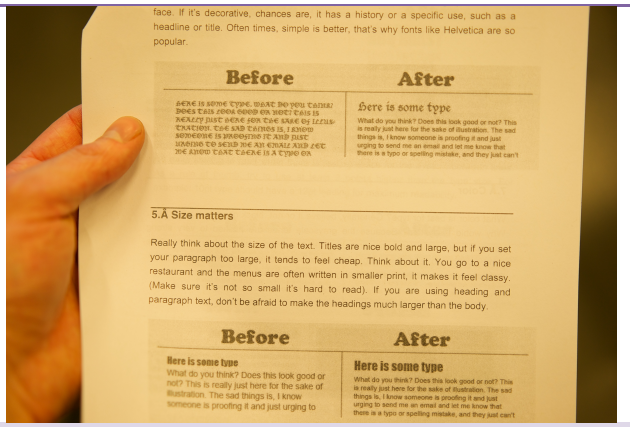
Observation / Using the Prototypes



Comments



Comments

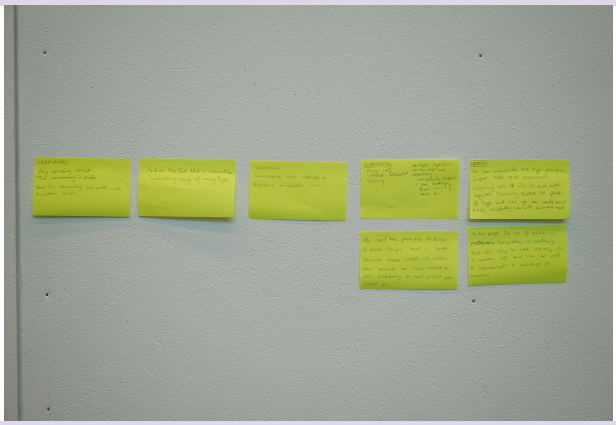


Notes and Info regarding prototypes

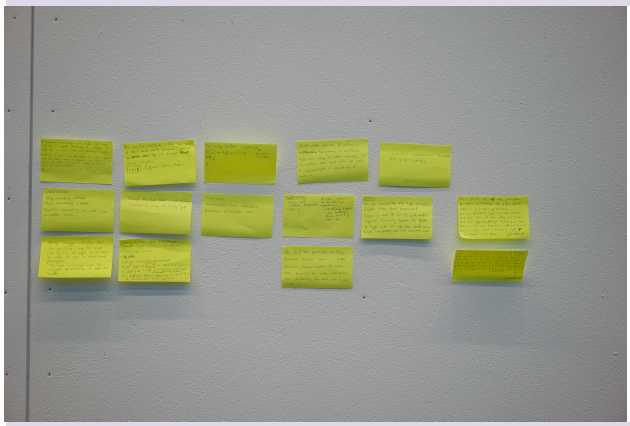
Documentation of Phase 2 Research Workshop, Based on Methodological Approach



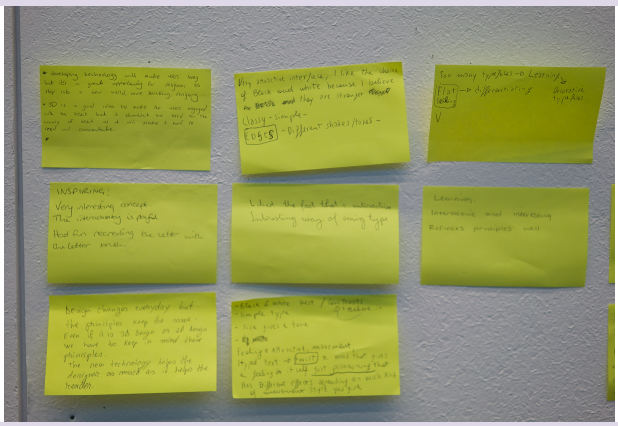
Participatory Design (Methodological process)



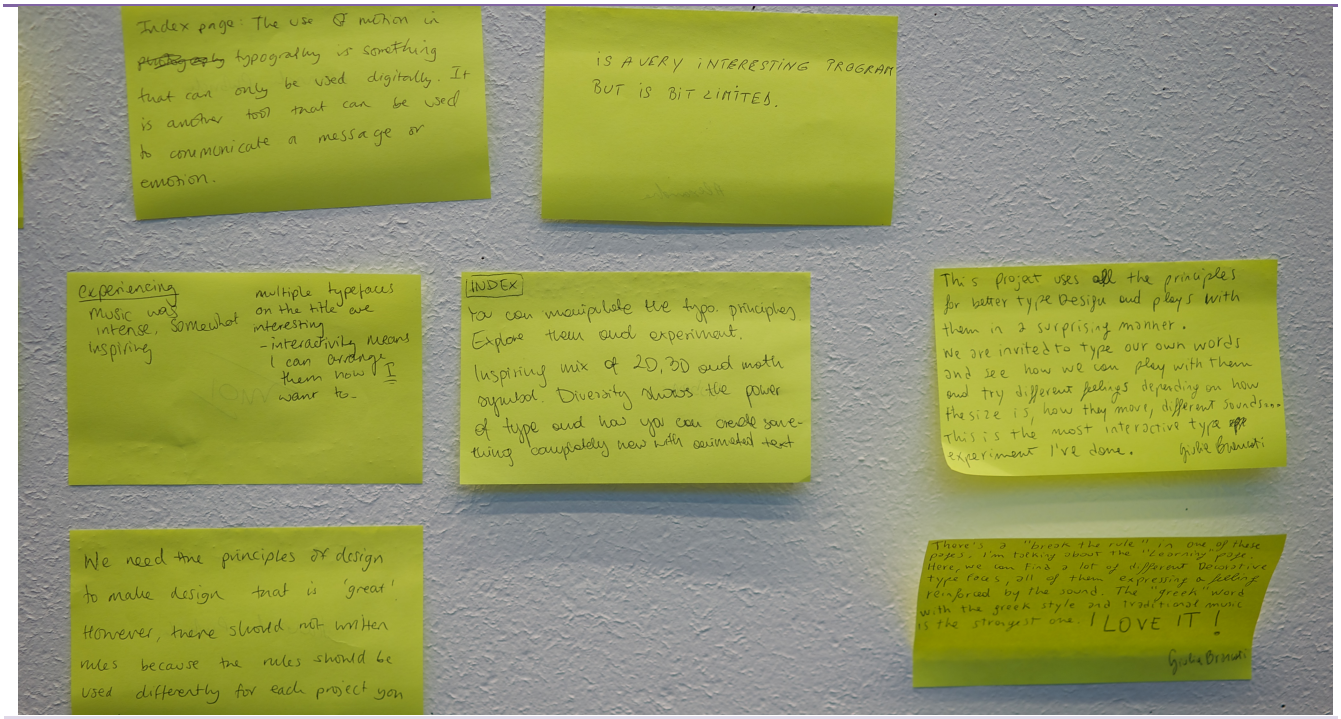
Participants Comments



Participants Comments



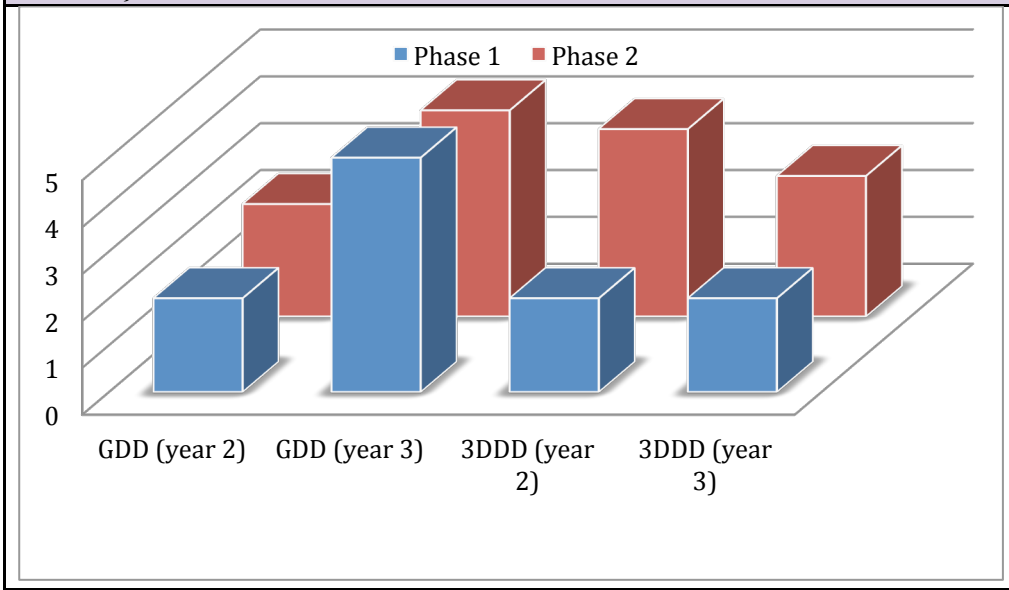
Participants Comments



Participants Comments/ Reflection

Table A.B.3

Comparison of participants 'The Typeface' Research Workshops {*Phase 1 + Phase 2*}



The table A.B.3 indicates the participants in both phases of *The Typeface* Research workshop.

