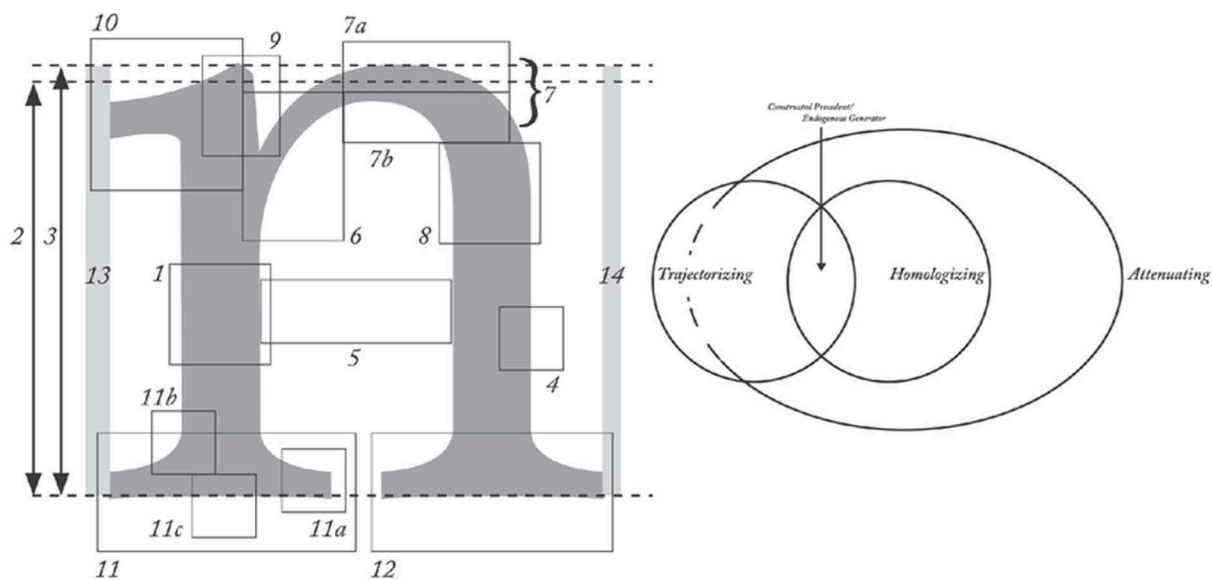


CONTEMPORARY PROCESSES OF TEXT TYPEFACE DESIGN



MICHAEL HARKINS

Contemporary Processes of Text Typeface Design

This book addresses the paucity of published research specifically dealing with knowledge of text typeface design processes.

Dr Michael Harkins uses a Grounded Theory Methodology to render a tripartite theory resulting in explanation and description of the processes of text typeface design based upon the evidence of subject specific expert knowledge from world-leading practitioners, including Matthew Carter, Robin Nicholas, Erik Spiekermann, and Gerard Unger.

The book will be of interest to scholars working in design research, design epistemology, design process, typography, type design, information design and graphic design.

Michael Harkins is Course Leader of MA Graphic Design at the University of Portsmouth.

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Contemporary Processes of Text Typeface Design

Michael Harkins

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Contents

<i>Acknowledgements</i>	viii
1 Introduction	1
<i>Introduction</i>	1
<i>Motivation for the Research</i>	2
<i>Research Questions and Aims</i>	3
<i>Contextual and Historical Framing for the Research</i>	3
<i>Methodology</i>	5
<i>Participants and Data</i>	6
<i>Terminology</i>	6
<i>Chapters</i>	6
2 Historical Context	8
<i>Introduction</i>	8
<i>A Lack of Specific Documented Knowledge in Relation to the Processes of Text Typeface Design</i>	9
<i>Examples of the Restriction of Type-Founding as a Practice and the Secrecy of Punch-Cutting – Contributors to a State of Paucity in Epistemological Articulation</i>	9
<i>Extant Texts in Relation to Typeface Design Process</i>	10
<i>Etic and Emic Accounts in Relation to Type Design Processes</i>	11
<i>Etic ‘Non-Expert’ Accounts of Process and Type Design</i>	13
<i>Emic ‘Expert’ Accounting of Process in Punch-Cutting and Type-Founding</i>	16
<i>Elucidated Understanding, Decision-Making and Described Method in Relation to Type Design Process</i>	17
<i>Describing Design Knowledge</i>	19
<i>Further Considerations of Etic and Emic Accounts</i>	22
<i>Epistemological and Ontological Proximity</i>	22
3 Processes of Text Typeface Design: An Introduction	24
<i>Introduction</i>	24
<i>Presentation of the Grounded Theory</i>	24

vi Contents

	<i>Definitions of Developed Core Categories and Sub-Categories</i>	25
	<i>Core Categories and Their Interrelationship</i>	26
	<i>Summary</i>	27
4	Trajectorizing	28
	<i>Introduction</i>	28
	<i>Trajectorizing</i>	28
	<i>Contextualizing</i>	30
	<i>Contextualizing Initial Influences – Broad to Focusing</i>	31
	<i>Contextualizing Specifically through Language</i>	34
	<i>Contextualizing via Specific Influences and Precedents</i>	35
	<i>Referencing Own Prior Work as Precedent</i>	39
	<i>Precedent Constructing and Constructed Precedents</i>	41
	<i>Precedent Constructing from Own Prior Work</i>	42
	<i>Precedent Constructing from Other Prior Work</i>	46
	<i>Control Characters and Constructed Precedents</i>	52
	<i>Summary</i>	54
5	Homologizing	56
	<i>Introduction</i>	56
	<i>Homologizing</i>	58
	<i>Endogenous Generation and Endogenous Generator</i>	58
	<i>Homologizing – Procedural Development and Mutability</i>	59
	<i>Homologizing beyond Obvious Relational Form</i>	64
	<i>Homologizing – Facilitating Self-Informing Design</i>	65
	<i>Homologous Mapping and Homologous Drift</i>	68
	<i>Homologizing – Extrapolation and Interpolation</i>	69
	<i>Synthetic Displacement and Synthetic Acquiescence</i>	72
	<i>Summary</i>	76
6	Attenuating	79
	<i>Introduction</i>	79
	<i>Attenuation</i>	79
	<i>Accretive Amelioration</i>	81
	<i>Attenuation of Incongruity through Testing</i>	81
	<i>Attenuation via Comparison</i>	83
	<i>Attenuation via Developed Corrective Judgment</i>	85
	<i>Attenuation and Improvement</i>	87
	<i>Historical Immersion</i>	89
	<i>Innate Referencing to Historical Context</i>	89
	<i>Direct Referencing to Historical Context</i>	90
	<i>A Broad View of Convention in Relation to Historical Context</i>	92
	<i>Specifics of Convention in Relation to Historical Context</i>	94
	<i>Historical Immersion Summary</i>	96

	<i>Envisioning</i>	96
	<i>Experience and Envisioning</i>	96
	<i>Envisioning a Personal Approach</i>	98
	<i>Envisioning and Originality</i>	100
	<i>Autonomy and Overseeing in Design</i>	101
	<i>Envisioning Context and Usage</i>	104
	<i>Reflection, Envisioning and Attenuating</i>	105
	<i>Envisioning Summary</i>	107
	<i>Summary</i>	107
7	Discussion	109
	<i>Introduction</i>	109
	<i>Interaction of the Core Categories</i>	110
	<i>Attenuation as Constant</i>	112
	<i>Attenuation and Comparison</i>	113
	<i>Trajectorizing and Precedent</i>	114
	<i>Trajectorizing for Subsequent Homology – Initial Control Characters</i>	118
	<i>Trajectorizing and Search Space</i>	121
	<i>A General Model for Text Typeface Design Process</i>	123
	<i>A General Flow Model for Text Typeface Design Process</i>	123
	<i>Trajectorizing in Relation to the General Flow Model</i>	123
	<i>Homologizing in Relation to the General Flow Model</i>	125
	<i>Models for Extrapolation and Interpolation</i>	126
	<i>Potential Applications of the Theory</i>	129
	<i>Theory as Analytical Tool</i>	129
	<i>Theory as Prescriptive Tool</i>	130
	<i>Summary</i>	130
8	Conclusion	131
	<i>Introduction</i>	131
	<i>The Original Aims and the Contributions of This Research</i>	131
	<i>Limitations of the Research</i>	132
	<i>Implications of the Research</i>	133
	<i>The Literature in Terms of Text Typeface Design</i>	133
	<i>Further Work</i>	133
	<i>In Summary of the Grounded Theory</i>	135
	<i>Appendix: List of Codes and Definitions</i>	138
	<i>Glossary</i>	141
	<i>Bibliography</i>	145
	<i>Index</i>	153

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1 Introduction

Introduction

Although many contemporary works account for processes of printing and typography, the processes of text typeface design still remain relatively unexplored and unexplained. Some glimpses, insights and part accounts document the personal views and methods of designers toward text typeface design (e.g. Dwiggins, 1940; Goudy, 1940). Karen Cheng's (2005) book *Designing Type*, claims that it 'explains, in detail, how to design characters into a set of unified yet diversified forms' (p. 7). However, the book's core themes are formed around a comparative analysis of existing typeface glyphs with some commentary toward a methodological approach. It does not deal with knowledge of process to any great extent. The lack of documented knowledge with respect to text typeface design will be discussed further in Chapter 2. Little exists that attempts to address a methodological approach to typeface design in terms of research, specifically relating to knowledge of what text typeface designers do, why they make the decisions they make in designing typefaces, how they account for them and how they can be rendered as explication of process or processes. The current research is a response to this lack and presents developed theories, based upon analysis of knowledge in relation to interviews with world-leading text typeface design experts that were conducted specifically for this purpose.

Text typefaces are specifically designed to work optimally for the setting and reading of continuous text, for example, types set as the reading matter within book, newspaper, magazine and journal design, etc. The typical range of sizes at which text types would be considered for continuous reading are usually small sizes. Such sizes would normally be somewhere between 7pt and 14pt, depending upon the design of the typeface. Sans serif typefaces typically appear larger on the body in design than serif type designs and, therefore, are usually set at smaller sizes in text than serif types. Typefaces designed for use above these sizes (i.e. above 14pt) would generally be considered for display setting purposes only.

The focus of this research relates to knowledge associated with typeface design experts, what they do and the decisions they make in creating text typeface designs. Data is derived by way of testimonies via in-depth interviews with world-leading experts in the field. The use of experts in this sense is advocated by the likes of Nigel Cross (2007, p. 85) in terms of developing a greater understanding of design knowledge generally. The focus therefore is related to knowledge of the decision-making and actions of the expert – the processes of design. However, the author

2 *Introduction*

does acknowledge that by virtue of the fact that the participants of this research are experts in their field, the collected data pertains specifically to expert perspectives of typeface design. Although this may be perceived to create something of a tautological bind between epistemology and ontology, it is intentional in this research to study expert knowledge. It is not the intention to separate knowledge of process from expertise in this study.

This research adopts a Grounded Theory Methodology (Glaser & Strauss, 1967) as a simultaneous method of enquiry and analysis toward collected data in order to develop theory. This allowed for an emergent and inductive model of research enquiry to develop. Grounded Theory Methodology fits with the aims and objectives of this research in that ‘Essentially, the methodology is most commonly used to generate theory where little is already known, or to provide a fresh slant on existing knowledge’ (Goulding, 2002, p. 42).

Although research conducted in respect to design process has been established in other design domains, such as architecture (e.g. Akin, 1986; Darke, 1979; Eastman, 1970; Lawson, 1997); engineering design (e.g. Bucciarelli, 1994; Marples, 1960); industrial/product design (e.g. Cross, Christiaans, & Dorst, 1996); urban design (e.g. Levin, 1966), there is a specific lack of research regarding knowledge of the text typeface design process.

The research described in this book is intentionally limited to the collection and analysis of testimony from type design experts; the collected testimony discusses and describes designing with respect to Latin category typeface design – the basic Latin script used as the standard character set for most Western and Central European language bases. Such design in turn is found in other derived language bases worldwide. Further study that draws from this research in order to explore design for forms of non-Latin font language bases may be potentially useful.

This book accounts for research that results in a developed Grounded Theory and resolves in three core categories along with sets of sub-categories and dimensions (Glaser, 1978). Each of the theoretical propositions is raised from and grounded by data. The core categories are Trajectorizing, Homologizing and Attenuating. These identify and explicate significant characteristics pertaining to the collective expert participants’ knowledge of practice.

In terms of contribution to knowledge and in answer to the research aims, this enquiry provides theoretical renderings of text typeface design knowledge in the form of these three main areas rendered as Grounded Theory core categories. This research also contributes knowledge in terms of the unique collection of interviews produced as part of the research enquiry.

Motivation for the Research

The lack of research in the subject area (discussed further in Chapter 2) presented the opportunity to conduct a study that would contribute to knowledge in terms of establishing research relating to text typeface design process. It was also envisaged that such a study would allow subsequent research to develop.

The identification of the gap in knowledge leading to this study partly developed from the author’s interests as a design educator, as well as from his prior education and design interests in the area of typeface design and typography. He observed

there appeared to be little to consult with regard to the rationale of decision-making and the drawing and rendering of form relating to text typeface design.

An additional key motivation for this research was that it would benefit future research, practice and teaching in the subject area by means of establishing a research-based view of the processes of text typeface design. It was anticipated that such explication of process would also help establish formal descriptions of knowledge in the area, which in turn would aid toward professionalising such specialist subject knowledge.

Research Questions and Aims

Initial questions with regard to this study were based upon such thoughts as: Why was there a lack of recorded knowledge? What kinds of knowledge appear lacking? How would acquiring such knowledge be best approached? Who would hold such knowledge in order to address the problem? In relation to text typeface design process, this study is concerned with a main research question:

Can knowledge of text typeface design process be revealed and if so can this be explicated theoretically?

In relation to the questions and concerns of this enquiry, the aims of this research are as follows:

1. To reveal and describe processes of text typeface design from accounts given by type design experts.
2. To evaluate whether it is possible to construct theory or theories of type design process from the accounts of practice and procedure given by type design experts.
3. To offer possible, descriptive and/or generative theory/theories that will allow further study to develop in the area of text typeface design process as well as informing practice.

Contextual and Historical Framing for the Research

Often perceived as related to the subject domain of typography, typeface design is a specialist area that concentrates on the designing of letterforms, characters or glyphs conceived to work in relation to one another within specifically designed sets. These are, in turn along with spacing, designed relative to the glyphs, presented as a group of accessible functioning entities in the form of a font. Currently and overwhelmingly, these are in the form of fonts delivered as small computer software packages.

Text typeface design seemingly poses a somewhat paradoxical initial problem for the designer – in order to begin to see how a typeface may become whole, a designer must begin with looking at detail first by way of individual character design or details of character designs. Ultimately, a typeface must work on both micro and macro levels simultaneously – on the level of detail of the individual characters that make up that typeface and on the level of how these individual characters appear and behave when combined with spacing to form words, sentences and paragraphs.

4 *Introduction*

Text type designers must also work within obvious constraints. This enquiry relates to the Latin character set. There are constraints of adherence to forms recognisable as accepted letterforms for use within a given range of language settings/expectations. There are also constraints that govern issues relating to the legibility and readability of characters when set as words and sentences at small reading sizes. Text typeface design must adhere to particular norms for any given group or set of languages a character set may be deemed appropriate to represent. Therefore, there is something of a notional precedent in relation to acceptable form imposed upon the design problems from the outset.

The constituent parts that make up a typeface design must work independently of each other but also harmoniously in any possible combination. These may include various glyphs: letterforms (both lower and uppercase), numerals, punctuation, diacritical marks, symbols and any associated spacing required in order that glyphs are positioned appropriately in relation to each other when in use. Therefore, this research interrogates expert designer knowledge of the design process in relation to designing and/or making of text typefaces. The study does not concentrate per se on the creative or conceptual development processes toward letterform design. Neither is it concerned with the design of types intended exclusively for use as display types, individual letter designs or lettering and calligraphy etc. This research is concerned, however, with knowledge in relation to developing letterforms or indeed generalizations regarding the designing and development of letterforms that are intended to be part of a set or group of associated forms that will in turn become a text typeface design.

Early works relating to the subject of devising types also account for the crafts and trade of punch-cutting and type-founding (Fournier, 1995; Moxon in Davis, & Carter, 1958). Of these early activities and professions, the punch-cutting of letters was regarded as one of the more highly skilled, if not the most highly skilled, crafts. It is also acknowledged that distinct divisions of labour existed in association with such activities (De Vinne, 1900, p. 11). Punch-cutters worked in minute detail to punch, counter-punch and engrave the ends of steel bars in order to make reversed letterforms that, when struck into a softer metal such as copper, could be used as a matrix (Southall, 2005, pp. 3–4). This matrix would then be incorporated into a mould in order that a single lead type might be cast from it, these types being cast one at a time (Moxon et al., 1958, pp. 134–184). The process of punch-cutting and casting the moulds would have to be repeated for every individual letter or character needed to create a font of type, each related by the characteristics commonly recognised as being distinctive to any given particular typeface or design.

Divisions of labour between the various stages in the process and manufacture of types meant that the design of letters, the cutting of punches and the casting of types could be conducted by different workers. However, prior to the late nineteenth century and the invention of photographic transfer, there was no method to reduce the design of model letters to appear at text size on the ends of the small steel bars from which punches could be made (Southall, 2005, pp. 13–17). Early designs could only be used as a guide and would need to be interpreted by the skill of the punch-cutter.

By the end of the nineteenth century, the move toward industrial mechanisation in many areas meant the cutting of punches by hand was supplanted by mechanised methods of production (De Vinne, 1900, pp. 348–350). This move toward

industrialisation brought with it a clearer separation in the division of the designing and making of type (Southall, 2005, p. 19). Drawings relating to the designing of types became less of a guide, as was the case of model letters for the earlier hand punch-cutters; from this point they become the machine pattern or specification of the final letter designs for types.

As technologies advanced with time, the manufacture and use of metal type eventually gave way, by and large, to photo-type and typesetting. The designing of types or what could be described as the type-image became closer still to what would appear as the final form or delivered image of the type. Within the last few decades, digital type has become the common form of reproducing typographic matter for print and on-screen renderings. The removal of the image of the letter as photographic film from the process of production has meant that designers today are working with digital media with the forms of letters directly within the medium in which they will be delivered. Today the type designer is able to work with outline Bezier curves and/or coding/programming, producing outline digital type-forms as they may appear in final products – the digital drawings become the resultant typefaces within a font. This affords contemporary typeface designers to work more closely in connection with the delivered form or product of their design than at any other time.

Methodology

This research adopts a qualitative Grounded Theory (Glaser & Strauss, 1967) approach as a general method. This is a simultaneous method of enquiry and analysis toward collected data in order to develop theory. An initial ‘key informant’ (Goulding, 2002, p. 60) was utilized to initiate and orient the data collection; this facilitated continued ‘theoretical sampling’ (Glaser & Strauss, 1967), where sampling is determined on the basis of the emerging data, analysis and theory development in accordance with Grounded Theory Methodology. Comparisons and differences from the given expert accounts focus the analysis in relation to developing description and theory that elucidates contemporary expert text typeface design practice. It is anticipated that the Grounded Theory generated in this study will aid in the future description and articulation of text typeface design process. This may prove to be of value in terms of a descriptive and generative nature in approaches to practice, education and further research enquiry.

This research began with what the author identified as an emergent ‘sensitized’ (Given, 2008, p. 246) focus in relation to a lack of recorded expert knowledge. Grounded Theory Methodology involves systematic but nonlinear processes. These include the collection and coding of data via theoretical sampling and analysis by means of constant comparison leading to raising concepts that become theory through the method of memoing. In turn, this leads to developing theoretical categories, the sorting of categories and the writing up of research. This process has resulted in three significant theoretical renderings as ‘core categories’ that describe specific aspects of text typeface design process. These are Trajectorizing (Chapter 4), Homologizing (Chapter 5) and Attenuating (Chapter 6).

Participants and Data

The sample for this research consists of high-profile text typeface design experts. The participants were selected in accordance with Grounded Theory Methodology ‘theoretical sampling’ (Glaser, 1978, p. 36). The focus on such expert participants within this study was in order that insight to their knowledge of text typeface processes could possibly yield richer descriptions of understanding and articulations. The use of experts in this sense is advocated by Nigel Cross in developing a greater understanding of design knowledge generally: ‘In some instances it will be necessary to study outstanding, or exceptionally good designers. This is analogous to studying chess masters, rather than chess novices ...’ (Cross, 2007, p. 85). The use of experts allows their voices to be heard in relation to the aims of this enquiry via Grounded Theory Methodology. Developed theory and descriptions thus arise from, and are grounded by, expert participant testimony.

The interviews conducted as part of this research enquiry form a unique contribution to knowledge in themselves as a body of ‘rich data’ (Silverman, 2006, p. 110). Twelve in-depth interviews with nine participants totalling approximately fifteen hours of recorded, transcribed, coded and analysed data from which theory is developed was utilised in this study. All interviews were recorded as high quality digital video. From these, all interview dialogues within the video recordings were transcribed by the author. These were duly coded and analysed according to Grounded Theory Methodology. This in turn helped organise and manage the higher order theory development that emerges from this research.

Terminology

Some of the terminology within this book is comprised of specialist language around three main areas. These are Type and type design, this includes what may be deemed professional language and nomenclature related to letterforms and parts of letterforms; Grounded Theory Methodology, this includes some expansion on the definition of terms; and finally Terms for the theory generated in this research. This will give an overview of the theoretical labels devised in rendering theory specific to this research. It must be noted by the reader that the theoretical terms generated within this enquiry are developed to delineate the specific concepts they represent. It was the author’s intention not to align such terms with terms of current practice per se. This was in part to abstract and make clear often nuanced knowledge phenomena that emerged from the research. It is anticipated that as research in this area develops further, clarity and consensus will emerge with regard to research and practice nomenclature. A glossary of terms has been included toward the end of this book.

Chapters

This book is comprised of eight chapters as outlined below:

Chapter 1 – Introduction

This chapter introduces the research report by means of contextualization. It introduces the research aims, outlines the background against which the

research theme developed and gives direction as to how the research report is structured.

Chapter 2 – Historical Context

This chapter considers the problem of a history of paucity in the context of recorded knowledge in terms of the literature and how this pertains to the identified research theme. This chapter includes a discussion of the perspectives from which accounts of practice have been written with respect to the history of the subject matter.

Chapter 3 – Processes of Text Typeface Design: An Introduction

This chapter introduces and presents the Grounded Theory overview developed in this research, including inductively generated core categories, sub-categories and substantive coding, whilst grounding the theoretical descriptions in relation to the collected primary data. This chapter gives an overview and context for the subsequent chapters.

Chapter 4 – Trajectorizing

This chapter provides theoretical explication as to how the text typeface designer initiates, negotiates and directs the early stages of text typeface design.

Chapter 5 – Homologizing

This chapter provides theoretical explication concerning actions and decisions relating to developing relational qualities within the emerging forms of text typeface design.

Chapter 6 – Attenuating

This chapter provides theory describing the ways in which expert designers continuously and critically test and adjust for incongruity in developing text typeface designs.

Chapter 7 – Discussion

This chapter discusses the core categories presented in the three previous chapters. This discussion includes the relationship and interrelationship of the main themes that arise within the categories. Aspects from the literature relevant to the developed theory are also discussed alongside additional relevant references from the data. The Grounded Theory is also extended to provide visual modelling in the form of diagrams that give an overview of text typeface design process.

Chapter 8 – Conclusion

This chapter summarizes and states the contributions made by this research. This summary includes how the contributions align with the initial aims of the research. This chapter also considers possible future implications of the Grounded Theory developed in this enquiry. Indicated are the possible implications and opportunities the theory may offer and support in terms of future research, pedagogy and practice.

2 Historical Context

Letter-cutting is a Handy-Work hitherto kept so conceal'd among the Artificers of it, that I cannot learn any one hath taught it any other; But every one that has used it, Learnt it of his own Genuine Inclination.

Joseph Moxon – *Mechanick Exercises on the Whole Art of Printing*
(1683–84) (Davis & Carter, 1958, p. 87)

Introduction

Type design is often a lengthy and solitary endeavour on the part of the designer, an endeavour in which there is little in terms of guidance to draw upon regarding the processes involved. Few books or resources exist detailing the processes of this subject – this is both an historical and a contemporary problem.

There exists, to date, no contemporary single reference showing a range of processes of type design that identifies and details a range of working practices from a range of designers, including their explanations of and reflections on these processes. This is especially true for the design of text typefaces, in which considerations of design must be treated with great care in relation to the functionality of type; it must appear legible and optically stable at small reading sizes.

General anecdotal accounts can be found within professional graphic design and typographic publications and online accounts of many typeface designers claiming to be self-taught. Many typeface designers also regard themselves primarily as graphic or typographic designers. However, there is currently a healthy commercial type industry served by many proprietary and independent type foundries.

In relation to type and typography, there is a substantial body of work to draw upon in other aspects, such as legibility, technology, history, biography, culture and the visual form of type itself. This chapter will first outline and examine significant contributions to knowledge regarding type design process and how this has been accounted for. Second, studies of knowledge in relation to the wider field of design will be discussed. Third, accounts of design process and knowledge relating to a wider field or design research will be examined.

These areas have a bearing on the research based theory presented within this book; subsequent chapters will focus on elucidation of knowledge with respect to text typeface design processes.

A Lack of Specific Documented Knowledge in Relation to the Processes of Text Typeface Design

A lack of published material relating to typeface design is acknowledged by the marketing claim for the textbook *Designing Type* by Karen Cheng:

The lack of a specific and comprehensive guide to type design has long been a frustration for typographers, graphic designers and students. *Designing Type* finally addresses this important need – and brings new depth and insight to the art and process of creating a typeface.

(Cheng, 2005)

Cheng's textbook contains some useful information for the grouping of some related letter shapes. However, it is questionable whether this brings insight and depth in terms of the process of designing typefaces. The book's core themes are based around the comparative analysis of existing typeface glyphs with some commentary of methodological approach.

Published work that offers some insight into detailed aspects of the text typeface design processes involved appears in some sole-authored books (e.g. Gill, 1931/2007; Unger, 2018; Van Krimpen, 1957) or as features within trade journals (e.g. *Typografische Monatsblätter* and ITC's *U&lc Magazine*). The latter tended to coincide with the release or publication of typefaces/fonts from the foundry and also acted as a promotional vehicle.

None of these works deals directly with establishing and describing a range of contemporary design processes relating to text type design derived from a specific research enquiry perspective. They often offer historical or retrospective views, describing specific details relating to aspects of designing type or the manifest design of types themselves.

Examples of the Restriction of Type-Founding as a Practice and the Secrecy of Punch-Cutting – Contributors to a State of Paucity in Epistemological Articulation

In connection with type design, the earlier related activity of type-founding suffered restrictive measures placed upon it by the state. There are also accounts of type-founders purposefully concealing methods of practice from those who worked around them (Johnson, 1952, p. 311; Reed, 1887).

In the UK, for example, restrictions in terms of the numbers of type-founders allowed to openly practice, along with restrictions of who they could employ and in what capacity, meant that type-founders could not, or would not, be able to freely communicate their knowledge regarding the processes of punch-cutting for making types. The Star Chamber Decree of 1637 detailed restriction in the number of type-founders in England to four. The maximum number of apprentices type-founders could have under their employ was restricted to two (Johnson, 1952, p. 120; Reed, 1887). The decree imposed in the UK was regulated by the Stationers' Company London and the law courts and was based upon an earlier decree of 1586. The Decree of 1637 was a measure to restrict activity of printing and type-founding and as a consequence the knowledge that would have accompanied this.

An anecdotal account by Reed (1887) in connection with the secrecy of punch-cutting from the mid-1700s is given with regard to Joseph Jackson, apprentice to William Caslon I. Caslon's punch-cutting was carried out in secret at the Chiswell Street foundry. The account relays that Caslon and his son would lock themselves in a separate room whilst practicing the work. Apparently, so much was Jackson's desire to learn about the process that he bored a hole in the wainscot to observe his master at work. From his observations, Jackson was able to apply himself to the practice in his own time, and on the completion of creating a single punch, presented this to his master in the hope to find praise and reward. Caslon's response was the dispensation of a hard blow to the apprentice and threatening him that he would be sent to 'Bridewell' (at the time both a court and prison) if a similar attempt was made (Reed, 1952, p.311).

The restrictions imposed by the 1637 Star Chamber Decree and the above account of Joseph Jackson implies that meaningful knowledge and methods in relation to a process did or could exist with regard to punch-cutting. As such, these methods etc. of process could be observed, taught and communicated. However, this is not to say that mastery of the subject could necessarily be expedited in such a manner.

In the later edited, full version of Moxon's *Mechanick Exercises*, Davis and Carter give brief historical accounts of imparting knowledge relating to punch-cutting (Davis & Carter, 1958, p. 375). However, it is not made clear how such knowledge was passed on, only that such activity is known to have existed historically.

Extant Texts in Relation to Typeface Design Process

Of the literature that offers insight to aspects of process of typeface design, these do so from an historical perspective: *Letters of Credit* (Tracy, 1986) gives some important insights into some aspects of processes of typeface design particularly on spacing letters. However, the content here is significantly historical and does not offer theory toward the development of form. Smieijers (1997) *Counterpunch* contains some thoughts toward issues regarding handling form and ground and the relative balancing of positive and negative space within and between letterforms – issues that transcend technologies employed in the designing of typefaces. Smeijers also draws heavily from the writing of Fournier, at times setting aspects of this to the practice of punch-cutting as part of his contemporaneous investigation. Southall's (2005) *Printer's Type in the Twentieth Century* describes some elements of the processes of type design. However, here the view is heavily based on the role of technology over a specific period in history.

None of the above works deal directly with establishing and describing a range of contemporary design processes relating to text types. They offer historical or retrospective views, describing some specific details of form relating to type design.

Where information relating to the subject does exist, it is usually limited and/or incidental in nature (De Vinne, 1900; Earls, 2002; Graß, 2008; King, 1999; Klein, Schwemer-Scheddin, & Spiekermann, 1991; Tracy, 1986); this is often contained in or found alluded to within books that cover a wider or broader scope including lettering (Harvey, 1996; Kapr, 1983; Noordzij, 2000, 2005). There is usually an emphasis on historical factors relating to type design (Johnson, 1966; Morison, 1926; Updike, 1937), changes, developments and paradigm shifts in technology

(Karow, 1998; Knuth, 1986; Morris & André, 1991) and/or biographical accounts (e.g. Burke, 1998; Carter, 1995; Lommen, 2003; Macmillan, 2006). Other texts offer glimpses of fixed or ideological perspectives from the point of the practitioner/author (Gill, 2007; Goudy, 1940; Hartz, 1958; Unger, 2005; Van Krimpen, 1957), including reflections on methods employed in practice itself (Briem, 1998–2001; Harvey, 1996), those that relate specifically to the use of particular technologies (Karow, 1998; Knuth, 1986; Lemon, 2005; Moye, 1995; Sassoon, 1993, 2002) and accounts that relate to specific aspects of form or visual qualities in type (Carter, 1937; Detrie, 1999; Hersch, 1993).

Of studies of printing and type-founding that make reference to process, three early substantial accounts exist: Moxon's 1683 *Mechanick Exercises* (Davis & Carter, 1958), Pierre Simon Fournier's 1760s *Manuel Typographique* (Carter & Mosley, 1995) and Legros and Grant (1916) *Typographical Printing Surfaces*. Aspects of these accounts are important to consider for some particular details and in relation to each other because they allow us insight into the perspectives from which they were written; these will be considered in further detail below.

Etic and Emic Accounts in Relation to Type Design Processes

Anthropologist-linguist Kenneth L. Pike (1967) coined the words etic and emic from the words phonetic and phonemic, in relation to his 'Tagmemic Theory' (Pike, 1967). The concepts of etic and emic have since found application in subject domains such as Ethnology and Psychology. Pike describes etic and emic as:

The etic viewpoint studies behavior as from outside a particular system. The emic viewpoint results from studying behavior as from inside the system.
(Pike, 1967, p. 37)

And in terms of partial versus total data:

Etic data are obtainable early in analysis with partial information. In principle, and on the contrary, emic criteria require a knowledge of the total system to which they are relative and from which they ultimately draw their significance.
(Pike, 1967, p. 39)

An expert in any given field can then be said to inherently have an insider perspective in their subject. Conversely, the non-expert, who lacks the depth of skill and knowledge of the expert, will have an outsider perspective.

It is useful to consider Pike's view of the etic and emic in relation to the literature that exists with respect to text type design. Accounts that do exist in relation to text typeface design come either from the 'inside' expert view of the type designer or from the 'outside' non-expert view of the observer. A tension exists here similar to that commented upon within areas of social science and anthropological research:

For what the social scientist realizes is that while the outsider simply does not know the meanings or the patterns, the insider is so immersed that he may be oblivious to the fact that patterns exist.

(Wax, 1971, p. 3)

12 *Historical Context*

It is the social scientist's task to work between such etic and emic viewpoints in order to communicate and illuminate what has been learned. Patton (2002) comments:

Experiencing the setting or programme as an insider accentuates the participant part of participant observation. At the same time, the inquirer remains aware of being an outsider. The challenge is to combine participation so as to become capable of understanding the setting as an insider while describing it for the outsider.

(p. 268)

Consideration of the above may highlight some ways toward an understanding of why there is a dearth thus far in describing the text typeface design process. The immersed (subject specific) insider could be considered too close to specific details and problems in relation to the activity to see clear ways of making meaningful generalizations of the process of type design. It is not only what is done (i.e. procedure) that needs to be explained, but also how and why things are done in relation to this.

Although typeface design is a complex and often lengthy practice, it can often be difficult even for those involved in seemingly related fields (e.g. graphic design and typography) who work closely with type within design contexts to appreciate such 'meanings' and 'patterns' as alluded to by the likes of Wax and Patton when describing issues concerning observations in social science.

Type design, although a specialist activity in its own right, can perhaps also be perceived as a discipline within disciplines, an activity that serves the broader specialist areas of typography, graphic design, communication design, media and communication technologies, etc. To an outsider, there is perhaps a certain sense of invisibility that discrete specialist activities such as typography and type design exist independently and interdependently, when superficially these would appear to be so closely related they appear as being one and the same area of activity and knowledge.

A distinction between perspectives can be illustrated by a criticism made by the Dutch writing master and type designer Gerrit Noordzij against Daniel Berkerly Updike with regard to what is considered by many to be an authoritative history of type designs, first published in 1922 – *Printing Types: Their history, form and, use; A study in survivals*:

The judgement of Updike is amazing and perhaps, if you would happen to enjoy a very special sense of humour, even amusing, but everywhere it demonstrates painfully the absence of the most elementary understanding of type design and its history.

(Noordzij, 2000, p. 63)

Noordzij makes this statement from the perspective of having a life and career immersed in the creation of letterform, type design and teaching. Although his own typefaces are not widely published, he draws upon his expert knowledge in his criticism of Updike.

Noordzij's knowledge of type design from the perspective of a type designer puts him at odds with Updike's view of type design as a type historian and printer. Although appearing closely related in terms of subject and discipline, the world-views of this particular type designer and historian differ. Noordzij's insider perspective does not align with Updike's outsider view on the subject area.

Etic ‘Non-Expert’ Accounts of Process and Type Design

Some well-established accounts of process that include letterform and type design have been made from the perspective of observed practice. These at times, sought to improve upon what existed regarding accounting for practice, with the intention of influencing and improving practice itself.

Joseph Moxon’s *Mechanick Exercises*, detailing printing and type-founding, was originally published as part-works that began to be issued in 1683. This was the second volume of his ‘works’, the first being devoted to other trades appeared during 1677 and 1678. According to Davis and Carter (1958), the book is the earliest known manual of printing in any language that accounts traditional knowledge associated with the practice and pre-dates any other by forty years (p. vii).

Within *Mechanick Exercises* (Davis & Carter, 1958), Joseph Moxon assumes a scholarly perspective, giving in-depth observational accounts regarding the whole art of printing. What Moxon describes in relation to type are the processes of letter-cutting; the processes of designing the letterforms are not explored to any great extent. However, what does appear in relation to letterform design (Figure 2.1) is clearly based upon an earlier book by the same author, intended to instruct the reader on the construction of letters by the use of geometry – *Regulae Trium Ordinum Literarum Typographicarum* (Moxon, 1676) (Figure 2.2). This in turn, references the work of Albrecht Dürer’s *Underweysung der Messung, mit dem Zirckel und richtsheyt* – 1525 (Dürer, 1535/1965), which also uses geometry as a method in constructing letterform (Figure 2.3).

Rather than an account based on expert subject knowledge, Moxon offers forced, fixed constructs as to how letters should be designed. His views are based upon his observations of the letterforms he deems to be the work of an expert, namely Christophel Van Dijk. Moxon’s descriptions of letterform are fixed by a grid system of 42 squares and complex geometry. These fixed exemplars highlight Moxon’s lack of expert knowledge in this area. There is no account within Moxon’s work of how the transference of the detailed geometry of such drawings would relate to producing

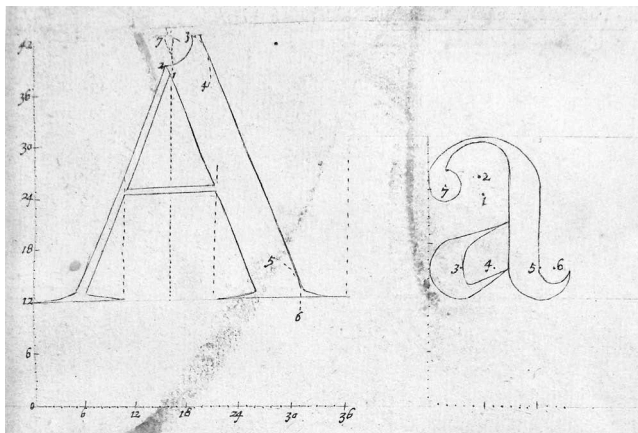


Figure 2.1 From Moxon’s *Mechanick Exercises* (1683). This can be seen as an adaptation from *Regulae Trium, etc.* (1676).



Figure 2.2 An example from Moxon's treatment of letterform description in *Regulae Trium Ordinum Literarum Typographicarum* (1676).



Figure 2.3 From Dürer *Unterweysung der Messung*, etc. (1525).

punches in steel. Punches needed to be chiselled and counter-punched from the end of a small steel bar in order that a text size letter could be produced.

This early form of what may be described as etic accounting and attempting to fix knowledge is also to be found in the work of the French Académie of Sciences. Six years prior to Louis XIV's reorganisation of the Académie in 1699, a working party was set up and given the task of organising the *Description des métiers*, to describe all the techniques used in the practice of the arts. The first of these was the art of printing. From this eventually came the description and apparent improving of the construction of letterforms intended for use in printing. These letterforms appeared in the form of engravings of model letters onto copperplate. Eventually, a grid structure of 2304 squares was adopted (Figure 2.4) along with complex geometry to construct the letterforms (Jammes, 1965). The first punches cut by Grandjean in 1699, for the Romain du Roi types, are based on Simonneau's early copperplate engravings of 1695. Fournier comments that Grandjean modified the designs considerably, at times disregarding them completely in creating the punches for the Romain du Roi (Fournier, 1995, p. 10). However, accounts given of the work in association with the Romain du Roi, along with the engravings created as model letters, do not reflect expert knowledge of the practice in terms of process, but rather seek to superficially fix description of form by means of geometry in relation to letter design. The intention here being – similar to

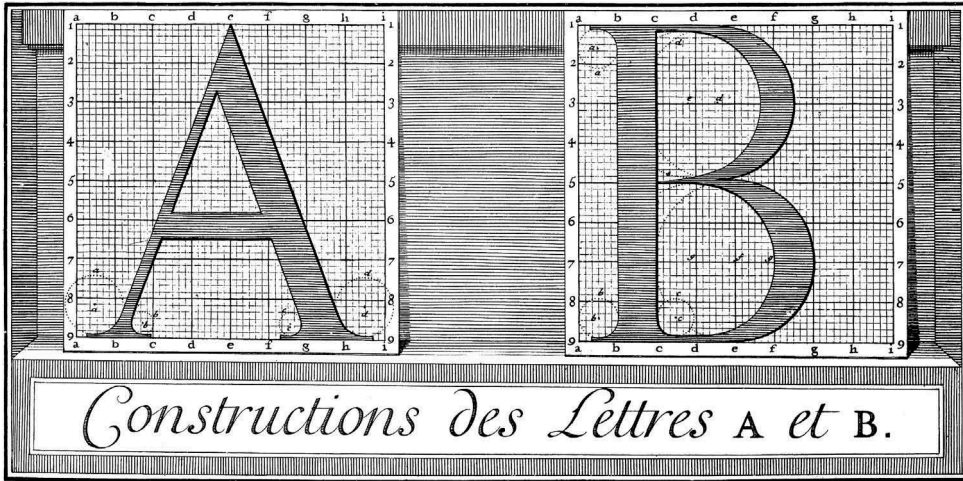


Figure 2.4 An example of the 2,304 square grid structures engraved by Simonneau for the model letters.

that of Moxon – that this would provide a rational, or measurable, scientific basis from which types could be created. Again, as with the case of Moxon, there appears no evidence that such detailed geometry was of any use to the making of the letterforms in terms of how these would manifest from punches for types.

A further major account that appears to give an etic perspective can be found in Legros and Grant (1916) *Typographical Printing Surfaces*. This concentrates heavily on printing technologies and associated applications of engineering. The short chapter devoted to type design offers very little insight, if any, concerning the process of type design. This chapter mainly discusses optical illusion (Figure 2.5), then moves toward a discussion and critique of the serif in its various forms. Aside from some optical considerations, the lack of specific subject insight affects what is communicated. The chapter appears ill informed and superficial in terms of specific subject knowledge.

