

University of Tartu  
Department of Semiotics

Mark Richard Lemon  
TOWARDS A TYPOLOGY OF TYPOGRAPHIC  
SIGNIFICATION

Master's Thesis

Supervisors:

Katre Väli

Gleb Netchvolodov

I have written this Masters Thesis myself, independently. All other authors' texts, main viewpoints and all data from other sources have been referred to.

Author: Mark Lemon .....

*(Signature)*

.....

*(Date)*

## *Table of Contents*

Introduction: .....	4
Chapter 1: A Modern History of Typography.....	8
1.1 A Semiotic Revolution.....	8
1.2 Problems in the Study of Typography .....	11
1.3 Historical Perspectives on Typographic Signification .....	14
1.4 Why did Tschichold fail?.....	16
1.5 Typographic Meaning: Delimiting a Semiotic Perspective .....	18
1.6 Type vs. Handwriting: The Relevance of Type's Heritage .....	20
Chapter 2: The Reading Process, Pattern Recognition and Habit .....	24
2.1 McLuhan's 'The Medium is the Message' in Relation to Typography .....	24
2.2 Steven Skaggs: Type, Token and Tone in Relation to Typography.....	26
2.3 The Figure/Ground Problem: Determining Relevant Information .....	29
2.4 The Role of Pattern Recognition in Reading .....	33
2.5 Douglas Hofstadter's 'Letter Spirit' Program .....	37
2.6 The Role of Habit and Context in Shortening the Pattern Recognition Chain ...	40
Chapter 3: Conceptual Metaphors and our Experience of Text .....	45
3.1 Danesi's Concept of the Metaform.....	45
3.2 Lakoff & Johnson's 'Conceptual Metaphor Theory' .....	48
3.3 Theo Van Leeuwen: 'Towards a Semiotics of Typography' .....	50
3.4 Applying Van Leeuwen's Work to Literature .....	55
3.5 The Distinction between Connotation and Metaphor .....	57
3.6 Towards a Typology of Typographic Signification .....	59
3.7 Typographic Signification in Danielewski's <i>House of Leaves</i> .....	64
Conclusion .....	69
References: .....	71

## Introduction:

This thesis is a study into the semiotic potential of typography. In the absence of much detailed research, the contemporary discussion of typography frequently relies on hearsay and unfounded suppositions. This trend stems somewhat from influential modernist theorists, such as Jan Tschichold, often overlooked or neglected the semiotic potential of typography. Compounding this problem, typographic classification schemas, such as the widespread Vox system, do not properly account for the diversity of typographic forms involved in digital publishing and design. These problems make the investigation and discussion of typography highly idiosyncratic and inconsistent. As such type is frequently talked about in terms of vague, feelings and suggestions, and there is no consistent basis to ground these discussions. As a discipline interested in the sign processes surrounding ‘meaning making’, semiotics is uniquely placed to interpret significant phenomena. It is the aim of this paper to utilise this expertise in relation to the study of typography.

In order to confront the issues in current systems of typographic classification this paper endeavours to formulate a typology of typography, based, not on physical or historical attributes (as is the convention within the field), but on signifying functions. Such typologies are not unusual within semiotics, Roman Jakobson’s communication model and its accompanying communicative functions, for example, can be seen as a systematized typology of the potential; ‘functions of language’ (Jakobson 1960: 353). This thesis aims to develop a similar approach to the process of typographic signification, a level distinct from the linguistic.

The term ‘typography’ has traditionally been used in reference to both type design, and the specifics of type layouts. This thesis is concerned only with semiotic import of the former of these, the design of the individual letterforms. This distinction allows me to avoid examples such as concrete poetry which signify through their arrangement of words on the page, and instead focus on signification at the level of the letterform. Some theorists mentioned in this project have written concurrently about both type design and layout, where this is the case care has been taken to focus only on their work that is directly relevant to the specifics of type design, any material that does

refer to typesetting and layout is included only where it is considered to be equally relevant, or functionally isomorphic to principles in type design.

My study is limited to the consideration typographic theory from the turn of the twentieth century onward. I have chosen this timeframe because the theoretical writing of the modernist period of the early twentieth century provides a useful, and somewhat antithetical, background to my own semiotically informed ideas. This period also allows me to consider the increasing role of desktop publishing in contemporary life. Software has made the previously time consuming process typesetting a simple procedure, comprising a few clicks, for even the most inexperienced computer user. This change has had a profound effect on the reception of type in the popular consciousness and as such validates my endeavour to formulate a typology of typographic signification. Outside of my selected timeframe, the heritage of typography is considered only where it has some direct bearing on the signification of a typeface being studied.

In addition to my temporal limitations, my thesis is directly relevant only to the use of typography in English. Language limitations make me unqualified to speculate about certain typographic significations in other languages, as there is often a degree of interrelation between linguistic and typographic signification. Certain features drawn out may well have relevance to writings in other languages that utilise the Roman alphabet, however the linguistic and culture specific manifestations of certain interpretive concepts (such as Lackoff and Johnson's conceptual metaphor theory, for example) mean that I cannot be sure of their application outside of the English language.

Nina Nørgaard argues that colour should be included in the semiotic study of typography (Nørgaard 2009: 145). I am of the opinion however, that including colour is not a relevant consideration. The proper consideration of colour would necessitate the analysis of factors such as; 'differentiation, saturation, purity, modulation, value and hue.' (Kress and Van Leeuwen 2002: 343) Due to these complexities, it is my belief that colour, whilst frequently applied to typography, is actually a separate semiotic system, with its own separate grammar that can relate to its application to many varied signifying practices, such as interior design, fashion, and art, in addition to typography. To splinter off and analyse the usage of colour solely with regards to typography is to analyse only one specialist application of this grammar, and is therefore not very enlightening in terms of the semiotics of either colour or typography. More information on the semiotics of colour can be found in Van Leeuwen's *The Language of Colour* (Van

Leeuwen 2011) and Van Leeuwen and Kress' article 'Colour as a Semiotic Mode: Notes for a Grammar of Colour' (Kress and Van Leeuwen 2002).

At the root of our perception of typography is the reading process. Seemingly an unproblematic method of passive reception, it has been observed that reading is actually; 'dependent on prior knowledge of possibilities; we can only recognize what we know.' (Gombrich cited in Chandler 2007: 176) Studies of linguistic signification through pre-established conventional signs formed the basis of important trends in the formation of semiotics (Saussure 1978), and as such familiarity with a sign on some level has always been a vital consideration of semiotics. In relation to this Van Leeuwen identifies the two fundamental principles that govern typographic signification as; 'connotation and experiential metaphor' (Van Leeuwen 2006: 146). As will be shown, connotation is grounded socially in the prior use and practical history of the typeface, while experiential metaphor locates meaning in metaphorical connections to other objects and phenomena. Both of these sites refer to prior experience, but experiential metaphor, based on Lakoff and Johnson's conceptual metaphor theory, is a more complex and flexible process. These central principles can be put to various significant applications, either operating in conjunction with the linguistic level of signification, resulting in the message being on some level slightly doubled, or signifying quite independently of the linguistic signified. It is the aim of this work to categorize the variety of these messages, based on their roots in either connotation or experiential metaphor, and their relation to the linguistic signified.

The paper begins with a review of several influential writings in the sphere of twentieth century typography. These are analysed and critiqued in relation to several biases both explicit and implicit in the theoretical writings of this period. The influential Vox Classification system, the most commonly used typology of typography, is also explored in relation to these texts, and the issues with its current application and basis are discussed. I also look at some of the issues surrounding experiments relating to concepts such as readability and legibility, and how the inconsistency of terminology has hindered theoretical work. Moving on from this I take a broader look at some of the semiotic writings relevant to the study of typography and writing in general, delimiting the level of typographic signification, before a final look at the potential influence of handwriting on type design and what issues this highlights for typographic signification.

The second chapter serves as a semiotically informed investigation into the processes involved in receiving and reading visual data. The diversity of potential shapes

for individual letterforms is considered as a problematic concern for the consistent transmission of linguistic messages. Steven Skaggs' application of Charles Sanders Peirce's, type, token, tone distinction to typography, is utilised as a framework for approaching reading as a context based process of discrimination and evaluation. This multi-layered process is explored in terms of computer reading, and experiments in pattern recognition, particularly Douglas Hofstadter's 'Letter Spirit' program. The role of function words in guiding us as we read, and the interpretation of pseudowords are considered. The chapter concludes with a look at the role of habit in shortening and automatizing the interpretation process is considered.

The third chapter opens with a look at Marcel Danesi's concept of the metaform, this is then related to Lakoff and Johnson's conceptual metaphor theory, of which it constitutes a nonverbal counterpart. The role of metaphors in the interpretation of typography is then looked at in relation to Theo Van Leeuwen's paper 'Towards a Semiotics of Typography'. This approach accounts for our understanding of typographic signification when we encounter an unfamiliar or unusual typeface without connotations and is therefore an important basis for a large part of typographic signification. The direct application of Van Leeuwen's work to literary texts is explored in the work of Nina Nørgaard as a look at some potential typographic significations. The linking of metaphors to typography is related to Peirce's concept of abduction, and the two areas of connotation and metaphor are combined with the distinction between Text and Display type. Within these two categories I compile the variety of signifying mechanisms into a unified typology of typographic signification and explore some of the implications of this schema, and the potential for a hierarchy of significations. My typology is then finally applied to the experimental novel *House of Leaves* to provide some concrete examples of certain signifying functions.

## Chapter 1: A Modern History of Typography

‘Type is a voice; its very qualities and characteristics communicate to readers  
a meaning beyond mere syntax.’

Ban Comic Sans’ Manifesto

This chapter details the increasing significance of typography in the modern world, starting with a look at the semiotic implications of the release of the first Macintosh computer in 1984, the first computer to provide the user with a wide choice of typefaces. After this there is a brief critique of the current VOX type classification system before an investigation is made into the influential modernist type theorists, Beatrice Warde and Jan Tschichold. After these investigations, there is a summary of the introductory semiotic theories directly relevant to typography, and an evaluation of the ways in which semiotics can be applied to typography. Finally this chapter looks at the links between handwriting and typography and a brief reflection on influence that handwriting has had on typographic signification.

### **1.1 A Semiotic Revolution**

In 1984, a semiotic revolution occurred. The release of the first Macintosh computer was more than just a technological breakthrough it was also an aesthetic one. Steve Jobs’ machine, you see; ‘came with something unprecedented – a wide choice of fonts.’ (Garfield 2010: 12) In our technological world it is increasingly the case that; ‘writing by means of the computer, which allows us to customise and reshape our documents in a variety of ways, is eroding the distinction between manuscript and printed book’ (Marcus 1995: 390), but it was the 1984 Macintosh computer that first opened up the semiotic potential of typography and document design to the public at large. A selection of the typefaces available on the first Macintosh are shown in *Figure 1* below:





*Figure 1 (Wenhart 2008)*

The existence of alternative typefaces in which one can easily set the same fragment of type introduces what Saussure refers to as the ‘associative’ axis (Saussure 1978: 125), allowing individual fonts to be read as significant in relation to others. This effectively made different typefaces into signs; this is because the semiotic value of a sign is constituted by two principles, the relation to:

- (1) A dissimilar thing that can be exchanged for the thing of which the value is determined; and
- (2) of similar things that can be compared with the thing of which the value is to be determined. (Saussure 1978: 115)

Prior to the popular emergence of alternative font choices, the casual user could only reasonably compare a typeface to the ‘dissimilar’ sound or linguistic expression that it embodied. The introduction of alternative similar typefaces, allowed a given text to be compared to its similar renderings in alternative faces and the choice of typeface became meaningful.

There are now; ‘over one hundred thousand fonts in the world’ (Garfield 2010: 14), however typography is not a new art. Indeed there have been notable revolutions in the past, most visibly the heralded Gutenberg revolution that brought printed materials to the masses for the first time and allowed the spread of literacy within the public sphere. The Gutenberg revolution however, whilst undeniably of profound historical,

social and cultural importance, maintained a certain status quo, in that, for the most part, practical knowledge of printing and typography remained the province of specialists. The first Macintosh eroded this barrier between producer and receiver, and for consumers; ‘marked a glorious freedom from the tyranny of professional typesetters’ (Garfield 2010: 13). IBM and Microsoft soon followed Steve Jobs’ lead (Garfield 2010: 13) and desktop publishing turned every computer user into a potential producer, undermining the; ‘active intellectual role publisher/printers performed in the succeeding ideational ferment’ (Abel 2011: 29).

With a growing understanding of the options and choices involved in presenting a visual text, the emergent generation are becoming discerning consumers, who are increasingly annoyed at what they deem as the misuse of certain fonts that are damaging the; ‘sanctity of typography’ (Ban Comic Sans 2013). One oft highlighted example of misuse is the recent controversy surrounding the presentation of CERN’s latest findings in the typeface **Comic Sans**. Critics felt that it was; ‘bizarre to juxtapose inscrutable words like "maximum deviation from background-only expectation observed for  $m_H \sim 126$  GeV" with a font originally designed for a children's computer program.’ (Kingsley 2012) The controversy surrounding this juxtaposition however highlights the semiotic potential of typography. If a typeface can be deemed unsuitable for a given linguistic message then we must concede that whilst they may share a sign vehicle, the aspects that constitute typographic and linguistic signification are decidedly different.

Sadly despite our growing engagement with typography, there is little theoretical exploration into what and how type signifies. Indeed when asked to justify why she chose **Comic Sans** for her CERN presentation, physicist Dr Fabiola Gianotti replied simply; ‘because I like it.’ (Morris 2012) For most people these kind of instinctive judgements are the norm, particularly as research into the potentially significant aspects of typography has only offered; ‘mixed conclusions’ (Aron 2012). It is for this reason that a semiotic approach to typography is valuable, as it can explore the roots of our subjective interpretations.

## 1.2 Problems in the Study of Typography

One of the problems with approaching typography theoretically is the inconsistency of theoretical terminology. Ole Lund observes that legibility, for example, has been used variously to denote; ‘the speed or ease of reading of continuous texts’, ‘the visibility or perceptibility of isolated displays of letters or words read at a distance’, or ‘the comparative perceptibility of individual letters within the same typeface’ (Lund 1999: 15). Many of these definitions have also been applied to readability due to the frequent interchanging of the terms (Lund 1999: 16). With these two concepts clearly overlapping, anecdotes relating to them circulate with little investigation of their validity. Assertions such as; ‘Sans serif fonts are better on the web’ (Poole 2008), or; ‘sans serif causes fatigue’ (Poole 2008) are frequently made however the vagueness and interconnectedness of these notions makes it hard to trace the root of such suppositions and investigate their value.

Even when experiments have been undertaken, there is little consensus on appropriate methodologies within the field. Reading speed tests for example have been carried out both with and without accompanying comprehension tests, and when these are included there is disagreement about the appropriate level of comprehension required to validate a test (Lund 1999: 23). Variation in experimental techniques has led to; ‘weak claims and counter-claims’ surrounding serif and sans serif typefaces, for example, but most have since been negated by; ‘study after study with findings of “no difference”’ (Poole 2008).

One of the problems with experiments in the field of typography is that qualities such as readability and legibility, are not fixed values. It has been observed for example that, **Cooper Black**, ‘looks best from afar’ (Garfield 2010: 54) but that; ‘at small sizes, it is legible but not very readable’ (Garfield 2010: 55). The variation of these qualities with size is complicated even more by the fact that the most common measure of a typeface, point size;

Is a legacy from the letterpress system, where each letter is held on a small metal block. The point size actually refers to the size of this metal block, and not the actual size of the letter. The letter does not have to take up the full area of the block face, so two fonts with the same nominal point size can quite easily have different actual sizes. (Bix cited in Poole 2008)

This makes research comparing the qualities of different typefaces problematic, as there is no set feature or measure with which to determine truly equivalent sizes.

The relative nature of certain typographic features has even confused attempts to classify typefaces. As Simon Garfield notes;

Because there are so many typefaces, there have been many attempts to classify them into definable groups. But type is a living element, and it will resist absolute categorization until it is worn thin; a good single letter in a vivid typeface has enough energy in itself to leap free of any box. (Garfield 2010: 44)

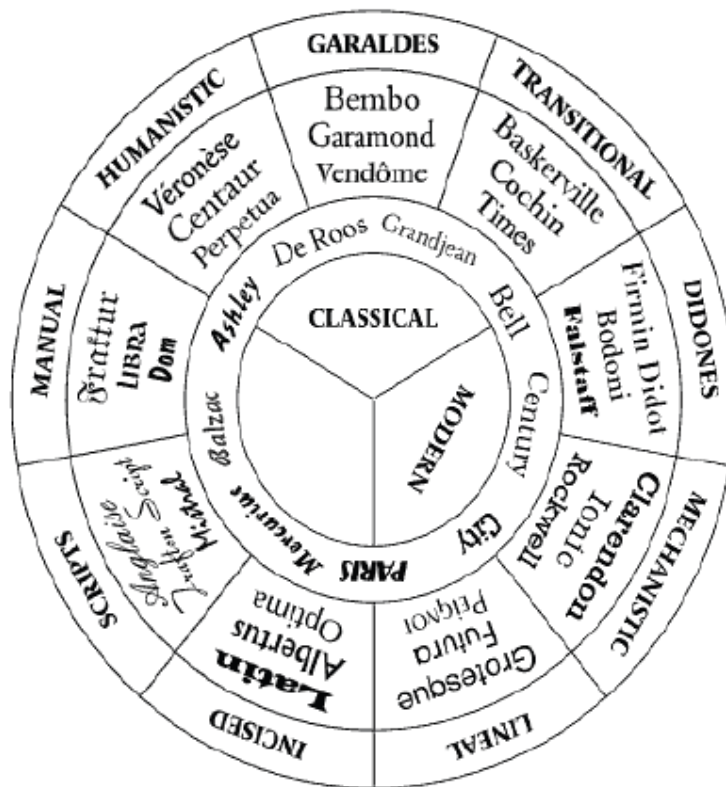
For this reason it would seem unwise to try and base a classification system on visual features, however this is usually the case. The most notable type classification system is called the Vox system, and divides the sphere of typography into; ‘nine basic forms’ (Garfield 2010: 44), such as; Humanist, Didone, Slab-Serif, Lineale and Graphic. This system is based on historical and physical characteristics such as; ‘the R usually has a curved leg’ or ‘the ends of the curved strokes are usually oblique’ (Garfield 2010: 44). Widespread controversies and problems with this system have led; ‘several big suppliers of digital type, such as Adobe and ITC, [to] attempt their own systems of classification’ but generally these efforts have shown; ‘the near impossibility (and perhaps futility) of accurate categorization.’ (Garfield 2010: 44)

One of the main issues undermining the Vox categorization system is that it actually attempts to serve two purposes. Descriptions based on arbitrarily chosen visible features are linked to values based notions about what it is or was appropriate or desirable to do with type. As Catherine Dixon notes, the British Standards Classification of Typefaces, based on the Vox system; ‘embodies values which suggest that some types are more deserving of detailed description than others’ (Dixon 2002). She notes that;

Early twentieth century evaluations of both historical and contemporary design practice favoured roman types over display, for reasons both aesthetic and commercial. This basic premise remained largely unchallenged, informing the basic Vox categorisation and that of the British Standard. If you consider the British Standard, ‘humanist’ types are formally distinguished from ‘garalde’, even though the formal differences are very subtle and such a distinction is only appropriate for very few types. But large numbers of slab serif types, clarendons or ionics (that is bracketed slab serifs) and egyptians (that is square-ended, unbracketed slab serifs) are simply grouped together. (Dixon 2002)

The problems with this system become apparent upon analysis of the chart below (*Figure 2*). Without expert knowledge it is difficult to observe the distinctions between

the Humanist, Garalde and Transitional groups while, despite their variety; ‘all sans serif fonts are classified as Lineal’ (Portier 2011). Similarly; ‘there is only one subcategory for describing “graphic” typefaces. In this current age, the number of fonts that fit in the Graphic category is skyrocketing’ (Portier 2011). It is clear that this system favours certain historically approved uses of typography whilst overlooking other more modern forms. This makes it an unsuitable basis for studying typography in our contemporary environment.