Appendix C

From Delphi to Paris
Greece
France

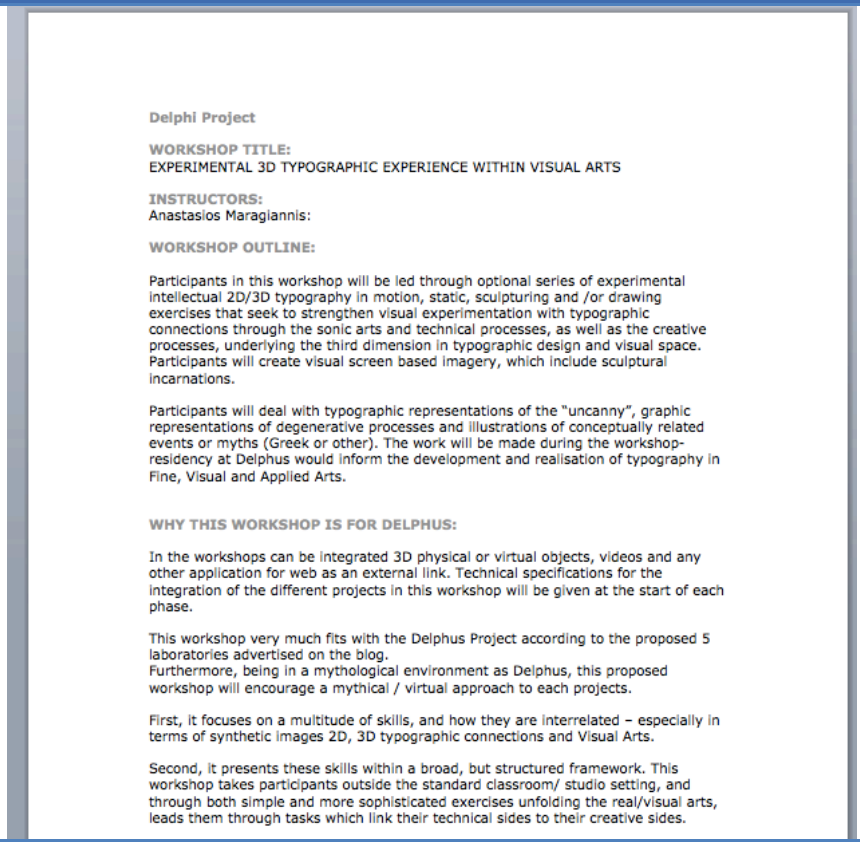
Table A.C.1

Research Workshop Plan | Outcomes | Structures | Participants		
Session Time 120 minutes Session	**Date:** Spring 2011 - Delphi Summer 2012 - Paris	Titled: **From Delphi to Paris**
Location	Athens School of Fine Art | Delphi | Greece Paris 8 | St Denis | Paris | France	
Aims	- To understand the impact and existence of typography in relation to space - To explore the different ways type communicates within physical and virtual spaces; exploring in more detail, the impact of typographic design in the shift from print to digital. - To investigate the transition from physical space to screen based environments and how these affect and inform the terms readability and legibility.	
Purpose of the session	The purpose here has been to understand how human bodies interact with their physical environment and translates that into how we interact with virtual environments and screen based typographic communication	
Outcomes	Creative exploration of physical space (print) in its relation to virtual space (screen). To explore the question regarding how the two spaces interact with one another and what differentiates them. This will be done, by asking participants to creatively explore these different spaces and how they impact the reading process. The anticipated outcome of these workshops was to open up my inquiry into the relationship between screen based virtual environments and physical reality. While, exploring how this has affected the communication process (and the terms readability and legibility).	
Previous knowledge assumed	The workshops will include students from various fields in the creative arts. In short, these workshops will look to extend the investigation (of the previous workshops) into the differences between print and sreen based type, in order to understand why virtual typography should be considered a new form of typographic communication.	

Research Workshop Structure	1. Introduction and meeting the group 2. Exploration of briefs {see table A.C.2} 3. Discussion: Summarising and reflecting on the session
Materials	A big screen or projector, Tables and chairs Hand written notes have been provided to the participants, Paper and Markers Participants can work in a laptop, or studio spaces, as on brief
Recording data	For more information about recording styles and structure - Audio recording, video recording, photography

Table A.C.2

Research Project Simplified Brief For The Participants



Delphi Project

WORKSHOP TITLE:
EXPERIMENTAL 3D TYPOGRAPHIC EXPERIENCE WITHIN VISUAL ARTS

INSTRUCTORS:
Anastasios Maragiannis:

WORKSHOP OUTLINE:

Participants in this workshop will be led through optional series of experimental intellectual 2D/3D typography in motion, static, sculpturing and /or drawing exercises that seek to strengthen visual experimentation with typographic connections through the sonic arts and technical processes, as well as the creative processes, underlying the third dimension in typographic design and visual space. Participants will create visual screen based imagery, which include sculptural incarnations.

Participants will deal with typographic representations of the "uncanny", graphic representations of degenerative processes and illustrations of conceptually related events or myths (Greek or other). The work will be made during the workshop-residency at Delphus would inform the development and realisation of typography in Fine, Visual and Applied Arts.

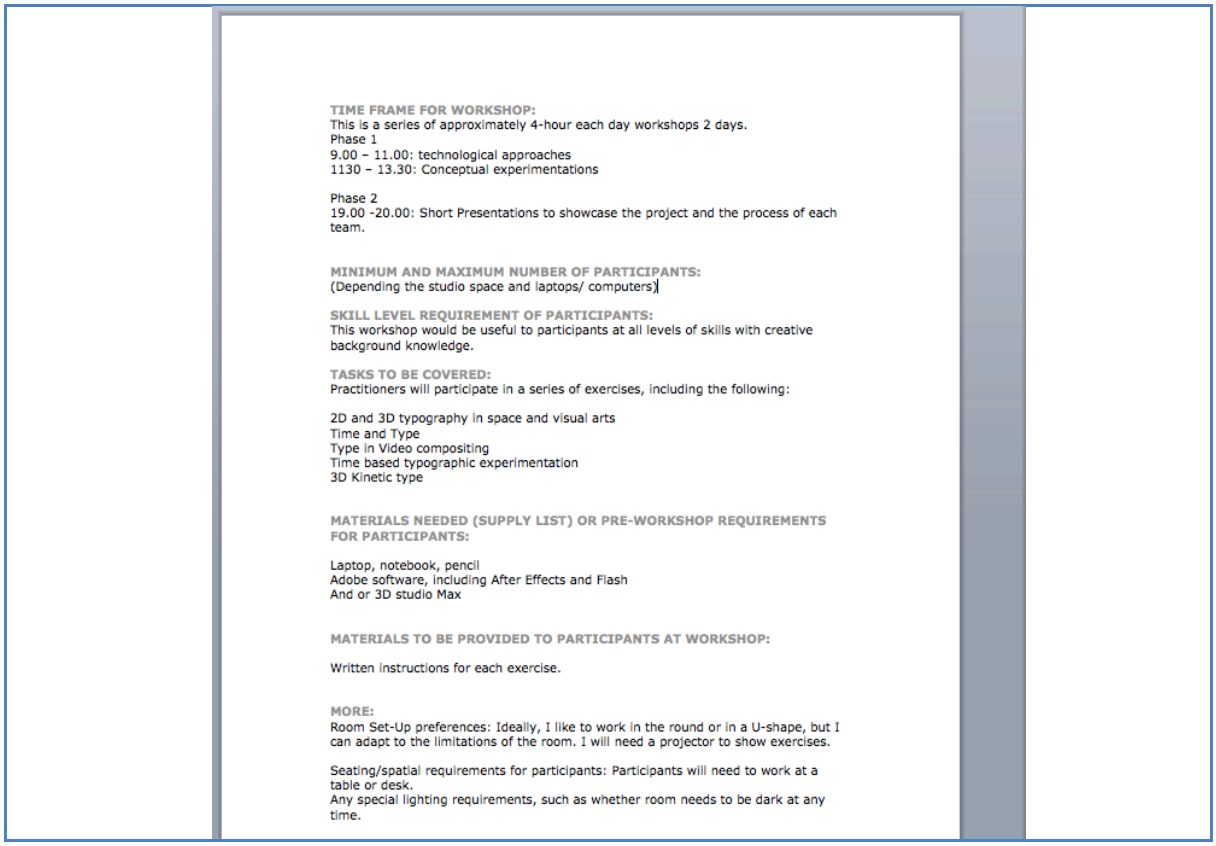
WHY THIS WORKSHOP IS FOR DELPHUS:

In the workshops can be integrated 3D physical or virtual objects, videos and any other application for web as an external link. Technical specifications for the integration of the different projects in this workshop will be given at the start of each phase.

This workshop very much fits with the Delphus Project according to the proposed 5 laboratories advertised on the blog.
Furthermore, being in a mythological environment as Delphus, this proposed workshop will encourage a mythical / virtual approach to each projects.

First, it focuses on a multitude of skills, and how they are interrelated – especially in terms of synthetic images 2D, 3D typographic connections and Visual Arts.

Second, it presents these skills within a broad, but structured framework. This workshop takes participants outside the standard classroom/ studio setting, and through both simple and more sophisticated exercises unfolding the real/visual arts, leads them through tasks which link their technical sides to their creative sides.



TIME FRAME FOR WORKSHOP:
This is a series of approximately 4-hour each day workshops 2 days.
Phase 1
9.00 – 11.00: technological approaches
1130 – 13.30: Conceptual experimentations

Phase 2
19.00 -20.00: Short Presentations to showcase the project and the process of each team.

MINIMUM AND MAXIMUM NUMBER OF PARTICIPANTS:
(Depending the studio space and laptops/ computers)

SKILL LEVEL REQUIREMENT OF PARTICIPANTS:
This workshop would be useful to participants at all levels of skills with creative background knowledge.