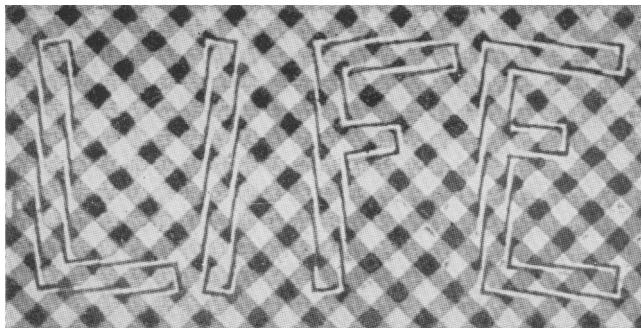


Figure 2.5 An example of Legros & Grant's figures from their chapter on type design.

These 'etic' accounts are constructed from the position of observer(s) or those outside of the expert practitioner's view of type design. They seek to give clarity to a specialist subject domain, of which they arguably display insufficient personal knowledge (Polanyi, 1969, 1973) when compared to other specialist or expert accounts of the subject. Yet because of their reputation as authoritative texts, these established accounts are still consulted by those wishing to gain insight into the processes of typeface design. This is not to say that these are not important accounts with respect of their depth and breadth. Their value lies in the technical recording of proposition, process and technology in relation to the designing of types – not the designing of text typefaces as a discrete area of knowledge, activity and specialism in itself.

Emic 'Expert' Accounting of Process in Punch-Cutting and Type-Founding

A further early account of practice given by Pierre-Simon Fournier (1764–66) attempts a similar breadth to that of Moxon. Published approximately eighty years later and without apparent knowledge of Moxon's work (Fournier et al., 1995, p. 9), its content affords a rather different perspective. Fournier does not strive to improve upon existing practice but is more insightful by describing his own.

In his treatise, Fournier appears highly critical of the methods employed in describing letterform by the French Académie of Sciences. He dismisses the geometric work saying that 'Genius knows no rule or compass, save in mechanical work' (Fournier et al., 1995, p. 9). If Moxon's experience or skill as a punch-cutter was ever in doubt, the same cannot be said of Fournier. He draws on his expert experience and knowledge in his criticism of the French Académie of Sciences.

Fournier clearly describes different approaches to making counter punches and how these should be considered. He gives account of the counter punches for certain letters such as 'bdpq' and 'h, n and u' as being common to these groupings of letters, whilst letters such as 'i, l, r,' and others need no counter punch (Fournier et al., 1995, p. 29). In doing so he intimates a system within his working practices. This description contrasts with that of Moxon and the French Académie of Sciences – theirs being fixed in geometry. Fournier's articulation can be interpreted in part as a discrete system, one that begins to describe an approach that considers the holistic or macro view of commonalities as well as the micro detail level of singularities. This intimates an implicit system, one that identifies pattern and the opportunity for the adaptation of pattern in terms of counter-form. Fournier begins to describe a procedure that may point toward the possibility of describing a formal method. This comes from his intimate knowledge of his practice. He is able to explain this in clear terms and generalize about specifics, thus creating a description of possibles and probables. What Fournier describes is flexible and adaptable yet essential knowledge required in the construction of the letterforms for punch-cutting. Fournier's account affords us greater insight into procedure than the earlier accounts given by others. However, descriptions are not always complete and at times not offered at all. Whilst he comments upon procedure, he does not offer a description toward the form of letters such as is found in the accounts by Moxon and the French Académie of Sciences. Regarding the form of letters Fournier states:

As to the best possible shape to give to letters, it is useless to write of it: it is a matter for the taste and discernment of the cutter, and it is in this that he displays his proficiency or his incapacity. It is a safe rule that he should do nothing without a correct understanding of the design of letters, or having good models before him to allow him to catch the fashion of them.

(Fournier et al., 1995, p. 38)

Fournier's refusal to comment on the design of lettering for typefaces may serve as an example of the difficulty in describing complex experiential knowledge. However, there is perhaps further significance in this statement. Fournier identifies a personal or ideological view: 'As to the best possible shape' (Fournier et al., 1995, p. 38). This is different from: 'It is a safe rule that he should do nothing without a correct understanding of the design of letters' (Fournier et al., 1995, p. 38), which implies the possibility to learn or understand. Fournier's use of the word 'correct' suggests needing thoroughness of understanding. However, it is difficult to interpret whether he suggests that understanding is developed by accretion – through immersion in the subject – or that acquisition of knowledge may be expeditiously achieved through understanding schema, etc., in relation to letterform. Fournier's use of the word 'design' is also of significance here. This suggests that Fournier has some knowledge or awareness of constructing or constructed letterforms specifically useful for the production of type. Knowledge of form is necessarily different from other kinds of traditional lettering, although these may be related.

The above example of Fournier helps to illustrate problems in describing the depth of knowledge that become second nature to the expert. This is opposed to the highlighted accounts of Moxon, The Romain du Roi and Legros and Grant that offer clear descriptions but of an apparent non-expert nature. The latter appear to lack the 'personal knowledge' that may be associated with the expert in the subject discipline.

Elucidated Understanding, Decision-Making and Described Method in Relation to Type Design Process

The separation of the process of the designing of types and the making of them is acknowledged and accounted for by Theodore Low De Vinne (1900). He develops the notion of designing further. De Vinne not only appears to regard punch-cutting as the highest skill but eludes to the designing of the letterform being importantly linked:

Punch-cutting is the first process, which must be preceded by a careful drawing of the characters. No operation in typography requires more skill than this, and in none is error more disastrous.

(De Vinne, 1900, p. 11)

De Vinne's account for the making of text types is also of interest. His references include those mentioned of Moxon and Fournier, and it is indeed Moxon's study that he refers to when describing the marking out of a framework on the commencement of punch-cutting to determine the position and height of each character. De Vinne does stop short however, in agreeing with Moxon's description of

letterforms as needing to be of geometric construction. He explains that ‘Optical delusions must be humored’ (De Vinne, 1900, p. 14). He continues to describe how curved letters must be extended slightly above and below the height of letters with a flat base or top, because otherwise they would appear too short. Again, these are helpful glimpses into process and understanding in terms of decision-making. His account of punch-cutting draws from an earlier period of punch-cutting by hand and specifically the account given by Fournier. This is in contrast to the available technologies at the time of his writing. He does, however, account for the available technologies of the day, including mechanized apparatus for the ‘reproduction’ of letterforms employed in type production (e.g. Leavenworth’s 1834 adapted pantograph) for scaling the ‘model letter’ for the production of wood-types (De Vinne, 1900, p. 348) and notably the Benton Punch-cutting Machine (De Vinne, 1900, p. 350) for its precision in facilitating the cutting of ‘models’ for letters for metal text types. De Vinne does not mention whether the technologies in themselves affect or impact how the letters for types are designed or should be designed in terms of form or process.

One of the clearest glimpses of insight toward designing that marks a distinction in the early twentieth century practice is given by William Addison Dwiggins (1940) – *WAD to RR: A letter about designing type*. The 8-page publication (without pagination) is an expanded version of a letter originally sent from Dwiggins in 1937 to punch-cutter Rudolph Ruzicka, who according to Dwiggins in his short introduction to the letter – ‘wanted to know how one went about designing a typeface’ (Dwiggins, 1940).

Much like Fournier’s description of counter punch-cutting, Dwiggins gives insight into what could be considered – in part – a system of working. He describes a technique used in making his Falcon type, whereby he created small stencils in celluloid as parts of the letterforms in order to arrive at the characteristics of the typeface design (Figure 2.6).

These consisted of a single long upright stem, a short stem, the n arch and a loop. Once enough small characters were created using these parts of letters, larger templates were made in order to make working drawings – evidence of an elemental system. The letter also explicates Dwiggins’ thinking regarding which characters can be useful when beginning a type design:

I have Griff [Chauncey Griffith] cut and cast two letters – the ones that will tell you the most. I like n, and p, d, or b, a straight one and a looped one. Maybe h p would be best.

(Dwiggins, 1940)

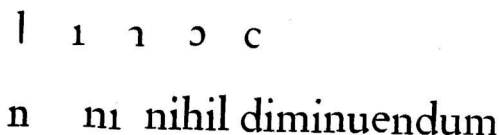


Figure 2.6 Dwiggins’ Falcon type stencil-like letter parts. The top line shows the elemental component parts. The bottom line shows the combining of parts to create letterform.

Dwiggins further explains that when dimensions are settled, the alphabet is then worked up, drawn on thin bond paper. This is drawn freehand and further rationalized later by the drawing office. Dwiggins also makes a brief account of ‘fitting’ letters – determining the amount of side-bearing space each individual letter requires. In relation to this he states, ‘I have a hunch that a “coarse” formula could be worked out’ (Dwiggins, 1940). The notion of a formula is again evidence of an intimated system proposed by Dwiggins, one that not only allows insight to ‘what’ the designer has done and ‘how’, but also ‘why’ he has chosen to do things in such a manner.

A similar glimpse into decision-making, method and system is also offered by Frederic W. Goudy in *Typologia* (1940). Goudy’s account allows insight into his method of establishing initial principles for designs that then have an impact on the remainder of the typeface design:

My drawing of the lowercase p permits me to strive for a movement in the round member – a movement that I attempt to retain throughout the face – to decide whether it shall be round or more or less oval in form, where the stress of color shall come, the ratio of stem to hairline, and a thousand and one matters that come and go in my thoughts as I draw.

(Goudy, 1940, p. 83)

The cases outlined above are important in that they begin to show some insights into the designer’s thinking in relation to their working practices. They also allow glimpses of what may be method or patterns of behaviour relative to practice.

Extant explanations that cover in some detail the designer’s working practices and approaches take the form of a small number ‘how-to’ texts (e.g. Briem, 1998–2001; Harvey, 1996; Moye, 1995). These have some commonality in that they offer methodological guidance and insight into the approach of the author as designer but they do not specify a particular process, or whether such processes exist. These accounts may offer ‘what’ to do or ‘how’ to do it but lack the important ‘why’ and ‘when’ that is necessary for developing or establishing theory or theories of process.

In terms of communicating process or theory with respect to type design there is still little evidence to be found to date, particularly in terms of research. Efforts toward establishing theory have been made in other areas of design and in particular the disciplines of architecture, product design and engineering design.

Describing Design Knowledge

In his *Metaphysics*, Aristotle states that we consider the master workers in each craft to be more honourable and wiser than the manual workers because the former know the causes of the things that are done ... In this connection, Aristotle states that the master workers are wiser not because they know how to act but because they have a knowledge of causes (Rotenstreich, 1977, pp. 4–5).

The above quote from Rotenstreich, regarding Aristotle’s view of manual and master workers, helps give some clues to understanding the difference in knowing how to do something that works as opposed to knowing why and how the things that we do work.

Knowing, however, does not necessarily equate with the explication of such knowledge. Michael Polanyi suggests that ‘we can know more than we can tell’ (1967, p. 8). The distinction between explicit and hidden, or ‘tacit’, knowledge can be attributed to Polanyi (1967). He also describes the distinction between ‘distal’ knowledge – that which can be clearly communicated – and ‘proximal’ (tacit) knowledge – which he argues cannot be formalized.

Thus far, this chapter has pointed toward problems of historical context in relation to gaps in recorded knowledge specific to text typeface design. Given that such paucity exists, it must be asked whether it is indeed at all possible to interrogate design knowledge in relation to this. What Polanyi describes as ‘tacit’ knowledge may help to explain why such a problem exists in relation to text typeface design. Conversely, difficulty in explaining or giving such accounts may be assumed rather than tested.

Previous design studies in other disciplines have drawn upon cognitive psychology to explain why designers may think or behave in certain ways (e.g. Eastman (1970), Akin (1986), Lawson (2003, 2004)). Studies have also led on from questioning accepted or anticipated beliefs in relation to design process. Some of these studies have suggested that previously established theorised concepts regarding analysis and synthesis in relation to design process could not be found to be evident in the practice and behaviour of designers. In particular, when participants were set problem-solving tasks or interviewed, designers behaved or responded differently than was anticipated. Through interviewing architects, Jane Darke discovered that amidst the complexity of problem solving relating to large projects, architects often introduced a self-imposed precedent found within the initiating design process that she termed the ‘Primary Generator’. The ‘Primary Generator’ appeared to influence the development of the design from an early stage. However, this was not related to the problems at hand. Darke described the ‘Primary Generator’ as ‘a broad initial objective or small set of objectives, self-imposed by the architect, a value judgement rather than a product of rationality’ (1979, p. 36).

In describing knowledge particular to design, Nigel Cross coined the phrase ‘designerly ways of knowing’ (Cross, 2007). He argues that there is something specific to designers and the way that they think that marks them out differently.

The subject of how designers may find it difficult to describe what they know and how knowing is or isn’t imparted is also commented on by Cross:

What designers know about their own problem-solving processes remains largely tacit knowledge – i.e. they know it in the same way a skilled person ‘knows’ how to perform that skill. They find it difficult to externalize their knowledge.

(2007, p. 25)

Bryan Lawson aligns these ‘designerly ways of knowing’ with the terms ‘episodic’ and ‘semantic’, as described by Tulving (1972) with respect to memory. Lawson argues that we put no conscious effort into trying to store our experiential knowledge as events from life (2003, p. 44). He further offers that ‘design knowledge is more heavily dependent on this experiential or episodic memory than the knowledge used in many other professions’ (p. 45).

In *Psychology of Architectural Design*, Ömer Akin (1986) draws upon earlier studies by Anderson (1981), Sussman (1973) and Lenat (1983) to describe Declarative Knowledge as ‘all that we know which describes how things are’ – ‘through objects,

their attributes and the relations between them' and Procedural Knowledge as 'all that describes and predicts actions or a plan of action' (Akin, 1986, p. 32).

Parallels can be drawn between declarative and procedural knowledge as actions in relation to craft. An example of this is given by David Pye in his book *The Nature and Craft of Workmanship* (1968). Pye describes the workmanship of risk as:

... in which the quality of the result is not predetermined, but depends on judgement, dexterity and care which the maker exercises as he works. The essential idea is that the quality of the result is continually at risk during the process of making. ...

(1968, p. 4)

This can be interpreted as a statement regarding not only procedural knowledge but also procedural action. Pye contrasts this with the workmanship of certainty as:

... always to be found in quantity production, and found in its pure state in full automation. In workmanship of this sort the quality of the result is exactly predetermined. ...

(1968, p. 4)

The contrast here is that the latter statement can be interpreted as declarative, the outcome prejudged or known, an *a priori* in terms of expectation.

This argument of particular action and knowing in practice is not to say that such phenomena are necessarily explicable, let alone identifiable. We may consider when engaged in the act of designing our attention is on the thing we are designing, not on our concentration of understanding the ability to design.

In *Knowing and Being*, Michael Polanyi talks of the 'unspecifiability of particulars' (1969, p. 124). He describes different states of the concentration of our knowledge as affected by the act of concentration itself, in turn affecting our ability to concentrate on two states simultaneously. Of this Polanyi argues:

Specifiability remains incomplete in two ways. First, there is always a residue of particulars left unspecified; and second, even when particulars can be identified, isolation changes their appearance to some extent.

(1969, p. 124)

He continues to expand upon this theme:

Every time we concentrate our attention on the particulars of a comprehensive entity, our sense of its coherent existence is temporarily weakened; and every time we move towards a fuller awareness of the whole, the particulars tend to become submerged in the whole.

(1969, p. 124)

Polanyi describes this phenomena or concentration between states as 'attending to' and 'attending from' (1969, p. 145). An example can be illustrated in the act of writing with a pen. A person may be initially aware of the pen as an object in their hand, its weight, feel etc. This can be described as attending 'to' the object.

However, once they begin writing with the pen the concentration is not so much on the pen itself but on what they are doing with the pen. This can be regarded as attending through or ‘from’ the concept and experience of the pen.

This description of the difficulty of simultaneous ‘attendance’ may partly help explain the problems in terms of accounting for type design process. Because the activity requires designers to work simultaneously at micro levels of detail and macro levels of overview, this could make for complex navigational approaches of such processes. Nothing is fixed as designers are forced to ‘zoom-in’ and ‘zoom-out’ in creating complicated internalized mental maps of their location in such schemes.

Further Considerations of Etic and Emic Accounts

Regarding how we may consider etic and emic viewpoints and accounts, it is the concept of relativity in connection with the account – relative to what and whom – that may provide us with useful insights and tools for determining the value of such accounts for study. Viewpoints can be considered as perspectives from within and without. This is reflected in what William James (1950a) identifies as two kinds of knowledge: ‘knowledge of acquaintance’ and ‘knowledge about’ (p. 221). He also offers what may be described as the conceptual particular – the relationship between a core ‘topic’ and a ‘fringe of unarticulated affinities’ (p. 259). This implies that if we are positioned within the fringe we may have ‘acquaintance’ with type design practice. However, this does not necessarily equate to having knowledge ‘about’ designing type.

Considering the above, and in relation to past accounts of practice, Joseph Moxon, the first English writer on type-founding, can be taken to exemplify the problem of categorizing definitive or exact labels such as ‘expert’. At what point is an expert an expert? Although Moxon produced type, he himself was not considered a type designer *per se*. Reed (1952) comments on Moxon’s first type specimen of 1669:

In all respects it is a sorry performance. Only two fonts, the Great Canon and the Pica, have any pretensions to elegance or regularity. The others are so clumsily cut, so badly cast, and so wretchedly printed, as here and there to be almost indecipherable.

(Johnson, 1952, p. 171; Reed, 1887)

There is clear evidence that Moxon made type; however, evidence indicates that he was far from what we would consider a proficient or accomplished type designer. Even if Moxon was not a virtuoso of the craft, what he produced and attempted did require some degree of skill and ability.

Epistemological and Ontological Proximity

If we think about what qualities are required in order to become a proficient type-designer, this implies a contiguous nature of ‘being’. Being in this sense is not fixed. It is relative to the knowledge, skill and ability the type designer develops with time, application and focused thought.

The relationship between epistemological evidence of subject knowledge and ontological qualities of being, in terms of those giving accounts of practice, must be

considered relative to the expectations for research within such specialist fields as typeface design.

For example, if type design is viewed as at a Jamesian epicentre within the wider context of type production or typography, how closely to this centre can the position of accounts of the subject be related? Where are those giving such accounts placed in relation to such a scheme, that these may yield valuable evidence for enquiry? With regard to ontological understanding of what type design is, if type designers make type design a subject of study, those with the greatest expertise or knowledge of this subject would reside safely within the centre of that subject domain. It can also be asserted that those with the greatest knowledge and ability would be regarded as being experts in the subject.

Nigel Cross highlights the lack of research involving exceptional or outstanding designers (2003, p. 85). He asserts that richer understandings of the subject can be gained by examining actions of the expert practitioners from within a given subject. Lawson supports this view of knowing how designers think:

It seems reasonable to suppose that our best designers are more likely to spend their time designing than writing. If this is true then it would be much more interesting to know how very good designers actually work.

(1997, p. 40)

Both Cross and Lawson illuminate a clear standpoint, that insight to expert knowledge with regard to practice would yield richer and more interesting perspectives in terms of knowledge of design practices.

This book seeks to address some of the gap that exists in the knowledge of the text typeface design process, by means of developed theoretical descriptions that are based upon the perspectives given by experts in relation to their accounts and knowledge of practice.

3 Processes of Text Typeface Design

An Introduction

Introduction

This chapter introduces the analysis and interpretation of gathered primary data resolved into Grounded Theory. No preconceived hypothesis or hypothesis testing was employed as a research methodology. This research set out to investigate whether it would be possible to reveal aspects of the design processes of Latin text typeface design, based upon accounts given by experts in the field. The wealth of primary data gathered in this study provided rich, in-depth accounts relating to practices, decision-making and personal viewpoints relative to Latin text typeface design. The data also included much in the way of what may be described as tacit knowledge (Polanyi, 1967) relating to the processes of text typeface design. This study is able to reveal specific design knowledge through analysis and developed theory as a result of the identification of emergent patterns of similarity and difference in the data. The concepts and interrelationships developed from the emergent patterns in the data enabled the generation of theoretical descriptions and explanations. These are explored in the chapters that follow on from this one and as highlighted below.

Presentation of the Grounded Theory

The three subsequent chapters articulate and evidence the developed Grounded Theory relating to individually raised core categories: Chapter 4 – Trajectorizing, Chapter 5 – Homologizing and Chapter 6 – Attenuating. Each of these chapters includes sub-categories and coding. Core categories and sub-categories have been developed through a process of comparative analysis of primary data in conjunction with memoing, theoretical coding and sorting in accordance with Grounded Theory Methodology (Glaser & Strauss, 1967). This is a constant, iterative, inductive process of continual analysis and theory generation that allows for emergent theoretical concepts to be raised from initial primary data.

Theory and analysis have been raised from but remain grounded in substantive coding at the primary research data level. Extracts of the primary data, set within tables are used to illustrate, evidence and support the developed categories and theoretical assertions, descriptions and explanations resolved as Grounded Theory in the following chapters. Each of the following three chapters also contains a table within its respective introduction to illustrate the connections and hierarchies between core category, sub-category and substantive coding.

The Grounded Theory developed in this research offers explanatory theory in relation to expert knowledge of text typeface design process. The developed theory within the following chapters can be seen as raised beyond a mere descriptive analysis through the rigorous application of Grounded Theory Methodology. The presentation of the Grounded Theory appears as blended analysis and supportive descriptions in relation to developed concepts. Charmaz describes this form of rendering Grounded Theory writing in that it:

... blends analytical statements with supporting description and illustration. It thus moves back and forth between theoretical interpretation and empirical evidence.

(2006, pp. 152–153)

Each of the three individually resolved core categories represents an emerged and resolved theoretical concept that accounts for deep structures and connections of multiple variables relative to text typeface design process or processes. The presentation of core categories as separate chapters within this book facilitates conceptual clarity and allows the reader to see the clear progression of the hierarchy of raised concepts and their direct connections with the primary data. This aligns with what Glaser describes when discussing the writing up of Grounded Theory core categories:

Many studies yield two or (sometimes) three core variables. To try to write about them all at once with no relative emphasis is to denude each of its powerful theoretical functions.

(1978, p. 94)

Reflection on and integration of aspects of the individual core categories with one another, along with the integration of aspects of the literature will be developed further in Chapter 7 – Discussion.

Definitions of Developed Core Categories and Sub-Categories

Each core category includes sub-categories, which will be discussed at length further in the relevant chapter. Core categories represent conceptual categorizations that are described as ‘causal’ – actions and behaviours. Respective sub-categories within this study are classified as causal, conditional, consequential or contingent in their relation to core categories. Table 3.1 details the relationships and interrelationships between the core and sub-categories developed in this study. The definitions of core categories and their respective sub-categories align with five of the definitions of theoretical coding families described by Glaser as *The Six C’s* – ‘Causes, Contexts, Contingencies, Consequences, Co-variances and Conditions’ (Glaser, 1978, p. 74).

It is stressed that the categories described in Table 3.1 were developed emergently and inductively over time from the data. These were found to have fit with aspects of Glaser’s ‘Six Cs’, rather than using existing frameworks of theoretical coding families to ‘force’ the data to fit pre-existing theoretical categorization and organization. In this sense, alignment of emergent concepts from the data with Glaser’s ‘Six Cs’ had been of benefit in framing and clarifying emergent conceptual themes

Table 3.1 Relationships of core categories to respective sub-categories and relative to five of Glaser’s Six Cs theoretical coding families.

Core Category	Sub-Categories			
Causal	Causal	Conditional	Consequential	Contingent
Trajectorizing	Precedent Constructing	Contextualizing	Constructed Precedent	
Homologizing	<i>Extrapolation*</i> <i>Interpolation*</i> Synthetic Acquiescence (dimension) Synthetic Displacement (dimension)	Endogenous Generation Homologous Mapping (dimension) Homologous Drift (dimension)		Endogenous Generator
Attenuating		Attenuation	Accretive Amelioration	Envisioning Historical Immersion

* Known causal phenomena

as opposed to utilizing the existing framework as a prescriptive tool for rendering concepts. The latter would have ultimately led to forcing potentially preconceived concepts to fit a conceptual framework rather than emerging conceptual fit, as was the case in this study.

Core Categories and Their Interrelationship

Allowing concepts to emerge without forcing a conceptual framework from the outset has resulted in theoretical completeness in terms of each of the core categories. These can be seen as stand-alone theoretical concepts around which sub-categories and substantive codes resolve. Moreover, and as will be discussed in Chapter 7 – Discussion, the three core categories developed in this study resolve and interrelate with one another, rendering a deeper and ultimately more multivariate Grounded Theory that elucidates deep structures relative to the whole process of text typeface design developed from, and grounded by, the accounts of leading experts in the field of text typeface design.

Figure 3.1 illustrates the interrelationship of the core categories to one another, giving the reader an impression of how the core categories coexist before reading the Grounded Theory chapters. Whereas Trajectorizing and Homologizing actions have definitive and arguably delimited roles within the development of text typeface design, Attenuating has an enveloping quality that can be seen as constantly present throughout the process of text typeface design. Attenuating is inexorably connected to both Trajectorizing and Homologizing as part of the overall design process relative to text typeface design. Again, the interrelationship of the core categories, their sub-categories and codes, where relative, along with relevant reference to the literature will be discussed subsequently within this book.

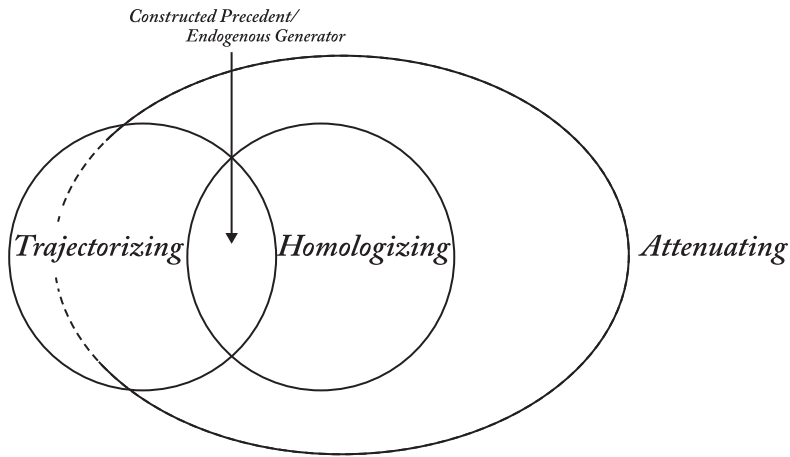


Figure 3.1 The relationships of core, causal, action categories linking Trajectorizing and Homologizing relative to Attenuating.

Summary

The core categories describe and explain sets of actions that are brought to bear upon the design and development of text typeface designs as part of the process or processes. The renderings of three core categories are presented hereafter as explanatory Grounded Theory, raised from and grounded by the primary data. The developed theories describe processes of text typeface design, but it is also anticipated that the themes raised and concepts developed in this research will serve as potential analytical tools that will be used in the further study and research of text typeface design practices and processes. Additionally, the developed theories may find use in applied situations relative to the practice of text typeface design. It is expected that the developed theoretical descriptions may bring greater conceptual clarity to the explication and understanding of discrete causalities relative to the overall process of text typeface design, thus facilitating aspects of teaching and education in relation to Latin text typeface design.

4 Trajectorizing

Introduction

This chapter outlines the developed core category Trajectorizing and its related sub-categories Contextualizing, Precedent Constructing and Constructed Precedent. As in the chapters that follow (5 and 6), the relationship of core category and relative sub-categories is highlighted with reference to Glaser’s theoretical familial categories – the Six Cs (Glaser, 1978). Table 4.1 shows the relationship of Trajectorizing and its sub-categories to Causal, Conditional, Consequential and Contingent categorizations, these relationships will be described further within this chapter.

In this and Chapters 5 and 6, the raised core and sub-categories are developed as Grounded Theory as described in Chapter 3. Table 4.2 shows the relationship of the core category Trajectorizing and its developed sub-categories: Contextualizing, Precedent Constructing and Constructed Precedent. However, this table also shows the relationship of sub-categories to the substantive coding and coding descriptions relative at the primary data level. This makes explicit the hierarchical lineage of the raised conceptual categories relative to coding at the data level. As will be found in Chapters 5 and 6, extracts from the primary data are used to illustrate and evidence developed theoretical concepts and assertions.

Trajectorizing

Trajectorizing provides explanation as to how the text typeface designer initiates, negotiates and directs the early stages of text typeface design by developing impetus and momentum in the process. This includes the development of form or forms relative to the first characters produced in the typeface, sometimes referred to as control characters within the process of design. A Trajectorizing form within the design can be determined as a form that the text typeface designer produces not

Table 4.1 Relationship of the core category *Trajectorizing* to sub-categories.

Core Category	Sub-Categories		
Causal	Causal	Conditional	Consequential
Trajectorizing	Precedent Constructing	Contextualizing	Constructed Precedent

Table 4.2 Lineage and relationships of coding at the substantive level up through conceptual categories with reference to the core category.

Trajectorizing – Codes relating to core category

Sub Cat > Code	Definition
Contextualizing	
<i>DefDesSearch</i>	Participant defining the search space (heuristic)
<i>DesDecRelProb</i>	Participant describes design decision related to problem
<i>DesDelimiters</i>	Participant outlining the design perimeters for specific problem(s) – general
<i>DesDelimiters Client</i>	Participant describes CLIENT outlining the design perimeters for specific problem(s)
<i>DesDelimiters Self</i>	Participant describes self-outlining the design perimeters for specific problem(s)
<i>Des Prob Inherent</i>	Participant identifies an inherent problem/area in approaching text typeface design
<i>DesignSpaceID</i>	Participant identifies distinction in approach to design.
<i>PrimaryGen</i>	Participant describes initial design influence or drawn influence prior to the process of design
<i>Redefining brief</i>	Participant describes scenario where the client brief is redefined
<i>Ref Other prior</i>	Participant states making reference to OTHER prior work to develop the typeface design
<i>Ref Other prior NEG</i>	Participant states NOT making reference to OTHER prior work to develop the typeface design
<i>Ref Own Prior</i>	Participant states making reference to their OWN prior work to develop the typeface design
<i>Ref Own Prior NEG</i>	Participant states NOT making reference to their OWN prior work to develop the typeface design
<i>Repertoire</i>	Participant indicates that an existing repertoire of actions or decision-making in relation to type design is used.
<i>Repertoire Neg</i>	Participant indicates that an existing repertoire of actions or decision-making in relation to type design is not used.
Precedent Constructing + Constructed Precedent (Consequential)	
<i>Des Micro</i>	Participant describes/acknowledges details relating to a micro level view/notion of design
<i>FirstChars Uc</i>	Participant describes letters designed initially for the UPPERCASE
<i>FirstChars lc</i>	Participant describes letters designed initially for the lowercase.
<i>Letter parts</i>	Participant describes/is aware of the component parts that make up letterform

only as a first characters or part of a character but as an initial form that will have the potential to inform subsequent forms in the process of design. Trajectorizing describes how designers draw from influences to create a new initial form and how that new form in turn establishes the direction and the potential generation of subsequent forms within the system of text typeface design.

Trajectorizing describes how the text typeface designer primes the burgeoning process of design. This core category rationalizes multivariate phenomena that explain how text type designers draw from influences and precedents by means of the sub-category Contextualizing. Initial influences can be distal/broad or proximal/focused in nature, specifically in relation to designers' knowledge and experiences. Trajectorizing conceptualizes how the text typeface designer utilizes Contextualizing influences and precedents alongside Precedent Constructing by way of producing purposeful, determined starting points within the system of design. These determined starting points allow the text typeface designer to continue to develop the text typeface design based on initial design decisions and actuations. Contextualizing and Precedent Constructing account for the text typeface designer's actions of converting extrinsic influences toward intrinsic influences in relation to the process of text typeface design, thus creating the potential for the developing design to become self-informing via Constructed Precedents. Coded extracts from the primary data will be used to substantiate and illustrate the developed Grounded Theory categories as discussed.

Contextualizing

As a Trajectorizing action, text typeface designers are engaged in not only aiming to give their initial letterforms form and structure as Constructed Precedents, they are also Contextualizing. Contextualizing can be seen as conditional to Trajectorizing: The latter sees designers giving direction and aiming to give potential to the undeveloped design, the former sees the designer identifying, shaping, forming, scoping or discovering the target they are Trajectorizing toward. Contextualizing allows the designer to ground or begin to make sense of what they aim for or at.

Contextualizing can be in the form of delimiting or identifying and narrowing the search space. However, Contextualizing can also be in the form of identifying precedent, following precedent or allowing serendipitous influences to impinge upon the design process in such ways as Jane Darke's identified Primary Generator (1979) (see Chapter 2). The commonality that links all of these forms of phenomena or activity is that they allow the designer to identify a target. Contextualizing describes the target designers identify from the outset or as it emerges, whereas Trajectorizing, describes what designers aim at the identified or developing target in terms of their developing forms for typeface design.

If designers are closing down search spaces, they are Contextualizing what their design will be aimed toward. If designers are following precedent they are identifying that their design will be informed or influenced by a specific form or forms. Therefore, they are initially aiming at producing something similar to a specific form. If designers are relying on repertoire or gambit, their design will adhere to a specific way of doing something or producing something. If designers identify inherent problems to be resolved (e.g. the type needs to be condensed so

that more words per line can be achieved), they identify their target. The new design can then be aimed at a specific target. Expert designers are thus Contextualizing their Trajectorized actions.

Contextualizing Initial Influences – Broad to Focusing

Text typeface designers draw upon various precedents and generators relevant to the scoping of the initial search space for text typeface design. Certain instances of initial influences can appear broad and at times somewhat removed from the nature of text typeface design itself:

... because I have this ideas of sixties seventies you know ...

Extract 1 (JFP_1, lines 175–176)

Such initial influences can lead to more specific generator-like influences:

... I have in mind at the time Letraset catalogues ... Mecanorma catalogues ... photo lettering things ...

Extract 1 (JFP_1, lines 176–177)

eventually leading to specific precedent-like influences:

Lubalin

Extract 1 (JFP_1, line 178)

In this aspect of Contextualizing, designers make links between initial broad and disparate influences in terms of how text typeface design may begin. Initially broad influences then become linked to more specific influences as the process progresses.

Broad and multivariate influences can take the form of somewhat vague potential starting points:

... I'll be thinking about the next typeface as I'm working on one already so that could be an initial idea but even then ... this idea which is for another sans serif I've had that idea bubbling around in my head in a very foggy way for maybe a year or two potentially but they're just all stored so it's hard to say when something actually begins ...

Extract 2 (JT_1a, lines 51–55)

Such links between initial broad ideas and feelings may become more focused over time in terms of where influences may be derived from:

... so initially there'll be an idea it may have come from who knows where they come from or just a thought will plop pop in my head and it can be to do with something you've seen and you think ah that would be interesting well maybe I should do that or it's the reaction to something you've seen somewhere I can't say where that initial sort of thing will come from ... but then they sort of tie in with other things for me a lot of it's with music or ... films

32 *Trajectorizing*

or what ever it could be the weather it could be a nice it could be like you've just gone for a walk ... you've seen an exhibition somewhere and you've been particularly taken by something or you're just in an elated mood or whatever you've just heard a piece of music and something all just goes click and you think wow that's the feeling I want to capture I want to get that high and make it would be really nice if I could do that whatever that is and then that becomes more focused as time goes on y'know ...

Extract 2 (JT_1a, lines 60–72)

The designers' references to broad initial influences may become more specific in terms of their generator-like nature, specifically with reference to previously designed typefaces:

... Kingfisher was initially inspired by ... sort of a lot to do with ... Lisa Gerard's voice in Gladiator the soundtrack this sort of very echoey Moorish sound ... and also having travelled round Spain and seeing all the Moorish architecture so that all came from there ...

Extract 2 (JT_1a, lines 72–75)

Initial influences can be specific in nature but somewhat unrelated to the subject of typeface design:

... William Golding's sea trilogy ... and Regency period.

Extract 2 (JT_1a, lines 82–83)

However, these may lead to connections with phenomena related directly to typography and typeface design:

... typographic based stuff like Tschichold his ideas of type mixing ... post Napoleonic eighteen thirties where you had all that explosion of the new types of the display types ...

Extract 2 (JT_1a, lines 84–87)

Influences can become even more specific with regard to typological models or styles of typeface from which influence is derived:

Egyptians and Fat Faces.

Extract 2 (JT_1a, lines 94)

These forms of broad to focusing forms of Contextualizing give insight to the developmental links designers make between heuristic or disparate early initial influences and how these may become focused by way of linking to other influences closer to the nature of the subject area of typography and type design. This offers the designer more in the way of tangible starting points in terms of Contextualizing any initial design from early ideas and influences. The movement here is of rationalizing thinking toward possible in-roads from multivariate influences in the initial stages to specific influences more clearly aligned to the nature of typeface design itself.

Extract 1**JFP_1 {ExampleExperi}{DesignSpaceID}{PrimaryGen}**

175 ... because I have this ideas of sixties
 176 seventies you know I I have in mind at the time Letraset
 177 catalogues + Mecanorma catalogues + photo lettering things +
 178 Lubalin

Extract 2**JT_1a {DesDelimiters}{FromKnowledge}{PrimaryGen}{DefDesSearch}**

51 ... I'll be thinking about the next typeface as
 52 I'm working on one already so that could be an initial idea but even then but
 53 even this idea which is for another sans serif I've had that idea bubbling
 54 around in my head in a very foggy way for maybe a year or two potentially but
 55 they're just all stored so it's hard to say when something actually begins because
 56 other things come forward be it a commission or be it a current typeface is
 57 taking longer than I thought it would take because of whatever erm Kingfisher for
 58 instance was like was only meant to be a year job and it took four years in the
 59 end because things came along which pushed it back to the shelf and blah blah
 60 blah erm so initially there'll be an idea it may have come from who knows where
 61 they come from or just a thought will plop pop in my head and it can be to do
 62 with something you've seen and you think ah that would be interesting well maybe
 63 I should do that or it's the reaction to something you've seen somewhere I can't
 64 say where that initial sort of thing will come from erm but then they sort of tie
 65 in with other things for me a lot of it's with music or erm films or what ever it
 66 could be the weather it could be a nice it could be like you've just gone for a
 67 walk eh you've seen an exhibition somewhere and you've been particularly taken
 68 by something or your just in an elated mood or whatever you've just heard a
 69 piece of music and something all just goes click and you think wow that's the
 70 feeling I want to capture I want to get that high and make it would be really
 71 nice if I could do that whatever that is and then that becomes more focused as
 72 time goes on y'know Kingfisher was initially inspired by erm sort of a lot to do
 73 with the eh Lisa Gerrard's voice in Gladiator the soundtrack this sort of very
 74 echoey Moorish sound erm and also having travelled round Spain and seeing all the
 75 Moorish architecture so that all came from there nothing to do with the final
 76 typeface but it all came from this particular thing and I can say noth I can
 77 hide that and not talk about those very esoteric kind of influences but then
 78 that those kind of things make me do what I do so I can't neglect that and I
 79 stopped fighting against it or necessarily being embarrassed about it because
 80 that's me that's the way it is erm trilogy for instance trilogy a lot of that

34 *Trajectorizing*

81 came from oddly enough erm + well a lot of things come from the sea so that was
82 em William Golding's sea trilogy erm + there was what else was there in there eh
83 Regency period as well as a more sort of graphic or typographic based stuff like
84 Tschichold his ideas of type mixing but then hence they all sort of tie together
85 in my own head so Tschichold his idea of type mixing was nineteen thirties going
86 back a hundred years to Regency period or post Napoleonic eighteen thirties
87 where you had all that explosion of the new types of the display types so that's
88 why it all knits together happily that way and then did a lot of research on
89 Regency things and got into all side of stuff and eh and what was happening with
90 that sort of era erm To The Ends Of The Earth was a three part televised
91 dramatization of William Golding's sea trilogy and hence Trilogy there's three
92 so there's all sort of came from this kind of baggage erm then it becomes what it
93 is but there's because of that sort of interest in in the Regency period the
94 types of that the start of display types the Egyptians and Fat Faces erm + that
95 that fuelled what it became and I didn't really want to take it into anything erm
96 too sort of eh too different I wanted to be quite true to those initial ideas
97 within there but also bring it up to date in a different kind of way hence I
98 suppose was the idea Tschichold or a different take on the idea of a super
99 family instead of having the same structure is actually having three different
100 styles drawn to work together in some way erm and that was interesting

Contextualizing Specifically through Language

Experts evidence the movement from initial broader influences to influences of a more focused nature by means of generators and precedents in the early stages of design. Expert designers also utilize supportive language to facilitate greater clarity in scoping initial thinking and working relative to the design space:

... a family of black block letterforms heavy based on wood modern expanded standard compressed sans slab serif ...

Extract 3 (JT_1a, lines 181–183)

Such use of notational language can enable Contextualizing conceptual framing with regard to initial design and its positioning:

... nine typefaces on a grid three by three ...

Extract 3 (JT_1a, line 183)

Used in this way, language offers a clarifying element in the development of visual matter offering a logically generative support employed by the designer to scope and aim the potential development of the design as part of the act of Trajectorizing:

... and pick things apart sort of to understand how the component parts work together how the arch of an n works with the terminal of an a and and how all of the things create a mood and a time and a place ...

Extract 4 (CS_1, lines 137–140)

The purposeful use of language in this way aids the direction and development of initial visual matter. This enables the designer to improve focus and potential in the early stages of design thinking:

... so it's really ... once we have the vocabulary both in terms of visual things and verbal things that's when we start drawing ...

