

Framework of Influential Factors on the Typographic Quality of Text Perceived by its Audience

A thesis submitted by Gerhard Bachfischer, July 2007 in fulfilment
of the requirements for the award of the degree

DOCTOR OF PHILOSOPHY

in Computer Sciences

CERTIFICATE OF AUTHORSHIP/ORIGINALITY

I certify that the work in this thesis has not previously been submitted for a degree nor has it been submitted as part of requirements for a degree except as fully acknowledged within the text.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

Gerhard Bachfischer

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Abstract

The focus of this research was on investigating audiences' experience of typographic designs. This study aimed to identify and explain various influential factors that shape how audiences perceive the quality of such typographic outcomes, as well as organise and integrate such factors and their characteristics into a guiding framework. The main grounding for this research came from a problem identified in the literature review. Typographic literature seems to mainly use 'objective', scientific measurements to formulate precise rules of 'good' typography that can help make text more legible or easier to read. Such rules were seen in this project as a useful foundation for typographic design, but, because experiences of readers seem not to be the same regardless of time, context, or other aspects, this research assumed that there must be other factors that affect the readers' perception of legible forms, but also factors that influence other qualities of typographic outcomes that matter to audiences, apart from legibility only.

The research revealed what other factors apart from scientific legibility rules, and in what way, can influence and, consequently, improve the quality of typographic outcomes perceived by audiences.

An overarching methodology, grounded theory, was employed to help answer the research questions posed in this study, and guided many aspects of this research across the individual studies although the project needed to diverge from the original methodology in the final, theoretical coding stage. This study used grounded theory as a guiding methodology, but it does not claim to create a substantive theory; instead it provides a framework of well-integrated influential factors. Grounded theory lent to this project rigorous and systematic procedures that were very suitable to answer the research questions posed.

The research process in this thesis was divided into four main stages that together informed the typographic quality framework which presents the major contribution of this research. The visual method of auto-driven photo-elicitation (participants were asked to take photographs of typographic outcomes, and such photos subsequently guided the interviewing process) proved to be very suitable to answer the research questions posed in this study. Apart from the proposed framework, an additional contribution of this study to typographic researchers is the review of the auto-driven photo-elicitation method, both from the literature and my own experience in the studies conducted.

This research led to the formation of the framework of influences on the quality of typographic outcomes, perceived by their audiences; the

framework also provides an explanation of the nature of these influences, or their characteristics, demonstrating the specific ways in which the factors influence the quality perceived by audiences.

The proposed framework organises such factors into two major spheres. The ‘object’s sphere’ includes the typographic outcome and various aspects of a text, including the media it is communicated with, its physical surrounding and social environment it is a part of, as well as visual elements that appear with it, and content it attempts to communicate. The ‘subject’s sphere’, on the other hand, includes the factors that stem or are dependent on the individual person experiencing a typographic outcome: the purpose behind the reading activity, the personal background of the one experiencing the text object, an accompanying activity, and the social situation in which the reading of a text takes place. Each of these two spheres are equally important, both encompassing influential factors the effect of which should be considered regarding any typographic outcome’s design.

Factors on both the object’s and the subject’s side influence the expectations formed by people towards a typographic object before they experience it. This ‘experience’ can refer to ‘reading’, ‘viewing’ and ‘using’ text. Various factors influence what expectations are formed, and these expectations, in turn, influence how the quality of typographic design is perceived by audiences.

ABSTRACT

The framework offers designers a better understanding of how audiences perceive typographic designs, which may lead to improved textual displays. Practitioners are offered an improved conceptual understanding of the multitude of influential forces that can affect the perceived quality of their text designs. The findings may be most relevant to designers working mainly with text, but they can also be useful for other visual communication or interaction design practitioners in their understandings of text design.

1. Introduction

The development of written communication follows the progress of civilisation. It is hard to imagine our society without written texts. With the invention of movable type for the western world around 1450 by Gutenberg (Perfect, 1992), and, therefore, the mechanisation of written texts , the task of creating, choosing and arranging of such type ('typography') became an important part of written communication. The profession of the typographer took shape as a specialist who is occupied with the design of textual information.

The advent of movable type has led to an enhanced capacity to store and retrieve as well as preserve and transmit information (Eisenstein, 1979). Nowadays, it is hard to imagine our modern society without typography, indeed our modern communications would be unthinkable without it. More recently, technological mediation of text and the proliferation of technologies enabling such mediation has made typography a concern not only for specialists, but for all whose work involves the production of texts.

1.1 Problem Statement

There have been many attempts in the literature to try to explain how to create better typographic outcomes, or, in other words, how designers and other practitioners can improve their typographic designs (see Chapter 2 Literature Review). As stated in the previous section, typography is an essential part of our written communication, and, therefore, the importance of improving the art of typography cannot be overestimated.

The existing literature, however, seems to be mainly concerned with providing precise rules that can help make text more legible or easier to read. The focus of such literature is on improving visual clarity of texts using ‘objective’, scientific measurements or other quantitative methods of inquiry to formulate rules of ‘good’ typography. Although such rules, without a doubt, provide a useful foundation for typographic design, and they will be synthesised in the Literature Review chapter, there is a danger that creators of typographic outcomes may become over-reliant on such guidelines. They may be tempted to believe that to create good typographic outcomes for their audiences merely requires following such learned legibility rules. This may create a false impression of being perfectly ‘safe’, or ‘right’, with the designer’s decisions made during their creation process just by following such rules. Baines and Haslam (2002) similarly note that such a declaration of certainty of legibility would imply that all readers, all of the time, share a common and consistent vision of letterforms; they argue, instead, that our collective perception of what

is legible is not a constant value. This view is supported by an argument put forward by Zuzana Licko, as summarised in Blackwell (2004): legibility is a dynamic process since the habits of readers are everchanging. Some styles that we find illegible today were preferred centuries ago; similarly, styles found illegible today may become future classic choices. This argument supports the view on the danger of over-reliance on objective measurable legibility rules. If these rules, on their own, were to always provide a safe and correct decision for the designer, the experiences of readers would be the same regardless of time, context, or other factors. Since they are not, there must be other factors that affect the readers' perception of legible forms, but also factors that influence other visual qualities of typographic outcomes that matter to audiences, apart from legibility only. It is these influential factors that this research aims to identify and explain.

The Literature Review in the following chapter will reveal a gap in the literature, and, therefore, knowledge base for designers, about what else, apart from scientific legibility rules, can influence and, consequently, improve the visual quality of typographic outcomes perceived by audiences. What is missing are studies that would aim to understand and describe 'subjective' typographic influences and what shapes people's attitudes and perceptions towards the typographic outcomes they encounter.

Even when some practitioners, the better ones in the field of typography, seem to cater in their work for such complex factors beyond the

scientific world of rule-based typography, they often rely on their design intuition only gathered over years of experience. This is supported by the following observation made by the design researcher Brenda Laurel:

Perhaps the single most pernicious sort of folly I have seen over nearly thirty years [...] is the belief on the part of [...] designers [...] that they ‘just know’ what will work for the audience. For an extremely observant, experienced designer, this may indeed be true, but such people are exceedingly rare, and those who are most successful have ‘trained’ their intuition by carefully observing and reaching deep understanding of certain kinds of people, cultures, and contexts.

(Brenda Laurel in Saffer, 2007, p.71)

Not only is this ‘intuitive’ knowledge the domain of only the most experienced designers, but it is also often not made explicit. This research tries to make this implicit knowledge accessible to all who may benefit from it in their typographic design practice.

Additionally, existing research, as will be shown in the Literature Review chapter, often focuses on one or few specific factors that can influence the quality of typographic outcomes. Such dispersed and fragmented research may include formal, technical, or semantic aspects, but it mainly involves examining distinct attributes of fonts in isolation, such as size, colour, weight, word spacing, length of line, or others. Lupton (2003) similarly notes that in the typographic literature many studies isolate and test certain variables separately, which is problematic since, in reality, such variables interact with each other, or, as Lupton (2003, n.p.) puts it, “*a pull on one part of the system has repercussions elsewhere*”. Another

problem with such a fragmented approach is that by studying aspects in isolation, the quality of typographic outcomes is not explained in full, and such studies provide just partial explanations of typographic design. In this respect, the task for this thesis is to clarify how the typographic quality can be improved by acknowledging the interplay of the multitude of aspects that shape such a quality.

To the best of my knowledge and based on an extensive literature search (see Chapter 2), at the time of this research there were no studies in the field of typography that would provide a holistic explanation of the multitude of aspects that constitute audience's typographic experiences, which has demonstrated the need for this particular research undertaking.

It seems important to offer design practitioners some empirically derived and functional findings on complex influences affecting the visual quality of typographic outcomes, findings that will be clearly articulated and structured in a guiding framework and that can inform their everyday practice.

1.2 Research Questions

To follow on from the previous section, the overarching aim of this study is to identify and explain influential factors that shape the perceived visual quality of typographic outcomes that people experience, as well as organise and integrate such factors and their characteristics into a guiding framework. The outcomes will hopefully help typographic

practitioners improve such a perceived quality of texts they design. To achieve this aim, the specific research questions posed in this study are:

1. What influential factors shape the visual quality of typographic outcomes perceived by their audience?
2. How can such influential factors be organised and integrated into a guiding framework that would explain what shapes such a perceived quality of typographic outcomes?
3. What are the specific characteristics or findings within each influential factor?

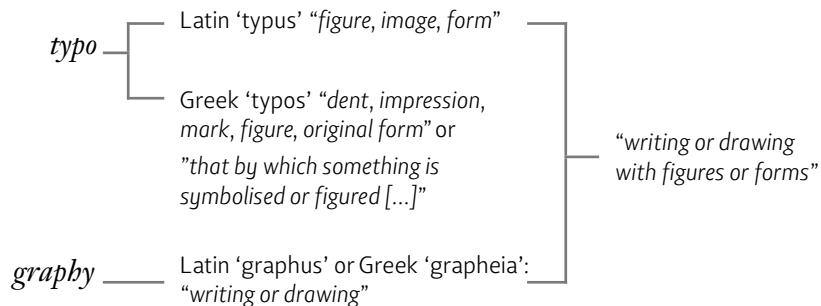
Additionally, the lack of studies on audience's typographic experiences, as mentioned in the previous section, makes it worthwhile to also provide insights on the method that can be used to conduct such investigations. A final research question, therefore, has been formulated to provide an additional contribution to the typographic research community:

4. How can typographic experiences be studied from an audience's perspective?

The next section clarifies the meaning of some of the terms used in this research. This is done before further influences on this research project are presented to avoid ambiguity regarding the scope of the research questions.

1.3 Clarification of Terms

‘Typography’ is the process that leads to the outcomes that are the focus of this research project. To better explain the meaning of the term ‘typography’, the etymology of this two-part word is presented below:



Such a “writing or drawing with figures or forms” definition is still open to interpretations, and, therefore, forms the basis on which printers, typographers and designers build their own definitions of typography. They, for example, interpret the ‘forms by which something is symbolised’ as mechanically reproduced or printed text, as opposed to handwriting or lettering and its treatment:

Typography is writing with prefabricated letters.

Gerrit Noordzij (Kinross, 1994, p.9)

Typography: the mechanical notion and arrangement of language.

Phil Baines & Andrew Haslam (2002, p.7)

Typography is the mechanical arrangement and organization of written words in such a way as to facilitate communication of the content.

Victoria Squire, Hans Peter Willberg & Frienrich Forssman (2006, p.10)

Typography in this respect refers to both micro-typography (Turtschi, 1995) concerned with distinguishing of discrete symbols and the basic letter-shapes and their arrangements in words, lines, paragraphs and finally text blocks, as well as macro-typography concerned with the textual arrangement in a given space. This arrangement usually takes place on a two-dimensional plane, on one page or on consecutive page-like units, forming a scroll, a codex or a book. Today, three-dimensional placement of text, moving text and the serial visual representation of textual information on a screen (as in films and infomercials) should be included in the definition of ‘typography’ on this macro-level as well.

Whereas the definitions above reflect the technicality and mechanisation of the trade, an additional view that can be found in typographic literature presents typography as an art rather than a mechanical means of written language:

Typography is an art. Good typography is Art.

Paul Rand (Kane, 2002, p.viii)

Typography is the craft of endowing human language with a durable visual form, and thus with an independent existence.

Robert Bringhurst (2002, p.11)

The whole duty of typography [...] is to communicate to the imagination, without loss by the way, the thought or image intended to be communicated by the author:

Thomas James Cobden-Sanderson (Carter, Day & Meggs, 2007, p.vi)

To summarise and conclude with a definition which tries to unify the arts and the crafts characteristics of typography, I have adopted the following definition for this thesis project:

Typography is the art of giving printed text a voice, and a position in space through discrete symbols, as well as basic lettershapes and their arrangements in words, lines, or paragraphs.

While in the common use the actual outcome of working with type is often referred to as ‘typography’ as well, ‘typography’ in this thesis refers to the process of working with text, not the actual artefact produced during this process, which is consistent with the definitions presented above. The outcome of ‘typography’, therefore, will be referred to in this thesis as ‘typographic outcome’ or ‘typographic design’. To simply refer to such outcomes as ‘text’ could be ambiguous: ‘text’ may refer to a piece of writing and imply a reference to its content only. Furthermore, in a visual arts context, any outcome of a particular media production, a book, a movie, or an advertisement that can be an object of study can be called ‘text’. A ‘typographic outcome’, on the other hand, refers to any sequence of letters, words or paragraphs that has been realised in a particular typeface or font, and arranged in a particular way. A ‘typographic outcome’ can, furthermore, be the *textual* part of any visual, designed object such as a sign, a printout, a book page, a poster, as well as an email displayed on a LCD screen or a title of a movie. Such a ‘typographic outcome’ is at the core of this research, regardless whether it exists as a physical object in a given surrounding or as a light pattern on a particular display medium - it is an object of experience.

The study of ‘typographic outcomes’ will no doubt include the terms ‘font’ or ‘typeface’. The words ‘font’ and ‘typeface’ had very distinct meanings in the days of metal type. The former (stemming from the British *fount*) is a set of characters of a given typeface in one particular size and style, while the latter is a set of fonts of related design, or a set of related styles, for instance bold or italic (Smeijers & Kinross, 1996). Today, when digital typography is commonplace, both terms, ‘font’ and ‘typeface’, are used interchangeably.

The term ‘audience’ is used in this thesis to refer to people who experience typographic outcomes. The traditional term ‘reader’ is not used in this respect, since, as will be discussed in the Literature Review chapter, traditional reading is more and more often replaced by either reading, viewing, or using of texts - the term ‘audience’ is meant to encompass all these possible roles.

It is true that the division between ‘producers’ and ‘audiences’ of a typographic artefact is less strong nowadays than in a historic context due to the proliferation of digital typesetting technology and its availability to the general public through the desktop publishing revolution in the 1980s. Despite of that, each of those artefacts still has a distinct creator and the purpose of appealing to a more or less specified audience; even though a consumer can easily become a producer of typographic outcomes nowadays, he or she still then designs for other people. Of course, a creator of a typographic outcome may want to be its only audience, but this thesis is meant to provide useful insights to people who produce

typographic designs professionally, and who create such outcomes for others, rather than for their own sake. Therefore, this research studies ‘audiences’ as separate entities from ‘producers’.

The ‘perceived quality’ in this study refers to the most immediate and graspable effect of visual aspects of a typographic outcome that audiences experience, at each encounter between them and such outcomes anew, often without such audiences being aware of the various influential factors that contributed to this effect. The framework proposed in this study aims to explain a multitude of such influences that make the audience perceive typographic outcomes in a certain way.

The following sections explain some additional influences that have further shaped this research. It should be stressed that the main grounding for this research comes from the problem statement described earlier, and confirmed by the gap identified in the literature review as reported in Chapter 2. These additional influences, however, have provided further insights on how this research should be conducted.

1.4 Additional Influences Shaping this Research

Three particular concepts that have further influenced the research described in this thesis are the notion of ‘phenomenological reduction’, as presented in Husserl’s ideas (Held, 1985, 1986) and Merleau-Ponty’s (2002) writing, the importance of inherited and cultural meanings ac-

cording to symbolic interactionism, as described by Crotty (1998), and the notion of intentionality (Sokolowski, 2000).

1.4.1 Phenomenological Reduction

The first concept that has influenced this research is ‘phenomenological reduction’. Phenomenology attempts to get to the immediate experience of objects, and reveal the ‘things themselves’, their essences, and the ways these things present themselves to us through such experiences. Sokolowski (2000) describes this aspect of phenomenology as a way of dealing with appearances, and how this leads to a radical form of self-reflection:

We can evidence the way things are [...] we discover objects [...] but also discover ourselves as those to whom things appear. (Sokolowski R., 2000, p.4)

Prior to uncovering essences or ‘real meanings’, however, we have to let go of boundaries and limitations that stand between us and the real meanings of our experiences. This process is called ‘phenomenological reduction’, ‘phenomenological bracketing’ or ‘epoché’ (Sokolowski, 2000; Moran, 2000; Held, 1985). It requires that we suspend our natural attitude, and adopt the attitude of an onlooker, a spectator of our own experiences. The boundaries in the natural attitude that prevent us from discovering the real meanings or essences include the cultures in which we are embedded and which already provide meanings to us: imposed, learned, or inherited understandings, preconceptions, and received notions. In imposing particular meanings on us, our culture excludes oth-

ers. We stop making sense of things ourselves - it has already been done for us. Where we should see, hear, and smell realities, what we see instead is a pre-imposed, already-existing meaning system. The ‘phenomenological attitude’, on the other hand, gives us means of ‘leading away’ from the imposed, and frees the mind, “*awaken[ing] a wild-flowering world*” (Merleau-Ponty, 1964, p.181).

To be able to get this fresh, unadulterated meaning of phenomena, people need to engage with the phenomena directly, and make sense of them immediately. They have to let the experience of the objects speak to them in the first hand, and let themselves perceive with their new ‘phenomenological attitude’, by intuition, and by opening their eyes (Crotty, 1998) - before they even start thinking about the objects in the way they were taught to. They should see the world, instead of seeing what they were taught to see.

These phenomenological concepts confirm the importance of this research, and suggest a possible approach to investigating the ‘typographic quality’ this research seeks to understand and explain. Years of education, the abundance of rules designers learn to follow, the multitude of encountered views and notions, the influences that famous typographers make - all of these have created the learned, inherited ways of making meanings, the ways that seem ‘sure and safe’ because they are considered ‘proper’ in the culture of designers. This research does not attempt to reject all the learned, inherited knowledge as ‘wrong’. Rather, it aims to uncover new meanings, beyond the ‘proper’ or ‘commonly accepted’

way - the educated typographer's way - to get a fresh look and see new meanings that blindly following the learned system may prevent designers from seeing.

The insights in this research, therefore, come from experiences of people who may have never read a typographic book, or have no knowledge of any typographic rules and what should be the 'right' way. Their 'naïve', unspoiled observations will hopefully allow me to re-assess the value of the assumptions and rules previously considered the only true meanings.

[...] Understanding the world as it is for another requires both a certain perspective and a certain level of critical distance in which the researcher steps back to reflect on the phenomenon [under investigation]. (Pollio et al., 1997, p.46)

I am aware that in my research, I will still need to use the same language and culture to talk about the newly discovered experiences and meanings - it would become a construction of a sense again, similarly to the one I want to break free of - but what I am hoping for is a reinterpretation, a new fuller meaning, and the creation of new directions and understandings of the quality of typographic outcomes I seek to enhance.

1.4.2 Inherited and Cultural Meanings

Another reflection that has influenced this research is Crotty's (1998) note on symbolic interactionism. This thesis does not claim to be based on all the underpinnings of this stance, but rather it is this one idea, put forward by Crotty, that has provided a useful reflection affecting this research. According to this author, symbolic interactionism embraces the importance of inherited meanings and the culture that is already in us, emphasising their influence as a "*meaningful matrix that guides our lives*" (Crotty, 1998, p.71). Symbolic interactionism seems to embrace culture and pre-imposed beliefs as a guidance in meaning creation, while phenomenology, as discussed earlier, seems to see it as a limitation in getting to the real experience. Reflecting on these two thoughts, I have come to realise that, while acknowledging the influence of phenomenology and Husserl's concept of reduction in terms of aiming to see beyond legibility rule-based typographic knowledge affecting designers' work, these existing values and beliefs are something that I should focus on in terms of audiences. Instead of judging whether their inherited and cultural influences are positive or negative in nature, this research will focus on the fact that these influences do exist, and they will influence readers of textual displays in the real world, whether it is desired by the creators of such texts or not. This research, therefore, aims not to judge such imposed, inherited, cultural understandings, preconceptions and notions of readers, but rather to understand them. They are the influences that will be identified, described, and explained to advance knowledge about what

shapes how typographic outcomes are perceived when people engage with them, and how to improve their perceived quality. These influences will exist whether it is desirable or not, and the readers and audiences will bring their belief systems and previous experiences to each new experience. This research, therefore, assumes that it is important to study these influences, so that creators of typographic outcomes and the design community in general can better understand the nature of such factors and how they shape the audience's subjective experience, and take those influences into account in their work.

1.4.3 Intentionality

This study is also influenced by the concept of 'intentionality' as found throughout the phenomenological literature (Sokolowski, 2000; Moran, 2000; Held, 1985). Every act of consciousness we perform, or experience that we have, is directed towards something - it is, phenomenologically speaking, 'intentional': we have 'consciousness of' something or we have an 'experience of' something. The phenomenological use of the word 'intentionality' is not a purpose we have in mind (as the practical use might suggest); rather, 'intentionality' in phenomenological diction describes the conscious relationship we have to an object (Sokolowski, 2000).

This phenomenological view of consciousness as being directed towards something opposes the Cartesian stance of consciousness being only the awareness of ourselves or our own ideas:

Consciousness is taken to be like a bubble or an enclosed cabinet [in the Cartesian tradition]; the mind comes in a box. Impressions and concepts occur in this enclosed space, in this circle of ideas and experiences, and our awareness is directed toward them, not directly toward the things ‘outside’. (Sokolowski, 2000, p.9)

Phenomenology breaks free from this bubble, and connects us with the world outside of the separating enclosure of our mind. Phenomenology breaks with the ‘egocentric predicament’ or the belief that all we can really be sure of is our own conscious existence and the various states of this consciousness (Sokolowski, 2000). Intentionality is the key for this new freedom and the living connection with the world ‘outside’. It leads to a view that we are beings in the world and we cannot be described apart from it, as well as the world cannot be described apart from us.

This realisation has inspired an important aspect of my research approach: any study of objects has to include the study of subjects who perceive these objects, with all the already existing meanings that affect this perception. A study of the ‘typographic outcome’ object cannot be undertaken without its ‘audience’, and, therefore, people and text have to be studied together. Phenomenology sees the objects as only being able to be studied through the subjects that experience them. At the same time, the subjects can only be studied through the objects they experience, and of which they are conscious. It does not describe experiencing subjects, but rather is in search of objects of experience (Crotty, 1998). The typographic artefact can only be meaningful, and its quality of experience comes to life, only when the audience engages with it; on

the other hand, the audience cannot experience typographic quality without specific objects with which they consciously engage in their 'lifeworld'. In this research, therefore, I aimed to study both people and typographic objects together at the moment of the actual experience, and visual research methods combined with interviewing seemed the most suitable choice to study such experience.

1.5 Personal Motivations for this Research

Apart from the main problem statement and additional philosophical influences that have shaped this research and have been described in the previous sections, this chapter also presents some personal motivations for this research rooted in my professional practice.

As revealed earlier, this research calls for a subjective study focusing on understanding people's experience, including their feelings, perceptions, and attitudes. As such, it is bound to involve a large amount of interpretations by the researcher. To make sure that I am still able to present trustworthy outcomes, my personal motivations are made explicit here. This allows me, the researcher, to be more aware of such influences during the study, and by being aware of them, making it easier to separate them from the subjects' opinions; additionally, it also makes the reader of this thesis aware of which personal attitudes may have influenced the outcomes of this study and adds to the study's trustworthiness (Creswell, 1998). This study is based on a number of systematic and rigorous procedures of data collection and analysis, discussed extensively in

Chapters 3, 4, and 5, that aim to minimise the influence of my own assumptions and motivations on the final outcomes that should emerge from data as much as possible.

1.5.1 The Old and the New in Typography

This research has been greatly shaped by a number of motivations that come from 20 years of my professional practice as a visual communicator /designer/typographer. In my career as a visual designer and typographer, textual information has been the main focus in designing content for audiences. My interest in typography was nurtured by the realisation that textual information forms the foundation, or an outline, for a majority of outcomes in the field of visual communication, in particular in the area of graphic design where I was educated in. This textual outline is subsequently extended by adding pictures or visual elements, spatially arranging a composition or a sequence of compositions (for example, pages in a book or frames in an animation or film).

Whereas the proliferation of digital technology in the typesetting industry during the 1980s has contributed to a decline of the graphic designer's 'typographic fluency', as described by Heller (2004), this technological boost has had quite an opposite effect on me. I grew up with digital typography, but I was eager to learn what had been before, rather than only accept what was provided by the new typographic tool, the computer. I learned to 'compose' with type rather than 'choose' a digital template. One of the issues that the new digital typographer had to face

was complying with the traditional rules of the field, while at the same time challenging these very concepts by using digital typefaces that were often not designed with these traditions in mind. Another more recent observation that I made during my increased involvement as visual designer in interactive projects was how much the texts we consume today mirror the changes we, as a society, are going through. Presently, the reading of a consecutive text can be found next to the scanning of Web pages for important information; the quick glance on a mobile phone display to ‘read’ a message can be found side by side with the ‘reading’ of typographic signs to orient ourselves in an urban environment. In this research, I was interested in developing a framework that would apply to both print and digital typography, and that would encompass a variety of reading behaviours, providing a holistic view that would span old and new ways of ‘doing’ and ‘using’ typography.

1.5.2 Functionality and Aesthetics in Typography

Just as I could appreciate the benefits of combining the two seemingly opposite experiences of being a digital designer who sat one of the last exams to become a skilled non-digital typographer back in 1997 in Austria, I have also come to understand the importance of bridging another apparent dichotomy in the typographic world. This includes the traditionalist view on the supremacy of functionality and visual clarity of text, as advocated by, for example, Beatrice Warde, Jan Tschichold, Kurt Weidemann, Erik Spiekermann or Jost Hochuli, and the intent of ‘revolutionaries’ to free typography of this supremacy in favour of aes-

thetics, as reflected in the works of Neville Brody, April Greiman, David Carson, or Zuzana Licko. I have gradually become more and more interested in how those seemingly opposing views can be combined to offer their best to an audience of typography, and this interest has led me to this holistic research that integrated such various approaches.

1.5.3 Designers' and Audiences' Perceptions

Throughout my years as a visual communicator/designer/typographer and later as educator in the same area, my attention has also been drawn to an increased delineation of the designers' perception of their work, and the audiences', readers', or consumers' perception of the same work. The explicitly expressed values of one's own design do not often seem to match the audience's expectations and needs, even though the line "*I am part of the target group [of my design work] therefore I know what is appropriate [in design terms]*" is commonplace amongst visual designers and students of visual design alike. I became interested in how designers' and audiences' perceptions can be aligned, and I hoped that this would benefit my own typographic practice but could also provide important insights for my profession of visual communication in general.

There have been some attempts to solve the problem of delineation between designers and audiences. One stems from the tradition of the 'reflective practitioner' (Schön, 1983), a design practitioner who can 'step out' of being engaged in a design activity and reflect on it from the outside with a fresh look. Another is the 'user-centred design approach'

found in the area of interaction design (Preece et al., 2002, 1994). Both approaches advocate an early engagement with end-users, either audiences, consumers, or, in the case of text, with readers. Both approaches try to bridge the gap that exists between the theoretical knowledge building process in academia and the practical attitude of ‘getting things done’. This dichotomy is referred by Snow (1959) as ‘two cultures’ - the practical and the theoretical, or, at a grand scale, humanities and sciences. The gap between theory and practice, and the extent to which the texts we read today do not reflect the knowledge available in a design practice as well as in academia, has encouraged me in this thesis project to look for practical implications that, to actually inform design in practice, must come from in-depth research with audiences of typographic outcomes, following a user-centred design approach and, therefore, aiming to help bring designers creating typographic outcomes back ‘in-line’ with typographic audiences.

This study, therefore, aims to gain insights into the audience’s experience of a typographic outcomes directly from the audience themselves, and to find out as much as possible about what makes them perceive typographic outcomes in certain ways - both good and bad. It also seemed important to offer to design practitioners some empirically derived and functional findings that would be clearly articulated and structured in a guiding framework and that could inform their everyday practice.

1.6 Shaping this Research - A Summary

The problem statement, additional influences, and some personal motivations that have been discussed in this chapter and that have shaped research questions, objectives, and approach in this study, are summarised below:

- the lack of studies on what influences the perceived quality of typographic outcomes apart from legibility rules; or, in other words, a lack of understanding or explicit discussion on complex constituents that influence audiences' typographic experiences;
- the gap in the typographic literature regarding qualitative studies that would explore people's attitudes and perceptions, and their experiences of typographic outcomes;
- the fragmentation of typographic research that often studies single factors in isolation;
- the concept of phenomenological 'reduction' to get a fresh understanding of typography for practitioners;
- reflection on the role of people's attitudes, cultures, learned notions, preconceptions, or belief systems on meaning creation, and the interest in understanding those that matter in typographic encounters;

- the concept of ‘intentionality’ that has led to the realisation that a study of typographic outcomes cannot be undertaken without their audiences (subjects) since the typographic experience is only created when the two interplay, each time anew;
- my view of typography as the basis of visual communication;
- my interest in encompassing traditional non-digital typography, new technological possibilities of type, and varied reading behaviours;
- my motivation to combine seemingly opposite views on function versus aesthetics in typographic outcomes;
- the problem of the delineation of designers’ and audiences’ perceptions of the typographic quality;
- the gap between academic research and typographic practice.

All of these have led me to undertake this research into the influences on the audiences’ perception of the typographic quality, a research that is meant to be as holistic as possible, encompassing all the complex constituents that shape such perceived quality, beyond legibility rules that, although important, only partially explain typographic experiences. This is also research to which results typographic practitioners - both traditional and digital - will hopefully be able to relate, and which will help to bring their understanding more in-line with audiences’ perceptions.

The study was conducted using visual research methods combined with interviewing to be able to study people and typographic outcomes that they are experiencing together. This research integrates the identified influences into a guiding framework, recognising the importance of interdependencies between them in forming a typographic experience. The framework also provides details within each of the influences to make findings more relevant and concrete.

1.7 Thesis Organisation

The following Chapter 2 reviews relevant typographic literature, and reveals how this particular research can fill the identified gap that has informed the problem statement in this study. The theoretical background is discussed in Chapter 3, including the epistemology, theoretical perspective, and the methodology.

Chapter 4 focuses on research design, presenting details of the various stages of this study. This includes the concepts of theoretical sampling and saturation as well as other details of data collection design. Data analysis procedures are also discussed in detail, including relevant examples from the studies conducted. The review of the photo-elicitation method follows in Chapter 5, synthesising examples from literature with my own observations. Finally, the outcomes are presented in Chapter 6 with rich illustrations and explanations, including comparison of findings to relevant literature. The final Chapter 7 presents the conclusions of this research, summarising its main findings and strengths, discussing

1. INTRODUCTION

the implications of this study for practitioners, and pointing out its limitations as well as future research directions.

2. Literature Review

After formulating the problem statement, the research questions as well as aims and motivations for this research project in Chapter 1, this chapter presents the results of an extensive literature review that synthesises existing findings in typographic research.

It is important to note here that Glaser and Strauss (1967), the creators of the grounded theory methodology that guided many aspects of the research design in this project, advise against performing a literature review in the substantive area before commencing a study. A literature review undertaken before a study can “*contaminate, constrain, inhibit, stifle, or otherwise impede the researcher’s effort to discover emergent concepts and hypotheses*” (Glaser, 1998, p.68).

It was impossible for me to follow this stance as the initial literature review was a traditional step in the degree that I was doing. This, however, proved not to be a problem in this particular study. As will be revealed next, the review has demonstrated a lack of research findings that would reveal what, apart from measurable legibility rules, constitutes additional

influences shaping the typographic experience; therefore, there was no relevant research that could restrict my open approach towards the data collected in this study.

2.1 Defining the Scope of the Review

Existing research on reading tends to focus on either legibility or readability. The former refers to the visual aspects of typographic outcomes, such as the appearances of type on a character, word, line and paragraph level as well as the spatial arrangements of typographic outcomes. Readability, on the other hand, refers to the understanding of a text and its content.

The Oxford Advanced Learner's Dictionary (2000) lists 'legibility' and 'readability' synonymously as "*clear enough to read (of written or printed words)*" (p.1053). A closer examination of the terms, however, reveals a distinction between the two. One of the experts in the field of legibility/readability research, Miles Albert Tinker (1963), refers to legibility as "[...] factors affecting ease and speed of reading [...]" (Tinker, 1963, pp.4); readability, on the other hand, was devised to "[...] measure the level of mental difficulty of reading material [...]" (Tinker, 1963, p.5).

In the 'Universal Principles of Design' (Lidwell, Holden & Butler, 2003) legibility is defined as "[...] the visual clarity of text, generally based on the size, typeface, contrast, text block, and spacing of the characters used" (p.124).

Although this description lacks several variables in terms of what influences legibility (as will be discussed later in this chapter), it associates legibility with visual factors. In the same book, readability is described as “[...] *the degree to which prose can be understood, based on the complexity of words and sentences*” (p.162). This points towards semantic relationships within a text and how readers create meaning from textual information.

In this thesis project, the two terms are used in that respect, ‘legibility’ referring to the visual aspects of typographic outcomes, the appearances of type on a character, word, line and paragraph level as well as the spatial arrangements of typographic outcomes, and ‘readability’ in reference to the understanding of a text and its content, based on its complexity.

The focus in this work is placed on legibility and its various influential factors, rather than understanding of content based on its complexity (readability), since the visual is the focus of typography first and foremost. Typography, and therefore this study, is mainly concerned with the visual clarity (legibility), which is what can be directly influenced by a typographic designer. Readability is rather the responsibility of the author of a text, in terms of making it clear to understand and, in this respect, is outside of the scope of this study. However, some visual aspects of legibility still may affect how 'readable' a text is, and how clear it is to understand, and these aspects are of interest in this particular study. This, for example, will be reflected in one of the factors of the presented framework, 'content', that may seem to be in the domain of readability studies. In the proposed typographic framework, however, this factor

deals with the impact that visual aspects of typography/legibility have on the understanding of content, for example, by clear visual grouping of related content.

The literature review in this chapter similarly focuses on legibility research only. It will also reveal the gap in the typographic literature in terms of qualitative research that would investigate people's attitudes and perceptions towards visual aspects of text. Such issues, the main concern of my study, have rather been the concern of readability research that, for example, examines cognitive factors affecting reading comprehension (Best, Rowe, Osuru & McNamara, 2005; Abu-Rabia, 1998; Samuels, 1983); this, as mentioned above, is outside the scope of this typographic study. This chapter will reveal a scarcity of qualitative studies in typographic legibility research. Lupton (2003) also points out that designers see legibility as the objective and readability as the subjective side of typographic experience. As will be revealed in further sections, a large amount of legibility research can be found in the literature, but it tends to focus on improving visual clarity using 'objective' and scientific measurements and other quantitative methods of inquiry to formulate rules of 'good' typography. My research will use qualitative methods, presently rather found in readability research, to study 'subjective' legibility influences, as discussed in Chapter 1.

The literature review is organised in four sections (see Table 1 below):

LITERATURE REVIEW sections 2.1 to 2.4	RESULTS	IMPLICATIONS for my study
<ul style="list-style-type: none"> typographic, rule-formulating studies that used quantifiable methods to improve the visual quality of texts (legibility) 	<ul style="list-style-type: none"> a large amount of established rules and guidelines from around five centuries of typographic practice 	<ul style="list-style-type: none"> provided the knowledge base which this study tried to extend with a wider range of less 'objective' additional factors that influence the perceived typographic quality
<ul style="list-style-type: none"> typographic studies that focused on attitudes and perceptions of people towards the visual quality of typographic outcomes using qualitative methods of inquiry 	<ul style="list-style-type: none"> very few studies, mainly focused on one aspect such as typeface personality 	<ul style="list-style-type: none"> less relevant since focused on designers' perceptions
<ul style="list-style-type: none"> studies and case studies that illustrate the changing nature of audiences' encounters of typographic outcomes, especially in the light of new technologies 	<ul style="list-style-type: none"> a vast number of examples that illustrate each of the particular encounters of a typographic outcome: reading, viewing, and using 	<ul style="list-style-type: none"> informed one aspect of the framework, division of the typographic experience into reading, viewing, and using
<ul style="list-style-type: none"> because of the lack of studies on experience constituents in typographic research, a review of such studies in a related field 	<ul style="list-style-type: none"> studies from the field of interaction design on the nature of user experience 	<ul style="list-style-type: none"> offered some perspectives on experience and its quality in general; most specific aspects, however, only relevant to interaction design; the few relevant ones employed in discussion of the outcomes in Chapter 6

Table 1 - The stages of the literature review and their implications for my study

The first and the most extensive section of this review synthesises quantitative, rule-formulating legibility studies and existing typographic guidelines stemming from design practice and knowledge gathered over a period of five centuries. A much smaller number of qualitative typ-

graphic studies follows in the second part. Even though my research aims to relate to the latter studies in a greater extent, beyond the limits of traditional scientific typographic research, it was still important to first establish and synthesise the base of such research. My original studies will build on this knowledge base and broaden it with a wider range of less ‘objective’ or measurable but still influential factors on the perceived visual quality of typographic outcomes.

The third section of this chapter will discuss an area that has not been extensively covered in scientific legibility research. It will discuss typographic outcomes that are mediated through and undertaken with an increasing amount of information technologies, and how this has affected the traditional ‘reading’ that is now, more and more often, also ‘viewing’ or ‘using’ of a text. This was of concern to this study since, as discussed in Chapter 1, this project aims to encompass the diverse developments and variations in ‘reading’ behaviour and the effect of technological enhancements on typographic design, as described in Chapter 1.

How people’s consumption of typographic design can be experienced as reading, viewing, or using was the only aspect of the typographic experience that I was able to synthesise from typographic literature and case studies. To the best of my knowledge, however, there were no studies in the field of typography that investigated the multitude of aspects that constitute audience’s experience of typographic outcomes. Therefore, I extended my literature search to related areas hoping for some relevant

perspectives; such studies were found in the field of interaction design and are outlined in the final section of this chapter.

2.2 Rules and Measures of Legibility in Typographic Research and Literature

Early legibility research tried to shed light on the reading process, employing tachistoscopic measurements of recognition thresholds (a visual stimuli, in typographic research characters and words, is presented to the viewer for a very short and furthermore increasing time span until the viewer can identify the stimulus correctly), distance and luminance threshold measurements (to research discerning of individual signs by changing distance or luminance for the participant), or the Luckiesh and Moss ‘Visibility Meter’ (a filter device that reduces the apparent brightness of an observed field while lowering the contrast between text and its background), to name just a few approaches (Paterson & Tinker, 1940; Tinker & Paterson, 1947, 1936; Luckiesh & Moss, 1938; Cattell, 1886).

Apart from research approaches described above, the knowledge of printers, designers and typographers who have worked with type for over five centuries is reflected in their handbooks about typography. Such handbooks are sometimes empowered by scientific measurements and sometimes enlightened by personal philosophies. The following is a sampling of both, with the aim to enhance an understanding of what influences legibility of typographic outcomes, an understanding that later will be extended through the original research with a number of additional factors that influence the perceived quality of textual designs.

2.1.1 From Character to Word Recognition

The complete alphabet of our western writing system consists of 26 uppercase and 26 lowercase characters. A font also includes non-alphabetic glyphs, such as figures, punctuations, pictograms, or accented characters, and, therefore, depending on language, 80 to 150 characters form a character-set or font. Around 70 characters (the complete alphabet of upper and lowercase letters, figures and punctuations) need to be identified as distinct entities when deciphering a written text.

THE READING PROCESS

Although one can identify all visible signs as single characters, reading consists mainly of a decoding of combined characters. While reading, there is no discrimination of single characters, and, as observed by the legibility researcher Wendt (Karow, 1994), it is rather a process of recognition of words and word groups and their overall shapes. According to Wendt (1971) who based his findings on Tinker (1963), one of the most productive scholars in legibility and readability who conducted research for over half a century, the human eye leaps across the printed text in so called ‘saccades’ or ‘saccadic’ movements of more than 8 or 9 characters (see Figure 1 on the following page). It stops for a period of 1/4 or 1/3 second to register the text and then moves on to the next fixation point. Subconscious backward jumps, called ‘regressions’ occur, supposedly to reassure registering of correct words and word groups. Generally speaking, the number of ‘fixations’ and their length in time, as well as the number of ‘regressions’, are indicators of how legible a given

text appears. Wendt concludes that therefore “[...] contours of whole words contain significantly characteristic shapes” (Karow, 1994, p.272), enhancing the deciphering process.

This example shows, how the eye leaps in so called “saccadic movements”, across a written text. Circles imply stops during “fixations”, dashed lines illustrate the forward movement of the eye, back jumps (lines) mark so called “regressions”.

Figure 1 - Schema of the reading process according to Wendt (Karow, 1994).

Tachistoscopic measurements of recognition thresholds by Cattell (1886) or Paterson and Tinker (1929a, 1932b) informed Wendt’s findings, reported by Karow (1994), that concluded that since exposure time for word recognition is not the sum of the time required for character recognition, overall word or word group shapes are registered as wholes rather than as individual character shapes (Karow, 1994).

The view that we recognise word shapes while reading is a reoccurring theme in legibility research, but it is also a view that is critically opposed. Larson (2005), for example, acknowledges word shape recognition as a viable model, but puts forward an alternative model - the ‘Parallel Letter Recognition Model’ - which has been increasingly popular amongst psychologists and cognitive scientists (Larson, 2005). This model states that individual letters in a word are recognised simultaneously and that this information is used to identify the word of which they are part. Recog-

nising the features of the individual letters, such as horizontal lines, diagonal lines and curves, is the first step of processing. In each level, as shown in Figure 2, a so-called activation is sent and the possible outcome with the most activations is the final outcome of this recognition process.

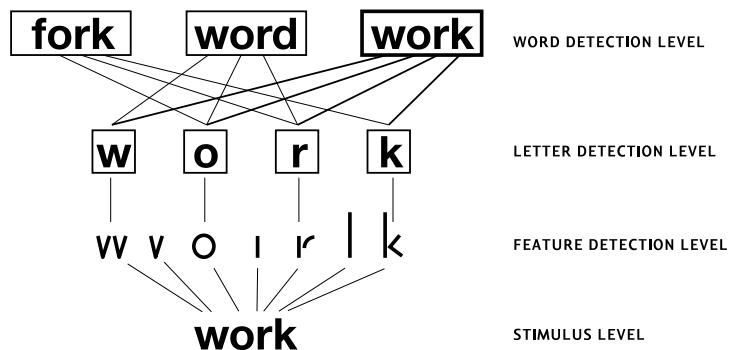


Figure 2 - The Parallel Letter Recognition Model as summarised in Larson (2005)

The ‘Parallel Letter Recognition Model’, even though proposed as an alternative to them, is in fact compatible with eye movement studies and the schema of a reading process shown in Figure 1. It also finds support in the literature and numerous research projects (Shillcock et al. 2000; McCusker et al., 1981; Healy, 1976). Nonetheless, the ‘Parallel Letter Recognition Model’ stands in strong contrast to an idea that is extremely popular in typographic circles (Carter, Day & Meggs, 2007; Perfect & Austen, 1992; Rehe, 1974) that states that we recognise words rather than letters, or the so called ‘bouma shape’ of words as wholes. The ‘bouma shape’ will be discussed in a later part of this chapter. What seems to support the ‘Parallel Letter Recognition Model’ rather than a model of ‘learned’ word shapes that are recognised as wholes, is the fol-

lowing example that seemed at first sight an internet hoax, circulated in September 2003 via the World Wide Web (Davis, 2004).

**Aoccdrnig to a rseerach at Cmabrigde Uinervtisy, it deosn't
mttaer in waht oredr the ltteers in a wrod are, the olny
iprmoatnt tihng is taht the frist and lsat ltteer be at the rghit
pclae. The rset can be a toatl mses and you can stil raed it
wouthit porbelm. Tihs is bcuseae the huamn mnid deos not
raed ervey lteter by istlef, but the wrod as a wlohe.**

Figure 3 - Example of significance of letter positioning in word recognition based on Davis (2004)

The original research described in the example in Figure 3 was undertaken in the 1970's at Nottingham University (not in Cambridge as asserted) by Graham Rawlinson (1976) and extensively discussed by Matt Davis (2004), a member of the Cognition and Brain Sciences Unit at Cambridge University/UK. The example shows that a reliance on the 'bouma shape' of words in terms of deciphering is not sustainable, and it stresses the importance of individual letter shapes rather than word shapes in regard to legibility of typographic outcomes.

LETTER BEING

There is a uniqueness about a single character that makes it distinguishable from other characters. The clearer this distinction becomes, the easier it is to identify characters, and therefore, words that include those characters. Examining character shapes closely, McGraw, Rehling and Goldstone (1994) proposed to break them into roles which are "*[...] ideas about what the acceptable bounds for letter-part shapes are, how far such shapes*

can be stretched before they lose their interpretation, and how they interact with other roles to form a complete object" (McGraw et al., 1994, p.613). McGraw et al. (1994) describe, for instance, the letterform 'a' as not just a shape, rather than a web of abstractions that make up the idea of an 'a': "*In one common form, the concept lowercase 'a' can be thought of as a marriage of two smaller ideas: 1) the idea of a curved umbrella-handle-like bar on the right, and 2) the idea of a small c-like curve nestled below the umbrella-handle*" (McGraw et al., 1994, p.613) (see the first glyph in Figure 4). As McGraw et al. (1994) point out, referring to Palmer (1978), such structural units are recognised as utilitarian for visual processing.

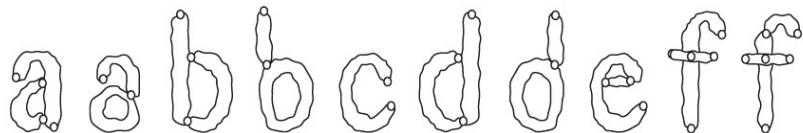


Figure 4 - The concept of roles (McGraw, Rehling & Goldsone, 1994) in defining 'letter-ness'

Although these 'roles' are concepts in their own right, without given boundaries or fixed shape, they form the basis of what might be called the essence of letter-being, or the likeliness that one can identify signs as readable and distinguish them from mere symbols without alphabetic meaning.

Combining McGraw et al.'s (1994) ideas of 'roles' with Sanford's (1888) research and Tinker's findings (1963) that different typefaces indeed differ with respect to their discriminability of character shapes, one can presume that the 'roles' implied in those typefaces are stretched in form, position and interaction with other 'roles' and, therefore, lose/gain the

ability to establish enhanced legibility. Presumably, the clearer the ‘roles’ are established and subconsciously registered, the more legible a typeface must be.