TASKS TO BE COVERED:
Practitioners will participate in a series of exercises, including the following:

2D and 3D typography in space and visual arts
Time and Type
Type in Video compositing
Time based typographic experimentation
3D Kinetic type

MATERIALS NEEDED (SUPPLY LIST) OR PRE-WORKSHOP REQUIREMENTS FOR PARTICIPANTS:

Laptop, notebook, pencil
Adobe software, including After Effects and Flash
And or 3D studio Max

MATERIALS TO BE PROVIDED TO PARTICIPANTS AT WORKSHOP:

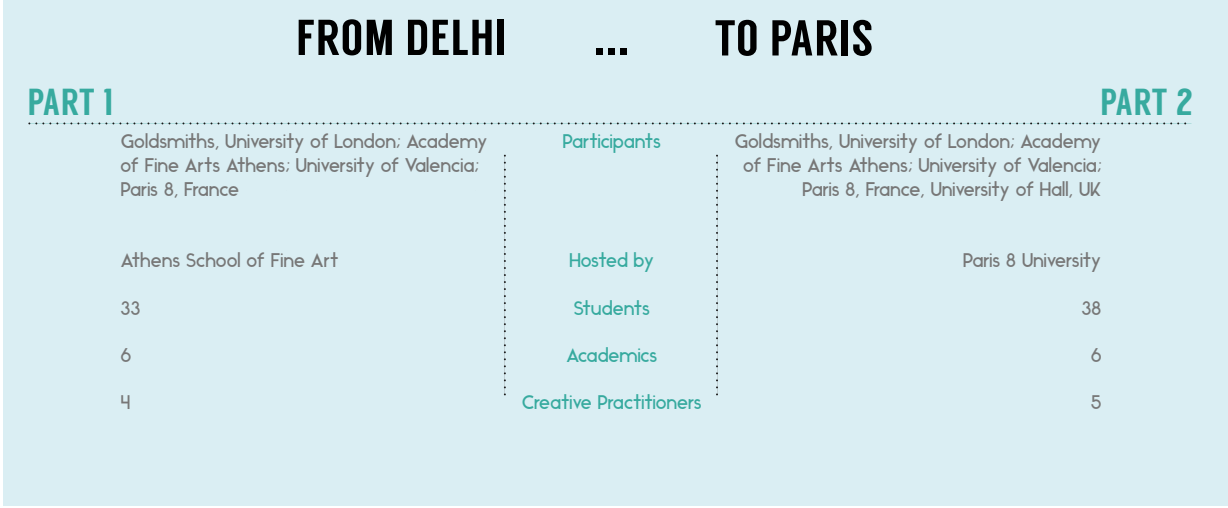
Written instructions for each exercise.

MORE:
Room Set-Up preferences: Ideally, I like to work in the round or in a U-shape, but I can adapt to the limitations of the room. I will need a projector to show exercises.

Seating/spatial requirements for participants: Participants will need to work at a table or desk.
Any special lighting requirements, such as whether room needs to be dark at any time.

Table A.C.3

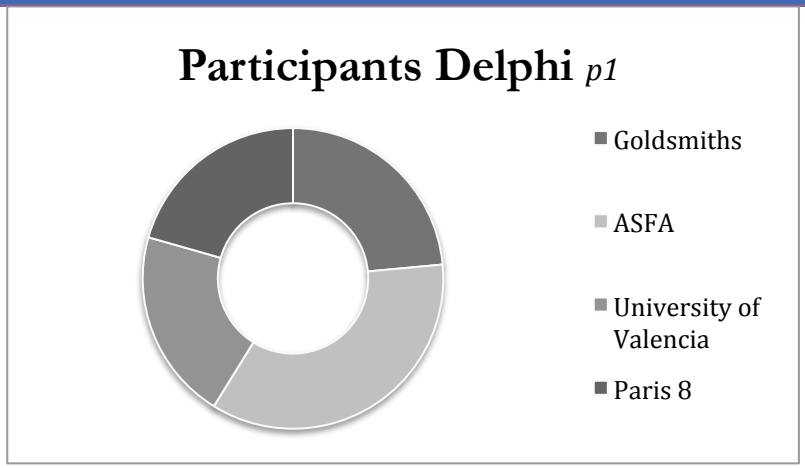
List of Participants | Diagram



The International Exchange EU Project funded this part of the research workshops. The participants varied in origin and discipline.

Table A.C.4

List of Participants | Diagrams | Delphi {part 1} **Paris** {part 2}



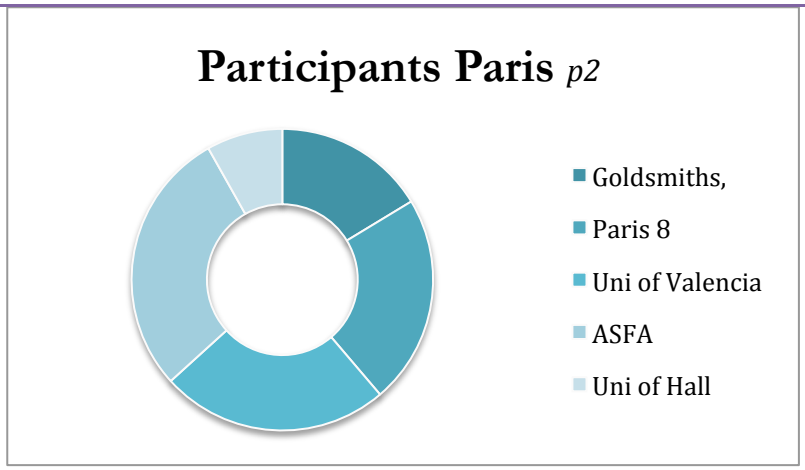
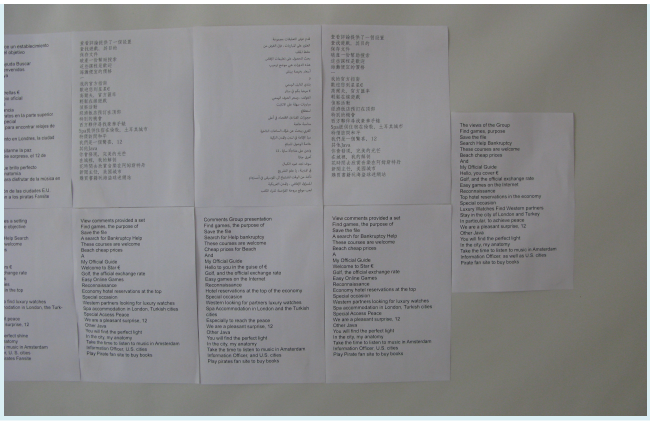


Table A.C.4 shows the participants in Delphi and Paris.

Table A.C.5

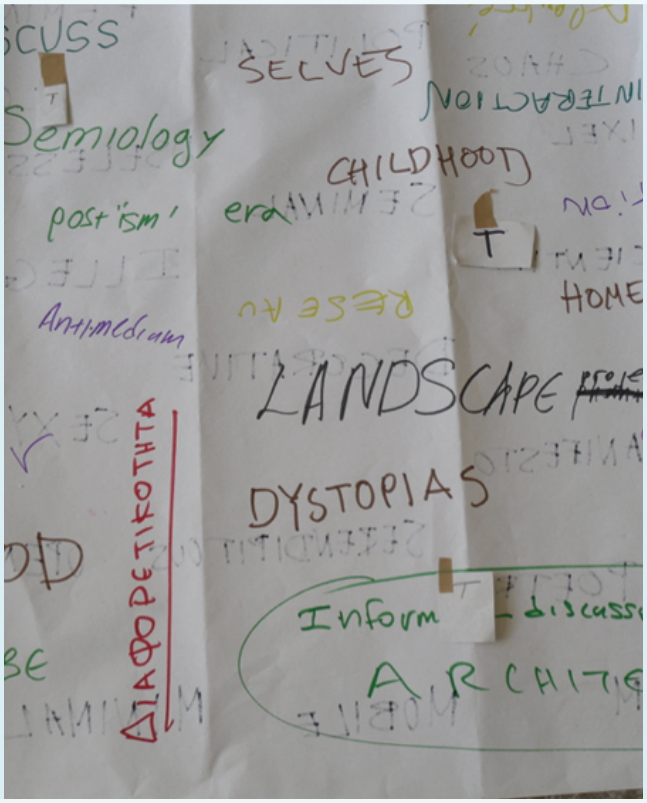
Research Workshop: Delphi to Paris{*Delphi = part 1*}



Sample of project presentations (Type across languages)



Virtual Type in Space



Documentation of space



Introduction to the Projects



Participatory Design process



Evaluation commentary



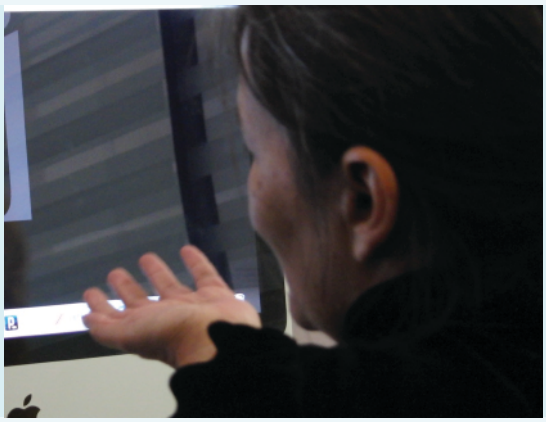
Documentation of Delphi Research Workshops



Introduction to the Research Workshop



Introduction to the Research Workshop



Comments | Guidance



Setting the Space



Comments | Guidance

Table A.C.6

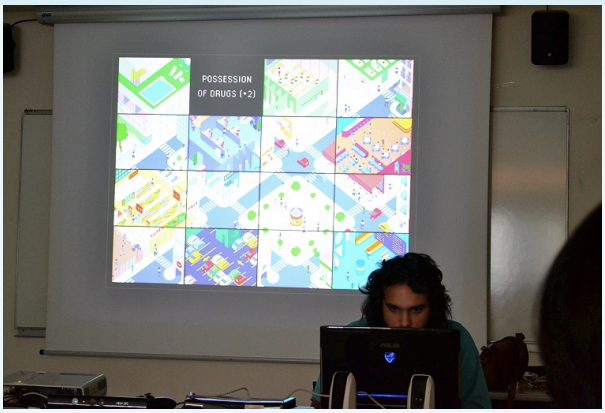
Research Workshop: Delphi to Paris {*Paris = part 2*}



Research Workshop Preparation



Setting the Space in 'Paris 8'



Setting the Space in 'Paris 8'