Extract 4 (CS_1, lines 137–140)

Extract 3

JT_1a {DeDesSearch}{DesignSpaceID}{DesDelimiters_Self}{Ref_Conv_Broad}{From-Knowledge}{Des_Macro} {PrimaryGen}

181 ... a family
 182 of black block letterforms heavy based on wood modern expanded standard
 183 compressed sans slab serif nine typefaces on a grid three by three italic forms
 184 too

Extract 4

CS_1 {DefDesSearch}{DesignSpaceID}{Proced_Dev}{Letter_parts}

137 ... and and pick things apart sort of to
 138 understand how the component parts work together how the arch of an n works with
 139 the terminal of an a and and how all of the things create a mood and a time and
 140 a place erm so it's really we once we have the vocabulary both in terms of visual
 141 things and verbal things that's when we start drawing

Contextualizing via Specific Influences and Precedents

For expert text typeface designers, Contextualizing draws heavily upon the use of specific precedents (relative to Historical Immersion, see Chapter 6) as a key element in influencing the initial stages of Trajectorizing. In relation to this aspect of the process, specific historical models or knowledge of specific prior design relates to identifying direct influences on the sense of positioning the developing design. Contextualizing in such specific ways enables the Trajectorizing of form for the developing design to be accurately positioned. In this sense, the notion of conjecture is narrowed and contained by the expert to fit within fine tolerances. Contextualizing such explicit precedents

directly influences the design of form in the process. Initial precedents constitute singular or multiple direct influences in developing initial form relative to Trajectorizing new designs. Singular precedents may take the form of prior or existing typeface design:

Bembo.

Extract 5 (RN_2, line 64)

Such initial precedents can act as both the starting point for the new typeface and a means of departure in terms of improving the design:

... make it [Dante] ... a better book face than the digital version that existed at that time

Extract 5 (RN_2, lines 63–64)

Such specific Contextualizing of ‘Bembo’ allows not only for Trajectorizing new design ‘Dante’, but also the aim or objective that the new design ‘Dante’ has the potential to perform or function better in some way (This example also illustrates action particular to the core category Attenuating, which is discussed at length within Chapter 6):

... trying to improve on what we already had for Bembo ...

Extract 5 (RN_2, lines 69–70)

Extract 5

RN_2 {Comparison}{PrimaryGen}{Collaboration}{Ref_Other_prior}{Ref_Own_Prior}

60 RN: I think I think that does depend on the project you're working on erm + I eh
 61 I mean I can clearly remember working with Ron Carpenter on Dante when we were
 62 making a digital version of Dante erm what we were really trying to do was to
 63 make it eh a better book face than the digital version that existed at that time
 64 of Bembo
 65 MH: hm
 66 RN: erm because I think the conversion from Bembo erm from hot metal into digital
 67 well into phototypesetting and into digital type hadn't been particularly well
 68 done and it had its shortcomings and with Dante because it's a sort of fairly
 69 closely related design we were trying to improve on what we already had for
 70 Bembo so sometimes there is a sort of clear objective in that way erm

Contextualizing precedents may also take the form of multiple precedents from which a synthesis of factors can enable new design to progress:

... and then you look around you know what kind of fits in there you know is this Baskerville or Garamond or Bodoni ... you know what is the sans gonna be like is this sort of like a Gill or a Futura ...

Extract 6 (ES_1, lines 88–96)

Designers may plan initially to both contextually situate the new design in relation to existing designs but also to directly derive influence in terms of how the initial form of the new design may be developed or mapped from models selected as precedents. Situating multiple precedents in relation to each other may be derived by logical means (e.g.

matrixes

Extract 6 (ES_1, line 91),

in terms of position and juxtaposition:

... Futura there Gill there ...

Extract 6 (ES_1, line 92)

Such positioning of multivariate precedents enables the Trajectorizing of the new design to be aimed within a contextual framework of selected precedents:

... and you say well eh we need to be you know somewhere here in that in that square ... you know like top right maybe towards the humanistic but not quite Gillish ...

Extract 6 (ES_1, lines 94–96)

Extract 6

ES_1 {DesignSpaceID}{DesDelimiters}{PrimaryGen}

88 and then you look around you know what kind of fits in there you
89 know is this Baskerville or Garamond or Bodoni + erm you know what is the sans
90 gonna be like is this sort of like a Gill or a Futura so you mark your stake as
91 it where your outlines + right you know so + well I actually do matrixes so
92 futura there Gill there + eh you know geometric + or Avant Garde Gothic whatever
93 you know I wouldn't touch that but you know what I mean sort of and and erm
94 humanistic and you say well eh we need to be you know somewhere here in that in
95 that square + you know like top right maybe towards the humanistic but not quite
96 Gillish

Degrees of specificity as to how and from where precedents may be derived in relation to the act of Contextualizing can vary greatly. These can range from the broad and heuristic to the focused and particular. In either case, the use of precedent or precedents enable experts to initiate thinking and or action in the process of designing. Influence can be as broad as a collection of associated historical models:

English vernacular.

Extract 7 (JT_1a, line 206)

38 *Trajectorizing*

More specific influences can include drawing historically from the way in which a particular designer is known to have worked. In terms of Contextualizing, this may still result a group of precedents that seemingly work on simultaneous levels:

... I've looked at several different Granjon faces and I've taken one bit from here and one bit from there and so on you know ...

Extract 8 (MC_1, lines 129–131)

However, potential synthesis of precedents may offer new opportunities for the expert in terms of their use in initiating new design:

... and put them together in a in a configuration that ... Granjon did not eh for the sake of argument ...

Extract 8 (MC_1, 131–132)

Extract 7

JT_1a {DesignSpaceID}{DesDelimiters}{DefDesSearch}{Proced_Dev}{Ref_Know_Hist_Cont}{PrimaryGen}

202 ... this
203 thing here so (showing drawn diagram in notebook) as much as I'm doing sketches
204 of loose sketches little visual notes or whatever like little mind maps of
205 what's is interesting me a lot of these came from eh where is his book +
206 Bartram's book on English vernacular wherever he is + there's three little books
207 an there's a big anthology kind of book a collect of the three books together
208 but a lot of it comes from that

Extract 8

MC_1 {Mutability}{FirstChars_Uc}{FirstChars_Lc}{Comparison}{Ref_Other_prior}{Proced_Dev}{PrimaryGen}{Working_Phase}

128 ... in the case of Galliard you know I I've
129 described that as being an anthology of Granjon's work because I've looked at
130 several different Granjon faces and I've taken one bit from here and one bit
131 from there and so on you know erm and and and put them together in a in a
132 configuration that that Granjon did not eh for the sake of argument

Although expert designers evidence Contextualizing in terms of broad variation in the kinds of influences referenced and where these may directly have impact relative to the articulated design process, Trajectorizing from these is common. Experts draw influence in order to focus, aim and give direction, Trajectorizing the new design.

Referencing Own Prior Work as Precedent

Contextualizing via precedent extends to expert designers explicitly referring to their own prior design work or aspects of prior design work as potentially influential toward the creation of new typeface design. This aspect of Trajectorizing gives insight to the ways in which designers use their own familiar prior work as a starting point to initiate a new design. The ease with which the designer is able to access data in terms of their own designed digital outlines can have a contributing influence:

... because it's just there ... why not ...

Extract 9 (ES_1, line 340)

This may provide immediate and tangible starting points for design where designers are able to work directly with pre-existing forms that will initiate the basis of a new design:

... and what I ... very often do is I cannibalize one of my earlier designs ... all the digitization points are in the right places and the thick and thins are there ...

Extract 10 (GU_1, lines 85–88)

The selection of the designer's own prior work as a precedent can be influenced by the perceived or apparent success or usefulness of the prior design based upon the designer's experience and knowledge:

... so I used those outlines of those drawings because I know it works ...

Extract 9 (ES_1, line 342),

and:

... I've done quite a few typefaces already so what you do is say start on a much higher level than the students here do ... I don't have to reinvent the letterforms completely ... I've done that a couple of times ...

Extract 10 (GU_1, lines 81–85)

Contextualizing in this manner, based upon the use of precedents that reference the designer's own prior work, affords designers the ability to draw upon their inherent sense of what is useful in terms of allowing for potential to develop from the selected prior design work. The use of prior successful work as a starting point, Trajectorizing the new design, potentially raises the possibility of the new design's success also as this is initiated by a prior model that the designer tacitly knows to be useful:

... I know it works ...

Extract 9 (ES_1, line 342)

The design expert is able to purposefully identify potential in prior work, knowing that it will have possibility in yielding further successful development relative to a new design. The use of precedent where designers are self-referencing their own prior work may require a combination of suitable prior work and insight allowing

the designer to identify potentially useful work and how this may benefit the Trajectorizing aims of the initial stages of design (on this latter point see Envisioning in Attenuating, Chapter 6).

Extract 9

ES_1 {DesDelimiters}{Tech_as_tool}{PrimaryGen}{Ref_Own_Prior}

331 MH: ... and are you are you that framework you talked about earlier do you use your
332 own typefaces sometimes
333 ES: yeah all the time
334 MH: to draw from
335 ES: and then I mean I did eh I did something for the german TV a couple of
336 years ago which erm I did actually draw from scratch but I knew it had to be a
337 sort of typerwriter thingy and I'm familiar with those considerably wider than I
338 would normally do but that's now become the base for a couple more screen faces
339 MH: yeah
340 ES: because it's just there for Christ's sake why not eh
341 MH: yeah
342 ES: use it so I used those outlines of those drawings because I know it works

Extract 10

GU_1{Proced_Dev}{Ref_Own_Prior}{FirstChars_Uc}{FirstChars_Ic}{Proced_Dev}

81 GU: I've done quite a
82 few typefaces already so what you do is say start on a much
83 higher level than the students here do + I don't have to
84 reinvent the letterforms completely + I've done that a
85 couple of times + and what I eh very often do is I
86 cannibalize one of my earlier designs + all the digitization
87 points are in the right places and the thick and thins are
88 there + so what I usually do is take a couple of characters
89 from an earlier design and eh start to modify it so it
90 begins to look like something I have in mind for my new
91 design

The potential the designer identifies in the use of a particular precedent as a starting point is utilized in the development of a new design, or more correctly, a new form is created via the use of known or found influences. In terms of text typeface design an important and particular recurrent theme that emerged from the data was the ways participants described how they worked from initial

precedents, either based upon their own prior designs or influences of an extraneous nature, and how these led to the development for the potential of new designs. Extract 10 describes the way in which the participant begins to identify specific starting points as important in this view and moves to tangibly developing text typeface design:

... so what I usually do is take a couple of characters from an earlier design. ...
Extract 10 (GU_1, lines 88–89)

This also importantly illustrates phenomena relative to a key sub-category of Trajectorizing:

... and eh start to modify it so it begins to look like something I have in mind for my new design. ...
Extract 10 (GU_1, lines 89–91)

Related phenomena from this research is identified and termed Precedent Constructing.

Precedent Constructing and Constructed Precedents

Type design experts not only draw upon precedent Contextualizing trajectory of new design; they also purposefully set Constructed Precedents within the process of establishing and negotiating the development of new typeface design. This includes developing a small group of initial forms or type forms that will then allow a typeface design to develop further with these initially developed forms the basis to inform subsequent form within the design. In developing particular and specific initial forms, experts allow for the potential development and generation of subsequent relational form. By Precedent Constructing designers are able to develop design by attending to micro to macro/form to context like scenarios that will allow for precedent-like detail within the structure of a letterform(s) to potentially inform subsequent letterform development. In the construction of initial type form, designers aim not only to design specific initial letterforms in themselves but Trajectorize their initial design in such ways that this will allow them to use and build from such initial forms by means of internalized or vestigial Constructed Precedents. Such Constructed Precedents within initial form can then be followed as rule and guide for the subsequent development of form as the typeface design continues. Therefore, experts' aims and objectives are focused on designing form that they determine as being sufficient to allow the details of such form, to afford the context from which subsequent form can follow. Working with such aims in mind, designers are Trajectorizing design to eventually become self-informing. A newly designed letterform with its internalized Constructed Precedents becomes imbued with potential to act as a generator within the process of continuing design (see Homologizing, Chapter 5).

Of particular significance is when experts describe working over, changing or manipulating form in order to depart from an original Contextualizing precedent but with the focus that such working over of form allows for the creation of a newly set precedent for the developing text typeface design. Thus, text typeface

design experts create or set new precedent(s) from existing precedent(s). The result of this behaviour is newly created Constructed Precedents that become internalized within the scheme of developing text typeface design process.

As described, precedents may take numerous forms and be derived from multiple or singular sources with respect to text typeface design. The working over of existing form affords the designer to intrinsically aim or project in terms of how a text typeface design may be informed by choices and decisions made early in the process of design by via Precedent Constructing. This enables designers to delimit and forecast in terms of Trajectorizing aspects of a new design and the effect this may have on the foreseeable typeface design. The designer's own sense of self-determination in terms of what is deemed potentially original or novel in a design is fused with what is regarded workable or functionally apposite with respect to the prospective text typeface design (for further discussion, see Envisioning in Chapter 6 – Attenuating).

Precedent Constructing from Own Prior Work

With respect to Trajectorizing, experts commonly evidenced the working over of prior form, in order to prospectively aim at aspects of the new design. Participants frequently referred to using their own prior work, or such possibilities, as starting points around which to work over and develop potential for a new design. Such possibilities of using their own previous designs can be in the form of digital outlines as starting points for new design:

... you tweak them and there's you change you know there's so many parameters you can change that make it look totally different but why and these days ... that also means opening up your own data ...

Extract 11 (ES_1 lines 343–354)

This is also reflected in:

... I would say what have I done that's kind of like that you know and I would maybe borrow a few letters ...

Extract 12 (MC_1, lines 268–270)

Familiarity and availability of source in terms of form appears important alongside a sense of ownership and perhaps ethical legitimacy:

... there is so much you can do by manipulating your own outlines now that's perfectly legitimate to me because they're mine I wouldn't do it with somebody else's that's one thing I have never done and never will do ...

Extract 11 (ES_1, lines 351–354)

Working in such a manner may offer what experts see as

... limitless choices ...

Extract 11 (ES_1, line 347)

in terms of changing the appearance of the original form by means of:

... drawing over it manipulating it ...

Extract 11 (ES_1, line 346)

Specific software tools can offer experts ways in which possibilities to work from prior form may be developed:

... why not just do it straight onto the screen you know and clean it up so that's what I do ...

Extract 12 (MC_1, lines 263–264),

and:

... we have Superpolator we have all these tools ...

Extract 11 (ES_1, lines 346–347)

Perhaps more specifically, experts identify particular aspects of a design that may be useful or productive in manipulating or working over form in order to determine potential qualities for a new design:

... I can change the weight I can change one of the axes I can make it wider thicker thinner all at the same time and it looks a totally different typeface and then chop off the serifs add a few make the counters round or make the counters square ... there is so much you can do by manipulating your own outlines ...

Extract 11 (ES_1, lines 349–352)

Also in this extract:

... I'd say to myself well if I make the x height bigger of this ... and I beefed up the weight ...

Extract 12 (MC_1, lines 276–277)

The references experts make in establishing initial form relate to manipulation of familiar form in order to develop possibilities for the new design:

... maybe they would eventually be changed out of all recognition but I would start with something you know again a blank screen is not is not for me ... I would throw up some letters perhaps from some previous job I'd done or something and say well is this going in the right direction ah no maybe not well I'll look at something else and so on ...

Extract 12 (MC_1, lines 270–274)

In the manipulation or development of Trajectorizing new form, experts identify possibilities of working over and changing the original form in order to determine the direction for the new design. This can involve a certain degree of adjustment or amelioration of the original (see Chapter 6 – Attenuation):

44 *Trajectorizing*

... I would cast around and then I would probably find something that it wouldn't work as is I mean you know but it would be something I would change ...

Extract 12 (MC_1, lines 274–276)

The direction or trajectory of a new design may be expedited by Contextualizing via designers' own prior work and the use of the computer in terms of Precedent Constructing. However, the notion of starting points appears to be significant for the design expert:

... am I then going in the right direction so I would try that yeah this looks promising and so ... I would depart from my starting point fairly soon ... but I still would have a starting point of some kind ...

Extract 12 (MC_1, lines 277–280)

In terms of the nature of how the manipulation of form is achieved or derived, this may take any apposite or valid method. Some experts describe the possible use of software and drawing directly onto the computer as mentioned. However, more traditional or temporal methods of drawing and manipulation via Contextualizing prior form relative to Precedent Constructing can manifest:

... Shaker's based on Enigma ...

Extract 13 (JT_2a, line 381),

and also

... I printed out Enigma and then either drew over through trace ... another one I had liquid papered out bits to get a basic serif-less version of it ...

Extract 13 (JT_2a, 383–385)

Extract 11

ES_1 {DesDelimiters}{Tech_as_tool}{PrimaryGen}{Ref_Own_Prior}

343 and then you tweak them and there's you change you know there's so many
344 parameters you can change that make it look totally different but why and these
345 days there are also eh and these days that also means opening up your own data
346 rather you know either drawing over it manipulating it we have Superpolator we
347 have all these tools that that gives you limitness limitless choices and then
348 you can say ok well you know I can change the weight I can change one of the
349 axes I can make it wider thicker thinner all at the same time and it looks a
350 totally different typeface and then chop off the serifs add a few make the
351 counters round or make the counters square + there is so much you can do by
352 manipulating your own outlines now that's perfectly legitimate to me because
353 they're mine I wouldn't do it with somebody else's that's one thing I have never
354 done and never will do

Extract 12

**MC_1 {DesignSpaceID}{DefDesSearch}{Tech_as_tool}{Working_Phase}{Ref_Own_Prior}
{Ref_Other_prior}{Proced_Dev}{PrimaryGen}{FirstChars_Ic}**

258 MC: I I I don't draw by hand at all on on paper any longer erm you know for a
 259 long while in the days of photocomposition I had to draw I mean I made
 260 production drawings but I I don't really draw very well I mean I don't have very
 261 good coordination eh motor skills so erm I gave up drawing just as soon as I
 262 could erm because I thought it was a waste of time you know to make a bad drawing
 263 scan it and then clean it up on the screen why not just do it straight onto the
 264 screen you know and clean it up so that's what I do erm but even even if I don't
 265 have a historical model or any model let's let's suppose although this seldom
 266 happens to me as I say I would start from something you know I I I + it's always
 267 easier to start from something than from nothing if I if I was working on a
 268 particular or wanted to work on a particular kind of design I would say what
 269 have I done that's kind of like that you know and I would maybe borrow a few
 270 letters and maybe they would eventually be changed out of all recognition but I
 271 would start with something you know again a blank screen is not is not for me erm
 272 I I I would throw up some letters perhaps from some previous job I'd done or
 273 something and say well is this going in the right direction ah no maybe not
 274 well I'll look at something else and so on you know so I I would cast around and
 275 then I would probably find something that it wouldn't work as is I mean you know
 276 but it would be something I would change you know I'd say to myself well if I
 277 make the x height bigger of this and I and I beefed up the weight a bit am am I
 278 then going in the right direction so I would try that yeah this looks promising
 279 and so so I would depart from my starting point fairly soon I would guess but I
 280 still would have a would have had a starting point of some kind yeah

Extract 13

**JT_2a {FirstChars_Uc}{FirstChars_Ic}{Mutability}{Ref_Own_Prior}{Proced_Dev}
{PrimaryGen}**

377 I've got a history of some of the types (moves over to box to look for an
 378 example) + erm shaker might have it (looks through folder) (17 secs) depends
 379 how far back (12 secs) these are this is naming of it so that's not it (11 secs)
 380 and you can see on there I think I know why I did that that was a printout of
 381 Enigma Shaker's based on Enigma
 382 MH: hm
 383 JT: and I know that here I I printed out Enigma and then either drew over
 384 through trace or erm or I know another one I had liquid papered out bits to get a
 385 basic serifless version of it

As an important aspect of Trajectorizing for the expert is Precedent Constructing via Contextualizing their own prior work, this may be a result of the designer's tacit or experiential knowledge – knowing what works or is workable in relation to previous designs. Self-deterministic motivators and perspectives in terms of ownership may also influence the choice of the use of own prior work as a starting point for design. However, experts' Precedent Constructing is not solely bound to Contextualizing their own prior work.

Precedent Constructing from Other Prior Work

Precedents may include working directly from other known or found sources of existing typeface design as an aid to Contextualizing the developing new typeface design. Again, these forms of precedent aid in the Trajectorizing of the new typeface design. Experts often utilize type design not of their own making as the basis for starting points and the working over of form. The use of found or known sources of influence in the process of design leads to the development of Precedent Constructing. The working over and manipulation of form is actuated in a similar manner as when experts utilize their own prior work:

having something in the background

Extract 14 (RN_2, line 122),

and leading to Precedent Constructing:

... then just work over ... making the modifications I think appropriate as I go ... and often sort of in fairly rough form. ...

Extract 14 (RN_2, lines 123–124)

As in using their own prior work, expert designers may be initially Contextualizing via the prior work of others and then simultaneously Trajectorizing and Attenuating (see Chapter 6) through the working over of new form Extract 14 (lines 125–131). Here the participant alludes to the ongoing shaping of the initial form (Precedent Constructing) and the checking of the form (Attenuating) via printouts:

... I tend to print out copiously amounts of (laughs) characters and often just the individual character I'm working on ...

Extract 14 (RN_2, lines 125–126)

In weighing up the net purpose of the working over of the form and the checking of iterations of a new design:

... to see how well the weights are working with contrasts between thicks and thins and so on ...

Extract 14 (RN_2, lines 130–131),

designers are simultaneously Trajectorizing and Attenuating. They are ensuring specific aspects of newly Constructed Precedents adhere to their vision for the new

design: ‘... contrasts between thicks and thins ...’, elemental to the form of characters throughout the typeface design. Establishing relationships between such given aspects is important at this early stage in the design process. These kinds of micro details become Constructed Precedents within the initially established characters of the newly developing typeface design.

Extract 14

RN_2 {Testing}{Working_Phase}{PrimaryGen}{Tech_as_tool}{Ref_Other_prior}

119 RN: yes yes I mean I might I might draw in illustrator perhaps to begin with eh
 120 a few shapes and then take those into fontlab and erm or I mean if it's if it's
 121 something that's sort of derivative or at least if it's if it's a sort of sans
 122 serif style I might start with you know having something in the background in in
 123 fontstudio erm and then just work over erm making the modifications I think
 124 appropriate as I go erm and often sort of in fairly rough form this is why I was
 125 saying earlier that I tend to print out copiously amounts of (laughs) characters
 126 and often just the individual character I'm working on erm so I might do a rough
 127 shape and then just print it out at the sort of size erm + well usually I I would
 128 start probably printing it at at around about a hundred and twenty point or
 129 something like that to get a look at the basic shape eh erm and then some smaller
 130 sizes to see how well the weights are working with contrasts between thicks and
 131 thins and so on

Developing the familiarity of a selected precedent other than those of the participant's own previous work constitutes a valid form of Contextualizing. In such instances experts may go beyond merely using existing design as a precedent upon which to base a new design and select precedents purposefully to develop further understanding:

... lets say that I did that I do have particular specimen of a typeface let's say that I would like that interests me that I want to inform myself about ... I would begin by following it fairly literally ...

Extract 15 (MC_1 lines 119–121),

and:

... that is how I educate myself about something ...

Extract 16 (MC_1 line 83),

also:

... it almost ends for me with an attempt to educate myself. ...

Extract 17 (MC_1 lines 91–92)

Experts learn from the use of precedents how knowledge of existing design may benefit in Trajectorizing a new text typeface design. Expert designers develop their own vision or foresight as to how a new text typeface design might develop (also see Envisioning in Attenuating, Chapter 6):

... you look at what you've done you compare it back to the model and I think it's almost never happened to me ... that I have stayed with you know that I've sort of imported a historical typeface literally letter for letter stroke for stroke and so on perhaps arrogantly I generally find someway in which I want to change it ...

Extract 15 (MC_1 lines 124–128)

As with working from their own previous designs to develop a new design, experts use precedents to enable the generation of new design through familiarity with found or selected precedents. Developing familiarity with a design then allows designers to work over, compare and work away from the selected precedent in some way. This then introduces purposeful direction and originality in Trajectorizing the new design whilst maintaining a sense of orientation and continuity upon which the new design is based:

... I would start by following the model fairly closely but then as I got more familiar with it more comfortable with it I probably would start to ... I have a sense of responsibility toward historical models I don't want to ... you know trash them ... but on the other hand I ... don't feel pious about it in the sense that I allow myself the ... license ... to make changes if I think they are ... worth doing and so on you know

Extract 15 (MC_1, lines 133–139)

Extract 15

MC_1 {Mutbility}{FirstChars_Uc}{FirstChars_Ic}{Comparison}{Ref_Other_prior}{Proced_Dev}{PrimaryGen}{Working_Phase}

119 MC: I mean I'm + I lets say that I did that I do have particular specimen of a
 120 typeface let's say that I would like that interests me that I want to inform
 121 myself about erm I would begin by following it fairly literally probably you know
 122 I would scan whatever eh sample I had I would work over it in eh I I generally
 123 use fontographer different I've used different versions of it eh and and then of
 124 course you you look at what you've done you compare it back to the model and I
 125 think it's almost never happened to me as I as I said that I have stayed with
 126 you know that I've sort of imported a historical typeface literally letter for
 127 letter stroke for stroke and so on perhaps arrogantly I generally find someway
 128 in which I want to change it erm + in the case of galliard you know I I've
 129 described that as being an anthology of granjean's work because I've looked at
 130 several different granjean faces and I've taken one bit from here and one bit
 131 from there and so on you know erm and and and put them together in a in a

132 configuration that that granjean did not eh for the sake of argument so and
 133 that's very unpredictable in my case I mean what as I say I I would start by
 134 following the model fairly closely but then as I got more familiar with it more
 135 comfortable with it I probably would start to + I mean I + I have a sense that +
 136 em + I have a sense of responsibility toward historical models I don't want to +
 137 eh erm you know trash them erm but on the other hand I I don't feel pious about it
 138 in the sense that I allow myself the the license to to make changes if I think
 139 they are worth worth doing and so on you know

Extract 16

MC_1 {PrimaryGen}{Ref_Other_prior}{DesignSpaceID}{Ref_Act_Design_learn}

83 MC: I mean that that is how I educate myself about something you know here's a
 84 nice typeface I've got a reasonably good specimen of perhaps most of the
 85 alphabet and so on let me scan it and put it in the background and eh and work
 86 over it and see where it takes me

Extract 17

MC_1 {PrimaryGen}{DefDesSearch}{Ref_Act_Design_learn}{Ref_Other_prior}

88 MC: and in that way eh I do sort of figure out why it is I like this typeface
 89 (laughs) eh and indeed whether I want to pursue it you know whether whether I
 90 think there's something here that I can use or add to or what whatever you like
 91 you know but but erm yeah I it it almost ends for me with an attempt to
 92 educate myself about about something I'm attracted to eh without as I say
 93 without necessarily having a very well thought out rationale for for liking this
 94 or you know you know

The nature by which text typeface designers may be Contextualizing by means of found or selected precedents, other than that of their own work in order to develop Constructed Precedents, can vary from directly drawing over an initial found or selected source. The data evidenced alternative instances whereby experts describe a purposeful selection and use of precedents as starting points for new designs. In these cases the method of engagement with background precedents used to work from varies from those mentioned previously. Negotiating familiarized aspects of precedent within developing new or original form can result from immersion of studying the form of the selected precedent(s). This can then lead to Precedent Constructing based upon memory of the initial precedent, even when this begins with a temporal approach to understanding the nature of the selected precedent(s):

... I might even trace some to get the gist of it that's how we all start and it is still a good method to trace that old stuff to get the feel of it ... and then I would go put all the books away ...

Extract 18 (ES_1 lines 376–378)

The use of selected precedents is studied as purposeful influences in order to develop familiarity and knowledge of form before embarking on the development of new form for text typeface design. This method of employing memorized precedents ensures newly Constructed Precedents vary or differ from that of the original precedent:

... I knew I wanted to go sort of like where syntax is but different ... if you look at a typeface for a long time you study it as it were you know look in different size look at the drawings may be ... then you sort of put the book away as it were and draw it from memory ... it won't look anything like the original ...

Extract 18 (ES_1 lines 365–369)

In terms of Contextualizing from memory and in relation to Precedent Constructing, the fact that the initial precedent is not temporal, tangible or present to the designer may have benefits. In employing such a method, the designer is not forced to concentrate on literal minutiae and detail, but it offers an opportunity to develop Constructed Precedent(s) for the new design via developing detail(s) in relation to a conceptual or envisioned typology:

... I have soaked up and I find that actually a good and legitimate method because we are talking about a generic style ...

Extract 18 (ES_1 lines 383–385)

In the use of memorized precedents, the designer is forced to work away from the initiating precedent(s) from inception, as there remains no tangible or temporal precedent other than those that the designer begins to develop in term of Precedent Constructing:

... I would look at all the variations and then shut them away and ... have a white sheet of paper and draw it ... construct it I do start with a few measurements I want my thickness and stuff and my x-height and draw a little grid ... and then just start drawing and drawing and drawing and then see what happens and I would I find that for me it's the appropriate way to do it ...

Extract 18 (ES_1, lines 387–392)

In this example, the initial precedent(s) upon which the Constructed Precedent(s) develop are not present to the designer in a temporal sense but are known or are afforded a mental image from which to develop new form(s) as a Trajectorizing action.

Extract 18

**ES_1 {DesDelimiters}{FromKnowledge}{Ref_Conv_Spec}{Ref_Know_Hist_Cont}
{Ref_Originality}{Ref_Other_prior}{PrimaryGen}**

360 ES: where was I I was going to say something else that's informative we were
 361 there what was the other method + oh yes now that's one thing I noticed and I
 362 didn't know that before erm I found out recently + I can't remember what I was
 363 doing erm I said I won't use somebody else's outlines physically but what I do
 364 like what we all do I am of course informed by what's out there so what I've
 365 I've noticed I've been doing if I wanted a certain style like I said I knew I
 366 wanted to go sort of like where syntax is but different + if you erm if you look
 367 at a typeface for a long time you study it as it were you know look in different
 368 size look at the drawings may be and erm and then you sort of put the book away
 369 as it were and draw it from memory + it won't look anything like the original
 370 MH: no no
 371 ES: but it will be what you remember about it then it's yours so it's
 372 appropriation like we all do it's eh to me that's legitimate so if I drew a
 373 Garamond I would probably spend you know a few weeks looking at Garamonds and I
 374 would put all the Garamonds away not trace them
 375 MH: Hm hm
 376 ES: I might even trace some to get the gist of it that's how we all start and
 377 it is still a good method to trace that old stuff to get the feel of it erm + and
 378 then I would go put all the books away sit down and say OK what what does
 379 Garamond look like and I would draw and it wouldn't look anything like Garamond
 380 it would have some of the drops of Garamond has the contrast may be but it would
 381 be mine
 382 MH: so are you remembering the things from the different versions of Garamond
 383 ES: yeah whatever whatever is whatever I have soaked up and I find that
 384 actually a good and legitimate method because we are talking about a generic
 385 style you know if I wanted to do a Bodoni or whatever or a modern or something
 386 more general or a constructed sans which I haven't done yet erm I would probably
 387 do it the same way I would look at all the stuff you know I would look at all
 388 the variations and then shut them away and and have a white sheet of paper and
 389 draw it + construct it I do start with a few measurements I want my thickness
 390 and stuff and my x-height and draw a little grid + and then just start drawing
 391 and drawing and drawing and then see what happens and I would I find that for me
 392 it's the appropriate way to do it

Precedent Constructing then is manifest within the process of design in the initial stages of developing form for text types. This allows the designer to envision further potential development of a design to the point at which the design will eventually become self-informing. As an element of the initial Trajectorizing actions, the designer

is able to focus more clearly the potential within the newly developing design as informing its own further development as a series of forms. The point at which the Constructed Precedent becomes set, fixed or actuated, is when the designer stops working over the form, either temporarily or permanently in the process of design. The newly Constructed Precedent then has the potential to become an Endogenous Generator (see Homologizing, Chapter 5) within the process of text typeface design. The designer may then move from initial Trajectorizing actions to Homologizing actions within the process of text typeface design. Homologizing is described in Chapter 5 along with its related conditional sub-category Endogenous Generation.

Control Characters and Constructed Precedents

It is important to mention at this point within this developing Grounded Theory, that one of the main aspects of the design decision-making process that links and allows the designer to move from Trajectorizing actions to Homologizing actions within the process of text typeface design is in the selection of first character forms to work upon (i.e. the first letterforms the designer selects or chooses to develop as a design). The term often used by designers for initial letterforms designed for a typeface is ‘control characters’, referred to at times by the participants within the primary research data. Constructed Precedent refers to letterforms or parts thereof selected by the designer, described in the data as the first characters whereby an attempt proper is made to begin to develop letterforms for the typeface. Therefore, the term Constructed Precedent refers to the initial actuated letterforms and parts thereof beyond any initial sketches in sketchbooks or notebooks, etc., that may relate to idea generation or delimitation of concepts formulated prior to the attempted articulation of design.

In general terms, when experts describe the first characters they design, the designing of these characters can be seen as often purposefully generative, in that they allow for the development of others to follow. That is to say that these Constructed Precedents are not solely designed as an end in themselves; rather, they open up possibilities and means for further procedural development of the typeface design. Initial letterforms designed within the early stages of the process of text typeface design are more than merely used as control characters, they are also generative characters whose component parts act as precedent for subsequent characters to draw from. Text typeface designers then are Trajectorizing in their choice of which initial characters or letterforms to work on in the early stages of the design process. Participants evidenced not only the kinds of characters or letterforms upon which the design begins but also the significance in relation to these choices.

Extract 19, line 318 and Extract 24, line 158 illustrate type design experts identifying the first characters that they begin the design process with. It can be noted that there are commonalities and differences between the suggested starting points evidenced by experts:

... probably my first are n p ...

Extract 19 (JFP_1, Line 318),

whereas:

... I start with an h and an o or an n and an o ...

Extract 20 (GU_1, line 158),

the character common between the expert accounts above is the ‘n’. Experts purposefully select the nature of these starting points:

... and from there pull through other characters. ...

Extract 20, (GU_1, lines 158–159).

Trajectorizing design in such a manner not only initiates a general process of design, it also loads those initially designed elements with potential to inform subsequent elements within a design – Precedent Constructing. The consequential Constructed Precedents lead to opportunity for Homologizing actions with the process of design. Type design experts describe drawing from declarative knowledge, knowing that certain choices as to which character to begin with will allow for trajectory to develop in the system of design. Here it is not just the choice of ‘what’ character can be seen as important, but ‘why’ it is important as this choice is both purposeful and generative. Trajectorizing therefore purposefully initiates design but also predicates design. In the case of text typeface design, the action of developing subsequent characters in relation to Constructed Precedents belongs to the core category of Homologizing. Thus, Constructed Precedents establish the direction and inform the development of the text typeface design:

... basically it’s true ... so you start indeed with a very limited set and build from there.

Extract 20 (GU_1 lines, 164–165)

Extract 19

JFP_1 {FirstChars_Ic}{Ref_Other_prior_NEG}

312 JFP: so, so, so for the initial glyph we are always
 313 question + it came always on the table + erm + and I know
 314 depending on the designer there is different glyph I know
 315 that Frutiger use + o n + but eh the o is probably one of
 316 the last letter I will design
 317 MH: Yeah
 318 JFP: but the n probably my first are n p

Extract 20

GU_1 {FirstChars_Ic}{Proced_Dev}{Des_Micro}{SystemNotion}{Proced_Dev} {Des_Micro}

155 GU: [gazes upwardly shaking head slightly] it’s again
 156 something that I do not pay a lot of attention to + I think
 157 there is there is a bit of variation there + like Matthew
 158 [Carter] I start with an h and an o or an n and an o and

54 *Trajectorizing*

159 from there pull through other characters + Matthew [Carter]
160 says the the genetic information for the font is in the h
161 and the o + [screws face slightly] I'm inclined to say there
162 should be a few more characters like lowercase a or
163 lowercase s and eh the tail of a g and a few more details
164 like that but + eh basically it's true + so you start indeed
165 with a very limited set and build from there

The choice of 'control characters' designers select to work on in the initial stages of the text typeface design are important as they facilitate the ability for designers to negotiate the move from Trajectorizing to Homologizing actions via Constructed Precedents within the early stages of the typeface design. This also allows the designer to move from working at a micro level of detail in terms of specifics in relation to single character design to common attributes in terms of a general developing view of the typeface design at a macro level.

Summary

The core category Trajectorizing describes the way in which designers make decisions and their related actions that inform and influence initial aspects of the design process. This includes character designs and the development of these designs relative to the process of the overall emerging design of the text typeface. Trajectorizing describes the impact and consequences in terms of decision-making and designing form and/or forms of initial characters within the process of text typeface design. Trajectorizing as a core category also includes the developed sub-categories Contextualizing, Precedent Constructing and Constructed Precedent, these latter sub-categories describe conditional, causal and consequential phenomena respectively.

The category Trajectorizing describes causal phenomena that afford the typeface design expert a sense of orientation, location or perspective within the design process. The sub-category Contextualizing describes possible singular or multivariate precedent-like influences that are drawn from in order to establish or influence the process of design. Certain Contextualizing influences can be seen as similar to such influences as the clearly identified 'Primary Generator' (Darke, 1979). Conversely, such Contextualizing influences may also appear accounted for as more complex multivariate or blended forms of precedent-like influence. Such references may be directly drawn from the type design expert's knowledge and experience or from extant exemplars of designs, schema, taxonomies or methodologies. In part, Trajectorizing describes the way in which designers draw upon declarative knowledge or that which is known, and how this allows for fixed points of reference and verification to negotiate location and perspective, Contextualizing the initial stages of text typeface design. Contextualizing affords the designer to aim with purposeful potential. The sub-category Precedent Constructing describes causal phenomena relative to the way in which designers produce form in the initial stages of design by way of developing Constructed Precedents that will subsequently inform the developing design – Precedent Constructing.

Trajectorizing describes a set of actions and decisions that belong to the initial stages of developing form, in this research, letterform or parts thereof. Trajectorizing also refers to the function of potential that the designer purposefully develops within the initial forms of design. In this respect, as well as initiating the design of the text typeface, Trajectorizing allows the designer to calibrate, aim and charge with potential the direction of subsequent form within the system of the typeface design. The potential loaded within the initial designed elements – letterforms or parts thereof – subsequently allows for Homologizing actions that in turn further develop the overall text typeface design.

5 Homologizing

Introduction

This chapter outlines the developed core category Homologizing and its related sub-categories Endogenous Generation (including its dimensions Homologous Mapping and Homologous Drift) and Endogenous Generator. Included also in this chapter are the developed dimensions Synthetic Acquiescence and Synthetic Displacement. The latter sub-category dimensions are aligned with known causal phenomena Extrapolation and Interpolation, identified within this research as sub-categories of Homologizing. As in Chapters 4 and 6, the relationship of core category and relative sub-categories is highlighted with reference to Glaser’s theoretical familial categories – the Six Cs (Glaser, 1978). Table 5.1 shows the relationship of Homologizing and its sub-categories aligned to Causal, Conditional and Contingent categorizations.

In this chapter and Chapters 4 and 6, the raised core and sub-categories are developed as Grounded Theory, as described in Chapter 3. Table 5.2 shows the relationship of the core category Homologizing and its developed sub-categories: Endogenous Generation and Endogenous Generator along with sub-category dimensions and known causal phenomena. This table also shows the relationship of sub-categories to the substantive coding and coding descriptions relative to coding at the primary data level.

Table 5.1 Relationship of the core category *Homologizing* to sub-categories.

Core Category	Sub-Categories		
Causal	Causal	Conditional	Contingent
Homologizing	Precedent Constructing <i>Extrapolation*</i> <i>Interpolation*</i> Synthetic Acquiescence (dimension) Synthetic Displacement (dimension)	Endogenous Generation Homologous Mapping (dimension) Homologous Drift (dimension)	Endogenous Generator

* Known causal phenomena

Table 5.2 Table showing lineage and relationships of coding at the substantive level up through conceptual categories with reference to the core category.

Homologizing – Codes relating to core category

Sub Cat > Code Definition

Endogenous Generation + [Homologous Mapping – Homologous Drift] (Dimensions) + Endogenous Generator (Contingent)

<i>Des Macro</i>	Participant describes/acknowledges details relating to a macro level view/notion of design
<i>Des Micro</i>	Participant describes/acknowledges details relating to a micro level view/notion of design
<i>FirstChars Uc</i>	Participant describes Letters designed initially for the UPPERCASE
<i>FirstChars lc</i>	Participant describes Letters designed initially for the lowercase.
<i>Mutability</i>	Participant describes mutable differences in similar character shapes
<i>Proced Dev</i>	Participant’s Statement shows insight to procedural development of design
<i>SystemNotion</i>	Participant describes or intimates NOTION of or reference to a SYSTEM or framework
<i>Tech as tool</i>	Participant describes using technology as a tool in the process or generation of design

Extrapolation/Interpolation + [Synthetic Acquiescence – Synthetic Displacement] (Dimensions)

<i>Des Macro</i>	Participant describes/acknowledges details relating to a macro level view/notion of design
<i>Des Micro</i>	Participant describes/acknowledges details relating to a micro level view/notion of design
<i>FirstChars Uc</i>	Participant describes Letters designed initially for the UPPERCASE
<i>FirstChars lc</i>	Participant describes Letters designed initially for the lowercase.
<i>Mutability</i>	Participant describes mutable differences in similar character shapes
<i>Proced Dev</i>	Participant’s Statement shows insight to procedural development of design
<i>SystemNotion</i>	Participant describes or intimates NOTION of or reference to a SYSTEM or framework
<i>Tech as tool</i>	Participant describes using technology as a tool in the process or generation of design
<i>Variants</i>	Participant describes consideration of other design variants in the design process

* Known causal phenomena

This makes explicit the hierarchical lineage of the raised conceptual categories relative to coding at the data level. Extracts from the primary data illustrate and give evidence to developed theoretical concepts and assertions.

Homologizing

Where Trajectorizing describes the actions of text typeface designers in relation to the initial development of form within the process of design, Homologizing describes actions relating to developing relational contiguity within the emerging forms relative to new a text typeface design.

As mentioned in Chapter 4, designers' Trajectorizing actions initiate the designing of particular type-forms early in the process of design. The letterforms produced by designers at this early point in the process are not solely for the purpose of designing those letterforms in themselves. That is to say that type designers are not merely designing collections of individual letterforms that become typefaces. Designers are designing or shaping letterforms so that qualities of the designed forms – or more correctly elements of the designed forms, Constructed Precedents – will potentially inform the development of subsequent letterforms within the developing typeface.

