

Modernity, Method and Minimal Means: Typewriters, Typing Manuals and Document Design

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This essay is about the contribution that typing manuals and typists have made to the history of graphic language and communication design, and that typewriter composition has played in typographic education and design practice, particularly in the 1960s and 1970s. The limited technical capabilities of typewriters are discussed in relation to the rules in typing manuals for articulating and organizing the structure of text. Such manuals were used to train typists who went on to produce documents of considerable complexity within what typographers would consider to be minimal means in terms of flexibility in the use of letterforms and space.

Keywords: typewriter composition—document design—typography—technology

Introduction

At the beginning of the twentieth century typewriters were part of the modern office: new machines operated by women and men who had a thorough training in how to use them and in how to format and produce different kinds of document.¹ Typing manuals and the relentless repetition of typing exercises in class formed the basis of this training, and generations of office workers acquired considerable knowledge about the visual organization of often complex documents. In the context of the history of typography, typewriter operators (typists, as they became known) were designing within 'minimal means'. They worked with a restricted range of letterforms and character sets, and with limited flexibility for manipulating vertical and horizontal space. The documents they made—in their material form—were true to the limitations of the machines that made them. Designers and educators also exploited the characteristics (and limitations) of typewriters in their work; in the 1950s and 1960s especially, typewriters were regarded by designers as one of the tools of the trade, though perhaps, as Ken Garland has noted, 'a design tool that is not usually regarded as such'.² Design educators such as Norman Potter and Michael Twyman used the limitations of typewriter composition to good effect in teaching typography. And because typing manuals were concerned with the kind of document that Herbert Spencer, in 1952, called 'utility' printing ('technical catalogues, handbooks, timetables, stationery and forms, the primary purpose of which is to inform'³), the typewriter as the means of production for such documents has a place in the history of document design and, by inference, of information design.⁴ 'Typewriter composition' was prevalent in the printing trade in the 1960s and 1970s and many typists who trained on mechanical typewriters went on to become 'compositors', working with electric machines such as the IBM 72, the IBM Executive, the Justewriter and later models of the Varityper.⁵ In this context typists assumed the role of compositor, applying rules acquired through typing training to typesetting in books.

Minimal means and a user-driven approach

Typewriters and the manuals that gave instructions for their use led to the rise of a user-driven approach to the design of functional documents, an approach influenced by the means of production. Richard Southall used the term 'graphic capability' (of a typesetting system) to refer to the potential for articulation of document structure, describing it as constrained by 'the number of characters, typefaces, and type sizes and the facilities for defining amounts of horizontal and vertical space, that the system offers'.⁶ Graphic capability, then, is determined by the extent of the character set and the finesse with which vertical and horizontal space can be manipulated. The graphic capability of the typewriter is severely limited yet it is these limitations that connect with modernist design principles. As noted by McIntosh, 'With only one typeface and size, with uniform inter-line and inter-word spacing and no justification, the typewriter is ... ideal, also because of its cheapness and simplicity of operation and ubiquity.'⁷

Histories of typewriters tend to focus on mechanical details and the engineering complexity of the machines.⁸ They pay little attention to the content of the manuals that explained how typewriters should be operated and used in the context of producing documents. This paper focuses on the latter and presents rules and prescriptions for organizing text, essentially the principles of layout and house style that are found in typing manuals. The prescriptions given are made in relation to commercial and business office documents. Many of the rules define basic typographic principles even though there is not the range of letterform variation or spatial flexibility that is available in conventional typesetting systems. So, what were the rules and conventions that were presented in typing manuals? What did trainee typists learn about making documents? What influence have typewriters had on document design?

Typing manuals

Towards the end of the nineteenth century, most office work was done in copperplate script or a variant of copperplate handwriting known as the 'Civil Service hand',⁹ and followed precise rules, an example being the setting out of correspondence. The transition to typewriters must have been challenging, both technically and stylistically, and the author of an 1893 manual showed 'a specimen of typewriting illustrating, in perhaps an exaggerated form, most of the irregularities to be found in unskilled work'.¹⁰ Many of these irregularities were explained as the ineffective technical use of the typewriter, such as uneven impression, and the misuse of one character for another, but reference to irregular spacing and uneven margins reflected a concern for elementary principles of typography that were relevant to making documents easy for people to read.

