Introduction: Reading the Space

'We put thirty spokes together and call it a wheel;
But it is on the space where there is nothing
That the usefulness of the wheel depends.
We turn clay to make a vessel;
But it is on the space where there is nothing
That the usefulness of the vessel depends.
We pierce doors and windows to make a house;
And it is on these spaces where there is nothing
That the usefulness of the house depends.
Therefore just as we take advantage of what is,
We should recognize the usefulness of what is not.'
Lao Tzu *Tao Te Ching* Tr. Arthur Waley

‘The Japanese had a word (*ma*) for this interval which gives shape to the whole. In the West we have neither word or theme. A serious omission.’ (Alan Fletcher)

The design of a book page draws upon a matrix of related bodies of expertise, including the design of typefaces, the setting of lines of type and the disposition of these lines within the space of the page. These are traditionally associated with the disciplines of typeface design, typesetting and book design, and are normally considered from within the critical and practical literature of these subjects. The common properties which link and relate these choices are properties of space, and it is the understanding of typographic space at each of these levels of the design that enables the designer to relate these aspects to each other, to achieve a harmonious whole. This book will explore the interrelated nature of these different orders of typographic space to construct an expanded view of the subject as a single totality and consider this totality as a coherent visual language,

1 Li Er Lao Tzu, *Tao Te Ching*, Translated by A. Waley, and R. Wilkinson (Ware: Wordsworth, 1997)
providing a critical context for the development of wider perspectives upon both designing and reading.

In the activity of reading the printed page we engage with a complex of interrelated relationships of shape and space. These include the interior spaces that characterise each letter and distinguish it from its neighbour, the intervals that define and separate the shapes of words, the ‘weave’ of space between lines, and the margins that relate the limits of the text area to the material limits of the page. These variables combine to determine ease of use, but also to inform our wider ‘reading’ of the page, evoking connotative values and signalling philosophical preferences. The designer of our page will have drawn upon several related bodies of specialist knowledge. The professional literature of the subject identifies complex and detailed practical decisions, around which different design ideologies have evolved. Designers and typographers agree on the importance of negative space, from a variety of different viewpoints. Stanley Morison included in his definition of typography the process of ‘distributing the space’ \(^3\) while Jan Tschichold stated that ‘the white background plays an active part in the design’.\(^4\)

Critical perspectives on typography continue to be informed by the material history of printing. Traditionally, typographic space has been the outcome of tangible material processes. For 500 years, printers and typographers organised the two-dimensional space of the page by physical means, through the relationships of three-dimensional components. The first of these was the typeface, originated as a three-dimensional ‘punch’: a sculpture of the letter in reverse, crafted by the removal of metal from the face of a steel rod; defined by the introduction of space into mass. The punch was then struck to create a right-reading matrix from which multiple reverse-reading impressions could be cast. The resulting metal letters or ‘sorts’ would be organised into lines of words by the compositor disposing the letters and spaces, by hand up to the late nineteenth century and subsequently through the machine composition systems of Linotype and Monotype. These lines of type would be arranged in the composing stick, 

strips of lead would be inserted between them to determine line-spacing, and additional space added to fill out the column width and enable a rectangular print area to be locked within the frame of the chase. Space was therefore a tangible material in the compositor’s hand, a codified system of material parts: metal spaces of various widths and strips of lead of standardised thickness, both related to the typographic letters by a common system of measurement in points. The unprinted areas of the page were therefore determined by the placing of space materials that had physical mass and weight, names and measurements. From the mid-twentieth century, as metal setting was replaced by photosetting and then by digital type, this material space became instead a ‘virtual’ concept, but the material traditions of metal type persist both in the user expectations of the reader and in much of the language of typography.