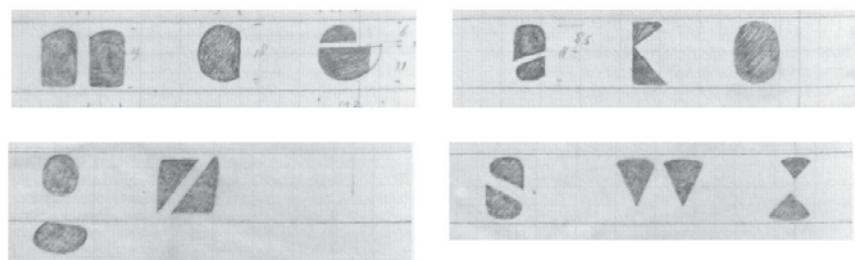


Figure 5 - Fred Smeijers's (1996) basic counters of roman lowercase characters

The breaking down of characters into ‘roles’ was basically intended as a means to make handwriting legible for machines (McGraw et al., 1994). Typographers too tried to identify the essence of letter-being, but breaking down letters into constituent parts was not their approach. Adrian Frutiger (1999) emphasised the importance of the inner contour of letters, the so called ‘counters’, rather than the outer form, as has been emphasised in ‘roles’. ‘Counters’ (as shown in Figure 5), establish good legibility if they are wide and open, and their form already suggests the letter they are part of (Frutiger, 1999). Earlier in history, emphasis upon the counter of a letter rather than the outline was used by punch cutters to craft well formed, legible character shapes (Smeijers et al., 1996). The following figure shows the basic counters (inner forms) of the roman lowercase character set (Smeijers et al., 1996, p.110).

The English typographer and printer Eric Gill (1936) acknowledged very early the existence of some kind of ‘norms’ that demonstrate “*precisely what constitutes A-ness*” (p.46). In the drawing of the experimental ‘A’-shape-variations (shown below in Figure 6), the counter plays a major role in establishing the form that is known as an ‘A’ to the reader.



Figure 6 - Eric Gill's (1936) experimental 'A'-shape variations

Everybody thinks that he knows an ‘A’ when he sees it; but only the few extraordinary rational minds can distinguish between a good one and a bad one, or can demonstrate precisely what constitutes ‘A-ness’. When is an ‘A’ not an ‘A’? [...] It is clear that for any letter there is some sort of norm. To discover this norm is obviously the first thing to be done. (Gill, 1936, pp.45)

Similarly, Jan Tschichold (1965), a German scholar and typographer, mentioned the importance of counters for legibility in his later writings. During his earlier engagement in the Bauhaus movement, however, when he published his ‘New Typography’ (Tschichold, 1928) he became known for, Tschichold opted for functional geometrically shaped letter forms including less distinguishable counters. Bauhaus typefaces were constructed out of a set of basic geometric shapes, and legibility was not of concern. At this time, the notion of sans serif typefaces (explained later in this chapter) as functional and modern was formed, whereas serif

typefaces were regarded as classic and old-fashioned. Interestingly, Jan Tschichold (1965, 1991a, 1991b) turned his back on his ideas on a ‘New Typography’ (Tschichold, 1928) later in his career.



Figure 7 - Writing on Walls can be sometimes disturbing for the viewer: what seems to constitute words are just signs, without alphabetic meaning

Writing on Walls - Graffiti Tags, 2002, (Archive of the author)

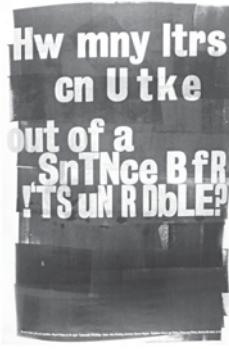


Figure 8 - The ‘How many letters ...’ experiment
inooooooooooooooooooooooo
ooooooooooooooooooooooo
ooooooooooooooooooooooo
oolegibility reflects the current state of graphic design:
to stretch boundaries and
question the relationship
between form and content

Henrik Kubel, 1998, ‘How

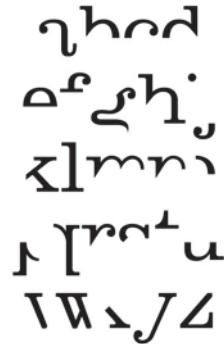


Figure 9 - ‘Can you (read me)’ How far can a letter-shape be reduced to be still recognised as a character - where is the essence of a character that defines its ‘letter-ness’?

Phil Baines, 1991, Typeface ‘Can you (read me)’, released on ‘Fuse 1 - Invention’, Fontshop Berlin/GER

Today, registering of single characters with clear ‘roles’ and distinguishable ‘counters’ is not an easy task. Recent developments in typography - and examples are numerous, as pointed out in Anna Gerber’s ‘All Messed Up’ (2004) and presented in Figures 7, 8 and 9 above - show that our visual landscape regarding letter forms has changed towards an almost anti-reading approach. Implied ‘roles’ have been distorted and stretched, and typographic designers engage in testing the boundaries of how much of the formal aspects of a typographical outcome can be elimi-

nated to still maintain some of its legibility, as demonstrated in the figures on the previous page.

A similar observation was made by Kurt Weidemann (1994) reflecting on our visual environment:

Graffiti-sprayer invent signs. But those signs do not signify words anymore. The Post-Alphabet found on trains, in railway stations, walls and surfaces, under- and overpasses, offers annoyance to some, beauty to others, and represents the need for expression for those without words.

(Weidemann, 1994, p.20 - translated by the author)

Acknowledging the fact that the typographic environment nowadays needs deciphering on a very basic level, distinguishing between alphabetic and non-alphabetic signs, one can sense the importance of legibility research and practice in this respect. The earlier examples (Figures 7, 8 and 9) show that today, more than ever, boundaries in letter perception are part of the design discourse and the daily practice of creators of visible displays.

The essence of a character lies in its uniqueness compared to other characters in a system of signs. Whether the character is broken up into ‘roles’ or into ‘counters’ to represent it, a legible typeface has to acknowledge both positive and negative form, character shape and enclosed space, as well as its formal relation to other characters in the same system of signs or font.

2.1.2 Typographic Influences on Legibility

FORMAL ASPECTS OF CHARACTERS

Many formal factors have to be taken into account when text is treated typographically from a designers' point of view. The first legibility factor that operates on the function of 'roles' and 'counters' is the **x-height**, the height of a lowercase letter without ascenders (parts that extend above the height of a lowercase 'x') or descenders (parts that extend below the baseline of a lowercase 'x'). The x-height conveys the visual impact of the type size; the larger the x-height, the bigger a typeface appears to be. A large x-height renders letter shapes and especially counters clearer than a small one. The following example will clarify the function of the x-height in a given typeface: both of the font examples shown in Figure 10 are the same size (48 points or approximately 18 mm). The example text set in Helvetica (left) appears to be larger than the text set in Centaur (right), because of the different x-height. A higher x-height also helps to establish larger, clearer counters, and, therefore, influences legibility positively.



Figure 10 - The x-height as influential factor in rendering clear characters exemplified by the font Helvetica on the left and Centaur on the right

The type size was identified as a legibility factor as early as 1886 by Griffing and Franz (Tinker, 1963) and in the speed of reading tests performed by Paterson and Tinker (1929a), the sizes 10 to 12 points (1 point = 0,376 mm) were confirmed to be of ‘optimal legibility’ in a printed text.

Nonetheless, these measurements cannot be transferred without caution across typefaces. If, as shown in the example on the previous page (Figure 10), Helvetica and Centaur are of the same measured type size, the visual impression of subjective size is quite different, depending on the x-height of the typeface in question.

In addition to the x-height, establishing clear ‘letter shapes’ and ‘counters’ is determined by the **weight** of characters or the thickness of the character’s main strokes.

The impact of stroke thickness is twofold:

- a) a thin stroke lessens the ability to establish clear ‘roles’ and ‘counters’ (see the character ‘a’ and ‘e’ in the Centaur-example in Figure 10);
- b) a thicker stroke, on the other hand, establishes ‘roles’ but reduces ‘counter’ sizes (see Eric Gill’s ‘A’-shape-variations in Figure 6 on page 40).



Figure 11 - Examples of different weights and widths and their influence on counter shapes

The weight balance of strokes is another important issue for typographers. In Figure 11 above, it is demonstrated (from left to right) that ‘Helvetica medium’ establishes the counter clearly, whereas ‘Helvetica ultralight’ and ‘Helvetica black’ (both set in the same type size) as well as Bodoni, with its extreme stroke variations, are less successful in defining an inner contour. ‘Helvetica ultra compressed’ (the right-most letter in Figure 11) is likewise less successful in rendering proper counters and, therefore, less successful when it comes to deciphering of characters.

Therefore, both extremes, bold fonts or thin fonts, as well as large differences in stroke thickness within typefaces, result in less legible characters. The same principle applies to the character **width**. Both extremes, a wide (extended) font and a narrow (compressed) font, obscure letter shapes and counters, stretching them and finally rendering them less legible.

SPACES WITHIN AND AROUND CHARACTERS

Every character in a font inhabits its own horizontal space. There is a distinct space before and after the character shape that separates it from

the adjacent shape. The space is predetermined by the type designer in the first instance (normal spacing), although it can be changed to a loose (or open) setting, or to a tight or very tight setting (to an extent where letter shapes begin to touch each other).

Typograph 1999

Typograph 1999

Figure 12 - Kerning pairs that help to form coherent entities to enhance legibility

Not only the space within a character, but also the space between characters is crucial to establish each shape as distinct, but at the same time, as part of a coherent entity, a word. Normal **character spacing** is the optimum set by the type designer, as mentioned above, and it is designed to work with a number of different characters in combination. Typographers distinguish some crucial character combinations (or ‘kerning pairs’), where character spacing is or should be adjusted. An example of such an adjustment can be seen in Figure 12. The first line shows two unadjusted character pairs (‘T’ and ‘y’, and ‘1’ and ‘9’). Adjusting the spacing between - or **kerning** of - the characters as shown in the second line helps to establish coherence between single characters to form a word.

If spacing is changed to a loose or open setting, it can make characters appear as entities instead of words (Figure 13 on the next page) or, on the other extreme, if spacing is set too tight, it can make words appear as single signs, where letter shapes and counters interfere and, therefore,

make it harder to be recognised as such. In the first part of the line in Figure 13, characters tend to break into individual shapes, slowing down the deciphering process; the middle part shows normal spacing, with characters forming words, and words visually separated from each other; the last part, on the other hand, presents words where characters are set tight, which decreases legibility. Character combinations at the end of the line in Figure 13 form entities which are unknown to the eye of the reader, as for instance ‘r’ and ‘m’ in the following example.

s i n g l e c h a r a c t e r s n o r m a l s p a c i n g h e r e t i g h t e r f o r m s n e w s h a p e s

Figure 13 - Example of loose, normal and very tight character spacing

This practical knowledge of spaces in and around characters in typography can be compared to Wertheimer’s ‘Gestalt’-Principles (1923) - in particular, the principle of closeness, where adjacent visual entities are seen as a whole, as a ‘gestalt’, rather than as separate visual entities.

THE BOUMA SHAPE OF WORDS

The analysis of words and word groups - starting with Cattell’s (1886) tachistoscopic measurements of recognition thresholds, Patterson and Tinker’s early work (1940), or Koler’s findings reported in Rehe (1974) - formed the notion that the upper half of characters in general is more significant for recognition than the lower half. It was proposed that the upper half of characters shows a greater variety of letter shape characteristics than the lower half and is, therefore, easier to be recognised. Given the fact that one analyses a text set in mixed cases (**upper and low-**

ercase letters), the upper half of a word is definitely more definitional in terms of form, as can be seen in Figure 14. The conclusions of several legibility researchers (Javal, 1878; Breland & Breland, 1944; Paterson & Tinker, 1946; Hvistendahl, 1961) confirm these findings - words set in uppercase letters only are less legible than texts set in mixed upper and lowercase letters.



Figure 14 - Significance of the upper half of letters in word recognition

Since this research was based on reading speed tests, it was criticised for not being accurate since reading speeds are higher for text in upper and lowercase as readers are more proficient and familiar with this kind of typographic outcome (Kolers & Perkins, 1975). The realisation of a more effective recognition of text set in lower case letters rather than in upper case only was subsequently linked to studies conducted by Bouma (1973).

Bouma (1973) presented strings of characters and whole words to subjects away from the fixation point, the point where the eye stops during the process of reading to take in visual stimuli, and measured their ability to identify the first and last letters (Larson, 2005). After extending this research to characters in the middle of the string, Bouwhuis and

Bouma (1979, p.22) concluded that “[a] word shape [...] might be satisfactorily described in terms of the letters in their positions”. The term ‘bouma shape’, as the outline of a word (see Figure 15) and described earlier in this chapter, came into being and is associated with the effect of words being recognised easier than individual characters.

bouma shape

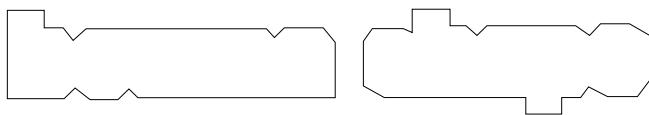


Figure 15 - The ‘bouma shape’ - word recognition vs. character recognition based on Larson (2005)

The assumption that word recognition can be solely based on the ‘bouma shape’ has been criticised (Larson, 2004; Papazian, 2005), as mentioned earlier, since research has shown that recognition and identification of words is based on individual characters, as described earlier in the Parallel Letter Recognition Model and supported by research conducted by Seidenberg and McClelland (1989), Plaut, McClelland, Seidenberg and Patterson (1996) or McClelland and Rumelhart (1981). Although, as Larson (2005, p.10) concludes in his work, “*it is hopefully clear that the readability and legibility of a typeface should not be evaluated on its ability to generate a good bouma shape*”, it has to be questioned that such research will find dissemination in typographic circles, since the ‘bouma shape’ is still widely quoted as the recognition model in typographic literature (Carter, Day & Meggs, 2007; Perfect & Austen, 1992; Rehe, 1974).

The prevailing assumption is that the upper half of letters plays a major role in a deciphering process - based on early research (Javal, 1878; Breland & Breland, 1944; Paterson & Tinker, 1946; Hvistendahl, 1961) and, from a typographical point of view, it can be said that text set in uppercase letters only is less legible because of less variance in character shape.

LINES OF WORDS AND PARAGRAPHS

Apart from the negative enclosed spaces, or counters, and the negative spaces between characters, spacing or kerning, one has to take the word spacing into account when analysing the legibility of a typographic outcome. Referring to Wendt's reading scheme (1971), to ensure that registering of proper words and word groups can take place during the reading process, the spaces between individual letters and the spaces between individual words must be balanced properly, so that they can be distinguished. Distinguishable letter shapes and counters help to identify characters, proper character spaces and word spaces help to register entities to be deciphered as words and word groups (Wendt, 1971).



Figure 16 - Letter spacing and word spacing responsible for establishing proper words or word groups for deciphering

Normal spacing can establish words and, at the same time, maintain an even distribution of negative space within these words (see the second line in Figure 16), while characters appear as singled out in the first line. Tight setting, as seen in the last line in Figure 16, creates new and unknown negative spaces (as indicated in the figure). Where negative spaces of single characters clash and irritate readers, legibility is affected negatively. When:

- a) ‘regressions’ (Wendt, 1971) occur too often, supposedly to reassure registering on a character level (for unknown overall shapes), or
- b) slower forward jumps are used when proper registering of words or word groups cannot be established successfully, or
- c) even character by character deciphering has to take place,

it is very likely that too many unknown shapes, too similar shapes or new shapes generated by overlapping counters and single letters are encountered by the reader which is, in turn, a result of disregarding the hierarchy of spaces within a line of text.

A line of text, however, is not only influenced by spaces between letters and words, but also by **line length** and vertical **line spacing**. Jumping from line to line in a text generates a pause, and every jump bears the risk of missing the next line. This phenomenon, for example, can be observed when someone learns to read; following the line with a finger helps to hold a line and to find the next one to jump to.

In terms of short lines, line jumps occur quite frequently. Reading, a learned process of left to right movement (in western cultures), transforms into a vertical movement with minimal left to right changes when lines are short. This should not make any significant difference to legibility; it is, as Tinker (1963) points out, the reader's preferences which have to be considered. According to his studies, “[...] *relatively long and very short line widths are disliked*” (Tinker, 1963, p.86).

The following examples (Figure 17 and Figure 18) of two paragraphs should illustrate two different extremes in line length. The two paragraphs show the maximum line length of 80 to 90 characters and a very narrow column with less than 25 characters in one line. One can experience the change in eye movement from a classic (in western civilisations) horizontal left-to-write to a vertical top-to-bottom direction.

Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write changes when text is set in a narrow column. This should not make any significant difference to legibility; it is, as Tinker points out, the readers preferences, which have to be considered.

Figure 17 - Long lines producing a left to right reading direction

Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write changes when text is set in a narrow Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write changes when text is set in a narrow

Figure 18 - Very short lines producing a vertical movement (top to bottom)

Some interdependencies can be observed concerning the line length of a text (Paterson & Tinker, 1932b, 1929a). There has to be a distinction between absolute and relative length of a line. A line with 80 characters set in a 12 point text typeface is obviously longer than a line set in an 8 point text typeface. In this respect, Tinker (1963) found out that smaller texts can be assembled to longer lines, without decreasing legibility. On the other hand, the point where legibility suffers is when line lengths are

hitting the 160 mm mark (Tinker, 1963). The visual focus while reading shifts from left to right, and the next line slips into peripheral vision, which makes it harder to jump to it when changing lines. The optimal relative line length is set around 80 characters as an upper limit (Jury, 2004; Rehe, 1974; Tschichold, 1965; Tinker, 1963; Paterson & Tinker, 1929a), which equals approximately 160 mm using a 12 point Times Roman (typeface).

Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write

Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write changes when text is set in a narrow column. This should not make any significant difference to legibility; it is, as Tinker points out, that readers preferences, which have to be considered.

Figure 19 - Longer lines needing more line spacing

In addition, several practitioners (Turtschi, 1995; McLean, 1980; Tschichold, 1965) remarked that longer lines need increased line spacing to maintain optimal legibility (see Figure 19 above). The minimum line length is to be found around 35 characters for two reasons: one is the already mentioned preference of readers while reading, and the other one is the **alignment** of the text.

Text, which is aligned left (flush left), can be set with proper character spacing and word spacing. Each line has a different length, and the play of different line lengths makes a column vivid and interesting. Sometimes text lines are set centred or aligned to the right. Both alignment types are not found very often and have their special use; centred text for instance is found in poetry, using the line as an additional structuring

device for intonation and expression for the text's content. The fourth alignment type is justified text. Here the lines are of the same length throughout, disregarding the number of characters used in each line. The space left at the end of the line of text set 'flush left' has to be distributed evenly throughout the length of the justified line (as seen in Figure 20 below). This can either be done by increasing word spacing or letter spacing. To make the lines of a paragraph the same length, spaces can be decreased as well, again either in between words or characters. Generating well justified text is an art of adding and deleting space where it is less obvious and disturbing to a reader. In Figure 20, line 1 needs more space in between words, and because the line is very short, the typographer had to add letter spacing too. In the same example (Figure 20), line 3 will be brought to the same length as line 2 by decreasing word spacing - this carefully applied technique produces text without influencing legibility negatively.

Reading, a learned process of left to right movement (at least in	Reading, a learned process of left to right movement (at least in
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Figure 20 - The process of justifying text

The shorter a line, the less character and word spaces are available to distribute additional space or regain empty space. According to optimal character and word spacing, this situation leads to decreased legibility. In American-influenced regions, letter spacing in a text block is quite common; this practice, however, is considered as unprofessional amongst

typographers in continental Europe (Turtschi, 1995). That is why a minimum of 35 characters should be considered as minimum line length because there will be still enough words (and, therefore, word spaces) to distribute empty space to adjust the line in length to match all other lines in a justified column. Although it is still hard to justify text with a minimum of 35 characters without changing letter spacing, a typographer with continental European background and a devotion to fine typography would rather leave some lines flush left (left aligned) than to apply visible letter spacing (see Figure 21, left column, lines 6 and 9). A typographer with Anglo-American influence would possibly use letter spacing to keep consistent line lengths (see Figure 21, right column, lines 6 and 9).

Reading, a learned process of left 1 to right movement (at least in the 2 western world), transforms into a 3 vertical movement with minimal 4 left to write changes when text is 5 set in a narrow column. This 6 should not make any significant 7 difference to legibility; it is, as 8 Tinker points out, that readers 9

Reading, a learned process of left 1 to right movement (at least in the 2 western world), transforms into a 3 vertical movement with minimal 4 left to write changes when text is 5 set in a narrow column. This 6 should not make any significant 7 difference to legibility; it is, as 8 Tinker points out, that readers 9

Figure 21 - Visible letter spacing avoided (left) and applied (right)

Cultural differences aside, overall different letter spacing applied in one text block makes the deciphering process harder - the reasons can be found in the previous sections about the balance of letter and word spacing.

The last parameter in assembling a block of text or a paragraph is line spacing (line increment), sometimes called leading.

In typography much is concerned with a proper hierarchy of empty space. As discussed earlier, characters need different horizontal spaces and the spaces between them are crucial for letter recognition. In a way, this space has to be subordinated to word spaces, which allows the reader to establish proper words in a line of text. The same hierarchical principle applies to line spacing. To form a line, the space between two lines has to be perceived as larger than the spaces between words, which, in turn, must be larger than the space between single characters.

In the following Figure 22, this hierarchy of spaces (letter spacing - word spacing - line spacing) has been disregarded with the effect that legibility is diminished. The establishing of words and lines is harder since the spaces do not form the natural deciphering hierarchy of letter-word-line; words and lines cannot be easily established with spaces disregarding their proper place in such a hierarchy.

Reading, a learned process of left to right movement (at least in the western world), transforms into a vertical movement with minimal left to write changes when text is set in a narrow column. This should not make any significant difference to legibility; it is, as Tinker points out, that readers preferences, which have to be considered.

Figure 22 - The hierarchy of spaces - letters before words before lines - disregarded

This typographic knowledge is reflected through and informed by studies conducted by the researchers Paterson and Tinker from 1929 onwards (Tinker, 1963; Paterson & Tinker, 1940, 1932b, 1929a; Tinker &

Paterson, 1935, 1931a, 1931c). If lines are set too tight, the reader cannot establish one line as entity; it also makes it difficult to locate the proper next line in a text. When the lines are set too far apart, jumping to the next line can be hard, the distance for the eye to travel is increased, and the lines do not form a proper entity; a text block or paragraph is not perceived as meaningful unit. The line jump will result in a more time consuming search, a pause in reading the text will occur, and continuous text apprehension will, therefore, suffer.

The subjective letter size perception influences line spacing as well as line length. As mentioned above, longer lines need more spacing, while shorter lines need less, presuming that lines can be properly formed in the hierarchy of empty space interdependencies.

To sum up, it has been established so far that the form of a character is important for distinguishability and deciphering. Although this seems to be crucial, research has given the spaces between characters, word spacing and line spacing importance, too (Tinker, 1963), forming a hierarchical system of empty spaces surrounding the characters' outer shape and inner counter. These influences are applicable to typographic outcomes regardless of its medium - research in screen media does not yield different results in terms of the influences identified above.

The following section will discuss characteristics of typographic outcomes that have been identified as being different for actively light emitting media (such as screens) in comparison to passively light reflecting media (such as print). One of the most prominent questions in

this respect is the question of whether serif or sans serif typefaces are more legible in print or screen environments.

SERIF VS. SANS SERIF

One of the main features of typographic outcomes is the presence or absence of serifs. Serifs are small ‘feet’ at the ends of letters (Lidwell, Holden & Butler, 2003) grown from the tradition of carving letters into stone. These serifs had practical implications (the stone could not break further if a stem was ended with a 90 degree stroke) as well as aesthetic value. One of the oldest and most beautiful engraved serif typefaces, according to many typographers (Bringhurst, 2002; Willberg & Forssman, 1997; Tschichold, 1991a, 1991b; Aicher & Rommen, 1988), can be found on the Trajan column in Rome. Nonetheless, serifs have been the topic of ongoing discussions in terms of their influence on legibility.

Serif typefaces span a 500-year-old tradition. Stripped from all practical use since they migrated from being carved to being printed or drawn, serifs form an aesthetic feature of fonts. Until the 18th century, serif typefaces were standard in print, when finally the first non-serif font was introduced (Tschichold, 1991b). Because the new form without serifs was such a novelty and a harsh break with tradition, these fonts were called ‘grotesque’. The term ‘grotesque font’ is still used nowadays synonymously for sans serif fonts (Tschichold, 1991b).

In terms of easing character recognition, the serif definitely adds to a character and makes it unique and distinguishable. In Figure 23, the

difference between a lowercase 'l' (left) and an uppercase 'I' (right) cannot be properly established with a sans serif font, whereas the serifs give the required hint for proper registration.

In terms of legibility, serifs perform several functions identified by researchers and typographers alike:

- serifs add a stroke variation to the font in question, and a page set in sans serif has uniformity and evenness of 'typographic colour' and therefore "*looks monotonous and unattractive to the eye*" (McLean, 1980, p.44);
- serifs help form the baseline and, therefore, help in holding the line while reading (Turtschi, 1995);
- serifs add character to fonts, and help to make individual characters distinguishable and unique (Robinson, Abbamonte & Evans, 1971).

Although these criteria suggest a better legibility of serif typefaces, this cannot be confirmed by research findings. An overall consensus in typographic circles is that sans serif fonts have, generally speaking, more significant features to support good legibility, including more elaborated forms, stroke differences, large x-heights and open counters. On the other hand, they stand independently within a word, very much like uppercase letters (Jury, 2004). The question of legibility seems, in general, not to be dependent on serifs rather than on other factors, for instance,



Figure 23 - differentiation between a lowercase 'l' and uppercase 'I' for a serif and a sans serif font.

type size or spacing, and research generally acknowledges this (Stone, Fisher & Eliot, 1999; Weissenmiller, 1999; Gould, Alfaro, Barnes, Finn, Grischkowsky & Minuto, 1987a). Where researchers certify increased legibility for serif typefaces for printed matter (Watzman, 1992; Stone et al., 1999; Tinker, 1963), they ground this finding in individual taste rather than objectified test results. One reason for poor legibility of serif fonts on screens can be subject to resolution issues in on-screen media; low pixel resolution renders serifs an obscuring feature of a font rather than a defining one, which might be less relevant nowadays with higher resolution screens.

MONOSPACED CHARACTERS

In print typography, every character has a given space to inhabit depending on its width, meaning that an ‘m’ needs more horizontal space than an ‘i’ and so forth. Consequently, characters could ‘melt’ into words quite easily to support legibility. On the other hand, the mechanics of a simple typewriter could not deal with these ‘variable character width’ fonts. For typewriters, a special breed of type has been invented: the fixed character width typeface or monospaced character typeface. Characters were designed to inhabit the same space (an ‘m’ used up the same amount of space compared to an ‘i’), and, therefore, character shapes had to be slightly distorted or squeezed/stretched into their new width (Friedl, Ott & Stein, 1998).

This technique is also used for other display techniques such as low resolution electronic screens, where character shapes have to be gener-

ated out of a limited number of raster points or elements. This interference with character shapes influences legibility negatively (Beldie, Passtoer & Schwarz, 1983), although the examples in Figure 24 show that it does not necessarily mean a visually less engaging form. The problem of monospaced letters is a mechanically imposed restriction, very much like screen resolution (as seen later in this chapter). Although this display technologies are more or less outnumbered by today's screen technologies, they still exist, especially in mobile devices (phones) or readouts and smaller displays.



Figure 24 - Monospaced typefaces and gridfonts for different applications (from left to right) : Wim Crouwel, 1967, the 'New Alphabet'; standard 16-segment LED display schema; Zuzana Licko / Emigre, Lo-Res font, 1985; Masamichi Udagawa / ITP and Sigi Moeslinger / Antenna Design, N.Y.C. subway train identification, over 50 segment LCD.

RESOLUTION OF TYPOGRAPHICALLY DESIGNED TEXT

Resolution has never been an issue in classic print typography. Type was cut in steel. A so-called 'punch' was created as the basis, then it was hardened and driven into copper blank to create a matrix from which, after placing it into a mould, characters from an alloy of lead, tin and antimony could be cast (Baines & Haslam, 2002). When photographic methods were introduced, type was still untouched by resolution except for the process of colour printing, where every image, text or picture,

had to be rasterised (as can be seen in Figure 25) and split into the four process colours of ‘cyan’, ‘magenta’, ‘yellow’ and ‘black’.

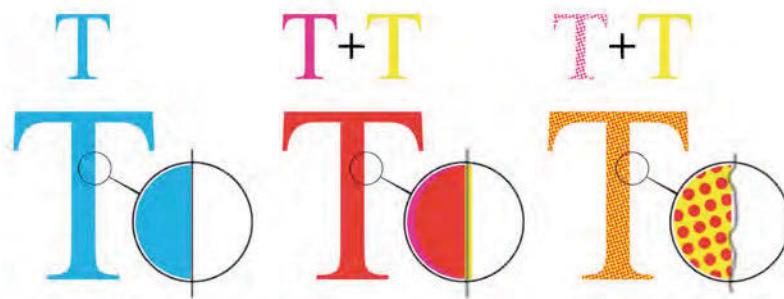


Figure 25 - Printing in a 4-colour process that needs rasterisation of text

The constraints of a screen as display media require an analogue shape to be converted into a digital (or pixelated) image. On-screen typefaces have to be rasterised, depending on the display technique, in various degrees. The reason why serif typefaces are less often used in on-screen media can be linked to the fact that pixel resolutions cannot support the very thin and subtle enhancements that serifs represent. Given that 9 to 12 point text is best for reading texts both in print and on screen (Weisenmiller, 1999; Gerig, Nibbelink & Hoover, 1992; Tinker, 1963; Patterson & Tinker, 1929b; Buckingham, 1931), any serif viewed on a screen resolution of 72 to 95 dpi (dots per inch) would happen on a sub-pixel level. The serifs would either not show up on a display screen or be much stronger than intended compared to the rest of the character. Figure 26 on the next page shows an enlarged 12 pt text set in a Times New Roman italic screen font (right) and the original Times New Roman italic in print resolution (left).



Figure 26 - Early example of text rasterisation for screen media

The insufficient number of pixels to represent characters on screen also influenced legibility of slanted or italic fonts. Legibility of italics compared to roman typefaces is lessened in print (Tinker, 1963) but on screen italics suffer the most from pixelisation, resulting in diminished legibility of such typographic outcomes (Boyarski, Neuwirth, Forlizzi & Harkness Regli, 1998).

The desktop revolution of the mid 1980's was characterised not by an increase of screen typography but by the fact that what one could see and manipulate on screen could be printed in high resolution to paper or film. This concept was called 'what you see is what you get' or 'WYSIWYG'. Although, what one could see on screen was jagged and rough (72 to 95 dpi) compared to what one could get on a printout (300 to 2400 dpi), it was an improvement for manipulating type on screen. The task of typesetting was formerly conducted with cryptic command line interfaces, but all of a sudden printed type could be visualised on a screen with a similar quality as on paper. This was part of the success of Apple's Macintosh computer which was launched in 1984 (Staples, 2000). Although direct on-screen manipulation including the correct rendering of typefaces was part of the Xerox PARC Concept of the GUI,

Apple was the first company to make this new interaction paradigm available in a consumer market context (Young, 1987; Staples, 2000).

Computer users increasingly considered the text's appearance as central to the writing process. (Staples, 2000, p.149)

Technological differences between the on-screen representation in a low resolution environment and the output on high resolution paper or film-printers created a split type format for the use of text on computers. The content of the message was encoded using ASCII, where a number represents a letter or glyph (Clapp, 1990). The visual form was split into an on-screen representation of the glyph (pixelated) and a description of the letterform using, for example, Adobe's Page Description Language (PDL) Postscript (Clapp, 1990). Postscript was refined by Adobe, the proprietor of this language, whereas the on-screen representation of a typeface generated by different means (e.g. Quickdraw in the case of Apple computers) still had to be appropriated. An automatic creation of on-screen rendered typefaces produced crude results in the early days of desktop publishing (see Figure 26 earlier). Display Postscript (Clapp, 1990) was another attempt to render characters on the fly and there was no translation from one language to another needed (e.g. Postscript to Quickdraw), although restrictions were experienced due to processor power (Clapp, 1990).

Even though most typefaces came with several sets for different type sizes on screen, the glyphs, although pixel-optimised, were still jagged and rough in appearance. 'Antialiasing', a technique created by an algo-

rithm from the late 1960's (Freeman, 1974), began to appear on the displays of Apple Macintosh Computers. The capacity of how the human eye perceives sharp edges was utilised through the use of grey pixels to blur a form and make it therefore appear sharper on screen (Freeman, 1974). A line made out of black pixels on white ground looks jagged - only an increase of resolution would make it sharp and crisp. On the other hand, if there are grey pixels mixed with the defining black pixels, the line appears to the reader to be sharper, even though it is not (Freeman, 1974). What works for human perception, namely straightening and smoothening of lines in the process of perceiving, works on a screen display as well. The techniques to transform jagged type into smooth greyscale on-screen fonts have evolved ever since.

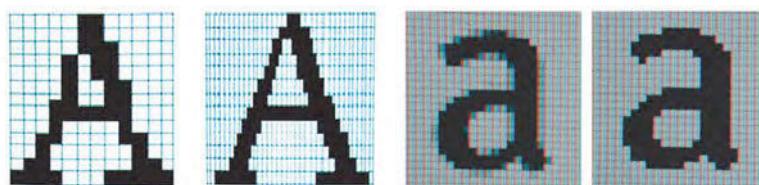


Figure 27 - Examples of sub-pixel rendering from Spiekermann and Ginger (2003, p.120), Photo: Ralf Weissmantel, Berlin

An improvement in display technology, namely the move from CRT (cathode ray tube) displays to LCD (liquid crystal display) screens, brought some new development to the area of on-screen typography. A technique, mainly referred to as sub-pixel rendering, was introduced by Microsoft's Clear Type Technology for LCD displays (O'Regan, Bis-muth, Hersch & Pappas, 1996; Betrisey, Blinn, Dresevic, Hill, Hitch-cock, Keely, Mitchell, Platt & Whitted, 2000; Platt, 2000). Sub-pixel

rendering increases the horizontal resolution of an LCD screen three-fold. It can be seen as a further development of antialiasing, using the three colour components of a sharp edge on screen to smoothen it for the human eye. Microsoft's 'Clear Type' and Adobe's 'Cool Type' technologies use sub-pixel rendering to achieve a closer match between screen and print in terms of character shape, therefore increasing on-screen legibility, as can be seen in Figure 27 on the previous page.

This technique used the units down to one third of a pixel, namely the colour elements 'red', 'green' and 'blue', to optically increase resolution horizontally. As shown earlier in this chapter, this horizontal dimension of typography is especially important to regulate spaces between single characters (spacing and kerning) as well as word spaces. These spaces therefore benefit from sub-pixel rendering immensely. Those techniques made on-screen type on LCD screens very attractive, compared to other display methods on the market at that time.

COLOUR AND TYPOGRAPHY

Colour in text from a typographic perspective is less about legibility and more about effect (Bosshard, 1996) or how to impress a reader. Colour in typography, according to Baines and Haslam (2002), can mean one of three things:

- a) the relative shade or tonal value a particular font creates on a surface - something that influences an overall impression of a page and its layout;

- b) the actual colour of text as printed or perceived, and finally;
- c) the colour of the background the type is placed on or against, often characterised by the material of this background or media (e.g. paper).

While a) is concerned with the visual design of typographic outcomes on a page, b) and c) are interdependent variables that immediately influence legibility, apart from the other factors already discussed in this chapter. The tonal difference between the foreground (text) and the background (materiality of the medium) is of main concern here, and research conducted for both print and screen accounts for this fact similarly. To achieve an appropriate contrast between text and its background is paramount to maintain legibility (Carter et al., 2007).

In print, that means that black type on white is preferable. It is superior to white type on a black background (Tinker, 1963) because readers are used to this positive form of representation of text (Tinker & Paterson, 1931b).

On screens, in comparison, as Bergfeld Mills and Weldon (1988) summarise:

Dark characters on a light background appear to be easier to read if the refresher rate is rapid [100Hz] but light characters on a dark background appear to be easier to read for slower refresher rates [50-60Hz]. (Bergfeld Mills & Weldon, 1988, p.353)

Light emitting on-screen display of type deals differently with contrast than typographers are used to from print media, regardless whether text is presented on normal (black on white) or inverse (white on black) backgrounds. Spiekermann and Ginger (2003) point out that this mostly overlooked effect is quite visible in regards to backlit information panels, as used for special road signature systems.

Legibility suffers from radiant light and needs to be adjusted in terms of explicit lettershape and weight. In Spiekermann and Ginger's (2003) example, shown in Figure 28, the 'DIN' typeface and Spiekermann's own creation 'FF Info' are compared, showing that formal adjustments, letter spacing and line weight are the main factors to make white active light-emitting type more legible on dark backgrounds.



Figure 28 - The effect of radiant light on a backlit sign

A comparison between the typeface 'DIN' (on the left) and 'FF Info' (on the right), the latter designed especially for the purpose of signage (Spiekermann & Ginger, 2003)

Bergfeld Mills and Weldon (1988) dedicate one entire section of their comprehensive review of empirical studies concerning the legibility of text on computer screens to the 'colour' aspect. Bergfeld Mills and Wel-

don (1988) found contrast is key to legibility on screens, the finding that is supported by Carter et al. (2007), Baines and Haslam (2002), Götz (1998) and Tinker (1963) regarding text in print.

The following Table 2 compares these findings with outcomes from a Bruce and Foster study (1982) concerning polarity and colour combination of printed texts. Although very detailed, the latter is in parts inconsistent with findings of Wendt (1974) and Tinker (1963). Uncrossed symbols in the left-most column of the table mark good legibility, a dashed line means reduced legibility, and a crossed-out symbol marks considerably less legible colour combinations for typographic outcomes.

TEXT AND COLOUR		RESEARCH FINDINGS
A A	-	reverse type (white on black) is read about 10% slower than the opposite (Tinker, 1963)
A A A A	+/-	green and blue ink on white paper and black ink on yellow paper are read only slightly slower than black ink on white paper - Wendt (1974)
	-	red on white, red on yellow, green on red, orange on black, orange on white, red on green and black on purple are considerably less legible - Wendt (1974)
A A A A	+	legible: white on magenta, red, green, blue
	-	not legible: white on yellow
A A A	+	legible: yellow on blue
	+/-	less legible: yellow on red, magenta
	-	not legible: yellow on white, cyan
A A A	+	legible: cyan on blue
	+/-	less legible: cyan on white, red
	-	not legible: cyan on green, yellow

TEXT AND COLOUR		RESEARCH FINDINGS
	+	legible: green on yellow, white
	+ / -	less legible: green on red, magenta
	-	not legible: green on cyan, blue
	+	legible: magenta on blue, white
	+ / -	less legible: magenta on cyan, green
	-	not legible: magenta on red
	+	legible: red on white, yellow, cyan, green
	-	not legible: red on magenta
	+	legible: blue on white
	+ / -	less legible: blue on yellow, cyan, green

Table 2 - Text and colour - a comparison of influences on legibility
(Bruce & Foster, 1982; Wendt, 1974; Tinker, 1963)

Bergfeld Mills and Weldon (1988), in addition, point out that environmental influences, for example, light or dark surroundings and characteristics of particular display technologies and their settings, such as high or low contrast, have an influence on and lead to sometimes contradictory results in the experiments discussed. Furthermore, they emphasise the fact that procedures were not always documented well, which makes any replication of the results difficult.

2.3 Legibility and Qualitative Typographic Studies

Apart from the abundance of studies reported above that focused on objective and often measurable rules and guidelines to improve legibility, there have been very few studies that use qualitative methods of inquiry

to understand people's experience, attitudes or perceptions towards typographic outcomes.

In his doctoral studies, Anthony Cahalan (2004) aimed to compare and contrast the personalities of typefaces. He was interested in finding out why some typefaces quickly become ubiquitous, while others never diffuse. This work also investigated which of those influence a designer's typeface choice and usage: their recognition of the imbued qualities, associations and personalities of the typefaces, marketing, trends or fashions.

This primarily qualitative research involved analytical and comparative studies on the broader issues of the history, development and classification of typefaces gathered from literature. The next stage consisted of analytical and comparative studies of the construction, origins, qualities, connotations and personalities of typefaces. An additional complementary aim of this research was to ascertain what impact the proliferation of typefaces is having on the professional practice of graphic design. Cahalan (2004) discussed type selection from numerous points of view - type foundry promotions, shareware, piracy, origination, degradation and implied value. In terms of typeface choices, the focus in his study was on the designer's perspective.

Brumberger (2004) similarly focused in her research on the 'personas' of typefaces and text. As put forward in her work, designers' choices are usually undermined by intuition and unconscious perceptual thinking, with designers being unaware of the individual components that com-

prise the whole of their designs. Brumberger, therefore, set out to help them consciously identify visual components and their relationships to one another. Her study aimed to establish persona profiles for a series of typefaces, and then use the same methodology to assess whether comparable profiles can be identified for text passages.

Both of these studies were concerned with just one aspect of typographic practice, the choice of a typeface, while my research aimed to identify a multitude of influential issues. Burt (1959), in his psychological study of print typography, also derived various influential factors for good legibility. These factors included 'typeface', 'boldness', 'leading' (interlinear spacing) or 'typesize'. The factors were measured separately as well as in combination, since it was apparent for him that they strongly interact. The tests included qualitative data that provided subjective impressions used to supplement quantitative measurements – which were, as the author states, highly contradictory. The reasoning of participants was particularly interesting since the author divided the results into subjective (associative, emotional, or anthropomorphic) as well as objective (intuitive or rationalistic) statements. Customary reading (because one is used to read something in a certain style) and motivation by content (more likely to be read, because the content is of interest to the reader) revealed to be much stronger influences on the reading performance than expected. My study, unlike Burt's (1959) investigation, is more concerned with influences on the perceived visual quality of typographic outcomes, rather than the readers' performance.

2.4 Different Types of ‘Reading’ Experiences

It is important to realise that, besides the legibility of a given text, discussed extensively above, typography may also be expressive, where form becomes more important than content or provides new ways of experiencing typographic outcomes. This multifaceted nature of an experience of a typographic outcome has been emphasised through the use of technologies and various display media which increasingly expand possibilities of typographic outcomes beyond the flat, static surface of a printed page. The way we consume textual information today has changed, and so has, possibly, typography and the factors influencing text perception. Especially the new possibilities of technology and screen displays have redefined the traditional way of ‘reading’ text, and this part of the review discusses the difference between traditional, linear ‘reading’, and the increasingly visual way of engaging with text, ‘viewing’, and an utilitarian approach of ‘using’ text.

Reading in a classical sense involves attending to a consecutive text, with the reader immersed in its content. This ‘reader’ is scarcely aware of the typographic form of the text, as long as it does not interrupt the flow of reading. The typographic form is used to improve its legibility, although it happens in the background, without the reader being aware of it.

Beatrice Warde describes in her essay ‘The Crystal Goblet’ (1955) how a typographer should strive for such ‘transparent’ or ‘invisible typography’. She argues for typography as the pure container for textual con-

tent, like a crystal goblet “*because everything about it is calculated to reveal rather than to hide the beautiful thing which it was meant to contain*” (Warde, 1955, p.37). When reading a consecutive text, immersed in its content and truly living in book space, we are scarcely aware of the connotative dimension of type, as long as it does not interfere with our immersive state of reading. Beatrice Warde’s (1955) approach calls for exactly that: an emphasis on legibility - the gap between the reader and the author being bridged with the help of effortless reading (see Figure 29 on the next page). Type setting becomes an invisible craft and the typographic outcome is seen as a non-intrusive servant. Warde (1955) was not alone in her view since she had support from many traditional thinkers, for instance Morison (1936) or the late Tschichold (1991a, 1991b, 1965).

Warde’s essay can, in retrospect, be seen as a reaction to a more experimental approach to typography that took place at the beginning of the 20th century. Dadaists and Futurists in the 1920’s and 1930’s - and later Concrete Poetry during the 1950’s and 1960’s - freed type from the mechanical grid of reproduction (Blackwell, 2004), resulting in floating typographic compositions, figurative use of letters and fragmented typographic treatment (see the following Figure 29).

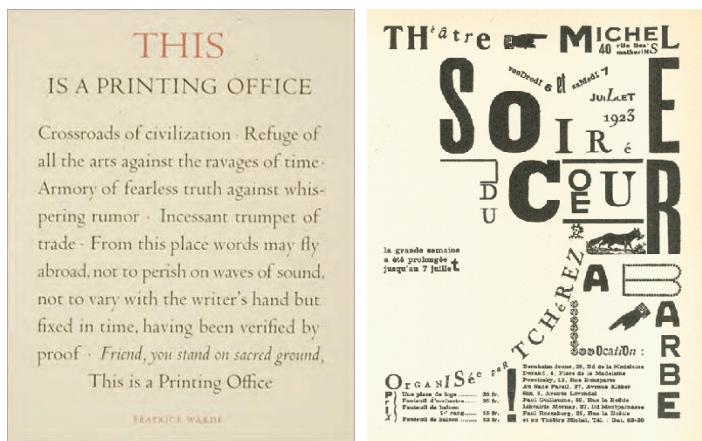


Figure 29 - Examples of typographic opposites: Monotype broadsheet 'This is a printing office' written and designed by Beatrice Warde 1932 (left) and a poster for a 'dada soirée' for and by dada artist Iliazd, 1923 (right).

This development was nurtured by the Bauhaus school and the proclamation of a 'New Typography', a typography devoted to the modern age (Tschichold, 1928). This clearly represented a breach in terms of 'invisible' type or the doctrine of 'typography as servant' (Warde, 1955). Where legibility was key to please the reader of consecutive texts in the Crystal Goblet line of thought, the reader in Dada or later in Concrete Poetry is viewing a text, engaging with its positioning on the page and the formal relations inherent in it and expressed through the diversity of its typographic treatment (expressed in different weights, sizes, or colours of a font). When a 'reader' starts viewing a text (instead of reading), such as in the examples above, the formal aspects of it overpower the content, taking centre stage. Such formal aspects begin to interpret and, therefore, affect the textual content. The 'viewer' not only reads the text, but also views the form of it, attending a typographic performance. An extreme example might be an English-speaker's engagement with text in

China as reported in Mau, Maclear and Bart (2000, p.273): “[reading] is purely associative. [The readers] cognitive attention is freed from its capacity to apprehend and register meaning.”

The significance of expressive type was further brought to public attention through the means of popular culture, primarily television and cinema, music videos and commercials. In his essay ‘Entranced by Motion, Seduced by Stillness’, Michael Worthington (1999) describes expressive typography in general as broadcast type, and states that, by using expressive type in broadcast media, “*the story is read to us in a particular voice*” (Worthington, 1999, p.39) - the reader attends to a visual narrative, he or she becomes a viewer.

Those two roles of the audience - reading and viewing - occupy opposite sides of the reading spectrum: on one side non-intrusive typography, the invisible art of designing for legibility; on the other side the emphasis on attending to typographic form.

Finally, ‘using’ a text happens when the audience can actively control it, being able to interact with the text and decide how to read it. The emergence of a ‘user’ of text is both reported by literature (Lupton, 2004; Triggs, 2002), and increasingly confirmed in published case studies of technology design. Lupton (2004), for instance, suggests the ‘birth of the user’ in context of typography, defined as someone who places the ‘usefulness’ of a text above its content, e.g. “*someone clicking here to go over there*” or “*someone who bought this also bought that*” (Lupton, 2004, p.73). Lupton bases her assertion on the use of new media, especially on inter-

active media such as the World Wide Web, and draws from the field of interaction design as well as social studies, for instance, when discussing the impatience of the digital reader as seen as a cultural rather than a technical issue.