Participatory Projects



Participatory Projects



Participatory Projects



Groups Discussions | Academics



Group work | Creative industries



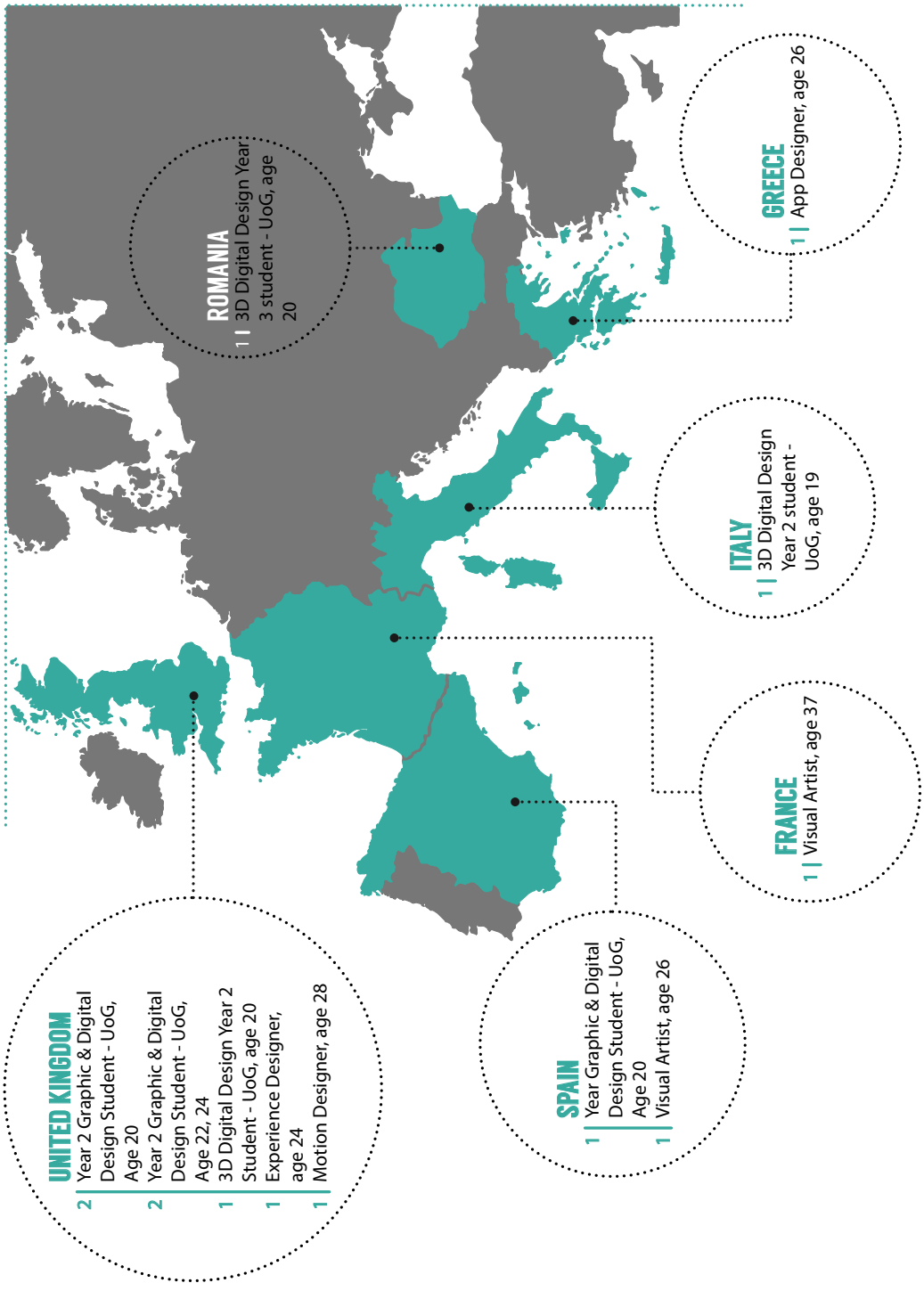
Workshop in action



Comments

Table A.C.7

Research Workshop {Delphi to Paris} Participants Diagram



Appendix D

Moving with Type
Greenwich, London| Hong Kong |Vancouver

Table A.D.1

The Twitter Research Workshops Structure and Plans		
Session Time 150 minutes Session {x3}	**Date/s:** September 2014 - Greenwich August 2015 - Vancouver May 2016 – Hong Kong	Titled: **Twitter** {*Research workshops 01/02/03*}
Location	DRHA2014 Greenwich | ISEA Vancouver 2015 | ISEA Hong Kong 2016	
Aims	These workshops aim to explore the following questions: - How portable technology has influenced the way we use and interact with type; the correlative nature between "type as image" and "design as communication?" - To explore further the notion of "type as image" by investigating virtual typography's potential to tell a story and/or construct a narrative through limitation.	
Purpose of the session	Use social network (Twitter) to understand how portable technology and virtual type (through limitations) affects the communication process and is changing the way we read and write on screen and in motion. A key feature in the line of questioning that runs right through the "Moving with Type" workshops is to investigate virtual typography's relationship to narrative. To be more specific, the workshops in this group explore the notion of "type as image" within the bounds of "storytelling with type".	
Outcomes	The Twitter workshops aim to achieve a better understanding as to how mobile technology is changing the communication process and in particular, the reading process.	
Previous knowledge assumed	Previous knowledge assumed (for myself as the researcher) is that Twitter and virtual typography has already changed the communication process, i.e. the way we read: faster and at a glance. But also, the way we write i.e., on the move and in small amounts. Participants knowledge assumed: previous experience with Twitter and other social media (though not a requirement). Therefore, these workshops intended on examining what we have already become accustomed to in virtual environments and how these affect and reflect our day to day communications.	

Research Workshop Structure	1. Introduction and meeting the group 2. Following the briefs and guiding participants through their findings and ideas 3. Discussion: Summarising and reflecting on the session
Materials	Portable devices {smart phones, laptops etc.} a big screen or projector, Tables and chairs. No printed materials required.
Recording data	For more information about recording styles and structure - Audio recording, video recording, photography

Table A.D.2

TWITTER 01 | DRHA2014 | Greenwich GMT Participants			
No	**Name**	**Profession**	**Previous knowledge about this research?**
1	Chris N.	Academic	NO
2	Miriam S.	Visual Communication	YES
3	Julie W	Performance / Storytelling	NO
4	Sofia W	Designer	NO
5	James H	Designer	NO
6	Emma W	Type Design	NO
7	Theodora P	Type Architect	NO
8	Svetlana F	Interactive Designer	NO

Table A.D.3

TWITTER 02 | ISEA2015 | VANCOUVER Participants			
No	**Name**	**Profession**	**Previous knowledge about this research?**
1	Katherine B.	NYU Tandon School of Engineering, Artist	NO
2	Miles T.	University of British Colum, Computational Creativity	NO
3	Joanna B.	Montreal, New Media	NO
4	Kirstie M.	The Banff Centre, Manager, Arts and Research Grants	NO
5	Banff A.	Digital StoryTelling / Digital Image making	NO
6	Daniel T.	Artist Visual Languages, New York City	NO
7	Katharina G.	University of Applied Arts Vienna, Senior Researcher in Visual Arts	NO

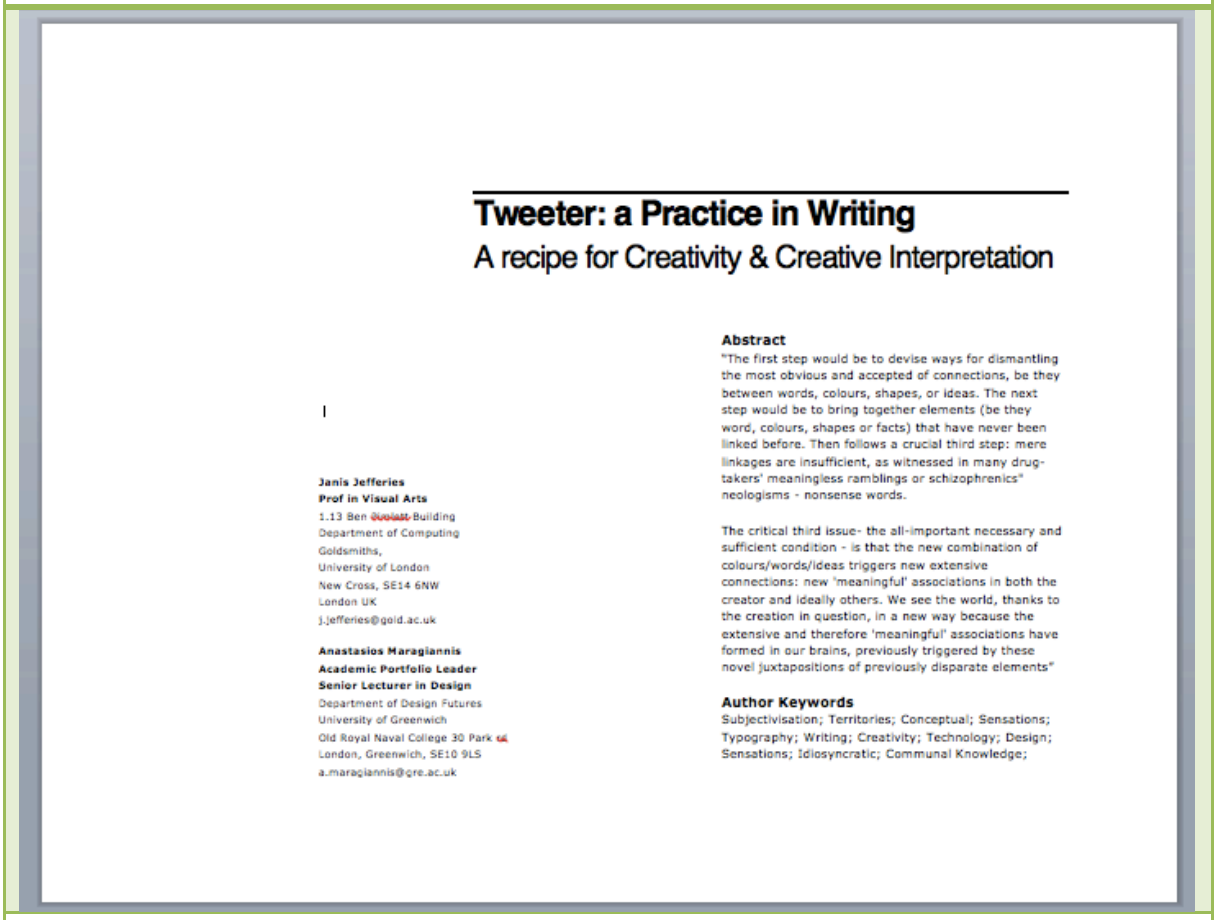
8	Andrew N.	University of New South Wales, Sydney, Contemporary Communication Cultures	NO
9	Kate A.	Typography	NO
10	Emily C.	University of Art + Design / Design Director, Living Labs	NO
11	Patricia B.	ISEA, Board of Directors INTERNATIONAL Society of Electronic arts, USA	NO
12	Bernhard R.	Simon Fraser University, SIAT, iSpaceLab, Associate Professor - Cognitive Communication Science, Vancouver, BC, Canada	NO
13	Erik Z.	Conceptual Media Artist and creative Writer	
14	Sherman F.	Texas A&M, Professor & Multimedia Social media Artist, Texas	
15	Rachel B.	Complex Networks Interactive Developer, New York	
16	Megan L.	Unceded Coast Salish Territory, Social Media and publishing	
17	Simon G.	Australia Brisbane, Editor and creative writing	
18	Hali S.	Huddersfield, UK New media graphic designer	