Within the design process designers produce initial forms that help shape or generate subsequent forms by way of their elemental parts, proportions, spacing and modulation of stroke etc. Propagation of form develops from initial character(s) or initial group(s) of forms. Subsequent forms become homologues or Homologizing forms. Homologizing provides the basis upon which the whole typeface develops its internal relational harmony. As a typeface develops and continues, even through to the latter stages, designers may change or adjust characters. Adjustment and/or alteration may have an impact or knock-on effect throughout the rest of the design. If the designer changes one aspect of a single letter, this may have the effect of necessitating change in other letters or all letters in the design. Homologizing ceases when relational changes to form are deemed no longer necessary.

Endogenous Generation and Endogenous Generator

Endogenous Generation sees the designer involved in the act of creating homologues based upon form that has been created earlier in the process of design. In order for designers to produce homologous form, a previous Constructed Precedent(s) is utilized in an act of Homologizing. Previous Trajectorized form(s) when utilized become reference points or starting points in order to develop emerging relational form within the text typeface design process. In this act, designers develop the typeface from micro to macro levels of familial contiguity that can be at the character or family level (e.g. bold etc.).

Conditional to the core category Homologizing is the act of Endogenous Generation. As designers generate subsequent form based upon prior form, produced within the initial stages of the process, the prior form when utilized becomes the contingent Endogenous Generator. Designers move beyond laying down rule and principle in the form of initial Constructed Precedent to actively using these forms as generators for new form. The switch from Constructed Precedent to Endogenous Generator initially sees the designer producing new form – Trajectorizing new material ahead. Once this is fixed, it has the potential to inform further, relative design. The form switches from precedent that has been laid down with potential to inform to active internal generator

within the process of design – Endogenous Generator. The act of Endogenous Generation, then, requires a contingent Endogenous Generator in the process of producing homologous form.

The Endogenous Generator is then a Constructed Precedent or group of precedents that the design expert utilizes in order to produce further relational form, thus enabling further development of the typeface design. Furthermore, all forms once generated within a typeface design have the potential to become Endogenous Generator(s), whether produced initially via Trajectorizing actions or subsequently via Homologizing actions in the process of design. The Endogenous Generator is therefore identified as contingent to the conditional phenomena Endogenous Generation that manifests as a result of the designer's Homologizing actions with respect to developing relational form throughout the process of text typeface design.

Homologizing – Procedural Development and Mutability

Type design experts knowingly predict and progress the design process through a series of events identified in this research as Homologizing actions. Expert designers trajectorize control characters (see Chapter 4) to produce as a deterministic and purposeful choice in beginning a text typeface design. Initial control characters are by their nature loaded with vestigial Constructed Precedents. Homologizing was initially identified as type design experts accounting for developing relational form within the type design process that emanated from prior trajectorized forms. The type design expert's deterministic choice of Trajectorizing control characters not only allows the type design process to begin in terms of design that is manifest, this also allows for potential subsequent development of design via Constructed Precedents. These, if utilized, become active Endogenous Generators:

... because the 'n' is the basis of the most biggest group of letters ... you have the 'm' you have the 'u' ...

Extract 21 (JFP_1, lines 325–327)

Type design experts produce homologues in relation to initially developed characters through recognition and exploitation of usefulness in the details of form – Constructed Precedents (Chapter 4). Homologizing describes the specific ways that designers propagate form through to other letterforms as a text typeface develops. This may be derived from whole or constituent parts of initially designed letterforms:

... you have the way you have the stem with the curve on this part on the top or sometime on the bottom ... you connect to a curve you connect to a stem it's something that is everywhere on the typeface ...

Extract 21 (JFP_1 lines 327–331)

However, certain characters or specific attributes of characters are beneficial to establish early in the process. These will allow for a greater yield or influence in terms of developing homologous form through the typeface design from the elemental detail level of pattern identified, and such details are translatable from the trajectorized control characters:

... there is many thing just on this connection ... give a lot of answer for the rest of the typeface ... and the serif indeed ... there is a relationship with thickness ... there is a lot of things just there on this part ... on the stem with the connection here ... it is really ... the ... heart of the typeface certainly ...

Extract 22 (JFP_1 lines 354–363)

Extract 21

JFP_1 {Proced_Dev}{DesignSpaceID}{Letter_parts}{FirstChars_lc}{FromKnowledge}{Mutability}

322 MH: and are you + so you are talking about the n and the p
 323 JFP: yes + because
 324 MH: they are becoming useful for what reasons?
 325 JFP: for for for everything + because the n is the basis
 326 of the most bigger group of letters + you have the m you
 327 have the u + you have the way that you have the stem with
 328 curve [gestures with hands to form an upright motion and a
 329 connected curve motion] on this part on the top or sometime
 330 on the bottom + you connect to a curve you connect to a stem
 331 its something that is everywhere on the typeface + on the
 332 bottom of the a on the a on the a lowercase [gestures again
 333 to form the shape of a lowercase a] you have the a is there
 334 [gesture to form the curve at the bottom of the lowercase a]
 335 so is as the same things as on the u or on the top of the
 336 n so + this is a crucial decision

Extract 22

JFP_1 {Proced_Dev}{DesDelimiters}{Letter_parts}{FirstChars_lc}{SystemNotion}{Mutability}

353 JFP: it will
 354 change also the type + there is many thing on this just
 355 just this this connection + [continually gesturing with hands
 356 to make the shape or the connection of stem and curve]
 357 this connection + eh + give a lot of answer for the rest of
 358 the typeface + and the serif indeed + there is a
 359 relationship with the thickness + eh + there is a lot of
 360 things there just on this part + on the stem with the
 361 connection here [clearly and purposefully gestures the form
 362 of a stem and connection] + just this part + it is really em
 363 + the + the + heart of the typeface certainly

The above example illustrates the type design expert's ability to identify and act upon their knowledge in terms of how an aspect of a trajectorized form – Constructed Precedent (in this instance the connection between an upright stem and the curve or shoulder of a lowercase n) – will inform other aspects of the typeface design. Concatenated elements or steps within the development of design would therefore be informed by the detail within a trajectorized control character, in this example the connection of curve and stem in the lowercase n. In developing other characters in the design, the trajectorized 'n' becomes an Endogenous Generator as it informs subsequent characters whereby a similar connection between stem and curve is determined apposite. Mutability in relation to how the identified detail works and how this is applied or adapted to other elements within the system of design becomes part of the designer's Homologizing actions.

All participants in this research described working in similar ways – from initially Trajectorizing particular and specific characters with their Constructed Precedents, to developing other forms by means of Homologizing via Endogenous Generators. Commonly, expert designers begin with lowercase characters amongst which the lowercase n appears to be favoured frequently in initiating the text typeface design. Extract 27 (MM_1, lines 36–40) evidences the way in which a Trajectorizing control character becomes an Endogenous Generator – the lowercase n – in the way that it informs the development of a series of related letterforms through the designer's Homologizing actions. This also makes clear that the expert in the subject area of text typeface design is able to project forward in terms of how the selection of a particular character – the lowercase n – will allow for procedural development within the typeface design:

... so already with one letter you have like maybe ... six or seven letters ... so fairly fast you can make an idea of what you want ...

Extract 23 (MM_1 lines 38–40)

Extract 23

MM_1 {Proced_Dev}{Mutability}{Letter_parts}{FirstChars_lc}

36 if you have for example the letter n + you
 37 just turn it around you have you have the u + or you turn it back around and you
 38 attach eh an ascender + you have the h or a double n is an m so already with one
 39 letter you have like maybe + [shakes head slightly] six or seven letters + so
 40 fairly fast you can make an idea of what you want

An Endogenous Generator may inform more than a single aspect of a letterform. Attention to detail in the design of Trajectorizing control characters plays an important role in terms of how these details will have the potential to inform subsequent characters within the developing typeface design. Experts identify the importance in the relationship of the Homologizing of curves:

62 Homologizing

... characters such as lowercase n is ... obviously a shape that is replicated in a number of other characters the m the h the u so it's important to establish ... that shape and it's relationship to the other curves. ...

Extract 24 (RN_1 lines 126–128)

It is important to note that this does not imply a simple repetition of form but talks about 'relationship' in terms of the curve of one letterform against a series of others. Homologizing implies the importance of mutability in the procedural development of form:

relationship to the other curves. ...

Extract 24 (RN_1 line 128)

The specific concentration on form at an elemental level with respect to Trajectorizing Constructed Precedents is also evidenced. Experts describe the importance of particular details within the relationships of forms as potential Homologizing details:

... it's obviously important to get the serif shapes right and look at the different styles of ... serif like the beak serif like you get on the top of an n or an i ... in relation to the baseline serifs. ...

Extract 24 (RN_1 lines 131–134)

Here the participant describes not only the different types of serif that have a different purpose and function 'beak serif' and 'baseline serifs', but also that there is a relationship relative to the form of the different kinds of serif.

Extract 24

RN_1 {Letter_parts}{Working_Phase}{SystemNotion}{Proced_Dev}{Mutability}{First-Chars_Ic}{DesignSpaceID}

126 erm characters such as lowercase n is is obviously a shape that is replicated in
127 a number of other characters the m the h the u so it's important to establish
128 that that shape and it's relationship to the other curves
129 MH: yeah
130 RN: you know the sort of curved part to the n (gestures with hands to form the
131 curve of the n) + erm also if it's a serified typeface it's obviously important to
132 get the serif shapes right and look at the different styles of sheriff serif
133 like the beak serif like you get on the top of an n or an i erm eh in
134 relation to the baseline serifs

In order that a trajectorized control character becomes useful, in that it will allow for subsequent Endogenous Generation, the designer must be confident that enough attention has been given to the Trajectorizing characters in terms of specifics of detail of form – Constructed Precedents.

Such focus on detail at a micro level affords designers' Homologizing actions with respect to developing relational form within the text typeface design:

... whatever little subset of the alphabet you've chosen to work with you think ... has it you know embodies all of the important proportional dimensional aspects. ...

Extract 25 (MC_1, lines 366–368)

Experts are aware that such relationships between forms within the typeface design are not achieved merely mechanically as homogenised form (see also Chapter 7), but that these relationships between form are developed over time and with care:

only when you get really pretty confident with that then do you start saying oh well I'll make an n now from the h or you know a d from the p or whatever.

Extract 25 (MC_1 lines 369–371)

Experts also evidence Homologizing's relational development within the process of design that does not take straightforward, obvious or superficial routes in terms of developing one form or set of forms in relation to another:

... and go off and try ... you know different categories of letters some of which may be don't have relatives within the alphabet and so on so there isn't an obvious sort of path ... that you apply your decisions systematically. ...

Extract 25 (MC_1, lines 371–374)

Extract 25

MC_1 {SystemNotion}{Proced_Dev}{Mutability}{Letter_parts}{FirstChars_lc}

366 and as you get more confident in whatever little subset of the alphabet you've
367 chosen to work with you think eh eh has it you know embodies all of the
368 important proportional dimensional aspects sort of thing all these things does
369 it have serifs or not all these details only when you get really pretty
370 confident with that then do you start saying oh well I'll make an n now from the
371 h or you know a d from the p or whatever it is eh and go off and try you know +
372 so you know different categories of letters some of which may be don't have
373 relatives within the alphabet and so on so there isn't an obvious sort of path
374 that you that you apply your decisions systematically and so on so you know you
375 you you build it eh you build it slowly

Beyond sets of letterforms that share common obvious attributes, such as a curve and a stem or a bowl and a stem, etc. (e.g. n, h, m, u etc. or b, d, p, q etc.) Homologizing develops relational form in groups of letters beyond where there may appear to be obvious similarity:

... isn't an obvious sort of path that you that you apply your decisions systematically ... you build it ... slowly.

Extract 25 (MC_1 lines 373–375)

The designer then is using the specific selection of characters to influence the development of the design along certain routes until there is enough information in the developing letterforms that may then go on to inform in more subtle or less obvious ways.

Homologizing beyond Obvious Relational Form

Expert type designers knowingly identify and act upon decisions that help to progress the type design beyond developing what can be considered groups of concatenated letterforms – for example, n, m, h, u and b, d, p, q etc. Although such groupings of letterforms will have subtle, mutable or nuanced attenuated (see Chapter 6) differences with respect to homologized form, there does appear a superficially obvious connection between such groups of letterforms. However, type design experts homologize form at less obvious, micro levels of detail, in order to progress their designs and establish harmonious relationships of form between characters across the type design at the macro level.

In order to develop such subtle relational balance between forms, the type design expert again knowingly draws from trajectoryed, Constructed Precedents:

... I have the ascender with the l ... I change to a letter that everybody look at into first ... will be the e the a ... eh can be the f eh can be after more difficult letter like the s. ...

Extract 26 (JFP_1, lines 403–406)

Whereas in the development of grouped or related sets of letterforms, designers may utilize a whole character as an Endogenous Generator – for example the lowercase n – the micro detail level of the Constructed Precedent affords designers the ability to develop relational form in the developing typeface design at more subtle levels:

... because that's the letter where you have the most of most of the style of the typeface ... also because you have some basic elements basic shapes that it will repeat on every part of the typeface. ...

Extract 27 (JFP_1, lines 409–412)

Type design experts move from obvious or explicit paths of Homologizing to less obvious, more nuanced forms of developing homology at detailed levels within the typeface:

... you will have that repeat on the top of the f so you have some of the elements that will repeat over the part of the typeface the top of the f will repeat somehow to the top of the c and the r lowercase and the and at the end of the y ... and so with very few letter you have the full style of the typeface. ...

Extract 27 (JFP_1, lines 421–425)

Extract 26**JFP_1 {FirstChars_lc}{Letter_parts}**

403 JFP: I have the descender I have the ascender with the l + l
 404 change to a letter that everybody look at into first + will
 405 be the e the a + eh can be the f eh can be after more
 406 difficult letter like the s

Extract 27**JFP_1 {FirstChars_lc}{Letter_parts}{SystemNotion}{Proced_Dev}**

407 MH: hm hm + so why is something like the e and the a and
 408 the
 409 JFP: because that's the letter where you have the most of
 410 most of the style of the typeface + also because you have
 411 some basic elements basic shapes that it will repeat on
 412 every part of the typeface + so you have the always the
 413 serif on n and on p and if you jump to the e
 414 + you have the terminal and it's turn up not by a thick part
 415 but by a thin part even if it's a sans serif it's will be a
 416 little more thinner at the end but the top of the a is very
 417 special it's just the a who have that in serif typeface but
 418 in sans it's more something like to the e so this shape is
 419 (unclear word) with the thicker parts because of the
 420 calligraphy scriptures and you will have that repeat on the
 421 top of the f so you have some of the elements that will
 422 repeat over the part of the typeface the top of the f will
 423 repeat somehow to the top of the c and the r lowercase and
 424 the and at the end of the y + and and so with very few
 425 letter you have the full style of the typeface

Type design experts homologize from Endogenous Generators in order to develop the typeface design beyond initial trajectorized forms. They also utilize micro-level Constructed Precedents to establish and develop homologous relationships of form across the entire typeface.

Homologizing – Facilitating Self-Informing Design

Homologizing within the developing design allows type design experts to purposefully abandon comparisons in terms of extraneous initial forms of influence and

precedent. As Homologizing develops relational harmony between forms within a design, the use or need for an extraneous precedent to compare to or against becomes unnecessary or less desirable. Expert typeface designers develop a sense of identity or originality in their work via Homologizing actions:

... once I feel I've got a concept that's working then I'm happy to develop that then I don't need to keep comparing it to other things. ...

Extract 28 (RN_1, lines 275–277)

Via Homologizing, the type design expert is able to eventually develop the typeface as a self-informing design:

... once I'd sort of got the basic parameters ... on Nimrod I was happy then to sort of develop it ... within its own rights. ...

Extract 29 (RN_2, lines 73–75)

Extract 28

**RN_1 {Ref_Originality}{DesignSpaceID}{DefDesSearch}{Proced_Dev}{PrimaryGen}
{Comparison}**

257 RN: well it certainly for me it's not off the top of my head erm I've always +
270 the the design work that I've been involved with is always sort of erm as far as
271 I'm concerned is developing typefaces from from what already exists but I think
272 once you get the initial concept fixed in your mind of what you what to try to
273 achieve anyway for me anyway I I tend then not not want to compare to other
274 things erm once I I suppose it's partly an experience thing you know I've worked
275 with type for forty plus years once I feel I've got a concept that's working
276 then I'm happy to develop that then I don't need to keep comparing it to other
277 things + erm but even so I I still see the sort of design work that I've done as
278 a sort of development process really

Extract 29

**RN_2 {Ref_Originality}{Proced_Dev}{PrimaryGen}{DesDelimiters}{Comparison}
{Ref_Own_Prior}**

72 RN: erm but with say something like Nimrod erm although I wanted to see how it
73 compared to other newspaper faces of the time once I'd sort of got the basic
74 parameters set on on Nimrod I was happy then to sort of develop it to to you
75 know within it's own rights not not really because I wanted to improve on any
76 particular existing typeface

The link between the uses of precedent, Trajectorizing and Homologizing actions and their function in the formation of a new design is highlighted in Extract 30. In terms of utilizing precedent, this highlights not only being of use to the participant in beginning a new design but evidences using a previously designed form as a gauge against which to develop a new design. In terms of Trajectorizing, here the precedent is described positively as something to work away from, and that the reference can eventually be dropped after a period of time. Homologizing is evident in terms of the new typeface as becoming self-informing. Other Homologizing influences are also described by the participant in this particular example in terms of the serif structure and the notion of the italic form. These draw from knowledge of specific historical precedents alongside the precedent of the participant's prior work to form a multivariate mix of precedents that the participant describes as helping initiate the new typeface design. Once established within the new design, these influences become self-informing for the design:

... and eventually it becomes it's own thing ...

Extract 30 (JT_1c, line 133)

its references becoming internalized within the design:

... like the a wants to be something different and it became something different any way as a matter of course and then it sits within its other letters within its grouping quite happily. ...

Extract 30 (JT_1c, lines 135–137)

The type design expert also gives consideration to the levels of similarity and mutability of form in order that a character should 'sit' well within the context of other developing forms.

Extract 30

JT_1c {Ref_Originality}{Ref_Conv_Spec}{PrimaryGen}{Des_Micro}{Des_Macro}{Proced_Dev}{Comparison}{Ref_Other_prior}

123 JT: well when I use my own work it's not sometimes it's not so I'm not sort of
 124 + I'm aware that I don't want to produce something or because the computer can
 125 make you do lazy things I don't want to end up with like an easy option or an
 126 easy solution erm + eh + eh yeah there's lot's of sort of erm baggage well one
 127 thing with Kingfisher against Enigma was I didn't want to fall in to the trap of
 128 it looking like Enigma I wanted to avoid that and become it's own thing which it
 129 did do over time but the early stages if you spend a lot of time doing something
 130 then it's time wasted because it's sort of oh well that's not what I wanted to
 131 do whereas if it's visually in front of me all the time then I can say that well
 132 that's the pattern that Enigma gives me and this is what Kingfisher is becoming
 133 and eventually it becomes it's own thing then I can drop that reference not so
 134 much a reference just something I'm aware of I don't want it to be that so I

135 don't to have like the a wants to be something different and it became something
 136 different any way as a matter of course and then it sits within its other
 137 letters within its grouping quite happily erm the reference to Fournier was I
 138 wanted that erm for the serif structure I wanted that erm sort of flat erm eh the
 139 the the y'know eh what do you call it the erm the the sort of the slab bottom
 140 serif with the more traditional erm old styley kind of top to it so you've got
 141 this oddity happening which you you don't really you you yeah you do get
 142 occasionally but then you get a bit more swelling in the bottom of serif I
 143 wanted to keep it a bit sort of starker and it he it was seen as revolutionary
 144 when he did it and his italic was an odd thing even though it was a sloped
 145 roman supposedly it doesn't look like a sloped roman to us but that those kind
 146 of ideas sort of were in built into Kingfisher or started me off on what it
 147 became

Homologous Mapping and Homologous Drift

The dimensions Homologous Mapping and Homologous Drift account for the considerations expert type designers exercise when creating homologues via Endogenous Generation in order to satisfy contextual fit with respect to relationships of form. In creating homologues, expert designers must consider how closely to adhere to precedent already constructed within the existing forms of the developing typeface. If the prior Constructed Precedent is adhered to rigidly, then a close Homologous Mapping of form takes place. If degrees of nuance and mutability of form are required for the new form to not only take its own shape but also contextually fit well with existing form, then the designer exercises a degree of Homologous Drift in relation to the prior form of the Constructed Precedent. However, if the designer is unable to attain an agreeable contextual fit in the new form with existing form via the dimensions of Endogenous Generation, Homologizing form may be abandoned so that a newly trajectorized form is pursued. Extract 31 illustrates the kinds of decisions and judgments made by the expert text typeface designer in developing relational or familial context between forms. Here the participant describes the possible considerations of developing a lowercase p and using the lowercase n as a basis. The lowercase n in this case becomes the Endogenous Generator, as it is the existing form, the lowercase p the developing form:

... I will sort of place it on top of the n and see if it's the same. ...

Extract 31 (JT_2c, lines 327–328)

The lowercase n is set with its component Constructed Precedents:

... the form is different you know well the n goes round and then goes down to a straight like it may arch a little bit it may come down at ... a sort of an angle like a Bembo does or whatever. ...

Extract 31 (JT_2c, lines 329–331)

Considerations with regard to the lowercase p must be given to this particular form in its own right:

... but the p goes all the way round it's a bowl. ...

Extract 31 (JT_2c, line 331)

Within the considerations of creating new homologues, expert text typeface designers must balance the degrees of Homologous Mapping and Homologous Drift as to how much a new form will match or deviate from existing form. Ultimately, the new homologue must conform in some manner to the forms from which it draws influence and against which it must 'sit' in context:

... so all you can look at is ... does it look like is it the same language....

Extract 31 (JT_2c, lines 333–334)

Extract 31

JT_2c {PrimaryGen}{Proced_Dev}{Letter_parts}{Mutability}{FirstChars_Ic}

322 JT: well there's you're aware of but they they fill their own spaces
323 MH: right
324 JT: so yeah you sort of put them side by side and yes you you think or well I
325 tend to do a lot of eh the only way it informs anything in that way is I would
326 take the character let's let's say the p and where the the line is thickening as
327 though the pen's going round that thickness I will sort of place it on top of
328 the n and see if it's the same put it side by side if it's optically the same
329 because the form is different you know well the n goes round and then goes down
330 to a straight like it may arch a little bit it may come down at at a sort of an
331 angle like a Bembo does or whatever but the p goes all the way round it's a bowl
332 and optically that that point is thicker than the stem of a straight so
333 it has it is different so all you can look at is is is it does it look like is
334 it the same language
335 MH: hm
336 JT: does it look like it well I mean obviously if one done with thin and one
337 done with thick it's not so it's a different type
338 MH: yeah
339 JT: so yes it's erm within the the realms of sort of say four to six units then
340 or eight units then it's erm it's the same thing the optics

Homologizing – Extrapolation and Interpolation

The acts of Extrapolation and Interpolation are well established within text typeface design practice and knowledge. The author makes no claim to identifying

these as new concepts within the current Grounded Theory rendering. However, extrapolation and interpolation of form with respect to typeface design are subsumed within the core category Homologizing, insofar as both acts utilize established or prior form in order that new relational or familial form can be developed.

Experts extrapolate to extend form in terms of variance of weight, etc. For example, from designing an initial standard or roman weight for a typeface, an expert designer may then derive a heavier weight such as a bold or lightweight version of the typeface based upon the regular or normal weight first established:

... I would always and have always worked on the sort of what I would consider the base weight of the typeface the regular weight of the typeface ...

Extract 32 (RN_1, lines 339–340)

and:

... I would always start with the sort of regular weight.

Extract 34 (MC_2, line 45)

Extrapolation extends (or contracts) known values in relation to form in order to derive new relational form:

... so we started with the black because if we can get that right you can figure out a regular and a thin. ...

Extract 35 (CS_1, lines 429–430)

In this respect and with reference to Homologizing form, designers use their established version or weight of a new design both in terms of individual characters and as characters collectively as Endogenous Generators for developing the extrapolated variant.

Interpolation in relation to typeface design is the nodal synthesis of form between two existing values/weights, etc. For example, a typeface could be interpolated between light and heavy weight variants to produce a medium weight(s):

... there are some designers that are ... able to work on a light and an extra bold or whatever and let the computer produce the interim weights ...

Extract 32 (RN_1, lines 341–342)

The nodal medium weight(s) are thus derived as a synthesis of form between light and heavy weights. When experts describe their actions in creating variants via Extrapolation and Interpolation, they are invariably describing the use of software as a tool to in some way negotiate, automate or semi-automate the process of transformations of form from their original state to a new state. The employment of software in undertaking such tasks is common in many fields. However, the decisions and actions related to the use of such automated or semi-automated processes can be categorized by means of two dimensions that relate to both Extrapolation and Interpolation. These are outlined below as Synthetic Displacement and Synthetic Acquiescence.

Extract 32**RN_1 {Working_Phase}{Proced_Dev}{Variants}**

339 RN: I I would always and have always worked on the sort of what I would
 340 consider the base weight of the typeface the regular weight of the typeface + erm
 341 even you know even if it's a sans serif family whatever I mean there are some
 342 designers that are are able to work on a light and an extra bold or whatever and
 343 let the computer produce the interim weights erm but in a way I I always felt
 344 that required too much initial input before the sort of design was fixed erm I'd
 345 much prefer to work on based the base weight erm at least to the point of
 346 getting pretty much alphabets made and then perhaps look at eh creating the the
 347 heaviest weight that you're going to need and the thinnest weight that you're
 348 going to need erm

Extract 33**MC_2 {Ref_Act_Design_learn}{Mutability}{Proced_Dev}{Variants}**

303 MC: I would take the existing weight and I would start pushing and pulling it
 304 until I I got a result that I thought was good as I said earlier I think that erm
 305 you can very often tell a lot about the potential of a type family from the
 306 central weight you know erm whether this is whether this is going to be adaptable
 307 eh versatile or whether it's going to be more limited and and so on you know
 308 it's in the nature of the design erm but again I mean I I would back back in
 309 Verdana days as we talked about erm you know when when your regular weight of the
 310 typeface was a single pixel wide for the stem on the screen the only way to make
 311 it bolder was to double it I mean there was no half pixel you went from one to
 312 two which is a big jump in typographic terms so sometimes there are certain
 313 circumstances that force your hand but normally I would erm you know I I would
 314 make trial characters of a bold and look at them and say well I think I can push
 315 this a bit further and eh or not I've gone too far you know this is this is not
 316 going to reproduce well and so on you know so again it's a very very pragmatic
 317 business eh for me erm it's it's sometimes + I I think I learnt this with
 318 Galliard which was the first you know that was a four weight family which is not
 319 a lot by modern standards but was quite a lot at the time and I learnt an awful
 320 lot through doing the particularly the black weight of Galliard and realizing
 321 it's partly a caricature of the existing typeface you know you you find yourself
 322 emphasizing certain features and so on it's + it + it's int it's an interesting
 323 job and there are of course tools that help you with that now but I don't use
 324 them very much I erm I at least at the start I tend to do it sort of brute force
 325 I tend just to redraw erm + eh + so you know if I if I expand this stroke to
 326 twice what it is now what does that do to the curves what does that do the
 327 oblique strokes and so on you know

Extract 34

MC_2 {Variants}{Working_Phase}{SystemNotion}

43 MC: yes I would normally yeah I mean now a days very few typefaces exist in a
44 single weight or single width but I would always start in the middle erm yeah eh
45 + yes I would always start with the sort of regular weight eh erm +++ I
46 think that's it's happened to me that I've changed that eh eh you know sometimes
47 when you build out the weights you find that you may have put the middle
48 (laughs) in slightly the wrong place so you're gonna interpolate something
49 slightly different and so on but I I would always try and work out the design in
50 what I though was the nominal standard for the one that it would be most used in
51 yes yeah

Extract 35

CS_1 {Variants}{Tech_as_tool}{ExampleExperi}

428 CS: that that that depends on the project erm Stagg for Esquire they were the
429 ones that that said we want something really really heavy so we started with the
430 black because if we can get that right you can figure out a regular and a thin
431 that go with it but if you can't nail the black then fundamentally your idea
432 isn't working + eh for Guardian Egyptian we started with the regular because
433 that's the weight they wanted for all of their headlines eh for Neue Hass
434 Grotesque it was the medium because that is the classic ideal poster weight
435 typeface

Synthetic Displacement and Synthetic Acquiescence

Two dimensions emerge from this research and are related to both Extrapolation and Interpolation as sub-categories of Homologizing, these dimensions are identified here as Synthetic Displacement and Synthetic Acquiescence. These describe the ways in which expert designers negotiate the Homologizing of form from one state to another predominantly via the use of specialist software:

... although I don't use the very latest tools there are much better ones than the one I use ... I have found that ... very reliable ...

Extract 37 (MC_4, lines 6–7),

and:

... eight axis Superpolator file. ...

Extract 38 (CS_1, lines 339–340)

In essence, Synthetic Displacement and Synthetic Acquiescence form polemics in terms of dimensions. The act of Synthetic Displacement is the way in which text typeface design experts intervene or interrupt – either manually or planned through the use of software – what may be determined as seamless automated Homologizing of form. In relation to Extrapolation this can involve manually adjusting existing vector-based form in order to derive a desired extrapolated result:

... I would take the existing weight and I would start pushing and pulling it until ... I got a result that I thought was good. ...

Extract 33 (MC_2, lines 303–304)

The expert's rationale can be related to knowledge and experience of the results that automation offers held against their own views and preferences or to purely practical attributes of the outcomes of automated Extrapolation:

... there is a thing in Fontographer and I'm sure in Fontlab as well called change weight but ... that's a bit like dipping in ... chocolate you know I mean you sort of add weight all round ... I would just redraw I mean I would ... move the contours this way and that and so on and redraw the curves. ...

Extract 40 (MC_2, lines 334–338)

The ways in which experts intervene in relation to the automatic generation of form – Synthetic Displacement – relates to Interpolation also:

... things often I don't think work particularly well if they're taken in a purely sort of linear way ...

Extract 36 (RN_3, lines 14–15),

and:

... I would design the ultimate heavy weight and eh I would then interpolate the bold I would almost certainly want to edit it to some degree it depends on the design frankly how much ...

Extract 37 (MC_4, lines 10–12)

In terms of Synthetic Displacement experts describe intervention in what could otherwise be a seamless automated process of homology, either from an initial form as point of origin to a target form – Extrapolation, or forms acting as extreme nodes that will allow for a synthetic median to result – Interpolation. In these instances designers interrupt; they displace what can be considered the smooth or synthetic linear transitions from object to target.

Conversely, expert typeface designers may enact or utilize design strategies that fully embrace the kinds of automation that software can provide:

... we really try to take advantage of eh I mean and we depend a lot on interpolation ... not just to ... make the weights in between but also interpolation as a design tool. ...

Extract 38 (CS_1, lines 335–337)

This can be equally Interpolation as above and Extrapolation:

... so the descender length is an independent thing that can be adjusted on it's own ...

Extract 41 (CS_1, lines 350–351)

In these kinds of instances the expert allows for purely automated homology in terms of generating new form. The expert does not intervene but acquiesces in terms of interrupting the smooth or linear transitions of synthesis enabled by the use of appropriate specialist software – Synthetic Acquiescence.

The act of Synthetic Acquiescence is extended further still by some text typeface designers in relation to producing seamless homologized form. In such cases, where a text typeface design has been developed over a period of time for the regular weight, etc., the design expert may then produce extrapolated variants as extremes by whatever means suffice. From the extremes the designer may then produce an interpolated mid or regular weight. The objective in these cases is to adjust the extreme variants only in order to aim at a derived completely synthesized new median form, one that is generated entirely via a process of automated homology:

... the one in the middle the interpolation is sort of not touched by you that's so the only way of altering that is by altering the extremes. ...

Extract 39 (JT_2b, lines 307–308)

In such instances of Synthetic Acquiescence, designers not only give tacit assent to the algorithmic generation of form in the shape of the new median weight; they also sacrifice or abandon the original regular version of the typeface they create in favour of a purely automated, uninterrupted homologized rendering of forms.

Extract 36

RN_3 {Corrective_Judgment}{Tech_Constrain}{ExampleExperi}{Proced_Dev}{Mutability}{Tech_as_tool} {Variants}{Working_Phase}

10 RN: so I think it you need to you would need to or you do need to look at each
 11 weight that's been created by the
 12 MH: hm
 13 RN: computer erm and make sure that it's functioning well I mean a a as an
 14 example erm you know things often I don't think work particularly well if they're
 15 taken in a purely sort of linear way if it's a sans serif family for instance
 16 the relationship erm between the thick and the thin strokes erm may need to vary
 17 from the sort of regular weight up to the bla if there's a black for instance erm
 18 the eh the the thin strokes in the black may well be proportionately thinner
 19 compared to the the vertical strokes erm and you wouldn't necessarily want that
 20 to work in a liner way through to the regular weight you might want a couple of
 21 steps there so you you I think you have to view these things carefully and plan

22 them carefully
 23 MH: hm
 24 RN: so typically what I would do I mean when I was developing erm a typeface
 25 called Felbridge which is a sort of sans serif that was designed really for on
 26 screen use primarily but I actually did the regular erm and a sort of extra bold
 27 I suppose and then did the black which was the heaviest weight as a separate
 28 development + because the the changes I was making to make the black work
 29 properly I didn't want to sort of to affect the interpolations through
 30 regular to extra bold worked fine for a bold or a semi bold erm but the black I
 31 wouldn't have wanted the work I was doing to that to sort of filter down

Extract 37

MC_4 {Proced_Dev}{Mutability}{Tech_as_tool}{Variants}{Working_Phase}

6 MC: (Interpol)ation tools although I don't use the very latest tools there are
 7 much better ones than the one I use I have found that very very reliable you
 8 know if if for the sake of argument I did I was given the job of doing a four
 9 weight family erm I would design the normal weight first the regular I would then
 10 not design the bold I would design the black I would design the ultimate heavy
 11 weight and eh I would then interpolate the bold I would almost certainly want to
 12 edit it to some degree it depends on the design frankly how much and then for
 13 the first pass at the light I would probably extrapolate that which is a sort of
 14 dodgier technique but is still very useful and in a way this is what we did as
 15 far back as Galliard with eh Ikarus Ikarus was very primitive at that time and
 16 couldn't handle italics at all for example but erm I I I I did get some sort of
 17 computer aided design help from Ikarus in the development of Galliard which is a
 18 long long time ago so yeah interpolation I think is a really really useful tool
 19 it can be abused eh but I I I I use it and erm ... eh and erm I'm very pleased to be
 20 able to do so yeah

Extract 38

CS_1 {Tech_as_tool}{Proced_Dev}{FirstChars_Uc}{FirstChars_Lc}{Mutability}{Variants}

335 CS: which eh which we really try to take advantage of eh I mean and we depend a
 336 lot on interpolation not just not just to to make the weights in between but
 337 also interpolation as a design tool or we'll do a version with bigger ball
 338 terminals and smaller ball terminals and we'll look at the one's in between or
 339 eh erm when I was working on the early stages of graphic I had I think an eight
 340 axis Superpolator file where I could adjust erm everything from how open the

76 *Homologizing*

341 apertures were on the a and c and e the length of the descenders the length of
342 ascenders the overall tracking the height of the i dots and erm I just
343 manipulated these eh bunch of different tests erm but it was nice to to feel I
344 could do this methodically and do it by looking than blindly trying to hit a
345 target that I didn't quite know what it was

Extract 39

JT_2b {Variants}{Proced_Dev}{Tech_as_tool}{Mutability}

307 JT: well the one in the middle the interpolation is sort of not touched by you
308 that's so the only way of altering that is by altering the extremes

Extract 40

MC_2 {Proced_Dev}{Mutability}{Variants}

334 MC: yes I mean I might not I might not I mean there is a thing in Fontographer
335 and I'm sure in Fontlab as well called change weight but that essentially eh
336 that's a bit like dipping in in chocolate you know I mean you sort of add weight
337 all round and I very seldom use that erm eh I would I would just redraw I mean I
338 would move move the contours this way and that and so on and redraw the curves
339 the arches and so on accordingly yes

Extract 41

CS_1 {Mutability}{Tech_as_tool}{Proced_Dev}{Variants}

349 CS: oh absolutely that would have been with only a handful of characters so and
350 and breaking and when you try to break it down into the component axes so the
351 descender length is and independent thing that can be adjusted on it's own

Summary

Whilst the causal core category Trajectorizing (Chapter 4) provides a theoretical explanation of the way in which text type designers begin the type design process or aspects thereof, drawing from precedents, developing initial original form, potential and momentum in the process of design, the causal core category Homologizing describes how type designers develop and progress a text typeface design in terms of relational qualities of constituent forms. From the micro to the macro level Homologizing not only describes the actions and decisions brought to bear by

designers relative to the range of developing letterforms within a text typeface design; it also describes how designers develop relational form relative to the emergent text typeface design.

Homologizing describes how the text typeface designer utilizes the potential of Constructed Precedents via Endogenous Generation to develop subsequent form within the system of design whilst allowing for mutability in developing the subsequent form. The developed concept of Homologizing within this research also describes the subtlety with which the text typeface designer develops familial form from one letterform or group of letterforms to the next, allowing for relational development of the typeface design as a group of independent forms that develop and function harmoniously as determined by the designer. Homologizing includes the properties Homologous Mapping and Homologous Drift that explain the negotiation of mutability of relational form.

Homologizing explains how type design experts negotiate micro to macro relationships between the detail-level of individual character design and how this is has the potential to map against the development of the whole emerging typeface design. Negotiations of micro to macro levels of relationship in terms of form work at the level of the single character to relative typeface weight as well as negotiations of form from weight to weight within the development of type families. In the act of Homologizing, designers are utilizing form developed within the ongoing process of design to inform subsequent form; this is tempered with a caveat of mutability employed where necessary and appropriate. In this sense, relational, mutable form develops as opposed to merely mechanically homogenized form. Homologizing accounts for the subtle variation the text typeface designer develops from one form to the next whilst maintaining cohesive rationality between forms.

Trajectorizing as part of a series of inductive actions in relation to design allows for the recognition of potential and the influence this may have on the system of design. This may include found references and precedents and those produced internally within initial stages of the 'system' of design. Relational form afforded by the results of what is described as the actions of the core category Homologizing can be seen as verifying references or 'internal precedents'; these are generated from the system of design and are used in order to locate and position the design as it develops.

Homologizing as a causal category describes instances whereby the type design expert accounts not only for identifying pattern but also for implementing action strategies in relation to this identification that will allow for procedural development of form within the establishing design process. Homologizing describes the type design expert's ability not only to recognize opportunity within the design system but also to act upon such opportunity to generate results of a somewhat predictable or foreseeable nature based upon forms developed relative to form created as a product of Trajectorizing. Homologizing describes instances whereby certain establishing elements within a design are utilized as 'progenitors' of foreseeable design instances. However, such predictability is not certain or fixed but acknowledges mutability within the system of design. This may include repeated patterns of form but also mutable patterns that must adapt or be adapted as part of procedural development within the system of design. Homologizing describes the development of relational or familial form that is established and developed within and throughout the design process.

The property Homologous Mapping relates to new form created within the developing system of design that is directly informed by existing established form

within the same system. Homologous Mapping may occur as a direct result of prior Trajectorizing via an Endogenous Generator. In turn as Homologizing establishes relational form, each newly established form (or groups of forms) thereafter has the possibility of becoming an Endogenous Generator with the potential to inform further subsequent developing form. Homologous Drift accounts for the varying levels of mutability that the text typeface designer allows for when developing relational form between characters, their constituent parts or groups of characters. Homologous Drift accounts for the variation in form within the typeface design and its constituent parts yet maintaining harmonious or relational qualities or characteristics. If the amount of Homologous Drift encountered is too extreme the designer may be in the position of Trajectorizing new form once more.

The core category Homologizing also includes the developed sub-categories Synthetic Acquiescence and Synthetic Displacement. Homologizing not only accounts for the relational qualities developed at the micro level of characters or parts of characters within the developing typeface design, but also accounts for the development of relational form across the development of type families of related form. The developed related subcategories Synthetic Acquiescence and Synthetic Displacement describe causal phenomena in relation to Homologizing with particular attention to employing software in the automation of Homologizing between extrapolated and interpolated forms.

Homologizing not only accounts for the designing of form; it may also be used to describe other relational aspects relative to typeface design, for example spacing and hinting. Homologizing as a core Grounded Theory category accounts for decisions and actions that describe and explain the nature of developing harmonious relational qualities between emergent and emerging phenomena within the process of text typeface design.

6 Attenuating

Introduction

This chapter outlines the developed core category Attenuating and its related sub-categories Attenuation, Accretive Amelioration, Envisioning and Historical Immersion. As in Chapters 4 and 5, the relationship of core category and relative sub-categories is highlighted with reference to Glaser’s theoretical familial categories – the Six Cs (Glaser, 1978). Table 6.1 shows the relationship of Attenuating and its sub-categories aligned to Causal, Conditional, Consequential and Contingent categorizations, these relationships will be described further.

Table 6.2 shows the relationship of the core category Attenuating and its developed sub-categories: Attenuation, Accretive Amelioration, Envisioning and Historical Immersion. This table also shows the relationship of sub-categories to the substantive coding and coding descriptions relative to coding at the primary data level. This makes explicit the hierarchical lineage of the raised conceptual categories relative to coding at the data level. Extracts from the primary data are used to illustrate and evidence developed theoretical concepts and assertions.

Attenuation

The text typeface designer is faced with a paradox of working simultaneously at micro and macro perspectives within the design process. In order to establish and develop flow in the process of design, the link between the design of the initial characters as forms in themselves, and how these forms relate to each other as they develop requires the designer to switch between the micro view of detail in the individual character design and the macro view of interrelationship between characters. Design begins with very few elements. As more elements are introduced this creates

Table 6.1 Relationship of the core category *Attenuating* to sub-categories.