When considering the interactive possibilities in a computer mediated text, one form that seems especially relevant is hypertext. Hypertext provides a structure for non-linearity in texts, where in-text links connect a consecutive, linear piece of writing with a conceptually connected text structure somewhere else in the information space of the internet (for instance, a bibliographic reference, an email address or anything of possibly related interest). Initially conceptualised by Vannevar Bush (1945) through his ‘Memex’ idea, hypertext has been widely recognised and advocated for as the interactive possibility in computer mediated texts (Bolter, 2001; Joyce, 1995; Landow, 1992). Although important, hypertext is only one text-focused interaction possibility within a digital environment (Lewis, 1996). When the visual display possibilities of screen environments developed to the point where they matched the richness of print, the expressive and interactive possibilities of typography itself increased.

Case studies that have been reported in literature support the notion of a ‘user’ of text rather than only a reader/viewer. One such example is the Xerox PARC prototype, ‘Speeder Reader’ (see Figure 30, left), based on ‘RSVP’ (Rapid Serial Visual Representation). It allows people to navigate a text space using the driving wheel metaphor (Back, Cohen, Har-

rison & Minneman, 2002). The steering wheel acts as navigational tool to switch from one lane - one stream of text - to the next. An accelerator pedal controls display speed; subchapter navigation is mapped onto the gear stick. The 'reader' here is much more than just that - he/she becomes a user, who is in control of both spatial and temporal movement of text.

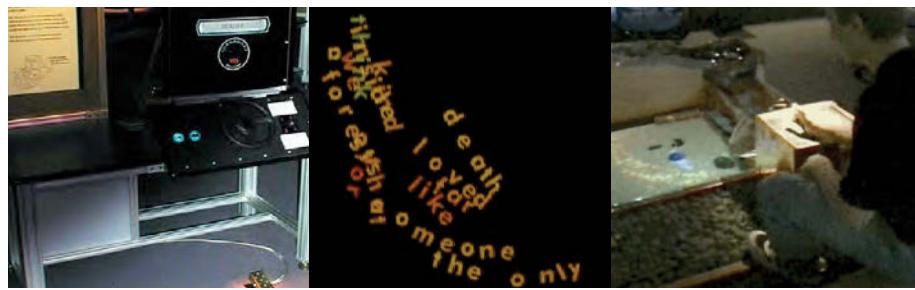


Figure 30 - 'Using' of text exemplified: Xerox PARC prototype, 'Speeder Reader' (left) (Back et al., 2002) and David Small's 'Interactive Poetic Garden' (middle and right) (Small, 1999)

In the 'Stream of Consciousness' project (see Figure 30, middle and right), later developed into an art installation called 'Interactive Poetic Garden' (Small, 1999; White & Small, 1998), the interaction, or the 'using' activity, becomes even more apparent. The creators combined the possibilities of a computer with a garden environment including stones, water and plants. The text (single words) is meant to mimic the physical behaviour of objects floating in a real fountain. As the pool circulates, old words are removed, so that over time the words in the water are the words that have been chosen as interesting. The user, thanks to the interactive capabilities of text, can therefore not only control the form of the 'layout', but also the content of the read text.

The computer is used to drive a video projector, creating the illusion of text floating on the surface of the water as it flows through the garden. [The user] can control the flow of words, blocking or stirring them up, causing them to grow and divide into new words that are eventually pulled into the drain, then pumped back to the head of the stream, only to tumble down again. (Small, 1999, pp.74-75)

Seeing people interacting with text, which has been treated typographically to suit the display circumstances (most importantly evoking ‘floating’ behaviour and being open for interaction), one can see the potential of technology-enhanced textual display possibilities. David Small describes the responses of audiences as warm and enthusiastic, emphasising the experiential dimension of his installation:

Some people were content to passively watch the words, others would repeatedly damn up the words into chumps and then release them, and others would attack the words so that they divided out of control and filled the water with hundreds of words. Even very young children were able to explore the water and stones and the “lights” which shone on the water. (Small, 1999, p.77)

The true beauty of Small’s project lies in the rich and open-ended interaction with type in an unusual form, which goes far beyond the passive reception of expressive typographic performance. If text in expressive typography is interpreted by the designer, text in an interactive environment may be interpreted by audiences in new, non-content related ways within a set of possibilities constructed by the designer.

The importance of differentiating between the three roles of the audience in the proposed framework stems from the fact that for each of the roles the remaining influences discussed in the model can manifest themselves differently, or be of different significance to a reader, viewer, or user.

2.5 The Nature of the Typographic Experience

The previous sections synthesised existing typographic research. This review has revealed that most studies are based on quantifiable results to improve legibility of typographic outcomes. The few studies that focused on people's perceptions and used qualitative methods of inquiry, which is where my study is situated, were concerned with just one aspect of a typographic experience, for example, the personality of a typeface. The only other aspect of the typographic experience that I was able to synthesise from typographic literature and case studies was how people's consumption of typographic outcomes can be experienced as reading, viewing, or using, as mentioned earlier. As in this study I set out to investigate a multitude of various influences and constituents of a typographic experience, I wanted to find studies with a similar focus on such experiential aspects. To the best of my knowledge, however, there were no such studies in the field of typography at the time of writing this thesis. Therefore, I extended this search to related fields as well to see if they can provide some new perspectives for my study. During this search, it became apparent that many of such studies are found in the

field of interaction design where the importance of what is referred to as ‘user experience’ has been widely acknowledged.

According to Forlizzi and Battarbee (2004), interaction design experience research focuses on the interactions between people and products, and the experience that results. Such experience includes a multitude of aspects, including physical, sensual, cognitive, emotional and aesthetic ones. Jääskö and Mattelmäki (2003) also argue that user experience can be examined from many different angles, revealing many layers of such an experience.

Alben (1996), when proposing criteria to be used for judging interaction designs, presents various aspects to determine the ‘experience’ of users engaging with an interactive product:

[...] the way it feels in their hands, how well they understand how it works, how they feel about it while they're using it, how well it serves their purposes, and how well it fits into the entire context in which they are using it. (Alben, 1996, p.12)

If these aspects are successful and engaging, it is referred to as the ‘quality of experience’ (Alben, 1996).

This experience is always a totality encompassing a person in a relationship with an object in a given situation (Forlizzi & Battarbee, 2004). This relative nature of experience is also stressed by Jääskö and Mattelmäki (2003) who point out that experience is dynamic, and it changes and develops over time and according to different contexts.

These aspects of experience outlined above are similarly reflected in the research objectives of this study. As discussed in the Introduction chapter, I was interested in investigating the many different layers, or aspects of a typographic experience, including all different contexts that create this experience between a person and a typographic outcome dynamically, in each situation anew.

Further reading on research exploring experience in interaction design, however, has revealed that the actual findings of such research are in most cases not applicable to typographic designs. Interaction design focuses on using artefacts, and, therefore, what constitutes such an experience is much different from audience's experience of a typographic outcome. The interaction design awards criteria proposed by Alben (1996), for example, include how 'learnable' or 'manageable' the artefact is, aspects that cannot be applied to understand the quality of typographic experience. Another experience criteria, proposed by Hirsch, Forlizzi, Hyder, Goetz, Strobach and Kurtz (2000), 'whether a device can be used', is similarly not relevant to my study. This does not mean that there are no aspects of experience in interaction design that can be applied in typographic research; some specific perspectives from the aforementioned studies, such as 'context of use' or 'purpose', will be used to support or contrast the outcomes of my study in the chapter that presents the final framework.

This chapter has synthesised significant typographic literature, thematically organised into several sections, showing its relevance to the current

study. The next chapter establishes the theoretical perspective for this project that affected how the whole study was designed and conducted.

3. Theoretical and Methodological Background

This chapter provides a description of how epistemological and ontological questions (the terms described in the section below) formed and informed the theoretical perspective, or philosophical stance, of this particular study, and how this theoretical perspective justifies the grounded theory methodology chosen and adapted for the study. It also explains assumptions embedded in the methodology and, therefore, in this research approach.

3.1 The Nature of Knowledge

Underlying every research undertaking are questions concerning the nature of our reality and what can be known, or so called ontological questions, as well as assumptions regarding the “*how we know what we know*” (Crotty, 1998, p.8), or so called epistemological questions. Ontology is the study of being, the ‘what is’, or, in other words, the question about the structure of reality and existence. Epistemology, on the other hand, is described by Denzin and Lincoln (1998) as the theory of knowl-

edge and the description of relationships between inquirer and the known.

To sum up, ontology is concerned with what reality and existence are, while epistemology looks at what it means to know about it, and how knowledge may be assessed. Both seem to influence any further research choices, since to know anything about reality, we need to consider what reality is in the first place, and we also have to understand what it means to know - together, therefore, they help to explain questions of knowing about reality.

Both epistemology and ontology form and inform a philosophical stance or theoretical perspective overarching any research inquiry. The theoretical perspective describes the way we look at the world and make sense of it, and includes the assumptions we bring to the research task at hand (Crotty, 1998).

A methodology's concern is a specific strategy or plan of action how to gain the knowledge we seek, and it implies particular processes, criteria and assumptions, all linked to the theoretical perspective (Crotty, 1998).

The methodology and the particular research design are influenced by how the researcher deals with epistemological and ontological questions, as well as by the assumptions of the philosophical stance or theoretical perspective adopted by the researcher (Denzin and Lincoln, 1998).

The following Figure 31 illustrates the interrelation of ontology, epistemology, philosophical stance and methodology used in this study.

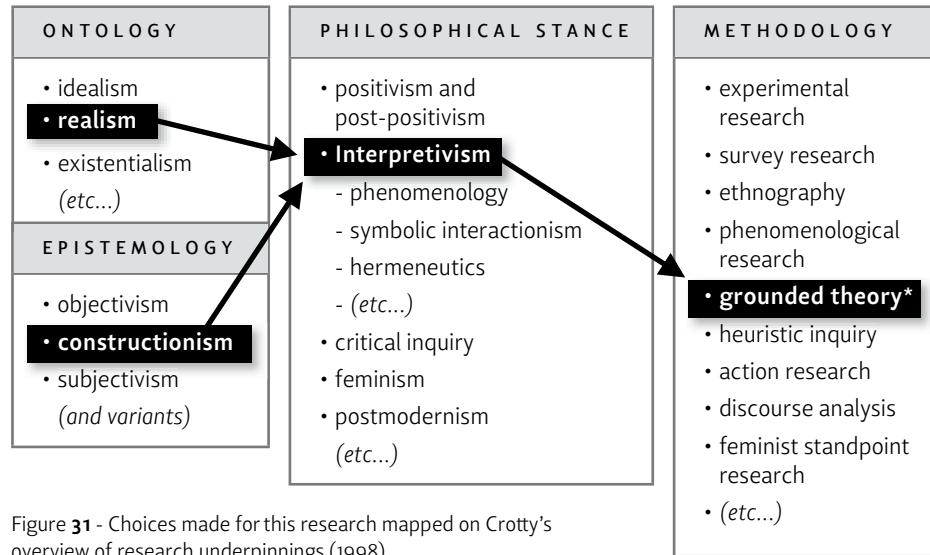


Figure 31 - Choices made for this research mapped on Crotty's overview of research underpinnings (1998)

* adapted for this study as explained on pages 100 - 107

What follows is a description of each layer in the diagram, the particular epistemology (along with its ontological assumptions), the philosophical stance and the methodology chosen, as well as a justification of their relevance and suitability to this particular study.

3.2 A Constructionist Epistemology

There are three epistemologies that will be briefly outlined in the following section: objectivism, subjectivism, and constructionism.

An epistemology that builds on the belief that meaningful entities exist independently of consciousness and experience is called objectivist:

That tree in the forest is a tree, regardless of whether anyone is aware of its existence or not. As an object of that kind ('objectively', therefore), it carries the intrinsic meaning of 'tree-ness'. (Crotty 1998, p.8)

The objectivist investigator is discovering meaning that is already within, waiting to be discovered. In terms of research, this suggests that objectivity is possible because investigator and investigated are separate, independent entities. An objectivist view sees, therefore, an investigator and their relation to the object as threatening influences that have to be eliminated to ensure objectivity (Denzin & Lincoln, 1998). The ontological view associated with objectivism is that research can reflect the 'true way' things are.

On the other hand, according to a subjectivist epistemology, meaning is imposed on objects by a perceiving (or investigating) subject, although this meaning does not stem from the interaction between investigator and investigated (subject and object), but rather anything else:

Here the object as such makes no contribution to the generation of meaning [...] The meaning [...] may come from our dreams, or from primordial archetypes we locate within our collective unconscious, or from the conjunction and aspects of the planets, or from religious beliefs [...] (Crotty 1998, p.8)

As mentioned earlier in this study, in this research I did not assume that objective truth is already there to be discovered (objectivist). The quality of a typographic outcome cannot exist as an objective truth since it cannot exist apart from, or prior to, perceiving subjects, each of which will

generate this quality anew. On the other hand, the subjectivist stance, where a typographic object would have a meaning ascribed without taking into account such an object's pure presence and the interaction with a perceiving subject, would not sufficiently explain the typographical quality either. Therefore, the investigation of typographic outcomes from an objectivist viewpoint (the quality is already in the typographic object to be discovered) or from a subjectivist stance (the quality is ascribed from anything but the typographic object) does not seem sufficient. The quality of a typographic outcome cannot emerge through the presence of text itself, or only through the reader - rather, it is the reader reading the text that generates the quality of it, in each instance of such an encounter anew.

An epistemology that emphasises such interaction or relationship between objects and subjects, rather than an object-subject dichotomy, can be found in constructionism, the adopted viewpoint in this particular investigation. Constructionism, according to Crotty (1998), proposes that meaningful realities (such as the quality of typographic outcomes) are being constructed in and out of the interaction between human beings (in the form of researchers, readers or audiences) and the world, or, in other words, between objects and subjects. Truth and meaning emerge through interaction between object and subject, when engaging with these realities in the world. Meaningful realities do not exist without a human mind, without a consciousness, and the meaning that is formed does not exist without the object it is linked with. Meaning is born out of

humans engaging with their human world, and humans need objects to generate these meanings (Kan, 2002).

Meaning (or the quality) of typographic outcomes, therefore, emerges from the interaction between text and reader; it cannot exist without a human reader, but also not without the typographic outcome to which the quality is linked. The constructionist view dictates that the typographic object can only be investigated with the perceiving subjects together, and not in isolation. The current investigation, therefore, focuses on meanings that are constructed by participants when they engage with the realities of typographic outcomes in the world. Such a constructionist approach addresses some of the criticisms raised against subjectivism and objectivism and avoids the before mentioned objectivist-subjectivist debate (Best, 1993).

The meanings we construct out of our engagement with the world and their objects are further developed and socially transmitted (Blumer, 1969). Since meanings are made, not found, by social and conventional means (Crotty, 1998), the basic generation of meaning is always social in nature - meanings arise in and out of an interactive human community. This also implies that different people may construct meaning in different ways, with different results at different times. Constructionism is, therefore, relativist since “*‘the way things are’ is really just ‘the sense we make of them’*” (Crotty, 1998, p.64).

On the other hand, constructionism in an ontological sense is nonetheless realist. A meaningful reality that is socially constructed is real in a

sense that it exists for us and is dealt with as a real object. Although different people may construct meaning and, therefore, reality in a different way, these constructs are the reality they live in and by.

The constructionist epistemology and how it relates to the research questions in this study can be summed up as follows:

- it proposes that meaningful realities (such as the quality of typographic outcomes) are being constructed in and out of the interaction between human beings (in the form of researchers, readers or audiences) and the world;
- meaning or truth (or the typographic quality that is sought to be understood) is not to be discovered in objects isolated from subjects (objectivism), nor does it come from other sources than objects alone (subjectivist);
- constructionism is relativist in a sense that the ‘things are the way we make sense of them’;
- constructionism is realist too - although different people may construct meaning and, therefore, reality in a different way, these constructs are the reality they live in and by.

3.3 An Interpretivist Theoretical Perspective

After clarifying the underlying epistemology of this study, the following step is a description of a theoretical perspective, or a philosophical stance which further underpins the choice of methodology. A theoretical

perspective grounds processes, logic and criteria of a chosen methodology. The epistemology employed in this research, constructivist in nature, suggests interpretivism as a theoretical perspective, as opposed to a positivist stance.

The positivist approach was considered unsuitable for the current study. In a positivist inquiry, the general assumption is that reality is objectively given and can be described by measurable properties which are independent of the observer and the instruments of observation (Orlikowski & Baroudi, 1991; Klein & Myers, 1999). Positivist research is theory testing, and an attempt to increase the predictive understanding of phenomena, according to Klein and Myers (1999). Characteristics of a positivist approach are a formal proposition, quantifiable measurements of variables, hypotheses to be tested, and the inference process from a drawn sample to a stated population (Klein & Myers, 1999; Myer, 1997). This research was not concerned with ‘objective’ and measurable properties of a typographic experience, and the research did not aim to confirm any already existing hypotheses.

Following Myer (1997), interpretive studies in general attempt to make sense of phenomena through the meanings people assign to them. Interpretive methods try to make sense of the situation, and the context of the engagement. These studies do not predefine dependent and independent variables but concentrate on the complexity of human sense making as a situation emerges (Klein & Myers, 1999). Interpretive stud-

ies focus on ‘Verstehen’ (‘understanding’) and look for culturally derived and historically situated interpretations of the social world (Weber, 1962). ‘Verstehen’, as explained by Bryman (1989), considers understanding on two levels, both of which are important concerns in this particular study: on the first level, according to Bryman (1989), the researcher attempts to gain an interpretive understanding of the causes and effects of social actions; on the second level, the focus is on underlying motivational or explanatory understandings of those actions. This interpretive approach was, therefore, suitable to answer the research questions posed in this study and appropriate for this project that looked for both interpretive and explanatory understandings of the quality perceived by the audience of typographic outcomes.

3.4 The Grounded Theory Methodology

After the underlying theoretical perspectives have been outlined, this chapter now presents a concrete plan of action, or, in other words, a methodology that was chosen, and subsequently adapted, for this study: grounded theory (Glaser & Strauss, 1967).

3.4.1 Initial Data Collection Methods

As revealed during the formulation of the research aims and questions in this study (see Chapter 1), a gap in the literature, and therefore knowledge base for designers, was identified regarding what else, apart from scientific legibility rules, can influence and, therefore, improve the visual

quality of typographic outcomes perceived by audiences. As demonstrated in the Literature Review chapter, most typographic research has been undertaken through quantitative methods in a positivist manner, and few researchers in the area, for instance, Brumberger (2004) or Burt (1959), have employed qualitative methods following an interpretivist approach to explore typographic outcomes and their perceptions from a readers' perspective. When typographical studies tend to focus on legibility of texts and improving effectiveness and efficiency of reading and the deciphering process, the quantitative method with its precise measurements seems the suitable choice. This study on typographic perceptions, however, focuses on the experience of a reader, a phenomenon that is essentially subjective. Variables in a hypothesis-testing quantitative approach must be measured numerically, and, therefore, they cannot reflect this subjective experience (Auerbach, 2003), captured in qualitative studies. Creswell (1998) also recommends a qualitative study when a detailed, close-up view of the topic is sought. The outcome of this study, which aims to understand and explain people's experiences, depends on such detailed explanations and the richness and depth of the data that qualitative methods can provide.

As also discussed in Chapter 1, the research questions in this study called for data that would reveal insights about people encountering typographic outcomes in their various forms; direct observation was seen as such a qualitative data collection method that could provide the means to achieve this objective. Observing and interacting with people in their

natural environment provides a detailed, in-depth picture of their behaviour and preferences (Ireland, 2003) or, as was the case in this particular study, their reactions and attitudes towards typographic text. Observation offers direct experiential access to the participant's "*world of meaning*" (Jorgenson, 1989, p.15). However, since the aims of this study also called for an investigation of audience's perceptions, thoughts, beliefs, and the like, interviewing could advance this research in this respect. According to Gorman and Clayton (2005), interviewing can obtain detailed, in-depth information from subjects who know a great deal about their personal perceptions of events. The person being interviewed can be encouraged to highlight self-perceived issues or relationships of importance. This is of great value in understanding context and creating links that are key aspects of qualitative research (Gorman & Clayton, 2005; Rubin & Rubin, 1995). Interviews can also go in new directions, adding to the depth of understanding of issues involved. According to Gorman and Clayton (2005), such self-perceptions and enhanced perceptions can be achieved in no other way in qualitative research. Interviewing can enable a researcher to explore causation, that is, to enquire why individuals behave the way they do.

Based on the above discussion, this research started with the use of qualitative methods, namely direct observation and interviewing in Study 1, to collect data that would help answer the research questions posed. While the specific methods of data collection have been refined later throughout this thesis project - this will be described in Chapters 4

and 5 - an overarching methodology was also needed to guide data collection, analysis and presentation.

3.4.2 Grounded Theory as the Basis of this Study's Methodological Approach

While since the beginning of this project I sought to find and employ a methodology that would help fulfil the aims of this study, it was unfortunately discouraged by external influences as unnecessary to employ a methodology at all when the specific data collection methods were seen as a sufficient means to complete the study. After the first data was collected, however, I insisted on the need of a guiding approach that would provide rigorous and systematic procedures to advance from collecting the data to producing a conceptual framework that would answer the research questions posed in this study.

Various qualitative methodologies were reviewed in terms of their suitability to help answer the research questions posed in this study. Grounded theory (Glaser & Strauss, 1967) was found to be a suitable choice to guide this research, based on the reasons presented in the following sections.

The grounded theory methodology was proposed by Glaser and Strauss (1967) with their seminal work 'The Discovery of Grounded Theory: Strategies for Qualitative Research', and further developed in these authors' subsequent publications, frequently referred to in this section.

Grounded theory has been utilised in various fields including ones that are related to design, visual communication or typography, for instance, in descriptions of the use of visual language in learning (Mikel-Petrie, 2003), in investigations into the nature of design and design thinking (Buchanan, 1992), or in research concerned with experiences of Web users and their information seeking processes, including their representation (Pace, 2004). However, to the best of my knowledge, there have been no studies that would use grounded theory to study typographic experience; as the Literature Review revealed, most typographic studies were based on quantitative methods. The following section explains why I found this methodology suitable for this typographic research.

RATIONALE BEHIND THE CHOICE OF GROUNDED THEORY

The suitability of grounded theory for this research stems, first of all, from the fact that, instead of starting with existing theories and hypothesis, it lets theory emerge from data (Burns, 1997). This is important when the researcher may not know enough of a particular area to formulate hypotheses to begin with (Auerbach, 2003). Such an approach was particularly suited to answer the research questions posed in this study, since, as clearly demonstrated in the Literature Review chapter, there were no existing studies that would help explain what influences audiences' typographic experience, and, therefore, the concept of findings emerging from data was seen as very appealing and appropriate. As Stern (1980, p. 116) puts it, "*[...] the strongest case for the use of grounded theory is investigations of relatively unchartered waters [...]*".

Furthermore, according to Glaser (1978), the research process - namely entering the field, the methods of data collection, the coding, sorting, and integrating of categories, as well as the construction of a theory - all is guided and integrated by the emerging theory of a particular investigation. This aspect of the methodology being guided in every step by the emerging theory made it again especially suitable for this research. It rendered the outcomes of the study as relevant, as practical, and as true to data as possible. This aspect also made the process flexible, as when new concepts emerged, the research was able to focus on new directions, ones that possibly could not be predicted at the beginning of this research. This was, again, especially important because of the lack of studies in the area. At the same time, unnecessary and redundant data did not have to be collected when it became clear that it would not contribute to the final outcome of a proposed framework. In grounded theory, as described by Denscombe (2004), data is collected for the purpose of improving the emerging concepts and theories. This was as well important in this study since the area of research was potentially so large (people's experiences with any typographic outcomes) that otherwise "*mountains of unconnected data could grow [...] that would not say much*" (Charmaz, 2006, p.23).

An additional reason why this methodology was considered suitable to guide this particular research is that this study aimed to provide practical and functional outcomes to the visual design community that could be used in an everyday design practice. According to Glaser (1999), a

grounded theory is not valued at its abstract level, but rather by how well it addresses real practical needs and how well it works in practice. Glaser (1999) goes on to state that this is one of the most appealing aspects of a grounded theory approach: it results in theories that are relevant for a particular field and it provides answers that actually work in this field. In fact, Glaser (1999) proposes two criteria for judging the adequacy of an emerging grounded theory: a) that it fits the situation, and b) that it works. As mentioned in Chapter 1, the problem statement included the lack of studies that would provide practitioners with explanations on influences that shape the perceived visual quality of typographic outcomes, and, therefore, a methodology that helps provide answers that actually work in the field was particularly suitable.

Furthermore, grounded theory is also flexible to change, to keep up with a fast paced environment (Glaser, 1999). Through the method of constant comparison, new data modifies generated theory until a saturation point is reached. This modification of theory makes it possible to keep up with what is going on while changes occur and, in turn, increases the theory's abstraction level. This means that the framework proposed in this study is not meant to be final or static - it will hopefully be easy to refine when yet new technologies appear or the cultural surrounding changes.

Another strength of grounded theory that made it a particularly appealing choice in this thesis project is that it provides a "*total methodological package*" (Glaser, 1999, p.836). It is a rigorous methodology woven to-

gether by constant comparison and conceptualisation (Glaser, 2005) that provides rules for every stage on what to do and what to do subsequently (Glaser, 1998). Since a grounded theory has become a recognised rationale for qualitative research (Denscombe, 2004), with clear and rigorous procedures for every stage of the research process, it seemed a very suitable choice for this doctoral dissertation, providing plenty of guidance and structure to the research process.

GLASER'S AND STRAUSS'S VERSION OF GROUNDED THEORY

There have been variations of grounded theory in the literature, mainly the split between the two originators Barney G. Glaser and Anselm L. Strauss, subsequently to the invention of the grounded theory method in 1967. Strauss and Corbin (1990) proposed their version of grounded theory, and were then accused by Glaser (1992) of diverting too much from the original methodology. Stern (1994) has gone as far as labelling the divergent paths of grounded theory as Straussian and Glaserian models.

The basic claim made by Glaser in his 'Basics of Grounded Theory Analysis' (1992) is that the Straussian approach rather forces theory into being (with too prescriptive procedures) than allowing a theory to emerge. Categories emerge by employing the classic grounded theory techniques of constant comparison and theoretical sampling. Furthermore, Strauss and Corbin's (1998) coding paradigm uses just one coding family with several codes compared to Glaser's (1978) original eighteen theoretical coding families. This, however, is not relevant in my study

because of the divergence from the methodology regarding theoretical coding, as described later in this chapter. After consulting relevant secondary literature, for example, Urquhart (2001) and Dey (1999), and since Strauss and Corbin's (1997) variation on the grounded theory method has been described as overformulaic (Melia, 1996) as well as problematic (Kan, 2002), and Glaser's approach (1998, 1992, 1978) provides more flexibility and alternatives, my study follows largely the Glaserian approach towards the grounded theory method. Still, it has to be noted again that, apart from the differences in approaches as discussed above, Glaser and Strauss (1967) together devised the grounded theory methodology, and they agree on many concepts on which it is based (including concepts of sampling, saturation, memos, and others). The differences lie mostly in the researcher's role and level of intervention in relation to the procedures used in the data analysis phase of the research (Walker & Myrick, 2006). Therefore, references to both creators of the methodology will be used in some sections of this thesis, and Glaser (2005, 1998, 1992, 1978) in particular will be followed in terms of the data analysis process.

ADAPTING GROUNDED THEORY METHODOLOGY TO THE NEEDS OF THIS RESEARCH

Grounded theory, as revealed above, has proven to be a suitable methodology to fulfill the research aims in this study. One important aspect of this approach, however, did not fit the aims posed in this research - it was the way the final outcomes are presented as a theory. Glaser and

Strauss (1967) see at the end of the process a theory that consists of conceptual categories and conceptual properties, linked through hypotheses or generalised relations between them. A category stands by itself as a conceptual element of the theory; a property is a conceptual aspect of a category; hypotheses - developed out of theoretical codes that conceptualise how those elements may relate to each other - integrate the categories and properties into a theory. Glaser and Strauss (1967) provide a list of many such theoretical codes, or possible relations, grouped into families. The potential relations include causes, contexts, contingencies, consequences, co-variances, conditions, stages, phases, orderings, limit, range, probability, dimensions, kinds, styles, strategies, mutual effects, identity or breaking point, just to name a few (Glaser & Strauss, 1967).

Such relations are suitable to explain basic social processes, as in Glaser and Strauss's (1967) research. As explained in Chapter 1, however, this study aimed to present to design practitioners a framework of influences that shape the perceived quality of typographic outcomes, rather than an abstract theory of categories linked by hypotheses. I aimed to understand and describe such influential factors (conceptual codes) but, instead of looking for hypotheses or generalised relations between such codes, my research aimed to organise and integrate the factors into a guiding framework that would provide a holistic understanding of the perceived quality of typographic outcomes. Additionally, grounded theory is often used to propose theory for one substantive area, or a specific domain; the outcomes within my framework, however, should provide as

holistic understanding of a typographic experience as possible, in various situations, different media, places, and so on. It would need to be descriptive, and would aim to provide detailed and particular characteristics within various influential factors. An important consideration, therefore, had to be given to the fact whether this methodology, despite its apparent suitability mentioned in the previous section, can still be used in this research even considering the different final outcome it aimed for. Based on the following rationale, grounded theory did prove to be a useful guiding methodology to answer the research questions posed in this study, with the adaptations in the final stages of the research process.

When a theory emerges in the grounded theory methodology, it is based on an intensive iterative process of discovering and refining of conceptual constructs, or codes. Glaser and Strauss (1967) divide this process into ‘substantive coding’ and ‘theoretical coding’. The former is concerned with proposing categories and their properties. This process is described in detail in the next chapter on Research Design. It includes simultaneous involvement in qualitative data collection and analysis, theoretical sampling, finding ‘incidents’ in data, discovering codes, assigning specific data as indicators of such codes, coding data initially for as many categories as fit, gradual separation of categories and their specific characteristics (properties), constant comparison of incidents and codes, grouping of codes into more and more abstract higher level concepts, the use of memos, note taking, the gradual move to more selective

and focused data collection as well as coding around the main emerging theme which guides further data collection and analysis, and, finally, theoretical saturation. All of these aspects of the grounded theory methodology were very suitable to devise categories and properties of the proposed framework which would emerge from and be grounded in the data, and not in any pre-existing studies; this would provide an answer to Research Question 1 (see the Introduction chapter).

It is the next coding stage, ‘theoretical coding’, where this research needed to diverge from the original methodology. In theoretical coding, categories and properties are integrated through hypotheses, or generalised relations, to generate theory (Glaser & Strauss, 1967), which, as explained earlier, was not the aim of this study. However, what is still central in this process is sorting and integration of constructs that have emerged earlier to formulate the final outcome and present it to others. Sorting and integration of categories and properties was also an aim in this study (see Research Question 2), and it is only regarding how this integration was attempted where I needed to divert from the original approach, focusing rather on organising the categories and properties into a framework. Some concepts of grounded theory theoretical coding were still useful for this study aims, especially memo sorting (Glaser & Strauss, 1967). As Charmaz (2006) puts it, grounded theory sorting provides the researcher with a logic for organising their analysis. Such a logic was still important and needed in this project; it will be described in detail in Chapter 4, Research Design.

Additionally, as mentioned earlier in the rationale explaining why the methodology was chosen in this study, it was important that in this project outcomes provide useful findings for design practitioners, and, therefore, such outcomes must be relevant, practical, and as true to data as possible; this is achieved in grounded theory when the entire research process is guided and based on the emergent theory. Even though this project aims to propose a descriptive framework not an abstract theory, this central concept could still be closely followed in the project: an emergent framework would guide every aspect of data collection, analysis, and integration, just as an emergent theory does it in the original methodology.

It must be stressed here that the diversion described above did not mean that the process of discovering and integrating conceptual codes was not a rigorous one. Adapting the grounded theory methodology to fit the aim and research questions of this study was still based on following systematic grounded theory procedures, the same ones that provide the advantages that have made the methodology suitable for this research in the first place (outcomes emerging from data, providing answers that work, and others). These procedures also ensure validity of this research, as discussed further in this chapter in Section 3.4.4. The actual process of integrating outcomes and presenting them was different than in the original methodology but still systematic and rigorous.

Charmaz (2006) notes that many researchers use grounded theory methods without claiming to have constructed a theory; this study fol-

lows a similar path. She also argues that there are many assertions about what stands as theory, and notes that most studies done in the name of grounded theory are descriptive rather than theoretical (Charmaz, 2006). The form of analysis does not always separate “*researchers who do genuine ‘grounded theory’ from those who merely claim to use the method*” (Charmaz, 2006, p. 181). As Charmaz (2006) defines it, grounded theory is “*a method of conducting qualitative research that focuses on creating conceptual frameworks or theories*” (p. 187). Therefore, methods of grounded theory can be used without necessarily aiming to generate a theory. Glaser (1996) himself talks about researchers making adjustments to grounded theory to handle the unique conditions of each research situation, and “*bending grounded theory methodology carefully to their emergent needs*” (p.xii). To sum up, this research uses grounded theory as a guiding methodology, but does not claim to create a theory, and instead provides a framework of well-integrated influential factors; grounded theory lends to this project rigorous and systematic procedures that are very suitable to answer the research questions posed. Those are closely followed in this study with the exception of the ones that deal with aiming at a substantive theory; such methods are adapted to suit the unique conditions and needs of this thesis project. After all, as Charmaz (2006) puts it, excellent examples of using grounded theory come also from studies whose authors only acknowledge specific aspects of the approach.

One more characteristic of the original methodology has to be mentioned in this respect: Glaser and Strauss (1967) recommend starting

with generating theory for one substantive, empirical area of inquiry and only extending it to a formal theory through future studies that can compare and contrast the findings in other areas. Still, both substantive and formal theory must be grounded in data (Glaser & Strauss, 1967). Because, as mentioned earlier, I did not aim to generate a theory of a social process with its deep relations between concepts, as in the original proposition of Glaser and Strauss (1967), but rather understand various influential factors regarding typographic outcomes in general, not in just one specific area, I focused on varying the contexts and situations to a large extent, to provide as holistic understanding of typographic experience as possible. Marshall and Rossman (2006) argue that in designing qualitative research, the research questions may determine that researchers need to focus on one specific site, but other questions call for a choice of many sites, which was the case in this study. Focusing on one specific site is somewhat constraining, according to these authors. Research purpose determines how big the sites selection should be (Marshall & Rossman, 2006). According to Arcury and Quandts (1999), the sites for a qualitative study are selected to maximise coverage in terms of characteristics important to the study. Since, based on the research questions and aims, this was the case in the presented study, another diversion from the original methodology was justified regarding a wider focus than just one substantive area.

The following table summarises how the grounded theory methodology was adapted to the needs of this study. The aspects of the methodology, based on Glaser & Strauss (1967) and Glaser (1998, 1992, 1978), are summarised on the left; the diversions are marked and explained on the right-hand side of the table. The application of all the concepts summarised in the table are discussed in detail throughout Chapter 4, Research Design, but the table is provided here to state upfront and before any further methodology discussion the scope of the grounded theory use in this study.

A S P E C T S O F T H E G R O U N D E D T H E O R Y M E T H O D O L O G Y followed and ★ adapted in this study
• instead of starting with existing theories and hypothesis, letting codes and finally a theory (in this case, a framework) emerge from data - well suited to this under-researched area
• the whole research process - including the data collection, the coding, sorting, and integrating of categories - guided and integrated by the emerging theory (in this case, framework)
• systematic and rigorous procedures guiding the research process
• use of any data collection method, although qualitative methods are more common
• initial data collection based on research questions
• theoretical sampling
• the emerging theory (framework) determining what data to collect and where to find it depending on the outcome of previous data collections
• not transcribing interviews as not to collect too much irrelevant data
• simultaneous involvement in data collection and analysis
• through the method of constant comparison, new data modifying generated theory until a saturation point is reached (theoretical saturation)
• memo-writing

ASPECTS OF THE GROUNDED THEORY METHODOLOGY followed and ★ adapted in this study	ADAPTATION FOR THIS STUDY
<ul style="list-style-type: none"> open coding: <ul style="list-style-type: none"> - looking for significant incidents of data and assigning labels to them - initial coding for as many categories as fit - gradual separation of categories and properties - grouping of codes into more and more abstract higher level concepts 	<ul style="list-style-type: none"> the aim of understanding and describing factors that influence the perceived quality of typographic outcomes, rather than a basic social process;
<ul style="list-style-type: none"> selective coding: <ul style="list-style-type: none"> - gradual move to more selective and focused data collection - coding around the main emerging theme which guides further data collection and analysis 	<ul style="list-style-type: none"> organising and integrating the factors into a guiding framework that would provide an explanation of people's experience of typographic outcomes, without looking for theoretical hypotheses;
<ul style="list-style-type: none"> theoretical coding: <ul style="list-style-type: none"> - memo sorting <p>★ exploring a number of suggested coding families to link concepts through hypotheses</p>	<ul style="list-style-type: none"> focus on providing as holistic understanding as possible, applicable to various situations, various kinds of typographic experiences, on different media, in different contexts and places, with descriptive characteristics within each influential factor
<p>★ discovery of a theory that consists of conceptual categories and conceptual properties linked through hypotheses or generalised relations between them, used to explain a basic social process</p>	
<p>★ discovery of theory for one substantive area</p>	
<ul style="list-style-type: none"> outcomes that are grounded in data, are relevant and provide answers that actually work 	

Table 3 - Summary how the grounded theory methodology was adapted for the needs of this study; based on Glaser & Strauss (1967) and Glaser (1998, 1992, 1978)

3.4.3 Data Collection in Grounded Theory

It is important to note here that grounded theory does not prescribe one specific way of data collection. As Glaser (1998, p.8) points out, “*all is data*” in grounded theory, and this data can include “*whatever may come the researcher’s way*”. Therefore, data for a grounded theory can come from various sources, including interviews, observations, documents, books, and others (Corbin & Strauss, 1990) - the researcher is only bound to the usual guidelines and procedures suggested for a given data collection method. Data in grounded theory can be collected with inter-

views, ethnographic methods, self-reporting methods, surveys, and others - what distinguishes and unifies such data collection as a grounded theory approach are the aspects that have been discussed and referenced in this chapter and are summarised here (Glaser & Strauss, 1967; Glaser, 2005, 1998, 1992, 1978):

- the research starts with as few assumptions as possible;
- data collection methods, research subjects, questions asked, and the focus of the research are constantly refined in the light of data analysis that happens as soon as the data is collected;
- the process is strongly guided by the emerging theory, or, in this case, framework, and therefore able to follow new and unexpected directions;
- data analysis uses constant comparison of new data to the existing codes, so the verification of a theory is inherent in the method.

As mentioned at the beginning of this section, the grounded theory methodology was chosen as the basis for this study after the data was collected in Study 1. I had to, therefore, carefully consider whether the data collected from the two participants of Study 1 would be valid and relevant in line with the guiding methodology. The reasons behind the decision to include this data in this research are presented next.

First of all, as explained above, the methodology is based on any data collection method, which made the methods of Study 1 a suitable choice.

I also had to consider that in grounded theory an emerging theory, or in my case the emerging framework, determines what data to collect and where to find it depending on the outcome of previous data collections (Glaser & Strauss, 1967). However, this was the first data collected in this project, and therefore, this issue was not relevant.

The more relevant issue was the guidelines regarding the first data collection in the study. Such initial data collection should be based on research questions, according to Glaser and Strauss (1967), and on general ideas of a phenomenon the researcher wants to study (Strauss & Corbin, 1998). As described in detail in Chapter 4, Research Design, data collection in Study 1, including the method chosen, the focus and the sample, were closely based on the research questions of this research and the general ideas about the phenomenon (audience's experience of typographic outcomes) that I set to study. What is more, this data was analysed only days after it was collected (as this was when I adopted the methodology) and before any new data was collected, already in line with the grounded theory methodology adapted for this study at that time; this analysis has guided further data collection (Glaser & Strauss, 1967). Therefore, data from Study 1 was included as a valid contribution to the formation of the framework that forms the outcome of this thesis.

3.4.4 Rigour in Grounded Theory

A possible criticism of grounded theory has been formulated by Denscombe (2004), implying that grounded theory often refers to approaches that lack methodological rigour. To avoid this problem, the studies undertaken in my project follow procedures and techniques recommended by Glaser & Strauss (1967) and Glaser (2005, 1998, 1992, 1978) as closely as possible (apart from the variations explained above). These procedures will be pointed out throughout the thesis, especially in the Research Design chapter.

Precise planning has not been seen as one of the strengths of the grounded theory approach (Denscombe, 2004). Especially theoretical sampling, where it is not possible to predict what sample to use, and the constant comparison method, which calls for the adaptability of the study when the need arises, make it hard to predict where the study is going and when it will be finished. The need to collect as much data as needed to reach saturation for each category also makes it hard to state a sample size at the outset of the study. These issues, however, become only problematic when detailed research designs have to be approved by various committees throughout different project stages, which has not been a problem in my study.

Grounded theory itself was proposed as a critique on theoretical enquiries in sociological research, namely positivist, quantitative testing and verification of “*dreamed-up, speculative, or logically deduced theory*” (Glaser & Strauss, 1967, p.5). A possible critique on the verifiability of

grounded theory itself can be countered with the originators' (Glaser & Strauss, 1967; Glaser 1992) proposition that:

- a) grounded concepts are suggested, not proven;
- b) theory grounded in data - or, as is the case in this study, an integrated framework grounded in data - has verification built in through the process of constant comparison.

Grounded theory looks for what is, not what might be, and therefore needs no test. Grounded theory gets its concepts from the data; it does not bring ideas to force the data that need to be subsequently tested [...]

(Glaser, 1992, p.67)

This chapter has explained the theoretical and methodological foundations of this study including many issues and limitations surrounding the methodological choices. The following chapter provides details of the research design, explaining how the studies were conducted.

4. Research Design

As discussed extensively in the earlier chapters, this study aimed to shed understanding on the influences shaping the audience's experience and perception of typographic outcomes. An interpretive qualitative approach was found as the most suitable for this research. As also discussed earlier, the grounded theory methodology that was adapted for the needs of this study does not advocate one specific research design, but rather encompasses many data collection methods in an approach that is guided by and evolves with an emerging theory - a theory, or in this case a guiding framework, that unfolds through constant comparison of new and immediately analysed data to the data collected earlier.

This project started with observation as the method of enquiry (see Section 3.4.1, Initial Data Collection Methods). As also described in the previous chapters, it was important to study text objects and subjects who perceive these objects together. Observing people when they experience typographic outcomes in the real world context was thought to be especially suitable for this; however, after the first study, a number of issues became apparent, and led to a change of method, namely to auto-

driven photo-elicitation (Samuels, 2004; Clark, 1999). The origins and principles of this method are provided in the subsequent Method Review chapter. The possibility of change in terms of method was encouraged throughout. As Charmaz (2006, p.15) puts it, “*with grounded theory methods, you shape and reshape your data collection.*” Grounded theory researchers can gather several types of data and use several data-gathering strategies (Charmaz, 2006). Additionally, apart from its main objective of explaining the influences on the quality of typographic outcomes, this thesis also aims to contribute to the existing body of knowledge on research methods suitable for typographic enquiries. It is hoped that insights and comments about the suitability and refinement of methods in this research context will be of use to other researchers in the field as well.

Therefore, during and after each study, when the forthcoming data was immediately analysed, much attention was also given to the evaluation of the research method employed, including what kind of data it could provide, and how this data could help answer the specific research questions in this study.

The evaluation and refinement of visual research methods used in these studies, in particular the employment of the auto-driven photo-elicitation method, was not only based on the first-hand experience from the studies undertaken, but was also supplemented with the input and guidance on such methods found in the literature; both would inform the ongoing research design for subsequent studies. For clarity and flow of reading, this is synthesised in the separate Chapter 5, Method Review.

4.1 Overview of the Research Design

The following outlines and describes the original research that has been administered in the course of this thesis project. The data collection process in this thesis has been divided into four main stages that together have informed the typographic quality framework which presents a major contribution of this research. The data collection started in October 2005 and has been an ongoing process throughout this research. The four studies include:

Study 1: two pilot field studies (**A** and **B**) in a museum context, examining the suitability of the intended visual data collection methods and their applicability to typographic research in general, and providing useful data that would help answer the research questions of this thesis in particular; the data led to the formulation of initial categories of the framework;

Study 2: a project reflecting a significant change in the data collection approach informed by Study 1 because of the potential benefits of handing the control of the data gathering process to the participant, using a method called ‘auto-driven photo-elicitation’ (Samuels, 2004; Clark, 1999). Study 2 was conducted in two shopping centres and aimed to unravel as many influences on the visual quality of typographic outcomes as possible, from various participants and in various situations;

Study 3: a project employing auto-driven photo-elicitation again, with participants taking pictures that guided subsequent interviews (Samuels, 2004; Clark, 1999). The pictures were taken during the participants' daily routine. The aim of this study was to further develop insights on categories and properties that had emerged in the previous studies, probe for additional influences, as well as gather in-depth data for all the emerging codes during interviews in a more selective and focused manner. It also aimed to elicit influences from as many diverse settings and situations of typographic outcomes encounters as possible, compared to the first studies that took place in a smaller number of settings.

Study 4: a final project based on the same procedures and methods as Study 3. The aim of this study was to further strengthen the proposed framework through confirming and refining emerged categories and their properties, providing even more insights about participants' perceptions of typographic form through discussions of a variety of typographic outcomes documented by them, as well as gathering additional examples that would demonstrate how each category and property manifests itself in real life.

The following sections will present more details about each of the stages, including their main objectives, location, number of participants, and specific procedures used. This is followed by the discussion of some

grounded theory concepts that underpin data collection (such as sampling and saturation) which provide the rationale and further details about how the participants, tasks, and questions were chosen.

4.1.1 Study I

PILOT FIELD STUDY A

In October 2005 the first study at a science museum in Sydney/Australia was initiated. The main aims of this pilot study were:

- a) to assess the suitability of the chosen method to the research questions in this project,
- b) to generate data and assess whether its analysis is suitable to uncover the real world influences on the experience of typographic outcomes of visitors, and
- c) to uncover any issues and challenges with the particular method, and improve it for subsequent studies.

The research questions were the same ones that guide the whole project, and focused on finding out various factors that influence how the participant perceives typographic objects encountered in the real world setting - in this case, during a museum visit.

The participant, 'Mona' (the sampling process will be discussed in the following section), was given the task to locate a specific small exhibition

space within the museum. The wayfinding task was only provided to give some meaning and purpose to her visit, to make it as close to a real world situation as possible, encourage her to spend some time at the location and look out for various textual displays, not only the ones that help her with the wayfinding task. It was, therefore, stressed that the participant was free to explore the museum space as she wished. The main aim was to encourage the participant to engage with a multitude of different kinds of typographic outcomes in the real world context (see Figure 32 below).



Figure 32 - 'Mona' engaging with a variety of typographic outcomes during her museum visit

As revealed in Chapter 3 (Section 3.4.1), direct observation was seen as a suitable qualitative data collection method that would help achieve this study's aim of understanding and describing what influences people's experience of the typographic outcomes they encounter. The participant's visit, therefore, and specifically her encounters of typographic objects were documented with two video cameras. One of these cameras was following Mona in close proximity of about 10 m, while the other one was free 'roaming' to document a different perspective of Mona's typographic encounters.

The value of observing participants has been summarised by Patton (1990) as:

- it enables a better understanding of context in which participants share activities;
- it allows the discovery and deduction of what is significant through a first hand experience;
- participants' activities reveal meanings without their being aware of it;
- meanings are revealed which may not have been willingly disclosed.

To understand various factors influencing participants' perceptions of encountered typographic outcomes, based on the above notes on the characteristics of direct observation, it was assumed that video observations by themselves would not be able to provide enough data to answer questions about the subject's experience. As discussed in Section 3.4.1 in Chapter 3, such data could be gathered by complementing observations with interviewing. The interviewing session, therefore, was meant to elicit in-depth insights from the participant, and to help interpret and deepen the understandings of the video-recorded and observed typographic text encounters of participants.