*Figure 2 (Source: Portier 2011)*

It has been suggested that; ‘knowledge of typeface classification is important when choosing fonts for specific purposes or “feelings” (Portier 2011), however purpose and feeling are not accounted for in the current classification schema. As an attempt to remedy these models, and provide a useful guide for persons interested in the purposes and feelings associated with type, this paper proposes the formulation of a semiotically informed, ‘typology of typographic signification’. In contrast to previous systems, based on visible features before speculatively projecting their significance, I

propose to base my typology purely on signification as semiotics is uniquely placed to apprehend sign based phenomena.

### 1.3 Historical Perspectives on Typographic Signification

Typographic signification is not in itself an unproblematic matter. Perhaps the most famous pronouncement on type design was made by Beatrice Warde in 1932. 'The Crystal Goblet, or Printing Should Be Invisible' asserted Warde's view that type; 'was not there to be noticed, much less admired. The more a reader becomes aware of a typeface... the worse that typography is.' (Garfield 2010: 66) For Warde; 'the most important thing about printing is that it conveys thought, ideas, images, from one mind to other minds.' (Warde 1955: 2) She felt that type well used, should be; 'invisible as type' (Warde 1995: 2), and explains her view through analogy to a wine glass that is; 'of crystal clear glass, thin as a bubble, and as transparent.' (Warde 1955: 1) The notion of an ideal wine glass is important as, according to Warde;

You will find that almost all the virtues of the perfect wine-glass have a parallel in typography. There is the long, thin stem that obviates fingerprints on the bowl. Why? Because no cloud must come between your eyes and the fiery heart of the liquid. Are not the margins on book pages similarly meant to obviate the necessity of fingering the type-page? Again: the glass is colourless or at the most only faintly tinged in the bowl, because the connoisseur judges wine partly by its colour and is impatient of anything that alters it. There are a thousand mannerisms in typography that are as impudent and arbitrary as putting port in tumblers of red or green glass! (Warde 1955: 1)

Warde was influenced by the modernist movement and the focus that they placed on the linguistic function of typography, she comments that; 'the man who first chose glass instead of clay or metal to hold his wine was a modernist... that is, the first thing he asked of his particular object was not "How should it look?" but "What must it do?"' (Warde 1955: 1) As is clear from her choice of metaphor, Warde sees typography as a vessel or; 'a conveyor' (Warde 1955: 2), yet she fails to see that the nature of the type itself can contribute to the overall message.

The theoretical work of type designer Jan Tschichold foreshadows Beatrice Warde's ideas on invisible typography by focusing on typography's linguistic function. In an effort to reconcile some of the issues of a disharmony or conflict between typographic and linguistic signification Jan Tschichold aimed to institute a 'New

Typography'. He was very much influenced by the contemporary artistic movements and his work both; 'embraced and defined modernist typographic ideas' (Hamamoto 2011). As such Tschichold stated that; 'the essence of the New Typography is clarity. This puts it in deliberate opposition to the old typography whose aim was "beauty" and whose clarity did not attain the high level we require today.' (Tschichold 1995: 116)

Tschichold felt the 'old typography' trapped in; 'superficial and formalistic shapes, and its so-called "traditional" designs which are long since fossilised.' (Tschichold 1995: 116) he felt that type does not need ornament to communicate; the form and function of type should be intimately linked, he states that;

Every piece of typography which originates in a preconceived idea of form, of whatever kind, is wrong. The New Typography is distinguished from the old by the fact that its first objective is to develop its visible form out of the functions of the text. (Tschichold 1995: 117)

The only acceptable form for Tschichold is one that is optimally communicative. Function is at all times opposed to ornament, which includes such common typographical features as weight; 'even the thick/thin rule is an ornament and must be avoided.' (Tschichold 1995: 118) He is instead searching for the underlying framework or; 'skeleton letters' (Tschichold 1995: 120) which can function unadorned. Theo Van Leeuwen has likened the concept of Skeleton letters to phonemes, he notes that;

As phonologists describe language as having a limited number of discrete phonemes and regard the many variations of pronunciation that result from the co-articulation of different phonemes as variations that do not affect meaning, so, here too, the 'meaningless' variation that resulted from typography's roots in handwriting was eliminated, and as many interchangeable components as possible were created (e.g. the 'bowls' of 'a', 'b', 'p', 'd', 'g' and 'q' were all made identical, which usually they are not). But this move towards typography as 'system' was, and often still is, rejected by traditional typographers. (Van Leeuwen 2006: 146)

The notion of skeleton letters is simple enough, and Tschichold states that; 'Paul Renner's **Futura**, makes a significant step in the right direction' (Tschichold 1995: 121). Despite this Tschichold apparently never fully realised them, and stated his feeling that; 'no single designer can produce the typeface we need, which must be free from all personal characteristics: it will be the work of a group, among whom I think there must be an engineer.' (Tschichold 1995: 121) Tschichold's inclusion of an engineer is an interesting choice, reflecting how, for Tschichold, type needs to be

compared to machines and buildings to re-establish the priority of its functionality as, all; ‘technology by its very nature can never be an end in itself, only a means to an end’ (Tschichold 1995: 115). He praises the way that modernist architecture; ‘discards the ornamental façade and the “decorated” furniture and develops its forms from the function of the building... the natural way.’ (Tschichold 1995: 116) Tschichold references the architect Adolf Loos; ‘one of the first champions of the pure form’ (Tschichold 1995: 118) and his mantra that; ‘to seek beauty in form itself rather than make it dependant on ornament should be the aim of all mankind.’ (Tschichold 1995: 118) This notion of the pure form, and the dissolution of the ‘form vs. function’ binary inform and motivate Tschichold’s entire project.

Tschichold and Warde’s theories are now considered outdated and restrictive. Simon Garfield states that; ‘to deny the idea that type itself can be the message (to deny that it is enough for it to be exciting and arresting) is to deaden excitement and progress.’ (Garfield 2010: 67) The signifying potential of type is now a more accepted phenomena and considered on its own merit, as Daniel Chandler states, studies into; ‘the generation of connotations from typography alone demonstrate how important the material aspect of written language can be as a signifier in its own right.’ (Chandler 2007: 141)

#### 1.4 Why did Tschichold fail?

Tschichold’s aim to create skeleton letters was flawed due to some basic semiotic problems. The central issue was that many of the distinctive features of typography; ‘are not binary but a gradual contrast.’ (Van Leeuwen 2006: 148) Features such as weight, curvature and regularity, for example, exist on a continuum. As such it is difficult to identify a typeface as being ‘curvy’ without reference to some context. *Edwardian Script* (Edwardian Script) for instance, might be considered curvy until one compares it to *Curlz MT* (Curlz MT), or vice versa, the matter is entirely subjective. Paul J. Thibault has observed that;

The graphological units and structures on the expression stratum in written text are integrated with their contexts in ways that are no less important than the lexicogrammatical and discourse level units and structures on the content stratum. (Thibault 2007)



For this reason it is impossible to conceive of typography as meaningful, without defining a context within which it can be considered such.

This issue is related to Roman Jakobson and Nikolai Trubetzkoy's concept of 'markedness', which has been defined as; 'an abstract relation holding over members of a set of observations displaying asymmetry, such that one subset is unmarked and the other marked.' (Hume 2011: 79) To give a concrete typographic example, if all the text on a page is printed in **bold**, no one text fragment can be identified as marked (in terms of boldness at least) as there is no asymmetry. As Hume notes however, over time the concept of markedness has accrued cultural associations such that; 'unmarked is often taken to mean... more frequent, natural, simple and predictable than the marked observation of the comparison set.' (Hume 2011: 80) In this situation, considering a text in isolation from any others, our perception of whether it can be considered bold or not, depends upon whether we consider it as printed in a significantly heavier weight than a text of the idealised, culture specific (frequent, natural, simple and predictable), context with which we are accustomed.

An awareness of this is present in Tschichold's work when he states that; 'the real meaning of form is made clearer by its opposite. We would not recognise day as day if night did not exist.' (Tschichold 1995: 119) Referring directly to type, he pulls out several significant factors, most of which exist on analogue scales; 'the ways to achieve contrast are endless: the simplest are large/small, light/dark, horizontal/vertical, square/round, smooth/rough, closed/open, coloured/plain; all offer many possibilities of effective design.' (Tschichold 1995: 119) All of these analogue features undermine Tschichold's desire to establish firm rules for modern typography.

A second issue with Tschichold's project emerges from the fact that much typographic signification is rooted in prior use, history and connotation. Due to processes of connotation even if he had formulated his neutral letters, Tschichold's work would have likely been out of date as soon as the letterforms entered the typographic sphere as signifiers of 'neutral' or 'functional'. Tschichold acknowledges the potential for type to change its signification when he concedes that the 'old "decorative" typefaces' that he is so keen to depart from, may; 'from time to time find a new use in modern typography: for fun, for example in order to make typographical parody of "the good old days" (Tschichold 1995: 121). The evolving nature of typographical signification, critically undermines Tschichold's investigations into a

stable form of ‘skeleton letter’, and the relative nature of much of typographical signification must be attended to as we begin our investigations into its semiotics.

### 1.5 Typographic Meaning: Delimiting a Semiotic Perspective

Typographic systems can be considered as composed of different sign types, depending upon the perspective of analysis and the relationship between these systems and the object of analysis. As an example, a text fragment could be considered an indexical sign of the printing process, an iconic representation of the letterforms of the standard alphabet, or a symbolic form for an established word. In order to meaningfully study the semiotics of typography, it is important to establish the nature of the signification processes being studied and delimit their bounds.

To crystallize some of these theoretical perspectives we can say that both handwriting and typography are constituted by systems of graphemes, which are visual symbols (in the Peircian sense of being wholly arbitrary) related to audible phonemes. Winfried Nöth states that;

In analogy to the phoneme, the “smallest contrastive linguistic unit which may bring about a change of meaning” (Gimson 1962: 44; cf. Structuralism 1.1.2), the grapheme has been defined as “the smallest distinctive visual unit of the alphabet” (cf. Pulgram 1951). Every grapheme consists of a class of typographic or chirographic (hand-written) variants called allographs. (Nöth 1995: 263)

The grapheme ‘A’ for example, can be rendered alternately as any of the allographs depicted in *Figure 3*. The differences between these typographic symbols and how and what they convey beyond merely ‘A’, is the fundamental object of this paper.



*Figure 3 (Hofstadter 1995)*

All of the above allographs, denote the same sound in the mind of a reader. Saussure states that ‘the signs used in writing are arbitrary; there is no connection, for example, between the letter ‘t’ and the sound that it designates.’ (Saussure 1978: 119) In response to the above issue he suggests that; ‘the value of letters is purely negative and differential... the only requirement is that the sign for ‘t’ not be confused... with the signs used for ‘l’, ‘d’, etc.’ (Saussure 1978: 119-120) This means that interpreting graphemes always requires a degree of comparison to the other forms with which they co-occur.

The allographs in *Figure 3* are all related to the specific sound ‘a’ by a convention that generates meaningful units on the amorphous visual and audible planes. Winfried Nöth observes that;

There are two basic options for the development of a writing system: the signs of writing, the graphemes, may refer either to semantic or to phonetic units of the language. In the first case the graphemes are pictographs, ideographs, or logographs; in the second case, the graphemes represent phonemes or syllables. Based on this distinction, Trager distinguishes between sememographic and phonemographic writing (Nöth 1995: 252).

This study of typography, based on the Roman alphabet, is relevant only to phonemographic writing, it does not take into account the issues of iconicity that are relevant to a pictographic system, however other iconic aspects are present in the typography of the Roman system such as the relation to handwriting.

### **1.6 Type vs. Handwriting: The Relevance of Type's Heritage**

At the advent of printing in the West, the first printers; 'mimicked scribes, with fonts designed to look like handwriting, while printing itself was promoted as automated writing.' (Jarvis 2012) In this respect early users; 'appear not to have perceived the printed book as a fundamentally different form, but rather as a manuscript book that could be produced with greater speed and convenience.' (Marcus 1995: 390) It is only with time that the different qualities inherent in the typographic medium began to be exploited. Writing is therefore an influential ancestor, and worthy of consideration as we begin to study typographic signification.

As a system of graphemes, handwriting is related to, but subtly different from, typography in terms of its signifying potential. One interesting difference is that handwriting can be considered as possessing some additional indexical qualities, for instance its morphology is often quite unique to an individual user, a handwritten text therefore signifies not only linguistic content, but potentially the identity of the individual who wrote it (assuming the style is familiar to the reader, or they have some samples against which to match it). As an example of the importance of this it is still a common practice for legal documents and contracts to be physically signed (or marked indexically, with a symbolic signature) to verify the signee's presence and agreement with the details contained within.

It is also possible for significant changes in handwriting to occur, suggesting a change in the emotional, mental or physical state of the writer. An example of this can be seen in an extract from the journal of Captain Mark Walker (*Figure 4*), who suffered severe injury in the Crimean war and woke to find his; 'arm taken off above the elbow during the night' (Morris 2012). A page of Walker's journal showing his handwriting with his right hand before, and with his left after the incident can be seen below.

\*Call to Honour

wounded Major Armstrong 49. wounded & Lt Stone 50<sup>th</sup>  
 killed - Today it is blowing very hard and the dust  
 is unbearable - I have just heard of 4 officers 50<sup>th</sup> being  
 seen killed and Col Munnion being killed & Capt Porter  
 62<sup>nd</sup> Regt I have and expect very much it is said the  
 loss has been in the Division about 500 killed & wounded  
 besides many in the light Division. Lord Raglan went  
 round the hospitals this evening visiting the wounded  
 there is a General order belonging to the Turks though  
 it is whispered they did not do so well little I have  
 has been gained for a great loss -  
 Saturday 7<sup>th</sup> Still blowing very hard & dusty the batteries  
 are firing away, yesterday he ships in harbor there  
 three at day at the moment he Nelson and Malakoff  
 have fired very little I fancy they are preparing  
 their ammunition in case of an assault & general  
 one I should think him have taken place -  
 Sunday 8<sup>th</sup> Last night I went on with the reserve just as I got  
 into our approach which joins the French on the right  
 heavy firing commenced at 10<sup>th</sup> the morning while I was in the  
 act of hurrying the men up a howitzer shell dropped beside  
 me and exploded a piece struck me on the elbow and  
 smashed it. I immediately tied a handkerchief about the  
 fracture and walked to the sea until I met some of the 5<sup>th</sup> who  
 put me on a stretcher and carried me to Camp I received  
 great kindness from my near brother officers, after some  
 time I was carried to a hut at the General Hospital where  
 I now am. I was put under chloroform and on coming to  
 consciousness I found my arm taken off above the elbow  
 during the night and today I suffered a good deal of  
 pain the loss I have experienced is very great but I am  
 very thankful that my life has been spared the hut has  
 been filled with sympathizing visitors particularly my

Figure 4 (Morris 2012)

It is hard to imagine a change such as this being conveyed indexically through typography. One can perhaps imagine changes in spelling or grammar to indicate distraction or agitation, but this would be signification on the linguistic level. The best that typography alone could do would be to iconically mimic such a change by changing from one script font, to another 'messier' variant, but this would clearly not possess the immediacy of the handwritten alternative. Whilst there are numerous examples of meaningful changes of typography in literary works, indexically typography can at best convey a sort of progression and proliferation of typefaces over time. Even then we can

locate examples such as; ‘the new calligraphic font Fractoer by Hans Heitmann’ (Schwemer-Scheddin 1998: 66) which mimics the visual style of the much older German typeface Fraktur (*Figure 5*), and cannot therefore be placed chronologically simply by its appearance.

Here is a Fraktur (blackletter) typeface.

*Figure 5 (Holbo 2009)*

Despite the ways in which handwriting can possess additional levels of signification, we must be careful not to overstate the significance of the handwritten. Speculative fields of handwriting analysis such as graphology, have largely been refuted as pseudoscience (Beyerstein 2008). Whilst the psychological aspects of graphology overstep what can be reasonably inferred, it is still fairly common to believe that handwriting reflects certain qualities of an individual’s personality, and distinctive handwriting styles between the sexes are also often detectable (Goodenough 1945: 61). It is important to consider these indexical qualities of handwriting as they can be rendered iconically in the orderly systems of typography. One example of this can be observed in the presence of ‘script’ fonts. These fonts, whilst standardised and digital, can be considered as iconic representations of handwriting styles. Yvonne Schwemer-Scheddin has suggested that; ‘digital font design is primarily characterised by randomization and the dissolution of the typeface outline: digital forms are variable, unpredictable, pictorial and androgynous.’ (Schwemer-Scheddin 1998: 66) In contrast to this trend script fonts are often given gendered names, for example ‘Bradley’ (Bradley), ‘Fiolex Girls’ (Fiolex Girls), ‘Gigi’ (Gigi), ‘Tall Paul’ (Tall Paul), ‘Sybil Green’ (Sybil Green) and ‘Vladimir Script’ (Vladimir Script). Due to their prescribed nature and accessibility for use by many individuals, these fonts remove the potential for indexical signification, (an apparently feminine typeface can be used equally by a male for example) and instead rely on a system of iconic and symbolic signification to create their personality. Notions of personality are not the sole province of script fonts, and Simon Garfield notes that any; ‘type can have gender’ (Garfield 2010: 33), typography in general is frequently associated with various meanings, and features such as weight, curvature and serifs can retain some of the characteristics of handwriting most explicitly rendered in script typefaces. These are minor concerns for my project but are

worth noting as they can be a source of connotations that contribute to typographic signification. The degree of variation present in handwriting is also an interesting factor of handwriting, there are so many individual styles, yet generally we can understand all of them. The mechanisms by which we are able to interpret such a varied mass are the key focus of the next chapter.