Core Category	Sub-Categories		
Causal	Conditional	Consequential	Contingent
Attenuating	Attenuation	Accretive Amelioration	Envisioning Historical Immersion

Table 6.2 Lineage and relationships of coding at the substantive level up through conceptual categories with reference to the core category.

Attenuating – Codes relating to core category

Sub Cat > Code Definition

Attenuation + [Accretive Amelioration] (Consequential)

<i>Comparison</i>	Participant describes making comparisons within the process of designing type
<i>Corrective Judgment</i>	Participant describes making judgments in identifying and improving elements perceived to be incongruous in relation to the overall design of the typeface
<i>Improvement</i>	Participant describes decision-making in terms of improvement
<i>Testing</i>	Participant describes testing of characters (e.g. introduced to form words)

Historical Immersion

<i>From Knowledge</i>	Participant drawing from prior knowledge – initially declarative
<i>Ref Conv Broad</i>	Participant makes reference to broad or general established method or pattern of description/classification
<i>Ref Conv Spec</i>	Participant makes specific reference to methods/methodologies/practices etc. that inform conventional notions of the subject (e.g. the use of the broad nib pen in calligraphy informing the oblique axis of a typeface design)
<i>Ref Know Hist Cont</i>	Participant refers to knowledge/influence of history and context of subject area

Envisioning

<i>Autonomy</i>	Participant describes having/needing to have a single view of design process/decision-making
<i>Experience</i>	Participant identifies an element where experience/ability/appreciation bears upon the process of designing type
<i>Overseeing</i>	Participant describes the importance of a single person's overview in relation to collaborative work
<i>Personal approach</i>	Participant offers opinion or thinking toward personal approach or philosophy of design
<i>Projecting user usage</i>	Participant projects how the design may be used
<i>Ref Act Design learn</i>	Participant references the act of 'doing' design and learning through 'doing'
<i>Ref Context</i>	Participant referring to context (of use) as important in the development of the typeface design
<i>Ref Originality</i>	Participant makes reference to originality in work
<i>Ref Reflection learning</i>	Participant makes reference to reflection/learning

more for the designer to compare and work upon. Comparison between macro level testing of words and micro level adjustment of character forms becomes more complex as more characters are introduced to the design. Homology (Chapter 5) to some extent controls certain variables within a design. However, improvement in the design is made via the constant contextual testing of forms alongside each other, eventually as words or word-type shapes and later as sentences and paragraphs (as the design develops further) where the designer checks for problems, inconsistencies and incongruity within the relational design of forms and spacing in the text typeface. From the initial elements within the early ‘control characters’, and as momentum builds in the design of the text typeface, the designer is Attenuating incongruity in the developing forms and spacing of the typeface. In doing so, Attenuation of disturbances within the forms and spacing of the design – their inter-relationship and inter-dependency to one another – becomes a condition of the act of Attenuating.

Accretive Amelioration

The sub-category Accretive Amelioration conceptually encapsulates the phenomenon of resultant improvement in a developing design. Where the direct acts of Attenuation explain instances of improvement within the processes of text typeface design at micro levels, Accretive Amelioration conceptualizes holistic improvement in the typeface design at macro levels. The complexity and detail demanded of text typeface design results in text typeface design problems not so much as being solved but rather as being resolved by the designer, often returning again and again to iteratively reduce identified incongruity.

Attenuation of Incongruity through Testing

Text typeface designers test continuously for incongruity in the development of their designs. Testing begins early in the process of design and can begin with very few forms:

... even if I'm just doing h o h o h o coming down the laser printer. ...
Extract 43 (MC_2, line 29)

This can also include attributed spacing or side bearings introduced from the very beginning of the process:

... I'm giving it side bearings I mean these letters don't exist in a vacuum. ...
Extract 43 (MC_2, line 30)

Crucially, the relationships between forms and forms and spacing afford the designer the opportunity to attenuate incongruity within a design:

... it's a matter of just putting together a few combinations of those letters ... and making sure that ... the eye just sort of continues to run along smoothly. ...

Extract 42 (RN_1, lines 142–144)

82 *Attenuating*

Testing at a macro level allows the designer to attenuate for micro-level details as these become more apparent within a context of related form and spacing:

... that there's nothing that stands out either in its weight or its structure ... that sort of jars in the general progression or reading through the letters. ...

Extract 42 (RN_1, lines 144–146)

Amelioration is achieved via the designer knowing or sensing what doesn't work within a given developing design:

... if I set n u n and ... the u doesn't look in the middle between two n's I know something is the matter. ...

Extract 43 (MC_2, lines 32–34)

Experience and familiarity with successful design affords the design expert the ability to detect and filter incongruity within a design:

... it's a difficult thing to put into words really I mean a lot of it is the experience of ... looking at typefaces. ...

Extract 42 (RN_1, lines 146–147)

Also illustrated in the extract:

... so I think some of those things do become ... sort of informed by experience and instinct. ...

Extract 43 (MC_2, lines 35–36)

However, this doesn't necessarily mean that the designer will know what to do in terms of design that will work successfully, only that the designer is aware of what does not work within a developing design:

... but that doesn't mean to say that you can't get them wrong over and over again

Extract 43 (MC_2, lines 36–37)

Extract 42

RN_1 {PrimaryGen}{Ref_Other_prior}{Testing}

142 RN: erm well I it it's a matter of just putting together a few combinations of
143 those letters erm and making sure that the the eye just sort of continues to run
144 along smoothly erm that there's nothing that stands out either in its weight or
145 its structure erm that sort of jars in the general progression or reading
146 through the letters erm it's a difficult thing to put into words really I mean a
147 lot of it is the experience of (laughs) looking at typefaces I mean obviously

148 with the wealth of typefaces that I've always had around me at Monotype erm
 149 there's always good references and you can look at other successful typefaces erm
 150 if you're working with book typefaces you know you can look at Bembo or Plantin
 151 or whatever to see how they look when you when you set words and it gives you a
 152 good sort of structure to work on new designs

Extract 43

MC_2 {Ref_Act_Design_learn}{Testing}{FirstChars_lc}

28 + erm also this business of
 29 you know eh even if I'm just doing h o h o h o coming down the laser printer eh
 30 I I'm I'm giving it side bearings I mean these letters don't exist in a vacuum
 31 they they exist with a space and eh I may change that a great deal you know eh
 32 if I if I set n u n and the and the n doesn't look as though it's in the middle
 33 + the u doesn't look in the middle between two n's I know something is the
 34 matter you know the o isn't centred between two n's presumably and so on + erm
 35 so so I think some of those things do become erm sort of informed by experience
 36 and instinct + erm but that doesn't mean to say that you can't get them wrong
 37 over and over again

Attenuation via Comparison

Text typeface designers often utilize comparison as an active means of Attenuating their developing designs. Comparison in this respect can take the form of using extant designs as referents. Existing designs may be utilized in such a way that the designer finds incongruity within an extant design; identifying such aids in Attenuating the new design to steer it from repeating existing identified problems:

... the conversion from Bembo erm from hot metal into digital well into photo-typesetting and into digital type hadn't been particularly well done and it had it's shortcomings. ...

Extract 44 (RN_2, lines 66–68)

And:

... we were trying to improve on what we already had for Bembo

Extract 44 (RN_2, lines 69–70)

Comparative testing can also facilitate optimizing the performance of a newly developing design:

... we had a bench mark in the form of a what was called MS Sans. ...

Extract 45 (MC_1, lines 178–179)

And:

... so we had something to compare what became Verdana ...

Extract 45 (MC_1, lines 180–181)

Also:

... we put up the same paragraph in MS Sans and in Verdana on the screen and walked backwards until one of them we couldn't read and one of them we could

Extract 45 (MC_1, lines 182–183)

Attenuation of the new design continues whilst being compared to an existing design(s) that is known to work well but one in which the designer has a sense that the new design can improve upon what exists. In this kind of example, the designer is Attenuating both the existing and new designs in terms of identifying and resolving incongruity. This continual checking, correcting and adjusting of the design over time leads to consequential Accretive Amelioration. The design improves by means of the designer identifying and being conscious of what isn't working well when comparing one design to another and then adjusting to compensate for this in the new design.

In contrast to comparing to extant forms, aspects internal (solely belonging to a new design) to a developing design may be used to provide reference points for comparison, aiding the Attenuation of identified incongruent elements within the new design:

... I'm comparing a lot so even though different wildly different forms they're still there's got to be some kind of language of eh unity between them something's I'm looking at well the g's not working is it something wrong with the form of the g and the balance of it

Extract 46 (JT_1c, lines 160–163)

Attenuating in this sense has a direct relationship to homology whereby the Attenuation of incongruity aids the refining of mapping relational or familial attributes between characters. This may also relate to their component parts or variables, such as relationships between character attributes in Roman and italic forms in a developing Latin typeface design.

Extract 44

RN_2 {Improvement}{Des_Prob_Inherent}{Comparison}{PrimaryGen}{Ref_Other_prior}

66 RN: erm because I think the conversion from Bembo erm from hot metal into digital
67 well into phototypesetting and into digital type hadn't been particularly well
68 done and it had it's shortcomings and with Dante because it's a sort of fairly
69 closely related design we were trying to improve on what we already had for
70 Bembo so sometimes there is a sort of clear objective in that way ...

Extract 45**MC_1 {Des_Prob_Inherent}{DesDelimiters}{Comparison}**

178 ... and we had a bench mark in the form of a
 179 what was called MS Sans which had been their eh their own eh sans serif typeface
 180 that the engineers had made at eh Microsoft so we had something to compare what
 181 became Verdana to and we did this in a very sort of seat of the pants way I mean
 182 we put up the same paragraph in MS Sans and in Verdana on the screen and walked
 183 backwards until one of them we couldn't read and one of them we could you know
 184 erm so so that the design of Verdana really grew out of the bitmaps

Extract 46**JT_1c {Comparison}{Proced_Dev}{Italics}**

158 ... these ones here are erm this is
 159 sort of typical what I'm doing designing a typeface once I've got erm a roman and
 160 an italic up to one level then I'm comparing a lot so even though different
 161 wildly different forms they're still there's got to be some kind of language of
 162 eh unity between them something's I'm looking at well the g's not working is it
 163 something wrong with the form of the g and the balance of it erm or it may be
 164 that I'm drawing over here what I imagine the display version to be
 165 MH: hm
 166 JT: a lot finer s's yeah this is the roman s is the s actually this kind of
 167 thing or is it more this

Attenuation via Developed Corrective Judgment

Expert text typeface designers develop a sense of corrective judgment that enables them to identify and attend to incongruity in emerging typeface designs. Because of the experience they have in designing typefaces they are able to employ working patterns, tools and 'tricks' that facilitate attending to micro-level incongruity that disturbs the design at the macro level:

... these proofs that I've built up over time are diagnostic proofs really you know they're intended because of certain combinations of letters that you know are going to be problematical ... they are intended to help me spot ... things that might be going wrong. ...

Extract 47 (MC_2, lines 177–181)

A sense of corrective judgment may also be developed in the form of working partnerships, whereby the designer has an acute awareness of the strengths they have at identifying particular kinds of incongruity:

... Paul I think is stronger with the ... conceptual things. ...

Extract 48 (CS_1, lines 373–374)

And:

... whereas I keep an eye on the ... more practical nuts and bolts things. ...

Extract 48 (CS_1, line 379)

A developed sense of corrective judgment also includes knowing what characters within a typeface or what attributes of characters may give rise to problems or incongruity in the process of developing a text typeface design:

... if there's something slightly the matter with your s if you see a double s it may be more obvious

Extract 47 (MC_2, lines 183–184)

And:

... these things are not spaced properly this part's inconsistent with these parts or here ... these weights are not right the smallcaps are the wrong size

Extract 48 (CS_1, lines 379–381)

Very experienced text typeface designers have awareness that not only will they have to attend to incongruity within developing designs but also that incongruity may present itself at times in specific or predictable ways. Experience enables designers to develop coping strategies and mechanisms that aid and facilitate corrective judgment in Attenuation of incongruity within developing text typeface designs.

Extract 47

MC_2 {Corrective Judgment}

177 MC: yes I mean these proofs that I've built up over time are diagnostic proofs
178 really you know they're intended because of certain combinations of letters that
179 you know are going to be problematical or or whatever it is I mean I eh only
180 these look rather odd some of these proofs in terms of the text and so on but
181 they they are intended to help me spot eh things that might be going wrong in in
182 it yeah diagnostic is the right word I mean they they eh you know eh if if
183 there's something slightly the matter with your s if you see a double s it may
184 be more obvious you know you may may may be clearer to you what is the problem
185 you and since in English there are a great many double characters that's that's
186 a thing I always look at erm it's sort of eh eh (gestures with hands) emphasizes
187 something that might might be wrong with it if you see
188 MH: yeah yeah
189 MC: two of them together yeah so a lot of little tricks like that I suppose
190 that I've learnt to help me eh ... spot these things

Extract 48**CS_1 {Improvement}{Corrective_Judgment}{Collaboration}**

373 CS: so what naturally happens is Paul Paul I think is stronger with the with
 374 the conceptual things and so he'll he'll be the the angel on everyone's
 375 shoulders saying you know we can you know that we said this was going to feel
 376 very early twentieth century it's starting to feel a little different from that
 377 are we sure + this doesn't quite feel right these proportions feel really
 378 regular and I'm not sure that that's what we decided upon and that's what we
 379 want whereas I keep an eye on the the more practical nuts and bolts things these
 380 things are not spaced properly this part's inconsistent with these parts or here
 381 erm these weights are not right the smallcaps are the wrong size eh which isn't
 382 to say that Paul doesn't notice those things and doesn't mention them and that I
 383 don't say you know this a no longer feels like it fits with the rest of the
 384 typeface this feels really casual where the rest is very rigid we should do
 385 something about this but it's more that erm our general tendency is to fall more
 386 to erm to Paul being the the big picture art director and I'm the nuts and bolts
 387 getting things done

Attenuation and Improvement

The goal or consequence of Attenuation is to bring about improvement in a developing design. Improvement within a typeface design will take the form of gradual refinement – Accretive Amelioration. However, it appears that the expert text typeface designer is constantly Attenuating – constantly looking to improve upon what they identify as incongruity. This continual focus upon improvement is not only attributable to attending to micro details within a typeface design:

... if it's with a text type then ... it's the harmony of keeping the strokes consistent so nothing stands out anymore than another one. ...

Extract 49 (JT_2a, lines 26–28)

At times, the ongoing gradual refinement of an element within a typeface design may no longer provide a route to improvement:

... sometimes you think if that's the trouble then you just have to get rid of that g and just put a single storey g in

Extract 49 (JT_2a, lines 33–34)

Attenuation in such cases is the removal and replacement of elements that then facilitate improvement of the overall design. This latter remedial procedure may result in the designer Trajectorying new form once again that will then be subject to later acts of Attenuation in order to find congruous fit.

Improvement was also coded for within the primary data as related to the macro view of typeface designs where participants identified or reflected upon how Attenuation of incongruity in some form was related to the actual improvement or the desire to improve design:

... yes I mean ... I think there's precious little that I'd feel fully satisfied with

Extract 50 (RN_2, lines 257–258)

And:

... so you know so everything I I've been involved with I think there were probably areas that could be improved. ...

Extract 50 (RN_2, lines 260–261)

This developed ability of the designer to sense where improvement may be brought about is not only focused toward their own work but includes the ability to identify such opportunity in existing work.

Extract 49

JT_2a {Improvement}

26 ... there's a style which follows through erm if it's with a text type then you it's
27 the harmony of keeping the strokes consistent so nothing stands out anymore than
28 another one if you have either too much variation or if a quirky idea
29 suddenly you say it would be really nice to do a g like that a lowercase g then
30 there's sort of levels if it goes too far then it just sticks out you know like
31 classic thing were you've got a a double bowl g and you've got two together then
32 you always sort of see these things spotting erm that's an on-going sort of
33 nightmare and sometimes you think if that's the trouble then you just have to
34 get rid of that g and just put a single storey g in

Extract 50

RN_2 {Improvement}

257 RN: (laughter) yes I mean I I think there's precious little that I'd feel fully
258 satisfied with ... erm but in a way I think that if you work in a sort of creative
259 environment if if you are totally happy with everything you do you sort of loose
260 the momentum a bit somehow it (laughs) so you know so everything I I've been
261 involved with I think there were probably areas that could be improved (laughs)

Historical Immersion

Expert text typeface designers draw upon a deep and innate sense of the history of their discipline that implicitly or explicitly influences both their approach to design and the development and refinement of designs they produce. Historical Immersion as a sub-category of Attenuating accounts for the way in which designers' knowledge of history and reference to history becomes a major contributing factor in the way that they see, situate and adjust their developing designs or approach to design. The concept of Historical Immersion can be seen as a contingent factor of Attenuating, allowing Attenuation to become operationalized. This sub-category accounts for the wealth of knowledge that expert text typeface designers draw upon. Historical Immersion accounts for the background context against which designers gauge and make judgments about their developing designs, influencing and shaping their critical view of design against their knowledge of what has preceded or that which is extant. This can relate to designers' own past work and experiences as much as to the reference of knowledge pertaining to a body or canon of work. Likewise, Historical Immersion may refer to a knowledge of others' work and working practices that assists the expert designer in managing the development of their own design or ways of designing by way of drawing parallels.

Innate Referencing to Historical Context

Historical Immersion is a key and consistent theme that arose from the data analysis via the way in which participants made reference to historical dimensions of type and lettering design. This contingent aspect of Attenuating appeared as references to historical models, specific designs or sources, along with candidly divulging routinely referencing history in their work. Evidence within the primary data suggested that the participants had such intimate understanding of the history of their subject that such historical referencing appeared innate. Extract 51 highlights the confidence and ease with which the participant makes reference to the knowledge of the history of typeface design:

... and after the historical model I know them ... I know the history of typeface. ...

Extract 51 (JFP_1, lines 166–167)

The participant also gives an example of this knowledge by referring to typefaces regarded as having a geometrical influence in their design structure demonstrating a confidence of knowledge of known historical forms. Likewise in Extract 52, clear reference is made to the innate or tacit sense in which expert designers draw from history as something that informs their sense of design. The same extract gives insight to the nature in which history informs approaches to design, but it is also explicit in that it retains a sense of self-determination on the part of the designer, or purpose in their view of approaching design:

... of course sometimes I look at historical forms or I look at Bembo or I look at Bodoni if it's necessary or whatever ... but it's not like ... I'm going to look at it and make the same thing. ...

Extract 52 (MM_1, lines 44 to 49)

Expert designers utilize knowledge of historical examples of design as contributory background against which to guide, judge or position their own design work and its development.

Extract 51

JFP_1 {FromKnowledge}

166 JFP: + and and after the historical model I know them + I
 167 know the history of typeface + I know what is a Nobel is +
 168 what is a Futura + what is a Erbar is + I know what is a
 169 Avant Garde is etcetera + Forma or what ever + all the
 170 typeface with eh eh a geometrical flower on it

Extract 52

MM_1 {FromKnowledge}{Ref_Know_Hist_Cont}{Ref_Conv_Broad}{Proced_Dev} {PrimaryGen}

44 MM: + erm referring is a bit eh + I'm not referring to historical it's more that
 45 it is in my mind I know what has happened in history and (shakes hand and
 46 gestures to his head) it's here somewhere + you know of course sometimes I look
 47 at historical forms or I look at Bembo or I look at Bodoni if it's necessary or
 48 whatever + but but it's not like + I'm going to look at it and make the same
 49 thing

Direct Referencing to Historical Context

In relation and in contrast to participants' references to drawing upon innate or tacit knowledge or knowing of history relative to typeface design, a sense of Historical Immersion through a direct referencing of history was also significant in the data. Designers describe the purposeful engagement with history as a dimension of designers' approach to the subject of typeface design:

... for me I'm always informed by what's gone before ... I suppose because I've always sort of taken an interest in the history of type and the development and the development of type over the years. ...

Extract 53 (RN_2, lines 221–224)

And:

... I'm always informed by what I've seen from ... the sort of history of type development

Extract 53 (RN_2, lines 228–231)

Expert designers constantly engage with the history and development of the subject and how this contextually informs their approach to typeface design. Historical Immersion is an element of the action of Attenuating insofar as engagement with the history of the subject not only informs and contextualizes the potential development of the approach to design but also assists in steering or directing the design, particularly in terms of development of potential originality as opposed to the serendipitous duplication of existing work or ideas:

... whether that's a conscious relationship that you are in control of or you are accidentally channelling something that you saw once you don't realize that you've made a replica of some existing typeface ... because ... you do see a lot of that. ...

Extract 54 (CS_1, lines 131–134)

Extract 53

RN_2 {Ref_Know_Hist_Cont}{PrimaryGen}

221 RN: for me I'm always informed by what's gone before
 222 MH: hm
 223 RN: erm + I I suppose because I've always sort of taken an interest in the
 224 history of type and the development and the development of type over the years
 225 and and I'm still amazed when I look back at the diversity of type design even
 226 sort of going back a hundred plus years erm you know you look at some of the old
 227 ATF catalogues and so on to see the range of almost grunge typefaces that they
 228 had at one time and you it still amazes me so I'm I'm always informed by what
 229 I've seen from
 230 MH: hm
 231 RN: the sort of history of type development

Extract 54

CS_1 {Ref_Conv_Spec}{Ref_Know_Hist_Cont}{DesignSpaceID}{DefDesSearch} {Collaboration}{FromKnowledge} {PrimaryGen}

129 CS: I well sketches we Paul and I always take a look at historical models erm
 130 because inevitably what you do is going to have some relationship with history
 131 and whether that's a conscious relationship that you are in control of or
 132 you are accidentally channeling something that you saw once you don't realize
 133 that you've made a replica of some existing typeface eh because you do you do
 134 see a lot of that erm and that's a very easy thing to do you always hear about
 135 songwriters saying you know I woke up this morning and thought I wrote the most
 136 amazing song but it was actually Let It Be (laughs) erm so we we we really try to
 137 do our research

A Broad View of Convention in Relation to Historical Context

A developed awareness and appreciation of convention plays a significant role in the way that expert text typeface designers view and see type design as being situated historically. This aspect of Historical Immersion in relation to Attenuating enables designers to gauge how likely an aspect of design will work or be acceptable on the basis of comparative similarity or familiarity with understood and accepted conventional norms. Attenuating with respect to the experts' awareness of convention ensures that a new design, or aspects of a given design, do not stray too far from what is perceived to be acceptable or expected in terms of text typeface design. Convention with regard to typeface design can be regarded as a broad construct designers use to measure and judge against:

... we know how important convention is even if you have not made a special study of it why is convention so important what exactly is convention ... how does it work. ...

Extract 55 (GU_2a, lines 98–100)

Historical reference relative to Attenuating may also include knowledge of broad and recurrent problems of convention that the text typeface designer must develop awareness of in order address or redress:

... reconciling these two alphabets in the same typeface is a perennial problem I mean we wrestle with this every type design. ...

Extract 56 (MC_4, lines 46–47)

And also:

... this comes up very often in type design reconciling things which have different histories different forms making them look as though they belong together to some to some degree. ...

Extract 56 (MC_4, lines 54–57)

A broad conventional awareness can relate to the design or inherent considerations of the forms of a text typeface but may also focus on how a typeface performs relative to conventional expectation:

... there is a sort of relatively narrow field in which a typeface performs really well ... as a book typeface a typeface for continuous reading. ...

Extract 57 (RN_1, lines 400–402)

In this respect expert typeface designers are aware that deviation from conventional expectation may result in problems within the typeface design that they would wish to avoid or attenuate if such problems did arise:

... any thing that's too sort of flamboyant or whatever ... is going to soon become tiresome. ...

Extract 57 (RN_1, lines 402–403)

However narrow the constrictions of convention appear to the expert, they are also aware that within the broad scope of convention, there is room for flexibility at the micro level of detail in a design that will also surface at the macro level:

... there's always scope for sort of little nuances that you can put in to characters which often if you are reading ... ten point text are not really noticeable or visible ... but maybe do have their influence subliminal sort of influence on the design

Extract 57 (RN_1, lines 407–410)

Extract 55

GU_2a {Ref_Other_prior}{Ref_Conv_Broad}

96 GU: and I think that any type designer like Matthew and Erik and me and many
97 others who do text face design mainly text face design we hardly in display
98 design we are all basically text face designers we know how important convention
99 is even if you have not made a special study of it why is convention so
100 important what exactly is convention + eh how does it work etc.

Extract 56

MC_4 {Ref_Conv_Broad}{Ref_Know_Hist_Cont}

45 MC: if you go back far enough you can see sort of atavistic similarities and so
46 on but but we've lost that eh + and reconciling these two alphabets in the same
47 typeface is a perennial problem I mean we wrestle with this every type design
48 you know and in the very earliest days roman roman like type it was not solved I
49 mean the relationship between the capitals and lowercase in early forms of roman
50 is just not right I mean it was Aldus's in my opinion it was Aldus's typeface of
51 1495 that first did that made the capitals and lowercase look like they were
52 part of the same typeface so dealing with these anomalies if you like capitals
53 and lowercase the figures are Arabic for goodness sake you know what are they
54 doing there erm dealing with italics which are different so I mean the this comes
55 up very often in type design reconciling things which have different histories
56 different forms making them look as though they belong together to some to some
57 degree you know we talked earlier about the problem of trying to eh deal with
58 relationship between different writing systems

Extract 57

RN_1 {Ref_Conv_Broad}{Ref_Context}{DefDesSearch}{DesignSpaceID}

400 RN: well I think in some ways it does erm + because there is a sort of
 401 relatively narrow field in which a typeface performs really well as a as a book
 402 typeface a typeface for continuous reading erm you know there any thing that's
 403 too sort of flamboyant or whatever is is going to soon become tiresome I think
 404 to to reading in quantity erm and in terms of the sort of overall colour on the
 405 page the number words that you get to the line and so on there are optimums for
 406 that and if you go too far from those then it doesn't the typeface won't fulfil
 407 its function so I think there is a relatively narrow band I mean there's always
 408 scope for sort of little nuances that you can put in to characters which often
 409 if you are reading ten point ten point text are not really noticeable or visible erm
 410 but maybe do have their influence subliminal sort of influence on the design +
 411 erm + yeah I mean I think there are sort of constrictions on how far you can go
 412 with the design when it's has to fulfil a particular purpose

Specifics of Convention in Relation to Historical Context

Complementary to a sense of broad conventional considerations with respect to Historical Immersion and Attenuating, type design experts utilize knowledge in terms of a developed sense of detailed understanding of conventional specifics. Acute awareness of detailed and specific aspects of historical convention in relation to type design and letterform design allows the designer to attenuate relative to a comparative background of declarative knowledge. Such insight with regard to Historical Immersion can include knowledge of the history and traditions of tools and processes and the relationships between these in the rendering of form:

... Bodoni's ... because it's copper engraving as opposed to ... cutting into lead. ...

Extract 58 (ES_1, lines 122–123)

Convention with respect to text typeface design extends then not only to the history of typeface design but to a history of form derived from making and designing letters, whereby the tools, materials and process involved directly influence the shaping of letterform:

... I find that quite informative if I look at the tool. ...

Extract 58 (ES_1, lines 127–128)

Knowledge of such detail in the construction of letterforms via tool specific and technique specific influence enables designers to gauge and judge convention in terms of the expected or anticipated way that form should appear:

... static arches so as a ... typeface in more recent years may have a curve the stem goes down you lift the pen then you start the arch. ...

Extract 59 (JT_2a, lines 120–122)

Specifics of convention can relate to knowledge of styles, genres or oeuvres in relation to historical references, whereby Attenuating specific details may allow for alignment to such former associations:

... or the E where the arms are pretty much even but actually pull the centre one back in so you've got that more old older grot kind of oddity. ...

Extract 59 (JT_2a, lines 116–117)

Extract 58

ES_1 {DefDesSearch}{Ref_Know_Hist_Cont}{Ref_Conv_Spec}

121 yes yes essentially because erm + there are also reasons for why these
 122 things exist I mean there are technical reasons you know Bodoni's Bodoni because
 123 it's copper engraving as opposed to to cutting into lead which he did but but
 124 the history of technology is the history of type or the history of type is the
 125 history of technology also you know whether it is wood or copper or steel or
 126 clay or litho you know the stone the brush the chisel the engraving tool we all
 127 know that that's made a difference and eh I find that quite informative if I
 128 look at the tool

Extract 59

JT_2a {DesignSpaceID}{DefDesSearch}{Ref_Other_prior}{PrimaryGen} {Ref_Conv_Spec}

113 JT: ie. News Gothic News Gothic grots Formata I wrote Formata down there I'm
 114 not quite sure about why I did square dot or squarish form not Eurostyle
 115 slightly exaggerated proportions then I got may be like the Gill E for instance
 116 or the E where the arms are pretty much even but actually pull the centre one
 117 back in so you've got that more old older grot kind of oddity
 118 MH: hm
 119 JT: erm creates awkward spaces but then that's what I wanted something
 120 exaggerated something a bit more odd erm static arches so as a eh typeface in
 121 more recent years may have a curve the stem goes down you lift the pen then you
 122 start the arch erm you with a static with a static so it has dynamics this is
 123 going back to Hans Eduard Meyer's idea for erm Syntax there's dynamics movement
 124 within the forms

Historical Immersion Summary

The immersive and constant nature with which participants referred to history as both guiding and steering the potential direction of their approaches to design was evident across all of the collected data. Historical Immersion as a sub-category of Attenuating accounts for the ways in which designers not only to inform their design in relation to and with respect to history but also affords the positioning of developing designs to align with or depart from such a sense of historical knowledge, determining a sense of progression in relation to history or distance and originality relative to the context of history. Participants utilize Historical Immersion to steer and position their design as part of an act of Attenuating incongruity in the development of the text typeface.

Envisioning

Envisioning is a contingent sub-category of Attenuating that describes the way in which the expert type designer's sense of self plays an important role in the development of design and designing generally. This includes awareness not only of what may be required to improve a typeface design but extends to developed and developing awareness of how approaches to designing may improve or be improved. Envisioning describes the designer's view of how they see themselves and their approaches to design as a contributing factor in the progression and improvement of design and designing. Envisioning compliments Historical Immersion in such ways that by Envisioning a designer may sense ways that they can bring about effective change within a design situation, drawing upon their own experiences, self-will or determination to bear upon design. Envisioning can be considered equal to situations in which an expert designer recognizes their own expertise or virtuoso abilities in terms of self-will and how this may be applied to a particular design scenarios or to developing a sense of improvement in their own understanding and abilities as a designer based upon their envisioned skill, knowledge and experience of designing.

Experience and Envisioning

Expert text typeface designers utilize their awareness of experience as part of an act of Envisioning. In this respect, Envisioning experience allows the designer to make judgments with regard to the bounds or limits of what can, could and possibly should be achieved with regard to designing text typefaces. The expert's sense of self-awareness of experience in terms of design and designing directly influences the act of Attenuating:

... well I suppose this is this is based around ... experience of working with these things over many years. ...

Extract 60 (RN_2, lines 320–321),

and

... having a good appreciation of how typefaces are used as or should be used ... so in the end the only judgment you can make is whether the typeface is fulfilling it's ... role. ...

Extract 60 (RN_2, lines 330–332)

Knowing ‘what’ to do or ‘how’ to bring about improvement is dependent upon awareness of the ability to identify where improvement is required and the ability of the self to bring about such improvement. This aspect in relation to text typeface design process is then very much dependent upon ‘who’ is involved in such activity:

... I think that the fact that we were older and a bit more experienced when we started working together I think there weren’t clashes of ego we knew that we both had the same goal in mind this is going to be a great typeface. ...

Extract 61 (CS_1, lines 238–241)

With respect to work of a collaborative nature, same or similar qualities of self in terms of experience and ability to attenuate may be shared between collaborators:

... so if he’s going to take the handful of letters I just drew and change them in some way because that makes it work better that’s fine you know I found that ... in some ways we get to the solution faster because you don’t need to take as much time away to reconsider things

Extract 61 (CS_1, lines 243–247)

The ways in which the designer engages in Envisioning their experience and ability, or what they envision as similar in other’s experience and ability impacts directly upon improving and progressing design and designing.

Extract 60

RN_2 {Ref_Context}{Ref_Know_Hist_Cont}{Experience}

320 RN: (laughs) well I suppose this is this is based around experience of
 321 experience of working with these things over many years but I mean as somebody
 322 who’s not judging the typeface then if they read the book and they don’t have
 323 any problems reading the book erm then in a way it’s worked the typeface has
 324 worked erm but even so even having said that I mean I’ve recently read a book
 325 that was I think it was set in a Garamond I can’t remember which Garamond but it
 326 was completely destroyed because it was too small a point size and too too much
 327 line feed
 328 MH: hm
 329 RN: erm and it was just difficult to read because it was too small so this comes
 330 back to having a good appreciation of how typefaces are used as or should be
 331 used erm + (4 secs) so in the end the only judgment you can make is whether the
 332 typeface is fulfilling it’s it’s + it’s role

Extract 61**CS_1 {Collaboration}{Experience}**

237 CS: I think our our relationship sort of fell into place relatively early I
 238 would think when we were working on the Guardian project I think that the fact
 239 that we were older and a bit more experienced when we started working together I
 240 think there weren't clashes of ego we knew that we both had the same goal in
 241 mind this is going to be a great typeface for this newspaper it's got to fit
 242 their needs we don't each have grand statements that we need to make and and
 243 have to go you know diva about it so a a good result and so if he's going to
 244 take the handful of letters I just drew and change them in some way because that
 245 makes it work better that's fine you know I found that in some way in some ways
 246 we get to the solution faster because you don't need to take as much time away
 247 to reconsider things and come to it with fresh eyes you can send it to the other
 248 person who has fresh eyes already and they can pinpoint what's wrong with it fix
 249 the weight thing or the proportion thing or the length of the serifs or whatever
 250 wasn't working about it they can try another iteration bring it forward and then
 251 you've got fresh eyes because it's changed

Envisioning a Personal Approach

Envisioning in relation to Attenuating also extends to ways in which experts project an envisioned personal approach to design. Awareness in this respect manifests in the ways in which designers impose their own view of what they as individuals bring to bear on the designing of type. This includes how they work or have a particular view that is then imposed upon their consideration of design and designing. Experts demonstrate an awareness of ways of working or views they hold, particular to themselves that influence a general approach to Attenuating. The influence of a personal approach on Attenuating can manifest in ways in which design experts knowingly work within certain bounds or parameters:

... it's hard to ... blaze a trail ... where text typefaces are designed are concerned which departs very radically from ... the familiar patterns. ...

Extract 62 (MC_4, lines 181–183)

Experts are thus able to exclude or dismiss other approaches, methods or considerations that for them would appear to be less fortuitous or desirous in terms of the yield they would produce for design and designing:

... drawing means drawing in my case pencil because I don't want it to be ... partly because I'm not quick on the screen so lack of practice partly I don't want to be slave to the curves. ...

Extract 63 (ES_Int2_1, lines 123–125)

An expert's personal approach in relation to Attenuating considerations of design and designing appears less like an applied dogmatic set of principles but more of a pragmatic consideration within the bounds of what appears conceivable:

... I suppose my frame of reference is ... rather limited by ... the constraints of what you can sort of get away with ... in a text typeface design. ...

Extract 62 (MC_4, lines 178–180)

These are personal views experts evidence about themselves and their relationship to design.

Extract 62

MC_4 {Ref_Know_Hist_Cont}{Ref_Conv_Broad}{Personal_approach}

167 MC: yes I well + most of my work I suppose has been with text typeface not all
 168 of it by any means I mean I've designed some display faces and so on and I think
 169 you know the the constraints which we were talking about at lunch are more
 170 severe where text typefaces are concerned so you know it's never been my
 171 ambition to work on very experimental things I mean I the idea appeals to me and
 172 I I have a whole talk which I haven't given in some years I must look at it
 173 again on the history of experimental type design which is almost as old as the
 174 sort of authentic eh or orthodox I should say (inconical?) type design has a
 175 very ancient history and some of it has thrown up some interesting ideas an
 176 awful lot of it has just fallen by the wayside you know eh eh and along the way
 177 it just didn't appeal to anyone it was some particular person's weird idea and
 178 so on outside the outside the norms + so I suppose my frame of reference is is
 179 rather limited by by the constraints of what you can sort of get away with eh in
 180 in a text typeface design erm I would like to have been more adventurous in in in
 181 some of them but have perhaps to be so but erm it it's hard it's hard to erm to eh
 182 erm blaze a trail eh where text typefaces are designed are concerned which
 183 departs very radically from from the familiar patterns

Extract 63

ES_Int2_1 {Tech_Constrain}{Repertoire}{Personal_approach}{Ref_Own_Prior} {Ref_Other_prior}{DesignSpaceID} {PrimaryGen}

121 ES: with some physical constraints and then my method has always been eh to
 122 draw something from memory that I'm familiar with but draw it from memory and
 123 drawing means drawing in my case pencil because I don't want it to be eh partly
 124 because I'm not quick on the screen so lack of practice partly I don't want to
 125 be slave to the curves because the you have a Bezier curve a true type or an
 126 open type curve it has a certain you know you try to do it economically so you
 127 have very few points and they all all all the curves are looking the same

Envisioning and Originality

Attenuating with respect to pre-existing forms of type and approaches to designing type can be dependent upon the designer's ability to envision their own sense of originality. This aspect of Attenuating relates to ways in which the designer weighs or judges their own ability to make novel contribution to a design or the contextual culture in which they design, insofar as such contribution will improve or enhance pre-existing forms or methods. Envisioning a sense of originality may include the ways in which a designer perceives their contribution to the canonical body of existing material within their subject domain:

... I don't have to reinvent the letterforms completely I've done that a couple of times. ...

Extract 64 (GU_1, lines 83–85)

Envisioning originality in a methodological approach can include ways in which the designer views existing approaches as being able to be improved upon:

... I try to ... convince people there's before that there is a stage which is much more important ... so try to follow that path in general. ...

Extract 65 (MM_2, lines 205–207)

In contrast, designers may view a prospect as not being useful in terms of the potential to contribute originality or bring about improvement within a pre-existing area:

... you get told to ... or asked or approached redraw Helvetica or something I said well why do you want to redraw it it's alright as it is and it's a soulless job anyway if you're going to do something you might as well do it new. ...

Extract 66 (JT_2a, lines 486–489)

The ability to envision potential to contribute and improve in an original manner appears as an important element of Attenuating for the expert designer.

Extract 64

GU_1 {FirstChars_Lc}{FirstChars_Uc}{Ref_Own_Prior}{Proced_Dev}{Ref_Originality}

83 I don't have to
84 reinvent the letterforms completely + I've done that a
85 couple of times

Extract 65**MM_2 {PrimaryGen}{Proced_Dev}{Ref_Originality}**

201 MM: yes + so eh + it's almost like proving that eh not that I'm right but
 202 trying to tell that what are all those people doing copying Akzidenz Grotesk or
 203 Helvetica from each other again and again and again and why always slanted
 204 for me it's like blind
 205 copying of what's already there + and I try to to convince people there's before
 206 that there is a stage which is much more important + so try to follow that path
 207 in general you know it's like eh what I did with Scala the same I showed the
 208 world that you have Scala first and from that you have the Scala Sans you could
 209 also do it with Bembo or with eh like Jan Tschichold did with Sabon and he made
 210 sketches for it Sabon Sans which were never it was never released but the path
 211 is very simple and very obvious and very eh logic that eh not the other way
 212 round of course

Extract 66**JT_2a {Ref_Originality}{PrimaryGen}**

486 JT: you you you get told to told or asked or approached redraw Helvetica or
 487 something I said well why do you want to redraw it it's alright as it is and
 488 it's a soulless job anyway if you're going to do something you might as well do
 489 it new erm and but then it's like market research the people who commission it
 490 don't know they can't see what's new otherwise no one can you see ad no way very
 491 rare will they give you gamble you you know give you lots of money to gamble on
 492 making something new
 493 MH: yes
 494 JT: because the trust isn't there there's no sort of understanding the days of
 495 Frank Pick and sort of commissioning the underground type and see what happens
 496 kind of thing is long gone you know

Autonomy and Overseeing in Design

In order to progress and improve text typeface design, the expert typeface designer draws upon a strongly developed perception of the importance of autonomy in decision-making in design:

... you need to have one designer to do everything

Extract 67 (JFP_1, lines 78–79)

The perception of autonomy in terms of a single designer's view, creating and progressing design, may also extend to situations of collaboration. In these instances the autonomous perspective is still maintained as the expert designer establishes parameters or retains overall control:

... at some point you can ask another one to come ... but later but one ... so how the step is created. ...

Extract 68 (JFP_1, lines 83–85)

The importance of a single 'overview' appears maintained by the expert even in situations in which collaboration may appear as an ideal. However, pragmatism may dictate that an expert partner within such collaborations take an autonomous role in progressing a design:

... there's the idea always that you when you're collaborating on a typeface ... you both want to be able to mess around with the full character set ... and make sure it's what you're both thinking ... find that middle point ... but practical concerns mean that's rarely possible. ...

Extract 69 (CS_2, lines 54–57)

Similarly, where a type design involves a group of stakeholders, autonomy appears necessary with regard to overseeing the progression of the design:

... I think it is important in a project that there is one person that has a responsibility for the design. ...

Extract 70 (RN_3, lines 139–140)

Envisioning autonomy for the expert designer then is necessary in order to enable the coherent progression of design.