Manuals to provide instruction in typing skills began to appear in the 1880s. One of the earliest was John Harrison's *A Manual of the Typewriter*, published by Isaac Pitman in 1888. Others followed, often connected to a particular typewriter brand, such as *Instructions on the Calligraph Typewriter* (1891). The 1890s and early 1900s saw the publication of what quickly became 'standard works' that ran to many editions: Isaac Pitman's *A Manual of the Typewriter* was first published in 1893, with numerous editions up to 1922, when it was superseded by *Pitman's Commercial Typewriting*, which was published until 1977.¹¹ Prominent twentieth-century authors of similar well-regarded manuals included Arthur E. Morton, Edith Collyns, Edith R. Smith, Frederick Heelis,

Maxwell Crooks, William and Elizabeth Walmsley, and Edith Mackay.¹² A detailed survey of rules for visual organization in key typing manuals in numerous editions shows consistency in content, though with change over time reflected across editions. Such change, for example in relation to conventions for abbreviation, reflects the evolution of language through micro typographic articulation.¹³

Typing manuals contained rules and conventions, in the main, for commercial correspondence and related office work, but many also included sections on setting out plays, engineering specifications, and legal documents, each with facsimiles as exemplars. Information presented ranged from punctuation, grammar and style to postal regulations and forms of address. The early typing manuals prescribed conventions derived from commercial handwriting practice, as would have been prevalent in office work (such as the use of superior figures in dates), and others were influenced by the desire to emulate typesetting and to reflect formality and authority (such as centring and capitalization).

Typing manuals formed the basis for the attainment of skills necessary for being an efficient office worker. Most were progressive, beginning with fingering exercises and ending with the transposition of handwritten material into typed documents, in accordance with typing rules and conventions that would have been mastered along the way. The attainment of skills was reinforced through examinations and certificates. In the manuals the words 'display' and 'setting out' were used frequently, suggesting that visual or artistic ability was a required skill. Typists were also expected to know how to spell, punctuate and organize text into paragraphs. The rules covered issues of organizing text on a micro level, such as punctuation, use of capital letters and treatment of book titles—all issues referred to by printers as 'house style'. Keeler observed:

Style in commercial typewriting, in contradistinction to 'style' in literary work, may be defined as the due observance of particular rules or principles, more or less well-known, in the technical setting out or rendering of any MS. into print, or typewriting and conformity with certain 'niceties' in the mode of arranging commercial terms, phrases, abbreviations, figures; careful attention to paragraphing, spaces after punctuation marks, etc.¹⁴

Typing manuals therefore provide an excellent repository of codified practice—rules and principles relevant to typewriter composition. Typists, through their engagement with the manuals, became experts at using a text composition system with limited graphic capability. The skills they acquired influenced the visual organization of everyday documents, as seen, for example, in the mapping of prescription to practice in a survey of late nineteenth- and early-twentieth-century typed correspondence in the archives of the publisher, Macmillan, and the agricultural machinery company, Nalder & Nalder,¹⁵ and in relation to business memos.¹⁶

The rest of this essay summarizes how typing manuals presented elementary typographic principles and conventions. It begins with letterforms, then the use of horizontal and vertical space and differentiation of elements within text, drawing on information from some of the most-widely used typing manuals and focusing on those elements that are particularly relevant to elementary typographic design. Tabular matter is mentioned briefly as an example of the more complex text composition that typing manuals covered. Following this, there are reminders of the contribution that typewriter composition has made to document design and to typographic education.

Document design

The character set

Most typists, in training or working in an office or typing pool, were assigned a typewriter with a single, built-in type style such as one of those illustrated [1], and most typing manuals published in the early years of the twentieth century included examples of styles of typewriter type.¹⁷

The most widely used was 'Roman' according to Arthur E. Morton, who also illustrated other typewriter type styles for particular purposes, including Medium Roman, 'a favourite type with clergymen and public speakers', and Gothic, which was 'very clear, inasmuch as it consists wholly of large and small capitals. It is much used for presswork and by engineers where a large number of special fractions are required'. 'Large Roman' was described as 'large and clear, and can be advantageously used when these qualities are a desideratum'.¹⁸ Because a standard typewriter character set was limited to capitals, small letters, punctuation marks, numbers and some fractions, and some commercial signs such as @, & and %, part of the training to be a typist was learning how to combine characters to make new ones [2].