## Chapter 2: The Reading Process, Pattern Recognition and Habit

‘Univers: a synthesis of Swiss thoroughness, French elegance and British precision in pattern manufacture.’ (Garfield 2010: 139)

This chapter undertakes a systematic review of theoretical writings on the process and mechanisms of reading. The various potential significations of typography are looked at, in terms of Peirce’s type, token, tone distinction. After this an investigation into the role of pattern recognition and the reception of visual data by computers is conducted, before a look at Douglas Hofstadter’s ‘Letter Spirit’ program, which attempts to teach a computer to interpret and create new typefaces. The importance of feedback during the interpretation process is considered, before a look at the role of habit in automatizing elements of our interpretation.

### **2.1 McLuhan’s ‘The Medium is the Message’ in Relation to Typography**

With the proliferation of printed material in our environment, we cannot meaningfully engage with it all. Once noticed, a fragment of typography impels an observer to formulate some kind of interpretation and decide whether their interest is awakened. Simon Garfield notes that historically there has been an;

Overriding principle that typefaces should mostly pass unrecognized in daily life... A font on a book jacket should merely pull you in, once it has created the desired atmosphere it does well to slink away, like the host at a party.’ (Garfield 2010: 33)

Cultural critics observing this phenomenon have; ‘considered the way that texts, can interpellate readers, or position them for the texts’ purposes’ (Runions 2001: 52). For Althusser ideology is something that ‘hails’ individuals, and in responding we; ‘become a subject... because we recognise that the hail was ‘really’ addressed to us’ (Althusser 1971: 174) If typography is implicated in a text’s process of ‘hailing’, (one might want to consider for instance an brief advertising slogan, glimpsed in the corner of the eye), then the potential social effects of typography could be far reaching.



Errol Morris relates an anecdote about a student who, after an upturn in their grades noted that; ‘the only thing I’ve really changed since I’ve been getting these grades is my essay font’ (Renaud cited in Morris 2012). Overall Morris observes that they;

Had written 52 essays in total. Eleven were set in Times New Roman, 18 in Trebuchet MS, and the remaining 23 in Georgia. The Times New Roman papers earned an average grade of A-, but the Trebuchet papers could only muster a B-. And the Georgia essays? A solid A. (Morris 2012)

These views suggest that our response to each fragment of type we encounter can play a significant role in our judgement, before we even consider the level of the linguistic message.

Marshall McLuhan explores the effect that typography has on users. Explaining his concept that, ‘The Medium is the Message’, he states that; ‘the "message" of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs.’ (McLuhan 1964: 7) In line with this he identifies several important effects of the emergence of typography; he mentions the writings of De Tocqueville who suggests that;

It was the printed word that, achieving cultural saturation in the eighteenth century, had homogenized the French nation. Frenchmen were the same kind of people from north to south. The typographic principles of uniformity, continuity, and lineality had overlaid the complexities of ancient feudal and oral society. (McLuhan 1964: 14)

McLuhan states that the; ‘content of any medium is always another medium’, and in terms of type that; ‘the written word is the content of print’ (McLuhan 1964: 8). Due to this unclear and disparate typefaces lead directly to disparate and unclear communication, and conceptually, to a divided society. If the uniformity of type can be seen as a contributor to the homogenization of the French people, this conceptualizes typography as an important social tool.

The view of typography as a tool is not uncommon and it can be seen as a trend throughout studies of language use in communication. In their investigations into metaphor Lakoff and Johnson highlight what Michael Reddy has called the ‘conduit metaphor’ of language;

Reddy observes that our language about language is structured roughly by the following complex metaphor:

## IDEAS (Or MEANINGS) ARE OBJECTS. LINGUISTIC EXPRESSIONS ARE CONTAINERS. COMMUNICATION IS SENDING.

The speaker puts ideas (objects) into words (containers) and sends them (along a conduit) to a hearer who takes the idea/objects out of the word/containers. (Lakoff and Johnson 2003: 10)

The conception of print as either a tool or a container, implicitly suggests an inverse relationship between readability and the semiotic capacities of typography. In line with Tschichold, an ornate font would be seen as a tool or container that is unnecessarily difficult to use or open, hindering access to the linguistic message.

As Lakoff and Johnson highlight, the conduit metaphor is built upon a long established relationship that; 'is so much the conventional way of thinking about language that it is sometimes hard to imagine that it might not fit reality.' (Lakoff and Johnson 2003: 12) The conduit metaphor separates the form and content of writing, however it only acknowledges the communicative value of the content and is largely dismissive of the communicative value of the writing itself.

### 2.2 Steven Skaggs: Type, Token and Tone in Relation to Typography

A fragment of typography has the potential to be a signifier of many different things. Steven Skaggs draws on Peirce's distinction between type and token, to illustrate the various fields of potential signification that such a fragment could belong to. Peirce's type/token distinction is best explained by example;

There will ordinarily be about twenty *the's* on a page, and of course they count as twenty words. In another sense of the word "word," however, there is but one word "the" in the English language; and it is impossible that this word should lie visibly on a page or be heard in any voice, for the reason that it is not a Single thing or Single event. It does not exist; it only determines things that do exist. Such a definitely significant Form, I propose to term a *Type*. A Single event which happens once and whose identity is limited to that one happening or a Single object or thing which is in some single place at any one instant of time, such event or thing being significant only as occurring just when and where it does, such as this or that word on a single line of a single page of a single copy of a book, I will venture to call a *Token*. (Peirce 1906: 4.537)

In *Figure 6* below Skaggs positions a fragment of the typeface Trajan, (a token) within a 'wheel of types' that could be variously used to interpret it.



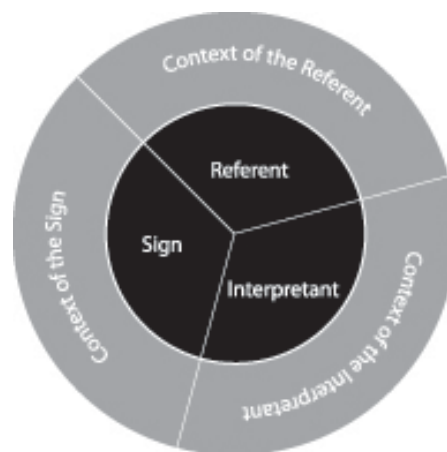
*Figure 6 (Skaggs 2013)*

Skaggs relates these notions of type and tone to a third concept touched on by Peirce, a tone. For Skaggs a tone can be conceived as; ‘the characteristics the sign possesses that are simply irrelevant to the primary semiotic exchange that is otherwise occurring - that is, those characteristics are contextually non-salient or non-pertinent.’ (Skaggs 2013) Relating this to the above example, if I interpret the Trajan ‘the’ in relation to a definite article, its historic and English characteristics, fade into the background as the insignificant tone. This type, token and tone relationship is clearly an important one in the interpretation of typography, yet, whilst seemingly automatic, this is far from a simple process, as Skaggs observes;

Even in such an apparently cut-and-dried case as the perception of a figure, there is already a series of discriminations and decisions being made, including an act of preference, an act of negation and a process of suppression. Perception might seem to be the simple “providing” to cognition of the figure, but this is certainly no brute dyadic process of supplying sense data to conscious awareness; on the contrary, it is already deeply, fully, and triadically, semiotic. It is a process that is fully entwined with us, our intentions, our lives. It is very easy to overlook this intertwinedness when we speak of the perceptual dichotomy of figure against background. (Skaggs 2013)

For Skaggs, deciding what should be in the foreground and what in the background then encounter a typographic token occurs within a ‘Semiotic Moment’ (Skaggs 2013),

that is; simply a formulation of Peirce's triad' (Skaggs 2013). Skaggs illustrates his concept by looking at the case of a group of people perceiving the text "si", he states that the interpretant "si", is; 'a kind of negotiated judgement within a single consciousness, but this recursive, meta-, negotiation is simultaneously happening for groups of beholders.' (Skaggs 2013) Each judgement is flexible, as; 'in both the individual's judgement process, and the group's consensual process there would be a continual exchange of sign action, the process of transactions of and between Moments.' (Skaggs 2013) These decisions are based on the perceived relevance to the communicative context, such that; 'determining the relevance toward the flow of the communication is something that comes not from the sign itself nor its referent, nor, strictly speaking, its interpretant. It is something being drawn from the context of the interpretant.' (Skaggs 2013) The relevant components of the Semiotic Moment are shown in *Figure 7* below.



*Figure 7* (Skaggs 2013)

Throughout this judgement process there is a continual shifting of potential significations between the roles of type and tone. This problem of deciding what should be foregrounded as type, and what moved to the background tone can be related to the; 'famous artistic distinction between figure and ground' (Hofstadter 2000: 67) a common issue in the interpretation of the visual arts.

### 2.3 The Figure/Ground Problem: Determining Relevant Information

Douglas Hofstadter has reflected upon the problem of discerning relevant, intelligible information and its relationship to the contextual background tone as an important factor in intelligence. He observes that;

When a figure or “positive space” (e.g., a human form, or a letter, or a still life) is drawn inside a frame, an unavoidable consequence is that its complementary shape—also called the “ground”, or “background”, or “negative space”—has also been drawn. (Hofstadter 2000: 67)

It is this uncommunicative background or negative space that needs to be subtracted from the total area when reading; this is a more complex process than appears. For Hofstadter the figure/ground problem is a logical consequence of many signifying systems, including visual arts, set theory, music and formal logic. (Hofstadter 2000: 67)

The figure/ground problem is at the root of the reading process. As Steven Skaggs observes; ‘a visible figure cannot be perceived except in contra-relation to, or against, what it is not – its background. An occasion of seeing a thing is an occasion of disjunction of the thing with the not-thing’ (Skaggs 2013). In terms of reading, the figure/ground distinction essentially boils down to the ability to divide the letter that is meant to be read, from the background that should be passed over. This may often seem like a very simple process of dividing the ‘black from the white’ as it is for this paper and most printed media, however with the proliferation of desktop and online publishing, we are now also frequently having to deal with; ‘alphabets which play with this figure ground distinction.’ (Hofstadter 2000: 67) Darkness of shade is not even a reliable indicator, as even Jan Tschichold mentions that ‘reversed black to white type can be found’ (Tschichold 1995: 127), problematizing any simple notions for dividing figure and ground on the basis of colour.

Hofstadter highlights how easy it is to cast doubt on the habitual way by which we divide the figure and the ground, this can be seen when we attempt to read the example below.



Figure 8 (Hofstadter 2000: 67)

By convention the black shapes in the above image seem as if they should be the figures and the white space the ground, but this interpretation falls down once your eyes adjust and the letters in white become visible. To assume then that the white space, constitutes the figures is also problematic however, as, printed on a page of white paper, it seems ludicrous to think of the black shapes as the background. The situation here is more complicated than it first appears, and to clear things up it is useful to draw upon another of Hofstadter's distinctions. He introduces the concepts of the 'cursively drawable' figure and the 'recursive' figure, stating that;

A cursively drawable figure is one whose ground is merely an accidental by-product of the drawing act. A recursive figure is one whose ground can be seen as a figure in its own right. Usually this is quite deliberate on the part of the artist. (Hofstadter 2000: 67)

Using this distinction we can observe that the above 'mail box' example, is an instance of a recursive figure, albeit an unusual one, where 'meaningless' figures are drawn with the sole intention of producing a readable ground. This is an unusual instance due to the meaninglessness of the initially drawn figures, but many examples of recursive figures exist in which both figure and ground are meaningful, even to the extent that it is impossible to determine which is the ground. An example of this can be seen in Scott Kim's illustration *Figure* shown below.



Figure 9: Scott Kim's *Figure* (Hofstadter 2000: 69)

In this image, both the black and white portions of the image read 'figure' and they tessellate perfectly to leave no meaningless ground within the image.

Recognising the figure and the ground is an important step in interpreting visual data; whilst typography does not usually deal with recursive figures, determining which area is the figure and which ground is a more complicated process than its usually habitual nature would have us believe. Looking again at *Figure 8* what are the clues that allow us to determine that it is the white areas that constitute the letterforms and not the black? Hofstadter describes the sensation of first reading this phrase as follows; 'at first it looks like a collection of somewhat random blobs, but if you step back a ways and stare at it for a while, all of a sudden, you will see seven letters appear' (Hofstadter 2000: 67). Note that in Hofstadter's description of this process, initially the 'collection of somewhat random blobs' is foregrounded (or considered as the figure), before the letters 'appear'. This is probably related to the fact that all of the surrounding text on this page (and in Hofstadter's book) is set black type on a white background, therefore we use this context as an initial indicator of what we should be reading. This initial supposition falls down however due to the fact that most of the black shapes are unfamiliar, with a few exceptions.

It has been observed that, for traditional typography; ‘the white space within letters such as ‘o,’ ‘e,’ ‘c,’ etc., help to define a character. Typographers believe that large counters are an aid to character recognition.’ (Haley 2013) This is part of a general acceptance that ‘the most legible typefaces contain big features... such as large, open counters, ample lowercase x-heights, and character shapes that are obvious and easy to recognize.’ (Haley 2013) Similarly, of the black shapes that appear initially to be the figure, in my opinion the most striking clues to the correct reading of this image are the four, roughly circular, self contained black areas that do not extend to the boundary implied by the more uniform larger black patches. These are areas known as ‘counters’, one contained entirely in both the A and the O, with an additional two to be found in the B. Shapes of this uniform and self contained nature occur frequently in the bounded areas of letterforms, with the only possible similar forms being the small dots found above lowercase ‘i’ and ‘j’s, known as tittles. In the standard roman alphabet, there are usually seven uppercase letters with completely closed counters (A,B,D,O,P,Q and R) and eight lowercase (a,b,d,e,g,o,p and q). Considering these fifteen, plus the two similar shapes provided by the tittles over i and j, only in two of these seventeen cases would, closed ‘counter-like’ shapes not be counters, and therefore part of the figure as opposed to the ground. The round black patches evident in the mail box design therefore provide a fairly reliable clue to the fact that the whitespaces are actually the letterforms, and bear out the theory of the importance of counters to character recognition.

This has important implications when selecting the weight (or thickness) of a typeface, as Simon Garfield notes; ‘too light a type will cause letters to appear grey and indistinct, while too dark will cause letters to appear overly thick, wrecking distinguishing details and blocking out the background.’ (Garfield 2010: 61-2) A heavy type weight may obscure the counters, due to this it seems that a medium weight will be the most uniformly legible at all sizes, allowing both a figures distinctive features, and the features that distinguish the ground to be easily perceived. It is important to note that certain elements that constitute the ground (such as counters) must not be lost, as they are as important to the reading process as elements of the figure.



## 2.4 The Role of Pattern Recognition in Reading

It is clear that certain typographic features have a key role to play in the process of reading. Such features however can be unreliable individually, as unusual language features or type design might negate or obscure them. Counters and tittles help us divide the figure and the ground for texts written in English, however, as Wells observes;

There are many languages in the world that use the Latin alphabet: more, in fact, than use any other script. English, however, is one of the very few among them for which the standard spelling makes use of just the basic set of twenty six letters. Almost all the remainder supplement this set by making use of letters with diacritics (or accent marks). (Wells 2001)

In other languages there are features such as the Turkish, ‘dotless i’ (Wells 2001) and characters such as ä, å, ë, or ø that problematize notions of tittles and counters as consistent distinctive features of the Latin alphabet. How then can we consistently identify letterforms accurately? To consider this it is worth investigating Hofstadter’s analysis of the diffuse allographs of the letter ‘A’, shown in *Figure 3*.

Hofstadter has spent a lot of time experimenting with letter forms as part of his work on Artificial Intelligence. He is critical of the influential work of George Boole, who in the 1850’s suggested that; ‘thinking itself follows clear patterns, even laws, and that these laws could be mathematized.’ (Hofstadter 1995) For Hofstadter this is problematic because;

This vision of thought places *full sentences* at centre stage. A tacit assumption is thus that the *components* of sentences—individual words, or the concepts lying beneath them—are not deeply problematical aspects of intelligence, but rather that the mystery of thought is how these small, elemental, "trivial" items work together in large, complex structures. (Hofstadter 1995)

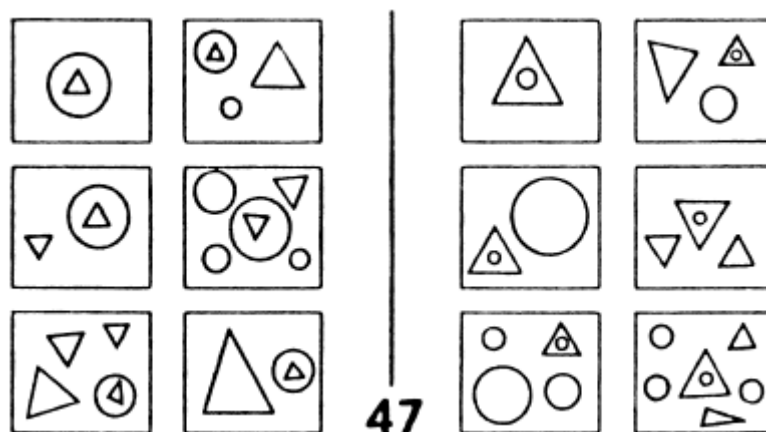
This view led AI researchers to pursue goals involving logic problems, whereas Hofstadter feels that; ‘logic is *brittle*, in diametric opposition with the human mind, which is best described as "flexible" or "fluid" (Hofstadter 1995). He feels that the most interesting facets of the human mind are; ‘its capabilities of dealing with completely new and unanticipated types of situations’ (Hofstadter 1995), because; ‘the real world, unlike chess and some aspects of mathematics, is not hard-edged but ineradicably blurry.’