Technological change prompted some revised perspectives upon the nature of typographic space. In the 1968 edition of his 1960 The Visible Word, Herbert Spencer notes that ‘much research this century has been concerned with questions of line length, interlinear spacing, margins and other aspects of the use of space in typography’ and continues, ‘Spatial arrangements . . . which have been established as optimum for the printed page held in the hand need now to be reconsidered in relation to images projected onto a television screen or microfilm viewer’. Since that time, digital media for both typesetting and typeface design have developed in sophistication to encompass the refinements of previous technologies while adding further capabilities, many of them prompted by the new challenges of the transition from the printed page to the screen. The semantic properties of typographic space apply equally in both contexts, determining the way that the spatial typography of the page reflects and advances the conceptual structure of the text. The web designer Mark Boulton has noted the fundamental idea that graphic structures can reflect conceptual structures, ’Making sure the graphical representation of the content matches the mental model of the reader’, while David Crystal has identified the

5 H. Spencer, The Visible Word (London: Royal College of Art, 1968), pp. 11–12
need ‘for linguists to become more interested in the properties of graphic substance’. The disposition of typographic space is foremost among these properties. Johanna Drucker affirms that white space ‘is not inert, not pregiven and neutral, not an a priori fact or entity, but is itself relational and constituted through dynamic relations.’ Both the microtypography of typographic detailing (font, case, spaces, dashes, indents) and the macrotypography of the page space (margins, columns, grids) invite multiple levels of interpretation. The disposition of space can signal design ideologies and cultural connotations. A generous volume of white space signifies added value, whether in luxury goods or linguistic messages. Across western visual culture, placing an object within a larger space (or adding a designed space around it) ‘frames’ that object to invite enquiry and interpretation. The white space of the page is a vessel containing the textual meaning, and the arrangement of type within that space directs the conditions of reading and the expectations that the reader brings to the text. Space is therefore both the connective tissue of printed language, and its paratextual frame. Typographic space as a ‘structural agent’ was a key precept of the concrete poetry movement of the 1950s. One defining characteristic of poetry is the idea of an ordered relationship between its parts; typically by patterns of metre and rhyme. This may involve symmetries and asymmetries that can be ‘read’ visually by looking at the shape of the text on the page; type and negative space become a sonic map of sounds and silences, one that both embodies and interprets the textual content.

The final chapter of this book considers the idea of space as a language, from which we can infer the idea of a ‘poetics of typographic space’. Any topic which involves relationships between ‘inside’ and ‘outside’ invites

wider interpretations. In his 1958 ‘The Poetics of Space’ Gaston Bachelard refers to ‘the dialectics of outside and inside’ and these concepts are not only fundamental to typography but also applicable across a variety of disciplines and contexts. In exploring these, the book will consider the common experience of typographic space within an expanded frame of reference, to locate this seemingly arcane design concept within a wider cultural perspective.

It should also be said that this book is a personal enquiry into ideas around the meaning of typographic space. As such it does not attempt to determine the means by which such space was calculated. Detailed work has been done on the measurements of typography; notably Peter Burnhill’s investigation of the in-house norms of Aldus, Frank Blokland’s theories on the dimensions of the letters of the early typefounders, and Andrew Boag’s chronology of typographic measurement. In his 1963 Human Space O. F. Bollnow makes an important distinction between mathematical space and human space, and this has an equivalent in the reader’s experience of typography; the eye traversing a page of text is not so much measuring the spaces as inhabiting them. It is necessary therefore to view typography not only through measurement but as a matter of human space. This space is experienced at several levels that interact with each other, and the conceptual structure of this book has been designed to examine these levels in order and reflect upon their individual and cumulative significance for both reader and designer.