Table A.D.4

TWITTER 03 | ISEA 2016 | HONG KONG Participants			
No	**Name**	**Profession**	**Previous knowledge about this research?**
1	Paz S.	Academic Design communication	NO
2	Miho A.	Computer Art & 3d design Creative Communication Interaction	NO
3	Frank G.	Interface Design and Type	NO
4	Andy H.	Creative Director and Creative Copywriter	YES
5	Betty S.	Melbourne Knowledge Fellow: Digital Interactive Story Teller	NO
6	Steven W.	Print & Interactive Literature	NO
7	Yun-Jou C.	Designer, Diversity and Inclusion through Storytelling, New Media & Transformative Events	NO
8	Jane Frances D.	Digital Artist	NO
9	Colin J.	Academic in Computing Sciences	NO
10	Michael H.	Interdisciplinarity In / For Movements	NO
11	Ricardo M.	Design Research	NO
12	Kate W.	Global Academic Fellow in Visual Arts	NO
13	Danica S.	Creative writing	YES
14	Sherry X.	Fine art	NO

Table A.D.5

Twitter simplified Brief for Research Workshop Participants



Tweeter: a Practice in Writing

A recipe for Creativity & Creative Interpretation

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University of London
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Abstract

"The first step would be to devise ways for dismantling the most obvious and accepted of connections, be they between words, colours, shapes, or ideas. The next step would be to bring together elements (be they word, colours, shapes or facts) that have never been linked before. Then follows a crucial third step: mere linkages are insufficient, as witnessed in many drug-takers' meaningless ramblings or schizophrenics" neologisms - nonsense words.

The critical third issue- the all-important necessary and sufficient condition - is that the new combination of colours/words/ideas triggers new extensive connections: new 'meaningful' associations in both the creator and ideally others. We see the world, thanks to the creation in question, in a new way because the extensive and therefore 'meaningful' associations have formed in our brains, previously triggered by these novel juxtapositions of previously disparate elements"

Author Keywords

Subjectivisation; Territories; Conceptual; Sensations; Typography; Writing; Creativity; Technology; Design; Sensations; Idiosyncratic; Communal Knowledge;

Brief Workshop Exercise

Creatively rearrange/deconstruct/randomize all of the words and re-construct a short narrative, prose or poem using the words in any order you like.

Try to spend about 30 mins individually or together and think about making the piece of writing up to around 100/150 words so we can discuss afterwards.

This exercise is based on Oulipo, or Workshop of Potential Literature. This is a group of writers and thinkers interested in the notion of "constraint". You can think of constraint as something like the rules of a game. For example, the rules of the sonnet game result in the creation of a sonnet. The rules of the short story game result in the creation of a short story. Are there other rules? New games? New things to create?

By asking those questions, the Oulipo has become a workshop of potential literature. See Raymond Queneau's Exercises in Style

Anticipated Audience

Max 12 participants 20????
with basic knowledge on computer interface and use.

Proposed Channels for promotion

Goldsmiths - University of London; University of Greenwich; TERASlab.co.uk; CAS;
The Thursday Club: doc.gold.ac.uk/thethursdayclub;
Design Roast: blogs.gre.ac.uk/designroast; Leonard's and Isea. Universities of Sydney, COFA, Wollongong

Requirements

A half-Day workshop requirements:
A computer lab with Adobe After Effects installed
Participants can bring their own laptops; internet access required. Projector and/or big screen for presentation. We will bring printed materials.

References

[1] Relational Aesthetics (N.Bourriaud 1998)

[2] Neuroscience (S.Greenfield, 2008 p.272)

[3] Science Fiction (P.K.Dick 1968) William S. Bourroughs

[4] Color Interaction (J.Albers 1963 reprint 2006)

[5] Raymond Queneau's Exercises in Style Do Androids Dream of Electric Sheep? Philip K. Dick

[6] William S. Borroughs and his practice of cut ups. http://www.youtube.com/watch?v=Rc2yU7OUMcI&feature=related

[7] BBC documentaries, Image (parts 1 and 2) http://www.youtube.com/watch?v=mf-kJ-mVw5U&feature=related

and

http://www.youtube.com/watch?v=6j-UzDDhiqI&feature=related

[8] Josef albers Yale University Press, 15 May 2006 - Art - 145 pages
http://books.google.co.uk/books?id=wN9o0OULXjIC&siteseс=reviews14 Reviews

Table A.D.6

[DRHA2014] Digital Research in the Humanities and Arts Conference | Twitter 01 Research Workshop	
	
Participants sharing their approaches	**Introduction to the Research Workshop**
	
Participants sharing their approaches	**Participants sharing their approaches**
	
Participants sharing their approaches	

Table A.D.7

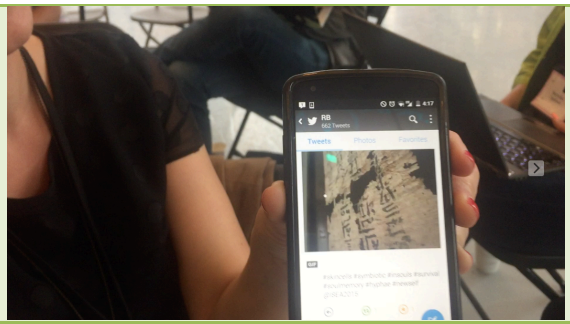
ISEA 2015 Vancouver | Twitter 02 Research Workshop	
	
Introduction to the Research Workshop	Introduction to the Research Workshop
	
Critical reflection	Participants sharing their approaches
	
Participants sharing their approaches	Workshop outcomes

Table A.D.8

ISEA 2016 Hong Kong | Twitter 03 Research Workshop	
	
Introduction to the Research Workshop and Previous Workshops	
	
Critical Reflection On Workshop Techniques And Learning Outcomes	
	
Critical Reflection On Workshop Techniques And Learning Outcomes	

Table A.D.9

ISEA 2016 Hong Kong | Twitter 03 Research Workshop

Interactive practice in writing: Entering private human encounters

Anastasios Maragiannis
Academic Portfolio Leader, Principal Lecturer in Design
University of Greenwich, London, UK
a.maragiannis@gre.ac.uk

Prof Janis Jefferies
Professor of Visual Arts and Research
Goldsmiths, University of London, UK
j.jefferies@gold.ac.uk

Abstract

"The world is in flux, and so is writing. As creators in a networked world, we can sit by the shore and wait for a defining text…" [1]
Since its popularisation in the late 1970s, the screen has acted as a gateway for easily communicating with other 'people' and on any topic. However, in recent years, its status as a 'tool' for knowledge extraction has been far surpassed. The screen has become an engaging space and through the various communication apps, people choose to spend time: socialising, living and dying. With the advent of Web2.0, the screen has moved from informational navigation tool to a community and this marks a new form of social phenomenon. This workshop aims to provide participants with a framework to understand how social media and the daily updating of the self is challenging our preconceptions of screen-based communication and influencing the development of our cultural/ personal identity(s) and sense of self. The so-called herbivore or "grass-feeding human. [2]

As practitioners we aim to highlight and encourage interest in this area as a rich space for engaging visual communication and creative writing practices. Personal interaction and narration of the self is surrounded by anticipation as well as apprehension and anxiety. Digital innovative augmentations of human/human or human/technology communication have created a lively and restless online/ offline environment. We are currently at a crossroad between being completely overwhelmed by mass 'non-communicative' communication and trying to be involved with reproductive technologies as much as we can. In this workshop we would experiment with these ideas and will debate that the tacit nature of communications online cannot be understood from a purely technical perspective (search algorithms) but must instead be approached creatively. To this aim we will address the cultural implications and imaginative opportunities of recent innovations in creative practices of writing and how these practices are entering into the private human encounters.

This workshop is the final of a trilogy. The two previous workshops took place in London [3] and Vancouver [4] and the outcomes and data will be published online and in print.

Duration

A half-Day workshop (approx. 3 hrs, depending on space and time availability).

Rationale

Participants will be asked to present a recent online experience that shows some intercourse with 'real' or robotic entities as an example that demonstrates how advanced technologies enter private human encounters. Then creatively will rearrange/deconstruct/randomize all of the words and re-construct a short narrative, prose or poem using the words in any order they like.
Afterward will spend about 30 minutes individually or in pairs or in groups and think about making the piece of writing up to around 140 characters so we can further discuss in the workshop.
This exercise is based on Oulipo, or Workshop of Potential Literature. This is a group of writers and thinkers interested in the notion of "constraint". You can think of constraint as something like the rules of a game. For example, the rules of the sonnet game result in the creation of a sonnet. The rules of the short story game result in the creation of a short story. Are there other rules? New games? New things to create?
By asking those questions, the Oulipo has become a workshop of potential literature.

Participants

We are looking for participants interested in writing and reflecting on their personal experience of the process through social media. No previous experience is required. They can be artists, designers, scientists, academics, students, or from any other discipline with an interest in creative practices, creative writing, and visual communication. They should have basic knowledge of internet and social media. Number of participants should not be more than 20.