(Hofstadter 1995) This leads us to the variation in the forms of ‘A’ as represented in *Figure 3*. Hofstadter notes that;

To native readers of the Latin alphabet, it is an almost immediate visual experience to recognise how any one of them is an "A." No conscious processing is required. ... Note that no single feature, such as having a pointed top or a horizontal crossbar is reliable. Even being open at the bottom is unreliable. What is going on here?" (Hofstadter cited in Haynes 2002)

Hofstadter feels that this problem is involved in issues such as; ‘the fluid nature of mental categories [...] the invariant cores of precepts such as your mother’s face [...] flexible yet strong boundaries of concepts such as “chair” (Hofstadter 1985: 633) So fundamental is this issue to intelligence, Hofstadter states that; ‘the central problem of AI is the question: “What is the letter a?” (Hofstadter 1985: 633) In the field of Artificial Intelligence this problem has been related to the notion of ‘pattern recognition’ and Bongard Problems.

Bongard problems are visual puzzles; ‘intended for pattern recognizers, whether human or machine’ (Hofstadter 2000: 646). In each problem a viewer is presented with twelve boxed figures, separated into two ‘classes’ of six. The essential question is “How do Class I boxes differ from Class II boxes?” (Hofstadter 2000: 646) An example problem is shown below.



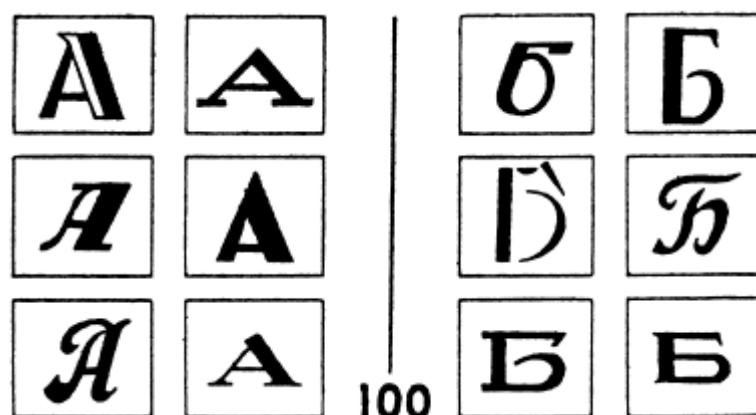
*Figure 10 (Hofstadter 1995)*

Hofstadter suggests the ways a viewer might describe an individual box (I-F, the one on the bottom right, of the left hand class), and lists some potential interpretations;

Three shapes  
*Or*  
Three white shapes  
*Or*  
A Circle on the Right  
*Or*  
Two triangles and a circle  
*Or*  
Two upwards-pointing triangles  
*Or*  
One large shape and two small shapes  
*Or*  
One curved shape and two straight-edged shapes  
*Or*  
A circle with the same kind of shape on the inside and outside

(Hofstadter 2000: 648)

Hofstadter notes that; ‘each of these descriptions sees the box through a “filter”. Out of context any of them might be a useful description.’ However; ‘all of them are “wrong”, in the context of the particular Bongard problem they are part of.’ (Hofstadter 2000: 648). This test has many similarities with Skaggs’ example of the word ‘the’ contained within a wheel of types. In this example instead we have the box I-F contained within a circle of types, including colour, number of shapes, type of shape, relative sizes, etc. Context is the key to determining the relevant types, for this example Hofstadter states that; ‘the essential feature of this box, in context, is that it includes, “a circle containing a triangle” (Hofstadter 2000: 648). It is a relatively simple jump from this problem, to a more specialized example relating to typography. Bongard actually suggested such an example, and Hofstadter considers it ‘highly significant’ that Bongard chose to use it to; ‘conclude his appendix of 100 pattern-recognition problems’ (Source: Hofstadter 1995), can we again arrive at the essential features of each group?



*Figure 11 (Hofstadter 1995)*

Bongard problems are for pattern recognizers both; ‘human or machine’ (Hofstadter 2000: 646), how would a computer make the distinction between the “A” and “B” sets? Simply put the current answer is that they can’t. This is evident in the increasingly common CAPTCHA (Completely Automated Public Turing Test to Tell Computers and Humans Apart) tests. These consist of; ‘an image containing several distorted characters’ (von Ahn et al. 2008: 1465) and are designed explicitly so that; ‘computers can generate and grade the tests even though they cannot pass them.’ (Robinson 2002) An example case can be seen below.



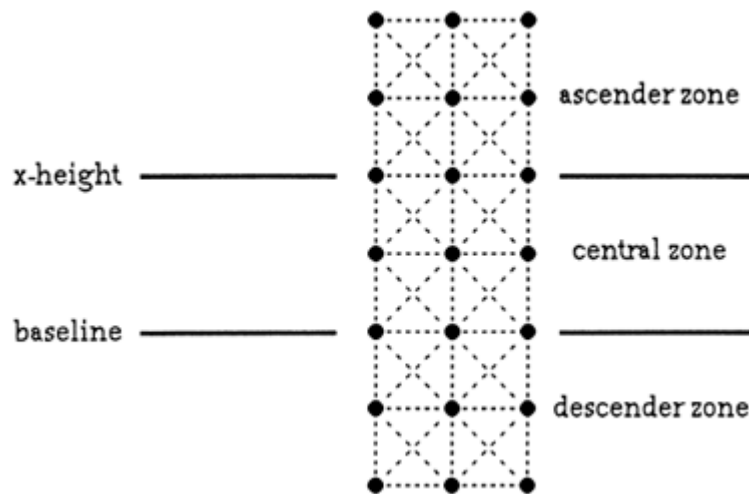
*Figure 12 (Captcha 2013)*

This technology is now so widespread that it is estimated that; ‘humans around the world type more than 100 million CAPTCHAs everyday’ (von Ahn et al. 2008: 1465), this proliferation however has also led to increasing attempts to break them, and subsequently improvements in computer reading abilities. Researchers have even commented that; “Captchas are useful for companies like Yahoo, but if they're broken it's even more useful for researchers... it’s like there are two lollipops and no matter what you get one of them.” (Robinson 2002) Programmes such as OCR (Optical Character Recognition) have improved to the extent that they can now read in excess of

eighty percent of the standard words contained on input material (von Ahn et al 2008: 1466). These advancements in computer reading have not happened overnight, and whilst many improvements been made since Hofstadter’s first experiments with computers and pattern recognition, it is worth considering some of his early experiments for what they can tell us about the roots of computer, and indeed human, reading.

## 2.5 Douglas Hofstadter’s ‘Letter Spirit’ Program

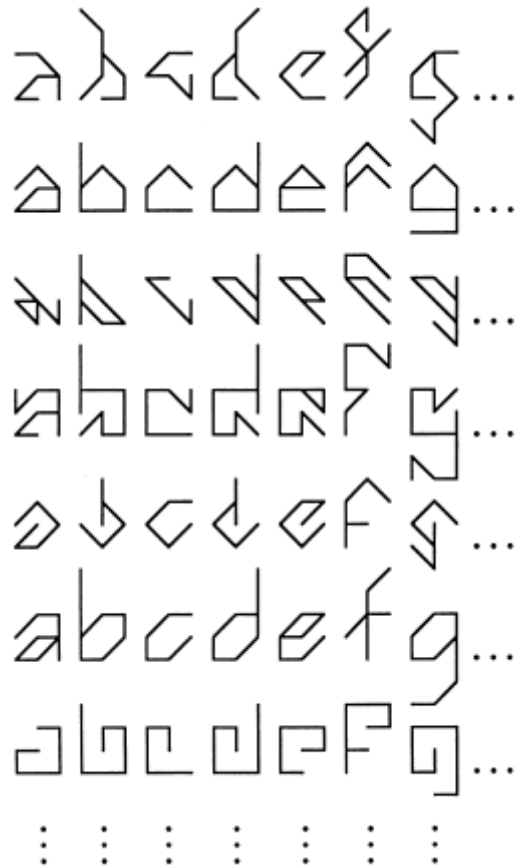
Hofstadter believes that; ‘nobody can possess the “secret recipe” from which all the (infinitely variable) members of a category such as “A” can in theory be generated.’ (Hofstadter 1982: 2) Hofstadter’s ‘Letter Spirit’ project limits the variation by; ‘restricting the letterforms to a grid. In particular, one is allowed to turn on any of the 56 short horizontal, vertical, and diagonal line segments’ (Hofstadter 1995), this grid is shown below.



*Figure 13 (Hofstadter 1995)*

Utilizing the grid allows for; ‘much of low-level vision to be bypassed and forces concentration on higher level cognitive processing, particularly the abstract and context-dependent nature of letter concepts.’ (Rehling 2001: iv) With this grid; ‘one can render each of the 26 letters in some fashion; the idea is to make them all agree with each other stylistically.’ (Hofstadter 1995) This project extends the issues of interpretation aiming not only to have the programme recognise a given letter, but to be able to; ‘take

a given letter designed by a person... and to let that letter inspire the remaining twenty five letters of the alphabet.’ (Hofstadter 1995) A selection of potential alphabets that could be generated by the programme can be seen in *Figure 14*.



*Figure 14* (Hofstadter 1995)

*Figure 14* displays the two fundamental principles of semiotic value in terms of typography. Recalling Saussure’s statement that semiotic value is based on relation to both; ‘a dissimilar thing that can be exchanged for the thing of which the value is determined’ and to; ‘similar things that can be compared with the thing of which the value is to be determined.’ (Saussure 1978: 115) We can see that the vertical columns display dissimilar letterforms of equivalent linguistic value, while the horizontal rows show visually similar letterforms of a differing value. For Hofstadter these axes reflect the two important concepts that his programme must deal with;

First is the "vertical problem"--namely, what do all the items in any given *column* have in common? This is essentially the question that Bongard was asking in the final puzzle of his appendix. The answer, in a single word, is: *Letter*. Of course, to say that one word is

not to solve the problem, but it is a useful summary. The second problem is, of course, the "horizontal problem"—namely, what do all the items in any given *row* have in common? To this question, I prefer the single-word answer: *Spirit*. How can a human or a machine make the uniform artistic spirit lurking behind these seven shapes leap to the abstract category of "h," then leap from those eight shapes to the category "i," then leap to "j," and so on, all the way down the line to "z"? (Hofstadter 1995)

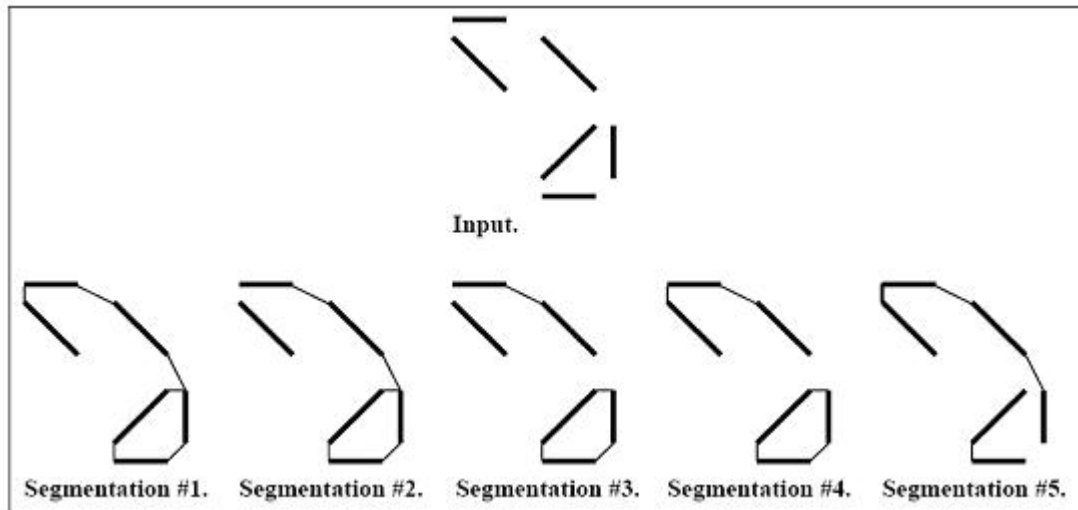
For Hofstadter and his team, the recognizing and creating processes are not unidirectional, they require complex arrangements of feedback loops and multilevel comparison. At all levels there is flexibility, as; ‘patterns are sought, templates are made, unmade, and remade... filtering and focusing are done; and so on. There are discoveries on all levels of complexity.’ (Hofstadter 2000: 659-60) This fluid view of intelligence is necessary given the fact that;

The Letter Spirit project does not by any means grow out of the dubious postulate that there is one unique "best" way to carry style consistently from one category to another; rather, it allows many possible notions of artistically valid style at many different levels of abstraction. Of course this means that the project is in complete opposition to any view of intelligence that sees the main purpose of mind as being an eternal quest after "right answers" and "truth." (Hofstadter 1995)

What we are dealing with here is unreservedly interpretation. It is an analysis and attempt to model the ways in which; ‘the mind makes holistic connections where algorithmic rules cannot. It pulls parts together in a different way to make sense of them.’ (Haynes 2002) In line with Skaggs, perception considered from this perspective is an act of creation, it is;

An interwoven process of guesswork and evaluation — “the central feedback loop of creativity”. The notion of continual evaluation of a creative product throughout the design process, and its necessary foundation in perception. (McGraw 1995: v-vi)

As an example *Figure 15* shows a sample of the identification process for an unusual letterform. Given the input data, the programme makes several associative connections between the components, creating segments and determining potential counters, tittles and other features.



*Figure 15 (Rehling 2001: 181)*

The process of interpretation proceeds through several phases, in the first; ‘the Examiner resegmented the gridletter a total of 23 times’ (Rehling 2001: 182). In the second; ‘18 resegmentations took place’ (Rehling 2001: 183), the process repeats with adjusted tolerances for four phases before in the fifth phase; ‘the threshold had finally been lowered enough for recognition.’ (Rehling 2001: 183) The character is finally recognised as an ‘a’, but it takes the program several steps and many tried, dismissed and retried segmentations before it ultimately decides. Our reading process for unfamiliar typefaces follows a similar process of negotiation when distinctive features are compromised.

## 2.6 The Role of Habit and Context in Shortening the Pattern Recognition Chain

The experiments into pattern recognition by Douglas Hofstadter, are only applied to the level of the individual letterform. To this extent they are revealing about certain facets of the reading process, but there are additional factors that should be considered. As Steven Skaggs notes, certain details may be lost in the process of reading; ‘in seeing the word as figure, we have neglected to see the individual letters of the alphabet; in seeing the letter i we neglect to see the jot over the i.’ (Skaggs 2013) In terms of receiving words, Matt Davis notes that;

We know from research in which people read words presented very briefly on a computer screen that the exterior letters of words are easier to detect than middle

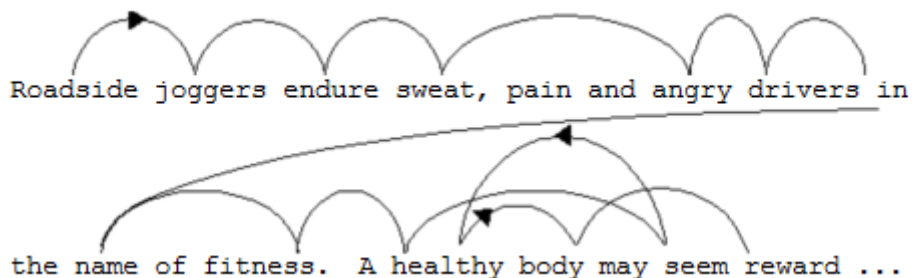


letters [...] We also know that position information for letters in the middle of words is more difficult to detect and that those errors that are made tend to be transpositions. (Davis 2003)

In addition when we read we are guided by ‘function words’ such as; the, be, and, you (Davis 2003). These words are especially important for; ‘preserving the grammatical [...] helping you to work out what word is likely to come next.’ (Davis 2003) It has been observed that, for proficient speakers within a given language culture the reception of function words is so automatic, that generally we do not even need to focus directly on them. As Larson notes;

We fixate on a word for a period of time, roughly 200-250ms, then make a ballistic movement to another word. These movements are called saccades and usually take 20-35ms. Most saccades are forward movements from 7 to 9 letters, but 10-15% of all saccades are regressive or backwards movements. Most readers are completely unaware of the frequency of regressive saccades while reading. The location of the fixation is not random. Fixations never occur between words, and usually occur just to the left of the middle of a word. Not all words are fixated; short words and particularly function words are frequently skipped. (Larson 2004)

An illustration of the typical Saccadic eye movements for a short passage of text is shown in *Figure 16*:



*Figure 16* (Larson 2004)

Despite the fact that our eyes are able to skip focusing on so much of the visual information, picking up only ‘three to four letters to the left and right of fixation at normal reading distances’ (Larson 2004), we are still able to understand the whole text without issue.