Extract 67

JFP_1 {ExampleExperi}{Redefining_brief}{Autonomy}

77 so + it's a joke
78 a little bit but + eh + you need to have one designer to do
79 everything

Extract 68

JFP_1 {Autonomy}

83 JFP: Because it makes sense + at some point you can ask
84 another one to come to came but later but one + so how the
85 step is created

86 MH: So do you think is is that important maybe one person
 87 to have an overall view
 88 JFP: Yes + it is necessary to take the decision + but in
 89 this case you see that + eh erm + the design involves some
 90 strategy

Extract 69

CS_2 {Overseeing}{Autonomy}{Collaboration}

43 CS: well I I I we have a centralized drop box and I'll throw things in and I'll
 44 say Paul I need you to have a look at this I think these parts are good I think
 45 the italic's looking not too great yet so if you could do what needs to be done
 46 (laughs) eh that would be great but a lot of it there there is sort of the ideal
 47 way that you would like to do it where we each work on go over each stage of the
 48 project and and each have a go at it and the reality of deadlines and things
 49 means that erm sometimes I'll say I I don't have time to work on this project
 50 anymore for two weeks so can I just send you these things and you fill in all
 51 the characters and I will italicize it when you're done + so yeah
 52 unfortunately the practical concerns mean that there's there's not not really
 53 one way that things tend to get done a lot of it has to do with what's going on
 54 at the moment + erm +++ there's the idea always that you when you're
 55 collaborating on a typeface you you both want to be able to mess around with the
 56 full character set and and and make sure it's what you're both thinking find
 57 find that middle point erm yeah but practical concerns mean that's rarely possible

Extract 70

RN_3 {Autonomy}{Overseeing}{Collaboration}

127 RN: I think it is quite important I I've been through all the sort of scenarios
 128 in my time at Monotype erm I I've seen sort of committees put together to judge
 129 typeface the progress of a typeface erm and I seen individuals have the
 130 responsibility and so on and I think trying to design to satisfy a committee is
 131 never a good idea really erm it's hard enough sometimes you know when you've got
 132 a customer to satisfy erm and that customer often you know often you're dealing
 133 with people that don't really know are not really type people
 134 MH: hm
 135 RN: so they're not confident in making a judgment so they show it around to all
 136 the people that are involved in the project perhaps (laughs) and if if they're
 137 people that work in a bank you get all sort of strange comments and (laughs)
 138 MH: I can imagine (laughs) yeah
 139 RN: so I think it is important in a project that there is one person that has a
 140 responsibility for the design yes

Envisioning Context and Usage

Context plays an important role in Attenuating beyond knowledge of context purely in the sense of Historical Immersion:

... the most important thing in my thinking ... when I think of type design immediately I form the image of someone holding a reading surface and reading intently. ...

Extract 73 (GU_1, lines 68–71)

Envisioning context accounts for the ways in which expert designers are able to Attenuate envisioned contextual scenarios in order to situate or justify the context for which a developing design will fit to or against. Envisioning such contextual fit may derive from Attenuating purely practical or functional issues in relation to the developing typeface design and its proposed foreseen use:

... it's nothing to do with fashion it has to do with the physical ... readability issues

Extract 71 (ES_1, lines 146–147)

However, expert designers are also able to envision themselves as users in terms of how a typeface may be perceived contextually. Both the functionality of the type and the envisioned contextual perception of the type can be aspects that the expert designer finds themselves Attenuating:

... you are putting things into it which then aid it's readability if you like but the way it works in context ... so I was looking at that and thinking well you can do like a Poliphilus and fake it up or you can work within the constraints of what you have now a days ...

Extract 72 (JT_2c, lines 95–98)

Envisioning context and usage sees the designer Attenuating – checking, testing, judging etc. – not only for the usability of a design but also for its envisioned contextual acceptability in use:

... they don't want the serif they think the serif is old fashioned they want everything in sans even if you can't read the bloody thing. ...

Extract 71 (ES_1, lines 139–141)

Attenuating a balance between such oppositional factors is aided by the designer's ability in Envisioning contextual fit in terms of both functionality and contextual acceptability.

Extract 71

ES_1 {Ref_Context}{DesignSpaceID}{DesDelimiters_Client}{DefDesSearch}

137 if you + I I

138 have this argument all the time with the engineering guys + at Bosch where we

139 did the typeface both the sans and the serif + they don't want the serif they

140 think the serif is old fashioned they want everything in sans even if you can't
141 read the bloody thing the annual reports you can't read shit but oh this serif
142 stuff yeck (dismissive gesture with hand) and then you tell that sans two
143 hundred years old and they don't want to hear that + no no no no this is modern
144 you know Arial is modern Avant Garde Gothic is even more modern + because it's
145 more modern it's more constructed they don't understand that it's boring that
146 it's nothing to do with fashion it has to do with the physical erm readability
147 issues and all the rest of it and tone of voice or what have you + so the
148 historical models if you look at why they existed in the first place look at
149 physical constraints technical constraints and a certain yeah and they have left
150 us with a taste that we do think serifs are bookish or magazine-ish and sans are
151 + eh corporate you know it's it's may be rubbish but it does exist and prejudice
152 and as our mothers would say you know where there's smoke there's fire there is
153 something in it and you have to take it into account

Extract 72

JT_2c {Ref_Context}

95 they are idiosyncrasies you're putting elements you are putting things into it
96 which then aid it's readability if you like but the way it works in context so
97 so I was looking at that and thinking well you can do like a Poliphilus and fake
98 it up or you can work within the constraints of what you have now a days and and
99 find a way of doing it erm now the way that I did that was + (5 secs) adding a
100 slight slope and it was an odd thing because it didn't work in some places

Extract 73

GU_1 {Projecting_user_usage}

68 that's right that's the most important thing in my
69 thinking + when I think of type design immediately I form
70 the image of someone holding a reading surface and reading
71 intently

Reflection, Envisioning and Attenuating

For the expert text typeface designer Attenuating goes beyond solely working on a current or ongoing design. Active Attenuation by the expert of their own past work or the work of other designers allows for the opportunity to learn reflectively

from experiences of designing and from the designs themselves. Learning from past experiences and developing critical appraisals of incongruity in past design output enables the designer to envision where Attenuation in terms of new or future designs may be required:

... mostly it's like I did something here and I'm going to do it different here because I know it didn't work there ... you know you learn from your own mistakes. ...

Extract 74 (MM_2, lines 136–137)

Attenuating existing work by means of identifying incongruity is important in terms of reflective practice for text typeface designers. This allows designers not only to reflect on past or current design but also allows them to project or envision where and what they will attenuate in developing or future designs:

... I used to have them exactly on the ... x-height maybe a little above now I've put them way above a least by one stroke because I always find them too small. ...

Extract 75 (ES_1, lines 208–210)

The expert typeface designer envisions themselves as an active agent in the process of Attenuating their work. In this respect it is not that designers are merely Attenuating design; it is dependent upon their insight, their reflection, their vision of what works and does not work gained with experience that enables them to attenuate to very exacting levels.

Extract 74

MM_2 {Ref_Own_Prior}{Ref_Act_Design_learn}{Ref_Reflection_learning}

136 MM: mostly it's like I did something here and I'm going to do it different here
 137 because I know it didn't work there + you know you learn from your own mistakes
 138 of course + it's eh in Scala there's lots of mistakes I think eh I remember that
 139 I wanted to make the oldstyle figures erm in the basic character set so if you
 140 type you have the I was so busy with this idea I was so focused on this idea I
 141 think I made the ascenders and descenders much too long the numbers too wide so
 142 they stand out very much in the text in a way which was the blame I wanted to
 143 extend them out like eh eh lining figures you know but now they stand out
 144 because they are very big oldstyle figures that for me later I saw this and I I
 145 realized these things I I tried in Nexis I corrected this sort of I made it in
 146 the right proportions I think descenders and ascenders are not as long as the
 147 letter descenders and ascenders the eh width is also not so wide + it's just
 148 correcting what you made mistakes before

Extract 75**ES_1 {Ref_Reflection_learning}{Ref_Own_Prior}{Numerals}**

204 there's more constraints there and I love that ... you can have the up and
 205 downs and I've done the semi-oldstyle figures and three quarter oldstyle figures
 206 and I learnt when I did the first Meta oldstyles they were way too short too
 207 small + they they should be higher and the same with caps eh low eh small caps
 208 (unrecognizable word) I used to have them exactly on the eh on the x-height may
 209 be a little above now I've put them way above a least by one stroke because I
 210 always find them too small

Envisioning Summary

The relationship between Envisioning and Attenuating sees the expert typeface designer identify themselves and their ability, skill and judgment as important to the ongoing development and improvement of a text typeface design. Moreover, this continual, critical concentration on improvement and development by way of reducing levels of perceived incongruity in design in turn informs and improves the designer's ability to design. The expert designer's sense of self is therefore important in the act of Attenuating, as it is dependent upon their perceived developed abilities in critically identifying and ameliorating incongruity that results in the kinds of high quality and contextually apposite artifice we associate with such expert designers.

Summary

The core category Attenuating describes the ways in which designers continuously and critically test and adjust for incongruity in developing text typeface designs. As a developed core category Attenuating includes the sub-categories Attenuation, Accretive Amelioration, Envisioning and Historical Immersion. Attenuating describes the on-going constant attentive and corrective nature of the designer's actions and decisions within the design process from the earliest stages of attending to the form or parts of form of single characters to testing contextually set text and typographic matter in order to determine the functionality, usability and acceptable contextual usage of the typeface. Attenuating is inexorably connected to both Trajectorizing and Homologizing as part of the overall design process relative to text typeface design. Attenuating also describes the designer's continual act of comparing, filtering, checking, correcting and adjusting the design. Attenuating describes both the practical and the tacit in relation to how the text typeface designer perceives and judges appropriateness in terms of the functional and aesthetic qualities of the design throughout its development. The text typeface designer is involved in the act of Attenuating at both micro and macro levels in the development of the typeface design. The corrective actions of Attenuating as a developed theoretical core category describe how the designer reduces disruption or noise in the system of design resulting in Attenuation. Attenuation is

therefore conditional in so far that it becomes a condition of Attenuating. As a consequence of Attenuation, the subcategory Accretive Amelioration describes the consequential, continual improvement of text typeface design over time, through constant Attenuation facilitated via the testing of form and relative spacing etc. Incongruity becomes rarefied, the typeface thinned of distracting elements. The designers' reflexive ability in Envisioning problem and opportunity, along with their critical sense of knowing and reference to known design and designing by way of Historical Immersion, enables and facilitates the steering and guiding of the design toward conclusion.

7 Discussion

Introduction

This chapter brings together by discussion the developed core categories and their theoretical sub-categories from the previous chapters. It also reintroduces aspects from the literature relevant to the developed theory alongside additional references where pertinent or necessary.

This research focused on the problem of a lack of documented knowledge relating to the text typeface design process. Thus, the research question – ‘Can knowledge of text typeface design process be revealed and if so can this be explicated theoretically?’ was developed. One of the aims of this research was to evaluate whether it is possible to provide evidence and develop a theoretical account of such processes – if at all discernible – from accounts of practice given by expert text typeface designers. Experts were chosen as the focus of this research as their accounts might give deeper insight into the processes involved. A Grounded Theory Methodology was adopted, as this research methodology would allow for the generation of theory in an area in which there was little in the way of substantive research regarding the process or processes of text typeface design. Grounded Theory Methodology often finds application where little exists in terms of explaining what happens in these areas (Goulding, 2002). Although research has been established in the area of design process, particularly in other subject fields such as architecture, industrial design, product design and engineering design, to apply this thinking directly to text typeface design to begin with would have been to make assumptions with regard to the processes of text typeface design as similar to other fields when there is no substantive study or proof that establishes such connections. In-depth interviews with experts provided rich primary data that was coded and analysed by constant comparative method in accordance with Grounded Theory Methodology. This was conducted with the aim of generating theory that would describe patterns of commonalities and differences in the accounts of text typeface design practice as evidenced by the expert participants.

The Grounded Theory that emerges from this research provides rich and in-depth explanatory theory that addresses issues raised in terms of the identified knowledge gap within the aims of this research. The three developed core categories Trajectorizing, Homologizing and Attenuating provide a rich elucidation of the deep structures that exist in relation to the processes of text typeface design.

The aim of this chapter therefore, is not only to broaden out into discussion the Grounded Theory developed within this research and the interrelationships of the

core categories pertaining, but also to offer discussion as to the implications and possible applications of the Grounded Theory.

A developed Grounded Theory is by its nature internally self-validating, in that it develops over time via the constant comparison of emerging concepts developed from and grounded in the data – the testimonies of the research participants. Glaser describes Grounded Theory as:

GT is induction, systematically generating concepts from systematically collected data – evidence – based on a unique methodology of constant comparison procedures, which constantly verifies validity of concepts as they are generated from data and related to each other as hypotheses.

(2003, p. 129)

The Grounded Theory in this study, then, can be described as a series of hypotheses developed as inductively generated concepts from the data and grounded by the data. This study in accordance with Grounded Theory Methodology generates substantive theory as hypotheses. That is to say, this study is not one of verification of existing theory or the further development of existing substantive theory toward a formal or grand theory. However, this chapter offers by discussion and example how the concepts generated in this research interrelate and extend explication of the generated theory in the preceding chapters.

This chapter will discuss the interrelationship between major elements of three core categories: Trajectorying, Homologizing and Attenuating. Each core category renders explanatory theory that elucidates groups of actions, thinking and behaviours relative to the processes of text typeface design as evidenced in the primary data by text typeface design experts.

The core categories are presented within this research in order to give clarity to the underpinning deep structures within the processes of text typeface design. This chapter will include the use of diagrams and images where these help elucidate, clarify and extend the discussion of the developed theory.

As part of the research methodology belonging to this research, the author developed a new method – Empathic Memoing – that augments the existing Grounded Theory method of memoing. Examples will also be included where this new method will help give clarity and structure to the discussion. Aspects of the developed theory relative to the literature with respect to typeface design will also be discussed.

This chapter also discusses aspects of the developed theory in relation to the wider context of the literature relating to design process and where pertinent beyond this.

Finally, this chapter discusses the implications of the developed theory as a model in relation to the practice of typeface design, the theory in relation to the teaching of typeface design as a model of understanding process and the theory in relation to research as a model for analysis.

Interaction of the Core Categories

This section will further elaborate upon the developed theory by discussing the interrelationships between the core categories. Figure 7.1 is the diagrammatic overview from Chapter 3 reintroduced to re-familiarise the reader with the structure and relationship between the three core categories. This takes the form of an Euler

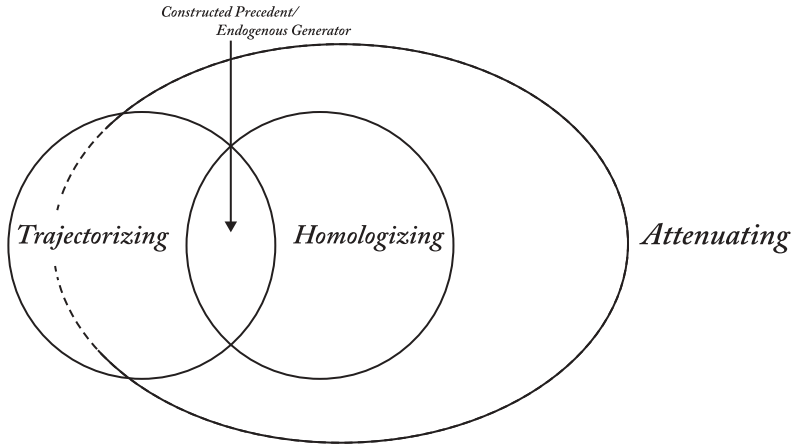


Figure 7.1 The relationships of core, causal, action categories linking Trajectorizing and Homologizing relative to Attenuating.

diagram, representing the relationship between the core categories Trajectorizing, Homologizing and Attenuating. This diagram also visually expresses the concept of Attenuating as having an enduring nature in terms of the overall process of text typeface design in relation to both Trajectorizing and Homologizing.

Figure 7.2 develops the simple Euler diagram, conceptually representing the same interrelationships between core categories but expanded with further detail with respect to the sub-categories and dimensions developed in this study. This diagram

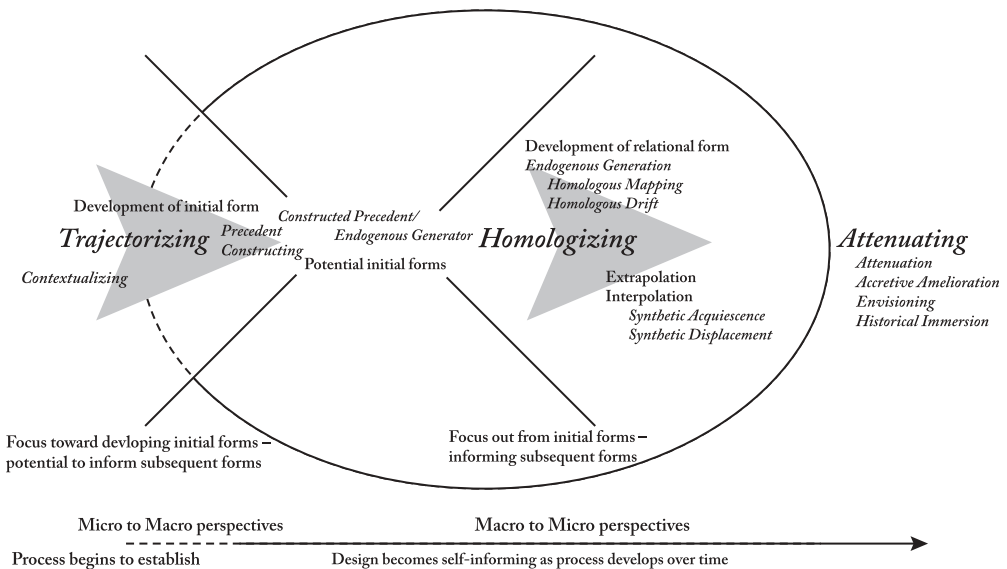


Figure 7.2 Typeface design process relative to core and sub-categories, including related phenomena as described by the developed Grounded Theory.

also represents the nature of the type design process over time relative to the inter-relationship of the core categories Trajectorizing, Homologizing and Attenuating. Highlighted is the shift that takes place in terms of the focus from micro to macro perspectives that inform and allow the text typeface design to control and navigate the development of design. The significance of Attenuation as a core category in relation to Trajectorizing and Homologizing can also be noted. Whereas Trajectorizing and Homologizing actions have definitive and, arguably, delimited roles within the development of text typeface design, Attenuating has an enveloping quality that can be seen as constantly present throughout the process of text typeface design.

Attenuation as Constant

Expert text typeface designers engage in critically assessing the needs, potential and opportunities of text typeface design from its very early stages continuously through to its completion, release or capitulation. Even after completion of a design, identification of incongruence is still possible:

... so you know so everything I've been involved with I think there were probably areas that could be improved. ...

Extract 76 (RN_2, lines 260–261)

Attenuation goes beyond the process of design. Incongruity may still be identified within a design even when the designer has decided that the point has been reached at which the design work must stop.

Extract 76

RN_2 {Improvement}{Ref_Own_Prior}{Ref_Act_Design_learn}{Ref_Reflection_learning}

257 RN: (laughter) yes I mean I I think there's precious little that I'd feel fully
 258 satisfied with + erm but in a way I think that if you work in a sort of creative
 259 environment if if you are totally happy with everything you do you sort of loose
 260 the momentum a bit somehow it (laughs) so you know so everything I I've been
 261 involved with I think there were probably areas that could be improved (laughs)

The designer Attenuates incongruity in relation to Trajectorizing new form and also in Homologizing based on subsequent generated form. Any seemingly incongruent element can be identified as well as adjusted or improved. However, when a design has come to the point of being deemed finished or complete, Attenuating may still take place in the form of identifying incongruity in a design, even if the designer does not Attenuate such incongruity in terms of remedying:

... I could probably find some things that I thought ah you know I wish I'd not done that and so on but ... I wouldn't change it at this point. ...

Extract 77 (MC_3, lines 149–151)

Attenuating, then, can be seen as a constant feature of text typeface design relating to expert designers. To be effective, Attenuation requires first comparison and second expectation in order to be effective. The level and success of Attenuation identified as necessarily required and achieved will be dependent upon the ability, knowledge and skill of the designer.

Extract 77

**MC_3 {Des_Prob_Inherent}{Ref_Other_prior}{Ref_Own_Prior_NEG}{Ref_Own_Prior}
{Corrective_Judgment}**

148 don't often eh eh no I mean + you know I I'm not really tempted I'm sure if I
149 sat down with you and we looked at you know Galliard or something or other I
150 could probably find some things that I thought ah you know I wish I'd not done
151 that and so on but I I wouldn't change it at this point

Attenuation and Comparison

Comparison for the text typeface designer is requisite. This is often simultaneously multivariate, requiring comparison at many levels from micro to macro and back again. Text typeface designers appear not to create leaps in terms of the notions of solving problems as described by Cross, Dorst, and Chritiaans (1996). The text typeface designer appears to resolve a design via constant Attenuation rather than by solving a design scenario:

this ... very long winded process of changing something and seeing the effect and may be makes it worse so you undo that and you go and change something else

Extract 78 (MC_1, lines 400–401)

Many of the issues that text typeface designers face are, at least by expert testimony, well known to them, issues such as readability and legibility, which are inherent in the nature of what a text typeface design requires. However, each text typeface design will have its unique and particular inherent sets of tensions also. Such tensions appear to emerge and resolve through the processes of design as opposed to being solved. Text typeface designers go beyond mere conjecture in the initial forms they establish; they Trajectorize, they lay down early precedent for themselves to follow, they Attenuate form by means of continual generation and testing – perhaps a high-frequency or micro version of the kind of generation and test identified by Newell and Simon (1972) – that may be found in other design discipline studies. Attenuating begins very early in the process of text typeface design:

[testing begins] almost immediately ... if you have ... n and an i and m you type nim

Extract 79 (MM_2, lines 48–49)

Attenuating is intrinsic to both Trajectorizing and Homologizing, Attenuating being the constant sets of awareness and actions that filter, check and amend – Attenuating incongruity in the sense that the expert designers see this. Here, there is something like the nature of what Christopher Alexander describes in ideas of fit and mis-fit in relation to examples of extended learning: ‘The most important feature of this kind of learning, is that the rules are not made explicit, but are, as it were, revealed through the correction of mistakes’ (1964, p. 35).

For the text typeface designer this perhaps connects to a process of learning, but the immediate similarity here is in the ways in which designers describe the actions of constant critical testing and identifying what they see as not working or incongruent. Attenuating leads to accretive improvement, but improvement ‘revealed through the correction of mistakes’, or more correctly improvement through the sense of the filtering of incongruity – Accretive Amelioration.

Extract 78

MC_1 {Working_Phase}{Testing}{Ref_Context}{Proced_Dev}

400 this + very longwinded process of changing something and seeing the effect and
401 may be makes it worse so you undo that and you go and change something else

Extract 79

MM_2 {Mutability}{Ref_Context}{Testing}{Proced_Dev}

48 MM: eh almost immediately + yeah eh if you have a eh n and an i and m you type
49 nim + (smiles) just to eh automatically you just do it you know so or if you
50 make the n and the m you cannot make a word so you you then start making the o
51 or the e just to have something you know

Trajectorizing and Precedent

The Grounded Theory developed in this research highlights the importance of the role of precedent in the designing of text typefaces as a Trajectorizing element. It is important to note, however, the distinction that this study gives in terms of two main kinds of precedent in connection with text typeface design. These are Contextualizing Precedents and Constructed Precedents. To clarify, a Contextualizing Precedent is one (there may be multiple) that the designer selects either consciously and purposefully or by serendipity as the influence or basis upon which a text typeface will begin:

I mean that that is how I educate myself about something you know here’s a nice typeface I’ve got a reasonably good specimen of perhaps most of the alphabet and so on let me scan it and put it in the background and eh and work over it and see where it takes me

Extract 80 (MC_1 lines 83–86)

Extract 80**MC_1 {PrimaryGen}{Ref_Other_prior}{DesignSpaceID}{Ref_Act_Design_learn}**

83 MC: I mean that that is how I educate myself about something you know here's a
 84 nice typeface I've got a reasonably good specimen of perhaps most of the
 85 alphabet and so on let me scan it and put it in the background and eh and work
 86 over it and see where it takes me

The employment of precedent in design process has been well documented and commented upon by others (e.g. Goldschmidt (1998)). A designer may use an initial precedent to work along with as a guide and then depart from it. However, Goldschmidt comments that '... the use of precedent is counterproductive with respect to design creativity ...' (1998, p. 258) and '... using past examples is a relatively straightforward problem in cases of routine, non-innovative design. When we consider non-routine, innovative and ultimately creative design, the problem increases manifold' (p. 260). Such views do not align clearly with the way in which expert designers in this study evidence the use of known and found sources, typologies etc. as impetus for initiating or targeting their own designs early in the process.

In terms of what this study identifies, these initial kinds of precedent can be seen as contextualizing precedents in terms of text typeface design, the like of which have been discussed and identified before with either seemingly positive or negative connotation depending upon the individual researcher's point of view (e.g. Goldschmidt (1998)). However, this research also identifies precedent that functions in a very different manner. Goldschmidt's description of precedent (1998, p. 262) also falls short of deeply examining parallels between precedent in law and how this may give insight to describing the use of precedent in terms of design. This second kind of precedent is named in this study as a Constructed Precedent. A Constructed Precedent is one in which the designer develops form to have an influence on the design that is to be developed. In this respect, form is developed as a rule or guide that the designer sets out in order to subsequently use and follow:

... the n is the basis of the most bigger group of letters ... you have the m you have the u ... you have the way that you have the stem with curve on this part on the top or sometime on the bottom ... you connect to a curve you connect to a stem its something that is everywhere on the typeface

Extract 81 (JFP_1 lines 325–331)

The example in Extract 81 illustrates the expert participant describing the importance of specific aspects of form within the lowercase n and how these act as Constructed Precedents for subsequent letterforms.

Extract 81

**JFP_1 {Mutability}{SystemNotion}{FirstChars_Ic}{Letter_parts}{DesignSpaceID}
{Proced_Dev}**

325 JFP: For, for, for everything + because the n is the basis
 326 of the most bigger group of letters + you have the m you
 327 have the u + you have the way that you have the stem with
 328 curve (gestures with hands to form an upright motion and a
 329 connected curve motion) on this part on the top or sometime
 330 on the bottom + you connect to a curve you connect to a stem
 331 its something that is everywhere on the typeface. On the
 332 bottom of the a on the a on the a lowercase (gestures again
 333 to form the shape of a lowercase a) you have the a is there
 334 (gesture to form the curve at the bottom of the lowercase a)
 335 so is as the same things as on the u or on the top of of the
 336 n so + this is a crucial decision + because if you have the
 337 top of the n

Extract 82

**JT_1a {Des_Macro}{Des_Micro}{FirstChars_Ic}{Ref_Own_Prior}{Proced_Dev}
{Working_Phase}{SystemNotion}**

422 ah this'll do ah this is Kingfisher + now this will will have
 423 had a eh erm + this had a very long gestation period + right so this + ok + this
 424 these aren't dated but these are pretty much + earlies this is erm Enigma on the
 425 bottom and this is literally just very first sketches so this is the kind of
 426 thing I will start with an l an n an i and an h whatever and this case very
 427 simple because that's a variation of that the l's a variation of that the dots
 428 you know just shorten that down and bung the dots on it so it's very easy

Extract 82 illustrates the participant describing the connection between initial letterforms in terms of Constructed Precedents leading to Endogenous Generation, Generation and Homologizing initial Trajectorized form:

... I will start with an l an n an i and an h whatever and this case very simple because that's a variation of that the l's a variation of that the dots you know just shorten that down and bung the dots on it so it's very easy

Extract 82 (JT_1a lines 426–428)

Figure 7.3 shows a still from the video footage of the interview corresponding to Extract 82 [time 00:33:50]. The video still shows the participant using a laser-proof



Figure 7.3 Detail of a video still from an interview in relation to Extract 82.

from a previously designed text typeface to describe how initial forms are developed early in the process of design that are then subsequently used as the basis to generate further forms.

This distinction in the form of two kinds of precedent may be seen as something closer to the description of precedent in law as given by Siltala when describing terms of rules and principles such as ‘precedent-identification and precedent-following’ (2000, p. 59) that may lead to ‘precedent-norm formation’ (p. 59). Siltala describes the difference between two forms of precedent-norm, those that are formal ‘... follow the binary code of an on/off, all-or-nothing, or either/or type ...’ and less formal ‘... follow the “logic” of a graded code with more-or-less type of reasoning ...’ (p. 60). Siltala goes on to explain that whereas the formal ‘binary’ precedent is of the fixed variety, the less formal precedent is subject to being ‘modified’ (p. 60). Siltala later explains in terms of precedents that are open to being modified that:

... practice of ‘adapting and altering’ a precedent, with an eye on the needs of the new context of adjudication, is in perfect accord with judicial reevaluation. ...

(p. 125)

This view of precedent in light of the testimonies of designers in this research goes some way to helping draw distinctions and explaining what appears in terms of designers not only selecting and following precedent but actively modifying and setting new precedents for themselves to follow for the purpose of designing form subsequent to initial trajectorized forms. Again with reference to the expert practice of law and working with precedent, Michael J. Gerhard argues that:

When people steeped in law become public authorities, they enter office prepared to learn from and to justify actions in terms of precedent. They appreciate that precedent-based arguments are an important stock in trade and are aware that a natural part of their job is constructing precedents.

(2008, p. 148)

These parallels then appear to have a much closer fit to the notion of precedent with respect to text typeface design. The Trajectorizing action of Precedent Constructing by the text typeface designer can be seen as imbuing the initial designed letterforms with potential to inform the developing design, design that is informed by a wealth of ‘steeped’ knowledge or Historical Immersion.

Figure 7.4 shows a lowercase n developed as part of an Empathic Memoing exercise in which the author produced the design in order to gain further clarity – to empathically understand – what was being evidenced in the primary data with regard to the concept of Precedent Constructing. The author recorded whilst designing where decisions were made with regard to elemental, component form that makes up the design of a lowercase control character, in this example the lowercase n. The diagram highlights typical design decisions that could lead to the development of component Constructed Precedents, the likes of which would have potential rule or influence over subsequent forms within a developing text typeface design. The diagram also includes a list of the individual elements and considerations produced by means of the author’s Empathic Memoing that can be considered as Constructed Precedents.

The notion of identifying the importance of elemental form in early stages of typeface design is inferred by W. A. Dwiggins (1940) in his letter to Rudolph Ruzicka with regard to experimental letters for his Falcon type. Although this example gives useful insight into the process of how Dwiggins used cut celluloid film to build letterforms from component parts in a stencil-like manner, it also infers something of a potential system of homogeneity rather than homology. Figure 7.5 shows Dwiggins’ illustrations depicting his system of letter parts. By way of using the developed theory in this study as an analytical tool, it can be argued that this example by Dwiggins displays a clear example of Precedent Construction.

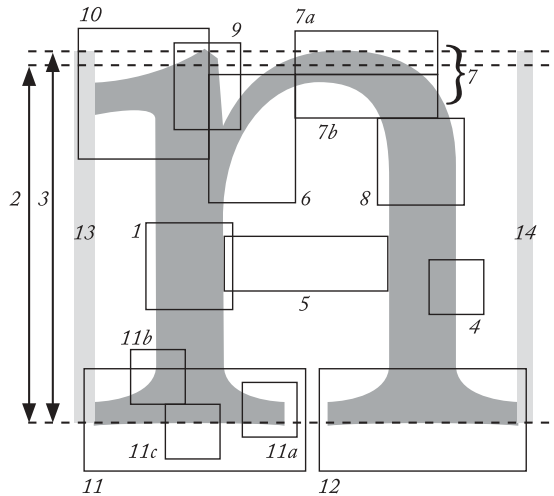
This study also evidences that designers describe subtlety and mutability as important considerations in the development of type-forms. The experts’ evidencing, coding and raising of the category of Mutability in the comparative analysis then transforms what otherwise might be considered the straightforward replicating or repeating of component form as homogenizing of letter parts to become a process of Homologizing form.

Trajectorizing for Subsequent Homology – Initial Control Characters

The initial characters that expert text typeface designers produce, sometimes referred to as ‘control characters’, offer ways into the process or sequences of design for the expert. Participants in this research related using or starting with different letterforms, however, the lowercase n appeared frequently in the primary data. As was outlined within Chapter 2, little exists previously in terms of the insights into the process of text typeface design. There are glimpses within some texts, such as that of Dwiggins (1940) and Goudy (1940) where the choice of

Empathic memoing:

Decision-consideration for initial lowercase n
(precedent construction memo)



Typical non-exhaustive decision consideration for lowercase n (precedent construction memo)

1. *Stroke/stem width*
2. *x-height relative to baseline*
3. *Extension beyond x-height for curved elements etc. (over-shoot)*
4. *Quality of outline (smooth, rough etc.)*
5. *Width of counter (frequency between uprights)*
6. *Connection of curve to upright/width of thin stroke/height of join relative to upright*
7. *Modulation of curved stroke (stress)*
 - 7a. *Attributes of outside curve (position of curve peak – throw, relative to uprights)*
 - 7b. *Attributes of inside curve (static/dynamic arch)*
8. *Connection of curve to upright/width of thick stroke/height of join relative to upright*
9. *Attributes of top of terminating upright relative to curve (cut-in etc.)*
10. *Attributes of top serif (flag serif etc.)*
11. *Serif style/kind*
 - 11a. *Termination and depth of serif*
 - 11b. *Attributes of serif join*
 - 11c. *Attributes of serif base (flat, cupped etc.)*
12. *Serif length/position left and right*
13. *Left side-bearing (spacing)*
14. *Right side-bearing (spacing)*

Figure 7.4 Empathic memoing used to simulate decision considerations within the initial stages of the type-design process for a serif typeface, with the lowercase n letterform as a starting point.

Note: This is an empathic memo of designing and related thought toward decision-making, not merely a diagram of the named parts of a letterform, the likes of which may be found within popular textbooks on the subject of type and typography.

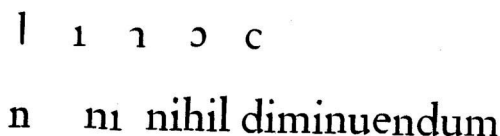


Figure 7.5 Dwiggin's Falcon type experimental letter parts. Top line shows the elemental component parts. Bottom line shows the combining of parts to create letterform.

initial letters in establishing a design are mentioned 'I usually draw two lower-case letters, a p and an h ...' (Goudy, 1940, p. 82). Goudy also gives some insight as to why he begins with a lowercase p 'My drawing of the lower-case p permits me to strive for a movement in the round member – a movement that I attempt to retain throughout the face ...' (p. 83). In relation to the drawing of these initial letters, Goudy goes on to mention considerations that he gives:

How shall the joining of the curve to stem at top and bottom be made, what thickness of serif, and what shape? If the face is to be 'old style', the decision with respect to relations and stress is partly settled already, and if it is to be a 'modern' face, while a different treatment is called for, the same points are also more or less settled in advance

(pp. 83–84)

It can now be seen that this developed theory can be used as an analytical tool to explain what the likes of Goudy have mentioned in the extant literature. In discussing the rounded bowl of the lowercase p, Goudy is describing Trajectorizing form that will lead to subsequent Homologizing of form '... a movement that I attempt to retain throughout the face ...' (p. 83). Decisions with respect to Precedent Construction are also given in Goudy's statements, '... joining of the curve to stem at top and bottom ...', '... thickness of serif ...' and '... old style ...' (p. 83) etc. These kinds of decisions that are made early in the process are made not only in and of themselves, but are made in order to lay down rule and guide for the text typeface designer as a basis to work from '... more or less settled in advance ...' (p. 84). With respect to initial characters within the design process, contextualized precedent may be used to set the style of a typeface design, whilst Constructed Precedents in the form of the component or vestigial forms within an initial letterform set the patterns from which designers will subsequently generate later homologized form. The theory developed in this research is able to explain and elucidate what previously may be considered tacit or esoteric descriptions or insights to process. To return to Goudy again:

From humble beginnings I progress step by step, working back and forth from one letter to another as new subtleties arise, new ideas to incorporate, which may suggest themselves as the forms develop, until finally the whole alphabet seems in harmony – each letter the kin of every other and of all.

(1940, p. 81)

Goudy describes Trajectorizing form and, via subsequent Homologizing and constant Attenuation of developing form, the completion of a design that harmoniously [congruently] self-informs. It can be seen then that the theory developed in this research from the primary evidence of expert design participants can also be applied to the descriptions of process of text typeface design found within extant texts. The value of this is two-fold, as it not only provides a model for the analysis of such descriptions but also facilitates explication of extant examples of description in order to go beyond the personal, tacit and esoteric. The theory developed within the research allows for the identification and categorization of existing descriptions and personal accounts of process. This will help in the development of further research within the area of typeface design as the theory gives a basis upon which comparative studies can be made between designing differing forms of typeface design (e.g. non-Latin, display type design). It also gives identity and language to identified actions and decisions text typeface designer make, this has potential to inform the orientation of future protocol studies where the focus would be analysing specific aspects identified by the developed theory in this research. In turn, development of research in the area of typeface design will lead to comparing knowledge, practice and processes across differing domains and disciplines of design.

Trajectorizing and Search Space

Previous studies and descriptions that focus on the way that designers negotiate initial approaches to design often make connections by viewing and describing designing and problem-setting/problem-solving. In relation to studying the ways that designers negotiate initial approaches to design, Omer Akin (1986) described models of search specifically in relation to architectural design. Akin described search methods such as depth-first searches (focus on details of design and designing) and breadth-first searches that designers may adopt in order to negotiate problems in design and designing, relative to what and how to approach design by matching these against a priori or archetypal solutions (Akin, 1986, pp. 90–93). Akin commented that:

The advantages of breadth-first search over depth-first search are largely a result of the greater likelihood of finding a solution in a shorter time, especially when there is a large repertoire of prototypical solutions available.

(1986, p. 93)

By general comparison, this may be seen as similar in the ways that text typeface designers work between micro and macro levels of attendance in designing. However, it can be argued that for the text typeface designer, many of the variables that may be considered relative to problem setting or narrowing search space are intrinsic in the nature of designing text typefaces (e.g. letterforms must conform to certain given norms in terms of form; they must also be legible to work at particular sizes). That is to say, to some extent, the parameters of what a design will need to fulfil are in many ways predetermined or self-fulfilling – in order to be a text typeface design the design must function as a text typeface. The problem is self-evident yet paradoxical. Participants in this study described varied approaches to the very early stages of design. These were evidenced as similar to breadth-first approaches

in terms of the purposeful selection of contextualizing precedents and typologies etc. However, designers in this study also evidenced similar depth-first approaches where a micro-level detail may be the focus of initial attention (e.g. serif detail). Where there appears to be little relation to what Akin describes, however, is that the notion of ‘finding a solution’ (1986, p. 93) appears less obvious for text typeface designers. The notion of initial search space as far as this research is concerned is more aligned to the concept of the designer aiming along a path, or a target, whilst developing potential or momentum to continue along such paths or find such targets – Trajectorizing – as opposed to problem-solving. The notion of a target in terms of context may be similar to what Schön describes as ‘framing’ in terms of problem-setting (1991, p. 41). Text typeface designers may clearly contextualize their search space or frame of reference at the outset of the process. However, text typeface designers in this study also evidence developing such context through the process of designing itself. In this sense, the path or target emerges as a result of and along with the initial design activity. What Schön does offer as useful to consider here in relation to notions of framing, problem-setting, problem-solving and search space is:

When ends are fixed and clear, then the decision to act can present itself as an instrumental problem. But when ends are confused and conflicting, there is as yet no ‘problem’ to solve.

(1991, p. 41)

He continues:

It is rather through the non-technical process of framing the problematic situation that we may organize and clarify both ends to be achieved and the possible means of achieving them.

(p. 41)

In terms of these statements and the concept of Trajectorizing, text typeface designers describe working in such ways that context can either be clearly defined in the initial stages of design or emerge along with the initial design. In this sense, the notions of problem-setting and problem-solving are not always as apparent as may be articulated in other areas of design. Certainly, the notion of the ‘problem’ was not always clearly evident in the testimonies of the type design experts. Schön’s notion of framing does appear to have some relevance with respect to the initial stages of text typeface design as far as the phenomena of contextualizing the initial design is concerned (i.e. helping shape the path or target initially). This initial contextualization, however, may emerge with the initial design activity as opposed to enabling the setting of the initial design activity. Trajectorizing may have greater similitude then with Christopher Alexander’s notions of ‘fit’ in that context and form are simultaneously independent and interdependent. He offers that: ‘... every design problem begins with an effort to achieve fitness between two entities: the form in question and its context. The form is the solution to the problem; the context defines the problem’ (1964, p. 15).

However, although this description has some degree of resonance with the participants’ descriptions of the initial stages of design, the notions of problem and

solution do not clearly align with testimonies in the primary data. In terms of Trajectorizing, text typeface designers evidence something more akin to context and positioning, aligning with selected, given, identified or developed contexts in opposition to problematizing the notion of context.

A General Model for Text Typeface Design Process

This research determines that within the initial stages of text typeface design, many factors can initiate the process of design from the purposefully selected Contextualizing precedent to ideas and concepts that develop serendipitously. Designers might instigate the process themselves or receive requests to design a typeface. It has been established within the Grounded Theory that Contextualizing precedents also play an important role in the initial development of text typeface design. Again, this can be in the form of a singleton precedent or may consist of multivariate precedents. These too can be selected purposefully or derived serendipitously via knowledge and experience.

There is however a point early in the process of text typeface design in which design experts will focus on the designing of the physical form of the type itself, as opposed to outlining the contextual search space that a design will occupy or initially occupy before developing further. When designing the initial characters for the typeface design begins, a discernible pattern of decisions, actions and behaviours is identified, as outlined in Chapters 3, 4, 5 and 6. From the developed theory, patterns of process can be mapped in the form of algorithmic flow diagrams. Process for text typeface design can be elucidated in such a manner that visual diagrams describe the deep patterns of design behaviour that account for the individual core categories Trajectorizing, Homologizing and Attenuating and the relationship between these three categories. A further detailed algorithmic flow diagram is presented in this discussion that represents the process(es) of Extrapolation and Interpolation.

A General Flow Model for Text Typeface Design Process

The three core categories developed within this research (Trajectorizing, Homologizing and Attenuating) can be represented in terms of their interrelationship relative to the process(es) of text typeface design. Figure 7.6 shows a flow/algorithm for the relationship of Trajectorizing (T), Homologizing (H) and Attenuating (A). The labelled bounding boxes represent the three core categories. The flow/algorithm diagram can be followed for a sequence of events in which an extraneous Precedent (P1) begins the sequence of decision-making and design actions/output that may result in Homologized form (Hom form).