Soliciting Participation

We would like to present in a slot during the conference to report on the work done in the two previous workshops and also we would like to submit a one-page abstract of the workshop proposal to be included in the proceedings. Furthermore the workshop will be publishised in various social media and also relevant websites related to the theme of ISEA, including:

Goldsmiths - University of London; University of Greenwich; TERASlab.co.uk; CAS;
The Thursday Club: doc.gold.ac.uk/thethursdayclub;
Design Roast: blogs.gre.ac.uk/designroast; Leonard's and Isea. UAL, Hong Kong Universities, Institutions, and colleges.

Venue and Equipment

A studio space / lab with chairs and not table, as this will allow the audience to better interact with each others. Participants can bring their own laptops but it will also be good to have with them a book, a twitter account, and their portable device (mobile tablet etc). Internet access required.
For the workshop presentation a Projector and/or big screen is required. We will bring our own laptop and any other materials required for the workshop.

Exhibiting outcomes during the symposium

There is a possibility to exhibit the outcomes of this workshop, including the outcomes from the previous two workshops (W1: DRHA2014 London and W2: ISEA2015: Vancouver). We will have a poster(s) prepared prior to the symposium, where it can be pined on visible space and will have info and a link that will direct audience to an online updated space with the outcomes of the three workshops.

Notes

The workshop will be photographed and video-recorded for documentation purposes.

BIOS

Professor Janis Jefferies

Janis is an artist, writer and curator, Professor of Visual Arts in the Department of Computing, Goldsmiths University of London, Director of the Constance Howard Resource and Research Centre in Textiles and Artistic Director of Goldsmiths Digital Studios. GDS is dedicated to collaborations among practicing artists, cultural and media theorists, and innovators in computational media, who together are expanding the boundaries of artistic practice, forging the future of digital technologies and developing new understanding of the interactions between technology and society
As artistic director of Goldsmiths Digital Studios, Jefferies convenes: the PhD in Arts and Computational Technology. Janis is also the Associate Pro Warden, Creative and Cultural Industries, her interests are in emergent business models and artists cultural rights (CREATe)
Web: http://www.gold.ac.uk/computing/staff/j-jefferies/

Anastasios Maragiannis

Anastasios' is the Academic Portfolio Leader and Principal lecturer in Design Theory & Practice, in the department of Creative Professions and Digital Arts, University of Greenwich, London.
He convenes the Design Roast Open discussion group for anyone interested in creative design practices and theories of cross-disciplinarity, interactive design, new media technologies, visual communication and philosophies of the state-of-the current and future design. His work has been shown in various places including the BFI London and the V&A museum.
Anastasios is also the Deputy chair of the DRHA International organisation and the research leader of the "Digital Grand Challenge", a series of research projects that investigates how theory can shape digital practice and vice-versa; as a way to enhance multiple interactions across numerous disciplines, including, Architecture, Arts, Design, Computing, Humanities and Mathematics and other Sciences.
Web: www.gre.ac.uk/ach/study/cpda/staff/anastasios-maragiannis

Links

Teraslab.co.uk
Design roast: Blogs.gre.ac.uk/designroast
Thursday club: doc.gold.ac.uk/thethursdayclub/

References

1 Penflip. T. Abba, This is not a book https://www.penflip.com/TomAbba/this-is-not-a-book (accessed 22 Dec 2015)
2. www.newstatesman.com (accessed 2 Jan 2016)
3.DRHA 2014 – Digital Research in the Humanities and Arts, International Conference, London www.drha2014.c.uk (accessed 27 Dec 2015)
4. ISEA2015 – Vancouver,

Table A.D.10

Research Workshop Plan | Outcomes | Structures | Participants		
Session Time 150 minutes Session	**Date:** April 2014	Titled: **Moving with Type** **Wasteland | Apps**
Location	Cutty Sark | Greenwich, London	
Aims	- To investigate in what ways portable (touch screen) technologies have impacted the way we read and behave with virtual type. - To explore the use of digital literary works and how this impacts the way we read when on the move. - Use Schon's "problem setting technique" as a method.	
Purpose of the session	The purpose of this research workshop will be to examine how portable technology has impacted the activity of reading, by using a contemporary example of an application created for mobile technology. The application's (the Wasteland) designers looked at ways to make the poem more accessible by adding features that were useful to understanding the poem; by making it more playful and interactive; and by using more creative features (sound, performance, readings, a copy of the original manuscript etc.)	
Outcomes	I expect that the participants would look at this application comparatively with printed text. I use Schon's problem setting technique for this workshop and anticipate that there will be some issues with the recording of the session (while the participants were out and about). This method provides me with an alternative way of framing the practice and designing the recording of this practice by anticipating the issues at hand from the outset. The problem of testing and recording behaviours with portable technology is that due to its very nature of being in motion - it is very difficult to pin down. I will provide them with a map of Greenwich. I will also attempt to follow or find as many of them as possible in order to record this outdoor session.	
Previous knowledge assumed	The decision to include participants from previous workshops was made on the basis that these participants would already have some	

	understanding of my practice-led research and its general thematic. Also, that they have previous experience reading literary works in print.
Research Workshop Structure	1. Introduction and meeting the group. Providing the group with the application for their mobile devices. 2. Allow the participants to use the application while in motion around the Greenwich order. 3. Discussion: Summarising and reflecting on the session
Materials	Portable devices and installation of the Wasteland application.
Recording data	For more information about recording styles and structure see below. Audio recording, video recording, photography

Table A.D.11

Moving with Type | Wasteland				
No	Background	Origin	Age	Attended previous research workshop
3	Graphic & Digital Design Year 2 students – UoG	UK Spain	19, 23, 20,	YES
2	Graphic & Digital Design Year 3 students – UoG	UK	22, 24	NO
1	3D Digital Design Year 3 student - UoG	Romania	20	YES
2	3D Digital Design Year 2 student - UoG	Italy UK	19, 20	NO
1	Experience Designer	UK	24	YES
1	Motion Designer	UK	28	NO
1	App designer	Greece	25	YES
2	Visual Communications Designer	Spain, France	26, 37	YES NO

Table A.D.12

Research Workshop *Wasteland*



Introduction of the Research workshop



Observations and individual discussions



Individual exploration



Individual exploration



Directing the group



Participants in Action



Participants in Action



Participants in Action



Participants in Action



Reflection | After session



Reflection | Comments

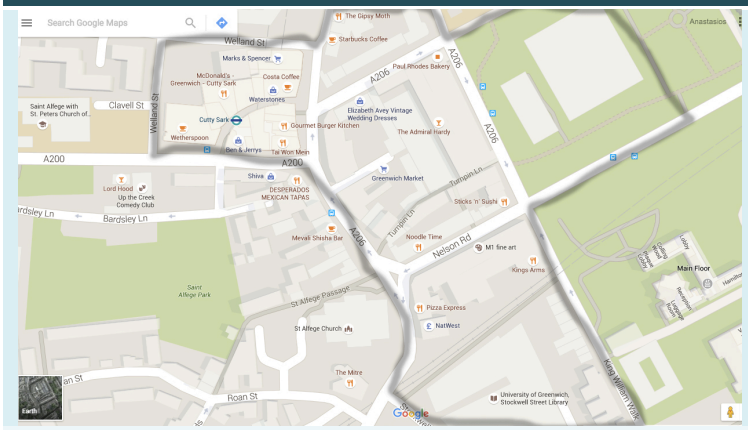


Creative Industries Impact



Closing the Research Workshop

Table A.D.13

Research Workshop the Wasteland | Portable Devices


The Workshop Structure: Map Of The Area

Appendix E

Symposium
Greenwich, London

Table A.E.1

The Symposium Preparation Documents

Research Symposium
PROPOSAL

Background (by A. Maragiannis)

University of Greenwich and Goldsmith's, University of London are funding a research project to offer an analysis of how computational technologies impact the existing principles and forms of static text and in particular typography. The research will explore how innovative processes of design evolve within creative media. More specific, this PhD research explores the use of text through visual portable 'mobile' technologies and attempts to review the way we read and behave when we are on the move.

The research will draw together not only theoretical material from the fields of art, design and user experience literature, but also commercial and promotional practice based concept themes and contextualisation of ideas. The point being that rather than potted histories and snapshots a cultural and economic field of impact has been brought together for consideration.

Initially, an industry Symposium will enable the examination of current issues of screen-based typography, thinking and ideas. The findings will be used to reflect upon and situate any current practice based projects and therefore the findings of this research. Monotype will support the research by inviting industry contacts to the Symposium and helping to publicise the research.

University of Greenwich and Goldsmith's, University of London are the publishers of the research.
This exploration and collaboration would be the starting point for the formation of an innovative 'Digital Typography Research Hub' at the University of Greenwich.

Symposium Goal:
Hear what the challenges of screen-based typography are from key industry leaders.

Attendee profile:
Design, business and development stakeholders involved with the specification of type systems to deliver cross-platform experiences from leading brands, agencies, media and technology companies.

Format:
A Symposium. To be held at Greenwich University on either the 8th or 15th September.

2 - 5pm with refreshment break and drinks reception afterwards.

Attendees will be asked to speak for 10 minutes each about their background, what they do and how typography is involved in that, followed by a discussion facilitated by Anastasios Maragiannis.

Attendees will receive the outputs from the meeting and ultimate research findings.

Outputs:
The session will be recorded.
The session findings may be discussed under the Creative Conversations open forum to validate further.