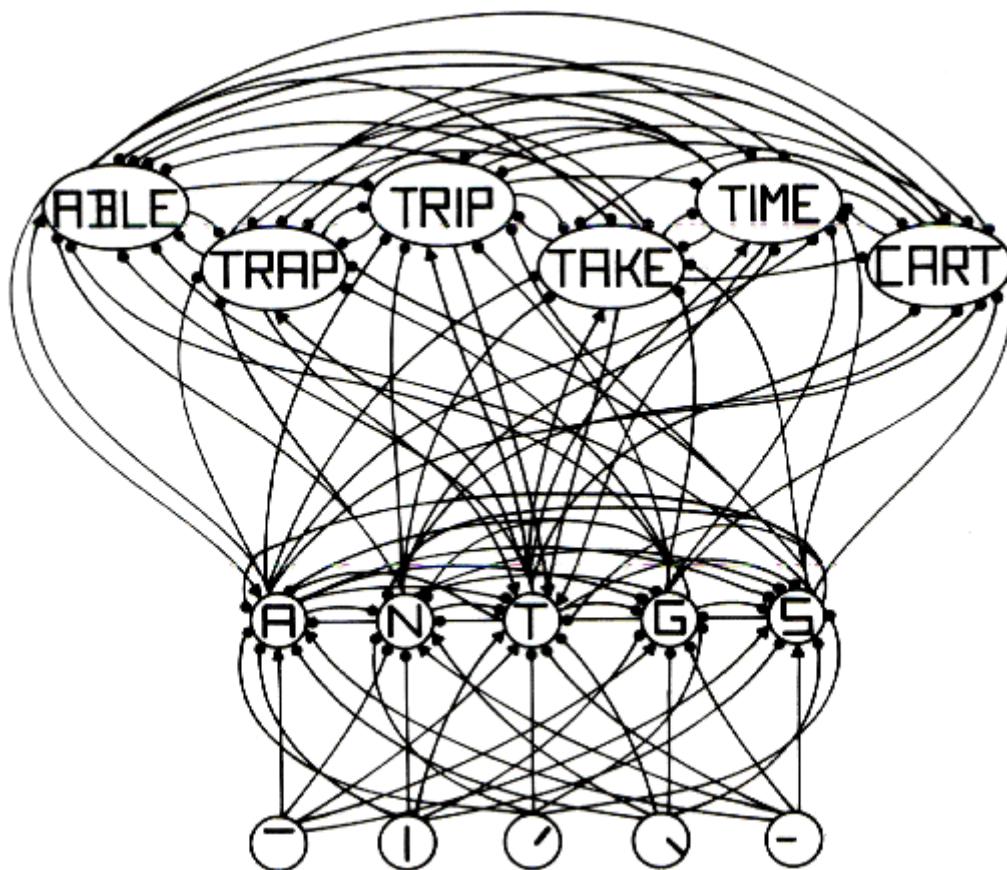
What is happening here in terms of pattern recognition that allows us to understand so much with minimal stimulus? Put simply when reading we are looking for ‘familiar letter sequences’ (Larson 2004), strings of two, three or four letters that we

recognise from previous experience. This is highlighted by the phenomena of pseudowords, words such as 'Mave and Rint', that maintain a certain 'phonetic regularity' of the language in question (Larson 2004). Experiments have found that 'letters are recognized faster in the context of pseudowords (*mave*) than in the context of nonwords (*amve*).' (Larson 2004) this illustrates that context is an important component in our ability to identify letterforms. Douglas Hofstadter comments on an interesting program called 'Hearsay II' that was designed to 'recognise spoken utterances' (Hofstadter 1995). Uniquely this program is always operated; 'in relation to a specific real world context' (Hofstadter 1995), and it makes use of this in its interpretive process, as described below.

The *meaning* of the hypothesized sentence was compared to the situation under discussion [...] if it made sense in the given context, it was accepted, whereas if it made no sense in the context, then some piece of the hypothesized sentence--its weakest piece, in fact, in a sense that I will describe below--was modified in such a way as to make the sentence fit the situation (assuming that such a simple fix was possible, of course). For example, if the program's best guess as to what it had heard was the sentence "There's a pen on the box" but in fact, in the situation under discussion there was a pen that was *in* a box rather than *on* it, and if furthermore the word "on" was the least certain word in the hypothesized sentence, then a switch to "There's a pen in the box" might have a high probability of being suggested. If, on the other hand, the word "on" was very clear and strong whereas the word "pen" was the least certain element in the sentence, then the sentence might be converted into "There's a *pin* on the box." Of course, that sentence would be suggested as an improvement over the original one only if it made sense within the context. (Hofstadter 1995)

In interpreting letterforms, the primary context available is the letterforms with which an example co-occurs. This is why letters in pseudowords are more easily identified than those in random letter strings, the context is one with which we are somewhat familiar this helps to guide the reader through the identification process.

When reading, as with any pattern recognition task, processes on different levels interact and feedback into each other informing the decisions made at each level. As an example of the complexity of the feedback processes involved in reading, McClelland & Rumelhart's Interactive Activation model (*Figure 17*), displays some of the processing involved in the interpretation of just one simple letter 'T'.



*Figure 17 (Larson 2004)*

Larson explains the processes involved in this complex diagram in the following passage;

The reader here is processing the letter *T* in the first position in a word. The flow of information here starts at the bottom where there are visual feature detectors. The two nodes on the left are active because they match the features of an uppercase *T*, while the three nodes on the right are not active because they don't match. Every node in the visual feature detector level is connected to every node in the letter detector level. The letters seen here apply only to the first letter of a word. The connections between the visual feature detector level and the letter level are all either excitatory (represented with an arrow at the end of the connection) or inhibitory (represented with a circle at the end of the connection). The letters *A*, *T*, and *S* all received some excitatory activation from the two left feature detectors because all three have a crossbar at the top of the letter (at least in this font). The inhibitory connections between each of the letters will result in the *T* being the most activated letter node because it has the most incoming excitatory activation. The letter node for *T* will then send excitatory activation to all the words that start with *T* and inhibitory activation to all the other words. As word nodes gain in activation, they will send inhibitory activation to all other words, excitatory activation back to letter nodes from letters in the word, and inhibitory activation to all other letter nodes. Letters in positions other than the first are needed in order to figure out which of the words that start with *T* is being read. (Larson 2004)

As we can see, in even this relatively simple example, the feedback processes involved are quite complex. However we can see how acceptable letter strings are an important part of this feedback process as they provide a context based on habitual uses within a language. The acceptable letter strings present in both words and pseudowords are ingrained through the force of habit, and habit can also play a role in the identification of letterforms.

In our interpretation processes habit helps to shorten the chain of feedback processes, by establishing a default interpretation. Cognitive science has shown that the fact that strong perceptual habits exist, stems from; the conceptual and linguistic defaults most likely to be activated in any given situation. (Fauconnier and Turner 1995: 13) Strong defaults do not exist for all of our reading processes as we encounter novel typefaces that we have not seen before, however the majority of our casual reception of typography, in newspapers, books and on websites for example is not unusual, and this allows us to interpret it quite easily. This automatization is true for the majority of our typographic reception; however we should not make the mistake of thinking that this reduces the potential for typographic signification. Indeed; ‘as part of its social use within a sign system, every sign acquires a history and connotations that are familiar to members of the sign users’ culture.’ (Chandler 2007: 27) As these connotations are linked with prior use, we are often only consciously aware of their typographic signification when they are removed from their usual context, such as a newspaper being printed in *Courier*. Linking back to Skagg’s work, habit may shorten the chain of Semiotic Moments by providing us with an easily identifiable default type, but this does not mean that the tonal qualities are not present. Despite their unobtrusive nature, habit and prior use are actually a key source of connotations that, whilst often received unconsciously, are no less significant than those which require a more engaged and lengthy interpretation. Having considered the role of familiarity in signification, the next chapter analyses the more complex processes involved in our interpretation of typography that we do not have prior experience of.

## Chapter 3: Conceptual Metaphors and our Experience of Text

This chapter views typography as a connected part of a broader cultural signifying complex. This connectedness, embodied in the philosophy of ‘connectionism’, allows for certain, apparently disparate phenomena, to be related and interpreted in terms of new information gleaned in the process of comparison. Trends in cognitive science suggest that this notion is valuable as it reflects the way that information is handled in the brain and parallels can therefore be drawn between signification as conceived at the individual and broader socio-cultural levels.

This chapter investigates the connectedness of typography to broader signifying culture first through Marcel Danesi’s notion of the ‘metaform’, which is itself derived from Lakoff & Johnsons ‘conceptual metaphor theory’. Theo Van Leeuwen’s investigation into the application of Lakoff and Johnson’s work to typography is looked at, and some general trends and notions extracted. The role of connotation and experiential metaphors in the interpretation of typography, are linked to the cases of Text and Display type, before the findings are compiled into a proposed typology of typographic signification. Finally the signifying functions identified are put in to practice and explored in relation to the typographically varied novel *House of Leaves*.

### **3.1 Danesi’s Concept of the Metaform**

Marcel Danesi’s paper, ‘On the Metaphorical Connectivity of Cultural Sign Systems’ builds upon the ‘connectionist’ trend in the human sciences which conceives of the brain as fundamentally; ‘a connecting organ’ (Danesi 2013: 33). This approach has great value for semiotics because, as Peirce states, signs themselves are; ‘anything which is so determined by something else’ (Peirce 1908: SS 80-81), illustrating that links are vital for signification and a connecting mind is therefore, an inherently semiotic one. Danesi uses this notion as a ground for the semiotics of culture as; ‘in all connectionist frameworks, the objective is to understand how the human brain extracts meanings from disparate information and then organises these into interconnected sign forms and sign systems’ (Danesi 2013: 34). Danesi’s theory of metaphorical connectivity thus

extrapolates the connecting tendency of the brain up one level to the broader social complex of culture.

Theories of connectivity have placed an; ‘emphasis on the role of context in the production of meaning networks in culture’ (Danesi 2013: 33-34), meaning networks are not considered as isolated phenomena, but may instead be related and contingent upon one another in certain signifying applications. This semiotic continuum provides a cultural connectivity which, in Danesi’s terms, is facilitated through the notion of the ‘metaform’. The metaform is a concept expressing the way by which; ‘the various non-linguistic forms (material, visual, aesthetic etc.) can be connected to conceptual metaphors and how this connectivity produces the sense of wholeness in a culture.’ (Danesi 2013: 35). The metaform underpins connectivity at a cultural level, facilitating certain system wide signifying trends.

How then do such metaforms manifest themselves within a culture? Metaphorical links in the linguistic sphere have been explored in detail by Lakoff and Johnson in their influential work *Metaphors We Live By*, one example being the ‘conduit metaphor’ for language mentioned earlier, but the metaform is an expressly extra-linguistic counterpart to this. Danesi mentions research investigating how the abstraction of the predicate “dark” into “darkness” could; ‘manifest itself as a connecting force in uniting seemingly disparate elements, such as actual clinical depression with metaphorical forms.’ (Danesi 2013: 44). These studies however, whilst interesting deal with abstractions that are hard to pin down and define. As a non-linguistic communicative system, typographic signification is a concrete phenomena to which Danesi’s concept of the metaform could be applied to glean meaningful results.

How then can such an analysis be performed? Methodologies for applying the metaform concept are, due to the notions varied manifestations, somewhat flexible and vague. Danesi does however provide one in-depth example of this kind of analysis, which is shown in the passage below;

As a concrete example of what metaform analysis might entail, Danesi and Perron consider how a single image schema, verticality, becomes a DS [Distributed Sign] diffused throughout the meaning network of one culture—the Anglo-American one. The up-down schema produces easily recognizable metaphorical language (“I’m feeling up”; “They’re feeling down”; “I’m working my way up the ladder of success”; “His status has gone down considerably”). These utterances derive from the conceptual metaphor “up is better”/“down is worse.” This concept then becomes a DS that manifests itself in a whole array of metaforms: for example, in many religious systems, heaven is portrayed as a place that is up from the earth, hell as a place that is down

from the earth. This metaform also manifests itself in the design of churches, where ceilings display images of heaven or something similar. In public building design, too, the same metaform can be discerned in the fact that the taller office buildings in a modern city are the ones that indicate which institutions (and individuals) hold social and economic power. In musical composition, higher tones are metaforms that are typically employed to convey a sensation of happiness, lower ones of sadness. In gesture, the raising of a hand designates notions of amelioration, betterment, growth, and so on, whereas the lowering of the hand designates the opposite notions. In bodily representation and perception, this metaform shows up in the common viewpoint that “taller is more attractive”/“shorter is less attractive.” In mathematical and scientific representational practices it can be seen, for instance, in the ways in which graphs are designed—lines that are oriented in an upward direction indicate a growth or an increase of some kind, while those that are slanted in a downward direction indicate a decline or decrease. (Danesi 2013: 42-3)

As we can see a given metaform, in this case verticality, can spread and operate in diverse, yet related ways, throughout the culture to which it applies. Despite the far reaching effects of this metaform, the manifestations of verticality are difficult to detect in typography. It could be tempting to suggest that, in line with verticality’s manifestation on building design, taller letterforms indicate; ‘social and economic power’ or that, analogous to body perception, taller letters are; ‘more attractive’, however such notions are problematic. Issues of point size, for example prevent a fair comparison of typeface height and the numerous ways in which majuscules differ from their miniscule counterparts (aside from simply being taller) mean that verticality cannot be isolated as the only significant factor. Due to these issues broader notions such as ‘expansion’, based on how condensed or wide a typeface is have been more easily applied (Van Leeuwen 2006: 148).

The problems with applying the metaform verticality to typography illustrates an important point, metaforms are not necessarily universal. Danesi states that; ‘the network of metaforms in a specific culture has both universal signifying structures within it as well as some that are tied to specific forms of poetic reasoning.’ (Danesi 2013: 43-44) As such we can see that metaforms are not prescriptive but; ‘connected interpretively to a conceptual metaphor as a consequence of the metaphor being distributed throughout the cultural network of meaning.’ (Danesi 2013: 35) Danesi’s notion of the metaform is directly applicable to typography, however the interpretive and distributed nature of a given metaform means that in practice it may be hard to identify. For this reason it is useful to look directly at Lakoff and Johnson’s conceptual metaphor theory, as they work within the linguistic sphere to which a metaforms; ‘various non-linguistic forms (material, visual, aesthetic etc.) can be connected’ (Danesi

2013: 35). Conceptual metaphors can provide us with some stable examples that underpin distributed metaforms, and are therefore a useful starting point for analysis.

### 3.2 Lakoff & Johnson's 'Conceptual Metaphor Theory'

Metaforms are the nonverbal counterparts to given conceptual metaphors and, as such Danesi's work; 'is part of a growing awareness in anthropology and linguistics of the connectivity between the verbal and the non-verbal domains of semiosis' (Danesi 2013: 45). The notion that; 'language and culture are really two sides of the same conceptual coin' (Danesi 2013: 45), allows us to consider a return to language as, not a turn away from broader cultural semiosis, merely one toward its linguistically expressed form. This is a useful direction to take at this point as, due to the arbitrary nature of language; 'the individual does not have the power to change a sign in any way once it has become established' (Saussure 1978: 70). Compared with typographic signification, language is a much more stable signifying system and can help to ground my analysis.

The metaphors described by Lakoff and Johnson are varied in their nature, they highlight for example the notion that; 'ARGUMENT IS WAR' (Lakoff and Johnson 2003: 5), and suggest that this metaphor; 'influences the shape arguments take' (Lakoff and Johnson 2003: 8). While the metaphor; 'TIME IS MONEY' (Lakoff and Johnson 2003: 9) is shown to have led to practices such as; 'hourly wages, hotel room rates, yearly budgets, interest on loans, and paying your debt to society by "serving time"' (Lakoff and Johnson 2003: 9). The manifestations of this second example are indicative of the distributed signs mentioned by Danesi, and hence metaforms, however conceptual metaphors can have much more subtle effects. Lakoff and Johnson note for example that, in terms of metaphor; 'our concepts structure what we perceive' (Lakoff and Johnson 2003: 4), it is this effect that makes conceptual metaphors relevant to the study of typography.

The above examples, ARGUMENT IS WAR and TIME IS MONEY are both examples of what Lakoff and Johnson call structural metaphors, as they are; 'cases where one concept is metaphorically structured in terms of another.' (Lakoff and Johnson 2003: 15) An important subcategory of conceptual metaphors are those relating to spatial relations, known as; 'orientational metaphors' (Lakoff and Johnson 2003: 15). These metaphors refer to spatial relations concepts that;



Are at the heart of our conceptual system. They are what make sense of space for us. They characterise what spatial form is and define spatial inference. But they do not exist as entities in the external world. We do not see spatial relations the way we see physical objects. (Lakoff and Johnson 1999: 30)

These notions are part of Lakoff and Johnson's idea of 'embodied philosophy', based on the concept that; 'the very structure of reason itself comes from the details of our embodiment' (Lakoff and Johnson 1999: 4) For them our metaphorical understandings of; 'spatial orientations arise from the fact that we have bodies of the sort we have and that they function as they do in our physical environment.' (Lakoff and Johnson 2003: 15) As an example of this they state that; 'Concepts like *front* and *back* [...] arise from the body, depend on the body, and would not exist if we did not have the kinds of bodies we have.' (Lakoff and Johnson 1999: 36)

The orientational metaphors extending from our embodied experience are particularly relevant to typography as they frequently ascribe values to certain spatial phenomena exhibited by typographic forms. Lakoff and Johnson state that;

Because we conceptualize linguistic form in spatial terms, it is possible for certain spatial metaphors to apply directly to the *form* of a sentence, as we conceive of it spatially. This can provide automatic direct links between form and content, based on general metaphors in our conceptual system. (Lakoff and Johnson 2003: 127)

As an example they tease out some of the implications of the conduit metaphor of language mentioned earlier, observing that; 'when we see actual containers that are small, we expect their contents to be small. When we see actual containers that are large, we normally expect their contents to be large.' (Lakoff and Johnson 2003: 128) This rather prosaic observation is given more weight when applied to the conduit metaphor to suggest that; 'MORE OF FORM IS MORE OF CONTENT.' (Lakoff and Johnson 2003: 128) In terms of typefaces, this is best reflected in terms of typeface weight. A heavy set typeface with limited whitespace and small or obscured counters may not be easy to read, but, in accordance with our spatial metaphors and the conception of language as a conduit, words conveyed in a heavy typeface are considered; 'reliable and reassuring' (Garfield 2010: 53) and are given more linguistic weight. The same can perhaps be said of majuscules (or capitals in the common conception, a name which itself suggests a density and importance of meaning) as these

are frequently heavier in weight than their miniscule counterparts, and occupy a larger visual space.

A related yet subtler spatial metaphor is that of; ‘CLOSENESS IS STRENGTH OF EFFECT.’ (Lakoff and Johnson 2003: 129) This can be related to the spacing and kerning of a typeface. It is a similar notion to MORE OF FORM IS MORE OF CONTENT, as it again relates to a kind of ‘visual density’, however the two metaphors are realised differently. Looking at the thickset typeface **Cooper Black**, it has been noted that it; ‘is usually employed bunched up, for excessive spacing between letters would make it break up very fast, confusing the eye’ (Garfield 2010: 54). At a metaphorical level, a heavy typeface and wide spacing offer conflicting messages, the former adding power and gravitas, while the latter dilutes it. For this reason very bold typefaces such as **Cooper Black**, do not function well when employed with wide spacing. The metaphors CLOSENESS IS STRENGTH OF EFFECT and MORE OF FORM IS MORE OF CONTENT provide useful examples that help illuminate some facets of typographic signification, however for a more direct look at the application of conceptual metaphors to typefaces, it is worth considering the associations suggested by Theo van Leeuwen in his paper ‘Towards a Semiotics of Typography’.

### 3.3 Theo Van Leeuwen: ‘Towards a Semiotics of Typography’

Little in depth work has been conducted on the semiotic potential typography. Winfried Nöth touches upon some important notions as part of a broader semiotics of writing, but the most detailed exploration of typography in semiotics is Theo Van Leeuwen’s article, ‘Towards a Semiotics of Typography’. Whilst he concedes that his work is only a starting point, rather than a ‘finished product’ (Van Leeuwen 2006: 154), there are several important notions that we can draw from his paper.