This study commenced with an extensive pre-research location reconnaissance in the museum. Such a venue visually forms a standalone

world, operating on its own with its pathways, exhibits, posters, display descriptions, signage, maps and guards; almost like a model environment of the ‘real world’ outside the confines of the exhibition halls. The museum houses around 25 exhibitions at any one time. The spaces they inhabit are diverse, ranging from niche spaces, pathways lined with small exhibits, or closed rooms to big open halls and huge displays, sometimes spanning more than one level. A range of typographic outcomes are available, presenting a rich opportunity to study typographic experiences (see Figure 33 below).



Figure 33 - The museum presenting an opportunity to study experiences of many diverse typographic text encounters

A briefing session was conducted before the task was commenced, outside of the museum. Apart from the ‘information sheet’ and ‘consent form’ (included in the Appendices), the briefing also stressed the fact that the participant was free to engage with anything during her visit, that there was no need to finish the ‘wayfinding task’ (which was set out to take about 20 minutes to finish) and that the participant could discontinue the task at any point without a reason. That was hoped to ensure that the observations and the researchers had the least influence on

the participant's natural behaviour and her engagement with typographic outcomes during her visit.

The interview was conducted several days after the actual visit due to time constraints of the participant on the day of the study. For that purpose a computer was set up where the video tape could be viewed and, depending on the interview's flow, could be easily manipulated (stopped, forwarded, or searched, for example). It was hoped that the video footage would make it easier for Mona to remember her opinions, thoughts, and experiences during the visit. A provided map of Mona's visit helped both researcher and participant visualise the event better and relate what could be seen on the tape to the actual space in the museum (see Figure 34).

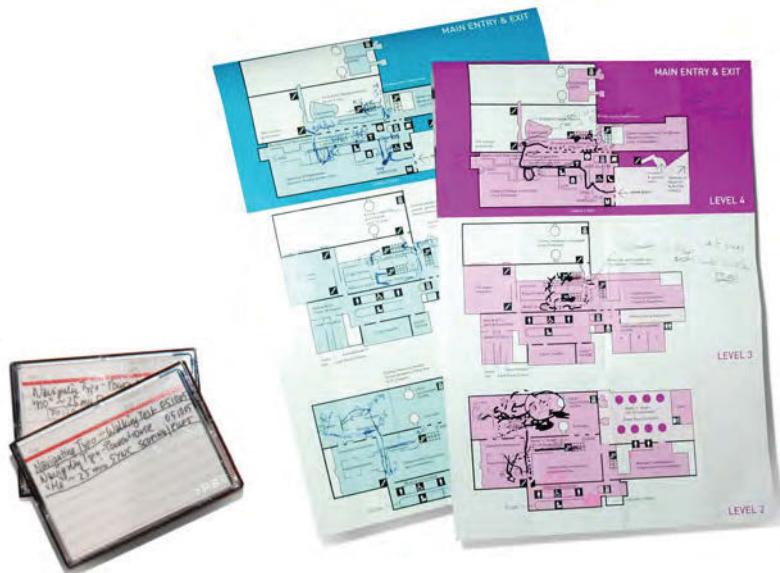


Figure 34 - A map of the event provided at the interview, derived from the video tapes of Mona's visit

Topics for this interview included such issues as what typographic outcomes Mona attended to, for how long and why, what caught her atten-

tion, what she liked and disliked about the text objects encountered, and similar questions that aimed to understand the participant's direct experience of textual information during the museum visit. The session took almost 2 hours to complete.

PILOT FIELD STUDY B

In Study B, the participant 'Anna' was asked to visit the museum with a digital still camera, a notepad, and with the task to document (taking pictures and notes) anything that is concerned with typographic outcomes and their contexts. As in Study A, Study B also aimed to find out as many influences as possible on the visual quality of encountered typographic objects perceived by the participant, and to evaluate how suitable the method was to achieve this goal. Anna was still asked to find her way to the same place as Mona, and again, this was only used to give her some purpose if she needed one, make her spend some time at the location, and to make her look out for textual information – otherwise, she was welcome to freely explore the museum space.

Instead of video, a digital still camera was used by the participant in Study B. The feedback and evaluation regarding the data collection methods, found in the subsequent Method Review chapter, explains the detailed rationale behind this decision; in summary, that method was meant to shift control for the documentation of the experience from the researcher to the participant, allowing her to decide herself what is of importance for her experience; a digital still camera operated by the participant was, therefore, found more suitable.

In the briefing session, the task of documenting her experiences with typographic outcomes as well as an explanation of what is meant by a typographic outcome was discussed with the participant. While the actual discussion and briefing took about 10 minutes, the task itself was finished after about 30 minutes (a timeframe very similar to Study A).

Anna was in the museum on her own, and was not followed or interrupted by the researcher at any time. She was encouraged to take as much or as little time as needed for the task, and was asked to meet the researcher upon the completion at the place outside of the museum where the briefing took place. Anna was using her own digital camera, at her request, since she felt familiar with its operation. Her memory card would allow her to store a large number of pictures, and posed no constraints in this respect. After returning to the meeting point, Anna reported that she had managed to find the specified place, and that she documented a number of different types of typographic outcomes she encountered. Since Anna's availability was very limited, a session to discuss her experiences was scheduled two days after the museum visit. It was also agreed upon that the participant would bring the digital pictures and the notes to the discussion session.

The participant brought pictures on a digital medium, and a very thorough typed up version of her visit to the over one-hour-long interview session. Since the thoroughly typed account was a surprise to the researcher, Anna explained that she did not take hand-written notes during the visit since it was too time-consuming and inconvenient but, instead,

she typed them in retrospect using the pictures as a memory trigger. Additionally, Anna already created a sequence of pictures according to the course of her task (see Figure 35).

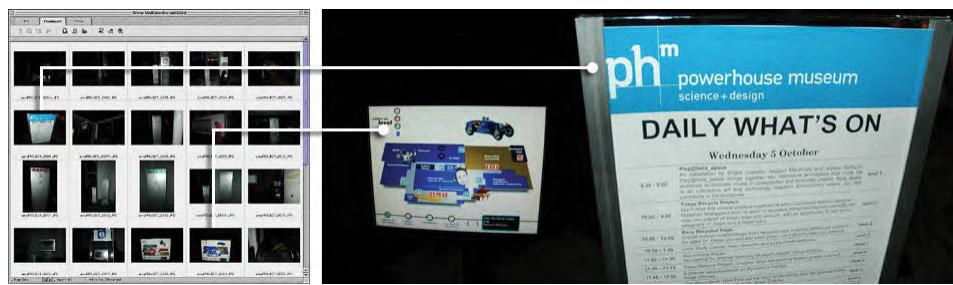


Figure 35 - Study B pictures with text objects sorted by the participant - pictures chosen were matched subsequently with a typed account of Anna's visit. In a session two days after the visit, those pictures and descriptions were discussed and formed the basis of an interviewing process.

The following interview, therefore, was guided by the participant's pictures and notes. The focus, as in the first study, was placed on her experiences with various text objects, and what made her perceive them in a specific way. The questions revolved around, for example, why particular pictures were included in the set, how important the objects in it were, why she liked or disliked them, what caught her attention, and others. During this process, I realised that the pictures had a special significance to the participant; Anna was quite particular about what picture to include and how they should be sorted according to her narrative. The process of 'taking pictures', 'sorting them', and 'creating a narrative' to inform a discussion about typographic outcomes was seen as a major step towards gaining a more thorough and holistic understanding of the individual typographic text experience.

This process was later confirmed by literature as ‘auto-driven photo-elicitation’ method (Samuels, 2004; Clark, 1999); the principles of this method will be described in the Method Review chapter.

4.1.2 Study 2

Regarding the collected data and its usefulness for learning about the perceived visual quality of experienced typographic outcomes, the first studies had confirmed the suitability of the process of visually documenting such experiences by the participants themselves, and the use of such documentation to guide subsequent interviews. An additional issue that was still evolving during following studies was the optimal use of a documentation device and its features; such an analysis is presented in the following Method Review chapter.

Since Study 1 (both A and B) was conducted in a museum’s context, a location change was decided upon for Study 2 because the new location was hoped to provide different kinds of typographic objects with which to engage, and, therefore, reveal a more diverse set of factors, as well as different insights about the factors that were emerging from the analysis of Study 1 data.

The three studies described here were conducted on separate days in December 2005. Each participant ('Alan', 'Kate' and 'Jack') was briefed before the actual session commenced (including a description of the task and examples of possible outcomes) as well as equipped with a documentation device. Since the aim of this study was again to reveal as many

various influences as possible, the participants were encouraged to spend some time in the shopping centre and document their experiences with typographic outcomes. As in the previous projects, to ensure that some time was spent at the location, a task was given to the participant: to find a) the post office in a large modern shopping centre in one of Sydney's suburbs for the first two participants, and b) a jewellery shop at another large shopping centre in a different suburb (according to the expressed wish of the third participant). The participants were told that their photo documentation could include typographic outcomes that would be of particular interest to them during their visit, grab their attention, seem annoying, ugly, beautiful, or of any other significance to them.

The set-up for the studies discussed here followed the set-up of the initial data collection described earlier. Both locations used in this study had been investigated prior to any research being undertaken. This investigation resulted in possible task scenarios and documentation technologies to be used in a particular location. After contacting participants and agreeing on date and time, 'consent forms', 'information sheets' and 'task description sheets' were prepared (see Appendix).



Figure 36 - Three different recording devices used in Study 2 to help document the experience of participants

Three different devices were used for this auto-driven photo-elicitation study (see Figure 36): a video-camera's still photo feature, a digital still camera and a disposable analogue still camera (notes about each of those cameras' uses can be found in the Method Review chapter that follows).

A technical brief was conducted to familiarise participants with the features of the particular recording device since it was important that the participant felt comfortable with the device chosen and familiar with the basic features that would be of use during the study. The briefing took a maximum of 15 minutes for each participant.

The task duration in the studies described here varied between 30 and 55 minutes. Subsequent semi-structured interviews were conducted several days after the visit (in two cases more than 4 weeks later because of the limited availability of the participants during the holiday period). Interview questions focused again on typographic outcomes documented by the participants, what the participants thought about them, and the various influences that have affected them. The interviews were guided by the pictures taken by the participants, and questions would differ

depending on the actual typographic example discussed, and how the participant perceived it.

4.1.3 Study 3 and 4

After the data had been collected and analysed in Study 2, as suggested by the grounded theory approach (Glaser & Strauss, 1967), the research process called for a refinement of emerging categories and properties. The analysis had revealed various influences on the visual quality of typographic outcomes. The goal of Study 3 and 4, therefore, was to elicit more details about each influence and its specific properties, refining and confirming the influential factors and their labels, as well as probing for any new influences. Study 4 was also used to gather additional examples of participants' perceptions of typographic form that would demonstrate how each category and property manifests itself in real life.

The set-up for such a study followed the approach developed so far: the auto-driven photo-elicitation method was employed as before, but this time, it aimed to elicit influences from even more diverse settings and situations of typographic text encounters than in earlier studies (according to the research aims stated in Chapter 1). For Study 3 and 4, I asked for a range of typographic examples gathered and documented from a participants' perspective in their real life situations. This was necessary to ensure that properties regarding each influential factor would not be limited to those from earlier locations (the museum and shopping centres); additionally though, this process was still open to the possibility of

new influences emerging from this wider reaching data collection (see examples in Figure 37 below).



Figure 37 - A variety of typographic text objects photographed by participants in Study 3 and 4

The ‘consent form’ and the ‘information sheet’ (see Appendix D) were sent out as attachments via email for information purposes. The ‘task description’ (see below), that was included as part of the email message sent, provided, besides an outline of the task, also possible outcomes of the documentation process to illustrate the data that was hoped to be gained from this process:

Task: photograph a minimum of five instances of typographic text* you encountered on any chosen day (on a screen, on TV, outside on the way to work or any other activity, inside at work, at your desk, at your home, in print, on labels, on buildings, on signs, etc...) which you find either:

Try to *remember time, place, and circumstances of the encounter* - of course you can take notes if you wish for the interview that will follow after sending your pictures in via email. The questions of this interview will evolve around the pictures you took - they will focus on the particular typographic text objects of your choice and the 'why' and 'what' and 'how' of your experience with it.

* 'typographic text' was the term used at this stage of the research; it was later changed to 'typographic outcome' based on the feedback of reviewers of this work; please see Chapter 1 for the clarification of the term.

Study 3 was conducted with six participants over several months at the beginning of 2007, well into the write-up process. Study 4 also included six participants, but took place over several months at the end of 2008 and the beginning of 2009. A timeframe of one week was set to photograph the chosen instances of typographic outcomes. Participants were asked to send in pictures via email after that week, so questions for the semi-structured interviewing process could be prepared. The interviews were conducted within the next seven days in informal settings, at a public cafe or at the participant's home as well as via a video conferencing session for an overseas participant. The interviews were digitally audio recorded; I also provided electronic means to choose and view the photographs.

Since ongoing data analysis and write-up had already suggested emerging categories (influential factors) and their properties (the characteristics of those influential factors), questions for interviews in Study 3 and 4

were developed to focus around particular factors and their characteristics, to confirm or refine them and provide additional details about each of them, as well as to probe for any additional influences and insights about participants' perceptions of typographic forms.

Therefore, for each influential factor represented in the emerging framework, a set of questions was prepared. Generic questions at the beginning and the end of the semi-structured interviewing process provided an entry point into the topic and probed for additional areas of the typographic experience to be explored. The sets of questions were asked referring to one picture only - this took at least 20 minutes per picture - then a new picture was chosen by the participant and the question-sets were asked again. Because of the time-consuming nature of the discussion around each picture, after the first interview the subsequent participants were asked for a minimum of three photos instead of five. In most cases, however, the participants still took more pictures, and three were chosen by them during the course of the interview. Altogether, each interview took up to 90 minutes, including the general and picture-specific questions. The discussion of five pictures would have extended this time frame considerably, something that I wanted to avoid because of respect for the participants' time. In addition, after the first interview with five pictures that took almost 2 hours, the participant stated that he was tired, which impacted negatively on the richness of descriptions provided in the later stages of the interview. The discussions around three pictures with the remaining participants of Study 3, and the additional

six participants of Study 4 provided plenty of richness and depth of details to fill in the emerging conceptual framework, up to the point of theoretical saturation (Glaser & Strauss, 1967), as discussed in further sections.

4.2 The Concepts of Sampling and Saturation in this Study

4.2.1 *Theoretical Sampling*

An important concern in any research is its sampling method. Grounded theory suggests theoretical sampling as the main guiding concept in this respect (Glaser & Strauss, 1967). The method of theoretical sampling enables the researcher to decide what data to collect and where to find it depending on the outcome of previous data collections, the analysing of the previous data, and the theory that starts to emerge from the already collected data. In other words, the data collection process in theoretical sampling is controlled by the emergence of a theory (Glaser & Strauss, 1967), or, in this case, the emergence of the framework of influential factors.

Theoretical sampling is the process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges. (Glaser & Strauss, 1967, p.45)

Sampling, rather than being predetermined by the researcher prior to the beginning of the study, evolves during the actual process of researching (Strauss & Corbin, 1998). Theoretical sampling differs in this

respect from statistical or random sampling commonly employed in quantitative studies. A definition of the theoretical sampling process by Strauss and Corbin (1998) is particularly applicable to understand the process that has guided this thesis project, where theoretical sampling is described as a method that would “*maximise opportunities to discover variations among concepts and to densify categories in terms of their properties and dimensions*” (Strauss & Corbin, 1998, p.201).

The aim of theoretical sampling is an in-depth exploration of constructs in different contexts (Auerbach, 2005; Denscombe, 2004); samples are deliberately selected by the researcher for what they can contribute to the research in progress, based on their relevance to emerging concepts, categories and properties. They allow for testing out the emerging theoretical constructs as well as for verification of developing framework.

Choices of informants, episodes, and interactions are being driven by a conceptual question, not by a concern for ‘representativeness’ [original emphasis]. To get to the construct, we need to see different instances of it, at different moments, in different places, with different people.

(Miles & Huberman, 1994, p.29)

SAMPLING FOR DATA COLLECTION

An initial decision for the collection of the first data in grounded theory should be based on general research questions, according to Glaser and Strauss (1967). These initial questions should also not be based on any preconceived theoretical framework - informants and questions are chosen for the study based on the general ideas of a phenomenon the

researcher wants to study (Strauss & Corbin, 1998). Such was the case in Study 1, and therefore, as discussed in Chapter 3, even though the grounded theory methodology was adapted for this research just after the data in Study 1 was collected, this data was found valid and included in the analysis.

As this study aimed to explore possible influences on any person's experience with typographic outcomes, there was not one specific group of people who needed to be targeted. The participants were drawn from various backgrounds, to ensure that they represented as varied profiles as possible, especially in Study 3 and 4 which had the biggest number of participants.

In all four studies, convenience sampling was employed as a specific subset of theoretical sampling. The informants approached were chosen based on the convenience and willingness to participate in a study that demanded a fair amount of time, engagement, and patience from them. They were usually friends of the researcher's colleagues, from different backgrounds, ages, and genders. Convenience sampling is described by Denscombe (2004) as an approach based on the idea of choosing a research sample to which one has easy and immediate access. This strategy assumes that any data obtained from the convenience sample will be informative in generating theoretical concepts and/or refining them.

Some issues with convenience sampling that had to be considered in this project include the possibility that participants tend to be the ones that are 'better' than others at some relevant skill, as they tend to volunteer

being competitive in nature (Lunsford & Lunsford, 1995). In this study, however, the participants were not volunteers, but were rather approached by the researcher. Additionally, in convenience sampling, subjects are often selected from the researcher's institution, which means that they may display styles or preferences of this institution (Lunsford & Lunsford, 1995). In this study, however, subjects were not chosen from the researchers' institute or university. Another possible problem with this kind of sampling is that the subjects may display some common characteristics, often unrecognised by the researcher (Stommel & Wills, 2003). To overcome this problem, the people that were approached to participate in this research were coming from varied backgrounds, ages, and occupations (see Table 4). Convenience sampling does not imply a lack of effort on the researcher's part (Stommel & Wills, 2003). Rather, there are often no other feasible alternatives given the resources available for many studies, including this one.

Table 4 below summarises who the participants in each particular study were (names used in this research dissertation and in the table are four letter codes and do not correspond to participants' actual names).

STUDY	INFORMANT	GENDER	AGE	OCCUPATION
Study 1A	'Mona'	female	31	primary school teacher
Study 1B	'Anna'	female	29	postgraduate student
Study 2	'Alan'	male	38	decorator
Study 2	'Kate'	female	24	office assistant
Study 2	'Jack'	male	27	travel agent

STUDY	INFORMANT	GENDER	AGE	OCCUPATION
Study 3	'Gary'	male	26	freelance programmer
Study 3	'Will'	male	54	sales representative
Study 3	'Suzy'	female	35	accountant
Study 3	'Fran'	female	19	undergraduate student
Study 3	'Wang'	male	39	designer
Study 3	'Debi'	female	61	pensioner
Study 4	'Brit'	female	35	PR assistant
Study 4	'Jeff'	male	44	carpenter
Study 4	'Paul'	male	19	undergraduate student
Study 4	'Elli'	female	50	office worker
Study 4	'Tara'	female	21	travel agent
Study 4	'Olga'	female	39	accountant

Table 4 - Summary of participants

Theoretical sampling in a grounded theory approach does not strive for a statistically representative sample (Minichiello, Aroni, Timewell & Alexander, 1995). Glaser (1998) states that 'face sheet data' such as gender, age, religion, nationality, colour, social class, and so on, are represented in an emerging theory if they 'earn' their way into it as categories and/or properties:

[...] this position flies in the face of the standard qualitative analysis which requires a rundown on the conditions and/or background of the research and the referral to face sheet data [...] as if they were obviously relevant. [...] If a condition or a face sheet item is relevant it will emerge as part of the analysis, otherwise ignore it. (Glaser, 1998, p.148)

The ages, gender, and occupations, therefore, are only presented to inform the reader who the participants were, and to demonstrate the variety of participants profiles that were important to maximise the perspectives of the theory.

EVOLUTION OF QUESTIONS ASKED

Questions asked to the participants should help to generate, to the fullest extent, as many categories/properties as possible and exemplify relationships between categories and their properties as well as between categories themselves (Glaser & Strauss, 1967). On the other hand, in further stages of the theoretical sampling process, when the categories have already emerged, it is only required to collect data on specific categories already established (Glaser & Strauss, 1967).

One of the advantages of theoretical sampling, according to Glaser (1998), is that the researcher is not collecting the same data over and over again, based on the same questions that ignore the evolving theory. It is also a flexible way of responding to the need of more specific data for an emerging theory. Theoretical sampling has also been described as cumulative by Strauss and Corbin (1998): each sampled incident builds on and adds to previous collected and analysed data.

4.2.2 Theoretical Saturation

As mentioned before in this thesis work, in a grounded theory approach it is impossible to state before the study commences how many groups or participants should be sampled. According to Liamputong (2005),

the number of participants is less important than the richness of the data produced. Similarly Auerbach (2003) and Denscombe (2004) note that the researcher needs to keep collecting data from participants until no new information is produced to add to the concepts of an emerging theory (in this case, framework), and this is referred to as theoretical saturation. Following this advice, redundancy was the primary determinant to establish when the sampling for this study had to be terminated and theoretical saturation was reached.

Glaser and Strauss (1967) note that theoretical saturation happens within categories of an emerging theory, when no additional data is being found to develop more properties within the category.

The emerging framework is, therefore, based on delimitation and saturation of categories. Data completeness in this approach is based only on theoretical completeness, not the number of participants or number and length of interviews conducted. Following Glaser (1998), there is no *n* number of participants, only sampling for completeness and saturation - theoretical sampling results in an ideational sample, not, as in quantitative analysis, in a representative sample.

Seventeen informants have participated in the range of studies conducted in this research (see Table 4 on page 135), discussing a multitude of varied typographic outcomes. Depth of their insights has proven to be enough to produce important outcomes regarding the influences on the perceived typographic quality in a real world setting; in other words, theoretical saturation was reached at this stage. This particular number

of participants has brought enough completeness to the emerging framework.

4.2.3 Taking Notes, Taping and Transcribing

A particularly strong point was made by Glaser (1998) in regard to taping of interviews in a grounded theory approach:

[...] One of the strongest evidentiary invasions into grounded theory is the taping of interviews. (Glaser, 1998, p.107)

While both originators of the methodology do not recommend recording and transcribing of grounded theory interviews (Glaser & Strauss, 1967), this approach could be ascribed to the fact that methods used to transcribe back in the late 1960's were far from being as efficient as they are nowadays. Glaser (1998), however, even in his more recent works, still emphasises that the taping of interviews collects too much data, more than theoretically necessary. He argues that, unlike in other methodologies that need transcribed interviews for completeness of evidence and verification of findings, the use of interviews in a grounded theory approach is for conceptualisation only (Glaser, 1998). As he further explains, taping ignores theoretical saturation of categories and their properties, and both taping and transcribing slows down the research process and produces masses of irrelevant data; it makes it harder to analyse data while it is still collected (Glaser, 1998). Glaser (1998) stresses the fact that in grounded theory research, data must be available for analysis immediately since this analysis influences further data collection.

Instead, Glaser (1998) argues that the researcher can rely on written notes generated during or even after an interview: data that is relevant will be remembered through associations during the process of constant comparison in the analysing phase. Accordingly, in this particular study at hand, extensive notes were taken during the interviews as well as complemented by remarks immediately after the interviews, when impressions were still ‘fresh’, as well as by some remembered during the analysis stage.

Even though the interviews were actually taped in addition to my notes, these recordings were not transcribed; taping was only used to excerpt direct quotes which could be used to exemplify categories and properties in the write-up stage of this thesis project. Therefore, they were not used in the way discouraged by Glaser (1998), and did not slow down the analysis process by providing unnecessary data.

4.3 Data Analysis

In a grounded theory approach, data collection and data analysis go hand in hand. While the previous section described how the data collection proceeded in this study, the current section focuses on the data analysis part of the research that started after the first data was collected in Study 1. This provides the necessary transparency of the process and demonstrates to the reader how the results presented in this thesis were achieved.

The reason for the concurrent collection and analysis of data is twofold:

- a) it allows the theoretical sampling process to react to emerging concepts, and
- b) it allows ongoing validation of concepts as they emerge from the data (Strauss & Corbin, 1998).

Therefore, all concepts should be considered provisional, till they “*earn their way into the theory*” (Corbin & Strauss, 1990, p.7) by being repeatedly present in data collection outcomes (interviews, observations, or documents in some form), or as by being significantly absent from the above. The relevance of concepts or phenomena must be proven through constant and critical examination (Corbin & Strauss, 1990). Following from this approach, an underlying principle of a grounded theory approach is ‘constant comparison’, a principle that can be found in the coding process throughout this research, at the heart of the grounded theory data analysis.

4.3.1 Data Coding Processes Overview

Coding is a process of identifying relevant texts in gathered data, deciphering and interpreting these texts or slices of data, and organising them into concepts and later into theoretical constructs (Auerbach, 2003).

This procedure, as described by Auerbach (2003), is divided into four steps:

1. *identifying* relevant text in the data collected;
2. discovering *repeating ideas* in those relevant texts;
3. *organising* these ideas *into themes*;
4. and *organising themes into larger, more abstract ideas* to form theoretical constructs.

The importance of the coding process in a grounded theory is emphasised by Glaser (1978) with the following statement:

The essential relationship between data and theory is a conceptual code.

The code conceptualizes the underlying pattern of a set of empirical indicators within the data [...] The code is of central importance in the generating of theory [...] (Glaser, 1978, p.55)

What distinguishes grounded theory from other qualitative methods is its high level of development and specificity of the coding process (Walker & Myrick, 2006).

The coding process has been one of the main subjects of disagreement between the two co-originators of the grounded theory approach during their split. Whereas many coding techniques and concepts are used by both Glaser and Strauss in their subsequent work after the split (for instance, constant comparison and memos), one of the major disagreements refers directly to the coding practice of ‘forcing’ versus ‘emerging’

(Walker & Myrick, 2006). Where Strauss and Corbin (1998) propose a set of complex procedures, tools and coding matrices to be used in grounded theory, Glaser (1992) suggests the total immersion in the data, where the constant comparison method alone will make categories emerge. Glaser (1992) advocates for such an emergence of categories, describing Stauss's version of the grounded theory coding process as too automatic and forcing preconceived frameworks onto the data.

Since I decided to follow Glaser's (1992) grounded theory approach where he rejects an over-reliance on automated processes, forced coding and imposed frameworks, I tried to rely on a total immersion in the data, which would ensure that a theory, or in my case a framework, instead of being forced on the data, would emerge from it naturally, and "*that is all there is to it*" (Glaser, 1992, p.42).

4.3.2 Substantive Coding

There are three subsequent coding steps involved in the coding process of a grounded theory research:

Substantive coding (divided into open and selective coding) is concerned with proposing of categories and their properties. On the other hand, theoretical coding occurs at a conceptual level, bringing together sub-

stantive codes - or categories and their properties - to generate theory (Walker & Myrick, 2006).

The first process (substantive coding) is a selection and fracturing of data, whereas the second process (theoretical coding) is meant to relate and integrate the fractured pieces back into a whole, or as Glaser puts it: “*weave the fractured story back together again*” (Glaser, 1978, p.72).

As discussed extensively at the end of Chapter 3, this research diverged from the grounded theory methodology in terms of how the theoretical coding process was conducted (see pages 100-107, for a complete discussion on the nature and reasons behind this divergence).

OPEN CODING

Open coding in grounded theory analysis, and therefore also in this study, starts with reading the data gathered, line by line, identifying ‘incidents’. Glaser (1998) describes an ‘incident’ as a unit of comparison, which can be found in a phrase or in a sentence but rarely in a whole paragraph. An incident can be an object, an action or an idea, and so forth; close examination and comparison to find similarities and differences makes it possible to break data down into such incidents. It is a detailed look at the collected data that enables the researcher to find incidents - if an incident is significant, it will be assigned to a label or code (Glaser, 1992).

The code gives the researcher a condensed, abstract view with scope of the data that includes otherwise seemingly disparate phenomenon. [...]

(Glaser, 1978, p.55)

Glaser (1978) puts forward a model, followed in this study, where each code conceptualises a set of empirical indicators - specific pieces of data - that denote the concept of this code. The 'concept-indicator model' (Glaser, 1978) is the basis of generating a strong link between data and concept, or the grounding of theory (in this case, framework) in data. All relevant data, according to Glaser (1978), can be subsumed as an indicator of some category/property. For example in this study, one of the indicators of the 'physical surrounding' concept is the specific piece of data: "*when you enter into the shopping area, there is so much text to be read everywhere*".

In an open coding process, the data is initially coded for as many categories/properties that might fit, and the most suitable and workable categories/properties start to emerge naturally (Glaser, 1978). As an example of this approach in this study, the following piece of data was initially coded into such concepts as 'media', 'expectations', 'or 'interactivity': "*[...] there should be a search feature for the Kiosk [...] it was very limited, like my map, nothing more.*"

The concepts in a grounded theory study fall into different groups: a fundamental distinction is made between categories and properties. While a category denotes a conceptual element in a theory, a property is a specific characteristic of a category in a theory (Glaser, 1998; Glaser &

Strauss, 1967). In this study, for example, ‘physical surrounding’ is a category representing an influential factor on the perceived visual quality of typographic outcomes, while one of the properties of this factor that participants have often commented on is the ‘visibility of typographic form in physical surrounding’.

The constant comparison of incidents and concepts enables the researcher to see patterns in the data gathered and code their incidents “*in every way possible*” (Glaser, 1978, p.58). Glaser (1978) encourages researchers in that respect to assign incidents to multiple codes or as many relevant codes as possible, in an approach that was followed in this study.

‘Every possible way’ also refers to possible comparisons (see the following Figure 38) a researcher can perform to generate categories and properties:

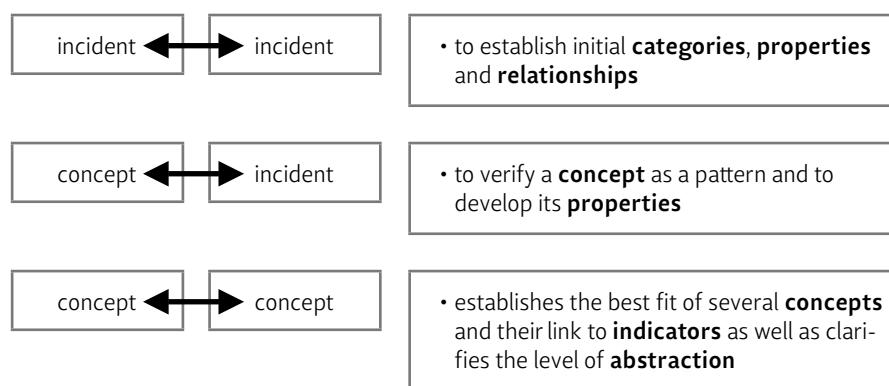


Figure 38 - Possible comparisons to generate categories and properties according to Glaser and Strauss (1967)

As recommended by Glaser (1978, p.57), the following questions were asked in the open coding process for each data incident:

1. what is this data a study of ?
2. what category/property does this incidence indicate ?
3. what is actually happening in the data ?

The first two questions are directed towards the generation of categories and properties whereas the last one targets the centre and organisation of the emerging framework (Glaser, 1978).

Following Glaser and Strauss (1967), the level of abstraction in categories and properties in this study was low in the initial coding process; further comparison and abstraction took place and concepts were grouped into more abstract, higher-order concepts. These high-level concepts reduced the number of units in a theory (Glaser & Strauss, 1967) or, as in this research, the number of units in the proposed typographic quality framework.

The main advantage of the open coding process or “*running the data open*” (Glaser, 1978, p.56) is that it allowed me, as the researcher, to see the direction where the study should be taken further, when the process became more selective and focused.

SELECTIVE CODING

Selective coding focuses on the delimiting of the process towards a core category (Glaser, 1978). The core category represents the main theme or the main concern or problem the participants face in a particular setting (Glaser, 1978). Being central, the core category relates to as many other categories and properties as possible and occurs frequently in the data.

In this study, two core categories emerged which represent the main themes of the typographic experience.

The core categories, namely the influences dependent on the typographic objects and the influences dependent on the experiencing subjects, once identified, became a guide for further data collection and the ongoing analysis processes (Glaser & Strauss, 1967). The coding process was then more focused on categories and their properties that related to the core. The theory, or in this case the framework, started to build around this core (Glaser, 1992, 1978).

There are two main forces at work in a grounded theory selective coding stage that are also relevant for this study: a) a reduction process that helps to minimise categories to only the ones that are relevant and related to the identified core category, and b) an integration process, that helps to efficiently account for as broad a variation in the data as possible with a minimal number of concepts (Glaser & Strauss, 1967). Furthermore, constant comparison can focus on this limited set of categories and nurture higher level category development - as a result, the theory, or, in my case, the framework, will display higher level concepts and a broader applicability (Glaser & Strauss, 1967).

MEMOS IN OPEN AND SELECTIVE CODING

Memos in this study were used to capture ideas at the moment when they occurred, referring to the coding and the conceptualisation of the research (Glaser & Strauss, 1967). Both Glaser and Strauss emphasise

the process of memo writing and give guidance on what memos can contain and how they help to deal with the researcher's proliferation of ideas during the process of coding (Glaser, 1998, 1978; Glaser & Strauss, 1967).

[Memos refer to] the theorizing write-up of ideas about codes and their relationships as they strike the analyst while coding. (Glaser, 1978, p.83)

Memos were used in this study, based on their following characteristics, according to Glaser (1978, pp.84-87):

- memos do not report data only, but they capture ideas when they actually happen;
- they present ideas of categories, properties and connections between them;
- they integrate clusters of categories and their properties;
- since memos are ideas in their rawest form, they are not final drafts at any point;
- they are of personal help to the researcher and are not shown to others;
- memos and field notes are not the same - memos should be kept separately not to be confused with field notes or data.

Memos, Glaser (1978) argues, provide theoretical ideas to sort, integrate or write about. Even before the grounded theory methodology was adapted for this research just after the first data collection in Study 1, and before I started using memos as a tool described by Glaser (1978), a research journal (see Figure 39) that I kept was used for my own reflective practice and, therefore, served a similar purpose as memos. From the very beginning of this research project, this research journal was used to summarise work in progress and generate a point of reference for ongoing developments in the project undertaken.



Figure 39 - Research journals used over the course of this project to document work in progress

This approach was confirmed by Strauss and Corbin (1998) who advocate for such a journal and the documentation of thinking connected with the particular research area. The research diary spans a time of six semesters and was given up in favour of the write-up of the actual thesis outcome. Although the research journal was not initially intended to be as prominently used in the final thesis work, its content provided par-

tially the functions of memos and a conceptualisation of the research undertaken from early on.

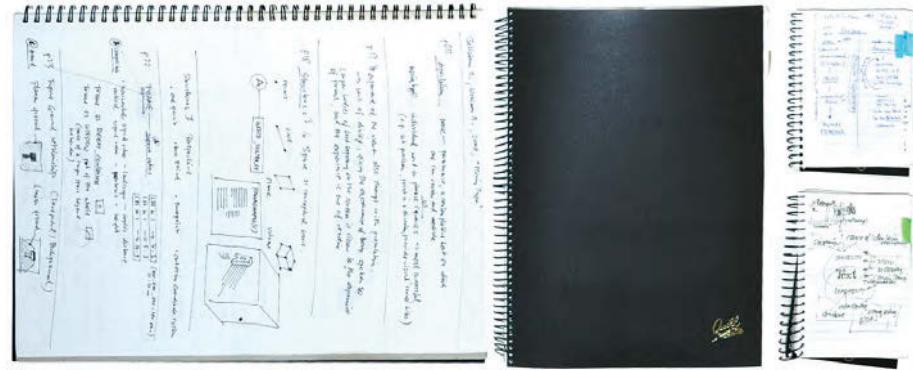


Figure 40 - Active reading notes and memos used extensively in this study

Another form of documentation within the format of the research journal has taken place as ‘active reading notes’ (see Figure 40) - notes taken from literature examined in this research process. It was a focus of this research not only to read in the substantial area but also to immediately relate the readings to the current work undertaken. Manual note taking was employed to achieve that goal, although these notes were accompanied by text documents on a laptop computer. Both were, depending on the individual contribution, integrated into the research journal.

After I adapted grounded theory as a guiding methodology, I also took up the concept of memos (see Figure 40) to document emerging ideas during data collection and analysis. They were collected in different formats, but mainly hand-written in notebooks of different sizes. While a standard A7 notebook was used to record fleeting ideas during the coding stage of this research, the conceptual work was done using larger

formats, using conceptual diagrams, in particular, to document ideas (see Figure 41 on the next page).

All these, including the research journal and memos, have been the main source of reference while analysing the data concurrently with designing subsequent individual studies.



Figure 41 - Examples of the sorting and integration process documented in memos

4.3.3 Theoretical Coding

Theoretical coding is an integrative process, where sorting and integration of memos and concepts proposed in the earlier stages of open and selective coding takes place (Glaser, 1978).

[...] *Theoretical codes conceptualize how the substantive codes may relate to each other as hypotheses to be integrated into a theory.* (Glaser, 1978, p.72)

As discussed extensively in Chapter 3, instead of looking for hypotheses or generalised relations between codes, as in the original methodology, my research questions were aimed to organise and integrate the factors into a guiding framework that would provide a holistic understanding of influences on the perceived visual quality of typographic outcomes. Therefore, to fit the needs of this study, I needed to diverge from grounded theory procedures in the theoretical coding stage, while still focusing on Glaser's (1978) concept of sorting and integration of memos and constructs proposed in the earlier stages of open and selective coding, using aspects of grounded theory as inspiration in this process.

The theoretical sorting of memos is described as key in formulating a theory and presenting it to others (Glaser, 1978), and this concept was followed in this study as well. Memos were collated for each category and property, and then sorted according to their connection to the core categories. Each memo was compared in search for similarities or connections with other memos (Glaser, 1978).

The process of sorting and integration of concepts into a guiding framework in this study initially took place on paper (later transferred into digital media) and was thoroughly documented, as exemplified in Figure 42 on the following page.

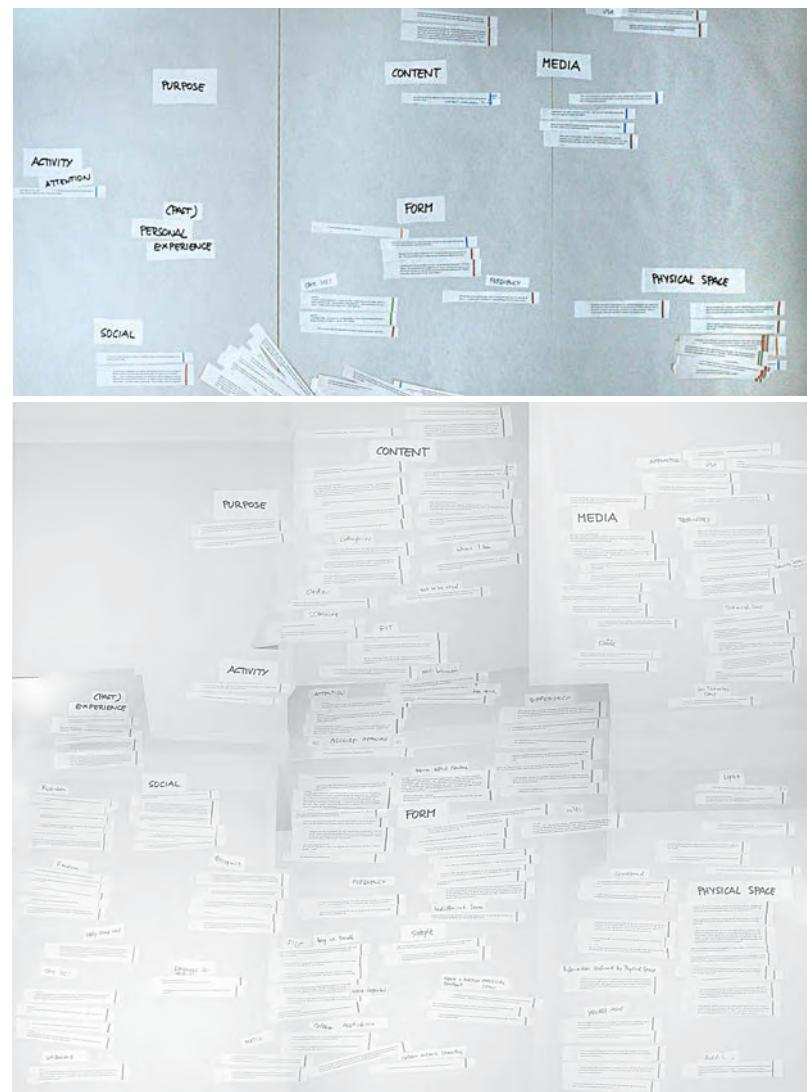


Figure 42 - Early (above) and later (below) stages during the integration of concepts

Codes were resorted and reintegrated a number of times, and each time the collected data slices and their categories and properties were checked for relevance and fit.

This chapter has explained the research design process in this study, providing plenty of details on both data collection and analysis stages, supported by numerous grounded theory principles and concepts. The

next chapter is still concerned with the methodological issues, but this time focusing on the background of the main data collection method employed in this study - auto-driven photo-elicitation (Samuels, 2004; Clark, 1999). This background includes both a review of the relevant literature on the topic, as well as evaluations coming from first-hand experiences in this study. This chapter is meant to provide an additional contribution of this thesis (see Research Question 4), useful for all interested in exploring the suitability of visual research methods for typographic enquiries.

5. Review of a Photo-based Method

As was mentioned in the Introduction of this thesis, apart from the main contribution of this work which the proposed framework offers, another contribution includes the discussion of suitability of visual research methods for typographic studies, in particular the method of ‘auto-driven photo-elicitation’ (Samuels, 2004; Clark, 1999). In this method, participants are asked to take photographs themselves which subsequently guide the interviewing process. The discussion of auto-driven photo-elicitation in this chapter includes its use, benefits, and challenges. While grounded theory (Glaser & Strauss, 1967) was adopted as an overarching methodology structuring this study (guiding such processes as sampling, saturation, or coding), it is still open to any method of data collection. Thus, the auto-driven photo-elicitation method was the focus of this research, and is discussed in this chapter.

As was demonstrated in the previous chapter, the research design in this project has undergone many iterations. Since the initial stages, I recorded both my observations and participants’ feedback on the method used, and used these to analyse and evaluate the methods in terms of

their suitability to elicit useful data, and also in terms of any problems and challenges that could be overcome in subsequent studies. This has helped to improve the methods used, and, as revealed in the previous chapter, the approach has moved from observations using a video camera followed by interviews, to an approach that has given the control of documenting typographic encounters to participants themselves, and using their photographs to guide subsequent interviews. This latter approach was established after Study 1. At this stage, I set out to explore what I could find out from the literature about my new approach, both in terms of some useful discussion on its suitability and the principles of such an approach, but also in terms of practical guidelines from reported studies.

The literature search was based on using keywords such as ‘visual research methods’, ‘photo based research’, ‘image based research’, ‘participants’ photographs’, and variations of those terms. Various academic databases were consulted, including a ‘Supersearch’ facility that searches a variety of databases at once. I also reviewed bibliographical references used by authors of initially identified publications, and subsequently searched for those as well. During the search, I have realised that a common term used for my research approach is ‘auto-driven photo-elicitation’ (Samuels, 2004; Clark, 1999), and, consequently, I included this keyword in my additional searches.

I also noted that many publications that were reporting the method were coming from ethnography, sociology, or anthropology, but not typ-

graphic research. The studies that were reporting the use of the method were often focusing on people's experiences and perceptions (see Table 5 in the following section), which suggest that this is the kind of data that this method is likely to elicit: people's opinions, accounts of their experiences, their backgrounds, and the like. The lack of such methods in typographic research, therefore, has confirmed my earlier assertion (expressed in the Introduction and the Literature Review chapters) that research on people's experiences and perceptions is scarce in the field of typographic design. Typographic research, instead, tends to focus on scientific measurements of legibility influences, using quantitative methods of inquiry. For my research that studies experience and people's perceptions, the visual approach was much more suitable.

Photographs taken by participants during their everyday lives seem to be also often used in interaction design research; such research, however, focuses on the use of technology, and therefore, participants' everyday interaction with artefacts, their daily activities or events, and even the sequence of such events. In my typographic study, I was more interested in what people thought about encountered typographic objects and how they perceived them, not how they used them. Photographs in interaction design research are often one of many self-recording activities asked of participants, next to scrapbooks, notebooks, maps, or postcards assembled together in packs referred to as cultural probes (Gaver, Dunne & Pacenti, 1999). In this field of study, such methods are summed up under the umbrella term 'self-reporting methods'. In Hagen, Robertson,

Kan and Sadler's (2005) methodological review, such self-reporting methods are extensively discussed. Since many of the advantages of self-reporting in general are similar to those observed in auto-driven photo-elicitation (Samuels, 2004; Clark, 1999), some of the interaction design references will be used throughout this chapter as well.

The following section synthesises findings of a literature review on photo-elicitation, organising it around various benefits that this method can offer. These are supported by reflections on my own experience from using the method. Technical equipment issues are discussed next. Finally, the suitability and applicability of the auto-driven photo-elicitation method (Samuels, 2004; Clark, 1999) to research on typographic experiences is explored, using observations from my studies.

5.1 Overview of the Method in Literature

The photo-elicitation technique combines interviewing with the image based research method of taking pictures for documentation. The term 'photo-elicitation' was introduced as a valid and useful method for data collection by Collier (1957). Auto-driven photo-elicitation happens when participants are asked to take photographs themselves, and these are subsequently inserted into the interviewing process (Samuels, 2004; Clark, 1999). The term 'auto' meaning "*self*" indicates that the participants responses are driven by impulses coming directly from their own experiences (Heisley & Levy, 1991). The auto-driven approach helps to achieve the shift of control from the researcher to the participant. Emmison and Smith (2000) use the term 'autophotography' to describe the

same research method, while Pink (2001) calls such collaboration with informants to produce images ‘native photography’. In this research, however, the term auto-driven photo-elicitation will be used in line with many researchers who described the technique (for example, Loeffler, 2005; Clark-Ibáñez, 2004; Samuels, 2004; Radley & Taylor, 2003; Harper, 2000).

The following Table 5 summarises some of the studies that used an auto-driven photo-elicitation approach, along with a short overview of how these were conducted. The procedures were examined to provide guidelines and to learn from experience when refining the research design of my own study.