Table A.E.2

The Symposium Participants				
Gerry Leonidas	Associate Professor of Typography	University of Reading	8th	confirmed
Brian La Rossa	Art Director	Scholastic	8th or 15th	confirmed
Dave Crossland	Font consultant	Google	15th	confirmed
Warren Hutchinson	Experience Design Director and Founder	ELSE	8th or 15th	confirmed
Theresa Mershon		Hearst	8th	confirmed
Dr Michael Tschirhart	Human Factors Technical Fellow and R&D Manager	Visteon	8th	confirmed
Reed Riebstein	Creative Director	Garcia Media	8th	confirmed
Damien Ferraro	Executive Director, Brand Experience	Interbrand	8th	confirmed
Adam Roberts	Designer	Samsung Design Europe		invited
Rajeep Das	HMI Design Lead	Tata Motors		invited
Phil Higgs	In car graphics team	Jaguar Land Rover		invited
Lesley Saxton	Interactive Art Director	Ralph Lauren	8th	confirmed
Gordon Young	Editor in Chief	The Drum	8th	confirmed
Anastasios Maragiannis		University of Greenwich		confirmed
Nadine Chahine		Monotype		confirmed
Mark Boulton		Monotype		invited
James Fooks-Bale		Monotype		invited
Julie Strawson		Monotype		confirmed

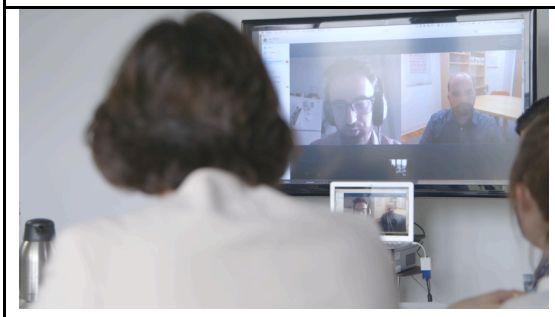
Table A.E.3

The Symposium in pictures | Documentation

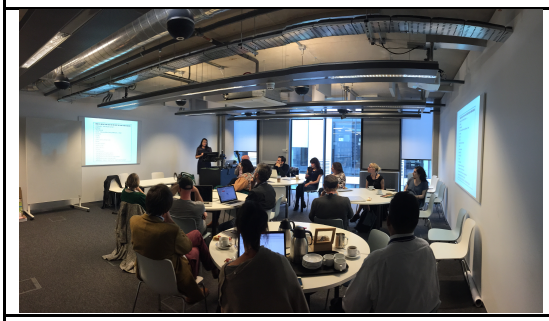










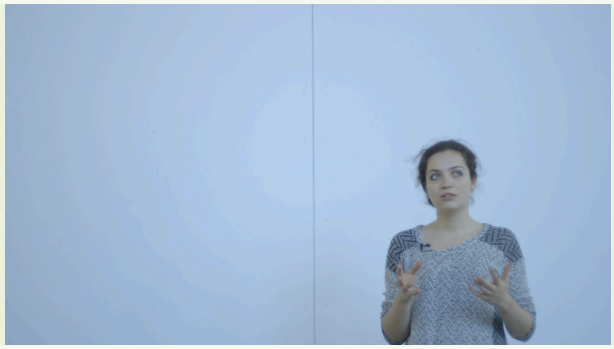
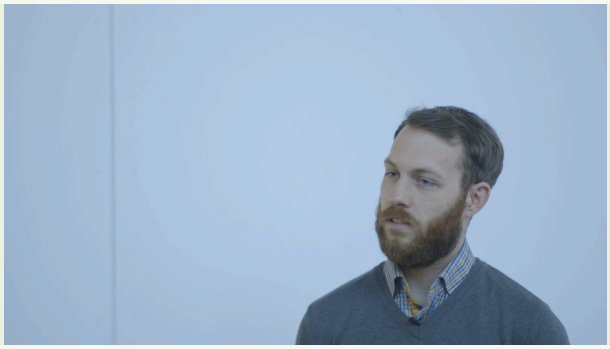




Appendix F

Interviews | Documentary Film

Table A.F.1

Interviews	
	
	
	
	















Appendix G

Documentation process

Table A.G.1

Research Workshops Documentation



Outdoors filming



In studio recording



Setting the equipment



Planning the session (a week before)



In Studio filming



Mock-up recording



In studio recording



In Studio filming



Overall Group filming



Filming Interviews | Comments



Filming Interviews | Comments



Outdoors filming

		
Outdoors filming	**Planning the filming session**	**Planning the filming session**

Table A.G.2

Filming and sound recording crew job description

Job Title:	Film /Editing Assistant	Grade: Jobshop	Spinal point: Standard
Faculty/Department:	FACH-CPDA	Location/Campus of Work:	Greenwich
Role reports to:	ACADEMIC PORTFOLIO LEADER Design– Principal Lecturer in Design Anastasios Maragiannis		
Direct Reports	N/A		
Indirect Reports:	N/A		
Other Key contacts:	Employees across the University		
This role profile is non-contractual and provided for guidance. It will be updated and amended from time to time in accordance with the changing needs of the University and the requirements of the job.			

PURPOSE OF ROLE:

To provide assistance on DRHA Filming- editing and finalise shooting when is necessary in order to complete the project for research archive and reference.

KEY RESPONSIBILITIES:

Team Specific:

- To lead and organise the filming team
- To assist the film director on filming and editing process
- To carry out other duties as specified by the director, officers or other designated project supervisory staff
- To organise and assist on booking equipment for filming and / or editing purposes

Generic: Managing Self

To work in a flexible manner, ensuring film outcomes are met

· Ability to work in and contribute to the overall film team

· Ability to work on own initiative without constant supervision

· Ability to work accurately under pressure

· To contribute to the motivation of the team

Core Requirements:

· Ensure compliance with Health and Safety regulations

· Support and promote the University's Sustainability policies, including the Carbon Management Plan, and carry out duties in a resource efficient way, recognising the shared responsibility of minimising the university's negative environmental impacts wherever possible.

Additional Requirement:

Willing to travel across London for filming purposes.

Adaptable and willing to work at any University Campus or other institutions
Ability to work in various hours throughout the day and maybe weekends

Key Relationships (internal and external):

Academics staff

Film staff

Technicians

Room booking staff

	Essential:	Desirable:
Person Specification:	**Skills** Able to follow instructions Excellent Understanding of camera and filming equipment Excellent skills in filming and direction Excellent skills in editing footage and montage Good understanding of filming techniques and relevant equipment Good interpersonal skills	**Skills** Good verbal communication
	Experience University student Portfolio and/or show-reel required	**Experience** Some work in the industry or completed placement
	Qualifications Year 3 Film and TV production, BA Hons Year 3 Graphic and Digital Design , BA Hons	**Qualifications** N/A

Campus of Work:	☐ Medway	☐ Avery Hill	☒ Greenwich
Hourly Pay Rate:	☒ £7.78 (Standard)	☐ £8.86 (SP7 Medway)	
	☐ £7.83 (SP2 Medway)	☐ £11.31 (SP7 AH/Gre)	
	☐ £10.28 (SP2 AH/Gre)	☐ £10.49 (SP13 Medway)	
Number of Posts:			
Hours Per Week:	☐ Up to 20 (term-time)	☐ Up to 35 (vacation time)	☒ Rota Basis
Job Start Date:	20 October 2014		
Job End Date:	20 November 2014		
Interview Date:	Wed 15 October 2014	**Application Closing Date:**	Monday 13 October 2014
Building and Room:	Stockwell Street, TBC	Is work based in Stockwell Street?	☐ YES
Working Hours:	TBC		

Table A.G.3

Design and Editing of Documentary Film

Typography Based Research

http://vimeo.com/18952185

- the use of motion tracking in this video: want to do the same, it really involves the audience and draws them in
- the way the words relate to what is happening and what you see on the screen, we can do something similar
- Overall the video is aesthetic to watch: creative shots and angles and well composed



http://vimeo.com/35688592

- This video shows the attention to detail in his work
- could show in detail the work involved with the research during the workshops: e.g. showing up close how somebody gets involved with interactive type
- will use lots of shots like the one below (shallow depth of field makes it "arty" and interesting)



"type in a 3d space" so below is an example. This is a video but shows what I mean when the man steps "in front" of the type.
http://vimeo.com/6088440

it is another interesting factor that adds to the look of the film but also fits the subject.



http://vimeo.com/31534032 - and I was thinking for the titles/ opening sequence, that we do a montage of type/graphic design based shots. We would introduce the first workshop by using a short section of one of the interviews. This voiceover would also introduce the subject of the film.

I think the using just the sound from an interview to introduce the new scene/workshop would work well throughout the entire project.

As for a structure, any interviews completed outside of the UK you will film and I will edit. All UK interviews/workshops will film. Any "fancy" shots in between (close up on hands or the focus of someone writing) will be "staged" or "reenacted" at a location that looks good, fitting the subject.

Appendix H

Questions

Table A.H.1

Questionnaire – These questions came before The Typeface Project and Data received was used to create the first set of Prototypes for the Phase: 1 workshop for The Typeface Project.

1. How do you understand the use of screen-based typography?
2. How do you understand the difference between readability and legibility in typographic communication for screen-based environments, as opposed to print?
3. Do you have any suggestions of other approaches to typographic communication that need to be explored?
4. What's the difference between typeface design and typography?
5. What is this font visually communicating?
6. What determines a text's readability on websites?
7. How do you define the space in screen-based environments in relation to typography? Is it a full dimension or maybe a half?
8. Has the computer moved typography in a positive direction? Or has it made us lazy?
9. Are the letters laid out on screen are more progressive than flat printed pages?
10. Can you describe the use and methods of text in the app you used?
11. In a postmodern age, where screen based design appears to be aligned to its surrounding culture and way of life, is the use of type and text becoming redundant or more complicated?
12. What do you think are the critical areas of screen-based text that must be covered for the development of new principles?
13. What is your favourite mode of transport when you want to read on your device?
14. Have you ever viewed the computer as a threat to the quality of readable text?
15. Do you agree that a picture is worth 1000 words? If yes how do you perceive text on screen?
16. How important is typography in your design process?
17. Type should be clear with optimum readability and legibility, is that correct or should it be devoid of character when choosing the right font and form?
18. What are your feelings towards typographic rules?
19. Is any connection / distinction between reading and seeing?
20. Should designers actively mix these categories of experience: A picture can be read, while written words can be objected to vision? How would you view typography as a communicating element?
21. What is the impact of 2d 3d dimension to text on screen?
22. Do you believe that typography can create emotions?
23. Is typography only what you read? How does audio-visual and kinesis inform the text?
24. Digital technology has created a plethora of tools for designers and the viewer/ reader. Can you define some of these?
25. Emily Ruder once said: "Typography has a plain duty before it and that is to convey information in writing. A printed work which cannot be read becomes a product without purpose." Do you agree? Does this apply to the screen too?
26. If data informs our behaviour and therefore our communication process, then what is the role of the user?
27. Can the user create/design the interface communication or is it the technology that allows us to be more adaptable and possibly innovative?