Van Leeuwen identifies two fundamental principles that govern typographic meaning, these are; ‘connotation and experiential metaphor’ (Van Leeuwen 2006: 146). Connotation here has a fairly specific sense, Van Leeuwen states that; ‘it refers to the idea that signs may be ‘imported’ from one context (one era, one social group, one culture) into another, in order to signify the ideas and values associated with that other context’ (Van Leeuwen 2006: 146). As an example of this he states that;

The ‘Herculanum’ typeface, imports aspects of the language of informal Ancient Roman inscriptions on papyrus, into a contemporary typeface, and can therefore be used to connote the values we associate with Antiquity and the Roman Empire. (Van Leeuwen 2006: 146)

Similarly typefaces habitually associated with certain brands or institutions may develop connotations relating to these groups which can then be adopted by other parties seeking to align their interests with these groups.

With the concept of ‘experiential metaphors’ Van Leeuwen adapts the notion of conceptual metaphors into something more text specific. Experiential metaphors are explicitly based directly on our experience of creating and receiving texts. Van Leeuwen states that; ‘a material signifier has a meaning potential that derives from our physical experience of it, from what it is we *do* when we articulate it, and from our ability to extend our practical, physical experience metaphorically.’ (Van Leeuwen 2006: 146) As an example of this he mentions irregularity in letterforms, stating;

In our own physical experience of writing, such irregularities stem from an inability or unwillingness to apply the rules of ‘neat writing’ we are taught in school. As a result, irregularity has, amongst other things, the potential to signify a kind of rebellion against the norms of the school, or, by extension, other coercive institutions. (Van Leeuwen 2006: 147)

This concept relates to Jan Tschichold’s ideas on the role of uniformity of type, however reframes them in terms of signification, dissolving the problematic ideological assumptions in Tschichold’s work. Van Leeuwen’s work similarly, borrows the notion of ornament, adjusting it by way of Jakobson and Halle’s phonological work, into the concept of distinctive features. He argues that; ‘although Jakobson and Halle did not see these features as having a semiotic potential, it is possible to argue that they do by using the principles of connotation and experiential metaphor.’ (Van Leeuwen 2006: 147) The features that Van Leeuwen feels are worthy of consideration are; expansion, weight, slope, curvature, connectivity, regularity, orientation, and a special category of non-distinctive features (Van Leeuwen 2006: 148-50). *Figure 18* below compares these to some of the ornaments identified by Tschichold.

Tschichold's Ornaments	Van Leeuwen's Distinctive Features
Large/Small	Expansion
Light/Dark	Weight
Horizontal/Vertical	Slope
Square/Round	Curvature
Closed/Open	Connectivity
Smooth/Rough	Regularity
Coloured/Plain	Orientation
	Non-Distinctive Features

*Figure 18*

Notable here is the way that Van Leeuwen adjusts Tschichold's binaries, which implied two distinct poles and the easy identification of a typeface as either large or small for example. He replaces these with notions such as weight which help to prevent naïve assumptions about the categorization of features. As Van Leeuwen states most of these characteristics are; 'not a binary but a gradual contrast - there is, at least in principle, a continuum of boldness [for example], even if technologies like the word processor reduce it to a binary choice.' (Van Leeuwen 2006: 148)

What role does each of these features take in the process of typographic signification? For each feature Van Leeuwen identifies relevant experiential metaphors which suggest how they might signify different things to us. *Figure 19* below briefly summarises these significations, however it is worth observing that, according to van Leeuwen; 'some values may also be reversed' and that; 'other, co-present signifying elements will narrow down the meaning potential and the values invoked, and make them more specific.' (Van Leeuwen 2006: 148). For each feature I have attempted to provide a marked typographic example, based on the conceptual background of what is; 'frequent, natural, simple and predictable' (Hume 2011: 80), within the western typographic culture.

Distinctive Feature	Associations	Example Type
Weight	<b>Bold:</b> 'daring', 'assertive', 'solid' 'substantial' or 'domineering' and 'overbearing'. <b>Light:</b> 'timid' or 'insubstantial'.	<b>Bold</b>  Light
Expansion	<b>Condensed:</b> 'Precise', 'economical', 'packing the page'. <b>Wide:</b> 'spread themselves around', 'using space as if it is in unlimited supply' or 'providing room to breathe', 'room to move'.	<b>Condensed</b>  <b>Wide</b>
Slope	[Due to its association with handwriting] <b>Sloped:</b> 'organic', 'personal', 'informal', 'handcrafted'. <b>Upright:</b> 'mechanical', 'impersonal', 'formal' and the, the 'mass-produced'.	<i>Sloped</i>  UPRIGHT
Curvature	<b>Angularity:</b> 'controlled', 'brisk', 'decisive movement', 'abrasive', 'harsh', 'technical', 'masculine'. <b>Curved:</b> 'gradual', 'fluid movement', 'smooth', 'soft', 'natural', 'organic', 'maternal'.	Angular  <i>Curved</i>
Connectivity	[Associated with handwriting, and therefore shares much of its meaning potential with 'slope'] <b>Disconnection:</b> 'atomisation', or 'fragmentation', 'distinctive individuality of the elements'. <b>Connection:</b> 'wholeness', or 'integration'.	Disconnected  <i>Connected</i>
Orientation	[Based on our experience of gravity, and of walking upright] <b>Horizontal:</b> 'heaviness', 'solidity' or 'inertia', 'self-satisfaction'. <b>Vertical:</b> 'lightness', 'upwards aspiration' or 'instability'.	Horizontal  Vertical
Regularity	<b>Regularity:</b> 'traditional typography' 'legibility'. <b>Irregularity:</b> 'rebellion against the norms of the school'.	Regularity  <i>Irregularity</i>
Non-Distinctive Features	Typography has developed a wide range of flourishes, ligatures and capricious additions, and they, too, can be said to have a meaning potential, in many cases derivable from that of the distinctive features	

	described above.	
--	---------------------	--

*Figure 1.9 (Adapted from Van Leeuwen 2006: 147-50)*

Van Leeuwen admits that in his work he has somewhat;

Glossed the typographical meaning potential by means of adjectives, and that may suggest that their meaning is primarily ideational. But while adjectives like ‘daring’, ‘assertive’, ‘solid’, ‘substantial’ and so on signify qualities of what is being represented, they can also have interpersonal significance. They can also signify attitudes towards what is being represented, or *do* something to readers. (Van Leeuwen 2006: 148)

Despite his concessions Van Leeuwen’s clearly demonstrates how typographic signification emerges from the two central principles, connotation and experiential metaphor. Regarding metaphor, in accordance with the notion of visual density mentioned earlier, Van Leeuwen notes that; ‘increased weight is [...] frequently used to increase salience’ (Van Leeuwen 2006: 148). Expansion is conceived of similarly, in relation to its informational density on the page, whilst orientation, in line with Lakoff and Johnson’s embodied philosophy, is significant in terms of our; ‘experience of gravity, and of walking upright’ (Van Leeuwen 2006: 149).

Drawing on our experience of typographical and handwriting conventions, and our preconditioned habits, slope and connectivity are shown to be both; ‘predominantly connotative, based on the meanings and values we associate with handwriting and printing.’ (Van Leeuwen 2006: 148) Similarly curvature is governed by; ‘our experience of producing straight, angular forms’ (Van Leeuwen 2006: 149) as opposed to round forms. In addition Van Leeuwen suggests that trends in art and design are particularly influential in relation to curvature, observing that;

Modernity, rationality, functionality etc have often favoured the values of angularity, as [...] in the paintings of Mondrian, while postmodernity has brought back round forms, for instance in car design and architecture. (Van Leeuwen 2006: 149)

These examples are illustrative of the way in which our prior experiences can influence our perception and evaluation of signification. Connotation in this sense is a fairly simple process, directly ‘importing’ signs; ‘in order to signify the ideas and values’ (Van Leeuwen 2006: 146) associated with their prior context. Experiential metaphor is a more complex process, but is similarly grounded in our experience, this time using our

experience of interpreting and creating visual forms to allow us to; ‘turn action into knowledge’ (Van Leeuwen 2006: 147).

### 3.4 Applying Van Leeuwen’s Work to Literature

As Van Leeuwen points out, typographic signification can be more than simply ideational, it can; ‘also signify attitudes towards what is being represented, or *do* something to readers.’ (Van Leeuwen 2006: 148) These functions are tricky to observe in the examples illustrated by Van Leeuwen, as they require a richer context in order to function effectively. To more thoroughly investigate these varied applications of Van Leeuwen’s work it is worth reflecting on Nina Nørgaard’s paper ‘The Semiotics of Typography in Literary Texts’.

Nørgaard has adapted Van Leeuwen’s work for the analysis of the use of typography in literature, and in doing so has drawn some interesting conclusions. Instead of focusing on the terms connotation and experiential metaphor Nørgaard relates the processes of typographic signification to; ‘Peirce’s concepts of Icon and Index’ (Nørgaard 2009: 147), stating that while;

The same kinds of meaning occur when a typographical signifier either looks like that which it signifies (icon), or invokes the material origin of its own coming into being (index)... these two types of meaning seem so differently motivated that they are best treated as different semiotic principles. (Nørgaard 2009: 147)

As an example, Nørgaard notes that the novel *Stuart: A Life Backwards*, includes instances of handwriting that function as; ‘fictional indices of the people who produced them.’ (Nørgaard 2009: 149) Indexical signs are necessarily signifiers of conditions of their own production, they reflect back upon the identity or nature of the source that created them. As such typographic significations of this sort extend beyond the ideational significations that Van Leeuwen focuses on. Nørgaard highlights another interesting example of the indexical qualities of typography as she investigates the typefaces E138 and Data 70. E13B was a set of numbers (*Figure 20*) designed to; ‘be read by machines and consequently allow cheques to be handled electronically for the first time.’ (Nørgaard 2009: 154) The prominent use of this number set on cheques led to the numbers developing connotative associations with banking and finance. The face was eventually developed into a full alphabet, called Data 70, which; ‘could be

employed in contexts extending beyond that of the banking business [...] the typeface has been used for book covers, film titles and music albums, among other things' (Nørgaard 2009: 155), yet due to its heritage it remains a signifier of; 'automated systems and technology.' (Nørgaard 2009: 155)



Figure 20 (Nørgaard 2009: 156)

The indexical associations that Nørgaard highlights for the handwriting samples in *Stuart: A Life Backwards* as well as the typefaces E13b and Data 70 can be thought of as mode based signification, as they directly reflect the typefaces mode of production. In both cases these are related to previous experience and a degree of familiarity with the typefaces involved. Although not mentioned by Nørgaard, Jan Tschichold highlights a similar form of typographic signification when he observes that; 'classic faces like Walbaum, Didot, Bodoni etc., cannot serve as bread-and-butter types today. In terms of their conception they possess romantic associations' (Tschichold 1995: 122). In this case the typefaces are indexes of their period of emergence. This illustrates that our prior knowledge of the heritage of a typeface can make it a historical signifier.

In terms of iconic signification, Nørgaard points to the use of majuscules (or tall capitals) as indicators of; 'sonic salience' (Nørgaard 2009: 150), she notes the passage in *Stuart: A Life Backwards* when a character cries; "order, order, **ORDER! WILL YOU PLEASE BE QUIET!**" (Nørgaard 2009: 150), as an instance of this as; 'the visual salience of letterforms is employed to convey a different kind of salience' (Nørgaard 2009: 150). This passage also provides an example of italics which, instead of sonic salience, Nørgaard claims are; 'often used to signify a different kind of salience, namely emphasis on word meaning.' (Nørgaard 2009: 150) This is not their only function however, as italics; 'appear to afford quite a number of other kinds of meaning' (Nørgaard 2009: 150) such as 'whispering' and 'thinking to oneself' (Nørgaard 2009: 151).

As opposed to indexical signification the meanings ascribed to these iconic features are entirely dependent upon the context within which they are applied. The



indications of salience she describes originate not from a set use of typography, but instead from merely an indication of change. To illustrate this point, one can imagine a situation where a whole passage of text is set in capitals, in this instance the indication of ‘sonic salience’ might instead be indicated by setting some of the type in **bold**. The same could be said of a passage of text set in italics, this indicates that the real signifier of a change in salience is not the use of either italics or majuscules, but the change from one standard typeface, to a marked derivative form. The same functions could be provided by a change in typeface colour, or an unusual page layout, due to this, my typology excludes the iconic significations described by Nørgaard, such as the effects of italics and the use of majuscules, from the realm of connotation.

### 3.5 The Distinction between Connotation and Metaphor

In previous parts of the thesis we have extensively analysed the reading process and our reception of typography, it is now time to proceed towards the formulation of my typology. As we have found, typographic signification emerges not from one, but two important mechanisms, connotation and experiential metaphor. A functional model of typographic signification needs to embrace both signification that emerges from our habits and prior use as connotation, and that which emerges in the act of interpretation via metaphorical associations. This distinction reveals the problems with considering type simply as a ‘container’ for linguistic messages, and it is not currently accounted for by contemporary feature based typographic classification systems.

These two processes, as inbuilt components of interpretation, both seem to occur very rapidly and unproblematically, however, as Lakoff and Johnson observe there is a meaningful distinction between an engaged act of metaphorical interpretation and concepts that;

Are not merely *understood intellectually*; rather, they are *used* automatically, unconsciously and without noticeable effort as part of normal functioning. Concepts used this way have a different, and more important, psychological status than those that are only thought about consciously. (Lakoff 1987: 12-13)

As connotation is based on prior use and habit, it is a much more automatic process than the processes of interpretation and contextualization required in determining metaphorical associations. Roland Barthes even suggests that we should give; ‘priority to

connotation' over denotation noting that, in terms of connotation it is frequently impossible; 'to separate the signifier from the signified, the ideological from the literal' (Barthes cited in Chandler 2007: 140). Once established, connotation cannot be avoided, and this makes it a powerful, yet hard to control, signifying mechanism.

When we have no connotations for a given typographic token, in order to shorten the interpretation process, we must instead; 'construct a minimal context in which to interpret it.' (Fauconnier and Turner 1995: 13) Experiential metaphor can provide us with this context but requires a more open ended process of interpretation, something akin to forming a hypothesis, or making a best guess about the relevant metaphors. Peirce called this process of connecting forms to each other; "abduction," defining it as a form of inference based on sense, experience, and the creative imagination.' (Danesi 2013: 34) It is through this process that new interpretations of typography emerge. Peirce states that abduction is; 'the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea [...] Abduction merely suggests that something *may* be.' (Peirce 1903: CP 5.171-172) He goes on to state that; 'if we are ever to learn anything or to understand phenomena at all, it must be by abduction that this is to be brought about.' (Peirce 1903: CP 5.171-172) This process is closely related to perception, Peirce states that; 'abductive inference shades into perceptual judgment without any sharp line of demarcation between them' (Peirce 1903: CP 5.181).

Based upon the investigations in chapter two, relating to the feedback mechanisms involved in pattern recognition. Abduction enters into perception where there is no established habit to shorten the process of interpretation. In these instances, we instead locate a hypothesis metaphorically. Our interpretation may not be initially valid, we may proceed through several of Skagg's Semiotic Moments, but eventually we arrive at a conclusion that, at least for the situation at hand, makes some kind of coherent sense of the data. Peirce describes such a process, which it is very easy to imagine applied to typography, in the following passage;

A mass of facts is before us. We go through them. We examine them. We find them a confused snarl, an impenetrable jungle. We are unable to hold them in our minds. We endeavour to set them down upon paper but they seem so multiplex intricate that we can neither satisfy ourselves that we what we have set down represents the facts, nor can we get any clear idea of what it is that we have set down. But suddenly, while we are pouring over our digest of the facts and are endeavouring to set them into order, it occurs to us that if we were to assume something to be true that we do not know to be

true, these facts would arrange themselves luminously. That is abduction. (Peirce 1903: A Deleted Passage, PPM 282-283)

As we can see abduction is in many ways a kind of educated assumption, Peirce even suggests that; ‘there is a more familiar name for it than abduction; for it is neither more nor less than guessing.’ (Peirce cited in Nubiola 2005: 122) This guessing however is bound by some general classes of how and what it is possible for typography to signify. Having explored the role of both connotation, and conceptual/experiential metaphors in reading, it is time to summarize the findings and examples investigated into a coherent typology of typographic signification that accounts for the ways in which these two processes act in the mind of the reader.

### 3.6 Towards a Typology of Typographic Signification

Dealing with two different sources of typographic signification would on the face of it seem to complicate any endeavour to formulate a consistent typology of typographic signification. Whilst seemingly problematic, this issue actually works well with a common observation that, in terms of function;

There are actually two kinds of type:

1. **Text Type:** is designed to be legible and readable across a variety of sizes
2. **Display Type:** is designed to attract attention and pull the reader into the text. It can be more elaborate, expressive, and have a stylish look.

(Haley cited in Bradley 2010)

This distinction between Display and Text typography is useful as it acknowledges the potential for differing reception methods and priorities depending on the context in which we receive type, and does not prescribe either linguistic or typographic signification as the preferred role of typography. This provides us with an initial level of division for typographic signification.

How is the distinction between Text and Display type relevant to typographic signification? Firstly we can observe that Text type, prioritizes the communication of linguistic meaning, whilst Display type places more emphasis on typographic signification. With their differing aims, we can conceptually place Display and Text typefaces at opposite ends of a continuum (*Figure 21*):

Text Type ←————→ Display Type

*Figure 21*

At the Text end of this scale we can place the concept of Jan Tschichold's skeleton letters and Beatrice Warde's notion of invisible typography; both concepts that see typography's essential purpose as the relaying of a linguistic message alone. At the other end of the scale Display type is best illustrated by brand names and advertising slogans that use distinctive typefaces as part of their brand identity. Display type is, as the name suggests, conspicuously displayed and as such can contribute an additional or alternative typographic message. Display type is generally reserved for; 'headlines or other short copy' (Chapman 2011) in these situations the linguistic content is often minimal and easily absorbed, but the type may be displayed repeatedly, or for long periods of time. This allows the receiver time to carry out the interpretive abduction processes required to determine relevant typographic significance. As an example, at the extreme end of Display type would be something like Aarhus University's 'Fifth Element' (Peto), which is a; 'simple geometric abstract alphabet that derives its origin from modernism' (Katrina 2010). The Peto alphabet is show below (*Figure 22*), and its construction from various simple, repeated elements seems somewhat reminiscent of the products of Douglas Hofstadter's 'Letter Spirit' program.