RESEARCHER/STUDY	PROCEDURES FOLLOWED
Loeffler (2005) <i>A study to explore the meanings of outdoor education experiences</i>	<ul style="list-style-type: none"> • 14 college students were asked to take pictures during outdoor trips • interviewees discussed the photographs
Cederholm (2004) <i>A study that used photo-elicitation in tourism research to frame the experience of backpacking</i>	<ul style="list-style-type: none"> • 30 backpackers were asked to talk about any of their trips based on the pictures they took • the interviews were taped
Clark-Ibáñez (2004) <i>A study of urban childhood and schooling using photo-elicitation - addressing the method's fundamentals and exemplifying its use</i>	<ul style="list-style-type: none"> • the schoolchildren participants were told to take pictures of people and things most important to them • the timeframe was a week • 47 interviews were conducted in the participants' homes

RESEARCHER/STUDY	PROCEDURES FOLLOWED
<p>Samuels (2004) <i>Ethnographic study on understanding of the monastic culture in Sri Lanka, including reflections on the use of auto-driven photo-elicitation</i></p>	<ul style="list-style-type: none"> • each of the 9 participants was given a list of 11 photographs to be taken • before interviews, participants were asked to match each photo to its topic • interviews were structured according to topics (from 1 to 11)
<p>Radley & Taylor (2003) <i>A study that aimed to discover the part that the physical setting of a hospital ward plays in a patients' recovery, including a critical discussion of the photo-elicitation method and its implications for qualitative analysis</i></p>	<ul style="list-style-type: none"> • 9 hospital patients were asked to take photographs of 12 things they thought as significant about their hospital stay • they were limited to 24 pictures overall (2 for each of the 12 things they wanted to document) • pictures of people were not allowed (because of hospital restrictions) • in some cases a Polaroid camera was used so that interviews could be conducted immediately • due to hospital restrictions, the researcher had to be present while pictures were taken (leaving the camera for 24 hours with the patient, as initially planned, was not allowed) • interviews were conducted asking about images in the order they had been selected • additionally the patient had to choose the most important shot taken
<p>Harrington & Lindy (1998) <i>A study examining the perceptions of college freshmen using auto-driven photo-elicitation and reflective interviews to discover reactions</i></p>	<ul style="list-style-type: none"> • 10 students were given a disposable camera to take shots of their impressions of the university • this was followed by a reflective interview to discover students' reactions
<p>Isomursu, Kuutti & Väinämö (2004) <i>A study examining the user experience evoked by a specific mobile application on a PDA</i></p>	<ul style="list-style-type: none"> • on three weekends, a total amount of 36 people took part in this research, either using the mobile application, or recording, with a camera phone, the experience of the other person using the application • participants worked in pairs, and often changed roles during usage, i.e. the PDA user became the observer and vice versa • when the users returned with the devices, they were asked to describe what they did and how they used the application

RESEARCHER/STUDY	PROCEDURES FOLLOWED
Carter & Mankoff (2005) <i>A study examining how people search for, consume and produce information</i>	<ul style="list-style-type: none"> • 19 participants asked to take a photo each time they noticed that they were consuming or producing information; an instruction sheet noted that things like reading a newspaper or surfing the Web were of interest • the researchers asked pilot participants to create written annotations for each photo on a small notepad • one day after the photo taking, one-hour interviews were conducted to discuss the photos taken

Table 5 - Examples of auto-driven photo-elicitation procedures

5.2 Benefits of Auto-driven Photo-elicitation

There are three main concepts that constitute the value of an auto-driven photo-elicitation method - the benefits of photography to support research, the use of those photographs in subsequent interviews, and finally, having participants themselves control the photo-taking process. These are discussed in the following sections, based on both the literature as well as my own experience during this research.

5.2.1 *The Use of Photographs in Research*

A photograph provides a potential “*to question, arouse curiosity, tell in different voices, or see through different eyes from beyond*” (Edwards, 1997, p.54). According to Collier (1967), one of the early visual anthropologists who used photography as a research method to elicit information from participants, a camera is highly sensitive to attitudes of the user. It is a tool of both “*extreme selectivity, or no selectivity at all*” (Collier, 1967,

p.39). The memory of a camera replaces the notebook, and ensures more complete visual coverage under most tiring circumstances. It allows for comparable observations of an event as many times as needed. Visual recording technology also allows us to manipulate the data. Visual recordings have long been appreciated and employed by natural scientists because they make it possible to speed up, slow down, repeat, and zoom in on things of interest.

There have been various attempts to categorise image-based research. Wagner (1979), educational researcher and visual studies scholar, for example, offers five modes of such research: photographs as interview stimuli, systematic recording, content analysis of native photographs, native image-making, and finally, documentary photography (narrative visual theory). Harper (1988), a visual sociologist, offers a different classification of visual research: the first category includes taking photographs to study the visual world, and the latter one focuses on analysing photographs others have taken. Banks (1995), himself trained as a documentary filmmaker now working in the field of social anthropology, divides visual research methods into three categories: studying society by producing images, studying images for information about society, and finally, collaborating with social actors in the production of visual representations. Emission and Smith (2000), in their seminal work ‘Researching the Visual: Images, Objects, Contexts and Interactions in Social and Cultural Inquiry’, argue, however, that it is not clear why these uses of photography must be seen as mutually exclusive, rather than dif-

ferent aspects of the same practice. Similarly, in my study, I wanted to employ these different aspects of photo-based research holistically, to maximise the usefulness of the method. Apart from documenting participants' typographic experiences in a richer way, I found the photographs useful to be able to revisit them as many times as needed to learn about participants' perceptions and attitudes or about typographic outcomes themselves, as well as utilise the photographs as a stimuli to guide interviews and enable participants to remember their experiences and talk about them.

5.2.2 The Use of Photographs in Interviews

Using photos in interviews results in a greater interest to take part in a study for participants, and makes it easier for researchers to establish a rapport with the interviewees more quickly (Samuels, 2004; Collier, 1967). Inserting photographs into the interviewing process eliminates to a great deal the discomfort associated with being questioned and captures the interviewees' attention much more easily and for a longer period of time (Samuels, 2004). Furthermore, pictures help to overcome the problem of the inadequacy of words alone to convey the essentials of the participants' experiences (Loeffler, 2005; Carlsson, 2001). Collier (1967) additionally notes that the information present in photographs facilitates asking questions by the researcher and the pictures can provide structure for the interviewing process.

5.2.3 Participants Controlling the Process of Taking Photos

During the course of my study the approach shifted away from the researcher as an observer to the new approach that was driven by the participants becoming observers themselves. Hammersley and Atkinson (1983) argue that all research targeted towards the social/real world is a form of participant observation, and there is no study of the social/real world without mutual influence. The shift of control from the observer to the observed as driving the study is a natural development in observational studies, since, as pointed out by Burns (1997), such studies often start off unstructured, with the researcher initially lacking an idea of what exactly will happen or should be observed. This has also been the case in my own research presented in this thesis, where the evaluation of initial studies called for handing more and more control over to the participant.

Specific benefits of asking participants to take photographs themselves during the study are presented below, structured around some common identified themes.

MAKING PARTICIPANTS FEEL ‘AT EASE’

The technique empowers the interviewee through a feeling of control over the process of being questioned (Clark-Ibáñez, 2004), giving them an increased voice and authority (Sherry, 1988) by putting the participant in charge of the situation and the story they want to tell (Cederholm, 2004). The participants may feel more at ease during the inter-

views because of the familiarity of the material present in their own pictures (Collier, 1967).

In the studies conducted, some participants stated that they felt they were an important part in this research since they had the freedom of choosing to photograph whatever appeared important to them personally. The photographs structured the interviews, and facilitated the flow of questions progressing from one picture to another, forming a coherent narrative of the participants' experience.

TRIGGERING PARTICIPANTS' MEMORY DURING INTERVIEWS

The process of interviewing using photographs not only appears to “*relieve the strain of being questioned*” (Collier, 1957, p.849), but it also reduces areas of misunderstandings and functions as trigger for memories:

[...] the thrill found in a photograph comes from the onrush of memory.

(Berger, 1992, p.192)

Samuels (2004) sees the relationship between memory and seeing something we once knew as a reason why auto-driven photo-elicitation provides the opportunity for reflection, recollection, and description. Loeffler (2005) observed that using photos as a memory trigger heightens the interviewees ability to formulate narratives of their experience. Similarly, Cederholm (2004) regarded the photographs taken by the participants in her study as a triggering mechanism to remember thoughts and emotions which they had at the time when the photos were

taken. Photography enables capturing a higher level of detail than the participants would be able to retain by themselves alone (Loeffler, 2005).

The memory trigger aspect of photo-elicitation was particularly interesting in this study that is associated with typography. Since some of the photographs taken by participants in this study did not have a sufficient quality to represent the typographic details encountered, the concern was that the photo-elicitation method is less suitable for the purpose. It was, in fact, minor since the main objective was to obtain an account of the particular experience of participants, rather than high quality pictures of typographic outcomes. It was the ‘trigger of memory’ that made the choice of auto-driven photo-elicitation an important aspect of the study conducted. When I first asked the participant (Anna) to take pictures, I also asked her to take notes during the visit. After initial tries to note down her thoughts about typographic outcomes encountered on the spot (in addition to taking pictures), the participant abandoned this idea, relying solely on the pictures and her memory to provide enough information for her subsequent recall of the visit - her reasons for not taking notes included “*too time consuming*”, “[...] *took me forever to write down all my thoughts*” and “[*it was*] *not very convenient to write while standing*”. Similarly, in Carter and Mankoff’s (2005) study, all of the pilot participants who were asked to create annotations for pictures taken abandoned written notes after only a few attempts, and the researchers also decided not to ask for such data of the study participants. In my study, Anna herself, however, came up with the idea of sorting the pictures and

writing about them later at home. The act of typing and the task of ‘sorting’ her thoughts in a linear manner according to the pictures taken made the task of looking back at her visit more manageable. Seeing the pictures again (not encountering them just once, when taking them) made her realise additional things about the typographic outcome she documented. Asked about why she thinks that happens, she answered with confidence that the situation in a quiet home in front of a computer let her focus much better on the visuals and their details, and she could spend much more time analysing each textual display. Anna was surprised herself by how much the pictures made her remember the actual situation and its circumstances.

The memory trigger effect of pictures was especially important because of a large number of typographic displays encountered by participants, and because of the fact that interviews happened days after typographic objects were experienced and photographed. The use of pictures is helpful because “*the sharper and more isolated the stimulus memory receives, the more it remembers*” (Berger, 1992, p.192).

UNCOVERING RELEVANT ASPECTS OF PARTICIPANTS’ EXPERIENCES

Clark-Ibáñez (2004) describes participants talking about their photos as disclosing meanings that could have remained hidden in traditional interviews. Harper (1988) similarly notes that a photograph elicits associations, definitions or ideas that otherwise could have gone unnoticed.

Clark-Ibáñez (2004) argues that using photographs taken by the researcher, not the participant, is highly suitable for theory-driven research - such photos represent the aspect of the phenomena that were taken for granted before the research starts. Theory-formulating studies on the other hand - such as this study of the typographic experience based on the grounded theory methodology - may, by presenting photographs that the researcher selected as important, limit themselves and miss essential aspects that could be important to the participants, and, therefore, relevant to an emerging theory (or framework). Photographs taken by participants, on the other hand, are particularly suited to the theoretical sampling technique of the grounded theory methodology as they may elicit valid information, and, therefore, reveal relevant concepts (Harper, 2000).

In this study as well, the openness of the photo-elicitation method allowed the discovery of a multitude of aspects relevant to typographic experiences. The participants' photographs let them recall and reveal numerous issues that might not have been available to this research if I, as the researcher, had been guiding the documentation process.

EVOKING CONTEXT DESCRIPTIONS

Photographic research, according to Banks (1995), should not only focus on what is represented in a picture itself (content), but also on the 'who' and 'why' aspects of taking this picture (context). Carter and Mankoff (2005) also stress the importance of peripheral information in photographs. Banks (1995), too, suggests that if researchers produce visual

representations themselves, there is a danger that the focus on content will make it harder to discover what context could reveal. Furthermore, visual tools are not objective, as both film and video are not neutral technologies that can objectively record visible givens. They are subject to social and cultural contexts (Banks, 1995).

Participants in photo-elicitation studies not only recall the subject photographed but also the moment of picture taking, their intention as well as the whole context of taking the photo, according to Loeffler (2005). The meaning of photographs is always dependent on the contexts in which they are taken, displayed and understood (Wells, 2000). Wells (2000) also points out that a photo seen from a phenomenological stance is not just a copy of some object but a visible fragment of particular engagements with the setting. In auto-driven photo-elicitation, the focus moves from an interest in the meanings of images themselves to the understanding of what was pictured, and why (Radley & Taylor, 2003). Carter and Mankoff (2005) found that the most important information from the interview usually comes not from the pictures themselves but from the subjects' descriptions of the processes and actions that led them to take this image.

Banks (1995) uses the term 'internal narrative' to describe the content, or story of the image as it is read by the viewer. The external narrative is the context which produced the image, and the context in which the image is being viewed. Pink (2001) also argues that it is impossible to record an image without some interference; what is crucial is reflexivity

and a recognition of the context which produces an image and which produces ethnographic knowledge.

Both internal and external narratives were studied in this project. The interviewees were often asked not only what their pictures displayed, but why and when they were taken. They often recalled contexts surrounding the moment of taking the picture, formulating rich and detailed narratives around the picture.

BREAKING THE FRAME

Harper (2002) refers in his writing to the term ‘breaking the frame’ when he describes photo-elicitation as a research tool. Although initially the pictures taken by his participants did not elicit the kind of responses he originally sought, it was because the pictures looked “*essentially like the illustrations in the many farm magazines*” (Harper, 2002, p.20). On the other hand, the insertion of historical and aerial photographs did break the frame of the farmers’ normal views, leading to a reflective stance in contrast to their taken-for-granted aspects of work and community. The participants as narrators of their photographic stories are encouraged by the photos taken to explore preconceptions which can be quite surprising to themselves (Harper, 1994).

This exploration can be confronting not only to the subjects but also to the researcher as well. Auto-driven photo-elicitation facilitates the breaking of the frame for both sides of the research process. Samuels (2004) describes this as a reflection of the participants’ own world and

perspective onto the world of the researcher. The photographs provide a direct entry for researchers into the participants' point of view (Radley & Taylor, 2003). The auto-driven photo-elicited interviews force the researcher to question and re-evaluate their own taken-for-granted assumptions, consequently leading to more novel and interesting results in the collected data (Samuels, 2004). The choices made by participants reflect their own subjective worlds and experiences much more than any answers given to questions phrased by the interviewer.

Since I have had extensive experience in the field of typography, it was important that my assumptions and views would not override the participants' own perspectives. In that respect, the photographs taken by the participants provided a 'direct entry' for me into their world view, helping to bridge the gap between two distinct points of view and two distinct knowledge bases.

NEGOTIATING MEANINGS BETWEEN PARTICIPANTS AND RESEARCHER

Another important issue in research is how to accurately negotiate meanings between the participants and the researcher. Photo-elicitation is more likely to reflect the participants' world and their understanding of it. Taking pictures themselves not only makes those pictures meaningful to the participant, but also helps to facilitate the ability to transmit that meaning to other viewers (Samuels, 2004).

The construction of meaning is intimately connected to the act of taking the picture:

The photographs are like a mirror for us. We can learn a lot of things by discussing the photograph. It is easier to speak while holding the pictures in our hand and while looking at the pictures. We can explain more when the pictures are close at hand. (Samuels, 2004 p.1540)

This is further displayed in Samuel ‘s (2004) comments on one of his participants’ experience as a Sri Lankan monk:

For him, knowing and thinking are not merely mental processes. Instead, feeling (holding the pictures) and seeing (looking at the pictures) are intimately connected to remembering, learning, and expressing. Shooting the photographs and later discussing them with me provided a greater opportunity for the interviewees to recall their own ideas as well as construct meaning out of their everyday monastic experiences. (Samuels, 2004, p.1540)

Placing the camera in the hands of the ‘insiders’, according to Caillier (2002) and Clark (1999), may be the most direct way of getting at what is important to them and how they attach meaning to their experiences. In this respect, Clark (1999) reports that giving the participants autonomy in the photo-making process not only facilitates the interview, but provides them with the power to describe their experiences on their terms. Clark reports: “*Their own photographs shape the topics included and their own commentary on the photographs retains [for the user] the right to interpret material in his or her own way*” (Clark, 1999, p.41). This allows the re-definition of the power dynamics inherent in researcher-subject rela-

tionships, and to discover what is really important to the participants in a study.

The participants' photos allow researchers and interviewees to develop a "*negotiated interpretation of [...] events*" (Heisley & Levy, 1991, p.257). They also "*provided a means to give the informant increased voice and authority in interpreting such events while provid[ing] a perspective ... that makes systems meaningful to an outsider. It also manufactures distance for the informant so they see familiar data in unfamiliar ways.*" (Heisley & Levy, 1991, p.257)

The participants in this study often did not have the vocabulary needed to describe typographic outcomes. Photographs made it easier for them to convey their ideas and impressions. The pictures became the main tool that facilitated the communication between me and the informants, providing clear and tangible prompts. Without pictures to accompany their accounts, it may have been impossible for me to visualise the typographic outcomes or surroundings that participants were describing.

ELICITING MORE CONCRETE DESCRIPTIONS FROM PARTICIPANTS

Descriptions evoked by photo-elicitation tend to be grounded in everyday concrete experiences (Samuels, 2004). In Samuels's earlier non-photo-elicited interviews, participants tended to list abstract qualities. In contrast, both Collier (1957) and Samuels (2004) found in their studies that photo interviews elicited considerably more concrete and richer descriptions. The photographs in this study made it possible for the par-

ticipants to provide rich, detailed descriptions, with plenty of concrete examples.

PROVOKING AFFECTIVELY CHARGED RESPONSES FROM PARTICIPANTS

According to Samuels (2004), auto-driven photo-elicited interviews tend to evoke more affectively charged responses because of the photos' ability to spark emotions and feelings in the interviewees. Data collected from such interviews tend to have more of an emotional flavour, often followed by discussions about personal likes and dislikes of the interviewees (Samuels, 2004). Collier (1967) realises that even though the camera is an automotive tool, it is one that is highly sensitive to the attitudes of its operator. Isomursu et al. (2004) also note that visuals taken by the users themselves contain more emotions and a better feeling of a real situation, compared to those taken by the researcher.

The issue of conveying emotions was particularly important in this study that explores the perceived quality of a typographic outcome. Such quality involves likes, dislikes, feelings, and attitudes. The photos elicited quite strong emotional statements from the informants when they commented on specific typographic outcomes.

The following Table 6 summarises the various benefits of an auto-driven photo-elicitation method as it has been employed in this research.

PHOTO-BASED RESEARCH	PARTICIPANTS TAKING PICTURES
<ul style="list-style-type: none"> • potential to question and arouse curiosity • camera as a highly sensitive tool to attitudes • comparable observations of one event as many times as needed • camera ensures complete visual coverage • recording technology enables manipulation of data 	<ul style="list-style-type: none"> • makes study more interesting to participants • helps to establish rapport with interviewees • empowers the participants giving them control over the process • facilitates question-asking by the researcher • reduces misunderstandings • triggers memories and enables recall of detailed descriptions • elicits all relevant aspects (which could otherwise go unnoticed) • not only reveals content of pictures but also context (intentions, reasons, circumstances) • overrides taken-for-granted assumptions of both researcher and informants • provides a direct entry into participants' point of views • helps participants to convey meanings and describe experiences • elicits more concrete descriptions grounded in an everyday lived experience • evokes more affectively charged responses

Table 6 - Summary of the benefits of the auto-driven photo-elicitation method (Carter & Mankoff's, 2005; Loeffler, 2005; Cederholm, 2004; Clark-Ibáñez, 2004; Isomursu et al., 2004; Samuels, 2004; Radley & Taylor, 2003; Caillier, 2002; Harper, 2002, 2000, 1994, 1988; Carlson, 2001; Pink, 2001; Emission & Smith, 2000; Wells, 2000; Clark, 1999; Burns, 1997; Edwards, 1997; Banks, 1995; Berger, 1992; Heisley & Levy, 1991; Sherry, 1988; Hammersley & Atkinson, 1983; Wagner, 1979; Collier, 1967, 1957)

5.3 Technical Equipment Issues in Photo-Elicitation Studies

The photo-elicitation method may present a number of technical challenges. It is based on the use of a camera, which means that some equipment issues need to be considered for the research to take place, including what equipment to use, how to use it, and how to overcome potential problems with its use. An even bigger challenge is present since it is not the researcher who uses his/her own camera to take pictures.

The request to the participants themselves to take photos brings about

many additional issues, such as whose camera to use, how to ensure the sufficient quality of the pictures and the like. The literature reviewed, as well as my studies have provided a multitude of insights about such issues. I have used various kinds of equipment in different projects, and I have taken detailed notes concerning their use. During interviews, apart from discussing the experiences with typographic outcomes, I also asked participants for feedback on the equipment used and the method itself. This has helped me to improve my studies, but also to present a contribution of this thesis in terms of useful guidelines and lessons learned to other researchers who want to use the method in their studies.

5.3.1 Technical Issues Evaluated during this Study

In the first study, two video cameras were operated by two researchers (my colleague and I). The participant Mona seemed to be excited about the use of a video camera, and felt it was innovative and interesting. The cameras were not seen as intrusive by the participant (as pointed out by the observing researcher as well). Although the participant did not mind the video camera following her, it may have been a distracting sight for other museum visitors. Following a participant with a video camera (although small and lightweight) still felt like ‘stalking’ to both researchers. Mona’s awareness of being followed made her deliberately not to turn around to face the camera. Another issue we realised was that we did not feel comfortable when Mona happened to stand or walk very close to other visitors, which meant that other people were filmed accidentally as well - this caused ethical and privacy concerns. The free ‘roaming’ cam-

era of the second researcher did not work at all: the participant was lost immediately when the observer tried to get some different camera viewpoints; when chance meetings happened, the camera was either facing the participant - which the participant and the observer wanted to avoid - or following the participant in the same way as the other filming researcher, which did not provide any new perspective.

A problem noted was that the main objects of concern - text displays - were not properly lit and the coarse resolution of a video camera did not provide much typographic detail. Additionally, video material proved very difficult to be used in subsequent interviews. Combining an interview with the joint analysis of the filmed visit was time-consuming and technically challenging. Viewing the video material presented some difficulties, including location, equipment, and the time spent to view and analyse it. The process was often interrupted by technical difficulties, due to the elaborate set up of the equipment. The process also proved inflexible in terms of the equipment access and operation.

When in the subsequent studies the control for documenting the visit was shifted to the participant, I decided that video cameras would not be suitable in this project. First of all, the video camera would require the participant to constantly attend to the recording process, while taking pictures was considered less interruptive and effortless. Some users may not be experienced with using a video camera, while taking pictures with a still camera is a very common task, with which more potential participants would be familiar. I also hoped that the analysis, viewing and sort-

ing of photographs would overcome many technical problems that became apparent during the video footage analysis of the first study. Additionally, the participant using a camera in the museum was possibly also a more natural sight for onlookers, especially compared to a person being followed by a researcher with a video camera.

Compared to the first study, more effort was required from the participant Anna this time, who, instead of just wandering about, had to take numerous pictures on the way. Such a technique could disturb the natural process of the museum visit. The participant, however, according to her own words, “*enjoyed*” the taking of pictures with a digital camera - she often took up to five pictures of one typographic outcome encountered, knowing there will be possibility of choosing the best shot. The actual act of taking the pictures at a particular point took just a few seconds and was perceived as a natural act without disturbing the museum visit. Taking pictures was not felt as being “*wrong*” in a setting such as a museum; it was also possibly perceived as natural behaviour from other visitors and guards.

The fact that a digital camera was used encouraged the participant to take more rather than just a few shots because of its cost-neutrality; using a non-digital device in contrast could have made the participant more aware of the cost of each picture and, therefore, limit her in terms of how many pictures she believed would be appropriate to take. It was also helpful that Anna used her own digital camera that she was very confident with - it would have been much more time consuming to ex-

plain how to operate an unknown piece of equipment to a participant of the study; additionally, there might have been many more technical problems while taking pictures.

In the shopping centre studies (Study 2), three different devices were used for the auto-driven photo-elicitation. In the first study with Alan, conducted in a large suburban shopping centre, a video-camera's still image feature was used to document Alan's experience with typographic outcomes during his visit at the mall (see Figure 43 on the next page). Even though it was a video camera used, its function was rather that of a still camera. The participant had experience with using a video camera (although a different model) and was familiar with the feature of taking still images. He also suggested that he would use a feature to record voice-over to the still images. He abandoned the idea after the first few shots, however, since he felt that he could not provide the information he wanted to add to each shot on the spot and take a meaningful picture at the same time.

Technically, the pictures taken were of adequate quality for the task given, although in situations where the camera was moved while taking a picture, and in those where Alan "*wanted to show text close ups*", the quality was below expectation. However, the main aim of the photo-elicitation method used in this study, which was to prompt interview responses during the feedback session, was achieved, despite the quality concerns formulated by the researcher and the participant alike.



Figure 43 - Pictures taken with the still image feature of a handy-cam, at a large suburban shopping centre

The frequency of pictures taken during the task dropped over time. Alan stated that he took so many pictures at the beginning because they were all new, whereas later on, towards task completion, the types of textual displays documented were already known. Another factor was not directly stated, but can be seen from an additional comment he provided during the interview: *"It was annoying to wait so long until a picture was taken"*. The still images feature of the video camera requires the participant to hold the release for about 7 seconds. This could under normal circumstances not be a noticeable problem, but when taking several

pictures in a row over a period of time, the seven seconds processing time were annoying for the participant.

Another comment referred to passers by: in Alan's words, onlookers were "*interested*" in the scene and "*wanted to know what [he] was filming*". Problems arose with security guards as well who questioned Alan twice. The participant wanted also to 'view' the pictures during his visit. This proved to be too complicated, although possible, and, therefore, was not done at all.

To sum up, using a video camera to take still pictures proved to be technically complicated, and therefore, not used in further studies and replaced by a digital still image camera for the next participant, Kate. Since Kate brought her own camera to the study, the technology briefing session was not conducted. Kate was sufficiently familiar with her camera. With its simplicity in terms of use and a capacity of 96 pictures, this camera proved to be a very good choice for the task at hand. There were no technical problems encountered during the study, possibly due to Kate's familiarity with the equipment and its simplicity in terms of handling. Kate was used to an automatic flash feature of her camera - if there were any doubts about pictures she took when she used a preview available, she took a second shot (sometimes up to five similar shots) until she was satisfied with the quality of the picture taken (see Figure 44 on the next page).

Overall, familiarity with the equipment and the ease of use were advantages of this approach and the particular device employed, and these should not be underestimated.

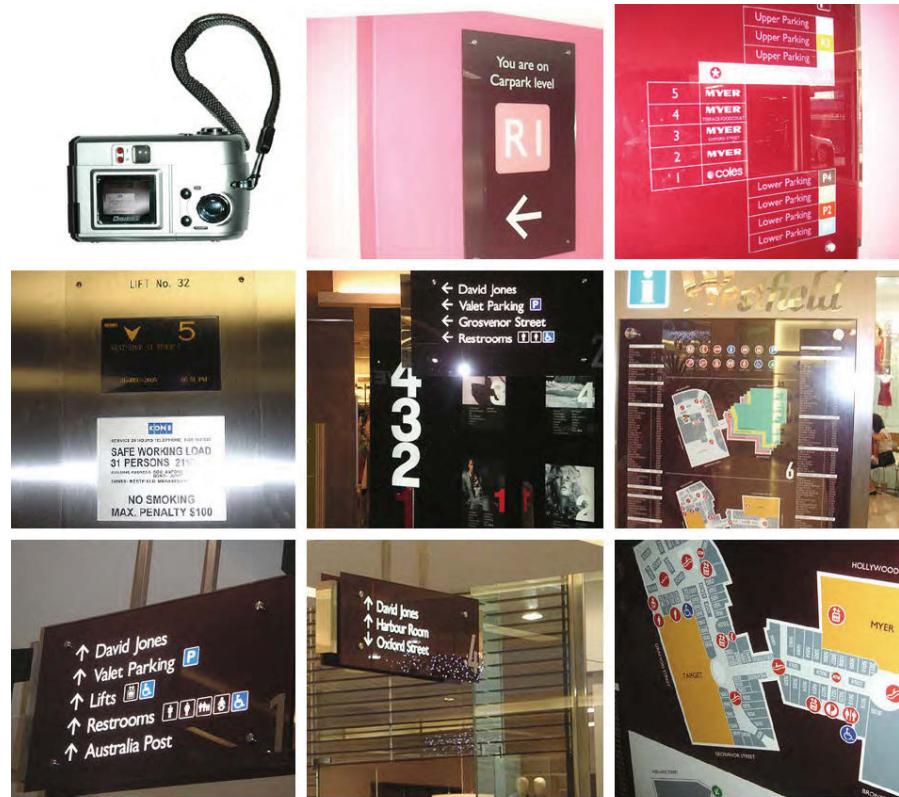


Figure 44 - Kate's pictures taken with a digital still camera during the study in a large modern shopping mall in Sydney

When choosing the next technology, the researcher had the 'ease of use' of Kate's study in mind and opted for a disposable analogue still camera. This was hoped to be the best scenario, independent from the participant owning or wanting to use their own recording device for this study. After conducting the study with another participant, Jack, however, it was clear that the disposable analogue still camera was used in the worst possible conditions: the low light environment of an indoor shopping

centre. Although a flash was built into the camera, it had to be triggered manually - something that was hardly remembered by Jack.

The fact that most of the around 35 shots were technically not adequate was discovered after the pictures returned from the lab since the analogue technology needed the separate development process (see Figure 45 on the next page).

Using analogue photography involves another issue of importance in a research project: proper timing. If interviews are to be conducted immediately (or at least soon after) the original study, the time for the development process of the disposable camera is a crucial issue - the camera in this case was sent to the lab since the development process was included in its price; a more expensive option would have been the development at a local store, something that has to be included in cost and time planning of a study.

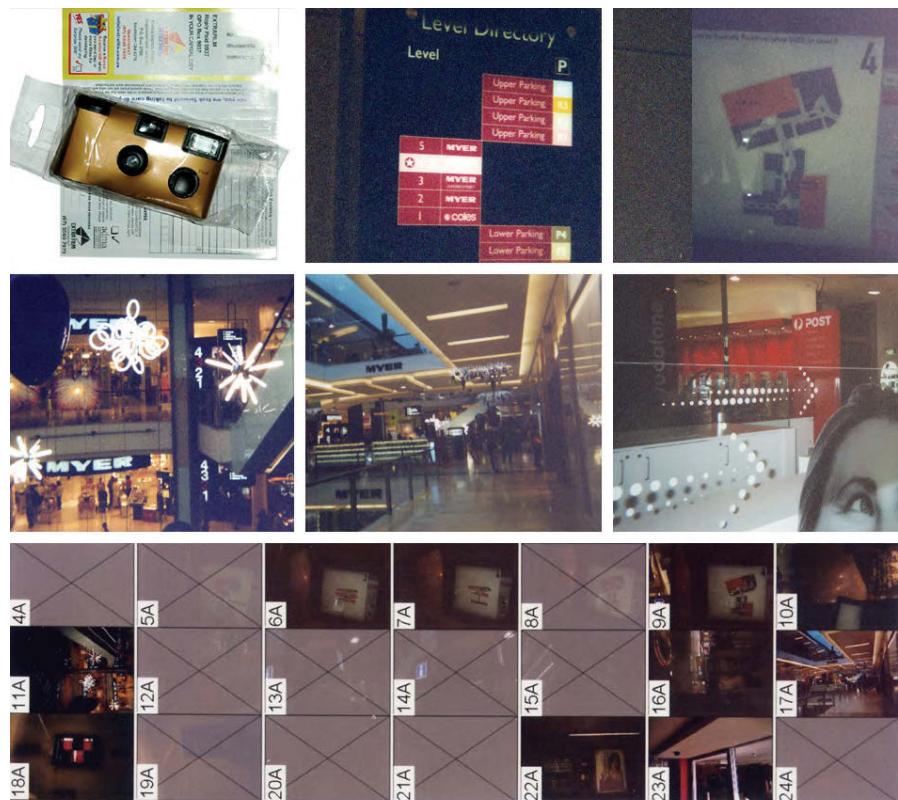


Figure 45 - The questionable quality of the pictures taken with a disposable analogue still camera

Although the task of triggering memory during the interviews was achieved with a limited number of pictures provided, the outcome of the photographs was a disappointment for the participant and the researcher alike which shaped the interviewing process, made the participant focus on the low quality issue, and limited elicitation of new insights about the actual experience with typographic outcomes in this particular setting.

The following Table 7 summarises and compares the experiences with different devices used for the auto-driven photo-elicitation in Study 2:

VIDEO CAMERA (still image feature used)	DIGITAL CAMERA	DISPOSABLE CAMERA
<ul style="list-style-type: none"> quality of pictures was adequate - although participant thought that a digital still camera would be better 	<ul style="list-style-type: none"> quality was perceived as adequate 	<ul style="list-style-type: none"> quality was perceived inadequate - participant was disappointed picture quality problems when movement occurs during picture taking minor problems with close-ups which were out of focus
<ul style="list-style-type: none"> no flash but automatic adjustment to low light conditions produced pictures of sufficient quality 	<ul style="list-style-type: none"> flash was released automatically on setting chosen by participant - ease of use 	<ul style="list-style-type: none"> flash to be released manually, and often forgotten, which made some pictures taken useless
<ul style="list-style-type: none"> auto-focus (problems with close-ups) 	<ul style="list-style-type: none"> auto-focus (minor problems with close-ups), the automatic flash and the ability of previewing the pictures made it possible to re-do shots if necessary 	<ul style="list-style-type: none"> restrictions on focus (how close one could go in relation to the object pictured)
<ul style="list-style-type: none"> release has to be held for 7 seconds to take a still image - perceived as annoying by participant 	<ul style="list-style-type: none"> short delay when releasing the trigger - perceived as "normal" 	<ul style="list-style-type: none"> no delay in taking a picture (although no flash was used)
<ul style="list-style-type: none"> preview on small screen possible but difficult 	<ul style="list-style-type: none"> preview on small screen possible after taking a picture 	<ul style="list-style-type: none"> no possibility of preview
<ul style="list-style-type: none"> participant was familiar with similar type of camcorder 	<ul style="list-style-type: none"> participant used own camera, which made it easy for her to take pictures - using participant's own camera seems very beneficial in photo-elicitation studies 	<ul style="list-style-type: none"> participant was familiar with disposable cameras but has not used one recently

VIDEO CAMERA (still image feature used)	DIGITAL CAMERA	DISPOSABLE CAMERA
<ul style="list-style-type: none"> a picture preview was '<i>too complicated</i>' to be used by participant additional feature (voice over) was tempting but not used - participant felt impatient 	<ul style="list-style-type: none"> preview of photos taken was remarked as a useful feature by participant, making it possible to redo shots if necessary 	<ul style="list-style-type: none"> the lack of a picture preview maybe limiting
<ul style="list-style-type: none"> over 480 pictures possible on a 60 min tape - enough pictures for the study undertaken 	<ul style="list-style-type: none"> around 90 pictures on a 96 MB smart card - enough pictures for the study undertaken 	<ul style="list-style-type: none"> only around 35 pictures possible - not enough pictures for the study undertaken
<ul style="list-style-type: none"> pictures had to be downloaded to PC - (printed if necessary) special cable needed 	<ul style="list-style-type: none"> pictures had to be downloaded to PC (printed if necessary) which presented no challenges 	<ul style="list-style-type: none"> pictures had to be sent to lab for development, which extends the wait between study and follow-up interview

Table 7 - Comparison of recording technologies and features used in Study 2

In the two last studies, when the participants were taking pictures with their own digital cameras during their daily routine, the pictures taken were generally of good quality, with the exception of some taken with a mobile phone camera. The issues with digital cameras would have been similar to the ones reported above, and no further evaluation of participants' use of equipment was conducted. There were no technical problems or issues with the process of collecting examples from participants via email and presenting them on a laptop computer during the interview since this was straightforward and easy to administer.

To sum up the issues discussed above, the participants stated that the use of cameras made participating in the study innovative and interesting. Taking pictures was seen as quick and effortless, and did not disturb the

participants' experience, unless the equipment chosen required a long pause between taking pictures, such as with disposable cameras when flash was used.

5.3.2 Comparison of this Study's Observations to Literature

In the first study, the researchers felt uncomfortable following the participant around, recording her with a video camera, whilst the participant experienced typographic outcomes. Interestingly enough, the participant herself did not report finding the encounter obtrusive. The use of cameras in public places also means that other people can accidentally be photographed. This issue of indirect and/or involuntary participation where participants' activities were recorded without permission was also reported by Hagen et al. (2005).

The quality of photographs may become an issue, especially in badly lit places or indoors, where professional equipment may be necessary. Even though it seemed desirable to provide such a camera to participants so they do not have to own or be willing to use their own device, this seems to be outweighed by the benefits of participants using their own equipment. Participants have experience with their camera, and are at ease with its use and various functionality. Additionally, it eliminates the problems inherited in camera dissemination and retrieval, as also pointed out by Clark-Ibáñez (2004).

It has to be noted, however, that the use of the participants' own camera may not be suitable in all research situations. In Clark-Ibáñez's study

(2004), for example, the participants included school-aged children whose parents expressed their concern about the possibility of the equipment getting lost or damaged. Providing a disposable camera to each participant may be the only viable option in such research.

The photo-elicitation method seems to work better with the use of digital equipment which makes the participants not worry about how many pictures they can take; it also cuts developing costs for the researcher. Digital technology also lets them preview the shots, in case they need to retake it. In my study, a camera with capacity of 96 pictures was considered sufficient, while the one with 36 might not be enough. In Carter and Mankoff's (2005) study, for example, the average participant captured 34 photos, with the minimum number being 15, and the maximum 90. Therefore, the suitable number may depend on the researcher's objectives as well as individual variations amongst participants.

Heisley and Levy (1991) view the feature of being able to limit the number of pictures as beneficial. Even though this problem has not happened in my study, according to these researchers, too many photos taken can prove to be unproductive, and the interview session could easily go overtime. Another problem caused by participants being allowed to take too many pictures, as noted by Carter and Mankoff (2005), is that having too many photographs makes it harder for participants to recall the context behind some of them. In their study, seven participants (out of the original nineteen) were unable to recall why they took a particular image during the interview.

In terms of their use in follow-up interviews, video footage is time-consuming and technically challenging; digital pictures, however, presented on a computer screen in this study, were easily integrated into the interview process. Heisley and Levy (1991) also point out that audio or video recording may make auto-driven interviews cumbersome. Analogue pictures, on the other hand, are dependent on a sometimes time-consuming development process, so if a researcher wants to conduct interviews soon after the photo taking, digital pictures may need to be used and displayed electronically during an interview. Another possibility, if the interview needs to be conducted immediately after the photos are taken, is the use of Polaroid cameras. This was necessary in Radley and Taylor's (2003) study conducted with hospital patients, some of which would be discharged before the researcher had a chance to develop the photos taken.

A still image feature of a video camera was another option that I used in this study, since I hoped that audio annotations would make it easier to record the context of taking a picture. However, technically it proved to be not a viable option, and the participant quickly abandoned the idea. Carter and Mankoff (2005) also noted that in many cases what was being photographed was not evident, and, therefore, some form of annotation of the photo would be beneficial. As noted earlier, written annotations during picture taking are not a viable option either. An ideal solution seems to be a digital camera with an easy-to-use audio annotation feature.

A final conclusion that can be drawn from my experience with photo-elicitation is that the issue of the equipment use may become a problem in some locations. This method seems to be suited to the use in places such as a museum, where taking pictures is a natural sight. In shopping centres, for example, the use of a camera generates interest of passers-by and security, especially a video camera. In Radley and Taylor's study (2003), the location of their research, a hospital, has caused even more restrictions on the camera use. Taking pictures of people was not allowed on a hospital ward, and, also due to hospital restrictions, the researcher had to be present while pictures were taken. This means that leaving the camera for 24 hours with the patient, as initially planned, was not possible. In my final study, participants took many pictures at home or outside on their way somewhere; in these locations, the use of a camera did not present problems to them.

5.4 Suitability of the Method for Research on People's Typographic Experience

While the previous sections discussed the benefits and technical challenges of photo-elicitation in general, this section looks at this method in terms of its suitability to answer the kind of questions posed in this thesis, investigating people's experience of typographic outcomes.

The Table 8 on the next page summarises how the method used suited this research, both in terms of the overall project, and specific studies with their particular contribution to the overall research aim.

	STUDY 1 (A+B)	STUDY 2	STUDY 3 & 4
<i>Overarching aim</i>	<ul style="list-style-type: none"> investigating audiences' experience of typographic outcomes, including the study of their perceptions, opinions, influences, accounts and comments about these experiences, in conjunction with the study of such objects of experience - typographic examples 		
<i>Aim of the particular study</i>	<ul style="list-style-type: none"> elicit initial influential factors and specific examples of those; refine the method used 	<ul style="list-style-type: none"> elicit additional influences and more specific examples in the new location that provided different kinds of experiences with typographic outcomes 	<ul style="list-style-type: none"> most flexible task to confirm/refine influential factors in a variety of settings as well as obtain insights on specific characteristics of such influences, and provide the widest range of specific examples for each factor; interviews more selective and guided by the already emerging framework
<i>Photo-elicitation method used in specific studies</i>	<p>A.video recording of participant encountering typographic outcomes in a museum; follow-up interview with the video as a basis</p> <p>B.participant asked to document experience with a typographic outcome in a museum herself by taking pictures and writing notes; follow-up interview using participants' own photos and notes as a basis</p>	<ul style="list-style-type: none"> participants asked to document experience with a typographic outcome in shopping centres by taking pictures; follow-up interview using their photos as a basis 	<ul style="list-style-type: none"> participants asked to document experience with a typographic outcome in everyday situations by taking pictures; follow-up interview using participants' own photos as a basis

	STUDY 1 (A+B)	STUDY 2	STUDY 3 & 4
<i>Suitability of the method to fulfil the overall and specific aims in this study</i>	<ul style="list-style-type: none"> interviews provided plenty of insights into participants' experience with typographic outcomes, motivated them to participate vividly, generated rich data, and allowed to discover a multitude of influential factors and concrete and detailed descriptions of real world situations the use of visual documentation in the interviews, apart from generic benefits discussed at the beginning of this chapter (e.g. eliciting context, triggering memory, negotiating meanings), heightened participants' awareness of typographic outcomes encountered, and provided plenty of concrete typographic examples for reflection and study taken from various environments; even low quality photos managed to elicit useful insights by having participants document their experiences, the value of these encounters was judged and assigned by themselves 		
	<p>A. the use of a video camera by the researcher meant that some possible influences might have been missed; having participant in the video was of limited use in terms of understanding their actual experience of reading that showed on the tape as a person standing in front of a typographic outcome only</p> <p>B. taking notes proved too time consuming and was replaced by photos triggering memory</p>	<ul style="list-style-type: none"> limiting participants to one location tends to elicit sometimes repetitive insights 	<ul style="list-style-type: none"> participants had most freedom in terms of choosing what, where, and when to photograph, which meant that some of their accounts were not relevant to the study; this problem can be overcome by constant refocusing the participants' accounts back to the relevant issues the problem that I thought could occur with participants being confused or lost what to do because of having more freedom did not become an issue

Table 8 - Suitability of methods used to examine audiences' experience with typographic outcomes

Overall, the method of auto-driven photo-elicitation has proven to be suitable to answer the research questions posed in this study. It is a viable tool to find out about people's experiences with typographic outcomes in real world situations, and combining visual documentation with follow-up interviews has provided a number of benefits, as outlined in this chapter. An especially significant shift in the research approach of this study happened when the importance of having participants document their own experience became apparent (as in 'auto-driven' photo-elicitation). When I was the one documenting the experience in the first study, the participant wanted to discuss some issues during the interview, but we realised that those were not recorded as the camera operators did not know that these objects were important or of interest to her. The interviewee mentioned typographic outcomes outside the view of the camera she encountered but the researchers did not know that it is something they should have been included in a shot. From the first study, it was hard to determine which typographic outcomes at the location were attended to and which were ignored. These observations have prompted the important shift in the further data collection approach, namely having the participants themselves document their experience and take control of the process. The value of the typographic outcomes during the visit would be judged and assigned by participants themselves, which proved to be very suitable for the research questions in this study.

As the study progressed, each stage had a specific objective to fulfil, moving from the initial broad categories formation in the first studies to refining the framework in the final ones. These objectives were met by appropriating photo-elicitation in particular studies, and therefore, the actual research tasks and settings varied throughout the stages. The issues that were becoming apparent with the method became the basis of a refinement in subsequent stages, which ensured that the use of photo-elicitation allowed me to fully develop the final framework proposed in this thesis.

The studies conducted have provided plenty of iterations and pointed out many specific issues and challenges that other researchers may find useful when conducting their studies.

The following chapter presents the final outcome of this thesis - the framework of influences on the perceived visual quality of typographic outcomes.

6. The Framework of Influences on the Perceived Typographic Quality

While the previous chapters described data collection of individual studies 1 to 4 and data analysis procedures used, this chapter presents the findings that have been derived from this data. These findings are organised within a framework of factors that influence the visual quality perceived by audiences experiencing typographic outcomes.

6.1 Description and Discussion of the Framework

The framework of influential factors is explained using a detailed narrative; additionally, numerous quotes from participant interviews provide a rich description of the various aspects of the framework and demonstrate to the reader of this thesis the basis on which the conclusions have been reached. Since the interviews in this research were based on participants' photographs, many photos are also included in this chapter to better illustrate some of the discussed factors and their influence on readers' perceptions. Additionally, the findings are compared to existing litera-

ture to demonstrate this study's contribution. Finally, practical implications of each influential factor for typographic design are summarised.

A 'typographic outcome', as described in the Introduction chapter of this thesis, refers to any sequence of letters, words or paragraphs that have been realised in a particular typeface, arranged in particular way. Such an outcome - regardless whether it exists as physical objects in a given surrounding or as a light pattern on a particular display medium - is the object of the participants' experience around which the framework is built. The 'audience', in this study, refers to people who experience such typographic objects.

The 'perceived quality' in the proposed framework denotes the most immediate effect of visual aspects of a typographic outcome that the audiences experience. The framework proposed in this study aims to explain a multitude of influences that make the audience perceive typographic outcomes to be of a certain quality; it also aims to explain the nature of these influences, demonstrating the specific ways in which the factors influence the quality perceived by audiences. The framework in its final form organises influential factors into two major spheres:

- a) the 'object's sphere' including the typographic outcome and various aspects of text, such as its content and its immediate surrounding as well as other factors constituting and influencing the physical appearance or materiality of it in the world, and

- b) the ‘subject’s sphere’ including the subject and influential factors that stem or are dependent on an individual experiencing a text object.

The inclusion of the subject and object sphere reflects a major theme running through this thesis, which was also explained in the Introduction as well as the Theoretical Perspective chapter: the study of any typographic outcome is bound to a study of its audience, the people experiencing it. On the other hand, the audience cannot experience the typographic outcome’s quality without specific objects with which they engage - a study of audiences alone will not yield results that can be transferred to the design of typographic objects without these objects being included in the research. One cannot be studied without the other if a resulting typographic quality is to be understood and described sufficiently.

When presenting the framework in this chapter, the text object’s side is discussed prior to the subject’s side. This does not imply that one is more important than the other. Each of these two spheres is equally important to understand, both encompassing influential factors of which the effect has to be considered regarding any typographic design, since the experience of reading always encompasses both object and subject of this experience.

Various factors on both the object’s and the subject’s side influence the expectations that the audiences form towards a typographic outcome (or,

in other words, the formal aspects of text), before they read, or experience it. Such expectations will influence how visual aspects of this experienced typographic outcome are finally perceived by audiences - the perceived quality, as it is referred to in this framework. Such a quality is relationally defined - by relation between a person and a text in each instance of a reading experience. This perceived visual quality is what this thesis hopes to improve through a better informed typographic design practice and designers' enhanced conceptual understanding of the various influential factors.

The Figure 46 further on presents how the two spheres of the framework, as well as the resulting expectations, the experience between the subject and object, and the perceived quality interconnect. The expectations, experience, and perception of quality happen only when the subject engages with the object. The framework can be read from left to right, or from right to left, since, as described above, both subject and object are equally important in creating this experience - 'the subject experiences and perceives quality of the (text) object', or 'the (text) object is experienced and its quality is perceived by the subject'.