For specialist work, such as for languages with accents, and work that contained fractions, there were machines with special keyboards, such as '64th Fraction Keyboard', described as a 'specimen of the work of the Smith Premier typewriter fitted with "gothic" type and a special arrangement of keyboard by which a large number of characters can be written'.¹⁹

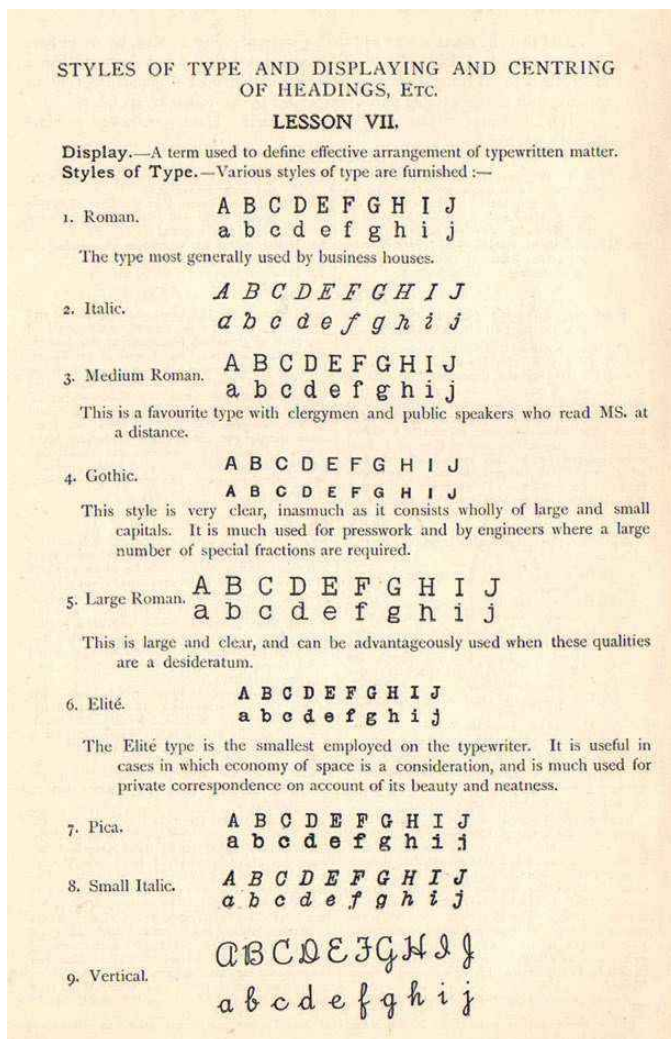
Line spacing and word spacing

Space between lines was created by a carriage lever attached to a ratchet that turned the platen. The carriage lever usually turned the platen two notches—equivalent to single-line spacing; two pushes of the lever resulted in double-line spacing and so on. A half-line space was the result of turning the platen manually by a single notch. Prescriptions for line spacing in the early manuals were rather complex for what might appear to be a relatively straightforward matter given the limited number of options. Trainee typists were urged to take a number of factors into account, including taste, cost, and document kind and length. The illustration shows different kinds of usage under single, double or treble line spacing [3].

The rules in *Pitman's Typewriter Manual* were less precise:

One-spacing should only be adopted when economy is a consideration, or when, for other reasons, it is desirable that the matter

Fig 1. Styles of type in common use at the beginning of the twentieth century. 'Vertical' illustrated at the bottom of the list was not included in later editions indicating that it was no longer expected that typed documents reflected the previous method of composition (Morton 1902: 34).



There are also many signs which are not of frequent enough occurrence to warrant their forming a part of the ordinary keyboard, but such signs may be made up of a combination of two or more characters, or by turning the platen backwards or forwards so as to raise or lower the desired character. In cases, however, where the work of the typist necessitates the frequent use of any particular sign not given on the ordinary keyboard, a mechanic should be called in and the sign in question substituted for some other character which is rarely required.