*Figure 22 (Katrina 2010)*

The linguistic content of this abstract alphabet is almost entirely unreadable when put to active use (*Figure 23*), and according to the brief, it is intended primarily for creating; ‘new graphical expressions’ (Sorensen 2013). It is stipulated that any uses of Peto are always accompanied with regular, readable text; ‘in the immediate vicinity of the graphics’ (Sorensen 2013). It is clear that Peto’s function is solely to provide typographic signification, its distinctive clean lines conveying associations of technology and authority for example.



*Figure 23 (Katrina 2010)*

Considering this discussion of the differing roles of Text and Display type, and the differences between Peto and invisible typography, it is useful to compile some of the important distinctions as I approach the formulation of my typology of typographic significations.

Text Type	Display Type
-Used for long passages of body text.	-Used for brief statements or slogans.
-Used for materials intended to be read and understood as easily as possible, without repetition.	-Used for materials that will be viewed repeatedly or for prolonged periods of time.
-Minimal typographic signification, and any present should not conflict with the linguistic message.	-Typographic signification may provide an additional message, not necessarily related to the linguistic.
-Typographic signification is generally a background or secondary message.	-Typographic signification may be foregrounded as a primary message.

-Linguistic and typographic messages cannot be easily separated.	-Linguistic and typographic messages may be readily separated.
-Typographic signification occurs primarily through connotation.	-Typographic signification occurs primarily through experiential metaphor.

*Figure 24*

This table summarises what I feel to be the important distinctions between Display and Text type in terms of their potential for typographic signification. These differences are not hard and fast rules; there is a degree of flexibility in them and they should be considered trends more than conditions. For a concrete example of many of these factors the practice of using different typefaces for headlines (Display) and body copy (Text) in newspapers (French 2010) is indicative of the differing characteristics of Display and Text typefaces.

In their purest conceptual manifestations, Display and Text type should be considered as idealised ends on an analogue scale, with the majority of uses of typography falling somewhere in between the two. *Figure 25* below is my attempt at systematising a typology of typographic functions, based on the concepts of Display and Text type and the nature of potential significations that connotation and experiential metaphor can convey.

Typography					
Text Type				Display Type	
Invisible Typography	Literary			Message Embodiment	Sender Stylistics
Tschichold's Skeleton Letters	Values Based	History Based	Mode Based	Curly	<i>Quality</i>
	Truth Value eg. Baskerville	<b>Futura</b> to denote the modernist period.	Typewritten eg. Courier		

*Figure 25*

Referring back to the work of Steven Skaggs, this typology catalogues some of the potential interpretive types that orbit any typographic token. As mentioned before, certain potential interpretations, such as those based on colour, are excluded from this typology, but this schema lists all of the potential signifying functions that are derived directly from typographic signification, whether it interacts with the linguistic level or not. Knowing the potential types surrounding any token of typography, allows us to apply Skaggs theory directly to the practical analysis of typography.

As we have seen, significant typographic functions are divided into two main areas. In Text type section accompanying the notion of invisible typography, are several literary uses of typography. These are signified through connotations related to prior experience, such as the indexical, mode and history based significations highlighted by Nørgaard and Tschichold. Similar to these functions there are certain subtle significations of value, evidenced for example in the predominance of certain serif faces for academic work, and the observation that straying from these may negatively affect a paper's reception (Morris 2012). The Display type side uses the concept of experiential metaphor to draw out two basic potential uses for display type, the first I have called 'Message Embodiment' in which the linguistic message is supported by the experiential metaphors associated with the typeface, as shown here with the word 'Curly', in the second instance, 'Sender Stylistics', the typographic signification is unrelated to the linguistic message. I have called this Sender Stylistics as in these instances typography is usually used to suggest something about the individual or group sending the message. This is evident in easyJet's use of the typeface **Cooper Black**, which it has been suggested signifies; 'warm, fuzzy, homely, reliable and reassuring' (Garfield 2010: 53) associations.

As Van Leeuwen points out; 'text and typography do not always double each other. Some meanings may be realized in both modes, others only in the one or the other.' (Van Leeuwen 2006: 154) In the above typology the meanings that usually involve a degree of co-operation or integration of both the linguistic and the typographic meanings are highlighted in yellow in the centre of the chart. Either side of this, invisible typography should provide pure linguistic signification, whilst sender stylistics can be signified purely through typographic meaning. These bracketing notions are somewhat idealised concepts as Van Leeuwen states that typography often cannot be divided from; 'the other communicative modes with which it almost always co-occurs' (Van Leeuwen 2006: 144) yet they help to frame the sphere of signification. In practice

these signifying functions rarely occur in isolation, in many ways they are analogous to Jakobson's communication functions in that the diversity of typographic signification; 'lies not in a monopoly of some one of these several functions but in a different hierarchical order of functions' (Jakobson 1960: 353), as such a sample of typography may embody several of these functions in a loose hierarchy of relevant significations. In order to provide a concrete example of some of the functions described in my Typology of Typographic Signification I will now analyse some passages from Mark Z. Danielewski's experimental novel *House of Leaves* and discuss the variety of typographic signifying functions that the work employs.

### 3.7 Typographic Signification in Danielewski's *House of Leaves*

*House of Leaves* is noted for its unique use of formatting and typesetting (Carpenter 2012). This is more than just a detached stylistic choice as it has been reflected that the author, Mark Z. Danielewski manages to use; 'typographical choice, to actually add another level of meaning to his novel' (Hawthorne 2010). As an example of the knowing integration of typographic signification into a literary work, *House of Leaves* is a perfect case study to briefly demonstrate some of the forms of typographic signification reflected in my typology.

Within the narrative frame, the main text of *House of Leaves* is supposedly compiled from a 'mountain of scholarly and critical material' including apparent secondary sources such as 'published interviews' (Poole 2000). The novel can be considered as a work of metafiction, and exploits the connotations of various typefaces to signify the nature of the different sources used. As an example, a passage called 'Tom's Story [Transcript]' is set in a typeface known as American Typewriter (Danielewski 2000: 253). This monospaced typeface (*Figure 26*) was originally designed for use on typewriters, and is used commonly for 'business correspondence' (MyFonts 2007). The use of this typeface in *House of Leaves* has clear Mode based significance and lends the 'transcript' a sense of accuracy and realism, enhancing its apparent truthfulness within the text.



# American Typewriter

*Figure 26 (Chapman 2011)*

Aside from connotation, *House of Leaves* also makes use of experiential metaphors as a basis for typographic signification. This is most visible when type is used as an indicator of authorship. The novel makes use of several different narrators, and some apparently secondary sources. The authorship of each of these sections is indicated by each character having their own unique typeface. Early in the work a footnote states the following; ‘in an effort to limit confusion, Mr. Truant’s footnotes will appear in Courier font while Zampanò’s will appear in Times’ (Danielewski 2000: 4) in addition to this, an anonymous group known only as ‘The Editors’ use the typeface Bookman, while in the appendix the letters by Johnny Truant’s mother Pelafina are set in Dante (Hawthorne 2010). As useful as these are to anchor our navigation of the book, it is an unusual device to have different characters ascribed different typefaces and as such forces us to consider the significance of typeface more than we usually would for a body font. Many readers have considered that the choice of typefaces is intended as more than a simple labelling device, indeed it has been suggested that; ‘font choice informs the reader of the roles of various voices.’ (Carpenter 2012) Instead of connotation these typefaces contribute to character development through metaphorical signification. In many ways the typefaces used function as sender stylistics suggesting facets of each character. In order to understand how this functions within the novel it is worth taking more time to compare the typefaces used. *Figures 27-30* below give examples of each typeface in use.

Courier:

The Quick Brown Fox Jumps  
Over The Lazy Dog

*Figure 27 (Binary Turf 2011)*

Times:

The Quick Brown Fox Jumps Over  
The Lazy Dog

*Figure 28 (Binary Turf 2011)*

Bookman:

The Quick Brown Fox Jumps  
Over The Lazy Dog

*Figure 29 (Binary Turf 2011)*

Dante:

the quick brown fox jumped over  
the lazy dog. 0123456789

*Figure 30 (Fonts Place 2013)*

Using these examples we can start to pull out some salient features of each face in relation to the others. *Courier* for example exhibits; expansion, angularity, and disconnection, *Bookman* displays; expansion, horizontal orientation and curvature, and *Dante* shows some traits of weight and curvature. *Times New Roman* is a harder typeface to pin down in terms of signification, and it is often considered ‘ubiquitous’ and ‘boring’ (Garfield 2010: 19), it has even been suggested that; ‘*Times New Roman* is not a font choice so much as an absence of a font choice.’ (Typography For Lawyers 1999) In many ways this indefinable character suits *Zampanò* perfectly, he is himself a mystery and, as Johnny Truant admits; ‘I never came across any **ID**, whether a passport, license or other official document insinuating that yes, he indeed was An-Actual-&-Accounted-For person.’ (Danielewski 2000: xii) *Figure 31* below links the typefaces to the characters they represent and draws out the relevant character associations shown in *Figure 19* for each of their distinctive features.

<b>Courier</b>	<b>Times</b>	<b>Bookman</b>	<b>Dante</b>
Johnny Truant	Zampanò	The Editors	Pelafina
Using space as if it is in unlimited supply, abrasive, masculine and distinctive individuality.	?	Spread themselves around, solidarity, self satisfaction, natural and fluid movement.	Assertive, overbearing, organic and maternal.

*Figure 31*

This analysis is clearly subjective, however we can see that the choice of typeface can at least be seen to contribute to the formation of characters. In line with the associations above, Johnny Truant has been described as a ‘diffident young loser’ (Kelly 2000) and The Editors as authoritative and neutral (Hawthorne 2010) while Pelafina has been described as ‘dangerous, lucid, confused but very eloquent’ (Kelly 2000). As such it seems we have fair grounds for drawing some of this associations, particularly as switching a couple of the typefaces, such as choosing Times for Johnny Truant and Courier for Pelafina, would seem to be completely inappropriate and contrary to their characters.

The choice of Times for Zampanò should not be considered completely insignificant. As mentioned earlier, typographic significations can be considered as plural and arranged in a kind of hierarchy. Two of the typefaces chosen to represent characters have additional Mode based significations, Times and Courier are both among the most recognisable typefaces in contemporary use. Times New Roman for example; ‘has always been one of the first fonts available in each new format’ (Typography For Lawyers 1999), and as such was the default font for many computer word processing programmes. Similarly Nørgaard notes that; ‘since its creation in 1955, Courier has been the reigning typewriter font.’ (Nørgaard 2009: 156). The mode based signification here directs the reader to the differing modes of production of their two narratives. This discrepancy, in addition to the metaphorical associations listed above, casts Johnny in the role of; typewriter using, unprepared amateur, in relation to Zampanò’s ‘through’ and ‘careful’ (Poole 2000) scholar. Indeed Zampanò’s scholarship is further reinforced by his use of Times a commonly accepted typeface for academic writing (Morris 2012), giving his writing a values based signification that Courier does not possess.

As we can see there are many instances of connotation and metaphorical signification relating to the Modes of text production and the characters. The most interesting example of typographic signification present in *House of Leaves* however is a clever instance of message embodiment. During a particularly abstract phase of the novel, we are at one point presented with a blank page bearing only the text; ‘not even the growl dares disturb this place’ (Danielewski 2000: 470). This sentiment is unusual, not only because of its setting on an otherwise blank page, but because it is displayed in noticeably smaller type than any of the other text in the novel. As noted earlier, size is not a particularly good measure for typographic comparison, however looking at Van Leeuwen’s suggested distinctive features (*Figure 19*), a reduction of size can be readily associated with a reduction in both expansion and weight. Van Leeuwen ascribes low values in these categories to metaphorical characteristics of economy, timidity and insubstantiality. Applying these values to the statement ‘not even the growl dares disturb this place’ we can reflect that metaphorically the typography similarly dares not disturb the blank page, it is trying to sneak in unnoticed and unobtrusive. In this instance the linguistic message is clearly embodied by the typography.

As we can see, *House of Leaves* displays most of the functions of typographic signification identified in my typology, with the exception of the probably impossible, invisible typography. Whilst it is unusual for a text to employ so many examples of typographic signification, the cases investigated above hopefully serve to illustrate the often unappreciated semiotic potential of type, and show how my theoretical observations can be physically realised.

## Conclusion

Contemporary systems of type classification, such as the widespread Vox classification system, are outdated and insufficient to account for the diversity of typographic forms in current use. Biases implicit in the work of many theorists, particularly modernists such as Jan Tschichold, overlook or neglect the semiotic potential of typography in its own right; conceiving of type as a container for linguistic meaning and dictating the simplicity of its form. As an attempt to remedy these influential, yet misguided approaches, I have endeavoured to formulate a ‘typology of typographic signification’ cataloguing the various communicative functions to which typographic signification can be applied.

Though it might seem a simple process of perception, the reception and interpretation of typography is, in its raw state, a multilayered process of feedback and evaluation. Steven Skaggs highlights the diversity of potential interpretive types for any typographic token, and defines our reception process as a series of semiotic moments, through which we progress, each time adjusting our interpretation. In order to shorten this process of repeated revaluations and semiotic moments, habit and prior association intervene to shorten the interpretation process, allowing us to understand typography without entering into an elaborate and drawn out procedure. Habit is therefore an important source for our notions of typographic signification.

In line with Theo Van Leeuwen, typographic signification is seen as emerging from two basic principles; connotation and experiential metaphor. Connotation is based directly on our prior experience of a typeface and can therefore generate significations relating to a typeface’s history, production mode, and usage value. Experiential metaphor occurs when we do not possess strong connotations for a given typeface, or it is presented to us in a manner encouraging and suggesting further interpretation. This process instead enables interpretation by formulating metaphorical links between typography and other spatially interpreted phenomena. Specifically, metaphorical interpretation involves Lakoff and Johnson’s conceptual metaphors and embodied philosophy, in an experience based process of Peircian abduction to formulate a flexible context based signification. These processes may occur concurrently at different levels, allowing a typographical token to have several significations in a loose hierarchical arrangement.

The mechanisms of connotation and experiential metaphor are linked to two distinct categories of typographic use. Connotation is linked to Text type, for which typographic signification is secondary to the linguistic, experiential metaphor is linked to Display type, for which typographic signification may be of equal or greater importance than linguistic signification. Within these two overarching categories, the signifying functions of typography described in this paper are; purely linguistic; historical, mode and values based connotations; and message embodiment, and sender stylistic metaphors.

These different signifying functions can occur in a variety of instances and contexts, and may be combined in unusual ways. As an example case of typographic signification, Mark Z. Danielewski's experimental novel *House of Leaves*, provides an interesting case. Within this work there are exhibited clear examples of both; mode, historical, and values based connotations, as well as message embodiment and sender stylistic experiential metaphors. These examples illustrate the diversity of potential applications of typographic signification, and reveal the importance of a proper consideration of the semiotic potential of typography.

## References:

- Abel, Richard 2011. *The Gutenberg Revolution: A History of Print Culture*. New Brunswick: Transaction Publishers
- Althusser, Louis 1971. 'Ideology and Ideological State Apparatuses' in *Lenin and Philosophy, and Other Essays*. Trans. Ben Brewster. London: New Left Books, Pgs 127-188.
- Aron, Jacob 2012. 'Higgs in Comic Sans: The Right Font for Physics?' in *New Scientist*. Online: Internet <http://www.newscientist.com/blogs/shortsharpscience/2012/07/comic-sans-at-cern.html> 27th February 2013
- Ban Comic Sans 2013. 'Ban Comic Sans Manifesto' Online: Internet [http://bancomicsans.com/main/?page\\_id=2](http://bancomicsans.com/main/?page_id=2) 26<sup>th</sup> February 2013
- Beyerstein, Barry 2008. 'Barry Beyerstein Q&A' in *Ask The Scientists* Online: Internet [http://www.pbs.org/safarchive/3\\_ask/archive/qua/3282\\_bbeyerstein.html](http://www.pbs.org/safarchive/3_ask/archive/qua/3282_bbeyerstein.html)
- Bradley, Steven 2010. 'Legibility and Readability in Typographic Design' Online: Internet [www.vanseodesign.com/web-design/legible-readable-typography/](http://www.vanseodesign.com/web-design/legible-readable-typography/) 25<sup>th</sup> March 2013
- Carpenter, Kasey 2012. 'Post Mortem: *House of Leaves* by Mark Z. Danielewski' Online: Internet <http://litreactor.com/columns/post-mortem-house-of-leaves-by-mark-z-danielewski> 19<sup>th</sup> May 2013
- Chandler, Daniel 2007. *Semiotics: The Basics*. Second Edition. New York: Routledge
- Chapman, Cameron 2011. 'A Crash Course in Typography: The Basics of Type' Online: Internet <http://www.noupe.com/design/a-crash-course-in-typography-the-basics-of-type.html> 21<sup>st</sup> of May 2013
- Danesi, Marcel 2013. 'On the Metaphorical Connectivity of Cultural Sign Systems' in *Signs and Society*. Volume 1, Issue 1. Pgs. 33-49. Online: Internet <http://www.jstor.org/stable/10.1086/670164> 2<sup>nd</sup> May 2013
- Danielewski, Mark Z. 2000. *House of Leaves*. Second Edition. Toronto: Random House
- Davis, Matt 2003. 'Aoccdrnig to a rscheearch at Cmabrigde Uinervtisy... According to a research (sic) at Cambridge University' Online: Internet <http://www.mrc-cbu.cam.ac.uk/people/matt.davis/Cmabrigde/> 10<sup>th</sup> April 2013
- Dixon, Catherine 2002. 'Typeface Classification' Online: Internet <http://www.stbride.org/friends/conference/twentiethcenturygraphiccommunication/TypefaceClassification.html> 11<sup>th</sup> April 2013