Trajectorizing in Relation to the General Flow Model

In Figure 7.6, P1 represents a precedent that can be considered derived via purposeful selection or serendipity. However, once the designer is aware of the use of such initial precedent(s) and this becomes purposeful toward the development of the design, such precedents can be called a Trajectorized precedent (TP1). At this point also Attenuation (A) begins, the selection of the precedent is scrutinized, compared,

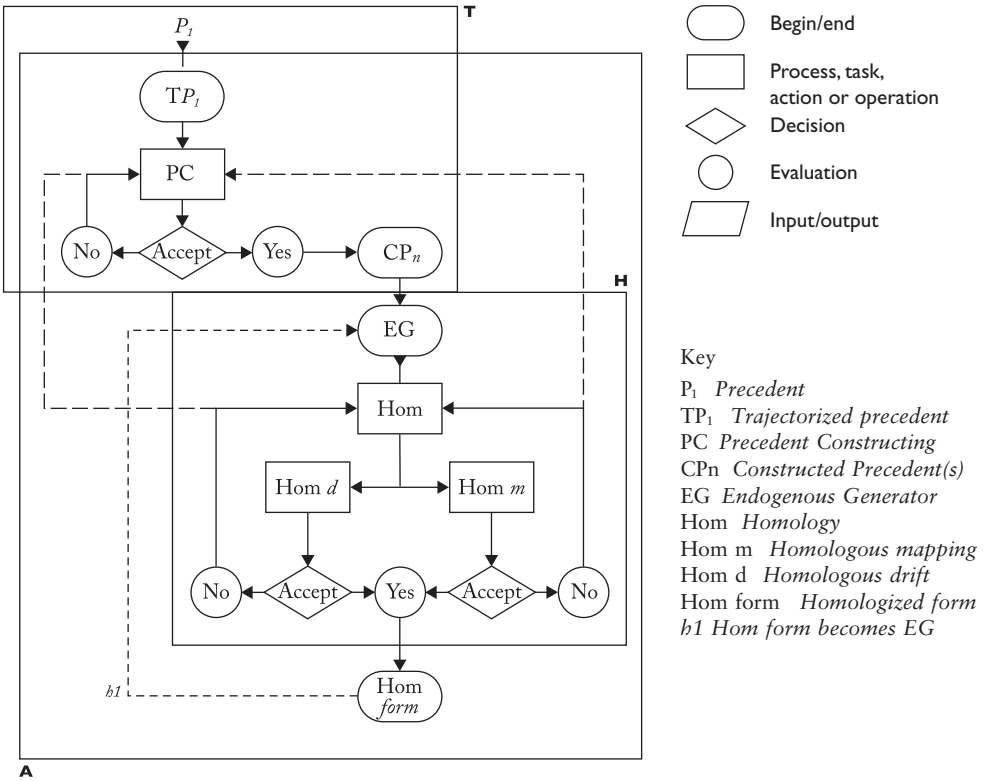


Figure 7.6 Flow/algorithm diagram for representing routines for Trajectorizing, Homologizing with Attenuating as constant.

contrasted and contextualized as to how it will facilitate the development of the design. The initial Trajectorized precedent (TP1) can be seen as a contextualizing precedent that aids constructing new form – Precedent Constructing (PC). If the attempt to construct new form is unsatisfactory, shaping is repeated until an agreeable or acceptable form is derived. Again, Attenuation is constant, the designer checking/testing/comparing etc. for what they determine as congruity and incongruity. When the designer decides that the form produced will be acceptable or useful to allow development to continue, this form becomes a Constructed Precedent (CP). As described previously, an initial letterform or control character (e.g. the lowercase n) may consist of a number of Constructed Precedents (CPn). It is at this stage that Trajectorizing of a single character or the component parts thereof may be complete to the point to allow for other subsequent forms to develop from this as a guide or rule. At CPn within the process of design, the designer has trajectorized an aspect of the design, contextually aimed and loaded this with potential to inform the development of subsequent form.

For the sake of this discussion, it could be considered that CPn represents a lowercase n based upon or influenced by an initial ‘old style’ precedent such as Bembo. The newly designed n would comprise a number of Constructed Precedents

that have the potential to inform subsequent letterforms in the design. In terms of developing newly trajectorized form, this part of the process could repeat. For example, if a designer decided to attempt a lowercase o after completing what was considered a workable and useful lowercase n at this point, the designer could return to Trajectorizing new form for the lowercase o. However, if the designer decided to produce form using the newly trajectorized lowercase n as a basis to work from, the designer moves from actions/decisions etc. relative to Trajectorizing to those relative to the core category Homologizing.

Homologizing in Relation to the General Flow Model

To continue with this discussion of the example of process, once the designer decides to utilize a newly formed Constructed Precedent or group of such precedents to inform subsequent design, the designer switches from actions and decisions pertaining to Trajectorizing to those of Homologizing (H). Homologizing describes the way in which the designer produces relational form within a text typeface design. Again, to return to the example of CPn representing the lowercase n, Trajectorizing sees the designer laying down rule and guide in the form of Constructing Precedents internal to the process of the newly developing design. Designers in this sense then are setting precedents to follow at a point subsequently within the process of design. When a designer decides to use a Constructed Precedent or group of Constructed Precedents as the basis to develop subsequent form (e.g. CPn lowercase n). The lowercase n in this example then becomes an Endogenous Generator (EG) in the process of design, a selected form, produced internally in the process of the design that will be used to develop subsequent form. The switch from Trajectorizing, where the designer develops Constructed Precedents, laying down potential in the forms for potential rule and guide, to Homologizing sees the designer picking up and following previously set rule and guide. The switch then is from setting precedent to following precedent internal to the process of design. Homologizing sees the designer producing relational form from earlier trajectorized form. In the example given above, the lowercase n could be used to provide the basis of other lowercase characters such as m, u, h, l and i (see Figure 7.3). Homologizing accounts for degrees of mutability in order to render relational form. For example, although the lowercase m may appear to be constructed from a duplication of the curve and right-hand side upright of the lowercase n, this in reality would be a much more subtle variation in mutable form. However, such forms may derive from a direct influence of the initially trajectorized lowercase n. Homology (Hom) then consists of two dimensions: Homologous Mapping (Hom m) and Homologous Drift (Hom d). To develop this example in terms of discussion, if a designer had produced a sans serif lowercase n that subsequently was utilized as an Endogenous Generator (EG) to develop a lowercase u, dependent upon the design, the form of the n may only require rotation by 180 degrees in order to satisfy the design. The form of the lowercase n would not have needed altering in order to produce the lowercase u, only rotation. This would be an example of very close Homologous Mapping of form. If conversely, the lowercase n was used as the basis to create a subsequent lowercase m, this may require considerable Homologous Drift from the original form. Yet this may still satisfy the designer that there was enough adherence to the rule and guide of the Constructed Precedents that constitute the lowercase n that translate to

the Homologized form (Hom form) of the lowercase m. In this example there would be a degree of Homologous Drift from the original form but not so much that it deviated so far from the rule and guide set in the original Constructed Precedents as to cause discernible incongruity between the new form and prior form. Too much drift in terms of homology and the designer may have to return to a fresh round of Precedent Constructing (PC) in order to derive a useful and workable form. This latter example may result when there is not enough information in the original Constructed Precedent to follow as a guide for subsequent form. By means of illustration, an example here could be to consider the attempted development of a lowercase p from a lowercase n. There may be something of useful precedent in terms of stem width and the curve and connection found at the top of the lowercase n but not enough information in terms of how round the bowl of the lowercase p would be or how it should connect at the at the bottom of the bowl to the upright etc. These latter decisions would see the designer drifting too far from the original Constructed Precedent(s) in the lowercase n for it to be of use to aspects of the lowercase p. This would require constructing new precedents that would inform the lowercase p. Such newly Constructed Precedents for the rounded bowl would also have potential to inform subsequent forms with similar rounded elements.

Models for Extrapolation and Interpolation

As is mentioned, Figure 7.6 shows flow modelling that represents the core categories Trajectorizing, Homologizing and Attenuating in relation to text typeface design. This visual modelling of process is developed from the developed Grounded Theory in order to further elucidate the theory as part of this discussion. In Figure 7.6, Homology (Hom) is represented in relation to the process(es) of generating relational form relative to initially Trajectorized new form for the typeface design. However, once Homologized form (Hom form) has been created, this in turn has the potential to become an Endogenous Generator (EG) within the scheme of the design process (see line h1). For the purposes of example, a lowercase h, generated as homologized form from a lowercase n, could give rise to producing a lowercase l from the extended stem of the left-hand side of the n forming the h. In this case the lowercase h would become the Endogenous Generator for the lowercase l.

The general term Homologizing also applies to the Extrapolation and Interpolation of form. Figure 7.7 shows an algorithmic/flow model representative of the process(es) of Extrapolation and Interpolation with respect to text typeface design as developed from the Grounded Theory.

Within this flow model, the sequences relate to the manual (Man) production of Homologizing form with respect to Extrapolation and Interpolation and the automated production of such form (Auto inp + Auto out). It can also be noted that in this representation of actions and decisions, Trajectorizing (T) is outside the normal bounds of the process. Here Homologizing is the focus of activity whilst Attenuation remains constant as the background activity. Trajectorizing (T) only becomes employed if satisfactory Homologizing of form becomes impossible to achieve and the designer must resort to creating new form.

Figure 7.8 represents a matrix of homology with respect to Extrapolation and Interpolation including representation of Synthetic Displacement and Synthetic Acquiescence; this also includes incidences of Homologous Drift and Homologous Mapping

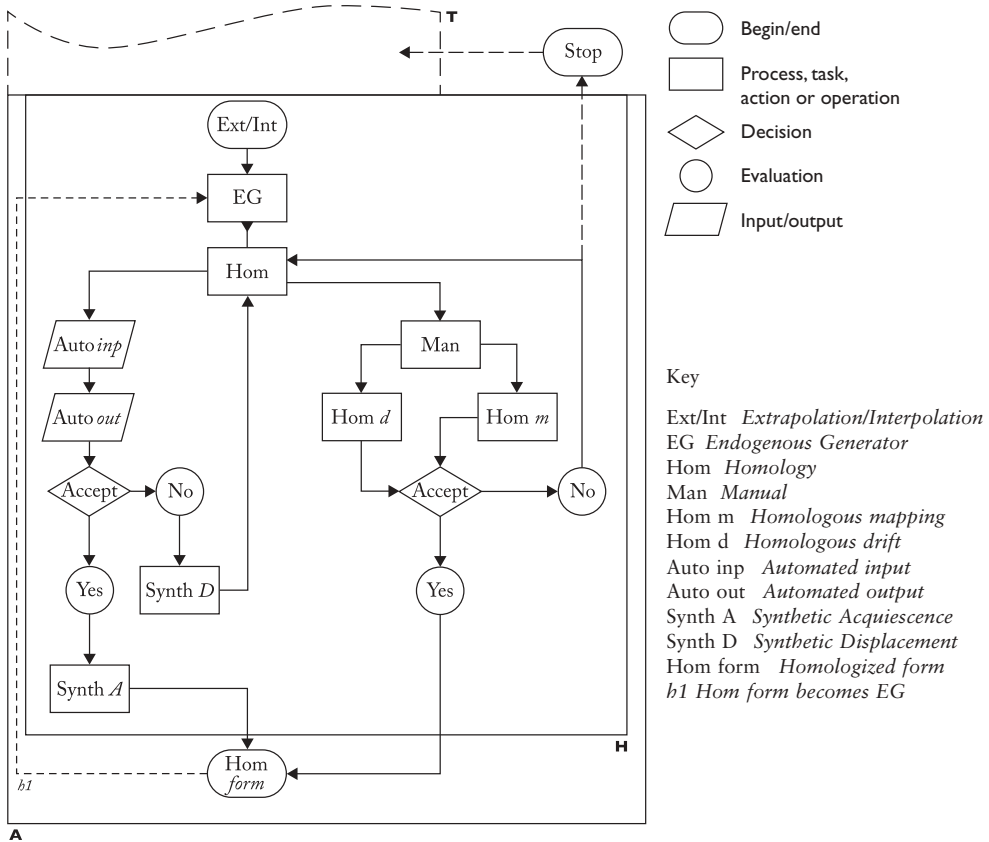


Figure 7.7 Flow/algorithm diagram representing routines for Homologizing in terms of Extrapolation and Interpolation with Attenuating as constant.

for the process of Extrapolation. The matrix represents possible homologous results for input variable O^1 . In this example, a lowercase a is used to illustrate the different categories of homology and their causal effects on a single character. The original design of the normal weight of the typeface is seen at O^1 . This can be considered an Endogenous Generator in this system of homology. In the top row of the diagram resultant outputs R^1 and R^2 can be seen as Synthetic Displacement of form in the manual transformation of outlines that produce a Lightweight variant (R^1) and an Ultra-bold variant (R^2). That is to say that the weighting/shaping of the forms have not been produced by wholly automated means, a degree of manual manipulation of the outlines has been employed in order to produce the resultant forms. The point of origin – variant O^1 – is therefore extrapolated as a single source to multiple targets, in this example this is represented by output variables R^1 and R^2 . It can also be seen that in terms of the dimensions of homology – Homologous Mapping and Homologous Drift – there are discernible qualities in the transformation of form from the standard weighting of the form O^1 to the lightweight variant at R^1 . Although the overall width of the character has not changed considerably, the overall appearance of the form

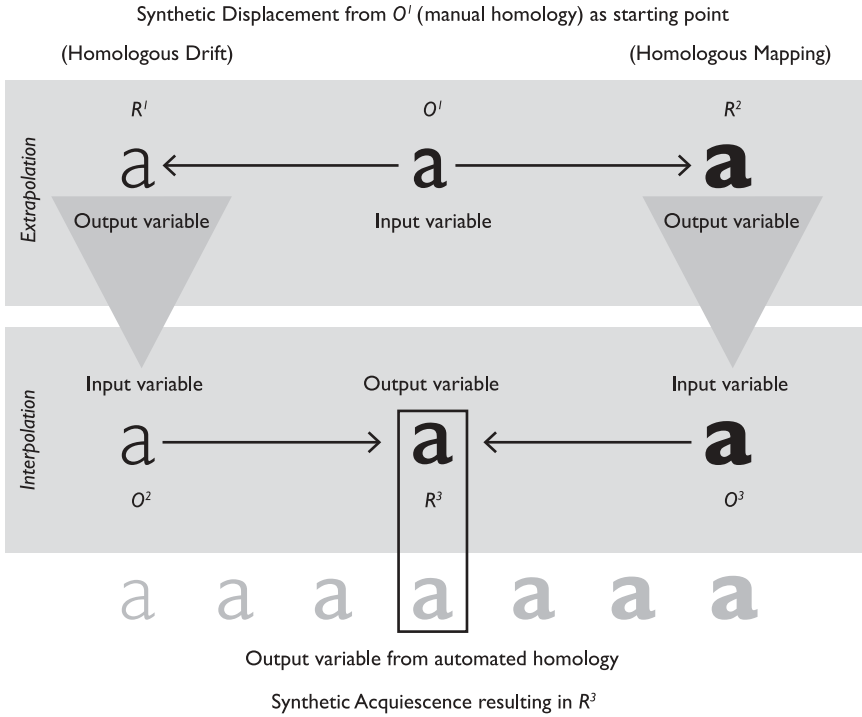


Figure 7.8 Matrix of Homology with respect to Extrapolation and Interpolation where O = origin and R = resultant. This shows the example of resultant forms of manual Extrapolation becoming the input variables for automated Interpolation.

at R^1 has lost the essential qualities of weighting and contrast of strokes found in O^1 . There has been a noticeable degree of Homologous Drift in R^1 from O^1 . However, this has not been so much so that the relationship between R^1 and O^1 has been destroyed or lost; there remains a good degree of homologous similarity. The relationship between O^1 and R^2 can be considered more successful in retaining qualities of the weighting and balance of strokes between the pairing, even given that R^2 is wider and heavier in weighting. In this latter pairing O^1 and R^2 , a good degree of Homologous Mapping can be seen to exist; essential qualities of O^1 have not been compromised as far as in the pairing between O^1 and R^1 . The synthesis of form $O^1 \rightarrow R^1$ and $O^1 \rightarrow R^2$ have been created by intervention of the designer manipulating the forms manually from source of origin to target in order to achieve a desired Homologous relationship between the pairings. Results have been achieved by means of Synthetic Displacement.

The second row in the matrix represents a process of Interpolation where Synthetic Acquiescence is represented. In this example the resultant forms of Extrapolation R^1 and R^2 now become the input variables, or points of origin O^2 and O^3 . The target output in this example is given as resultant R^3 . In this example, modifications are made to the Bezier points in O^2 and O^3 that will allow for a smooth transition of

computer generated automatic interpolations. The transitions of interpolative steps can be seen in the lowest row of repeated lowercase a at the bottom of the diagram. The interpolated mid-weight character R^3 is the automated synthetic resultant. This is an example of Synthetic Acquiescence whereby the designer allows automated synthesis to produce the resultant form. In terms of homology, the relationships between O^2 , R^3 and O^3 can arguably be considered to have closer Homologous Mapping than the relationship between R^1 , O^1 and R^2 . However, it can also be noted that the subtly designed qualities of weighting and balance of strokes in O^1 are lost in the auto-synthetic counterpart R^3 . These are the kinds of complex differences of quality that Attenuation by designers would detect and ultimately make decisions for. In this example, a designer may argue in terms of Attenuation, that incongruity exists in the example of the auto-generated mid-weight R^3 . Although, seamlessly congruent in terms of the synthesis of O^2 and O^3 , it could be argued that this appears too mechanical in terms of a synthesised form relative to its points of origin. If this were the case, and the resultant R^3 is Attenuated, this would result again in Synthetic Displacement by virtue of the designer's manual intervention, reworking or reshaping the resultant form.

Potential Applications of the Theory

The developed theory in this research and the visual modelling produced to accompany this by way of the discussion offer potential for further applications and usage. The theory and visual modelling detailed here not only have the power and ability to explain text typeface design process from the perspective of expert witnesses; it has the potential to be applied as an analytical and prescriptive tool.

Theory as Analytical Tool

By way of example, this section will give a brief account on the analytical potential of the theory developed in this research. The theory applied as an analytical tool can be considered useful in further study of text typeface design process, knowledge and artifice. The immediately obvious usage would be in applying the concepts of the theory in studying further conversations with text typeface designers. In this application, the developed theory hypotheses and concepts would become an analytical tool for verification testing. This could be seen to be useful where the theory developed from the perspective of expert participants aligns or deviates from the testimonies or actions of mid-weight or novice designers with respect to text typeface design.

The theory developed in this research also comes from the perspective of focusing expert knowledge toward the Latin alphabet. Applying the theory as an analytical tool toward the designing of other language/script bases would allow a useful starting point where little recorded knowledge or research is available.

The theory may also prove useful as a tool in the analysis of extant design artifice. Using the explanatory theory to study the output of text typeface designers may be useful in terms of understanding text typeface design from the perspective of the designed forms – the knowledge embedded within the objects of design. In this manner the theory may allow for more insightful understanding of how and why a design may be successful or unsuccessful due to the inherent nature of its construction. This kind of analysis may also aid the practicing designer gain greater insight and understanding as to the nature of approaching the process of designing text typeface design.

Theory as Prescriptive Tool

The theory also has the potential to inform instruction of text typeface design. As a prescriptive tool, the theory offers a guide to follow in terms of the processes or routines encountered in the designing of text typeface design. With respect to the algorithm/flow diagrams (Figures 7.6 and 7.7) it is anticipated that these could aid mapping out the possible steps and routines that need to be considered or observed in developing the text typeface design. In terms of approaching design or the instruction of design, concepts such as Precedent Constructing not only make clear what aspects require consideration but why they are important in terms of what they will facilitate and inform within a developing design. Theoretical concepts such as the switch between Trajectorizing and Homologizing by means of Endogenous Generation help to explain not only what happens in terms of design; also, in terms of applying these concepts to designing itself would help contain and delimit routines for designers and instructors. Seeing Attenuation as a constant, the way in which expert designers describe this may help novice or less experienced designers go beyond what may be habits of Generate and Test, where the gaps between generation and testing are left too long or infrequent to suffice for successful text typeface design.

Summary

This discussion extends the developed theory in this research, supporting and further elucidation by means of visual modelling and example given in chapter sections. This demonstrates that the theory is workable, adaptable and robust as far as the substantive area of text typeface design in this study is concerned. The theory can be seen as not only as a model for describing and explaining text typeface design processes, but also as a tool for the analysis of design knowledge, activity and artifice with respect to text typeface design. It has also been discussed how the theory may be used as a prescriptive tool in terms of design activity and pedagogy with respect to instruction of design process via mapping activity to the models of description and flow that the theory and visual modelling facilitate. In this respect, the developed Grounded Theory of Contemporary Processes of Text Typeface Design offers a ‘theoretical completeness’ (Glaser, 1978, p. 125). This can be seen not only in the concepts raised in this research, in that they offer powerful stand-alone and interrelated descriptions and explanations of text typeface design process, but also in that it can be argued and demonstrated that the theory can be extended and applied toward further study, practice and pedagogy in terms of adoption as analytical and/or prescriptive tools. It is with this in mind that the developed theory in this research should and conveniently does resolve by means of a mnemonic. Terms used to describe the developed theory in this research attempt to convey as accurately as possible the nature of the collections of concepts, actions and phenomena. The naming of the higher order core categories, however, resolves this research with respect to text typeface design process. These offer immediate conceptual ‘grab’ (Glaser, 1978) as portable, useable concepts and tools with which to describe, study and apply the practice of text typeface design. With respect to text typeface design, the terms Trajectorizing, Homologizing and Attenuating as theory resolve conveniently as the mnemonic – THAT.

8 Conclusion

Introduction

This chapter summarizes the research and theory generation presented in this book. Here results of the research are considered with respect to the initial aims and intentions set out at the beginning of this book. This chapter also presents the unique contributions of the research, its limitations and implications. Also set out are considerations for possible further work and applications of the developed theory within the areas of design practice and pedagogy. Finally, this chapter considers the generated theory in relation to what Glaser (1998) describes as a successful Grounded Theory.

The Original Aims and the Contributions of This Research

As set out in the Introduction, the original research question is:

Can knowledge of text typeface design process be revealed and if so can this be explicated theoretically?

The aims of this research in relation to the research question were as follows:

1. To reveal and describe processes of text typeface design from accounts given by type design experts.
2. To evaluate whether it is possible to construct theory or theories of type design process from the accounts of practice and procedure given by type design experts.
3. To offer possible, descriptive and/or generative theory/theories that will allow further study to develop in the area of text typeface design process as well as informing practice.

Research aims 1 and 3 are satisfied by the development of the Grounded Theory that emerges from this study. The aims are also in part satisfied by means of the body of collective conducted interviews. The interviews conducted with type design experts offer a unique body of collective knowledge in themselves and contribute to the knowledge in the field of text typeface design as a related collection of recordings that are epistemologically rich in nature. The employment of Grounded Theory Methodology in terms of its analytical constant comparative rigour and concept and theory development methods satisfies the research aims. This was facilitated via the coding and constant comparison of the transcribed data analysed

in conjunction with the video recordings of the interviews with text typeface design experts. From this, identified patterns in the data and coding were raised to a conceptual level of explication via the Grounded Theory method of Memoing. As an augmentation to the methodology, the author devised a new method, Empathic Memoing. This contributes to knowledge not only in terms of the devised method itself but also in the output produced from this method by means of experiential engagement with aspects of the practice of type design, empathetic to testimony given by the expert participants in this research. Examples of output from Empathic Memoing facilitated a deeper understanding in relation to aspects of the participants' testimony. This allowed the author to experience first-hand phenomena discussed within the data and gain greater understanding of the participants' descriptions of design process.

The resolving of codes and categories by way of the three emergent core categories, their sub-categories, dimensions and codes also satisfy the research aims by means of the presented developed Grounded Theory in this study. Chapters 3, 4, 5 and 6 render the developed Grounded Theory in terms of theoretically describing and explaining text typeface design process, relative to and grounded by the primary data. Chapter 7 – Discussion – offers examples of how it is anticipated that the developed theory may be considered, not only in explaining text typeface design process, but also how the developed theory may be applied as an analytical and prescriptive tool in terms of possible future usage. Related implications are outlined and extended further in this chapter below.

The development of the theory in this research constitutes an overall contribution relative to the identified knowledge gap with respect to text typeface design process. It is the author's belief that this study presents for the first time a theory of text typeface design process, derived via research, based on and grounded by primary data from testimonies of expert participants.

Limitations of the Research

This research was conducted in order to evaluate whether theory could be developed via the collection and analysis of data in the form of testimonies that would describe and explain process or processes of text typeface design from text typeface design experts.

The methodology used to conduct this research was Ground Theory Methodology. Although competing blends/perspectives of Grounded Theory Methodology are argued for (Charmaz, 2006; Glaser, 1978, 1998, 2003; Glaser & Strauss, 1967; Strauss & Corbin, 1997), it was decided to apply Grounded Theory Methodology in accordance with Glaser's principals in terms of methodological fit.

Grounded Theory Methodology requires conceptual saturation of generated ideas through the emergence of concepts related directly to patterns and instances within the data. In order to survive, concepts must also fit and re-fit the data as the researcher works across existing and emerging data in the development of the research. Concepts and ideas describe what is 'going on' in the data and emerge, compete and remain only when they are grounded by the data (Glaser, 1978, 1998, 2003; Glaser & Strauss, 1967).

This research has in part been necessarily limited in terms of the kinds of participants involved. The study has focused upon expert knowledge of process within

the field rather than novice or intermediate knowledge, or indeed combinations of these different perspectives. Gender of participants was not determined as a distinct variable within the research due to the nature of what emerged from the testimonies of the participants and the theoretical sampling conducted. The content of the gathered testimonies inferred nothing in terms of any gender specific bias in knowledge of process. Again, although the study includes participants of different ages and nationality, these are variables in themselves that could be studied specifically in relation to the subject matter. These aspects can be seen as limitations and are acknowledged by the author.

By default, any single approach to research will have its limitations. This research offers theory generated via Grounded Theory Methodology, specifically from the substantive area of interest. This research does not claim to offer results derived as research of verification or of a comparative study nature. Consequently, this research does not claim results derived from applied research in the form of hypothesis testing or from the observation of enacted practice. Again, these limitations are acknowledged by the author. However, theory that does emerge from this research provides a set of 'grounded' hypotheses that will enable future research to develop by offering themes and concepts, along with the limitations mentioned here as possible future starting points for further enquiry.

Implications of the Research

The Literature in Terms of Text Typeface Design

The gap in knowledge identified in this research was with respect to a lack of recorded knowledge – particularly evident in terms of research-based knowledge – relating to the processes of text typeface design. It was identified that such paucity had endured for a considerable period of time. Notable reference works such as Moxon's seventeenth century accounts of printing trade and practice, Fournier's eighteenth century account of type-founding and Legros and Grant's early twentieth century study of printing technology, although authoritative works in themselves, offer little that refers to the designing of types within an overall commentary of either survey or personal perspective of practices. It was highlighted within Chapter 2 that with respect to these authoritative works, none offer an adequate overview on the process or processes of designing text typefaces.

This research offers a major contribution to knowledge by means of a workable theory, generated from the analysis of accounts of knowledge of practice given by text typeface design experts. This research therefore contributes to the extant body of knowledge that exists for the subject domain literature.

Further Work

It is anticipated that this research will act as a base or foundation upon which further research in the area of text typeface design process will develop. In this sense, it is hoped that this research establishes a positive contribution to knowledge in the subject area through its evidenced-based explication of practice-related knowledge. Such evidenced-based or research-based work is important in an area in which much of the subject knowledge still appears to reside as tacit – in many ways, the

preserve of those who know how to do through the experience of doing. Going beyond tacit acknowledgement of subject expertise and establishing consensus with regard to formalising concepts and descriptions of design knowledge and activity in the specialist subject area may take some time. However, it is the author's hope that the results of this research in some way aid furthering discussion in the subject area with regard to the relationship between practitioner knowledge, knowledge of practice and how such knowledge is described and disseminated. Establishing clear concepts that describe the subject area through evidenced-based research will also facilitate describing the subject beyond a homogeneous audience, that is to say, beyond the bounds of those within and connected to the subject area specifically. It is the author's hope that explication of the concepts that describe the subject will allow for dialogue between subject disciplines to develop, where such dialogue can be evidenced based rather than merely based upon speculation or aphorism, in this regard contributing to the developing professionalization of the subject area.

Research in this study has been intentionally limited to the collection and analysis of data from type design experts that discusses and describes designing with respect to Latin category typeface design. This research is potentially useful as a basis in order to explore other language bases with regard to typeface design.

At the time of writing, the author has had the opportunity to utilize aspects of the developed theory by applying these within his own teaching practices at both undergraduate and postgraduate levels where students have been developing typeface designs. For the students, this proved to be beneficial for understanding key aspects of the processes of design. In these cases concepts described as Trajectorizing and Homologizing were often simplified in order to discuss and explain notions with regard to the 'trajectory' of design and the 'mutable' nature of 'relational' form. These discussions enabled students to think about initial 'micro' elements within the forms of early letters they were designing and how this would have an overall influence on form that was to be subsequently developed. This also allowed students to consider the micro and macro nature of approaches to typeface design, something as novice designers that they had not previously considered. This brief example illustrates how theory from this research is beginning to be directly applied to the contexts of teaching and the practice of designing type.

The terms created in this research have been developed to provide clear conceptual delineation. It is anticipated that the terminology within this study will be adapted for use over time within the fields of education and practice. However, what is important to note is that the developed terms aid conceptual distinction. In the example above students were introduced the concept of 'trajectory' in relation to their own design thinking and decision-making. This was then supported and reinforced by linking to the theoretical gerund Trajectorizing relative to describing expert practitioner knowledge.

Intention and motivation of this research focused on the collection of data relating to expert knowledge. Analysis and development of conceptual explication from the data generated theory specific to text typeface design process. Although some parallels have been drawn between this research and existing research and thinking towards design process generally (see Chapter 7), it is anticipated that future research may evaluate possible connections with what is described here as design process for text typeface design and design process research in other domains.

Beyond the scope of text typeface design this research may provide useful insights and applications toward future research in other related areas of design: subject areas such as Graphic Design generally but also specialist subject domains such as Typography, Book Design, Information Design and Exhibition Design, where at present little exists in terms of research in relation to expert knowledge of design process. Subject areas such as Architecture and Product Design may also find use for some of the concepts developed in this study. Aspects of theory in this research such as micro and macro approaches, together with concepts of trajectory, mutability of relational form and constant Attenuation toward design may find resonance beyond the substantive subject level offered here. Such concepts may offer starting points or hypotheses upon which further applied research in related fields may find use for evaluating similarities and/or differences between discrete disciplines.

This research has concentrated upon testimonies of expert participants. It is anticipated that the theory generated from this study may be useful in terms of studying and analysing the behaviour of design novices or design students in terms of the ways in which they understand and approach text typeface design. To extend this research along such paths may provide useful means by which to understand the nature in which experts differ from novices with approaches to text typeface design. Also, the generated theory from this research may provide a useful basis in order to theoretically frame the practice in terms of education and instruction. This could prove useful for both educators and those who wish to gain insight into the process of text typeface design for self-instruction and practice.

It is also anticipated that theory developed in this research will find use as an evaluative tool for manifest design and also enable text typeface design activity to be analysed. As text typeface design appears to involve lengthy periods of time in order to produce workable or finished versions of the designs, longitudinal studies may be required to observe and analyse a complete process of design from beginning to end. The theory produced in this study may be useful as a base or starting point from which to orient such studies. It may be used as a descriptive framework against which observations could be made or tested. The theory produced in this research may also prove useful for shorter protocol studies where parts of the processes of design are observed. Again the theory produced within this research would assist in the framing and scoping of such studies in terms of what may be identified and for what specific purposes. This research offers a series of grounded hypotheses that reveal and explicate deep connections in terms of thinking, actions and results with regard to the process of text typeface design. Such theory can offer initial hypotheses as the basis upon which comparative and verification type studies may develop in future.

In Summary of the Grounded Theory

In summation, this research resolves in three core categories: Trajectorizing, Homologizing and Attenuating. The resolved core categories of the developed theory allow for the neatly fitting acronym and mnemonic, by which the theoretical categories may easily be recalled – THAT.

The theory developed as a result of this research can be seen to have ‘theoretical completeness’ (Glaser, 1978), insofar as it not only aligns with what Glaser deems

necessary for a grounded theory to fulfil the qualification of ‘completeness’ but that the theory also fulfils the original aims of this research.

In his book *Doing Grounded Theory: Issues and Discussions*, Glaser gives four clear criteria by which a grounded theory generated in a ‘... close, cogent way ...’ (Glaser, 1998, p. 18) to the data may be judged. First, Glaser outlines what he determines as ‘fit’ in terms of generated grounded theory:

Fit is another word for validity. Does the concept adequately express the pattern in the data which it purports to conceptualize. Fit is continually sharpened by constant comparisons.

(p. 18)

The theory developed in this research aligns with what Glaser describes above. Concepts generated by this research have emerged from the data. They have been developed through the rigorous constant comparison of instances identified within the data and the patterns of such instances that appear. These in turn have led to the generation of concepts that capture and explicate, concepts that get to the heart of ‘what is going on’ in the data via instances and their relative patterns that appear in the data. The concepts of the theory in this research ‘fit’; they are valid in that they emerge from the data and data patterns. Fragmentary instances within the data are captured and conceptualised, thus presented coherently within this research as a conceptual/theoretical package that allows the reader and user of the theory to grasp and understand what hitherto lay as latent or hidden connections regarding knowledge of text typeface design processes. Fit then leads to what Glaser secondly describes as ‘workability’. He explains thus:

Workability means do the concepts and the way are related into hypotheses sufficiently account for how the main concern of participants in a substantive area are continually resolved.

(1998, p. 18)

This research presents three individual core categories; each one resolves and hypothesizes what has emerged from the data. The core categories also resolve in terms of each other. This research presents a resolved, workable, conceptual theory that not only describes and explains what happens with respect to text typeface design process but that may also be applied as an analytical and/or prescriptive tool in terms of framing possible future study, research, pedagogy and practice. It is anticipated the theory developed in this research will enable future hypothesis testing, comparative and observational studies to develop. The illustrations developed in the Discussion (Chapter 7) of this research demonstrate the ‘workability’ of the developed theory.

This research anticipates potential future uses and applications for the developed theory that have relevance toward the substantive subject area of text typeface design practice. Glaser’s third point in describing the usefulness of a generated Grounded Theory is in its relevance: ‘Relevance makes the research important, because it deals with the main concerns of the participants involved ...’ he continues ‘Relevance, like good concepts evoke instant grab’ (Glaser, 1998, p. 18). This research presents relevant theory that can be linked directly to the knowledge, thinking and actions described by the participants.

Glaser's fourth criterion relates to the ability of the theory to adapt to new data if and as it emerges:

Modifiability is very significant. The theory is not being verified as in verification studies, and thus never right or wrong ... it just gets modified by new data to compare it to ... New data never provides a disproof, just an analytical challenge. (1998, p. 19)

The terms and language developed for the theory in this research represent a formalised view of describing text typeface design process at the substantive level. The Grounded Theory presented in this research works by generating theory that is grounded at each and every stage of the analysis and development of the theory. The aim was to generate theory where insufficient explanation of text typeface design process existed previously. The theories presented in this study are open to modifiability in accordance with Grounded Theory Methodology. It is anticipated that such modifiability may come through future applied and experimental research; it is hoped that such future research will add to, extend and enrich what has been initiated and set forth within this book.

Appendix

List of Codes and Definitions

Autonomy	Participant describes having/needing to have a single view of design process/decision-making.
Collaboration	Participant describes aspects of design collaboration with another designer(s).
Comparison	Participant describes making comparisons within the process of designing type.
Corrective judgment	Participant describes making judgments in identifying and improving elements perceived to be incongruous in relation to the overall design of the typeface.
DefDesSearch	Participant defines the search space (heuristic).
Des macro	Participant describes/acknowledges details relating to a macro-level view/notion of design.
Des micro	Participant describes/acknowledges details relating to a micro-level view/notion of design.
Des prob inherent	Participant identifies an inherent problem/area in approaching text typeface design.
DesDecRelProb	Participant describes design decision related to problem.
DesDelimiters	Participant outlines the design perimeters for specific problem(s) – general.
DesDelimiters Client	Participant describes client outlining the design perimeters for specific problem(s).
DesDelimiters Self	Participant describes self outlining the design perimeters for specific problem(s).
DesignSpaceID	Participant identifies distinction in approach to design.
ExampleExperi	Participant gives account of specific design example from experience.
Experience	Participant identifies an element in which experience/ability/appreciation bears upon the process of designing type.
FirstChars lc	Participant describes letters designed initially for the lowercase.
FirstChars Uc	Participant describes letters designed initially for the UPPERCASE.
FromKnowledge	Participant draws from prior knowledge – initially declarative.
Hinting	Participant describes hinting within the process of designing or producing type.
Improvement	Participant describes decision-making in terms of improvement.

Italics	Participant describes italic forms in the process of creating type.
Letter parts	Participant describes/is aware of the component parts that make up letterform.
Mutability	Participant describes mutable differences in similar character shapes.
Numerals	Participant describes development of numerals.
Overseeing	Participant describes the importance of a single person's overview in relation to collaborative work.
Personal approach	Participant offers opinion or thinking toward personal approach or philosophy of design.
PrimaryGen	Participant describes Initial design influence or influence prior to the process of design.
Proced dev	Participant's statement shows insight to procedural development of design.
Projecting user usage	Participant projects how the design may be used.
Punctuation	Participant describes development of punctuation.
Redefining brief	Participant describes scenario in which the client brief is redefined.
Ref act design learn	Participant references the act of 'doing' design and learning through 'doing'.
Ref context	Participant referring to context (of use) as important in the development of the typeface design.
Ref conv broad	Participant makes reference to broad or general established method or pattern of description/classification.
Ref conv spec	Participant makes SPECIFIC reference to methods/methodologies/practices etc. that inform conventional notions of the subject (e.g. the use of the broad-nib pen in calligraphy informing the oblique axis of a typeface design).
Ref epistemic prob	Participant makes reference to inherent problems relating to subject epistemology.
Ref know hist cont	Participant refers to knowledge/influence of history and context of subject area.
Ref originality	Participant makes reference to originality in work.
Ref other prior	Participant states making reference to OTHER prior work to develop the typeface design.
Ref other prior NEG	Participant states NOT making reference to OTHER prior work to develop the typeface design.
Ref own prior	Participant states making reference to their OWN prior work to develop the typeface design.
Ref own prior NEG	Participant states NOT making reference to their OWN prior work to develop the typeface design.
Ref reflection learning	Participant makes reference to reflection/learning.
Repertoire	Participant indicates that an existing repertoire of actions or decision-making in relation to type design is used.
Repertoire neg	Participant indicates that an existing repertoire of actions or decision making in relation to type design is NOT used.

Skillset prior non TD	Participant makes reference to non-typeface design prior knowledge or skill set as being important.
Spacing	Participant describes SPACING of characters.
SystemNotion	Participant describes or intimates notion of or reference to a system or framework.
Tech as tool	Participant describes using technology as a tool in the process or generation of design.
Tech constrain	Participant describes constraining effects of technology and how this affects design development in some way.
Testing	Participant describes testing of characters (e.g. introduced to form words).
Variants	Participant describes consideration of other design variants in the design process.
Working phase	Participant identifies discrete phases in the process of designing type.

Glossary

Text Typeface Design

Apex The ‘peak’ of a letter such as is often found on the pointed top of the uppercase A.

Arm The horizontal extension of a letter, often from the vertical stem such as found on the uppercase E, F, L etc.

Ascender The part of lowercase letters that protrudes above the x-height (see x-height).

Baseline The invisible line on which the characters in a typeface sit. The imaginary line upon which the uppercase letters appear to sit is often a useful way to visualise the baseline within a typeface design.

Bowl The curved extension of a letter, often adjoined to an upright stem, that forms a loop with an often enclosed ‘counter’. For example, letters such as b, B, d, D, p, P have bowls with counters.

Bracket Curves that connect and partly form the serif and adjoining stroke. In this sense the word bracket refers to a ‘bracketed serif’, not the symbol of a bracket in terms of parentheses.

Cap Height The height from the baseline to the top of the uppercase letters.

Character Commonly used to indicate a letterform, numeral or symbol (see Glyph).

Counter The internal space within a type-form, often completely enclosed by a bowl (see examples under Bowl). The term counter or counter-space is derived from the early process of type-founding, whereby the punch-cutter of types would create a ‘counter punch’ in order to strike the end of a bar or rod of metal, this would form a ‘counter’. It was around this ‘negative’ counter shape that the punch-cutter would shape the letterform for the punch.

Descender The part of a lowercase letter that descends below the baseline.

Diacritical Marks For example, a mark used above, below or through a letter to indicate stress or pronunciation (e.g. ç ö è).

Display Typeface A typeface that has been designed to work optimally at larger point sizes. Display typefaces can often have decorative qualities or details. At small point sizes display typefaces may not render well in terms of legibility.

Extrapolation The extending of a known variable state toward an estimated or targeted variable state. In typeface design, for example, to develop a new variant relational weight of character or typeface design from a pre-existing weight etc.

Finial Often ‘shaped’ ending to a letter stroke/terminal such as can be found on the overhanging elements of lowercase a, f, r, for example, within many serif typeface designs.