The following is a list of signs which can be made either by the raising or lowering of a given character or by a combination of characters:—

By turning the Platen a shade backwards—

The Diereis.....	~	Two full stops.
The Asterisk.....	*	Small x, hyphen and apostrophe.
The Degree sign	°	Small o.
The Decimal point	Full stop.
The Equation sign ...	=	Two hyphens.

By turning the Platen a shade forwards—

Cedilla	,	Comma.
Caret.....	^	Small v inverted.

By turning the Platen a shade backwards for the top character, and a shade forwards for the bottom one—

The Section sign	§	Two small s's.
The per cent.....	%	Small o, shillings stroke and small o.
Care of	c/o	Small c, shillings stroke and small o.
Per thousand	o/oo	Small o, shillings stroke and two small o's.

By holding back the carriage half a degree—

Diphthongs	œ, æ	o and e, a and e.
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By holding down the space bar—

Case	©	Capital C and shillings stroke.
Rupee	₹	R " "
Shares	₹	S " "
Dollar	₹	Capital S and parenthesis* marks.

* In a few machines the parenthesis marks do not answer for the dollar, in which case employ the shillings stroke.

Fig 2. Examples of 'signs that can be made either by the raising or lowering of a given character of by a combination of characters'. (Collins 1909: 32)

recommended three spaces after a full stop, two spaces after a colon and a semi-colon and one space after a comma. Other manuals, such as Morton's *Modern Typewriting and Manual of Office Procedure* preferred two, rather than three, spaces after a full stop, and this practice has continued until the present day.²³ Few authors of manuals go into detail as to why large spaces should be left at the end of sentence, though it does follow typesetting practice in the late nineteenth and early twentieth centuries (such as in children's books).²⁴ As with many of the rules that typists had to learn one cannot help thinking that incremental word spacing, particularly of the 3, 2, 1 kind, was included as a particular challenge for trainee typists.

A fixed character width

A ragged right-hand edge was an inevitable and distinctive visual attribute of typewritten documents. This feature might be described as informal, relative to books and journals.²⁵ It prevailed because justifying lines on a typewriter, though not impossible, was difficult:

should occupy as little space as possible. Two-spacing is usual, and certainly gives the best results. Three-spacing is general used only in display work, or in addressing envelopes. The lines may be separated even more widely in the case of a piece of work displayed throughout.²⁰

Typing manual authors explained how line spacing could be used to define hierarchy within a text, echoing standard typographic practice, though with much cruder vertical increments. Edith Collins provided a succinct verbal explanation:

Leave a wider line-space after the heading than employed between the lines in the body of the work; thus, if double line-spacing be employed in the body of the work, employ not less than three after the heading.

If there is a heading and a sub-heading, separate the heading from the sub-heading by a greater space than the sub-heading from the body of the matter.²¹

Sometimes, prescriptions for particular usage of vertical space were associated with a document type, such as a specification where, for example, Collins instructed: 'Employ double line spacing; treble between paragraphs and four between the main parts, or if preferred, single, double, and treble.'²²

Typing manuals contained different rules for using horizontal space between punctuation marks and in so doing created a hierarchical system of differentiation between parts of a sentence. The earliest manuals published by Pitman, for example, recommended three spaces after a full stop, two spaces after a colon and a semi-colon and one space after a comma. Other manuals, such as Morton's *Modern Typewriting and Manual of Office Procedure* preferred two, rather than three, spaces after a full stop, and this practice has continued until the present day.²³ Few authors of manuals go into detail as to why large spaces should be left at the end of sentence, though it does follow typesetting practice in the late nineteenth and early twentieth centuries (such as in children's books).²⁴ As with many of the rules that typists had to learn one cannot help thinking that incremental word spacing, particularly of the 3, 2, 1 kind, was included as a particular challenge for trainee typists.