- Fauconnier, Gilles and Turner, Mark 1995. 'Conceptual Integration and Formal Expression' in *Metaphor and Symbolic Activity*, Vol. 10, No. 3. Online: Internet <http://ssrn.com/abstract=1650417> 15<sup>th</sup> March 2012
- French, Matthew 2010. 'Common Fonts Used for Newspaper Design' Online: Internet <http://www.newsdesigns.com/newspaper-design/typography/common-fonts-used-for-newspaper-design/> 26<sup>th</sup> March 2013
- Garfield, Simon 2010. *Just My Type: A Book About Fonts*. London: Profile Books
- Goodenough, Florence L. 1945. 'Sex differences in judging the sex of handwriting' *The Journal of Social Psychology* Volume 22. Issue 1. Pgs 61-68. New York: Routledge  
Online: Internet <http://www.tandfonline.com/doi/abs/10.1080/00224545.1945.9714182?journalCode=vsoc20#preview> 4<sup>th</sup> April 2013
- Hamamoto, Chris 2011. 'Jan Tschichold: Master Typographer' Online: Internet <http://typographica.org/typography-books/jan-tschichold-master-typographer/> 22<sup>nd</sup> January 2013
- Haley, Allan 2013. 'It's about Legibility' Online: Internet <http://www.fonts.com/content/learning/fontology/level-4/fine-typography/legibility> 30<sup>th</sup> March 2013
- Hawthorne, Elise 2010. 'Font Functions in *House of Leaves*' Online: Internet <http://postprintfictions.wordpress.com/2010/03/14/font-functions-in-house-of-leaves/> 10<sup>th</sup> May 2013
- Haynes, Felicity Ann 2002. 'Beyond the Letter; Or the Structure and Strangeness of Creativity in Schools' Online: Internet <http://www.aare.edu.au/02pap/hay02494.htm> February 29<sup>th</sup> 2013
- Hofstadter, Douglas R. 1982. 'Metafont, Metamathematics, and Metaphysics: Comments on Donald Knuth's Article "The Concept of a Meta-font"' Online: Internet <http://www.cs.indiana.edu/pub/techreports/TR136.pdf> 6<sup>th</sup> April 2013  
Also included in, *Metamagical Themas: Questing for the Essence of Mind and Pattern*. New York: Basic Books.
- Hofstadter, Douglas R. 1985. 'Waking Up from the Boolean Dream' in *Metamagical Themas: Questing for the Essence of Mind and Pattern*. New York: Basic Books.  
Online: Internet <http://mind.cog.jhu.edu/faculty/smolensky/050.326-626/foundations%20readings%20pdfs/hofstadter-1985.pdf> 25<sup>th</sup> March 2013
- Hofstadter, Douglas R. 1995. 'On seeing A's and seeing As' in *SEHR*. Volume 4, Issue 2. Online: Internet <http://www.stanford.edu/group/SHR/4-2/text/hofstadter.html> 9<sup>th</sup> April 2013
- Hofstadter, Douglas R. 2000. *Gödel, Escher, Bach: An Eternal Golden Braid*. 20<sup>th</sup>-Anniversary Edition. London: Penguin



Holbo, John 2009. "Typocalypse Now?" The Legacy of Jan Tschichold' in *The Berlin Review of Books*. 9<sup>th</sup> of November. Online: Internet  
<http://berlinbooks.org/brb/2009/11/typocalypse-now-the-legacy-of-jan-tschichold/> 25<sup>th</sup>  
February 2013

Hume, Elizabeth 2011. 'Markedness' Online: Internet [http://www.ling.ohio-state.edu/~ehume/papers/Companion\\_markedness\(proofs\)2011.pdf](http://www.ling.ohio-state.edu/~ehume/papers/Companion_markedness(proofs)2011.pdf) 4<sup>th</sup> March 2013

Jakobson, Roman 1960. 'Closing Statement: Linguistics and Poetics' in Thomas Sebeok eds. *Style in Language*. New York: Wiley

Jarvis, Jeff 2012. 'Not So fast' Online: Internet  
<http://www.google.com/think/articles/not-so-fast-jarvis.html> 20<sup>th</sup> March 2013

Katrina 2010. 'One Element Too Many?' Online: Internet  
[http://www.underconsideration.com/brandnew/archives/one\\_element\\_too\\_many.php](http://www.underconsideration.com/brandnew/archives/one_element_too_many.php)  
25<sup>th</sup> March 2013

Kelly, Robert 2000. 'Home Sweet Hole' in The New York Times. 26<sup>th</sup> of March.  
Online: Internet <http://www.nytimes.com/books/00/03/26/reviews/000326.26kellyt.html>  
12<sup>th</sup> May 2013

Kingsley, Patrick 2012. 'Higgs Boson and Comic Sans: The Perfect Fusion' in *The Guardian*. 4<sup>th</sup> of July. Online: Internet  
<http://www.guardian.co.uk/artanddesign/2012/jul/04/higgs-boson-comic-sans-twitter>  
23<sup>rd</sup> February 2013

Kress, Gunther and Van Leeuwen, Theo 2002. 'Colour as a Semiotic Mode: Notes for a Grammar of Colour' in *Visual Culture*. Volume 1, Issue 3. Pgs. 343-368. London: Sage Publications

Lakoff, George 1987. *Women, Fire and Dangerous Things: What Categories Reveal About the Mind*. Chicago: University of Chicago Press

Lakoff, George and Johnson, Mark 1999. *Philosophy in the Flesh*. New York: Basic Books

Lakoff, George and Johnson, Mark 2003. *Metaphors We Live By*. London: University of Chicago Press

Larson, Kevin 2004. 'The Science of Word Recognition: or How I Learned to Stop Worrying and Love the Bouma' Online: Internet  
<http://www.microsoft.com/typography/ctfonts/WordRecognition.aspx> 13<sup>th</sup> April 2013

Lund, Ole 1999. 'Knowledge Construction in Typography: The Case of Legibility Research and the Legibility of Sans Serif Typefaces' Online: Internet  
<http://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.301973> 15<sup>th</sup> March 2013

Marcus, Leah S. 1995. 'Cyberspace Renaissance' in *English Literary Renaissance*. Volume 25, Issue 3. Pgs. 388-401. Online Internet

[http://discoverarchive.vanderbilt.edu/bitstream/handle/1803/3166/MarcusCyberspaceRenaissance25.3\\_1995.pdf?sequence=1](http://discoverarchive.vanderbilt.edu/bitstream/handle/1803/3166/MarcusCyberspaceRenaissance25.3_1995.pdf?sequence=1) 22<sup>nd</sup> March 2013

McGraw, Gary E. 1995. 'Letter Spirit (Part One): Emergent High Level Perception of Letters Using Fluid Concepts' Online: Internet  
<http://people.cs.kuleuven.be/~joaquin.vanschoren/Flexo/letter%20spirit%20part%201.pdf> 15<sup>th</sup> April 2013

McLuhan, Marshall 1964. 'The Medium is the Message' in *Understanding Media: The Extensions of Man*. Pgs. 7-21. New York: McGraw-Hill

Morris, Errol 2012. 'Hear, All Ye People; Hearken, O Earth (Part 1)' in *The New York Times*. 8<sup>th</sup> of August. Online: Internet  
<http://opinionator.blogs.nytimes.com/2012/08/08/hear-all-ye-people-hearken-o-earth/> 15<sup>th</sup> January 2013

MyFonts 2007. 'American Typewriter' Online: Internet  
<http://www.myfonts.com/fonts/adobe/helvetica/> 22<sup>nd</sup> May 2013

Nørgaard, Nina 2009. 'The Semiotics of Typography in Literary Texts: A Multimodal Approach' in *Orbis Litterarum*. Volume 64, Issue 2. Pgs. 141-160. London: Blackwell

Nöth, Winfried 1995. *Handbook of Semiotics*. Bloomington: Indiana University Press

Nubiola, Jaime 2005. 'Abduction or the Logic of Surprise' in *Semiotica*, Vol. 153, No. 1-4. Berlin: Walter de Gruyter

Peirce, Charles S. 1903. 'Harvard Lectures on Pragmatism' Online: Internet  
<http://www.helsinki.fi/science/commens/dictionary.html> 10<sup>th</sup> May 2013

Peirce, Charles S. 1906. 'Prolegomena to an Apology for Pragmaticism' Online: Internet  
<http://www.helsinki.fi/science/commens/dictionary.html> 2<sup>nd</sup> April 2013

Peirce, Charles S. 1908. 'A Letter to Lady Welby' Online: Internet  
<http://www.helsinki.fi/science/commens/dictionary.html> 3<sup>rd</sup> May 2013

Peirce, Charles S. 1909. 'A Sketch of Logical Critics' Online: Internet  
<http://www.helsinki.fi/science/commens/dictionary.html> 18<sup>th</sup> March 2013

Poole, Alex 2008. 'Which are More Legible: Serif or Sans Serif Typefaces?' Online: Internet  
<http://alexpoole.info/blog/which-are-more-legible-serif-or-sans-serif-typefaces/> 29<sup>th</sup> March 2013

Poole, Steven 2000. 'Gothic Scholar' in *The Guardian*. 15<sup>th</sup> of July. Online: Internet  
<http://www.guardian.co.uk/books/2000/jul/15/fiction.reviews>

Portier, Margaret 2011. 'Typeface Classification' Online: Internet  
<http://margaretportier.files.wordpress.com/2011/06/assignment2.pdf> 20<sup>th</sup> April 2013

- Rehling, John A. 2001. 'Letter Spirit (Part Two): Modelling Creativity in a Visual Domain' Online: Internet  
<http://www.cogsci.indiana.edu/farg/rehling/lspirit/thesis/thesis.pdf> 16<sup>th</sup> April 2013
- Robinson, Sara 2002. 'Human or Computer? Take This Test' in *The New York Times*. December 10<sup>th</sup>. Online: Internet  
<http://www.nytimes.com/2002/12/10/science/human-or-computer-take-this-test.html> 9<sup>th</sup> April 2013
- Rumions, Erin 2001. *Changing Subjects: Gender, Nature and Future in Micah*. London: Sheffield Academic Press. Online: Internet  
[http://books.google.co.uk/books?id=B1iVP2h\\_GOAC&pg=PA52&lpg=PA52&dq=links+between+althusser+and+benveniste+on+language&source=bl&ots=trsstMH2Js&sig=B U7wQE9YL3h2x6HGSldzyij82tk&hl=en&sa=X&ei=3pwCUeifDKyLAgTP-4CACw&ved=0CD4Q6AEwAQ#v=onepage&q=links%20between%20althusser%20and%20benveniste%20on%20language&f=false](http://books.google.co.uk/books?id=B1iVP2h_GOAC&pg=PA52&lpg=PA52&dq=links+between+althusser+and+benveniste+on+language&source=bl&ots=trsstMH2Js&sig=B U7wQE9YL3h2x6HGSldzyij82tk&hl=en&sa=X&ei=3pwCUeifDKyLAgTP-4CACw&ved=0CD4Q6AEwAQ#v=onepage&q=links%20between%20althusser%20and%20benveniste%20on%20language&f=false) 25<sup>th</sup> January 2013
- Saussure, Ferdinand De 1978 [1916]. *Course in General Linguistics*. Translated by Wade Baskin. Third Edition. Glasgow: Fontana/Collins
- Schwemer-Scheddin, Yvonne 1998. 'Broken Images: Blackletter between Faith and Mysticism' in Peter Bain and Paul Shaw eds. *Blackletter: Type and National Identity*. New York: Princeton Architectural Press
- Skaggs, Steven 2013. 'Typology and Typography: Bridging the Type/Token/Tone Distinction'. Online: Internet <http://fashion.semiotix.org/2013/02/typology-and-typography-bridging-the-type-token-tone-distinction/> 25<sup>th</sup> March 2013
- Sorensen, Caspar 2013. 'The Fifth Element' Online: Internet  
<http://medarbejdere.au.dk/administration/kommunikation/branding/designmanualen/omdesignet/femteelement/> 21<sup>st</sup> March 2013 (Translated using Google Translate from the original in Danish)
- Thibault, Paul J. 2007. 'Writing, Graphology and Visual Semiosis' in Terry D. Royce and Wendy Bowcher eds. *New Directions in the Analysis of Multimodal Discourse*. Mahwah: Lawrence Erlbaum Associates
- Tschichold, Jan [1928 original] 1995. *The New Typography: A Handbook for Modern Designers*. Translated by Ruari McLean. Berkeley: University of California Press  
 Online: Internet <http://t-y-p-o-g-r-a-p-h-y.org/MEDIA/PDF/ThePrinciplesoftheNewTypography.pdf> 22nd January 2013
- Typography For Lawyers 1999. 'A Brief History of Times New Roman' Online: Internet [http://www.typographyforlawyers.com/?page\\_id=1411](http://www.typographyforlawyers.com/?page_id=1411) 22<sup>nd</sup> May 2013
- Van Leeuwen 2006. 'Towards a Semiotics of Typography' in *Information Design Journal and Document Design*. Vol. 14, Issue 2. Pgs. 139-155. Amsterdam: John Benjamin's Publishing Company
- Van Leeuwen 2011. *The Language of Colour: An Introduction*. London: Routledge

Von Ahn, Luis. Maurer, Benjamin. McMillen, Colin. Abraham, David. Blum, Manuel. 2008. 'reCAPTCHA: Human Based Character Recognition via Web Security Measures' in *Science*. Volume 321. Online: Internet [http://www.cs.cmu.edu/~biglou/reCAPTCHA\\_Science.pdf](http://www.cs.cmu.edu/~biglou/reCAPTCHA_Science.pdf) 7<sup>th</sup> April 2013

Warde, Beatrice 1955. 'The Crystal Goblet' Online: Internet <http://gmunch.home.pipeline.com/typo-L/misc/ward.htm> 15<sup>th</sup> March 2013

Wells, J.C. 2001. 'Orthographic Diacritics and Multilingual Computing' in *Language Problems and Language Planning*. Vol. 24, Issue 3. Online: Internet <http://www.phon.ucl.ac.uk/home/wells/dia/diacritics-revised.htm> 8<sup>th</sup> April 2013

#### Picture Sources:

Binary Turf 2011. 'Thesis Font Previews - A Visual Guide to Thesis theme Fonts' Online: Internet <http://www.binaryturf.com/thesis-font-previews-visual-guide-thesis-theme-fonts/> 21<sup>st</sup> May 2013

Captcha 2013. 'CAPTCHA: Telling Humans and Computers Apart Automatically' Online: Internet <http://www.captcha.net/> 5<sup>th</sup> April 2013

Chapman, Cameron 2011. 'A Crash Course in Typography: The Basics of Type' Online: Internet <http://www.noupe.com/design/a-crash-course-in-typography-the-basics-of-type.html> 21<sup>st</sup> of May 2013

Fonts Place 2013. 'Dante-PL' Online: Internet <http://www.fontsplace.com/dante-pl-free-font-download.html> 21st May 2013

Wenhardt, Nina 2008. 'Prehysterics of New Media' Online: Internet <http://prehysterics.blogspot.com/2008/07/jodiorg.html> 23rd May 2013

Yahoo 2011. 'Can You Spot the Hidden Images in These Famous Logos' Online: Internet <http://shine.yahoo.com/work-money/can-you-spot-the-hidden-images-in-these-famous-logos-2528093.html> 20<sup>th</sup> April 2013

Resümee

## TÜPOGRAAFILISE TÄHENDUSE TÜPOLOOGIAST

### TOWARDS A TYPOLOGY OF TYPOGRAPHIC SIGNIFICATION

Antud magistritöö on teoreetiline uurimus, mille eesmärgiks on kategoriseerida tüpograafia tähenduslikku potentsiaali. Praegu olemasolevad klassifikatsioonisüsteemid (nt. Vox süsteem), ei ole modernse tüpograafia eri variatsioonidega tegelemiseks piisavad. Seetõttu on käesolevas töös rakendatud mitmeid semiootilisi teooriaid formuleerimaks uut tüpoloogiat, mis ei põhineks tähtede füüsilistel omadustel, vaid võimalikel tüpograafilistel tähenduslikel funktsioonidel.

Semiootika on mainitud töö jaoks pakkunud rohkelt olulisi allikaid: peamisteks käsitlusteks on Charles Sanders Peirce'i kirjutised, eriti tema märgitüübid tüüp (*type*), token (*token*) ja toon (*tone*); disaineri Jan Tschicholdi mõiste skelett-tähestik (*skeleton letters*); Lakoffi ja Johnsoni kontseptuaalsete metafooride teooria ning Theo Van Leeuweni tüpograafia eristatavate tunnuste analüüs. Nende teoreetikute tüpograafiaalaseid ideid on rakendatud vastuvõtuprotsessi analüüsimise raames. Tuginedes antud allikatele on tüpograafilise tähendustamise protsessi nähtud tulenevana kahest põhilisest tajuprotsessi tasandist: konnotatsioonid ja kogemuslikud metafoorid .

Need protsessid ilmnevad omavahel seotud, ent eristatavatel viisidel ja seostuvad interpretatsiooniprotsessi eri tasanditel, seejuures konnotatsioonid ilmnevad automaatselt, kuid kogemuslikud metafoorid eeldavad kontekstipõhist tagasisideprotsessi. Mainitud kaks mehhanismi on seotud kahe tüpograafilise tähendustamise esmatasandiga: teksti tüübiga (*text type*), mille puhul tüpograafiline tähendus on sekundaarne võrreldes lingvistilise tähendusega, ning esitustüübiga (*display type*), mille puhul tüpograafiline tähendus on võrdne või isegi suurema tähtsusega, kui lingvistiline tähendus. Selle põhijaotuse alusel esitatakse töös kuus tüpograafilise tähenduse kategooriat: puhtalt lingvistiline, ajalooline, mudelitel põhinev, väärtustel põhinev, sõnumi konkreetse kujul põhinev ning saatjapoolsed stilistilised metafoorid. Neid funktsioone rakendatakse kategoriseerimise näitlikustamiseks konkreetsel kirjandustekstil, milleks on Mark Z. Danielewski teos "House of Leaves" ("Lehtedest maja").

Non-exclusive licence to reproduce thesis and make thesis public

I, Mark Lemon

-----  
-----  
(date of birth: 8.11.1988 *(author's name)*),

1. herewith grant the University of Tartu a free permit (non-exclusive licence) to:
  - 1.1. reproduce, for the purpose of preservation and making available to the public, including for addition to the DSpace digital archives until expiry of the term of validity of the copyright, and
  - 1.2. make available to the public via the web environment of the University of Tartu, including via the DSpace digital archives until expiry of the term of validity of the copyright,

Towards a Typology of Typographic Signification  
-----  
-----  
-----  
(title of thesis)

supervised by Katre Väli and Gleb Netchvolodov,  
(supervisor's name)

2. I am aware of the fact that the author retains these rights.
3. I certify that granting the non-exclusive licence does not infringe the intellectual property rights or rights arising from the Personal Data Protection Act.

Tartu/Tallinn/Narva/Pärnu/Viljandi, 24.5.2013 *(date)*