This chapter will consider the nature and function of space within the designed letterform. The printed letter begins not in shapes but in spaces, created by the introduction of voids into a solid mass. Since the inception of printing from movable type in the mid-fifteenth century, the printer’s letter has differed from those made by calligraphers, engravers, and sign-painters in one significant respect: it is a relief form rather than an autographic one, created by carving away rather than making a written or incised stroke. Unlike letters made by handwriting or engraving, the punches from which letters were originally cast were made by a subtractive process: a removal of their negative spaces. Where written letters are formed by the action of making a stroke, typographic letters are fashioned – a process of modelling or ‘whittling’ in which positive shape and space are developed in reference to each other. In the design of type, space and letter-shape must therefore be considered as interdependent parts rather than an active shape against a passive background: together, they form the ‘ying’ and ‘yang’ necessary to the whole. To design type is to engage in what Fred Smeijers, in his book Counterpunch, calls ‘a game of black and white’ or Bachelard’s ‘dialectic of inner and outer’. Like architecture, type design establishes complex relationships between interior and exterior, between mass and void, and gives purpose and meaning to the space it encloses.

1.1 Interior Shapes
The letter is assembled from spaces, either contained or open, with their own descriptive vocabulary. This includes the ‘counter’, a fully enclosed space as found within o, d, and p, and the smaller counter of the a, e, and g, sometimes referred to as the ‘eye’. The wider term ‘counterform’ is commonly used to describe all the negative spaces within the overall shape of the letter, and therefore also includes the open spaces within c, n, m. These vary in ‘aperture’ – the opening from the counterform into the surrounding space – which may be wide or narrow. This leads to some ambiguities,

---

16 Bachelard, The Poetics of Space, p. 211
discussed in detail by Smeijers, as to whether a space is properly ‘inside’ a letter or part of its intercharacter space, which will be considered in Chapter 2.

For its first 500 years, type production involved the sculpting-away of metal from the face of the punch, and therefore involved unique considerations of ‘inner’ and ‘outer’, and the independence of interior profile from exterior profile marks a key distinction between the printer’s letter and the calligraphic letter. Punch-cutting is a matter of visual subtraction; of punching-out and filing-away and the design and execution of the letter is a succession of visual decisions about the shapes of spaces. The interior shapes would be either carved out with a graver or more commonly punched out with a counterpunch – a tool specially fashioned for this purpose. Crucially, Smeijers locates this as the beginning of the punch-cutting process: the letter form actually starts from the design of its interior space, after which its outer profile is shaped to complete the resulting letter. This explicitly demonstrates the active role of space as fundamental to the design process.

1.2 The Space and the Stroke

Since type originated as the mechanical expression of the manual practice of writing, it might be assumed that typographic shapes should be determined by the norms of handwriting. This is the view held by the Dutch graphic artist and educator Gerrit Noordzij, whose ‘theory of the stroke’ provides a robust design framework based upon the expansion and translation of the pen-stroke. There is, however, no particular reason why the written hand should continue to dictate the aesthetic norms of type. Type is not writing, and while Noordzij’s theories provide a persuasive and consistent formula for the making of a certain kind of letter, it is limited by the presumption of a direct equivalence between these practices, which have in fact been diverging for over 500 years. This is particularly significant with regard to the status of space in the letter-making process. In written letters

17 Smeijers, Counterpunch, p. 79
(distinguished by Smeijers as those in which ‘each significant part is made of one stroke’), the space within the letter is an outcome, determined by autographic factors – the shape of the stroke and the width and angle of the tool used to create it. For the punch-cutter, the interior space was the first shape to be fashioned. This marks a very important distinction between the nature of space in typography and in the letter arts.

1.3 The Divergent Counterform
When interior space is considered as independent of the exterior profile (rather than as the by-product of the stroke), it presents new questions and stylistic possibilities. As type has evolved away from specific reference to calligraphic origins, the relationship between the interior and exterior space has become more complex. In his typefaces from the 1930s William Addison Dwiggins made dynamic use of the contrast or dissonance between the outer and inner profile. His practice of cutting stencils for many of the repeat elements of letters allowed the inner and outer profiles to be considered separately, creating an interior space that was independent of any common ‘stroke’. The relationality of the letters is established through the repeated use of common shapes rather than the consistent action of a writing tool. The ‘M-formula’, by which he described this approach to typefaces such as Electra, allows for a controlled dissonance between the letter’s exterior and interior profiles, introducing sharp angles into the interior curves to produce a ‘whip-lash vitality’. The M-formula was derived from observations of the action of light upon the features of carved marionettes, illuminating angled planes to give the impression of curves. This approach to the design of a letter’s interior space is directly opposed to the stroke-based approach advocated by Noordzij. Divergence from the behaviour of the writing tool has also characterised the development of twentieth-century blackletter typefaces. While Rudolf Koch’s Kochschrift clearly reflects the traditions of the idiom, he noted that its distinctiveness lies in the qualities that could not have been achieved with the pen-stroke alone, in the divergences between outer and inner space that animate and