As noted in the Introduction chapter, the focus of this study is on typographic design, and therefore, the visual quality of the formal aspects of text, not on the quality of its content, or meaning it carries. Such specific formal aspects that make up the 'visual side' of a text were discussed extensively in the Literature Review chapter and are summarised next.

Most of the literature in the field of typography assigns importance to the typeface used: its style, whether it is a serif or sans serif font, the slant of a character (whether it is an ‘italic’ font), the x-height of a font (the height of a lowercase ‘x’ compared to the rest of the characters), type size, type colour, width, weight, upper- and lowercase treatment, the spacing between characters, the word spacing, the line length, the line spacing, the paragraph alignment, and the placement in space (White, 2005; Jury, 2004; Turtschi, 1995; Aicher & Rommen, 1988; McLean, 1980). Some of the experts in the field paid attention to technicalities of typographic use, for instance resolution or surface (Willberg & Forssman, 1997; Tschichold, 1991a; Weidemann, 1994), while others condensed formal aspects into design categories, for instance ‘contrast’ - weight, size, colour, etc. (Dair, 1967), or ‘colour of text’ - meaning the visual impression of a block of text, comprised of type size, weight, width, spacing, and others (Bringhurst, 2002).

The focus of this study is the perceived visual quality of text composed of these formal aspects, and therefore, the discussions of influential factors in this chapter will often refer to these aspects; consequently, they can be found at the centre of the framework diagram in Figure 46 on the following page.

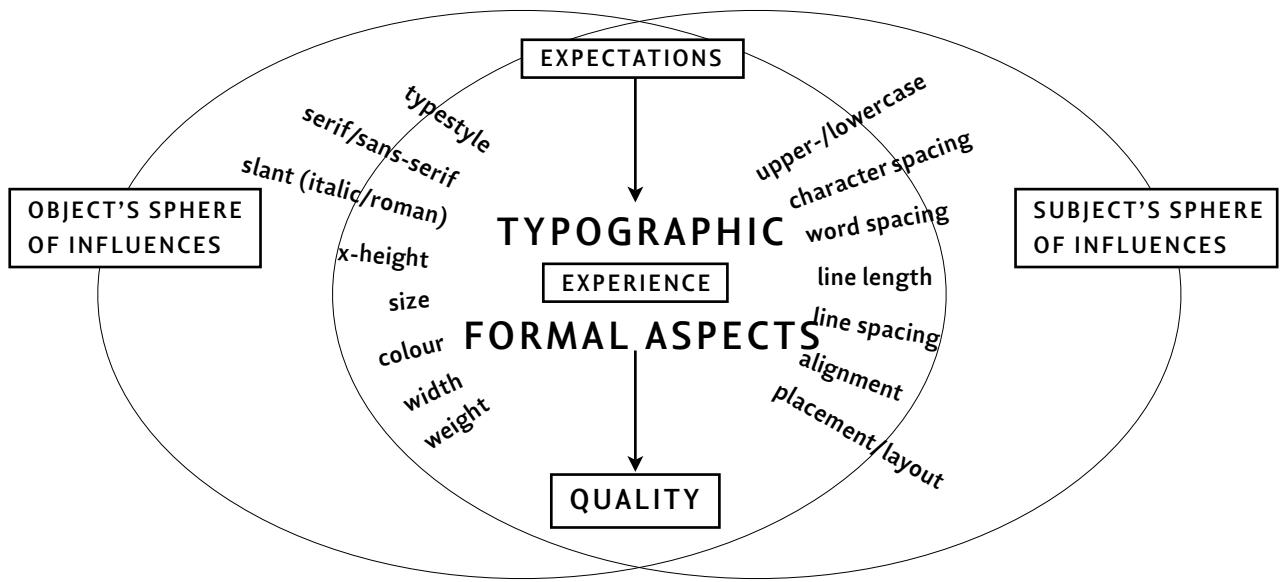


Figure 46 - The typographic experience composed of formal aspects, and its influences categorised into an object's and a subject's sphere

Specific parts of the framework will be explained in the following sections. After describing various influences in both spheres at first, this chapter concludes with an examination of the resulting expectations of the audience towards typographic outcomes, the audience's actual experience of the texts, and their perceived visual quality.

The framework in its final form includes, both in the subject's and object's spheres, specific 'influential factors' (in data analysis stage called 'categories'). Such factors provide a high-level overview of relevant influences. Because of the depth, richness and detail of the data collected, these factors, however, also come with 'particular characteristics' (in data analysis terms called 'properties') of such influential forces. While 'categories' and 'properties' are general coding terms used in grounded theory (as explained in the Research Design chapter in the section 'Open

Coding' on p.144-147), the terms 'influential factors' and their 'characteristics' are used in the framework respectively since this is what they represent in this particular study. The factors themselves describe influences in general terms, such as, for example, **media** on which typographic outcomes exist and which influence how such outcomes are perceived by their audiences. The characteristics within each influential factor describe the nature of such influence in more detail, demonstrating how specifically the factors, in this case, **media**, affect audiences' perception of the quality of typographic outcomes. Such characteristic within the media factor is, for example, the *fit between typographic form and media type*; audiences can perceive typographic outcomes differently depending on whether they think that their form fits a specific medium, for example, a book, computer screen, or a brochure.

It is possible that in a different typographic situation - unlike the ones within the project's studies - some of these influential factors, or characteristics of the factors, may be more or less important than others, or manifested differently. Still, the characteristics of various influential forces, as presented in this chapter, cover a wide range of possibilities and are important to consider in any typographic design since they have emerged from original data gathered in varied environments and situations.

What follows is a description of each of the two high level spheres (object's and subject's sphere), the **influential factors** within each sphere and their *specific characteristics*, all of which are the findings of the original

research in this study. Figure 47 below presents an overview of the influential factors that will be discussed in each of the sphere's sections.

6.2 The Object's Sphere of Influential Factors

The influential factors that are grouped around the typographic object include the **media** it is communicated with, its **physical surrounding** and **social environment** it is a part of, as well **visual elements** that appear with it and **content** it attempts to communicate (see Figure 47).

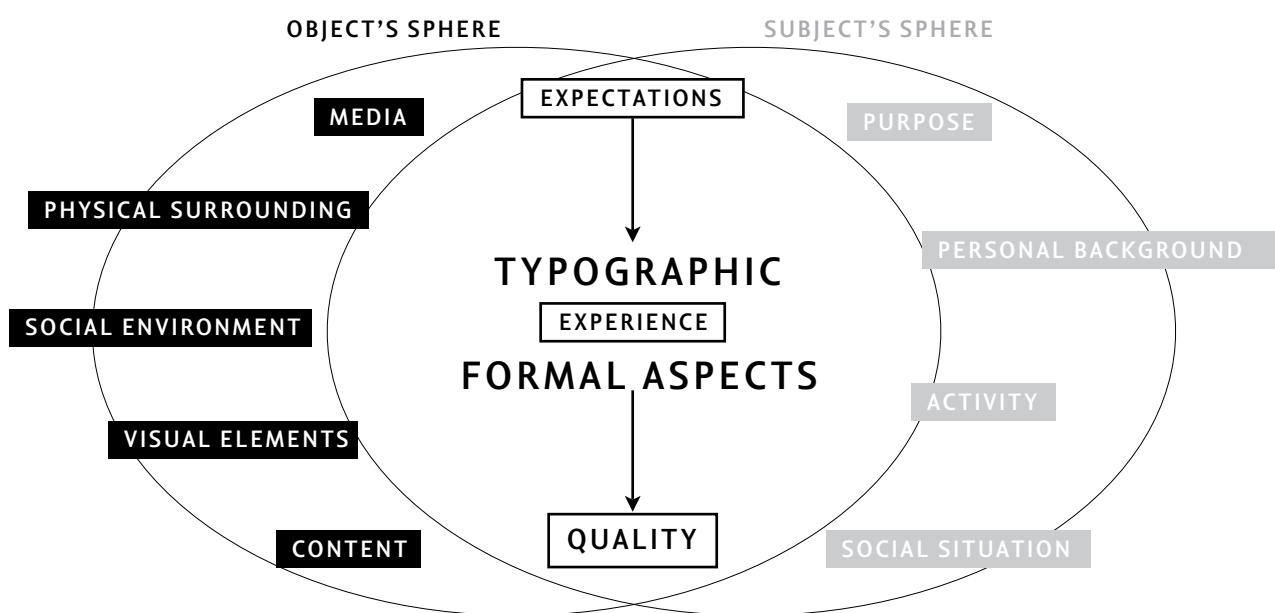


Figure 47 - Influential factors in each of the two spheres (with focus on the object's sphere)

6.2.1 Media

A typographic outcome always exists on a particular medium. The means of delivery of a written message are traditionally divided into old (print) and new (electronic) **media**. A broad range of media in the former

group may include, for example, a book, newspaper, poster, sign or message board, while the latter may include digital display panels, electronic billboards, computer monitors, mobile phone screens, and others. In line with McLuhan's (1964) *media-is-the-message* doctrine, all media have an existence of their own; furthermore, they come with connotations surrounding their functionality and proper use. In this study, the audience experienced typographic outcomes on various media. While in the first studies, because of the chosen locations, many typographic objects included both printed and electronic signage, the examples that participants discussed in the later studies were drawn from their everyday lives, and therefore, apart from various signs that attracted the participants attention again, also included text used in books, magazines, on posters, mobile phones, packaging or others.

PROVISION OF CONTROL OVER TYPOGRAPHIC FORM TO AUDIENCE THROUGH MEDIA

One way how media can influence the perception of typographic outcomes is through the fact that media, especially new media, may be used to enable audiences to choose a preferred form for a text they read - a form that they can decide on themselves, and therefore, like more. This could, for example, refer to the choice of a particular font: “[*participant commenting on a font in a received email] it is not respecting my [font] setting ... where do those [different typeface] settings come from, what can you do about this?*” This participant did not like how the email looked since the settings that he had chosen did not work properly. The ability to control formal aspects of text through electronic media on which it is displayed

was mentioned by another participant, too: “*You know what would be cool, if you could choose a font for your phone, I don’t even know, maybe expensive phones have that? You could choose the font or colour, or... I don’t know, I’d rather just choose it once, for all the messages once.*” The formal aspects that people like to control, therefore, seem to include font, as well as size and colour of text, which is also exemplified through the following participant’s quote: “*I have it in my work email, I could choose the font and colour and size every time for each email I get or write, but I just set it once for all my messages, it looks good, much better now than this default font they had.*” By being given such a choice, audiences may like the text more than they would in its default settings: “[*Do you know what the default font in your email application was ?] No... something like Times New Roman, you know, the ones that are on each computer. I’ve changed it to one called Verdana, there were five or six to choose from; I often use it [Verdana], to type assignments, too. [Why do you like it?] I think it has this cleanliness about it, you know, it’s so smooth to read. It’s just nicer to read the whole email*”

The participant’s perception of text set in Verdana seems to match the purpose of the design behind the font. Verdana is a humanist sans-serif typeface designed by Matthew Carter and released in 1996 for Microsoft Corporation (Will-Harris, 2003). Carter’s design of Verdana combines typographic excellence with technological consideration: the font is attributed with a better legibility on screens as most other fonts are designed for print purposes only (Re, Drucker & Mosley, 2003). The factors considered in the making of the font which is displayed in Figure 48 included: a large x-height, a general increase of spacing between char-

acters, wide proportions, larger counters and a particular focus on distinguishability of problematic characters such as the digit "1", the lowercase "L", the uppercase "i" and the uppercase "J" (Re et al., 2003).

Verdana

ABCDEFGHIJKLMNPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

Figure 48 - Upper and lowercase figures as well as numerals in Verdana

Verdana as well as its sister font Georgia - a matching serif typeface - were especially conceived to be readable at small sizes on a computer screen which makes them, therefore, very suitable for the use in any on-screen text application, or, as in the example discussed by the participant, as the preferred choice in an email.

Control over the formal aspects of a read text in electronic media seems to have become a norm, and, as participants in this study demonstrated, such control strongly shapes the experience of typographic outcomes on such media, for example when one's preferred font can be chosen.

USE OF NEW FORMAL TYPOGRAPHIC POSSIBILITIES ENABLED BY MEDIA

Media may also influence a text quality when they enable a new, not previously possible, typographic treatment of text. A participant commented, for example: "*I like those scrolling signs, and I like it that they use it there in the window of the studio [of Channel 7 in Sydney]*" (see Figure 49).

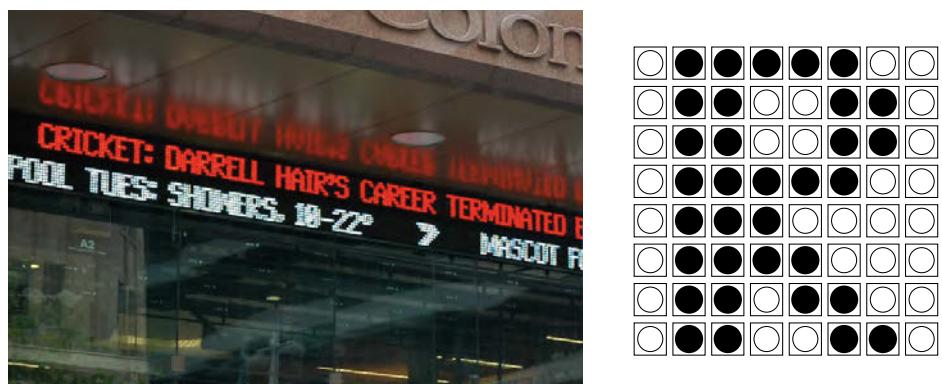


Figure 49 - Two rows of differently coloured LED (light-emitting diode) strips on the Channel 7 headquarter building in Sydney's CBD (left); schema of one 8 x 8 dot LED matrix segment displaying the letter 'R' (right)

The new possibility of ‘movement’ adds to the formal repertoire of typographic design and, therefore, may be used to improve the visual quality of a text. Moving text, for example, is associated with the possibility to attract attention, as noted by one participant: “*It makes it more current [...] like the Channel 7 news, you know, it’s happening now and everyone who walks past looks up.*” A similar effect - attracting attention - can be achieved with blinking text as exemplified in the following quote: “[in an interactive directory kiosk in the shopping centre, what was animated?] Your route to the shop you want. I think [the text] was blinking [...] so you know that this is where you are on this route now. And what to do next.”

While typography in public spaces might surprise or attract attention through size, positioning or message, the scrolling text on the Channel 7 headquarter building in the city of Sydney adds the movement and an ever changing content to those typographic measures. Two rows of differently coloured LED (light-emitting diode) panels display channel-specific news, weather information and stock exchange data on a 200 mm character height display over a length of 70 metres each; such a sin-

gle line LED display length equates to approximately 383 characters per line (Computronics, 2009). While 8 x 8 dot LED matrix segments do not render the optimal typeface on such a sign (see Figure 49 on the previous page for an example of an uppercase ‘R’ on such a segment), the lower quality of the character shapes seems to be overshadowed by the much stronger visual stimuli of movement and its urgency and importance in terms of the information carried. Such a display in the window of the news studio benefits from the fact that LED panels are normally used at airports, highways and train stations, where the immediacy and accuracy of information is a given - such qualities are, therefore, immediately associated with this form of textual display.

The use of new typographic possibilities enabled by media may also be inappropriate for the audiences, such as in the case of another participant discussing an SMS displayed on her mobile phone: “*What’s annoying is here, on top, this name is scrolling, this is who it’s from, I just find it annoying. Don’t know why, seems like [...] advertising or something.*” The participant also remembered another situation when moving text was found inappropriate: “*... also my friend used to have this terrible phone, it was almost funny because it was so bad, had no functions at all, and a whole message would be shown in these huge large letters, and scrolling. You had to be really patient to wait to read the whole text.*”

While the Channel 7 sign does not need scrolling to maximise a limited space because of its large size and line length, many screens, for instance those of mobile devices, do use scrolling to overcome a limited space for

text display. The use of scrolling on a small display to enable longer text messages to be viewed might be justified in many cases; however, in the above-mentioned example of a mobile phone user, the scrolling possibility of text was misused to create a false sense of urgency. The name of the sender of the SMS message that was discussed by the interviewee was not too long to fit on the screen; regardless, the designer of the interface used scrolling for the text, which the participant found annoying.

To sum up, electronic media offer new typographic possibilities, such as movement, scrolling or blinking of text, that, if properly used, can improve the visual quality of typographic outcomes.

FIT BETWEEN TYPOGRAPHIC FORM AND MEDIA TYPE

The participants in this study also commented on how well some typographic forms fit the media they are on, and how these forms could lose their appeal if presented on a different medium. For example, a participant talking about a botanical book page reproduced on a coaster (see Figure 50): “*On a coaster, this writing just looks very nice [...] I wouldn’t like to have this, say, on a keyring, but a coaster has this style too.*” The issue was often brought up in relation to ‘old and ‘new’ media, for example (still referring to the same typographic outcome as above): “*If they converted such a book into a web page, it would look different - they wouldn’t write it in this old scientific style, it wouldn’t have this pretty style, all these things on the Internet now look different than these beautiful old books.*”

The text on the coaster is part of a double spread botanical book reproduction that has been reduced to fit the coaster format. Therefore, the text appears much smaller than in the original book - its appearance is approximately 3 point, or 1 mm, and smaller on the coaster. What one can easily depict on this medium is the visual style - font and font combination - of the text rather than the text itself; it is an act of viewing rather than reading (a distinction made and explained in the Literature Review chapter of this thesis, as well as later in this chapter).



Figure 50 - Text on a reproduction of an illustrated botanical book found on a coaster

The short block of text describing the drawing of plants on the coaster is designed using various fonts: a combination of an uppercase-only slab serif typeface for the plant name in French, and an English script for a description underneath accompanied by a line of hand-written notes. Such a combination of very different forms was not uncommon in the 19th century (Friedl, Ott & Stein, 1998; Steinberg, 1988), possibly the time when the original botanical publication that is reproduced on this coaster was conceived. This combination of fonts created the effect that the participant expressed as "*this old scientific style*", which made a good

impression on the interviewee who liked it on a printed coaster, but would not expect to find it in new electronic media.

Another example of a participant discussing a particular medium creating a proper feel for a typographic outcome included: “*It [a bright-coloured poster for an organic food shop] appears to have a very physical nature ...*”; according to the participant, another medium might not be suited to convey the same physical nature of the text: “*... and this would be lost in translation to digital media.*”

A good fit between text and the medium it is communicated with is something that can improve the visual quality of typographic outcomes for its audiences.

EFFECT OF TYPE OF MEDIA ON TEXT PERCEPTION

Not only its fit with the text on it, but also a nature of the medium itself can affect audience’s overall opinions about a text object. This is exemplified by a participant talking about a picture of a church sign in a street (see Figure 51 on the next page) that he had seen earlier in the newspaper: “*The sign [in the newspaper] looked bigger, more important, somehow prominent, but it was relatively small ‘there’ [as a sign in front of a church]*”.

In this example, the medium used shaped the impression of the text.



Figure 51 - The church sign in the real world

The choice of the medium may also add importance to a text, such as in the following example: “*Church signs in general (here in Australia) are more like letters on a board that can be replaced (like in a cinema) but if you print something out and hang it out on a sign, then it is more effort, someone must have thought about it*”. In this case, the participant assumed that this message was more important or thought-through because of the medium used.

The type of media used can also attract attention to typographic outcomes. One participant spent time looking at an electronic billboard at the shopping centre because he “*just thought it's a cool thing, makes this whole shopping mall look modern, and with all these technologies...*”.

As the above examples illustrate, the choice of the type of media can affect the perception of typographic outcomes realised on them, for example by adding importance or attracting attention to these outcomes.

USE OF MEDIA TO IMPROVE ACCESS TO TEXT

Another finding of this study is that audiences may display high expectations towards access to textual displays because of the media used, especially in regards to the interactive possibilities of new media. These interactive possibilities may provide a certain form of control, influencing what and how text can be accessed through a particular medium.



Figure 52 - The interactive shopping centre directory providing control over access to text

This control, for instance, included enabling a choice of preferred media to access the information in an interactive shopping centre directory (see Figure 52): “*You know what would be even better: if you could just hit Print now, and print the whole map and instructions to take with you instead of memorising*”, or control over content, often expressed in the possibility to access the required information, such as in the case of a participant in the museum: “[...] *there should be a search feature for the [electronic] kiosk, it was very limited, like my map, nothing more*” or in the shopping centre again: “*What you can do is you type in the name of the shop or you browse through a list, alphabetical, and it's really cool because it shows you directions, so not just where it is, but how to get there from this point*”.

USE OF DIFFERENT MEDIA TO PRESENT THE SAME TEXT

While the above focused on the interactive possibilities of new media, just having a range of media was often useful for participants to cross-check or supplement information. The same text sometimes appeared in different media. It could be to support understanding or just offer an alternative way of displaying the same content, as in these examples about an electronic kiosk in the museum (see Figure 53): “*cool map, and the best thing is that there are also printed maps that correspond to the one on the screen*”, or “*it’s the same map as the one I had in my hand, just a cooler way to look at it, you could choose a level and there was a voice reading names*”.



Figure 53 - The same typographic outcome presented on two different media (electronic screen and a printed map)

As discussed in the Literature Review chapter, there has been no prior research, to the best of the author’s knowledge, that would explore influences on typographic experience, and, consequently, no research that would discuss the influence of a medium on such an experience. The importance of the influence of media on visual communication in general was part of the Lasswell’s (1948) formular which extends Shannon and Weaver’s (1949) Transmission Model of Communication. The

original Shannon-Weaver model, although a technical model of communication, has been often referred to in visual design (Baldwin & Roberts, 2006; Jury, 2004; Baines & Haslam, 2002). It distinguishes between information source, message and receiver in any communication taking place, and also includes an encoder on the source's side; the channel which transports an encoded signal (message); a decoder at the receiver's end; as well as 'noise', an influence that is apparent while a message is transmitted on a particular channel. Whereas in the Shannon-Weaver (1949) model the notion of a channel was meant to be a technical term (a phone line for instance), Lasswell (1948) described different types of media instead of channels. Media, therefore, influence a message transmitted from the source to the receiver, which supports the findings of this study - the receiver, in the context of this research, is the audience of typographic outcomes. Lasswell (1948) assumed that different media would have 'different effects' on audiences. This was also supported in the data of this study in the context of typography, as discussed in the previous section. What the models mentioned above did not propose is the actual nature of such 'different effects', or such influences. The findings of this study not only confirmed the importance of media and their 'different effects' on audiences in the field of typography, but also presented six specific ways in which media influence the typographic experience. This included allowing the reader to control the form of texts, emergence of new typographic possibilities, the importance of fit between media and text, the effect of specific type of media on text perception, improving access to texts, and presenting the same text on dif-

ferent media. What is more, each of these specific ways of media influencing typographic experience was exemplified with the participant's accounts to demonstrate how such influences can manifest themselves in real life.

Maletzke (1963), in his model of mass communication, did introduce two specific elements affecting the relation between a medium and audiences: constraints from the medium, and receiver's image of the medium. In terms of the first element, in this typographic study, audiences commented on new possibilities enabled by media rather than their constraints; this study has provided detailed examples of such new possibilities. The second element, the receiver's image of the medium, is similar to this study's 'effect of specific type of media on text perception'. The findings demonstrated with more detail how this can manifest itself in typographic situations, for example by adding importance or bringing attention to texts.

6.2.2 Physical Surrounding

A typographic outcome exists on a medium, and this medium, in turn, always appears in some **physical surrounding**. A text is, therefore, not only displayed on a medium but also displayed somewhere, existing in some physical space or surrounding. This real world surrounding of text is one of the factors that influence how the form of a typographic outcome is perceived. The focus here lies on the physical context of a typ-

graphically treated text, or in other words, the physical circumstances in which people are engaging with the text.

FIT BETWEEN TYPOGRAPHIC FORM AND VISUAL STYLE OF PHYSICAL SURROUNDING

One way how the physical surrounding can affect the perceived quality of a typographic outcome is through the fit between the form of such an outcome and the visual style of its surrounding. A participant in the shopping centre, for example, thought the surroundings were new and modern, and therefore she liked the text on signage in there because of its fit with the environment: “[...] just all those signs with directions look nice, their colours and text, they fit there because it's such a new shopping mall and modern”. The typographic outcomes encountered were, therefore, evaluated against their overall fit with the physical surrounding and what ‘feel’ they created, as in another example about the shopping centre: “*This [food court] sign is also nice, I didn't need it for finding the post office, but it just looks nice, fits well with the look of this mall.*” When one of the participants talked about a poster with brightly-coloured text on it advertising an organic shop, she commented: “*I just imagine how good it would look in a green park under blue sky with lots of sun.*”

Another participant who talked about a picture of a text sign that she took during her travel in Italy (see Figure 54) also liked its ‘fit’ within the particular surrounding of the old town in Venice: “[*The text on the sign*] it's really this old tradition of Europe, old traditional style; [*it*] makes it very authentic [...] it looks like really old,”. If the same formal treatment was

used on a text placed in a different surrounding, the perceived effect could be very different: “*I think, if you see [the sign] in Sydney, you would think you are in a cheap suburb.*” The visual looks of it and its positioning in the city of Venice, according to the participant, “[makes you] see it’s an old city, it’s got this old history [...] and see around it, it’s this old wall too - I wouldn’t like it if they restored it.”



Figure 54 - Street signage in Venice

The typeface referred to by the participant - as shown on the photograph in Figure 54 - is one that stems from the formal tradition of 17th Century typefaces also known as ‘Modern’ or ‘Didone’ fonts (Carter, Day & Meggs, 2007; Baines & Haslam, 2005). It is very likely a Bodoni inspired font, adapted for its particular use - in this case to be stencilled on a rough surface in the old town of Venice. The font’s extreme stroke contrasts (thin and thick strokes) and rigorous horizontal, vertical and circular forms assert a very official and strict visual appearance. While the particular execution of the text on the wall - a stencil - breaks this precision and rigour of the form, the visual impact of the font still retains its almost statutory authority which fits its use but also its tradi-

tional, classical surrounding. This is emphasised by the uppercase treatment of the text, that in this specific texture and this specific surrounding, visually reflects the birthplace of roman uppercase letters, the lettering on the Trajan column in Rome (Baines & Haslam, 2005). Although the lettering on the column in Rome is different in its basic proportions, much more humanist in its appeal as well as less rigid, with the stroke contrasts less pronounced, the traditional connection has been made - at least for some passers-by, such as the participant, who views the sign as a perfect fit for the old and traditional surrounding, including its colour and texture, because “*it looks like an old Italian font; [the text is] like a bit worn out, washed out too and this colour - it looks like made of clay or something [...] It could be the same sign as from a hundred years ago*”.

Such a fit between the typographic form and its physical surrounding may greatly improve the visual quality of texts for their audiences.

VISIBILITY OF TYPOGRAPHIC FORM IN PHYSICAL SURROUNDING

Another recurring theme found in this study’s data was the importance of visibility of typographic outcomes in their surroundings. Text objects should fit their physical surroundings, but not blend in with them. The participants’ comments suggested that typographic objects should stand-out from their physical surroundings through various formal aspects, for example:

- their size (“*It [a sign in the shopping centre] is big so it’s good - you can see it easily*” or “*There is the ‘Daily events’ sign [in the museum], but so small [...] and easy to miss*”);
- their colour (“*[about the magazine cover in Figure 55] I took this picture because I think these headlines in magazines, they must be so bright; when I bought it, it would have been there among hundreds of other magazines, so they just have to make it stand out, and I think that’s why they have this bright orange here*”);
- its lighting (“*it [the church poster mentioned on pages 211-212] was quite visible - lit and in your face*” or “*it [the billboard add in the shopping centre] was lit. And I saw it because everything else around it was dark*”).



Figure 55 - Colour that stands out in a newsagent's magazines display

In the second example above the formal aspect which was commented on was colour (see Figure 55). The use of colour in conjunction with the text not only makes the magazine stand out among other magazines at a newsagent's as the participant pointed out; the use of a bright, almost fluorescent orange, in conjunction with an extrabold condensed typeface

set only in uppercase, gives the headline weight and importance on the cover itself. The headline is even more important than the masthead (or title of the magazine), which is achieved by the size of its uppercase letters as well as the stronger contrast on the darker background of the photograph that forms part of the message. Such a typographic treatment signifies urgency, extreme importance and potentially shocking news, making the headline more important than the magazine itself (or its masthead) as well as more important than its immediate surrounding or the other publications lined up next to it at the newsagent's stand.

Another issue that could be discussed at length referring to this example is the actual choice of words, its literal meaning and its interplay with the photograph; as explained in the first chapters, however, this thesis is not concerned with meaning of texts, but rather their typographic treatment.



Figure 56 - Text size and colour that make a packaging stand out on the shelf

An additional example that was discussed in this study, a packaging box text shown in Figure 56 above, also referred to the formal aspects helping the typographic outcome stand out in the surrounding: “*In the su-*

permarket, there was a whole section with spices, and they are so confusing, so mixed, and they are all very small and writing is small, and this one has big text... [So it was standing out because of the size of text?] Yes, and its colour".

The colour the participant refers to is a combination of bright yellow and red, and the size of the text is around 10 mm caps height (the height of capital letters). Such a text size might not be considered large on the packaging itself, but, as can be seen in the picture, it stands out as large compared to text on other labels surrounding it.



Figure 57 - The colour of the level 2 text blending in with the surrounding

An example from this study where the typographic treatment of the text was not suitable not in itself but in relation to its surrounding included: “[the level number on the escalators] is kind of ... I can't really see it because of the colour ... it looks nice, but it blends in too much” (see Figure 57). The contrasting colour of the text could be used to make the text easier to read.

As shown in the above examples, typographic treatment, especially colour and size, may be used to make texts stand out in their physical surroundings, and, therefore, improve their quality in general.

EFFECT OF OVERALL IMPRESSION OF PHYSICAL SURROUNDING ON TYPOGRAPHIC FORM PERCEPTION

The significance of the physical surrounding of the text was also seen through the overall impression it made on the participants: “*When you enter into the shopping area, there is so much text to be read everywhere [...]. Too much to read [...]. Too much fuzz all around.*” or “*This [...] looks so empty compared to what was going on there [in the shopping centre].*” (see Figure 58)



Figure 58 - Text in a very cluttered and busy surrounding of a shopping centre

This participant may have had a different opinion about some text within such a shopping centre than if it was displayed somewhere else because it was already “*too much to read*” for him.

EFFECT OF POSITIONING OF TEXT IN PHYSICAL SURROUNDING

Similarly, according to this study’s findings, positioning of typographic outcomes in a particular physical surrounding seems to be influential on

how such outcomes may be perceived, as exemplified by the following quote: “*it [the museum’s electronic information kiosk] does have a big ‘I’ for Information, but the whole thing is hidden in the corner*”.

The importance of positioning the typographic outcome within its surrounding was discussed not only in terms of its visibility, but also in terms of making the access to it more convenient. The following examples illustrate this point: “*the ‘Daily What’s On’ sign [in the museum] is very bad ‘cause it is about 1 m high, which means at the level of my belly button, not my eyes*” (see figure 59) or “*I had to almost kneel to read it [a map in the shopping centre]*”.



Figure 59 - Positioning of text making access to it inconvenient

Text objects should also be positioned in the right places, where they are needed, in the proper frequency, as often discussed by the participants: “*There should be a directory there too [in the shopping centre], near the lift, this is where so many people start their shopping, not just at the main pedestrian entrance*” or “[about directory maps and listings in the same shopping centre] they need more of them, at all intersections, in front of lifts, car parks”. The participants also commented on the number of signs they needed to find

their way in Study 1 and 2; not only was this an issue but also the appearance of such signs ‘at the right time’.

SUITABILITY OF TYPOGRAPHIC FORM IN RELATION TO ITS POSITIONING IN PHYSICAL SURROUNDING

Another issue that came up in this study was a typographic design not being unsuitable in itself, but in relation to its positioning in the physical surrounding, for example, in relation to its position on a display, so the participants had to bend or squat to read it (“*I wouldn’t bother to squat in front of it.*”). Formal aspects, in this case size, were unsuitable for the specific surroundings they were going to be placed in. The size of the text on the map could be appropriate in a different surrounding. A suitable size, therefore, is not a given measurement, rather than perceived size depending on a particular physical surrounding.

Another example also referred to unsuitability of form in relation to its positioning in physical surroundings: “[...]this poster I saw several days ago on a street, it was wrapped around the pole but this pole was too small or this poster was too big, and it had to be wrapped around twice or so... you couldn’t read what’s on it of course.” While such a placement on a pole is probably not what the designer of the poster had ideally in mind, it is not uncommon for posters in general, and, therefore, needs consideration. Such considerations can revolve around the placement of the text (e.g. vertically instead of horizontally) or the repeating of key information (e.g. title) in various sizes and places on the poster. Establishing strong visual hierarchies of text elements within the poster can establish and

strengthen key elements of information which are not lost if such a unfavourable placement of a poster occurs.

The choice of a formal typographic treatment, therefore, needs to be considered in terms of its suitability in relation to various physical surroundings in which texts can be positioned.

There have been no studies found in the literature that investigated, with audiences, the influence of physical surrounding on their experience of typographic outcomes.

In other fields, such as interaction design, Jääskö and Mattelmäki (2003), when discussing qualities of the user experience in interactive designs, refer to a factor called ‘environment’, and include in it the physical context, the physical environment, the aesthetic environment, and the atmosphere of an interactive experience. Still in the field of interaction design, when studying factors influencing experience of product use by the elderly, Hirsch et al. (2000) similarly argue that artefacts must be designed with an understanding where they will be used, and must, for example, match the interior and be unobtrusive if they are to be used in people’s homes. In a still different field of study, ‘physical context’ has been proposed as one of the contexts influencing an individual experience in a museum in Falk and Dierking’s ‘The Interactive Experience Model’ (1992); the other two contexts in Falk and Dierking’s (1992) model - namely social and personal context - will be mentioned in the relevant sections of this chapter.

My study has confirmed the influence of physical context, or environment, in the field of typography. More importantly, it provided plenty of details about the specific nature of this influence, including the importance of fit between typographic form and visual style of a physical surrounding, visibility of typographic form in the surrounding, effect of the overall impression of a physical surrounding on typographic form perception, positioning of text in a physical surrounding, or suitability of typographic form in relation to its positioning in a physical surrounding.

Falk and Dierking (1992) did write more specifically that such a physical context in the museum may include the architecture or the ‘feel’ of a building as well as the design of a museum space. Such a ‘feel’ of the overall impression of the surrounding, as mentioned in the previous paragraph, was found as important in this study’s typographic context too; this is, however, just one of the five other properties explaining the influence of the physical space on the quality of a typographic outcome.

6.2.3 Social Environment

A **social environment** includes the crowd present in a public space, for example, or other people who may want to view the same typographic outcome at the same time, as in the following quote: “[*the reason for not using the overview map in the shopping centre was] because there were people standing there already, and there was no one at this computer [interactive kiosk]*]” (see Figure 6o). The subject’s sphere of this framework, described later in this chapter, includes a factor called **social situation**; the **social**

environment differs from the **social situation** factor since the latter is something that audiences ‘bring with them’ to the situation of experiencing typographic designs, or something they are able to influence, whereas the former is part of the physical environment that is ‘already there’, surrounding a typographic outcome.



Figure 6o - Other people accessing the same text at the same time

SUITABILITY OF TYPOGRAPHIC FORM FOR SOCIAL ENVIRONMENT

The previous section included the discussion of the suitability of formal aspects of text in relation to their positioning in a physical surrounding. What has also emerged as important in this study is suitability of such formal aspects in relation to the social environment in which they are positioned. Participants commented, for example, on the small size of a font used in a shopping centre lift, which would make it hard to read for people standing further back. From my observations, it seemed that font sizes were usually between 12 and 20 mm, which is the appropriate size found in typographic literature for signs (Ruegg, 1989; Turtschi, 1995),

but, because of a number of people who can read the text at the same time, they might seem not large enough for the participants.

Another quote illustrates the importance of this influential factor: “*You know in train stations, it is all so busy and fast, and people are pushing you, you can't stop, so something to read there would have to be very clear to just see it in no time.*” This would suggest, for example, the use of a typeface that clearly renders on various media, a strong contrast, and an appropriate size so many people can read the text at the same time.

To sum up, audience’s perception of typographic outcomes may be influenced by the social environment in which such outcomes appear, and, therefore, a typographic treatment needs to take such possible social environments into account.

To the best of my knowledge, there have been no studies that would explore the effect of social environment of typographic outcomes on audiences’ perceptions. Fawcett-Tang (2007), when discussing new typographic design, distinguished between various reading surroundings, for example, the quiet reading room of a public library or a noisy and boisterous cafe or bar with a potentially disruptive environment. The focus was only on the presence or the lack of disruptions, however; this is similar to the busy reading situation described above. My study has also added another important aspect of the influence of the social environment: the number of people reading the text at the same time.

6.2.4 Visual Elements

When participants talked about typographic outcomes in this study, their perceptions often seemed to be influenced by additional visual elements with which those text objects appear. These elements form the immediate visual context of a typographic object, and most often they included an accompanying picture, an illustration, an icon or an animation or moving image.

VISUAL ELEMENTS SUPPORTING RECOGNITION OF CONTENT OF TYPOGRAPHIC FORMS

The visual elements that accompany typographic outcomes can be used to help support recognition of the typographic form. One participant, commenting on the cover of a Leonard Cohen concert program brochure (see Figure 61), realised: “*If this text was not next to his [Cohen’s] picture, you probably wouldn’t even know what it says, it’s a bit illegible...*” By positioning it close to the portrait image of the artist, the risk of the text remaining illegible seems to be much smaller.

Another case that supports the importance of this aspect includes a participant talking about a shopping centre sign: “*I think they could also add the post office icon on the sign, like this red P that was in the directory [...], or it could have this black and white logo [the David Jones department store logo] next to it ['David Jones' store name] so people would recognise it straight away*”. Visual elements accompanying typographic outcomes can support the proper recognition of such outcomes by audiences.

FIT BETWEEN TYPOGRAPHIC FORM AND VISUAL ELEMENTS

The ‘fit’ between visual elements and a typographic outcome is another aspect that seems to influence the perceived quality of a text. This can be seen in the following case of the participant commenting on the cover of the concert brochure (see Figure 61) mentioned earlier: “*It [Leonard Cohen typologo] just fits so well with his [Cohen’s] picture, it’s got the same colours and the same style, very elegant.*”



Figure 61 - The character of the text and the portrait complementing each other

In this case, the handwritten style of the typologo ‘Leonard Cohen’ adds character to the portrait of the artist and vice versa. Both are perceived as one, almost inseparable for the participant, which, according to her, works very well for the quality of the composition: “*I love the way it’s written ... I’ve got it [the cover] displayed in my living room. [...]*“.

Another participant also commented positively on the fit between a typographic outcome and its visual context on a game box (see Figure 62):

“*I really like this cover; these letters look the same as the picture*”.

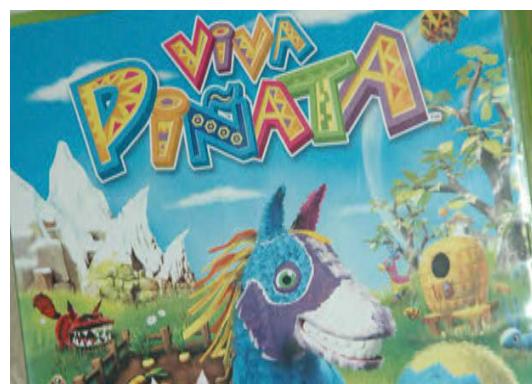


Figure 62 - The fit between the text and the game characters on a games packaging

The picture on the box shows an arrangement of game characters, all sharing a similar appearance of brightly-coloured ‘Piñata’ paper dolls; the way the title of the game is written mimics this appearance. The letters have a three-dimensional body - they are not flat - and a colourful pattern applied to them seems to stem from some old culture, with dominant triangular and square shapes. The letters also ‘dance’ - they are not static or set on a shared baseline. This implies motion, similar to the movement a real Piñata doll would make suspended from a string and hit during a birthday celebration. The typographic outcome and the background image share similar visual attributes: square shapes, a three dimensional multi-coloured appearance, and friendly, bright colours. In addition, the behaviour of a Piñata doll when hit shapes the directional placement of the letters, overall resulting in an especially successful appearance, according to the participant: “*I don’t know, just funny, cute, very lively, and the colours...*”.

Yet another example discussed in this study demonstrated how visual elements can support a typographic outcome and its overall perception.

The example concerned a website of a rock band that a participant found particularly interesting: “*it’s good fun, and very well designed*”. Discussing the text and its visual context that can be seen in Figure 63, the interviewee thought that “*the red on top looks like it has blocks missing, and this font is blocky too, like on a computer terminal, it all looks like retro computer terminal stuff...*”



Figure 63 - The website of the rock band Nine Inch Nails 'The Slip'

Again, the visual property of being “*blocky*” is shared between the two elements, text and background, and is responsible for the ‘fit’ of the elements and its overall appearance, as commented on by the participant.

The above examples have demonstrated how visual elements can fit and support a typographic outcome, and, therefore, improve its overall perception.

VISIBILITY OF TYPOGRAPHIC FORM WITHIN THE CONTEXT OF VISUAL ELEMENTS

The specific placement of a typographic outcome within the visual context of other elements can influence its quality, too. The text itself may

be based on appropriate typographic rules when it is typeset; however, the immediate visual context where it is placed may affect its quality. This is exemplified through the case of a magazine discussed by one of the participants in this study: “*Have a look here, this is one of those where you can’t even read it because of the photo behind it [...] all looks messy*”.



Figure 64 - Text placed on a background image with varying contrast

While the choice of font and the settings of this text are under normal circumstances - on a neutral background - appropriate, the headline of this ad becomes less legible when placed on a background image with varying contrasts. Such a background breaks the consistency of the typographic forms and adds additional “*clutter*” which influences the perception of the letters, make them harder to discriminate, as well as decrease the typographic object’s perceived quality: “*it [...] all looks messy*”.

The same participant also remembered another situation where text was hard to read because of other visual elements on which it was placed: “*In my country, almost all movies are shown with subtitles - you’d be surprised how badly they are done sometimes, you miss out on whole sections of what they [actors] are saying because you can’t read the subtitles.*” In this case, what made

the text hard to read was the possibly moving background and, therefore, changing contrast between foreground and background: “*they [subtitles in the participant’s country] are white letters, so if there is something white in the movie, ocean or snow, you can’t read them. It’s so annoying.*”

An unsuitable placement of a textual design within the visual context of other elements can affect its visibility and, therefore, its overall typographic quality.

To the best of my knowledge, there has been no research to date that would specifically investigate the effect of accompanying visual elements on audience’s perception of typographic quality perception. Instead, the conventions and guidelines regarding the design of typographic outcomes in conjunction with visual elements, mainly graphics and images, are covered in many typographic manuals (Carter, Day & Meggs, 2007; Samara, 2007; Squire, Willberg & Forssman, 2006; Baines & Haslam, 2002; Whitbread, 2001; Turtschi, 1995; Perfect & Austen, 1992; Kane, 2002; Felici, 2003; Genzmer & Grossmann, 1961). The use of basic visual means, such as point, line, or plane, to help structure a typographic outcome, for instance its hierarchy, has been discussed in such literature (Lupton & Cole Phillips, 2008; Krause, 2004; Whitbread, 2001). Another issue covered in such manuals is the employment of the grid to deal with the text/image integration in generating outcomes (Elam, 2007, 2005; Samara, 2005; Bosshard, 2002; Müller-Brockmann, 1996). Such basics of integrating text and image were summarised by a categorisation devised by White (2005): text and image can be related to each

other by position (type is near an image for example in captions), by layering (type over image or image over type), by space and alignment (position or size alignment) or by shared characteristics (treatment, shape, direction, angle, colour and texture).

These suggestions how to integrate text and image are either based on the analysis of existing typographic outcomes by the authors mentioned above, or are presented as a set of rules that designers should follow. The focus of this study, however, was looking beyond such rules and guidelines (as described in the Introduction chapter) to find out from audiences themselves how successful the application of such rules is in terms of a perceived visual quality of such outcomes. The layering of text or the use of grids, mentioned earlier, are the basic approaches employed by designers, but what the participants in this study rather noticed as the final quality was the resulting fit of text and image in terms of their depicted visual style, as well as their harmonious, supportive and uncluttered integration in a designed outcome.

Samara (2007) describes two main problems that occur in terms of visual integration of text and image: a) type that has nothing in common with the image around or close to it, existing completely separated and b) type that is “*aggressively integrated with image [so] it becomes an illegible mass of shape and texture.*” (Samara, 2007, p.226) The first problem confirms the importance of the proposed property of ‘fit between typographic form and visual elements’, while the latter supports the property of ‘visibility of typographic form within the context of visual elements.’

My study, however, has also provided specific examples from the participants' accounts to demonstrate how these aspects manifest themselves in real world designs.

A particular domain also interested in the interplay of text and image is the area of semiotics, with the focus on typography and meaning creation (van Leeuwen, 2006; 2005). Another area where text/image integration is paramount to create meaningful narratives is the field of Comics and Graphic Novels as investigated by Scott McCloud (2006, 1993). As mentioned in the Introduction chapter, the focus of this study is on the visual qualities of typographic design, and not its content or meaning it carries. Still, the participants did like particular typographic outcomes because of how images were used to make the content of such outcomes easier to recognise, and, therefore, this aspect is included as a property of the visual elements factor in the proposed framework.

6.2.5 *Content*

It has been established in literature that typographically treated text is made up of a core literal 'content' - or how the text is written in respect to writing style, clarity, or understanding, represented through the term 'readability'; but it is also always embodied in a physical 'form' - the visual appearance of a text or how it 'looks' (Tchichold, 1991a; Aicher & Rommen, 1988; McLean, 1980; Warde 1955; Gill, 1936). Both of these constituents of typographic outcomes carry and influence meaning creation.

In this thesis, as discussed in Chapter 2, the focus is placed on typography, or the visual aspects of text, and not on the content or meaning of this content. However, content is still represented in the proposed framework as an influential factor, but only in regards to how it affects or supports the formal aspects of a text. While there is no ‘pure content’ in a textual representation (in print nor on screen) since texts always appear in a certain physical form, any visual form of a text also always communicates something, or, as Watzlawick, Beavin, and Jackson (2003, p.50) put it: “*You cannot not communicate*”. Typography is used to communicate content, and therefore, a discussion of its quality without considering its interplay with the literal meaning of a text would be incomplete.

FIT BETWEEN TYPOGRAPHIC FORM AND CONTENT

The participants in this study often commented on the suitability of visual aspects of text for the specific content that this text communicates. For example, the interviewee who discussed the botanical book style coaster, mentioned on pages 209-210, found the visual appearance of the text on it very suitable to what this text communicates: “*some scientific names in a scientific language, and the names look like that, old scientific style.*”

In another example, the participant who would like to be able to control the ‘look’ of her text messages, mentioned on page 205, thought that this feature could be especially important to support the meaning of a message: “*I think people would like to use a nice font, say, when they send happy birthday to someone, or a love message, or even colour you can choose, you know,*

'I love you' in red and so on. It just changes the character of this message.'

When visual aspects support the literal content of a text, the quality of the text can be enhanced, for example, according to the participant, in terms of its 'character'.

Such a visual treatment can set the 'character' for an entire publication, as suggested by another participant who talked about the Venice street sign (see Figure 50 and the discussion on pages 209-210): "*This sign just showed how to get there, but I think they could copy this style for a book cover; they could make it look this old and worn out if it [the book] is something to do with history and tradition [...] but I mean including this whole worn out look of it and the clay colour looking a bit dirty.*" Such typographic treatment could provide a suitable visual support for the historical content of the book, improving the perceived quality of the title cover.