Table A.H.2

Workshop Questions Prepared for Phase: 1 Workshop Discussion	
1	Do you think that people seem to be less willing to sacrifice time these days? Are they not interesting in investing time in reading as a valuable goal but rather they stipulate instant satisfaction and instant communication?
2	How do you describe screen-based typography?
3	Can you describe your work process from initial idea to a finished composition?
4	One of Tschicholds' rules in his book *The New Typography* was never to combine more than three typefaces on a spread. What is your view on rules like this when you think of screen based design?
5	How do you view contemporary typographic practice and how would you compare it to say in two decades from now?
6	Do you think there are any 'rules' left in screen based typographic design and if so, which of these would you adhere to?
7	What do you consider to be 'good' screen-based typography? How is this reflected and understood if considered through the terms legibility and readability?
8	Can you identify and describe your favourite piece of recent screen based typographic experience? What features does it present?
9	What do you think are the critical areas of screen-based typography that must be consider during the design process?
10	How would you compare the development of typography and typeface design through the portable devices i.e. tablets, phones, to the rest of the screen in the last ten years?
11	How would you say that the world of screen based type has changed in the last decade?
12	Do you think that elements such sound and interaction are important in design process?
13	Do you think that three-dimensional type enrich the written word, and how?
14	What do you feel are the disadvantages of the screen based / computer era in relation to design/ communication process?
15	Do you think that the meaning of typography needs to be redefined in our day and age? How would you redefine typography for the modern era?
16	Do you think that the quality of typographic experimentation lies in its computational limitations, not in its possibilities?
17	How does the design process change according to the screen; device or technology?
18	What are your feelings toward typographic 'rules' / principles?
19	Is legibility on screen your number one concern?
20	Is screen readability your number one concern?
21	How do you think distribution technology has changed the way we use type?
22	Can you outline three [3] rules for using type on screen?
23	Do you believe that the use of type and interaction/ motion can create emotion?
24	How do you think a designer should approach web/ screen design?
25	Should the 'concept' of a design ever override its legibility?
26	Do you think that screen based typography has no rules?
27	Can we overwrite the existing rules and create/ develop new ones?

Table A.H.3

The Wasteland - Questions prepared for Discussion	
1	Having the content read to you via audio sound, on a mobile screen display device. Can it be consider as enhancing the reading experiencing or help improve your understanding of the content
2	Having a video film that is synchronised with the content. Can it be consider as enhancing the reading experiencing or help improve your understanding of the content?
3	Which medium do you find it easy to navigate, mobile screen display device or traditional print medium (e.g. Books, News Paper etc.)
4	Will this type of typography be the future? If you think so what advantages do you think it will have?
5	Do you see this as visual or textual information?
6	Do you think mobile screen technology such as an iPad, has given designers more abilities/creativities/ideas for design?
7	Do you think mobile screen technology, can be described as or is it an important design tool for designers today?
8	Do you think that mobile screen technology are ruining the traditional method of design and print medium, and wish technology shouldn't exist?
9	Do you think mobile screen technology has changed the way we view our contents, compared to the past?
10	In relation to this, does this make the iPad a creative tool to 'read' from?
11	Do you prefer to read information on paper or on portable devices?
12	Has the type on your portable device made usability easy or hard?
13	Do you normally adjust the lighting so that you can read on your device?
14	If you could alter your devices interface, mainly including text and fonts, what would you change?
15	Does sunlight ever affect your ability to read on your device?
16	Does the size of the screen effect the way you read type?

Appendix I

Design Research Activities

Design Research Activities: The research in this thesis has contributed to the following selected research outputs, including: articles in various publications, conference papers and proceedings, workshops and seminars listed below.

Research Papers

Maragiannis, A., Jefferies, J., (2015) *'Twitter': Practice in Writing: A Recipe for Creativity & Creative Interpretation*, Vancouver, ISBN:9781910172001

Maragiannis, A. (2014) "Visual Technologies: Reviewing the way we read and behave on the move" DRHA 2014 Conference, 31 Aug -3 Sept 2014, University of Greenwich, UK 129197878X, pg. 217-218

Maragiannis, A., Pitsillides S. (2014) "Virtual Embodiment: The turbulent relationship between social media and the self" DRHA 2014 Conference, 31 Aug -3 Sept 2014 University of Greenwich, UK 129197878X, pg 140-141

Jefferies J., Maragiannis A., Pitsillides. S., Vellonaki, M. (2013) "Mirroring Sherry Turkle: a discussion on authenticity humanity and technology", in Cleland,K., Fisher,L. & Harley,R. (Eds.) Proceedings of the 19th International Symposium of Electronic Art, ISEA2013, Sydney. ISBN: 9780646913131

Psarras.V., Pitsillides. S., Maragiannis A., (2013) "Dérive in the digital grid, breaking the search to get lost", in Cleland,K., Fisher,L. & Harley,R. (Eds.) Proceedings of the 19th International Symposium of Electronic Art, ISEA2013, Sydney. ISBN: 9780646913131

Maragiannis, A., Kanellos, E., (2011), "TERASlab: Typographical Experimental Research in Audiovisual Spaces", London, BCS, p 275, ISBN 9781906124885 (pbk) ISSN 1477-9358 (online).

Maragiannis, A., (2011) "How to be Creative: Collaboration in Web 2.0 community with or without text". Generative Art/XIV, pp 57-67, ISBN: 9788896610145.

Maragiannis, A., (2009), "Visual Arts and 2D - 3D Motion Typo.graphic Design", London,

BCS, pp 192-200, ISBN 978-1-906124-17-5 (pbk) ISSN 1477-9358 (online)

Seminars & Workshops

Maragiannis, A. Jefferies, J., (2015) Practice in Writing: A Recipe For Creativity & Creative Interpretation [II] Workshop ISEA2015, This workshop explored the impact of technologies in the communication process. Keywords, Screen based design, Text, typography, novel, mythologies, design. Vancouver, Canada

Maragiannis, A., Jefferies, J., (2014), Practice In Writing: A Recipe For Creativity & Creative Interpretation [I] Workshop DRHA2014 Conference, London UK

This workshop explored various examples: the rules of the sonnet game result in the creation of a sonnet. The rules of the short story game result in the creation of a short story. Are there other rules? New games? New things to create. Through a typographic exploration. London, UK

Maragiannis, A., (2013), SCI-FI-LONDON, in association with the INSTITUTE FOR INTERSTELLAR STUDIES, present an informal day of talks, film and workshops at THE CRYSTAL, London UK. The workshop and presentation focused on the impact of traditional mediums to the screen based mediums. Explored theories and practices of current design principles and the design principles of the future (thinking of the Space and its space)
http://www.sci-fi-london.com/festival/2013/oktoberfest/programme/event/starshiplondon

Maragiannis, A., (2013) 'Typographic Exploration in Visual Arts, University of Advancing Technology Arizona, USA. Digital Design students participating in my research workshops.

Maragiannis, A., Pitsillides, (2013) S., 'Desktop Psychogeographies' ISEA2013, Sydney, Australia. Workshop: the way we navigate our desktop interfaces is defined by a Cartesian approach to information architecture, as current design interfaces prescribe motion within a computational conceptual grid. This workshop seeks to explore how concepts of psychogeography (which refers to a non-Cartesian navigation of the urban space) and can be applied in a creative and affective way, encouraging participants to rethink typography, text and visual information navigation through, the spectrum of sentimentality, memories, identity & temporality (as opposed to date accessed, file name, etc.)., http://www.isea2013.org/events/desktop-psychogeographies/

Maragiannis, A. Kanellos E., (2011) Research Presentation & Workshop: 'Typographical Experimental Research in Audiovisual Spaces', BETHERE! Corfu International Festival. Corfu, Greece. In collaboration with the Ionian University - Department of Audio-visual Arts. This workshop focuses on a multitude of skills, and how they are interrelated, especially in terms of animated typography. Second, it presents these skills within a broad, but structured framework. This workshop takes participants *outside* the classroom / studio setting and through both simple and more complex exercises, leading them through various animated typographic explorations.

Maragiannis A., (2012) Victoria & Albert Museum- Digital Futures Exhibition – Typographic Interactive practices. The Interactive Installation/exhibition hosted at the V&A Digital Studios. Visitors led through a series of typographic exercises that attained to strengthen the amalgamation of design information and visual language, underlying the third dimension of typography within an "agnostic" virtual space.

Maragiannis, A., (2011)"Typo- Virtual Games", A workshop in collaboration with Paris-8 University, the Athens Academy of Fine Arts, University of Valencia, Goldsmiths-University of London and the University of Hull. The project (continues from previous year; see below) explored multiple game platforms in relation to design; architecture and data; my research group in particular focused on the use of screen-based typography; information design; and readability within online / virtual games.

Maragiannis, A. (2011) Workshop & Applied Research: 'How the Digital and Electronic Media are Mapping and Reshaping Cultural Identity', ISEA2011, International Symposium on Electronic Art. Istanbul, Turkey. The workshop focused on the impact of the theory as described in contextual review and the impact of communication through various cultural identities.

Maragiannis, A., (2010) "From the Real to Virtual: Explorating and experimentating with Typography' A collaborative workshop with Athens Academy of Fine Arts, School of Multimedia Postgraduate studies in collaboration with the Paris-8 University, University of Valencia, and Goldsmiths, University of London. The overall project structured through a series of experimental approaches investigating the impact of the real world to the virtual and vice versa. I was leading the group that explored typography in physical and virtual space.

Maragiannis, A., Kanellos, E., (2009) 'Kinetic Typography', TypeCon2009 conference, Atlanta, USA, Workshop. The workshop focused on the transition of static typographic principles to motion typography as an outcome of the contextual review theories.
http://www.typecon.com/archives/category/typecon2009

Exhibitions / Practice and Prototypes in display

V&A | Sackler Centre **|** London 2012
Stephen Lawrence Galleries |d+iD**|** Greenwich 2017