19 P. Shaw, ‘W.A. Dwiggins: Jack of all Trades, Master of More Than One’. Linotype Matrix. 4.2. (2006), p. 45
The interior space of letters is also a key to stylistic differences between related typefaces; in many cases the differences are more evident in the interior spaces than the exterior profiles. This is clearly demonstrated in Martin Majoor’s *Scala* and *Scala Sans*, an extended superfamily that includes both serif and sans serif. Comparison of these designs reveals that the variations between them are most evident on the inside.

### 1.4 Drawing and the Letter

It is significant that Stanley Morison invited Eric Gill and others to ‘draw letters’ for Monotype rather than ‘design typefaces’; though hand punch-cutting continued as a specialised practice into the mid-twentieth century, from the late nineteenth century it had been superseded by methods that allowed for larger drawings to be mechanically transcribed to punches or matrices. This had the significant effect of opening up the field of type production to the input of graphic artists, sculptors, and architects, redefining the relationship between type design and drawing. As Smeijers observes, drawing a letter in outline describes a contour which does not present a form, but only defines its border or edge. It has the effect of deferring any consideration of space relationships until the outline has been filled. He also contrasts a drawing ‘made in one go’ with the development of a letter starting first with the creation of the counters ‘as is the case with cutting text sizes in metal’ – a sequence of shape development that differs radically from making an outline drawing. The transition from outline to silhouette will normally involve both positive and negative processes; as important as the ‘inking-in’ will be the revisions made with process white or gouache; a subtractive process like the punch-cutter’s. Type designers’ drawings from the era of machine composition often reveal this ‘whiting-out’, and this aspect of the letter design process is more than simply the correcting of errors; it is the drawing and refining of the letter’s negative space.

---

22 Smeijers, *Counterpunch*, p. 18
23 Cinamon, *Rudolf Koch: Letterer, Type Designer, Teacher*, p. 92
1.5 The Subtractive Letter

The use of typographic space in the letter arts reflects cultural differences and variations of stylistic tradition. Architectural lettering and monumental inscriptions in Central Europe show a tradition of relief lettering largely without equivalent in Britain. The raised letter is created subtractively, like the punch, and it is by the cutting-away of stone that the recognisable form of the letter emerges. British inscriptive lettering, by contrast, has after its early vernacular origins centred upon the incised letter: writing with a chisel. In this more ‘Roman’ approach, the space is a surface into which the letter is incised, and the negative space is a result of this mark-making process. In relief lettercutting, however, the space is the medium by which the letter is formed. This difference in vernacular craft traditions would seem to correspond to the contrasting print cultures of roman and black-letter type. In the nineteenth and twentieth centuries, as an increasing variety of novel forms entered the world of type production from graphic and vernacular traditions, the subtractive display letterform manifests in print and the preeminent examples are Central European. Rudolf Koch’s Neuland is explicitly subtractive, created directly through punchcutting. Gerald Cinamon affirms that ‘much of the character is due to the variety and inventiveness created by the designer himself guiding the punch-cutting tool’.

The work of Rudolf von Larisch is also significant here since he rejected the blackletter tradition and placed particular significance on the proportion of space between letters, to the extent of giving greater importance to the distribution of space than the letter shape itself. Nash and Williams note that his alphabets ‘emphasized the figure-ground relation between the letter and the writing surface’.

The subtractive lettering of Koloman Moser and Alfred Roller typified the graphic styles of the Vienna University Press & Assessment