- Fitting** The spacing of letters relative to their side bearings (see Side bearing) and each letter to one another. Historically, this would relate to the positioning of letters relative to the metal body on which they sat (also termed justifying), leaving enough space on either side of the letter so that when combined with other letters in a sequence for printing, these would appear to sit correctly.
- Font** Sometimes referred to as a collection of characters of one typeface design but can include a suite of typeface designs, related or unrelated (see Font family and Type family).
- Font Family** Sometimes referred to as a collection of characters of a typeface design. This can include related variants (e.g. Roman, Bold, Italic). (See Type family; these terms are often used interchangeably.)
- Glyph** Used to indicate a single character within a font. This can be a letterform, punctuation, numeral or symbol etc.
- Interpolation** To create or interpret a new set or sequence of values that are relational between two known or given nodal variables. For example, in typeface design, creating a medium weight by interpolating between a lightweight and heavyweight character or character set.
- Italic** A slanting/oblique or script-like variant of a typeface. Upright variants are usually referred to as Roman.
- Latin** The standard character set for most Western and Central European language bases and languages derived from these.
- Leg** The down stroke found in letters such as k, K and R.
- Point** A unit of typographic measurement. There are approximately 72 points to the inch. One digital postscript point is equal to 0.353 mm.
- Point Size** The measurement usually given for type. This is often the height of the 'body' or space upon which the letter sits (traditionally, the literal height of the cast metal body of an individual type).
- Roman** The upright version of a typeface. Often considered the normal or average variant of a typeface design.
- Sans Serif** A typeface without serifs.
- Serif** Small strokes included at the terminals of the main strokes of a letter.
- Shoulder** The curved stroke that extends from the upright stem found in letters such as lowercase h, n and m.
- Side Bearing** The space designed to work either side of an individual letter, numeral or symbol.
- Spacing** With respect to typography, word spacing and letter spacing, the latter is often associated with side bearing (see Side bearing) in typeface design.
- Spine** The main diagonal stroke found in letters such as lowercase 's' and uppercase 'S'.
- Stem** The main, often upright stroke of a letterform.
- Stroke** The constituent structural parts of a letterform. The term is derived from letterforms constructed by traditional writing methods (e.g. pen, brush, reed and stylus forms). The influence of the kind of writing tool and the incidence in which that is applied in practice is considered in many typeface designs.
- Terminal** The terminating end of a stroke.
- Text Typeface** Type specifically designed to be set and read as continuous reading matter usually set at small sizes (e.g. 9, 10, 11, 12 pt; generally below 14 pt).

- Type Family** A collection of typefaces designed to work together, usually sharing common attributes across several related variants (e.g. Roman, Bold, Italic; see also Font family).
- Typeface** Letters, numbers and/or symbols of collectively relational character design. A typeface can also be part of a larger group of related sets of designs (e.g. bold, italic). Traditionally in metal type, the typeface was literally the design on the raised face of the type used as the surface from which a printed impression was made.
- Weight** The relative boldness or darkness of characters considered as variants of a typeface design (e.g. light, bold, extra-bold and black).
- Width** One of the possible variations of a typeface design. Condensed and expanded are examples of width variants.
- x-Height** Traditionally the height of the lowercase letter x. It can also be referred to as the height of the body of lowercase letters in a font, excluding the ascenders and descenders. The x-height may vary greatly in different typefaces yet still have the same point size.

Grounded Theory Methodology – General

- Category** An analytic unit that conceptually organises phenomenon in relation to the prior or continuing process of coding. A category may also arise from the organisation of groups of categories or the relation between categories and codes through a process of sorting.
- Code** A literal or conceptual label used to tag and identify an item or section of specific interest within collected data.
- Coding** The arrangement and systematisation of ideas, concepts and categorisation through the application of codes to the data.
- Constant Comparison** A key method and part of the Grounded Theory Methodology by which the researcher constantly compares incidents, codes, categories and themes in emerging analysis and theory development.
- Core Category** A thematic, conceptual/theoretical category within (or around) which other related developed categories are organised. A Core Category ‘resolves’ a group of theoretically related coded and categorised phenomena.
- Dimension** The property of a code or category in which two or more relational properties are identified as attributable phenomena specific to such a code or category.
- Memoing** The act of recording reflective notes, concepts etc. as a result of studying the collected data in order to develop conceptual/theoretical meaning and interpretation.
- Sorting** The process of organising the developing theory from memoing and coding/categorizing stages through to the writing stages of Grounded Theory Methodology.
- Theoretical Sampling** Sampling determined on the basis of emerging themes, concepts and theory development from analysis of the data.

Grounded Theory – Developed Theory in This Research

Accretive Amelioration The holistic improvement of design over a period of time and the result of multiple interventions that combine to ‘resolve’ in a design, not merely producing a design with the intention of problem-solving.

Attenuating The ways in which expert designers continuously and critically test and adjust for incongruity in developing text typeface designs.

Constructed Precedent An initiating form with the potential to inform subsequent form.

Contextualizing The use of singular or multiple known or exiting precedent(s) relative to situating and initiating the text typeface design, affording orientation of initial design trajectory. Contextualizing may be defined from the outset of a process of design or can emerge along with and within the initiating process of design.

Empathic Memoing A method developed by the author that allows for insight to develop via enacted experience – through practice for example – relative to phenomena identified within data being analysed, so that reflective notes, concepts etc. emerge that aid and develop analysis and theory development.

Endogenous Generator A form that is specifically and purposefully utilized within a developing scheme of design in order to generate further relational form.

Envisioning The expert designer’s identifying themselves, their ability, skill and judgment as contributing factors, significant in the development and improvement of design.

Historical Immersion The ways in which designers’ historical and contextual subject knowledge directly contributes to the ways they Attenuate.

Homologizing The development of relational form within the processes of text typeface design.

Synthetic Acquiescence A dimension of Homologizing related to Extrapolation and Interpolation; the designer allows a design, or part of a design, to be created wholly by means of automated software and/or programming routine.

Synthetic Displacement A dimension of Homologizing related to Extrapolation and Interpolation; a designer imposes manual intervention in adjusting a design or part of a design that would otherwise be derived wholly by automation via software and/or programming.

Trajectorizing The various purposive beginnings and initiations relative to the processes of designing text typefaces.

Bibliography

- Adamson, G. (2007). *Thinking through craft*. Oxford: Berg.
- Ahrens, T. (2006). *A multiple master based method for scaling glyphs without changing the stroke characteristics*. Retrieved from http://remixtools.com/about/Tim_Ahrens_MM_method.pdf
- Akin, Ö. (1986). *Psychology of architectural design*. London: Pion.
- Alexander, C. (1964). *Notes on the synthesis of form*. Cambridge, MA: Harvard University Press.
- Almqvist, J., & Lupton, J. (2010). Affording meaning: Design-oriented research from the humanities and social sciences. *Design Issues*, 26(1), 3–14.
- Anderson, B. F. (1975). *Cognitive psychology: The study of knowing, learning and thinking*. New York, NY: Academic Press.
- Anderson, J. R. (1996). *The architecture of cognition*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Ashcraft, M. H. (2002). *Cognition* (4th ed.). London: Pearson.
- Atman, C. J., Turns, J., Cardella, M. E., & Adams, R. S. (2003). The design processes of engineering educators: Thick descriptions and potential implications. In N. Cross & E. Edmonds (Chairs), *Proceedings of design thinking research symposium 6: Expertise in design*. Sydney: University of Technology. Retrieved from https://www.creativityandcognition.com/cc_conferences/cc03Design/papers/32AtmanDTRS6.pdf
- Avis, F. C. (1967). *Edward Philip Prince – Type Punchcutter*. London: Glenview Press Ltd.
- Baines, P., & Haslam, A. (2002). *Type & typography*. London: Laurence King.
- Ball, J. (1973). *William Caslon 1693–1766: The ancestry, life and connections of England's foremost letter-engraver and type-founder*. Kington: The Roundwood Press.
- Baudin, F. (1989). *How typography works (and why it is still important)*. London: Lund Humphries.
- Baudin, F., & Hoeflake, N. (1973). *The type specimen of Jacques-François Rosart – Brussels 1768: A facsimile with an introduction and notes*. Amsterdam: Van Gendt & Co.
- Bauermeister, B. (1988). *A manual of comparative typography – The Panose System*. New York, NY: Van Nostrand Reinhold Company.
- Bayazit, N. (2004). Investigating design: A review of forty years of design research. *Design Issues*, 20(1), 16–29.
- Benner, P. E. (1984). *From novice to expert: Excellence and power in clinical nursing practice*. Menlo Park, CA and London: Addison-Wesley.
- Birks, M., & Mills, J. (2011). *Grounded theory: A practical guide*. Los Angeles, CA and London: Sage.
- Blackwell, A. F., Eckert, C. M., Bucciarelli, L. L., & Earl, C. F. (2009). Witness to design: A phenomenology of comparative design. *Design Issues*, 25(1), 36–47.
- Blades, W. (1875). *Some early type specimen Books of England, Holland, France, Italy and Germany*. London: J.M. Powell.

- Bousbaci, R. (2008). Models of man in design thinking: The bounded rationality episode. *Design Issues*, 24(4), 38–52.
- Brawne, M. (2003). *Architectural thought, the design process and the expectant eye*. Oxford: Architectural Press.
- Briem, G. (1998–2001). *Notes on type design, type, handwriting and lettering*. Retrieved from <http://box5680.temp.domains/~operinan/index.html> (First accessed 3 January 2009).
- Bringhurst, R. (2005). *The elements of typographic style* (3rd ed.). Point Roberts, WA: Hartley & Marks.
- Bryant, A., & Charmaz, K. (Eds.). (2007). *The SAGE Handbook of Grounded Theory*. London: Sage.
- Bucciarelli, L. L. (1994). *Designing engineers*. Cambridge, MA and London: The MIT Press.
- Buchanan, R. (1999). Design research and the new learning. *Design Issues*, 17(4), 3–23.
- Burke, C. (1995). *Paul Renner and German typography, 1900–1950* (Doctoral thesis). University of Reading.
- Burke, C. (1998). *Paul Renner, the art of typography*. London: Hyphen.
- Carter, H. (Ed.). (1930). *Fournier on typefounding – The text of the Manuel typographique (1764–1766) translated into English and edited with notes*. London: Soncino Press.
- Carter, H. (1937). The optical scale in typefounding. *Typography*, 4(Autumn), 2–6.
- Carter, H. (1955). *Letter design and typecutting*. Bristol: College of Technology.
- Carter, H. (1969). *A view of early typography – Up to about 1600: The Lylle Lectures 1968*. Oxford: Clarendon Press.
- Carter, H., & Vervliet, H. D. L. (1966). *Civilité types*. Oxford: The Oxford Bibliographical Society, Oxford University Press.
- Carter, S. (1995). *Tuentieth century type designers*. New York, NY: Norton.
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative analysis*. London: Sage.
- Cheng, K. (2005). *Designing type*. London: Laurence King.
- Child, H. (Ed.). (1971). *Edward Johnston – Formal Penmanship*. London: Lund Humphries.
- Clair, C. (1960). *Christopher Plantin*. London: Cassell.
- Cross, N. (2001). Designerly ways of knowing: Design discipline versus design science. *Design Issues*, 17(3), 49–55.
- Cross, N. (2003). The expertise of exceptional designers. In N. Cross & E. Edmonds (Chairs), *Proceedings of design thinking research symposium 6: Expertise in design*. Sydney: University of Technology. Retrieved from https://www.creativityandcognition.com/cc_conferences/cc03Design/papers/12CrossDTRS6.pdf
- Cross, N. (2007). *Designerly ways of knowing*. Basel: Birkäuser.
- Cross, N., Dorst, K., & Christiaans, H. (Eds.). (1996). *Analysing design activity*. Chichester: Wiley.
- Darke, J. (1979). The primary generator and the design process. *Design Studies*, 1(1), 36–44.
- Davis, H., & Carter, H. (Eds.). (1958). *Joseph Moxon – Mechanick exercises on the whole art of printing (1683–4)*. London: Oxford University Press.
- De Vinne, T. L. (1885). *Historic printing types*. New York, NY: The Grolier Club.
- De Vinne, T. L. (1900). *The practice of typography. A treatise on the processes of type-making, the point system, the names, sizes, styles, and prices of plain printing types*. New York, NY: Century Co.
- DeRose, K. (2005). *What is epistemology? A brief introduction to the topic*. Retrieved from <http://pantheon.yale.edu/%7Ekd47/What-Is-Epistemology>
- Design Museum. (2010). *How to design a typeface*. London: Conran Octopus.
- Detrie, T. (1999). *Font fundamentals: Font design*. Retrieved from www.public.asu.edu/%7Eedetrie/pages/fundamentals_fonts/pages/font_design.html

- Dey, I. (1999). *Grounding grounded theory: Guidelines for qualitative inquiry*. San Diego, CA: Academic Press.
- Dorst, K. (2006). Design problems and design paradoxes. *Design Issues*, 22(3), 4–17.
- Dreyfus, H. L., & Dreyfus, S. E. (1986). *Mind over machine: The power of human intuition and expertise in the era of the computer*. New York, NY: Free Press.
- Dürer, A. (1535/1965). *Of the just shaping of letters – Translated by RT. Nichol from the Latin text of the edition of MDXXXV*. New York, NY: Dover.
- Dwiggins, W. A. (1940). *WAD to RR. A letter about designing type*. Cambridge, MA: Harvard College Library.
- Earls, D. (2002). *Designing typefaces*. Mies: Rotovision.
- Eastman, C. M. (1970). On the analysis of the intuitive design process. In *Emerging methods in environmental design and planning* (pp. 21–37). Cambridge, MA: MIT Press.
- Fallman, D. (2008). The interaction design research triangle of design practice, design studies, and design exploration. *Design Issues*, 24(3), 4–18.
- Farleigh, J. (1945). *Fifteen craftsmen on their crafts*. London: Sylvan Press.
- Feyerabend, P. (1978). *Against method: Outline of an anarchistic theory of knowledge*. London: Verso.
- Folkmann, M. N. (2010). Evaluating aesthetics in design: A phenomenological approach. *Design Issues*, 26(1), 40–53.
- Fournier, P. S. (1995). *The manuel typographique of Pierre-Simon Fournier le Jeune: Together with fournier on typefounding (1764–1766)*. (H. Carter, Trans.) J. Mosley (Ed.). Darmstadt: Technische Hochschule.
- Gerhard, M. J. (2008). *The power of precedent*. Oxford: Oxford University Press.
- Gettier, E. L. (1963). Is justified true belief knowledge? *Analysis*, 23, 121–123.
- Gill, E. (1931/2007). *An essay on typography*. Jaffrey: David R. Godine.
- Gill, E. (1940). *Autobiography*. London: Jonathan Cape.
- Given, L. M. (Ed.). (2008). *The Sage encyclopedia of qualitative research methods*. Thousand Oaks, CA: Sage.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. New York, NY: Aldine.
- Glaser, B. G. (1978). *Theoretical sensitivity*. Mill Valley, CA: Sociology Press.
- Glaser, B. G. (1998). *Doing grounded theory: Issues and discussions*. Mill Valley, CA: Sociology Press.
- Glaser, B. G. (2003). *The grounded theory perspective. Vol. 2, description's remodeling of grounded theory methodology*. Mill Valley, CA: Sociology Press.
- Goldschmidt, G. (1998). Creative architectural design: Reference versus precedence. *Journal of Architectural and Planning Research*, 15(3), 258–270.
- Goldschmidt, G. (2003). Expert knowledge or creative spark? Predicaments in design education. In N. Cross & E. Edmonds (Chairs), *Proceedings of design thinking research symposium 6: Expertise in design*. Sydney: University of Technology. Retrieved from https://www.creativityandcognition.com/cc_conferences/cc03Design/papers/33GoldschmidtDTRS6.pdf
- Goldschmidt, G. (2011). Avoiding design fixation: Transformation and abstraction in mapping from source to target. *Journal of Creative Behavior*, 45(2), 92–100.
- Goudy, F. W. (1922). *Elements of lettering*. New York, NY: Mitchell Kennerley.
- Goudy, F. W. (1933). *On designing a type face. The Dolphin – A journal of the making of books*. Number one, 3–23.
- Goudy, F. W. (1940). *Typologia – Studies in type design and type making with comments of the invention of typography – The first three types – Legibility and fine printing*. Berkeley, CA and Los Angeles, CA: University of California Press.
- Goudy, F. W. (1989). *The alphabet and elements of lettering*. London: Bracken Books.
- Goulding, C. (2002). *Grounded theory: A practical guide for management, business and market researchers*. London: Sage.

- Graß, T. (2008). *Schriftgestalten – Über script und gestaltung*. Sulgen: Niggli.
- Gregory, R. L. (1987). *The Oxford companion to the mind*. Oxford: Oxford University Press.
- Grey, N., & Nash, R. (1976). *Nineteenth century ornamented typefaces*. New edn. London: Faber & Faber.
- Hanington, B. (2003). Methods in the making: A perspective on the state of human research in design. *Design Issues*, 19(4), 9–18.
- Hansard, T. C. (1841). *Treatises on printing and type-founding*. Edinburgh: Adam and Charles Black.
- Harland, R. (2011). The dimensions of graphic design and its spheres of influence. *Design Issues*, 27(1), 21–34.
- Hartz, S. L. (1958). An approach to type designing. *The Penrose Annual*, 52, 39–42.
- Harvey, M. (1996). *Creative lettering today*. London: A&C Black.
- Hersch, R. D. (1993). *Visual and technical aspects of type*. Cambridge: Cambridge University Press.
- Hess, S. (1972). *The modification of letterforms*. New York, NY: Art Direction Book Company.
- Heylighen, A., Cavallin, H., & Bianchin, M. (2009). Design in mind. *Design Issues*, 25(1), 94–105.
- Hofstadter, A., & Kuhns, R. (1976). *Philosophies of art and beauty – Selected readings in aesthetics from Plato to Heidegger*. Chicago, IL: University of Chicago Press.
- Hu, C., & Hersch, R. (2001). Parameterizable fonts based on shape components. *IEEE Computer Graphics & Applications*, 21(3), 70–85.
- Hunter Middleton, R. (1965). *An essay on the forgotten art of the punchcutter*. Los Angeles, CA: University of California.
- Hutchings, R. S. (1963). *The western heritage of type design*. London: Cory, Adams & Mackay Ltd.
- Hutt, A. (1972). *Fournier – The compleat typographer*. London: Muller.
- James, W. (1890/1950a). *The principles of psychology: Volume one*. New York, NY: Dover.
- James, W. (1890/1950b). *The principles of psychology: Volume two*. New York, NY: Dover.
- Jammes, A. (1965). Académisme et Typographie – The making of the Romain du Roi. *Journal of the Printing Historical Society*, 1, 71–95.
- Jarma, M. (2003). *Form and proportion in a text typeface: A few guidelines*. Retrieved from www.typeculture.com
- Jaspert, W. P., Berry, W. T., & Johnson, A. F. (1983). *Encyclopaedia of typefaces* (Revised ed.). London: Blandford.
- Johnson, A. F. (1966). *Type designs* (3rd revised ed.). London: Andre Deutsch.
- Johnston, E. (1935). *Writing & illuminating & lettering* (16th ed.). London: Pitman.
- Kapr, A. (1983). *The art of lettering – The history, anatomy, and aesthetics of the roman letterforms*. München: Saur.
- Karow, P. (1987). *Digital format for typefaces*. Hamburg: URW Verlag.
- Karow, P. (1998). Two decades of typographic research at URW: A retrospective, lecture notes. *Computer Science*, 1375, 265–280. Springer.
- Keinonen, T. (2009). Immediate and remote design of complex environments. *Design Issues*, 25(2), 62–74.
- King, E. (1999). *New faces: Type design in the first decade of device-independent digital typesetting (1987–1997)* (Doctoral thesis). Kingston University.
- Kinross, R. (1992). *Modern typography: An essay in critical history*. London: Hyphen Press.
- Klein, M., Schwemer-Scheddin, Y., & Spiekermann, E. (1991). *Type & typographers*. London: Architecture Design and Technology Press.
- Knuth, D. E. (1986). *Computers and typesetting/E – Computer modern typefaces*. Reading: Addison Wesley.
- Kolko, J. (2009). Abductive thinking and sensemaking: The drivers of design synthesis. *Design Issues*, 26(1), 15–28.

- Kvale, S., & Brinkmann, S. (2008). *Interviews: Learning the craft of qualitative research interviewing* (2nd ed.). London: Sage.
- Labuz, R. (1988). *Typography & typesetting, type design and manipulation using today's technology*. New York, NY: Van Nostrand Reinhold.
- Lawson, A. (1990). *Anatomy of a typeface*. London: Hamish Hamilton.
- Lawson, B. (1997). *How designers think: The design process demystified* (3rd revised ed.). Oxford: Architectural Press.
- Lawson, B. (2003). Schemata, gambits and precedent: Some factors in design expertise. In *Expertise in design, design thinking symposium 6* (pp. 37–50). University of Technology, Sydney. Sydney: Creativity & Cognition Studios Press.
- Lawson, B. (2004). *What designers know*. Oxford: Architectural Press.
- Leach, M. (1960). *Letter design in the graphic arts*. New York, NY: Reinhold Publishing Corporation.
- Legros, L. A., & Grant, J. C. (1916). *Typographical printing surfaces – The technology and mechanism of their production*. London: Longmans, Green and Co.
- Lemon, D. (2005). *Basic type 1 hinting*. Retrieved from www.adobe.com/type
- Levin, P. (1966). *Decision making in urban design*. Watford: Building Research Establishment.
- Lommen, M. (2003). *Bram de does – Typographer and type designer*. Amsterdam: Uitgeverij De Buitenkant Publishers.
- Macmillan, N. (2006). *An A–Z of type designers*. London: Laurence King.
- Mardersteig, G. (2005). Alberti and the revival of the roman letter (J. Mosley, Trans.). *Typography Papers*, 6, 49–65.
- Margolin, V. (2010). Doctoral education in design: Problems and prospects. *Design Issues*, 26 (3), 70–78.
- Marples, D. (1960). *The decisions of engineering design*. London: Institute of Engineering Design.
- McDonnell, J., & Lloyd, P. (Eds.). (2009). *About designing: Analyzing design meetings*. London: CRC Press.
- McDonnell, J., Lloyd, P., & Valkenburg, R. (2003). Encouraging the development of design expertise through the construction of video stories about the design process. In N. Cross & E. Edmonds (Chairs), *Proceedings of design thinking research symposium 6: Expertise in design*. Sydney: University of Technology. Retrieved from https://www.creativityandcognition.com/cc_conferences/cc03Design/papers/34McdonnellDTRS6.pdf
- McLean, R. (1995). *Typographers on type*. London: Lund Humphries.
- McMurtrie, D. C. (1924). *American type design in the twentieth century – With specimens of the outstanding types produced during this period*. Chicago, IL: Robert O. Ballou.
- McRae, J. F. (1920). *Two centuries of typefounding – Annals of the letter foundry established by William Caslon in Chiswell Street, London, in the year 1720*. London: H. W. Caslon & Co. Ltd.
- Meggs, P. B., & McKelvey, R. (2000). *Revival of the fittest: Digital versions of classic typefaces*. New York, NY: RC Publications.
- Middendorp, J. (2004). *Dutch type*. Rotterdam: 010 Publishers.
- Middendorp, J. (Ed.). (2010). *Creative characters: The myfonts interviews, vol. 1*. Amsterdam: BIS.
- Moran, D. (2000). *Introduction to phenomenology*. London: Routledge.
- Morison, S. (1926). *Type designs of the past and present*. London: The Fleuron Ltd.
- Morison, S. (1949). *The typographic arts: Two lectures*. London: The Sylvan Press.
- Morison, S. (1968). *Letterforms, typographical and scriptorial: Two essays on their classification, history and bibliography*. London: Nattali & Maurice.
- Morris, R. A., & André, J. (1991). *Raster imaging and digital typography II*. Cambridge: Cambridge University Press.

- Mosley, J. (1963). English vernacular: A study in traditional letterforms. *Motif*, 11(4, Winter), 3–55.
- Moxon, J. (1676). *Regulae trium ordinum literarum typographicarum; or the rules of the three orders of print letters, viz.: The Roman, Italick, English, – Capitals and small; showing how they are compounded of geometrick figures and mostly made by rule and compass. useful for writing masters, painters carvers, masons and others that are lovers of curiosity.* London: Sign of the Atlas.
- Moye, S. (1995). *Fontographer: Type by design.* New York, NY: MIS Press.
- Narváez, L. M. J. (2000). Design's own knowledge. *Design Issues*, 16(1), 36–51.
- Nelson, H. G., & Stolterman, E. (2012). *The design way: Intentional change in an unpredictable world.* Cambridge, MA and London: MIT Press.
- Newell, A., & Simon, H. A. (1972). *Human problem solving.* Englewood Cliffs, NJ: Prentice-Hall.
- Newland, P. M. (1990). *Understanding designers' knowledge acquisition processes: A potential for enhancing information transfer* (Doctoral thesis). Portsmouth: Portsmouth Polytechnic.
- Noordzij, G. (2000). *Letterletter: An inconsistent collection of tentative theories that do not claim any other authority than that of common sense.* Point Roberts, WA and Vancouver, BC: Hartley and Marks Publishers Inc.
- Noordzij, G. (2005). *The stroke: Theory of writing.* London: Hyphen Press.
- Osterer, H., & Stamm, P. (Eds.). (2009). *Adrian Frutiger – Typefaces: The complete works.* Basel: Birkhäuser.
- Pardoe, F. E. (1975). *John Baskerville of Birmingham: Letter-founder & printer.* London: Muller.
- Patton, M. Q. (2002). *Qualitative research and evaluation methods* (3rd ed.). Thousand Oaks, CA, London, and New Delhi: Sage.
- Pike, K. L. (1967). *Language in relation to a unified theory of the structure of human behavior.* The Hague: Mouton & Co.
- Plaat, F. (Trans.). (1960). *Wolfgang Fugger's handwriting manual – Entitled, A practical and well-grounded formulary for divers fair hands, compiled by Wolfgang Fugger citizen of Nuremberg 1553.* London: Oxford University Press.
- Polanyi, M. (1967). *The tacit dimension.* London: Routledge & Kegan Paul.
- Polanyi, M. (1969). *Knowing and being.* London: Routledge & Kegan Paul.
- Polanyi, M. (1973). *Personal knowledge: Towards a post-critical philosophy.* London: Routledge & Kegan Paul.
- Popovic, V. (2003). General strategic knowledge models connections and expertise development in product design. In N. Cross & E. Edmonds (Chairs), *Proceedings of design thinking research symposium 6: Expertise in design.* Sydney: University of Technology.
- Pye, D. (1968). *The nature and art of workmanship.* London: Cambridge University Press.
- Rathgeb, M. (2006). *Otl Aicher.* London: Phaidon.
- Reber, A. S. (1993). *Implicit learning and tacit knowledge: An essay on the cognitive unconscious.* New York, NY: Oxford University Press.
- Reed, T. B. (1952). *A history of the old English letter foundries: With notes, historical and bibliographical* (New ed. revised). London: Faber.
- Retrieved from www.fontbureau.com/historical/ChaunceyGriffith/
- Retrieved from www.fontbureau.com/historical/WilliamDwiggins/
- Rotenstreich, N. (1977). *Theory and practice – An essay in human intentionalities.* The Hague: Martinus Nijhoff.
- Ruggles, L. (1983). *Letterform design systems. Technical report STAN-CS-83971.* Department of Computer Science, Stanford, CA: Stanford University.
- Russell, B. (2009). *History of western philosophy.* London: Routledge.
- Rust, C. (2004). Design enquiry: Tacit knowledge and invention in science. *Design Issues*, 20(4), 76–85.

- Sassoon, R. (Ed.). (1993). *Computers and typography*. Oxford: Intellect Books.
- Sassoon, R. (Ed.). (2002). *Computers and typography 2*. Bristol: Intellect Books.
- Scarfe, L. (1954). *Alphabets: Written and printed letter forms*. London: Batsford.
- Schneider, U. (1998). DaType: A stroke-based typeface design system. *Computers & Graphics*, 22(4), 515–516.
- Schön, D. (1985). *The design studio: An exploration of its traditions and potential*. London: RIBA.
- Schön, D. (1991). *The reflective practitioner: How professionals think in action*. Aldershot: Ashgate.
- Sennett, R. (2008). *The craftsman*. London: Allen Lane.
- Silver, R. G. (1965). *Typefounding in America, 1787–1825*. Charlottesville, VA: University Press of Virginia.
- Silverman, D. (2006). *Interpreting qualitative data* (3rd ed.). London: Sage.
- Sitala, R. (2000). *A theory of precedent: From analytical positivism to a post-analytical philosophy of law*. Oxford: Hart Publishing.
- Smieijers, F. (1997). *Counterpunch: Making type in the sixteenth century, designing typefaces now*. London: Hyphen.
- Smieijers, F. (2003). *Type now plus work so far*. London: Hyphen.
- Smitshuijzen AbiFares, H. (2007). *Typographic matchmaking: Building cultural bridges with typeface design*. Amsterdam: BIS.
- Southall, R. (2005). *Printer's type in the twentieth century: Manufacturing and design methods*. London: The British Library.
- Spencer, H. (1969). *The visible word: Problems of legibility* (2nd ed.). London: Lund Humphries.
- Stienberg, S. H. (1961). *Five hundred years of printing* (2nd ed.). Middlesex: Penguin.
- Stones, C., & Cassidy, T. (2010). Seeing and discovering: How do student designers reinterpret sketches and digital marks during graphic design ideation? *Design Studies*, 31(5), 439–460.
- Strauss, A., & Corbin, J. (Eds.). (1997). *Grounded theory in practice*. Thousand Oaks, CA: Sage.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Tan, S., & Melles, G. (2010). An activity theory focused case study of graphic designers' tool-mediated activities during the conceptual design phase. *Design Studies*, 31(5), 461–478.
- The Monotype Recorder. *Fifty years of type-cutting 1900–1950*. 39(2).
- The Monotype Recorder. (1958). *Commemorating the exhibition of lettering and type designs by Eric Gill held at the Monotype House, London in October 1958*. 41(3).
- Tory, G., (1529). *Champ Fleury*. Retrieved from www.archive.org/details/fre_b1888652
- Tracy, W. (1986). *Letters of credit: A view of type design*. London: Gordon Fraser.
- Tulving, E. (1972). Episodic and semantic memory. In E. Tulving & W. Donaldson (Eds.), *Organization of memory* (pp. 382–402). New York, NY: Academic Press.
- Unger, G. (2005). *While you're reading*. New York, NY: Mark Batty.
- Unger, G. (2018). *Theory of type design*. Rotterdam: nai010.
- Updike, D. B. (1937). *Printing types, their history, forms and use – A study in survivals* (2nd ed.). London: Oxford University Press.
- Van Krimpen, J. (1957). *On designing and devising type*. New York, NY: The Typophiles.
- Van Krimpen, J., Hofer, P., & Dreyfus, J. (1972). *A letter to Philip Hofer on certain problems connected with the mechanical cutting of punches*. Boston, MA: David R. Godine.
- Van Veggel, R. J. F. M. (2005). Where the two sides of ethnography collide. *Design Issues*, 21(3), 3–16.
- Vanderlands, R., Licko, Z., & Gray, M. E. (1993). *Emigre: Graphic design into the digital realm*. New York, NY: Van Nostrand Reinhold.
- Wallis, L. W. (1999). Legros & Grant: The typographical connection. *Journal of the Printing Historical Society*, 28, 5–39.

152 *Bibliography*

- Wang, D., & Ilhan, A. O. (2009). Holding creativity together: A sociological theory of the design professions. *Design Studies*, 25(1), 5–21.
- Wax, R. (1971). *Doing fieldwork: Warnings and advice*. Chicago, IL: University of Chicago Press.
- Wylant, B. (2008). Design thinking and the experience of innovation. *Design Issues*, 24(2), 3–14.
- Zapf, H. (1970). *About alphabets: Some marginal notes on type design*. Cambridge, MA and London: MIT Press.
- Zapf, H. (1993). About micro-typography and the hz-program. *Electronic Publishing*, 6(3), 283–288.

Index

Note: Page numbers in *italics* indicate figures and those in **bold** indicate tables.

- Accretive Amelioration 81, 84, 114
Akin, Ö. 20, 121–2
Alexander, C. 114, 122
Analytical tool, Grounded Theory
 Methodology as 129
Anderson, B. F. 20
Attenuating 26–7, 79–108. *See also*
 Envisioning; Historical Immersion;
 Accretive Amelioration and 81;
 comparison and 113–4; as constant
 112–3; context and 104–5; Envisioning
 and 96–107; Historical Immersion and
 89–96; improvement and 87–8; of
 incongruity through testing 81–3;
 introduction to 79; lineage and
 relationships of coding 80; overview of
 79–81; relationship of core category, to
 sub-categories 79; summary of 107–8;
 via comparison 83–5; via developed
 corrective judgment 85–7
- Benton Punch-cutting Machine 18
- Carter, H. 10, 13
Caslon, W., I 10
Certainty, workmanship of 21
Charmaz, K. 25
Cheng, K. 1, 9
Christiaans, H. 113
Coding, lineage and relationships of:
 Attenuating and 80; Homologizing and
 57; Trajectorizing and 29
Comparison, Attenuating via 83–5, 113–4
Constructed Precedents: control characters
 and 52–4; described 115–6; Endogenous
 Generator to 58–9, 61; Homologizing and
 59–62; Precedent Constructing and 41–2;
 Trajectorizing and 114–8
Contextualizing: initial influences 31–4;
 through language 34–5; Trajectorizing
 and 30–1; via specific precedents/influ-
 ences 35–8
Contextualizing Precedents 114
Control characters: Constructed Precedents
 and 52–4; defined 52, 118; Trajectorizing
 and 118–21
Convention: Historical Immersion and 92–5;
 specifics of, in relation to historical con-
 text 94–5; view of, in relation to
 historical context 92–4
Core categories. *See also* Grounded Theory
 Methodology: defined 25–6; interrelation-
 ships between 26–7, 110–2; relationship
 of Attenuating, to sub-categories 79;
 relationship of Homologizing, to sub-
 categories 56; relationship of Trajectoriz-
 ing, to sub-categories 28; sub-categories
 and 25–6
Corrective judgment, Attenuating via 85–7
Counterpunch (Smeijers) 10
Counter punch-cutting, Dwigins Falcon
 type 18–9
Cross, N. 1, 6, 20, 23, 113
- Darke, J. 20, 30
Davis, H. 10, 13
Decision-making in design, autonomy in
 101–3
Declarative knowledge 20
Designing Type (Cheng) 1, 9
Design knowledge, describing 19–22
De Vinne, T. L. 17–8
Doing Grounded Theory: Issues and
 Discussions (Glaser) 136
Dorst, K. 113
Dürer, A. 13, 14
Dwigins, W. A. 18–9, 118
- Emic expert accounts of punch-cutting, type-
 founding process 16–7

- Emic viewpoint, described 11
- Empathic Memoing 110, 118, 119
- Endogenous Generation: described 58; Homologizing and 56, 58–9
- Endogenous Generator: from Constructed Precedent to 58–9; Homologizing and 56, 58–9
- Envisioning: Attenuating and 96–107; autonomy in decision-making 101–3; context and usage 104–5; experience and 96–8; originality and 100–1; overview of 96; a personal approach 98–9; reflection and 105–7; summary of 107
- Epistemological/ontological relationship 22–3
- Etic non-expert accounts of process and type design 13–6
- Etic viewpoint, described 11
- Experience, Envisioning and 96–8
- Extrapolation 69–72
- Extrapolation models 126–9
- Fournier, P. S. 11, 16–7
- Framing 122
- French Académie of Sciences 14, 16
- General Flow Model for text typeface design process 123, 124; Homologizing in relation to 125–6; Trajectorizing in relation to 123–5
- Gerhard, M. J. 117–8
- Glaser, B. G. 25, 56, 79, 110, 131, 135–7
- Goldschmidt, G. 115
- Goudy, F. W. 19, 118, 120–1
- Grant, J. C. 11, 15
- Grounded Theory Methodology 2, 5; as analytical tool 129; applications for 129–30; Attenuation as constant 112–3; comparison, Attenuation and 113–4; control characters, Trajectorizing and 118–21; core categories, interrelationships between 110–2; core categories and 27; Extrapolation and Interpolation models 126–9; General Flow Model 123–6; introduction to 109–10; precedent, Trajectorizing and 114–8; as prescriptive tool 130; presentation of 24–5; research aims satisfied by 131–2; search space, Trajectorizing and 121–3; summary of 130, 135–7
- Historical context, text typeface design 8–23; design knowledge, describing 19–22; direct referencing to 90–1; emic experting accounts of process and 16–7; epistemological evidence/ontological qualities relationship 22–3; etic and emic accounts of 11–2, 22; etic non-expert accounts of process and 13–6; Historical Immersion and 89–90; introduction to 8; literature offering insight to 10–1; published material relating to 9; type-founding restrictions and 9–10; understanding, decision-making and described method in relation to 17–9
- Historical Immersion: Attenuating and 89–96; Convention and 92–5; historical context and, referencing to 89–91; overview of 89; summary of 96
- Homologizing 26–7, 56–78; as causal category 77; Endogenous Generation/Generator and 58–9, 77; extrapolation/interpolation acts and 69–72, 126–9; Homologous Mapping/Homologous Drift and 68–9; introduction to 56–8; lineage and relationships of coding 57; overview of 58; procedural development and mutability 59–64; relational form and 63–5; relationship of core category, to sub-categories 56; in relation to General Flow Model 125–6; self-informing design and 65–8; summary of 76–8; Synthetic Displacement/Acquiescence and 72–6, 78
- Homologous Drift 68–9, 78
- Homologous Mapping 68–9, 77–8
- Improvement, Attenuation and 87–8
- Incongruity, Attenuation of through testing 81–3
- Initial influences, Trajectorizing and 31–4
- Interpolation 69–72
- Interpolation models 126–9
- Jackson, J. 10
- James, William 22
- Knowing and Being* (Polanyi) 21
- Knowledge about 22
- Knowledge of acquaintance 22
- Lawson, B. 20
- Legros, L. A. 11, 15
- Letters of Credit* (Tracy) 10
- Literature in terms of text typeface design 133
- Manuel Typographique* (Fournier) 11
- Mechanick Exercises* (Moxon) 10, 11, 13
- Metaphysics* (Aristotle) 19
- Moxon, J. 13–4, 15, 16, 22
- Nature and Craft of Workmanship, The* (Pye) 21
- Newell, A. 113
- Noordzij, G. 12

- Originality, Envisioning and 100–1
 Other prior work, Precedent Constructing from 46–52
 Own prior work: Precedent Constructing from 42–6; Trajectorizing via precedent referencing 39–41
- Patton, M. Q. 12
 Personal approach, Envisioning 98–9
 Pike, K. L. 11
 Polanyi, M. 19–20, 21–2
 Precedent Constructing: based upon memory of initial precedent 49–51; Constructed Precedents and 41–2, 114; Contextualizing Precedents and 114; control characters and 52–4; from other prior work 46–52; from own prior work 42–6; termed 41; Trajectorizing and 114–8
 Prescriptive tool, Grounded Theory Methodology as 130
 ‘Primary Generator,’ 20
Printer’s Type in the Twentieth Century (Southall) 10
Printing Types: Their history, form and, use; A study in survivals (Noordzij) 12
 Procedural knowledge 20
 Processes of text typeface design 24–7; core categories, relationships of 26–7; core category/sub-categories defined 25–6; Grounded Theory described 24–5; introduction to 24
Psychology of Architectural Design (Akin) 20
 Punch-cutting 9–10; counter, Dwiggins Falcon type 18–9; emic expert accounts of 16–7
 Pye, D. 21
- Reed, T. B. 22
 Reflection, Envisioning and 105–7
Regulae Trium Ordinum Literarum Typographicarum (Moxon) 13, 14
 Relational form, Homologizing and 63–5
 Risk, workmanship of 21
 Ruzicka, R. 18, 118
- Schön, D. 122
 Search space, Trajectorizing and 121–3
 Self-informing design, Homologizing and 65–8
 Serif 62
 Simon, H. A. 113
 Sitala, R. 117
The Six C’s (Glaser) 25
 Six Cs theoretical coding families 25–6, 79
 Star Chamber Decree of 16, 37, 9, 10
 Sub-categories. *See also* Grounded Theory Methodology: core categories and 25–6; defined 25–6
- Synthetic Acquiescence 56; Homologizing and 72–6
 Synthetic Displacement 56; Homologizing and 72–6
- Tacit knowledge 20
 Tagmemic Theory 11
 Text typeface design. *See also individual headings*: Attenuating 79–108; historical context 8–23; Homologizing 56–78; processes of 24–7; Trajectorizing 28–55
 Text typeface design research: aims and contributions of 131–2; codes/definitions 138–40; contextual framing for 3–5; flow model for 123; further research for 133–5; future research in other related areas of design 135; general model for 123; Grounded Theory Methodology used 5; historical framing for 3–5; implications of 133–5; introduction to 1–2, 131; limitations of 132–3; literature in terms of 133; motivation for 2–3; participants and data used 6; questions and aims 3; terminology 6
 THAt mnemonic 130, 135
 Theoretical sampling 5
 Trajectorizing 26–7, 28–55; Contextualizing and 30–8; control characters and 118–21; initial influences and 31–4; introduction to 28; language and 34–5; lineage and relationships of coding 29; overview of 28–30; Precedent Constructing and 41–54, 114–8; relationship of core category, to sub-categories 28; in relation to General Flow Model 123–5; search space and 121–3; specific precedents/influences and 35–8; via precedent referencing own prior work 39–41
- Tulving, E. 20
 Type design processes: etic/emic accounts in relation to 11–2, 22; understanding, decision-making and described method in relation to 17–9
 Typeface design process, texts relating to 10–1
 Type-founding process: emic expert accounts of 16–7; restrictions 9–10
Typographical Printing Surfaces (Legros and Grant) 11, 15
Typologia (Goudy) 19
- Underweysung der Messung, mit dem Zirckel und richtsheyt* (Dürer) 13, 14
 Updike, D. B. 12
- Van Dijk, C. 13
- WAD to RR: *A letter about designing type* (Dwiggins) 18



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