The form of typographic outcomes can also directly express the literal meaning of its content. The participant who discussed the rock band website, mentioned in the Visual Elements section, liked the fact that the typographic treatment of the word 'slip' expressed the idea of 'slipping' through the displaced 'p'; this was, in addition, supported by the visual elements on the webpage (see Figure 65 on the next page).

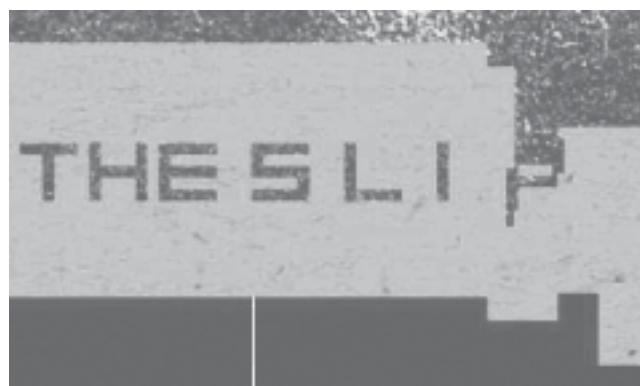


Figure 65 - Detail from the Nine Inch Nails 'The Slip' website

The background is pixelated in this area of the text - blocks of the red bar are breaking away, assisting the displaced 'P' even more in its 'slipping'. The participant liked the effect: "*This is a pretty neat feature... their designs have always been so non-conformist... out of line.*" As we are used to seeing text resting on a common baseline, the displacement translates directly into the participant's answer and his perception of the band as being "*so non-conformist... out of line.*"

SUITABLE EMPHASIS ON TYPOGRAPHIC FORM OR CONTENT

The participants in this study realised that either 'content' or 'form' are emphasised in particular typographic outcomes, which may make them more or less appropriate; the interviewees, however, rather used terms such as 'the information it gives you' for the former, and 'the looks of it' for the latter. In their own terms: "*It doesn't matter how [good a certain website is], if it doesn't look good, it will not be received well*", or "*The sign [in the shopping centre] is nice [...] just the looks of it, and it's got the level number on it. It looks good but it does not give you any information*".

Audiences of typographic objects may expect some of such objects to focus more on the content and be easy to read, and others to focus more on appealing formal aspects: “*I like to read books and like to absorb a lot of information from a page, as opposed to a headline or magazine cover which has aesthetic and in-your-face appeal*”, or “[about the ‘Welcome’ sign in the shopping centre that looked good but was hard to read] It is not something you read!” (see Figure 66).



Figure 66 - The form of the text considered more important by the participant than its content

According to the participants quoted above, a book needs to make the content easy to read, while a welcome sign is something that needs to look good. In the former case, formal aspects are still very important, but more in the background, helping to convey the content, while in the latter case, formal aspects are emphasised.

If such formal aspects are misleadingly emphasised, however, the form may ‘overpower’ the content, and make it harder to understand. Such was the case described by the participant who talked about the mustard box (see figure 56 on page 221): “*My girlfriend was surprised in the kitchen*

what it is. She didn't get it it's a mustard even though it's like a big 'mustard' text there. Just this box looks so different than normal mustard [package]."

It is, therefore, important for practitioners to consider that if the audience deems the emphasis on either form or content in a particular text object as appropriate, its perceived quality is higher, which is exemplified in the following statement: "*The 'Welcome' sign seems promising. Its white on yellow contrast makes it hard to read, but it is not something you read! But it represents the colour theme of [the shopping mall].*" The participant realised that formal aspects of this text sign are more important than whether it can be read easily, and found the sign appropriate.

The balance between content and form needs to be adapted to a particular typographic situation, where either form or content may be of a higher importance to the audience.

USE OF TYPOGRAPHIC FORM TO ORGANISE CONTENT

Since content provides the literal meaning of a text object, there are various ways of organising it, using formal aspects, to make it easier to communicate this meaning to the audience. Categorisation and organisation of contents in textual objects have often been discussed by the participants, for example: "*[about a shopping centre's directory] it's just always hard to find what you want if it's not an obvious [standing out] category*".

The organisation of content items on a page was also commented on by participants: "*[...] on the Daily 'What's On' sign [in the museum], there is*

Beta Space listed at the very top, as the first one, so that's why I find it - there is no way I would read the whole thing".

The importance of the choice of suitable formal aspects to organise text was seen in an example of a very small language dictionary that one participant brought to the interview. Although the interviewee especially liked the cover of this dictionary because of its soft material and bright colour (which did not add much relevant data to the study) and this is what she chose to photograph, she did bring the whole mini dictionary to the interview because of its small size. When asked about the inside pages of the dictionary, the participant noted that she finds it very easy to look up words despite the tiny size. She noticed that she liked "*how the words are listed in blue and then they have these expressions in bold, it's so small [page size] but really easy [...] a very clean structure.*" The use of the colour seems to be an important aspect in this dictionary, something that must have been taken into account by the publisher who emphasised it on the cover, as seen in Figure 67.



Figure 67 - Picture of the cover of dictionary (left) and a content page detail (right)

While the organisation of the text inside the dictionary follows common threads in arranging such information (bold cueing of headwords, use of italics, intended paragraphs, or additional vertical spaces for inserted cultural background information), the use of colour in addition to these features helps to organise the entries and achieves easier identification of particular words - according to the participant, quite successfully ("I really like using this dictionary"). The picture above was taken during the interview to show the inside of the dictionary that the participant was talking about.

Another example discussed in this study that demonstrates how the form of text designs can be used to organise the content for the reader is presented in the following Figure 68.

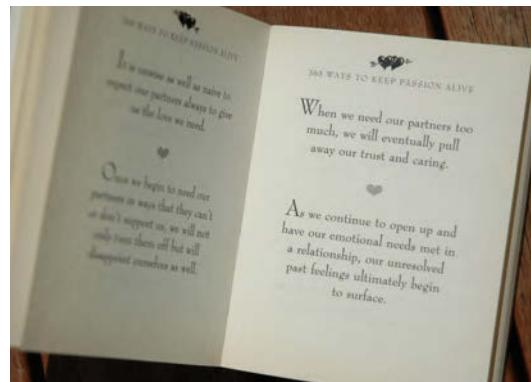


Figure 68 - Vignette-like text passages in a small booklet

An interviewee liked the book because "*I'm not that much into these relationship tips, but it's so cute how this book's been made, see the little hearts between each tip - it's just a collection of these tips...*" The arrangement and separation of individual text blocks, each starting with an uppercase letter and centered, is emphasised with the illustration of a little heart be-

tween them. The space around those ‘quotes’, or ‘tips’ as the participant calls them, helps to separate them from each other and from the rest of the page. They stay individual and invite the reader to start reading wherever she wants, which supports the way this participant uses the book: “... *and you can open it and start reading anywhere you want, and they [the tips] are just like these separate pieces, just two or three per page.*” The order created is one that aids the perception of the text itself.

Formal aspects can be used to organise the content of typographic outcomes and improve their overall visual quality.

6.3 The Subject’s Sphere of Influential Factors

This section presents influential factors that are dependent on the individual experiencing a typographic object (**purpose**, **personal background**, **activity**, and **social situation** in the subject’s sphere on the right-hand side of Figure 69).

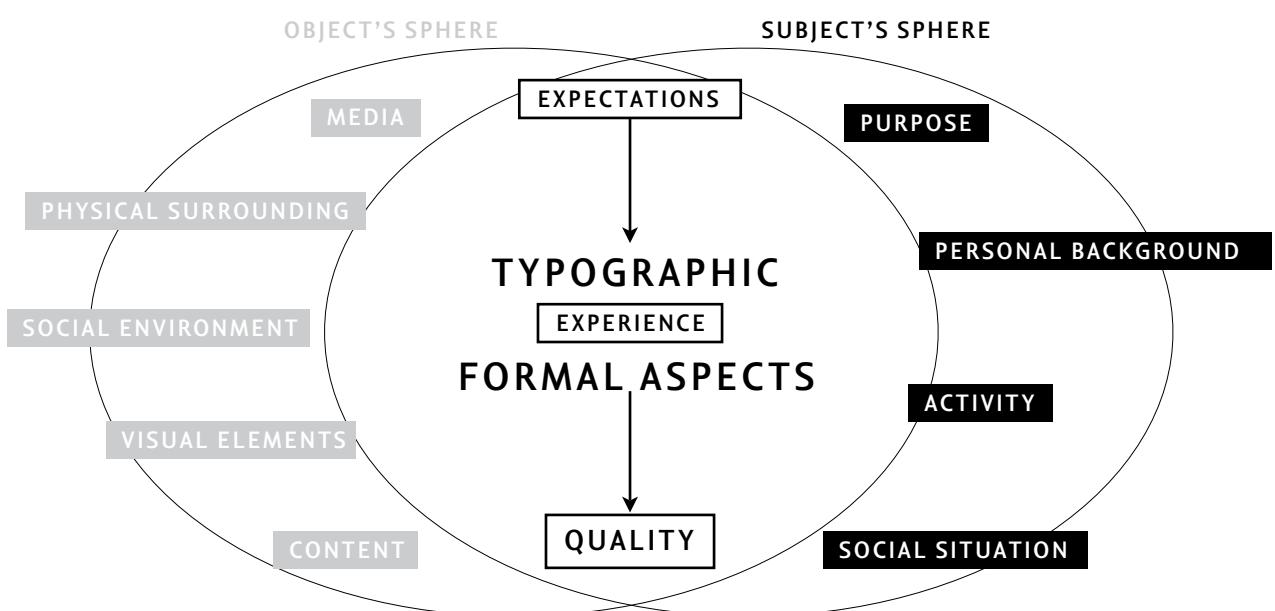


Figure 69 - Influential factors in each of the two spheres (with focus on the subject's sphere)

Although many designers in most cases design with an audience or target group in mind, they may not be fully aware of the multitude of factors that may constitute the ‘individual’s situation’ while engaging with a typographic object. Target groups consist of individuals; one way of understanding the audiences is using standard social class category descriptions for various groups within an audience, for instance Professionals or Skilled Manual Workers, as used in the UK’s National Readership Surveys NRS, or Achievers or Strugglers, as in Values and Lifestyles (VALS) system (Baldwin & Roberts, 2006). Such systems, however, seem so generalised that they would be hardly useful for design practice. The influences described in this study are not based on demographics rather than an individual’s situation and possible attributes and background that may matter in their perceptions of typographic outcomes.

6.3.1 *Purpose*

An important influence on the perceived quality of typographic outcomes that has emerged during the data analysis in this study is the ‘why’ people read or engage with textual objects in the first place, or their **purpose** behind reading a specific text. The experience of typographic outcomes seems to be greatly affected by this ‘why’. The same text can be perceived differently by someone who, for example, searches for information, compared to someone who reads for entertainment. Reading is never just performed for its own sake, there is always an intention, or a purpose that drives the reading process.

The purpose was strongly task-related in the early studies, and these tasks were the same for all participants (finding a particular location). Participants often read texts to find some specific information: “*But when I wanted to find the jewellery shop I knew, I didn’t know which category to look under. So it took me a while [...] scanning fashion, gifts, and others*”), or to get an overview (see Figure 70): “[*Would you read the whole list of names of shops on the sign in the shopping centre?*] Not all of it, just look at it quickly and figure out where I am and where I have to go” or “[*Would you normally look at this sign?*] Oh, yeah, you have to know where things are [*in the shopping centre*].”



Figure 70 - The purpose of getting an overview

Participants in these early studies were sometimes also reading to pass time, in moments of transitions: “[*I read what was on the screen*] because I was standing close to it and I had nothing to do in the elevator”.

In study 3 and 4 where tasks were not assigned by the researcher, the interviews also confirmed the importance of purpose factor, for example, “[*Sometimes you want to look up something in it [an SMS you have received earlier], like address, and write it down*], or “[*when you go to buy a book, you*

scan through many books there to choose what you want", where a purpose of reading (looking up information or scanning to make a choice) affected what the participants might have expected from various text objects.

As shown in this section, people read with various purposes in mind; the next issue is how such different purposes may influence what they think about the quality of formal aspects of typographic outcomes.

POSITIONING OF TEXT TO SUIT PURPOSE

The purpose behind a reading activity prompted the participants to decide whether a particular typographic object was useful to them, both in terms of whether it provides 'the right amount' and 'the right kind' of information. Such evaluation depends on the specific purpose or motivation of the reader (for example, to find some specific information or to get an overview, as in the examples below).

Some quotes that illustrate the importance of the 'right kind and amount of information' in relation to the reading purpose follow. The participants had a purpose of finding a specific kind of text information, for instance, where one is, when an SMS was sent, or some information about a museum tour; they wanted this information when or where it was needed:

- a participant commenting on a sign right when exiting an elevator in the shopping centre: "*[would you normally look at this sign?] Oh, yeah, you have to know where things are. [Would you read*

it?] Not all of it, just look at it quickly and figure out where I am and where I have to go”;

- a participant discussing her expectations regarding phone messages: “*I don’t like it that time it was sent is at the beginning [of the SMS], on all other phones it is at the end, so that ‘s where I look for it [...] with this phone I always have to go back to look for it since it’s not at the end of the text.”*
- “[...] and it even says there ‘tour starts here’ [at a central place in the museum] but there is no more info saying what tour and what to do now” (see Figure 71).



Figure 71 - Not enough information provided, according to the participant and her purpose

The reason why the participants read a given typographic outcome influenced their perception of how useful they found it, both in terms of whether it provided ‘the right amount’ and ‘the right kind’ of information.

SUITABILITY OF TYPOGRAPHIC FORM FOR PURPOSE

The purpose behind the reading activity affects the expectations towards various formal aspects of such texts. Several participants discussed what they thought about typographic outcomes when their purpose was, for example, scanning to make a choice. This includes an example with the bright headline on the magazine cover (Figure 55 on page 220) mentioned in the Physical Surrounding section, but also another one where a participant discussed a book he particularly liked. The participant mentioned the cover of the book, with its especially large title, not only on the front of it, but also on the spine; this was particularly important for the participant in respect to the purpose he discussed: “*You know, this publisher, DK [Dorling Kindersley], they always have such nice covers, with really big titles... When you go to buy a book, you scan through many books there [in a bookshop] to choose what you want, and these DK titles always stand out for me.*”

The participant who mentioned that she sometimes needs to look up information in an SMS discussed the importance of colour differentiation in respect to this purpose: “*If you get a message [SMS] and then [...] if people who send it are able to make some important info like in red ... or any other colour; then it would be so much easier to find this address.*”

Various formal approaches, such as size or colour of text as mentioned above, can be used to visually treat a text to suit possible purposes that audiences may have when reading these texts.

EFFECT OF PURPOSE ON VISIBILITY OF TYPOGRAPHIC FORM

The participant who discussed the book mentioned above also commented on the visibility of formal aspects of text in this book. He picked the book to talk about it because he noticed and liked the typographic treatment of text in it: “*There are many different stories, little snippets of information, and they all look different, a bit like an exhibition about the war; not just a book.*” Asked about whether he would read the book from cover to cover in a linear manner, the interviewee indicated that the purpose when reading this particular book is different: “*No, not at all, I haven’t read the whole thing like that, I just look at those snippets and learn about stuff.*”



Figure 72 - Typographic treatment of a book tailored to the particular reading purpose of its audience

The main text of the book is set in three columns in a serif typeface, often interspersed with small uppercase sans-serif headlines. The pictures also interrupt and fragment the main text; overall there are five addi-

tional visual stimuli present on the double spread which include two photographs, a photograph in a box with an additional feature text (slightly smaller serif typeface in comparison to the main text), a photo with explanatory text in italics, and a little paper snippet with an original text fragment set in a worn typewriter font including an uppercase only reference. Such a typographic treatment (very similar to magazines) is designed for a particular reading purpose, the absorption of information in small (fragmented) doses, and this seems to work well in this case, according to the participant: (*"it's actually more like a book for learning, could be a textbook, lots of pictures, map, explanations, little boxes with extra info"*). Such a purpose made the participant appreciate the suitability of the formal aspects; those formal aspects support such a reading purpose well.

On the other hand, in linear reading, formal aspects need to be less if not invisible to readers; such aspects make the text seem effortless to read. When the participant was asked if he liked typographic treatment of any other books he has, he could not remember any, and said *"No, normal books just look similar; they are usually all good, professionally made, they must think about how to make them a good book so you can read it fast."* Only when formal aspects do not support the purpose of effortless linear reading, they get noticed by readers: *"But sometimes there are books, must be from some small publisher; where you just wonder how they can sell it like that, not even fully edited, full stops missing or two in a row, and then really badly [visually] styled too, really sloppy."*

Similarly, another participant noticed the inappropriateness of formal aspects of text in relation to the purpose of their reading of this text (looking up information quickly): “*This Arrivals and Departures screens really need to be much easier to read [at the airports] - you need to look up your flight info quickly*” (see Figure 73).



Figure 73 - Inappropriate form of an Airport's arrival screen in relation to purpose of looking up information quickly

When asked how information on such screens they could be made easier to read, the interviewee replied: “*I don't know, make it bigger, or brighter, sharper.*” Size, brightness, or sharpness are, therefore, other examples of formal aspects that were noticed because of the specific purpose of reading that the participant had in mind. The trouble of reading the small text on the information screens at the airport where this information needs to be looked up quickly, as pointed out by the participant, made her aware of the aspects and it was clear to the interviewee that the formal aspects of the font used were responsible for such a poor legibility, which influenced her perception of the text on the display.

To sum up, different reading purposes make audiences notice or appreciate the suitability of the formal aspects that support such a reading purpose well.

Some existing studies that explored the issue of reading purposes were focused on identifying possible purposes. Sellen and Harper (2001) at Xerox PARC, for example, discussed a set of purposes and motivations behind the reading activity in their study of reading at work, published in their book ‘The Myth of the Paperless Office’. These included reading for one’s own entertainment, to self-inform, to skim through a text, to learn, to identify, to cross-reference, to edit or critically review texts, to search for answers to questions, to support listening, to support discussion or to remind (Sellen & Harper, 2001). Willberg and Forssman (1997) propose additional types of reading for different purposes: linear reading, informative reading, reading for differentiation, reading as consulting a text or selective reading. This study, while reporting on what specific purposes audiences discussed in terms of their reading activities, explored those in terms of how and in what way they influence the audience’s perceptions of typographic outcomes, for example, the effect on visibility of typographic form or the positioning of a typographic outcomes.

6.3.2 Personal Background

The influential factor **personal background** refers to each person's different attitudes, past experiences, personal preferences, and other attributes that may matter in how they experience a typographic outcome. This has been expressed, for example, by one participant when describing a concert poster: "*I personally enjoy music and music festivals, so this brings back good memories*" or, by another participant, for whom a recent experience clearly affected what she thought about a particular text object: "*They [wedding invitations] are fun. Oh yeah, I class myself as a newly wed.*"

EFFECT OF PREVIOUS EXPERIENCE WITH OTHER INFLUENTIAL ASPECTS ON TEXT PERCEPTION

One aspect within this factor that was especially often discussed by the participants in this study was their previous experience in relation to various aspects of text objects encountered, for example: "*I searched for some leaflet and a map [to read] because that's what I always do in a museum*" or "*Finally the first directory [...] they are good, like others I see in other shopping malls*". The participants referred to their previous experience at the museum or shopping centre, including what they have seen or done there, and this affected their current behaviour or expectations towards the encountered text objects.

When the participants in this study were referring to their previous experience with a text object, they were often talking about a specific aspect of such an object, such as its physical surrounding or social envi-

ronment; these aspects are influential factors themselves in the proposed framework on the object's side of it.

The participants, for example, discussed their previous experience with the physical space or surrounding in which text objects are located, saying: "[*What do you mean saying that the car park signs are colour coded?*] Because it's the same as the walls on your level. That's what usually happens in all shopping centres". The participant was able to recognise the colour pattern of textual signs in the car park (see Figure 74) not because of her previous experience with these signs seen on their own, but rather because of her earlier experience seeing such signs positioned in different coloured levels of some shopping centre car parks.



Figure 74 - Recognising the pattern of matching colours because of a participant's previous experience

'Previous experience' may also refer to audience's experience with a similar social environment where the text is located, as demonstrated in the following quote: "*They should have done a better job here with clear signs [in the museum], since there's no staff helping you find the way - the security guards [in such places] would not help you*". The participant's earlier experi-

ence has shaped her opinion that the guards would not provide help, and therefore she expected better textual signs to guide her.

The audience's previous experience with content of typographic outcomes may also shape the current experience with similar texts: "*I guess the others [magazines at the newsagent's] seemed not that interesting [...] - for example, I saw Linux magazine and this brought back bad memories of complete boredom during my life as a programmer, so I could barely look at that one.*" One participant who talked about an example of a text message he got on his mobile phone explained that he liked the style of it "*because I often write like that in my own text messages.*" The participant's previous experience with writing such messages affected what he thought about the message he received.

The above examples demonstrate how previous experiences with various aspects of typographic outcomes influence how such outcomes are perceived by their audiences.

EFFECT OF PREVIOUS EXPERIENCE WITH TYPOGRAPHIC FORM ON TEXT PERCEPTION

Previous experience regarding formal aspects was also seen as an important factor in influencing perceptions of participants in this study. A similar textual form encountered in the past may make some formal treatment easy to recognise: "*If you want to know about the fonts here [on a sign listing all the shops on one level in the shopping centre], I think just the 'Myer' [department store] and the 'Coles' [supermarket brand] ones are inter-*

esting: because they are the same as - I don't know how to call it - the same as in their logo or something. It makes it easier to recognise".

As another example, the participant who wanted to have control over the look of text messages she receives on her mobile phone, as discussed in the Media section, formed this expectation based on her earlier experience with such control over form in her email program.

EFFECT OF PERSONAL BACKGROUND ON TYPOGRAPHIC FORM ASSOCIATIONS

The personal background of participants evoked in many situations associations in regards to formal aspects of typographic outcomes. The following example of the participant who discussed the text on a packaging for mustard (see Figure 75) illustrates this point: “[*the label on the packaging] reminds me more of a motorcycle logo, classic machine, or classic fashion accessories logo, hats or coats label.*” The participant described the label as “*the text is in a square and half round*” and he associated this perception of typographic form with different types of brands: “*The shape of letters make the look [...] remind me of some brand from the 50's, looks like a classic motorcycle company [...] everyone knows motorcycles [brands] look like that, some old Triumph [motorcycle], or even Harley Davidson.*”



Figure 75 - The mustard label creating an association with 1950's branding of motorcycles

This association, even though it is a surprising connection between ‘mustard’ and ‘classic motorcycle brand’, was found suitable by the participant, who, when asked if he thinks that the company tried to create this association on purpose, stated: “*maybe, it’s like [spices] travelled far from a distant country [...] like an old motorcycle diary of far travels [...] if they did [it on purpose], they did a good job, it looks so different that others, it has an idea.*”

Both classic motorcycle logos mentioned by the interviewer, the Harley Davidson logo and the Triumph logo, bear similarities with the mustard packaging: outlined, half-round, and bold text (see Figure 75). A fact that the associative connection is made and, perhaps more surprisingly, a further connection to far distant travel is implied (“*like [spices] travelled far*”), shows how connotations can be transferred using the formal aspects of type that evoke such associations.

The personal background of another participant evoked a colour association for a pharmacy sign photographed (see Figure 76): “*I think this sign is cool because it fits, it's about medicine, and it's like hospital colours, ambulance lights, you know what I mean?*”



Figure 76 - The colour of the text sign associated with hospitals or ambulance lights and, therefore, fitting its medical content

Participants seemed to like some typographic outcomes more when found such associations appropriate, as in the examples above.

EFFECT OF PERSONAL PREFERENCES ON TYPOGRAPHIC FORM PERCEPTION

While the personal background may affect associations created by individuals in regard to typographic outcomes, it can also determine preferences and attitudes towards various formal aspects of such outcomes.

One participant, for example, talked about her personal interests such as history - “*I like more this old history style*” - which made her especially like the street sign in Venice. Another participant, discussed in the section above, was clearly influenced by his interest in classic motorcycles when experiencing the typographic object he discussed - the mustard package label.

The liking for original things also influenced another participant who talked about book covers and a particular style of design: “*I don’t like it when you would have many book covers copying such style. I like it when it’s original.*” The typographic outcome on such a cover would be perceived as original and, therefore, for this participant, of ‘higher quality’ compared to others “[which] look like cheap mass market books”.

The above examples showed how individual preferences influence the perception of typographic outcomes.

EFFECT OF KNOWLEDGE ON TYPOGRAPHIC FORM PERCEPTION

Although this study was targeted at non-designers, it was apparent that some people may have more knowledge of design or typography, and, therefore, experience various typographic outcomes in a different way. During one interview, a participant stated: “*I know so much about type that it forms a different impression on me than on ... let’s say ... 90% of people*”. This further influenced his perception of the typographic quality of a text as exemplified in the following quote: “*If you see a passage of text with straight quotes and a passage of text with curly quotes [...] you see that the curly quotes are better [...] once you have that knowledge, then you see a passage without curly quotes as kind of ... bmmmm ... this person doesn’t know as much as me possibly*”.

Another participant, who works in an office and writes and receives many documents daily, mentioned another piece of knowledge that influences how she perceives a specific formal aspect, the underlining style: “*You know, underlining should be used only to show hyperlinks, but not for*

anything else anymore - it was only used when we used typewriters, and now we should just use bold or colour highlighting - underlining makes it harder to read - but people still do it, I think."

Therefore, it seems that people may be more and more aware of typographic rules, and develop higher expectations towards typographic outcomes.

There has been no research, to the best of the author's knowledge, that would explore how the personal background influences the audience's perceptions of typographic outcomes. Brumberger (2004) pointed out that typographic perceptions do not take place in a vacuum, but rather are contextually embedded and shaped by prior experiences and knowledge. This study has demonstrated how, or in what way, such typographic perceptions can actually be shaped by the audience's personal background.

A similar concept to the personal background factor identified in this study can be found in Falk and Dierking's work 'The Museum Experience' (1992). These researchers structure a museum visit in a framework that acknowledges the difference between individual subjective experiences of various visitors. This experience, described in their work as 'The Interactive Experience Model' (Falk & Dierking, 1992), cannot be tied to one aspect of the museums visit, such as the physical properties of the space or its design. The individual experience emerges, in their view, out of three overlapping contexts, which contribute to each individual museum experience, though not necessarily in equal proportions. Two of

these contexts, social and physical, are mentioned in the discussions of other factors of the framework in this thesis. The one that is similar to the personal background factor discussed in this section is Falk and Dierking's (1992) 'personal context of a visitor', who may be, for example, a first time or frequent visitor, a subject novice or a subject expert, and therefore, experience their visit differently. In the field of interaction design, Jääskö and Mattelmäki (2003) also acknowledge the influence of user personality, self-image, attitudes and values, life style, and previous experiences on the quality of the user experience, while Forlizzi and Ford (2000) point out the importance of cultural backgrounds and prior experience. This study has demonstrated the importance of this factor for the typographic experience as well.

6.3.3 Activity

Reading is no longer an activity that mostly takes place in a more or less quiet surrounding, where reader and material 'become one', as described in Manguel's (1996) 'A History of Reading'. What the data in this study clearly shows is not only that reading is nowadays often conducted in a non-linear fashion in a real world environment, but also that reading in a real world context is frequently just one **activity** amongst several others that often take place simultaneously.

Reading by the participants in Studies 1 and 2 was often conducted while waiting for something or while walking: "*The moment you pick up a*

map [in the museum], you will start reading it, so you may miss a small sign nearby ['What's on' sign], walking past it reading".

Transition times were often used to read, as observed during one of the participant's visit to the museum; she used the time on the escalators to read the map and figure out what is on the level below (see Figure 78). In the shopping centre, another participant looked at one sign and took a picture of it because she had nothing to do while riding the elevator.



Figure 77 - Reading while walking or riding escalators

SUITABILITY OF TYPOGRAPHIC FORM FOR ACTIVITY ACCOMPANYING THE EXPERIENCING OF TEXT

When reading happens parallel to some other activity, it can have an effect on the suitability of formal aspects of the text. For example, the participant who chose to discuss the way messages are displayed on her phone, when asked whether she reads them when walking, stated the following: "*Yeah, all the time, see, another thing why it would be easier if the whole message was on one screen - when you are walking, you could see it better.*" The participant did not like the fact that "*I can't see the whole message*

at once, it's divided over; say, three screens, so it's really badly broken", and this was especially unsuitable for her when reading it while walking.

Another example where formal aspects of text may be perceived differently depending on an activity accompanying reading was discussed by a participant who commented on a street number on a busy street in Sydney. He liked the way the number in Figure 78 is painted on the wall, and found it "*interesting and surprising.*" However, as the participant noted, he noticed the sign for the first time when waiting to be picked up there: "*I'd driven there lots of times, never seen it. [So you think you can't read it from a car when driving?] No... you wouldn't make out what it says. It's pretty cool but totally hard to get, if you're driving and looking for 65 King Street, no way, you wouldn't know this is the number.*"



Figure 78 - The additional activity of driving making a hard-to-be-read sign almost invisible

The number '65' on the wall is very tightly set in a bold Franklin Gothic. The spaces between the two digits are completely removed making them overlap to create the number, which makes the number harder to read (see Section 2.2.2 in the Literature Review chapter). In addition, instead of filling out the positive form of the number, the de-

signer decided to emphasise the negative shapes or counters of the font, leaving five shapes painted in black on the brick wall. While this treatment already makes for a less legible street number, the additional activity of driving, according to the participant, would make the number illegible or “*totally hard to get*”. Although the playfulness of the typographic treatment and its dimensions (probably over 2 m high) make an interesting composition on the brickwall, as a sign to be read by passers by who are engaged in other activities than reading (for instance, driving), it is not useful, as the participant pointed out.

An activity that happens at the same time as reading, as discussed above, may influence the perception of the suitability of formal aspects of text.

It seems important that designers are more aware of other background activities that the audience may be engaged with while reading their text objects, and design with these in mind. Cahalan (2004) also noted the importance of font choice for highway signage because such signs will need to be read clearly by people driving cars past it at various speeds. Sellen and Harper (2001) identified another activity that frequently happens parallel to reading, that is, writing. Work related reading occurred especially often with some kind of writing activity such as note taking or making marks on paper or computer screens as pointed out by Sellen and Harper’s study (2001).

This study, however, has looked at the influence of various activities accompanying reading, not only driving and writing. Through the examples from the participants’ interviews, it did not just explore what these

activities are, but rather demonstrated how the audience's perception of typographic outcomes can be influenced by such activities.

6.3.4 Social Situation

The social situation frames reading as an individual or social activity, an activity that is conducted in private by one person, or by a group and, therefore, directly influenced by others - by immediately verbalised opinions of others, for instance.

Although the influence of others on the perception of a typographic quality was not taken into account before conducting the first studies, and, therefore, not catered for in providing a task which would involve social interaction at the museum or shopping centres, this factor did emerge during the interviews, and therefore was explored further in Studies 3 and 4.

The **social situation** is part of the subject's sphere of influential factors since it is seen as something that can be affected or decided on by the participant (in contrast to the **social environment** factor placed in the object's sphere and described earlier in this chapter). There is a choice to read something and to make sense out of it by oneself, or to verbalise text or state opinions about a certain typographic object to others, such as, for example: "*I recently talked to my friend who loves retro stuff, Japanese, American, you name it. And we both read 'hyper magazine', of which there is a section dedicated to the old school games, clothing, whatever... We talk about [what we've read] when we both purchase the mag or visit each others' house.*"

EFFECT OF OTHERS ON TYPOGRAPHIC FORM PERCEPTION

The influence of the social situation factor is often seen where reading is ‘done together’ or influenced by others, for example, “*Looking at band gig announcements in the paper; mostly my partner has pointed something out, like look at so and so's band, they might have misspelt the name which I wouldn't notice on first look*”. Therefore, how text is perceived may be affected by someone else pointing out various aspects of a typographic outcome, which is exemplified in the next example as well (see Figure 8o): “*I've had this book for years, and I saw it's got this title written like on a real phone, but I saw nothing else... and several weeks ago I was reading something in this book and showed it to my flatmate, and she showed me - I never saw it earlier - that it actually is like the whole phone, this cover... and this text in the title is like a screen*”. The participant talked to another person about the book, which has affected her perception of the way its title is written.

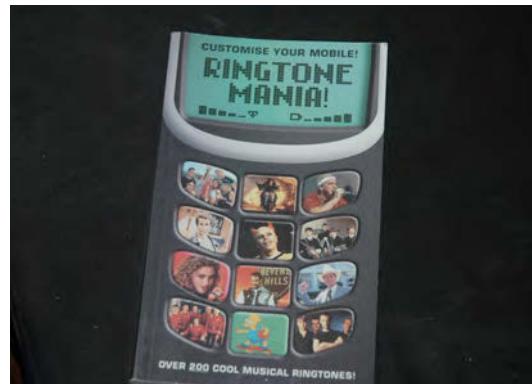


Figure 79 - The perception of the book title affected by talking to someone else

The mobile phone picture on the cover of the book mentioned by the participant and shown in Figure 8o is heavily cropped and, where one would expect a text message, the book title appears; the number keys

hold pictures of famous pop and TV icons. Together with the size (possibly about three times the height of the mobile phone it depicts), this treatment makes it hard to decipher as an illustration of an actual phone, as the participant pointed out.

Audiences may also assume that some textual displays work appropriately based on other people looking at it, such as in the example of one respondent who decided to read information on an interactive museum kiosk after seeing other people doing it: “*Somebody is using the kiosk [for reading] - must work.*”

Therefore, how text is perceived may be affected by the social situation surrounding the reading of this text.

There have been no studies found in the literature that researched the effect of the social environment of text on how readers perceive typographic outcomes. The work of Falk and Dierking (1992) concerning the museum experience, already mentioned in the **social environment** and **personal background** section, revealed the importance of the social context on the individual experience in the museum, including the influence of others, parents, children or a group. This current study has demonstrated the importance of the influence of others in the context of the typographic experience; some examples were also presented to demonstrate the nature of this influence.

6.4 The Perceived Typographic Quality

6.4.1 *Expectations*

All the influential factors described in this chapter shape the audience's expectations towards the typographic outcome they experience. The participants' expectations emerged as a very important issue in many interviews in this study. 'Expectations' were initially included as one of the characteristics of the **personal background** factor; during the analysis and write-up, however, it became very clear that when all the other factors were discussed, the interviews often revolved around the participants' expectations that these factors shaped - what they thought 'should be', and whether such expectations were met in the actual experience. Each encounter between a person and a typographic outcome includes such expectations, whether they are made explicit or not.

Drawing from the data discussed in the sections above, the purpose behind the reading activity, for example, will form the audiences' expectations towards the text - if they want to find something quickly, they will expect the information they need to be especially easy to read or well-organised. The personal background may shape the audience's expectations in many ways, for example, through their previous experience, as discussed earlier in this chapter. The activity that happens parallel to reading forms such expectations as well, since, for example, driving audience will expect the text to be positioned in the way easy to read at some speed. This also refers to a social situation, since another person may

influence the person's opinion and change their expectations towards the typographic outcome, too.

On the object's side, similarly, the kind of media on which text is displayed shapes the audience's expectations towards what is possible, for example, in terms of interactivity. The audience may also expect more from a text in some physical surrounding, for example in a modern and expensive shopping centre. A social environment, for example, many people reading the text at once, may also raise specific expectations towards textual displays. Visual elements, for example background images accompanying typographic outcome, as well as the content of the text, such as a formal invitation or a shopping centre's directory, shape expectations towards typographic outcomes, too.

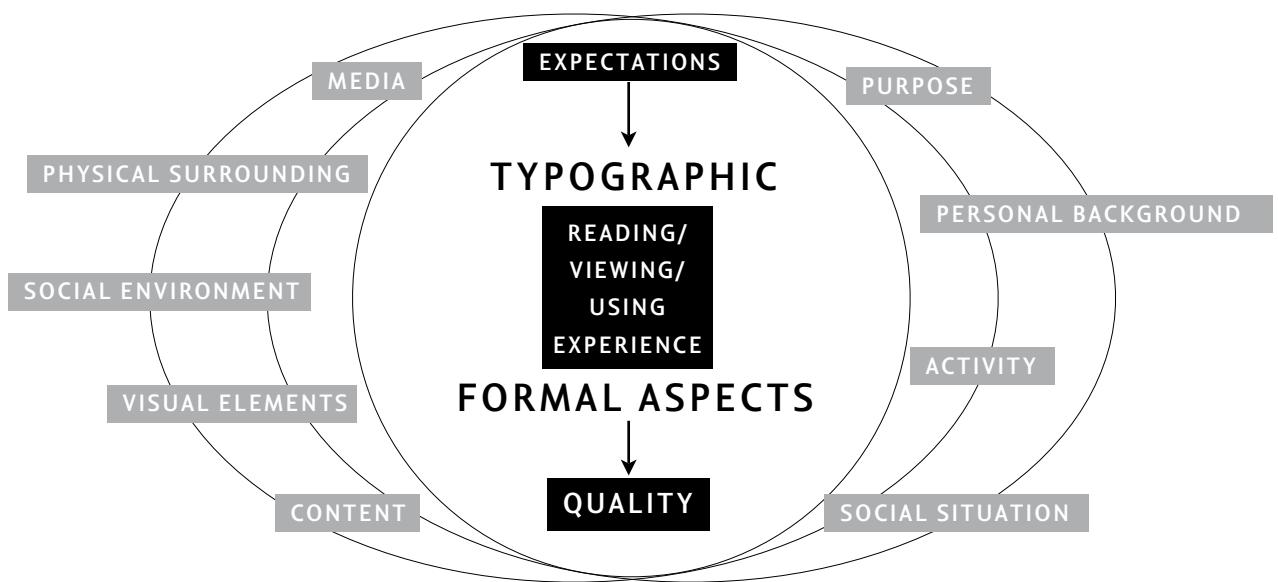


Figure 80 -The audience's experience of typographic outcomes (reading, viewing or using), influenced directly by expectations that they had formed because of the factors in the subject's and object's sphere

The audience, therefore, influenced by a multitude of factors, will form some expectations towards a typographic outcome, often without realising such expectations or attending to them. When the audience experiences the text (that is, reads, views or uses it), they will perceive this text as being of some, better or worse, quality, and the expectations that they had formed will influence their opinion - if the experience has been higher or as expected, the visual quality will be perceived by the audience as high; in the opposite case, they may not think much of the text object or be disappointed (see Figure 81).

The following examples are just a few quotes from the data that demonstrate how various factors can influence the audience's expectations towards typographic outcomes:

- expectations towards typographic outcomes because of media on which the text is presented, especially often discussed by the participants in this study. These expectations were mostly linked to the particular media, for instance those that were identified as supposedly 'interactive' or including particular features ("*there should be a search feature in the [interactive] kiosk*"). Especially expectations towards multimedia tools were high, expecting information-access that would not be possible in classic, printed media: "*there [in the interactive shopping centre directory] should be a keyboard and you enter the name what you are looking for, say 'post office' and automatically there should be lights blinking where it is in the directory and on the map, that would be*

perfect" or even expecting such texts on multimedia tools to offer something "cool": "*There should be something cool on it so everyone would say: that's cool. Like the registers at 'Coles' [supermarket brand] that say 'Hello, I'm Bondi [name of suburb]'";*

- expectations towards how typographic form should be used to organise the content: "*You would expect that they would have organised this directory [in the shopping centre] better, you know, put more thought into it, whether this works for people*";
- expectations towards formal aspects of text because of the physical surrounding; there was often a strong preference towards a particular look of a text object, for instance, a screen display in an elevator in the modern shopping centre : "*ugly - like those computers in old times. It should be some nice colour, e.g. blue like in Windows [operating system]*";

6.4.2 *Experience*

When audiences experience a typographic outcome, such experience, as has been revealed in the Literature Review section, can be divided into reading, viewing, or using the text; in many situations, these roles overlap but one would still take a centre stage.

The distinctions between 'reading', 'viewing' and 'using' were informed by the Literature Review chapter where it was proposed that 'reading' involves attending to a consecutive text, with the reader immersed in its

content. This ‘reader’ is scarcely aware of the typographic form of the text, as long as it does not interfere with the immersive state of reading. When the ‘reader’ starts viewing a text, the formal aspects of it overpower the content, taking centre stage. The formal aspects of a text begin to interpret and, therefore, affect the textual content. The ‘viewer’ not only reads the text but also views the form of it, attending a typographic performance.

The original data of this research supports the distinction between a ‘reader’ and a ‘viewer’, where participants would become either the former or the latter, depending on their choice of typographic outcomes that they were documenting during the study. When the subjects were discussing typographic outcomes that they used as help in navigation, for example, they were focused on the content and the information that they were able to gain from it. On the other hand, some displays that they liked just attracted their attention because of their form; in such cases, the respondents were much more aware of the form of the display than its content.

‘Using’ a text happens when the audience can actively control it, being able to interact with the text and decide how to read it. The ‘user’ controls both spatial and temporal aspects of the text and its appearance. In the studies conducted participants were, for example, interacting with new media kiosk systems, making choices using typographic outcomes. ‘Using’, as one kind of typographic experience, was the least common one in the particular contexts investigated.

6.4.3 *Perceived Visual Quality*

When the audience, with all the influential factors that they bring to it, read, view, or use a typographic outcome, with all its surrounding aspects, they form expectations towards it, and therefore, perceive this text to be of some, better or worse, quality. How they perceive this text object, consequently, does not just depend on whether the designer has followed the prescribed typographic rules, but it will be influenced by the multitude of the factors in both the subject's and object's sphere that have been described in this chapter.

The factors in the subject's sphere refer to those of the 'individual situation', and include the purpose behind the engagement with a typographic outcome, the personal background of the individual, the activity undertaken while reading the text, and the social situation the individual is part of. In the object's sphere, they include the physical surrounding of the typographic outcome, the media it is communicated with, the social environment it is surrounded by, as well as accompanying visual elements and the content of the typographic outcome.

This framework recognises that the quality of experienced typographic objects will be perceived very differently by people with different previous experiences of similar text, different personal background, or having a different purpose of reading this text. Similarly, their experience with such a typographic outcome will be different in a busy surrounding or on a particular media than in, for instance, in a lab setting. The previous sections have presented numerous examples on how exactly such an ex-

perience may be different, and how specifically the various factors influence it.

The visual quality that our respondents perceived in the typographic outcomes, in various instances of them experiencing those outcomes, was articulated in their own words in a variety of ways. Positive comments about this perceived typographic quality, were expressed in numerous quotes throughout this chapter as, for example, “*nice*”, “*good*”, “*smooth*”, “*cool*”, “*expensive-looking*”, “*authentic*”, “*appropriate*”, “*nice and modern*”, “*very clear*”, “*fitting*”, “*cute*”, “*sweet*”, “*interesting*”, or “*simple*”; neutral comments included “*normal*”, “*nothing special*”, “*nothing bad about it*”, “*it’s all the same*”, or “*I don’t mind*”. Some examples of negative comments about a perceived typographic quality used by the participants in this study included: “*weird*”, “*ugly*”, “*I’m disappointed*”, “*something’s wrong here*”, “*confusing*” or “*don’t like it*”.

The framework will hopefully improve the understanding of researchers and design practitioner about what influences such perceived visual quality of typographic outcomes experienced (read, viewed, or used) by the audience, and how to design for an audience to perceive typographic outcomes to be of the highest quality possible.

The next chapter concludes this thesis with an overview of the study’s contribution, a summary of the main findings, a discussion of the benefits of this study as well as a note on the limitations and possible future directions of this research.

7. Conclusions

7.1 The Contributions of this Study

This study was concerned with typography, an essential part of our written communication, defined in this thesis as the art of giving printed text a voice and a position in space through discrete symbols, as well as basic lettershapes and their arrangements in words, lines, or paragraphs.

The focus of this research was on investigating audiences' experience of typographic outcomes. A 'typographic outcome' in this respect refers to any sequence of letters, words or paragraphs that has been realised in a particular typeface or font and arranged in a particular way. The term 'audiences' refers to people experiencing typographic outcomes, which could either be through traditional 'reading' of text, 'viewing' it (when form becomes more important than content), or 'using' a text (when

people are able to influence what and how they read by interacting with text objects).

More specifically, this study aimed to identify and explain various influential factors that shape how audiences perceive the visual quality of typographic outcomes, as well as organise and integrate such factors and their characteristics into a guiding framework. The ‘perceived quality’ in this study refers to the most immediate effect of visual aspects of typographic outcomes that audiences experience, at every encounter between them and the typographic object anew. The proposed framework is meant to help typographic practitioners improve such a perceived quality of their designed texts.

The main grounding for this research comes from a problem identified in the literature review. An abundance of typographic literature provides guidelines for designers helping them to improve their typographic designs. Such literature, however, seems to mainly use ‘objective’, scientific measurements to formulate precise rules of ‘good’ typography that can help make text more legible or easier to read, or improve the visual clarity of texts.

Such rules were seen in this project as a useful foundation for typographic design, but, because experiences of readers seem not to be the same regardless of time, context, or other aspects, this research assumed that there must be other factors that affect the readers’ perception of legible forms, but also factors that influence other qualities of typographic outcomes that matter to audiences, apart from legibility only. It

is these influential factors that this research aimed to identify and explain, using numerous examples from the original data gathered. The research aimed to reveal what other factors apart from scientific legibility rules, and in what way, can influence and, consequently, improve the visual quality of typographic outcomes perceived by audiences.

Additionally, existing research, as was shown in the Literature Review chapter, often focused on one or few specific factors that can influence the visual quality of typographic outcomes. This research aimed to organise and integrate the discovered influences and their characteristics into a guiding framework.

This project was influenced by additional perspectives, including those derived from my professional practice, and others based on philosophical reflections. Inspired by the concept of phenomenological reduction derived from Husserl's philosophy (Held, 1985, 1986) and Merleau-Ponty's (2002) writing, I wanted to look for new understandings of typography, beyond the 'proper' or 'commonly accepted' way - the educated typographer's way - to get a fresh look and see new meanings that only following the learned system may prevent designers from seeing. I was also influenced by some concepts of symbolic interactionism, as described by Crotty (1998), that seem to embrace culture and pre-imposed beliefs as a guidance in meaning creation. In this study, I aimed not to judge such imposed, inherited, cultural understandings, and preconceived notions of readers, but rather to understand them. Inspired by the notion of intentionality, as described by Sokolowski (2000), I realised that a study of

the ‘typographic outcome’ object could not be undertaken without its ‘audience’, and, at the same time, these subjects can only be studied through the objects they experience. I aimed to study both people and typographic objects together at the moment of the actual experience.

Based on some personal motivations rooted in my professional practice, I was also interested in developing a framework that would apply to both print and digital typography, and that would encompass a variety of reading behaviours. In addition, I wanted to find out how the apparently exclusive functionality and aesthetics of typographic designs can be combined to offer their best to audiences. This research also aimed to overcome the problem of delineation between designers’ and audiences’ perceptions of typographic quality, and a gap between academic research and typographic practice in general.

The literature review, as mentioned earlier, revealed a large number of typographic rule-formulating studies that used quantifiable methods to improve legibility, or visual clarity, of texts. There were few typographic studies that investigated attitudes and perceptions of people towards the visual quality of typographic designs using qualitative methods of inquiry. Such studies were less relevant to the current project since they mainly focused on designers’ perspectives, not audiences, and were concerned with just one aspect of a typographic experience, for example, the personality of typefaces. A number of studies and case studies were found that illustrated the changing nature of audiences’ encounters of typographic outcomes, especially in the light of new technologies. They

informed one aspect of the proposed framework, the division of the typographic experience into ‘reading’, ‘viewing’, and ‘using’. There was an identified lack of studies on audiences’ experience in typographic research, and therefore some studies were reviewed from the related field of interaction design. Such studies revealed some perspectives on experience and its quality in general, but many specific aspects of experience seemed relevant to interaction design only. The literature review confirmed the need for a qualitative study on typographic experiences.

The study answered all the research questions posed at the beginning of the project:

1. What influential factors shape the visual quality of typographic outcomes perceived by their audience?
2. How can such influential factors be organised and integrated into a guiding framework that would explain what shapes such a perceived quality of typographic outcomes?
3. What are the specific characteristics or findings within each influential factor?
4. How can typographic experiences be studied from an audience’s perspective?

An overarching methodology, grounded theory (Glaser & Strauss, 1967), was employed to help answer the research questions posed above, and guided many aspects of this research across the individual studies.

Grounded theory offered rigorous procedures in terms of sampling, saturation, and numerous coding procedures. One important aspect of

this methodology, the way the final outcomes are presented as a theory, was not suitable in terms of the research aims in this study, and, therefore, this research needed to diverge from the original methodology in one of the coding stages, namely the final, theoretical coding stage. In theoretical coding, categories and properties are integrated through hypotheses, or generalised relations, to generate theory. Sorting and integration of categories and properties was also an aim in this study, and it is only regarding how this integration was attempted where a diversion from the original approach was needed, focusing rather on organising the categories and properties into a framework. Additionally, while grounded theory focuses on one substantive, empirical area of inquiry, I focused on varying the contexts and situations to a large extent, in accordance with this study aims, to provide as holistic understanding of typographic experience as possible. This study, therefore, used a range of research settings to make sure that the typographic quality framework would be as comprehensive as possible and that a multitude of influential factors would be revealed and examined. To sum up, this research uses grounded theory as a guiding methodology, but does not claim to create a substantive theory, and instead provides a framework of well-integrated influential factors; grounded theory lends to this project rigorous and systematic procedures that are very suitable to answer the research questions posed.

Since this research is meant to be useful for design practitioners, it does not assume that all the people reading it have a research education.

Consequently, some background on both chosen and opposing theoretical perspectives was provided.

The research process in this thesis was divided into four main stages that together informed the typographic quality framework which presents the major contribution of this research. In terms of data collection, the aim of this study with its focus on understanding and explaining people's experiences, depended on detailed explanations and the richness and depth of the data that only qualitative methods could provide. Specifically, the visual method of auto-driven photo-elicitation (Samuels, 2004; Clark, 1999) - participants were asked to take photographs of typographic outcomes, and such photos subsequently guided the interviewing process - proved to be very suitable to answer the research questions posed in this study. It was found to be a viable tool to find out about people's experiences of typographic outcomes in real world situations, and combining visual documentation with follow-up interviews presented a number of benefits. A significant shift in the research approach of this study happened when the importance of having participants document their own experiences became apparent (as in 'auto-driven' photo-elicitation) since the first pilot study revealed a number of problems with the original approach with the researcher documenting participant's experiences using video cameras. The main benefit of making photo-elicitation in this study 'auto-driven' was that it allowed participants to decide themselves what typographic outcomes they found important, or wanted to document and discuss in subsequent interviews.

Apart from the proposed framework, an additional contribution of this study to typographic researchers is the review of the auto-driven photo-elicitation method, both from the literature and my own experience in the studies conducted. The method made the study more interesting to participants and allowed them to have control over the documenting process. The fact that subsequent interviews were based on the photos taken by participants facilitated question-asking, reduced misunderstandings, triggered participants' memories, elicited as many relevant aspects as possible, and not only managed to reveal the actual content of pictures, but also the contexts surrounding them. Employing such a method helped participants convey their meanings and describe experiences, using more concrete and specific examples, grounded in their actual lived experience. The thesis also offers many specific guidelines and observations in terms of equipment choices, for example, revealing that the use of participants' own digital camera may be the most suitable solution.

As the study progressed, each stage had a specific objective to fulfil, moving from the initial broad category formation in the first studies to refining the framework and providing more real-life examples in the final ones. The actual research tasks and settings, therefore, varied throughout the stages.

Overall, this research led to the formation of the framework of influences on the visual quality of typographic outcomes, perceived by their audiences; the framework also provides an explanation of the nature of

these influences, or their characteristics, demonstrating the specific ways in which the factors influence the quality perceived by audiences. The framework, as the main contribution of this study, is summarised next.

7.2 A Summary of Findings and their Implications

The proposed framework organises factors that influence how audiences perceive the visual quality of textual designs into two major spheres.

As mentioned above, the ‘object’s sphere’ includes the media by which the text is communicated, its physical surrounding and social environment, as well as visual elements that appear with it, and its content.

The ‘subject’s sphere’, on the other hand, includes the factors that stem or are dependent on the individual person experiencing a typographic outcome: the purpose behind the reading activity, the personal background of the one experiencing the text object, an accompanying activity, and the social situation in which the reading/viewing/using of a text takes place.

Each of these two spheres are equally important, both encompassing influential factors the effect of which should be considered regarding any typographic outcome’s design.

Factors on both the object’s and the subject’s side influence the expectations formed by people towards a typographic object before they experience it. This ‘experience’ can refer to ‘reading’, ‘viewing’ and ‘using’ text. Reading involves attending to a consecutive text, with the reader

immersed in its content. When the ‘reader’ starts viewing a text, the formal aspects of it overpower the content and begin to interpret and therefore affect the textual content. The ‘viewer’ not only reads the text but also views the form of it. ‘Using’ of a text occurs when the ‘reader’ is able to influence what or how is read by interacting with typographic objects.

When the audience, influenced by the various factors, forms expectations towards typographic outcomes, it often happens without them realising such expectations or attending to them. When the audience experiences the text (that is, reads, views, or uses it), they will perceive this text as being of some, better or worse, quality, and the expectations that they had formed will influence their opinion - if the experience has been higher or as expected, the visual quality will be perceived by the audience as high; in the opposite case, they may not think much of the text object or be disappointed. Various factors, therefore, influence what expectations are formed, and these expectations, in turn, influence how the visual quality of typographic design is perceived by audiences. Such a perceived quality is relationally defined - by relation between a person and a text in each instance of a reading/viewing/using experience.

The framework in its final form includes, both in the object’s and subject’s spheres, specific ‘influential factors’ that provide a high-level overview of various influences. Because of the depth and richness of the data in this study, these influences also come with ‘particular characteristics’ that explain their nature, demonstrating the specific ways in which the

factors shape the quality perceived by audiences. The factors and their characteristics comprise the main contribution of this study and are summarised next.

The ‘object’s sphere’, as mentioned above, includes the **media** text is communicated with, its **physical surrounding** and **social environment** it is a part of, as well as **visual elements** that appear with it, and **content** it attempts to communicate.

A typographic outcome always exists on a particular medium. One way how **media** can influence the perception of typographic outcomes is through the fact that media, especially new media, may be used to enable audiences to choose a preferred form for a text they read - a form that they can decide on themselves, and therefore, like more. Control over the formal aspects of a read text in electronic media seems to have become a norm, and, as participants in this study demonstrated, such control strongly shapes the experience of typographic outcomes on such media, for example when one’s preferred font can be chosen. Media may also influence a text quality when they enable a new, not previously possible, typographic treatment of text. Electronic media offer new typographic possibilities, such as movement, scrolling or blinking of text, that, if properly used, can improve the quality of typographic outcomes. The participants in this study also commented on how well some typographic forms fit the media they are on, and how these forms could lose their appeal if presented on a different medium. A good fit between text and the medium it is communicated with is something that can improve

the quality of typographic outcomes for its audiences. Not only its fit with the text on it, but also the nature of the medium itself can affect audience's overall opinions about a typographic outcome. The choice of the type of media can also affect the perception of typographic outcomes realised on them, for example, by adding importance or attracting attention to these outcomes. Another finding of this study is that audiences may display high expectations towards access to textual displays because of the media used, especially in regards to the interactive possibilities of new media. These interactive possibilities may provide a certain form of control, influencing what and how text can be accessed through a particular medium. Additionally, just having a range of media was often useful for participants to cross-check or supplement information. The same text sometimes appeared in different media, for example, to support understanding or just offer an alternative way of accessing the same content.

A text is not only displayed on a medium but also displayed somewhere, existing in some **physical surrounding**. This real world surrounding of text is another factor that influences how the form of a typographic outcome is perceived. One way how this happens is through the fit between the form of such an outcome and the visual style of its surrounding. Such a fit between the typographic form and its physical surrounding may greatly improve the visual quality of texts for their audiences. Another recurring theme found in this study's data was the importance of visibility of typographic outcomes in their physical surroundings. Text

objects should fit their physical surroundings, but not blend in with them. Typographic treatment, especially colour and size, may be used to make texts stand out in their physical surroundings, and, therefore, improve their quality in general. The significance of the physical surrounding of the text was also seen through the overall impression it made on participants. Another issue that came up in this study was typographic designs not being unsuitable in themselves, but in relation to their positioning in the physical surrounding. The importance of such positioning of the typographic outcome within its surrounding was discussed not only in terms of its visibility, but also in terms of making the access to it more convenient. Text objects should also be positioned in the right places, where they are needed, in the proper frequency. The choice of a formal typographic treatment also needs to be considered in terms of its suitability in relation to various physical surroundings in which texts can appear.

A **social environment** includes the crowd present in a public space, for example, or other people who may want to view the same typographic design at the same time. What has emerged as important in this study is the suitability of formal aspects of text in relation to the social environment in which they can be found. Audience's perception of typographic outcomes may be influenced by the social environment in which such outcomes appear, and, therefore, a typographic treatment needs to take such possible social environments into account.

When participants talked about typographic outcomes in this study, their perceptions also seemed to be influenced by additional **visual elements** with which those text objects appear. These elements form the immediate visual context of a typographic object, and most often they included an accompanying picture, an illustration, an icon or an animation or moving image. The visual elements that accompany typographic outcomes can be used to help recognise the content of text. The ‘fit’ between visual elements and a typographic outcome is another aspect that seems to influence the perceived quality of a text. Visual elements can fit and support a typographic outcome, and, therefore, improve its overall perception. The specific placement of a typographic outcome within the visual context of other elements can influence its quality, too. The text itself may be based on appropriate typographic rules when it is typeset; however, the immediate visual context where it is placed may affect its typographic quality.

The **content**, which is normally not within the scope of typographer’s work, is still represented in the proposed framework as an influential factor, but only in regards to how it affects or supports the formal aspects of a text. The participants in this study often commented on the suitability of visual aspects of text for the specific content that this text communicates. The form of typographic outcomes can directly express the literal meaning of its content. The participants in this study also realised that either ‘content’ or ‘form’ are emphasised in particular typographic outcomes, which may make them more or less appropriate.

Since content provides the literal meaning of a textual design, there are various ways of organising it using formal aspects, to make it easier to communicate this meaning to the audience. Formal aspects, therefore, can be used to organise the content of typographic outcomes and improve their overall visual quality.

The ‘subject’s sphere’ includes the factors that stem or are dependent on the individual person experiencing a typographic object: the **purpose** behind the reading activity, the **personal background** of the one experiencing the text object, an accompanying **activity**, and the **social situation** in which the reading/viewing/using of a text takes place.

An important influence on the perceived quality of typographic outcomes seems to be the ‘why’ people read or engage with textual objects in the first place, or their **purpose** behind attending to a specific text. The reason why the participants read a given typographic outcome influenced their perception of how useful they found it, both in terms of whether it provided ‘the right amount’ and ‘the right kind’ of information. The purpose behind the reading activity also affected the expectations towards formal aspects of texts. Various formal approaches, such as size or colour of text, can be used to visually treat a text to suit possible purposes that audiences may have when reading these texts. Additionally, a specific reading purpose may make audiences notice or appreciate the suitability of the formal aspects that support such a reading purpose well.

Another influential factor proposed in this study, the **personal background**, refers to each person’s different attitudes, past experiences, per-

sonal preferences, and other attributes that may matter in how they experience a typographic outcome. One aspect within this factor that was especially often discussed by the participants in this study was their previous experience in relation to various aspects of text objects encountered. The presented examples demonstrated how previous experiences with various aspects of typographic outcomes influence how such outcomes are perceived by their audiences. Previous experience regarding formal aspects was also seen as an important factor in influencing perceptions of participants in this study. Additionally, the personal background of participants evoked in many situations associations in regards to formal aspects of typographic outcomes. Participants seemed to like some typographic outcomes more when found such associations appropriate. While the personal background may affect associations created by individuals in regard to typographic outcomes, it can also determine preferences and attitudes towards various formal aspects of such outcomes. Examples from this study showed how individual preferences influence the perception of typographic outcomes. Furthermore, it seems that people may be more and more aware of typographic rules, and develop higher expectations towards typographic outcomes.

What this study also showed is that reading in a real world context is frequently just one activity amongst several others that often take place simultaneously. An **activity** that happens at the same time as reading may influence the perception of the suitability of formal aspects of text.

The social situation frames reading as an individual or social activity, an activity that is conducted in private by one person, or by a group and, therefore, directly influenced by others - by immediately verbalised opinions of others, for instance. The influence of the social situation factor is often seen where reading is ‘done together’ or influenced by others. How text is perceived may be affected by someone else pointing out various aspects of a typographic outcome.

The above summary presented factors from both the object’s and the subject’s side of the framework that influence how people perceive the visual quality of typographic outcomes. Additionally, the nature of such influences was also discussed. The benefits and usefulness of these findings are discussed next.

7.3 The Benefits of this Study

The framework offers designers a better understanding of how audiences perceive typographic designs, which may lead to improved textual displays. Practitioners are offered an improved conceptual understanding of the multitude of influential forces that can affect the perceived visual quality of their text designs. The findings may be most relevant to designers working mainly with text, but they can also be useful for other visual communication or interaction design practitioners in their understandings of text design.

Such improved understandings can be of advantage in many respects. For instance, if practitioners are in control of aspects regarding their text

designs, such as the choice of media or physical surrounding, they can make well-informed and thought-through design decisions by reflecting on the proposed influences and their characteristics, helped by a variety of examples described in this thesis. In case such decisions have already been made by their clients, typographic practitioners can better understand limitations and issues brought about by such decisions. They can also make sure that user testing considers all the various influences that may matter in the final text design.

To demonstrate how the findings of this study can help practitioners improve the quality of their typographic designs, the following examples suggest how an understanding of the influential factors or their characteristics can inform their practice. For instance, one important influence proposed in this study is ‘why’ people read or engage with textual objects in the first place, or their purpose behind attending to a specific text. This finding does not suggest that designers can control the audience’s purpose, but rather design for flexible use, accommodating varied purposes, and not assume just one, envisioned or ideal purpose. Stiff (1997) argues that designers are less likely to imagine, for instance, sloppy skim reading to quickly find information, as often happens in relation to reading educational texts, catalogues, reference books, maps, diagrams, food and medicine labels, schedules, user manuals, and so on. Such possible purposes as in the example above and others could be elicited from surveys or interviews with potential audiences of typographic designs.

Regarding findings about another factor, the social environment of a typographic outcome, one possible implication is that it may be important for practitioners to enable many people at once to access and read the text, or, on the other hand, consider private access in a crowded place. It may also be important to identify potential disruptions present in a social environment, or take into account whether anyone is available to help understand a particular typographic design.

As another example of practical implications of this study's findings, taking into account another proposed factor - accompanying activity - practitioners should be aware of other background activities that the audience may be engaged with while reading their text objects, and design with these in mind. Such background activities can be identified by, for example, observing potential audiences engaging with similar typographic objects. Scenarios are also useful tools, common in the field of interaction design (Preece, Rogers & Sharp, 2002), that express proposed or imagined situations in which people will find themselves when experiencing the designed artefact or surrounding. According to Preece et al. (2002), scenarios are narrative descriptions that focus on various activities or tasks in such situations, which allows to identify contexts of what people are doing. Such scenarios in typographic design could also elicit potential background activities of audiences experiencing particular texts, and lead to a better-informed design, according to this study's findings.

As a final example, an understanding of a specific characteristic of the personal background factor, ‘effect of personal background on typographic form associations’, may prompt practitioners to consider any possible associations their typographic design choices may create in a specific culture of which their audience is a part.

Even when some design practitioners already do cater in their work for such complex factors beyond rule-based typography focused on improving legibility only, they may be only the best ones in the field who are able to rely on their design intuition gathered over years of experience. In this respect, this research tries to make this implicit ‘intuitive’ knowledge accessible to all who may benefit from it in their typographic design practice, not just the most experienced practitioners.

For researchers in the field of typography, the framework can be used to organise and condense existing research, to illustrate what various perspectives need to be studied, or to organise literature reviews and reveal current gaps. Researchers studying specific issues of typographically treated texts can also be made more aware of the influence of other factors that can impact on their researched areas.

7.4 Originality and Strengths of this Study

One of the strengths of this study is that the research questions are based on a problem statement confirmed by the gap identified in the literature. An additional strength of this research lies in its real world setting, where many different locations and situations of typographic encounters

could be integrated in the data collection process to elicit as many relevant influences as possible. A large number of typographic outcomes were discussed in the study with its seventeen participants. The depth of data collection and analysis has helped to uncover as many perspectives as possible, as well as brought them together in the conceptual framework presented.

The studies conducted during this research were divided into iteratively designed stages, each with a specific objective that added to an overall aim of this study. While the early studies were meant to elicit initial influential factors, a refinement of the method was used in later studies to elicit additional influences and more specific examples in new locations that provided different kinds of typographic experiences. Intensive interviews conducted later in the process were more selective and guided by the already emerging framework. Such an approach and a flexible set-up towards the end of the research led to confirmation and refinement of influential factors and integrating links between them, in a variety of settings. This also provided the widest range of specific examples for each factor possible.

The rigour and quality of this research were ensured thanks to the guiding methodology of grounded theory that was adapted to the needs of this study, and provided procedures for every step of the research process. Since the methodology is based on a constant comparison method of analysis, a verification of its outcomes happens throughout the process.

Another strength of this research lies in the presentation of the framework which is accompanied by numerous quotes from interviews and pictures taken by participants to better explain and illustrate the findings, and to provide a link to the reader between original data and presented findings. In addition, the findings are compared and contrasted to literature references throughout Chapter 6 although the actual framework emerged from the data and the original input from participants only, without imposing ideas from literature on this data beforehand.

An additional original contribution can be found in the reflection on the visual method used and its suitability to this kind of research. This includes both a review of examples from the literature to better support the methods choice and its use, as well as a number of reflections on my own experience of using this method in this study.

7.5 The Limitations of this Research and Future Directions

In this study I tried to elicit as many influences on the typographic quality as possible, using a variety of research situations and contexts. It is, of course, still possible to extend this study with further research in new typographic situations. This seems especially true at the level of specific characteristics of each factor.

Another possible future direction could be conducting in-depth research about one specific factor, analysing at a much more detailed level all the possible situations, perspectives and constituents that matter within this

factor; this could include research about media, social environment, or any other factor identified in the framework. Another worthwhile direction seems further investigating possible relations between some specific factors and how they affect each other.

An additional interesting research direction could be comparing the importance and manifestation of the various framework factors between, for example, print and screen typography or between reading, viewing and using situations. While the proposed framework is meant to be holistic and applicable to various situations and environments, the importance of specific aspects is bound to be different in each of those situations. Investigating such specific situations or environments with the framework as a guidance could provide useful insights to practitioners working in those areas.

At the end of this research endeavour I came to believe that the study conducted would not be the final word spoken, nor should it be. For the outcome of my studies I was hoping for something that has been described by Welch (2001, p.72) as “*a living text that invites the reader to engage in a timeless dialogue from which new insights and understandings are gleaned. The completion of a project is [...] a point of arrival and a point of departure.*”

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Typographic Quality of Text

Information

Consent

Dear [participant],

My name is **Gerhard Bachfischer** and I am a researcher from the Interaction Design and Work Practice Laboratory, at the Faculty of Information Technology / University of Technology, Sydney. I would like you to be part of a study that investigates the typographic quality of text that is part of my PhD research project.

What is typography, what are typographic text objects? At its very basis typography is the formal aspect of a written word, its font, shape, size, colour and position. Typographic text objects are such pieces of text in the environment - in one case a sign, in another case a paragraph in a leaflet, the headline on a poster or a message on a screen. This research will be concerned with such typographic text objects and your individual perception of them.

The overall aim of the study you're part of is to find

1. influential factors that shape a typographic text quality perceived by its audience
2. the relations of such factors to each other and
3. specific characteristics or findings within each of the factors identified.

Finding such factors and trying to understand the typographic experience will help to improve the visual quality of professionally designed texts.

What is involved to participate in this study?

- Spending some time wandering around the museum, trying to get to a specified location, and paying attention to various text displays on the way. This task will take you about 30 min to complete.
- The second part will involve an in-depth interview about the task in the first part and will take about 60 min to complete.

Overall there is a time commitment of about 1 1/2 hours involved and I appreciate your willingness of participating. Thank you very much for this.

Is that all? Yes, that is all.

I want to thank you very much in advance for your contribution and hope you enjoy your participation. If there are any questions you want to ask, please feel free to do so at any point - if you have questions after completing the research project you can email me directly at gerhard@it.uts.edu.au. If you would like to receive a copy of the findings of the study please tick the appropriate box on the consent form presented to you or tell me in person during the interview or via email: gerhard@it.uts.edu.au.

Thank you again for participation sincerely, *Gerhard Bachfischer*

Please remember the following: you are under no obligation to participate or to complete participation in this research project. If you wish to withdraw from the study for any reason, you may simply quit at any stage (in part one and two respectively). Anything recorded or stated by you will remain completely anonymous. The research data gathered from this project may be published in a form that does not identify you as a participant in any way.

Information

Consent

Notes:

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Typographic Quality of Text

Information

Consent

Dear [participant], please read and sign the following statement prior to your participation in the typographic quality of text study.

- I [participants full name] agree to participate in study that investigates the typographic quality of text as part of Gerhard Bachfischer's PhD research project. I understand that the purpose of this study is to find
 1. influential factors that shape a typographic text quality perceived by its audience
 2. the relations of such factors to each other and
 3. specific characteristics or findings within each of the factors identified.
- I understand that my participation in this research will involve
 - a. spending some time wandering around the museum, trying to get to a specified location, and paying attention to various text displays on the way. This task will take you about 30 min to complete.
 - b. The second part will involve an in-depth interview about the first part (a) and will take about 60 min to complete.

Overall there is a time commitment of about 1 1/2 hours involved for both tasks.

- I am aware that I will be video-taped during the wayfinding task a). This video will be used in conjunction with the task b), the in-depth interview. I agree that parts of this video tape might be published as part of this research in a form that does not identify me in any way.
 - I am aware that I can contact Gerhard Bachfischer in person or via email (gerhard@it.uts.edu.au) if I have any concerns about the research. I can also contact A/Prof Toni Robertson, Director of IDWoP Laboratory, at the Faculty of Information Technology, University of Technology Sydney, Broadway Campus, Building 10, Level 4, 235-253 Jones Street Ultimo, Phone +61 2 9514 1966 or email: toni@it.uts.edu.au
 - I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason. I will not be penalised in any way for declining to take part in any stage of the research.
 - I have received the information sheet that informed me about the aim of the study and my participation in it. Gerhard Bachfischer who conducted the research and the interview has answered all my questions fully and clearly.
 - I agree that the research data gathered from this project may be published in a form that does not identify me in any way.
- Yes, I would like to receive a copy of the findings of this study

Information

Consent

Notes:

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Task Descriptor - Study 1A

A task descriptor was not handed out but the task was explained during the briefing session prior to the commencement of the study. The participant was given the information sheet and the consent form and after carefully reading both, the participant was briefed for the session.

Firstly, it was stressed that various typographic objects and the participant's perceptions of them were the focus of this study, and, therefore, another researcher and I would be documenting her encounters with such objects. The participant was informed about the wayfinding task to find a particular small exhibition (one room only) in the context of the museum. The wayfinding task was provided only to give some meaning and purpose to the participant's visit, to make it as close to a real world situation as possible, and to encourage her to spend some time at the museum and look out for various textual displays. If the encountered text objects were part of her wayfinding or not was not relevant for this research. It was again stressed that the participant was free to explore the museum space as she wished. The main aim was to encourage the participant to engage with a multitude of different kinds of typographic outcomes in a real world context.

Since an observation with two video cameras took place, the participant was informed that she would be followed by two cameras and filmed during her visit. The material from this recording would be part of the interviewing session after the study in the museum was finished. The participant would be able to see everything that had been recorded dur-

ing the museum session, voice possible concerns about the material recorded or even withdraw the material from the study if she found it necessary.

The participant was told that one of the documenting video cameras would follow her in close proximity of about 10 m. She was encouraged to simply ignore this camera. The other camera would be ‘free roaming’ to document a different perspective of the visit and it was also hoped that this would not impact on the visit and the participant could try to ignore this second camera too.

The final part of the briefing session focused on the fact that the participant was free to engage with anything during her visit, that there was no need to finish the ‘wayfinding task’ (which was set out to take about 30 minutes to finish) and that the participant could discontinue the task at any point without a reason.

Interviewing Schedule - Study 1A

The interviewing session took place several days after the actual visit. The session was meant to help to interpret and deepen the understandings of the video-recorded and observed typographic encounters of the participant. For that purpose a computer was set up where the video tape could be viewed and, depending on the interview's flow, could be easily manipulated (stopped, forwarded, or searched, for example). An additional map was provided to help both researcher and participant visualise the event better and relate what could be seen on the tape to the actual space in the museum (see Figure 34 in Chapter 5).

The interview questions revolved around the typographic objects encountered during the participant's visit, and her perceptions about them, as seen in the video recordings. The specific questions depended on the specific text objects, but the following questions were usually asked for all the objects that the participant would point out or that were attended to according to the video:

- What (typographic object) did you attend to here?
- Why this particular typographic object?
- What caught your attention here?
- What did you 'like' about this piece? Why?
- What did you 'dislike'? Why?

- Was it suitable/visible/easy to read? Why?
- What else can you tell me about this typographic object? Is there anything else you noticed about it?

Additional questions were asked to evaluate the data collection method used:

- What did you think about this study?
- How did you feel being video taped? Did you find it obtrusive?
- Do you think it impacted on the way you behaved?
- Do you have any other observations or comments about the way the study was conducted?

Typographic Quality of Text

Information

Consent

Dear [participant],

My name is **Gerhard Bachfischer** and I am a researcher from the Interaction Design and Work Practice Laboratory, at the Faculty of Information Technology / University of Technology, Sydney. I would like you to be part of a study that investigates the typographic quality of text that is part of my PhD research project.

What is typography, what are typographic text objects? At its very basis typography is the formal aspect of a written word, its font, shape, size, colour and position. Typographic text objects are such pieces of text in the environment - in one case a sign, in another case a paragraph in a leaflet, the headline on a poster or a message on a screen. This research will be concerned with such typographic text objects and your individual perception of them.

The overall aim of the study you're part of is to find

1. influential factors that shape a typographic text quality perceived by its audience
2. the relations of such factors to each other and
3. specific characteristics or findings within each of the factors identified.

Finding such factors and trying to understand the typographic experience will help to improve the visual quality of professionally designed texts.

What is involved to participate in this study?

- Spending some time wandering around the museum, trying to get to a specified location, and taking pictures of various text displays on the way. This task will take you about 30 - 60 min to complete. This task will take you about 30 - 60 min to complete.
- The second part will involve an in-depth interview about the task in the first part and will take about 60 - 90 min to complete.

Overall there is a time commitment of about 2 hours involved and I appreciate your willingness of participating. Thank you very much for this.

Is that all? Yes, that is all.

I want to thank you very much in advance for your contribution and hope you enjoy your participation. If there are any questions you want to ask, please feel free to do so at any point - if you have questions after completing the research project you can email me directly at gerhard@it.uts.edu.au. If you would like to receive a copy of the findings of the study please tick the appropriate box on the consent form presented to you or tell me in person during the interview or via email: gerhard@it.uts.edu.au.

Thank you again for participation sincerely, *Gerhard Bachfischer*

Please remember the following: you are under no obligation to participate or to complete participation in this research project. If you wish to withdraw from the study for any reason, you may simply quit at any stage (in part one and two respectively). Anything recorded or stated by you will remain completely anonymous. The research data gathered from this project may be published in a form that does not identify you as a participant in any way.

Information

Consent

Notes:

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Typographic Quality of Text

Information

Consent

Dear [participant], please read and sign the following statement prior to your participation in the typographic quality of text study.

- I [participants full name] agree to participate in study that investigates the typographic quality of text as part of Gerhard Bachfischer's PhD research project. I understand that the purpose of this study is to find
 1. influential factors that shape a typographic text quality perceived by its audience
 2. the relations of such factors to each other and
 3. specific characteristics or findings within each of the factors identified.
 - I understand that my participation in this research will involve
 - a. Spending some time wandering around the museum, trying to get to a specified location, and taking pictures of various text displays on the way. This task will take you about 30 - 60 min to complete.
 - b. The second part will involve an in-depth interview about the first part (a) and will take about 60 to 90 min to complete.
- Overall there is a time commitment of about 2 hours involved for both tasks.
- I agree that the pictures I take as part of this research project will be used in conjunction with the task b), the in-depth interview. I am aware that the pictures might be published as part of this research unless I withdraw individual pictures which I don't want to be part of this research or which I don't want to be published as part of this research. This can be done prior or as part of the in depth interview.
 - I am aware that I can contact Gerhard Bachfischer in person or via email (gerhard@it.uts.edu.au) if I have any concerns about the research. I can also contact A/Prof Toni Robertson, Director of IDWoP Laboratory, at the Faculty of Information Technology, University of Technology Sydney, Broadway Campus, Building 10, Level 4, 235-253 Jones Street Ultimo, Phone +61 2 9514 1966 or email: toni@it.uts.edu.au
 - I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason. I will not be penalised in any way for declining to take part in any stage of the research.
 - I have received the information sheet that informed me about the aim of the study and my participation in it. Gerhard Bachfischer, who conducted the research and the interview, has answered all my questions fully and clearly.
 - I agree that the research data gathered from this project (including the pictures I have taken) may be published in a form that does not identify me in any way as part of this research without any credits given to the originator of those pictures (me).
- Yes, I would like to receive a copy of the findings of this study

Information

Consent

Notes:

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Task Descriptor - Study 1B

Again a task descriptor was not handed out but was part of the briefing session prior to the commencement of the study. When the participant had been invited to take part in the study, she was informed that it would involve the use of a camera. At the briefing session, she was given the information sheet and the consent form and after carefully reading both, the participant was offered a digital still camera and a notepad and the task to document (taking pictures and notes) anything that is concerned with typographic outcomes she encounters and their contexts in the museum space. The participant decided to use her own digital camera that she brought to the session to document her encounters since she felt more 'safe' with her equipment.

The participant was again given a 'wayfinding' task (finding a particular small exhibition in the context of the museum). This task was provided only to give some meaning and purpose to the participant's visit, to make it as close to a real world situation as possible, to encourage her to spend some time at the location and look out for various textual displays. It was stressed during the briefing that the participant was welcome to freely explore the museum space and document as many or as diverse typographic outcomes as she liked or find appropriate.

The participant was encouraged to take as much or as little time as needed for the task to document typographic objects, and was asked to meet the researcher upon completion at the place outside of the museum where the briefing took place (this was set to be in around 30 min but

again it was stressed that this time would be just a guideline for completing the ‘wayfinding’ task - neither the time nor the completion of this task would be important for the research if the participant wished to stay longer or shorter).

It was initially planned that after returning to the meeting point, the notes and the pictures taken would be a guiding framework for conducting the interview. Although in the actual study the participant returned within 30 min to the meeting point, she was not immediately available for the interview. It was decided to conduct the interviewing session two days later. It was also agreed upon that the participant would bring the digital pictures and the notes to the discussion session.

Interviewing Schedule - Study 1B

The interviewing session took place two days after the actual study 1B. A computer was set up to view the digital pictures taken. The notes that the participant was also asked to take during her museum visit were hoped to help gain a better understanding of what took place during the participant's encounters with typographic objects.

The participant brought pictures on a digital medium, and a very thorough typed up version of her visit to the over one-hour-long interview session. Since the thoroughly typed account was a surprise to the researcher, the participant explained that she did not take hand-written notes during the visit since it was too time-consuming and inconvenient but instead, she typed them in retrospect using the pictures as a memory trigger. The participant already created a sequence of pictures according to the course of her visit which was used as a guide for the following interview session. The focus, as in the first study, was placed on her experiences with various text objects, and what made her perceive them in a specific way.

The questions were similar to the questions asked in study 1A though the additional input of the participant to 'choose' particular pictures to be included in the set discussed prompted new questions about the why these pictures were included and how important the objects in those picture were for the participant:

- What did you take a picture of here?

- Why did you take a picture of this particular typographic object?
- Why did you include this picture in the set? What makes it so important/interesting etc for you?
- What caught your attention here?
- What did you ‘like’ about this piece? Why?
- What did you ‘dislike’? Why?
- Was it suitable/visible/easy to read? Why?
- What else can you tell me about this typographic object? Is there anything else you noticed about it?

Additional questions were asked to evaluate the data collection method used:

- What did you think about this study?
- Did you like the ‘taking pictures’ part? What about note taking?
- Do you think ‘taking pictures’ impacted on the way you behaved in your surrounding?
- Were there any equipment issues?
- Do you have any other observations or comments about the way the study was conducted?

Quality of Typographic Text Study

Gerhard Bachfischer, PhD Thesis Project

Information Sheet

Dear _____,

My name is **Gerhard Bachfischer** and I am a researcher from the Interaction Design and Work Practice Laboratory, at the Faculty of Information Technology / University of Technology, Sydney. I would like you to be part of a study that investigates the typographic quality of text that is part of my PhD research project.

► **What is typography, what are typographic text objects?** At its very basis typography is the formal aspect of a written word, its font, shape, size, colour and position. Typographic text objects are such pieces of text in the environment - in one case a sign, in another case a paragraph in a leaflet, the headline on a poster or a message on a screen. This research will be concerned with such typographic text objects and your individual perception of them.

► **The overall aim of the study you're part of is to find**

- influential factors that shape a typographic text quality perceived by its audience
- the relations of such factors to each other and
- specific characteristics or findings within each of the factors identified.

Finding such factors and trying to understand the typographic experience will help to improve the visual quality of professionally designed texts.

► **What is involved to participate in this study?**

- The participation in this project will involve a documentation of typographic text objects (see above) you encounter during your task, and will take you about 30 - 60 min to complete. You will be able to use a documentation device (camera) that I will provide - a familiarisation with the equipment will be part of the briefing session before you commence the task.
- A follow-up in-depth interview about the completed task and the documentation you have created will take about 60 to 90 min to complete.
- Overall your time commitment is about 2 hours overall - around 30 - 60 min of taking pictures (to document) and about 60 - 90 min of an intensive interview where the pictures you have taken will be used. I want to thank you in advance for this commitment.

► **Is that all?** Yes, that is all.

I want to thank you very much in advance for your contribution and hope you enjoy your participation. If there are any questions you want to ask, please feel free to do so at any point - if you have questions after completing the research project, you can email me directly at gerhard@it.uts.edu.au. If you would like to receive a copy of the findings of the study, please tick the appropriate box on the consent form presented to you or tell me in person during the interview or via email: gerhard@it.uts.edu.au.

Thank you again for participation sincerely, Gerhard Bachfischer

Quality of Typographic Text Study

Gerhard Bachfischer, PhD Thesis Project

Please read and sign the following statement prior to your participation in the Quality of Typographic Text Study.

Consent Form

- ▶ I _____ agree to participate in study that investigates the typographic quality of text as part of Gerhard Bachfischer's PhD research project.
- ▶ I understand that my participation in this research will involve:
Finding _____. This task will take you about 30 - 60 min to complete. It will be conducted at _____. During this task I will have to document various text objects I encounter using _____
- ▶ A follow-up in-depth interview about the completed task and the documentation I have created will take about 60 to 90 min to complete and is planned _____
- ▶ Overall there is a time commitment of about 2 hours involved for both tasks.
- ▶ I agree that the pictures I take as part of this research project will be used in conjunction with the in-depth interview that forms part of this research.
- ▶ I am aware that the pictures might be published as part of this research unless I withdraw individual pictures which I don't want to be part of this research or which I don't want to be published as part of this research. This can be done prior or as part of the in-depth interview.
- ▶ I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason. I will not be penalised in any way for declining to take part in any stage of the research.
- ▶ I am aware that I can contact Gerhard Bachfischer in person or via email (gerhard@it.uts.edu.au) if I have any concerns about the research. I can also contact A/Prof Toni Robertson, Director of IDWoP Laboratory, at the Faculty of Information Technology, University of Technology Sydney, Broadway Campus, Building 10, Level 4, 235-253 Jones Street Ultimo, Phone +61 2 9514 1966 or email: toni@it.uts.edu.au for the same reasons or if I have additional questions about this project.
- ▶ I have received the INFORMATION SHEET that informed me about the aim of the study and my participation in it. Gerhard Bachfischer, who conducted the research and the interview, has answered all my questions fully and clearly.
- ▶ I agree that the research data gathered from this project (including the pictures I have taken) may be published in a form that does not identify me in any way as part of this research without any credit given to the originator of those pictures (me).

Yes, I would like to receive a copy of the findings of this study when available

_____/_____/_____
date

participant signature

researchers signature

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome

X

Quality of Typographic Text Study

Gerhard Bachfischer, PhD Thesis Project

Task Description Sheets

- ▶ Your task during the visit of _____ is to find _____.
- ▶ This task is by no means compulsory but should encourage you to spend some time in the environment and document (with the device you have been given) your experiences with typographic outcomes.
- ▶ Typographic outcomes in this respect are any form of printed text you encounter during your visit, text that grabs your attention, seems annoying, ugly, beautiful, or of any other significance to you.
- ▶ To document those outcomes you should use the device that has been given to you and which I hope feels after the technical brief fairly comfortable for you to use.
- ▶ Your task should take around 30 to 60 min to complete but you are free to extend your visit or shorten it, just as you wish - the completion of the task is not at all necessary.
- ▶ In addition, please remember the following: you are under no obligation to participate or to complete participation in this research project. If you wish to withdraw from the study for any reason, you may simply quit at any stage (during the visit as well as during the intensive interview that will follow). Anything recorded or stated by you will remain completely anonymous. The research data gathered from this project may be published in a form that does not identify you as a participant in any way (please see the INFORMATION SHEET and the CONSENT FORM that have been presented to you for details).
- ▶ Thank you again for participating in this study, Yours Sincerely Gerhard Bachfischer

Interviewing Schedule - Study 2

The semi-structured interviews conducted as part of Study 2 also focused on typographic outcomes documented by the participants during their visits to shopping centres. Since the interviews were guided by the pictures taken by participants, questions would differ depending on the actual typographic example discussed, and how the participant perceived it. A sample set of question that could be asked about a particular object photographed was prepared:

- What did you take a picture of here?
- Why did you take a picture of this particular typographic object?
- What caught your attention here?
- What did you ‘like’ about this piece? Why?
- What did you ‘dislike’? Why?
- What can you tell me about the circumstances in which you engaged with this object? What about its surrounding? Anything that happened in conjunction with experiencing this typographic object?
- Was it suitable/visible/easy to read? Why?
- What else can you tell me about this typographic object? Is there anything else you noticed about it?

Additional questions were asked to evaluate the data collection method used:

- What did you think about this study?
- Did you like the ‘taking pictures’ part?
- Do you think ‘taking pictures’ impacted on the way you behaved in your surrounding?
- Were there any equipment issues?
- Do you have any other observations or comments about the way the study was conducted?

Dear _____,

My name is **Gerhard Bachfischer** and I am a PhD candidate/researcher from the Interaction Design and Work Practice Laboratory, at the Faculty of Information Technology / University of Technology, Sydney. I would like you to be part of a study that investigates the typographic quality of text.

What is typography, what are typographic text objects? At its very basis typography is the formal aspect of a written word, its font, shape, size, colour and position. Typographic text objects are such pieces of text in the environment - in one case a sign, in another case a paragraph in a leaflet, the headline on a poster or a message on a screen. This research will be concerned with such typographic text objects and your individual perception of them.

The overall aim of the study you're part of is to find:

- influential factors that shape a typographic text quality perceived by its audience
- the relations of such factors to each other and
- specific characteristics or findings within each of the factors identified.

Finding such factors and trying to understand the typographic experience will help to improve the visual quality of professionally designed texts.

What is involved to participate in this study? This study's participation is divided into two parts:

Part 1: includes you photographing a minimum of five instances of typographic text objects you encounter on any chosen day (on a screen, on TV, outside on the way to work or any other activity, inside at work, at your desk, at your home, in print, on labels, on buildings, on signs, etc...) which you find either: very useful, very interesting, very beautiful, completely useless, annoying, or plain ugly. (See more details in the task description that you should have received with this INFORMATION SHEET.)

Part 2: includes a follow-up in-depth interview about the pictures you have taken and can take up to 90 min to complete.

Overall your time commitment can be quite large but I hope you will enjoy the task given and the follow up interview. In advance I want to thank you for your time and effort.

Any more Questions? If there are any questions you want to ask, please feel free to do so at any point - if you have questions after completing the research project you can email me directly at gerhard@it.uts.edu.au. If you would like to receive a copy of the findings of the study please tick the appropriate box on the consent form presented to you or tell me in person during the interview or via email: gerhard@it.uts.edu.au.

Thank you again for participation sincerely, Gerhard Bachfischer

Quality of Typographic Text Study Consent Form

Please read and sign the following statement prior to your participation in the Quality of Typographic Text Study.

- I _____ agree to participate in study that investigates the typographic quality of text as part of Gerhard Bachfischer's PhD research project.
- I understand that my participation in this research will involve:

Part 1: photographing a minimum of five instances of typographic text objects I encounter on any chosen day (on a screen, on TV, outside on the way to work or any other activity, inside at work, at my desk, at home, in print, on labels, on buildings, on signs, etc...) which I find either: very useful, very interesting, very beautiful, completely useless, annoying, or plain ugly. (See more details in the task description that you should have received with this CONSENT FORM.)

Part 2: a follow-up in-depth interview about the pictures I have taken and which can take up to 90 min to complete.

- I agree that the pictures I take as part of this research project will be used in conjunction with the in-depth interview that forms part of this research.
- I am aware that the pictures might be published as part of this research unless I withdraw individual pictures which I don't want to be part of this research or which I don't want to be published as part of this research. This can be done prior or as part of the in-depth interview.
- I also understand that I am free to withdraw my participation from this research project at any time I wish and without giving a reason. I will not be penalised in any way for declining to take part in any stage of the research.
- I am aware that I can contact Gerhard Bachfischer in person or via email (gerhard@it.uts.edu.au) if I have any concerns about the research. I can also contact A/Prof Toni Robertson, Director of IDWoP Laboratory, at the Faculty of Information Technology, University of Technology Sydney, Broadway Campus, Building 10, Level 4, 235-253 Jones Street Ultimo, Phone +61 2 9514 1966 or email: toni@it.uts.edu.au for the same reasons or if I have additional questions about this project.
- I have received the INFORMATION SHEET that informed me about the aim of the study and my participation in it. Gerhard Bachfischer, who conducted the research and the interview, has answered all my questions fully and clearly.
- I agree that the research data gathered from this project (including the pictures I have taken) may be published in a form that does not identify me in any way as part of this research without any credit given to the originator of those pictures (me).

Yes, I would like to receive a copy of the findings of this study when available

____ / ____ / ____
date

participant signature

researchers signature

IMPORTANT: This study has been approved by the University of Technology, Sydney Human Research Ethics Committee. If you have any complaints or reservations about any aspect of your participation in this research which you cannot resolve with the researcher, you may contact the Ethics Committee through the Research Ethics Officer, Ms Louise Abrams (ph: 02 - 9514 9615, Louise.Abrams@uts.edu.au). Any complaint you make will be treated in confidence and investigated fully and you will be informed of the outcome.

Task Descriptor - Study 3 and 4

For Study 3 and 4, after the initial contact was established and terminology, content and context of the study were explained, the actual ‘brief’ took place via email. While ‘consent form’ and ‘information sheet’ (see Appendix D) were sent out as attachments via email for information purposes and to sum up what was discussed during the initial contact, the task descriptor was included as part of the email message sent. It provided, besides an outline of the task, also possible outcomes of the documentation process to illustrate the data that was hoped to be gained from this process:

Task: photograph a minimum of five instances of typographic text* you encountered on any chosen day (on a screen, on TV, outside on the way to work or any other activity, inside at work, at your desk, at your home, in print, on labels, on buildings, on signs, etc...) which you find either:

- very useful,
 - completely useless,
 - very interesting,
 - annoying, or
 - very beautiful,
 - plain ugly.

Try to *remember time, place, and circumstances of the encounter* - of course you can take notes if you wish for the interview that will follow after sending your pictures in via email. The questions of this interview will evolve around the pictures you took - they will focus on the particular typographic text

objects of your choice and the ‘why’ and ‘what’ and ‘how’ of your experience with it.

* ‘typographic text’ was the term used at this stage of the research; it was later changed to ‘typographic outcome’ based on the feedback of reviewers of this work; please see Chapter 1 for the clarification of the term.

Interviewing Schedule - Study 3 and 4

Since participants were asked to send in pictures via email after about a week, questions for the semi-structured interviewing process could be prepared in advance.

For each influential factor represented in the emerging framework at that point, a set of questions was prepared. Generic questions at the beginning and the end of the semi-structured interviewing process provided an entry point into the topic and probed for additional areas of the typographic experience to be explored. The sets of questions were asked referring to one picture only - this took at least 20 minutes per picture - then a new picture was chosen by the participant and the question-sets were asked again. The questions varied depending on the object or the particular area the participant wanted to focus on, and therefore, the selection below shows just a set of sample questions that would cover a range of possible aspects in conjunction with the typographic experience:

GENERAL LEAD-IN

- What does this picture show? Why did you want to talk about it?
Why do you like/dislike it?

CONTENT

- How would you describe the visual style of the text? Does the ‘visual’ fit the text’s ‘content’? Does the ‘visual’ fit what it says on it?
- Is the text organised well (formally)?

VISUAL ELEMENTS

- Do the visuals fit with the text? What can you say about the visuals that come with the text? Are text and visuals related? How are they related?
- Is the text easy to see in conjunction with other visual elements?

PHYSICAL SURROUNDING

- Where did you photograph/find this typographic object? How did it look there? Did it grab your attention? How? What was around it?

MEDIA

- Can this text object be realised in a different medium? How would it look like on a poster/website/magazine/TV/etc ?

SOCIAL ENVIRONMENT

- Where there plenty of people around? Can many people see it?
- Was it a busy place, where you found this object? What were the circumstances?

PERSONAL BACKGROUND

- Can you associate the object with something else? Does it remind you of something? If so, do you like it (attitude questions)?
- Have you had experience with similar objects? Did you have a similar attitude towards them?
- What do you know about ... (knowledge questions)? How does it influence what you think about this object?

PURPOSE

- Why did you look at this object? Why did you encounter it? What did you ‘need’ it for?
- Was the text object suitable for your purpose?

A C T I V I T Y

- What were you doing when you saw it first time? What were you doing before/after?
- Did it make it harder/easier to read?

S O C I A L S I T U A T I O N

- Did you show this typographic object to anyone? Did you share this experience? Did/would other people like it too?

F O R M A L E L E M E N T S

- Ask for any other formal elements noticed? Font? Font Style? Serifs? Slant? Size? Colour? Width? Weight? Upper/Lowercase? Spacing? Length of Line? Placement/Layout?
- Relate the noticed form to other factors?

G E N E R A L L E A D - O U T

- What did you think about this typographic object and your encounter with it? What can you tell me additionally about this typographic object?