... a completely even, or 'justified', right-hand margin is not possible with most typewriters—unless the space between the words is adjusted to ensure that the lines all end at the same point. For this purpose a draft must, of course, be typed. When retyping, the first line should be the required length and the spaces between the words should be suitably adjusted on subsequent lines so that they end flush with the first line. Obviously, such a procedure is very time-consuming and could only be recommended for the production of originals for high-class work.²⁶

Nevertheless, since the end of the nineteenth century, and driven by commercial imperatives, there had been attempts to make typewriters that could justify lines through the use of proportional character width and proportional spacing.²⁷ From the 1920s the Vartyper was one kind of typewriter used to produce justified lines; it relied on typing the text twice:

When first typed, each line must finish with a justification space, as shown on a dial on the machine. This space is adjusted before the second typing by a special device which automatically and evenly distributes the justification space so that the line ends are equal.²⁸

Many short-run book publishers, for reasons of economy and flexibility, were keen to use typewriter composition in artwork for printing by offset lithography. Justified setting was integral to this. For some, 'to publish a ragged-right book was considered to be more daring than to print with sans-serif typefaces'.²⁹ And this notion—that justified setting was 'correct' for book publishing—was a widely-held view. An example of a typewriter-composed book with a justified right-hand edge was written and produced (probably on a Vartyper) by a chemist, Cyril Tyler, in the 1940s at the University of Reading [4]. Tyler used a typewriter to compose his book for reasons of cost and because he was very particular about the setting out of formulae and equations. A note inserted in the book details that it was typed on a 'large image typewriter'—and then justified in a way that involved a second typing; superior and inferior figures and the formulae lines were, he said, added by artists according to his instructions, following an underlying grid.³⁰

Other publishers, however, were prepared to relinquish the convention of unjustified setting. The American Institute of Physics (AIP) changed from Monotype to typewriter composition in the 1950s to make optimum use of the typewriter's capability—'one font in one size with fixed "leading" but that could be fitted with a special attachment that included all the special characters needed to compose scientific papers':

There was some concern that physicists would object to the appearance of a typewriter-composed page with its typographic imperfections, unjustified margins, and limited number of type fonts. Experience has shown, however, that the quality we produce is acceptable to the majority of physicists, for whom accuracy and speed are far more important'.³¹

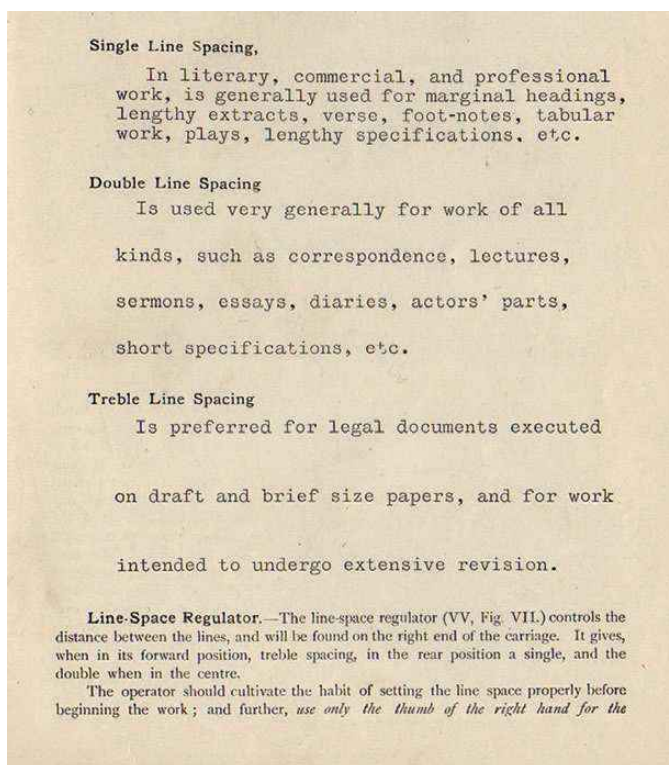


Fig 3. Recommended uses for single, double and treble line spacing. (Morton 1902: 23)

CHAPTER 11

BASAL COMPOUNDS

CYCLO-PARAFFINS

The cyclo-paraffins or polymethylenes consist entirely of methylene units arranged in cyclic form. In cyclo-propane and cyclo-butane there is some strain in the ring but the cyclo-pentane and cyclo-hexane structures are more stable because there is little strain in the ring. For this reason the two latter are of more frequent occurrence.

Examples of the cyclo-paraffins are:-

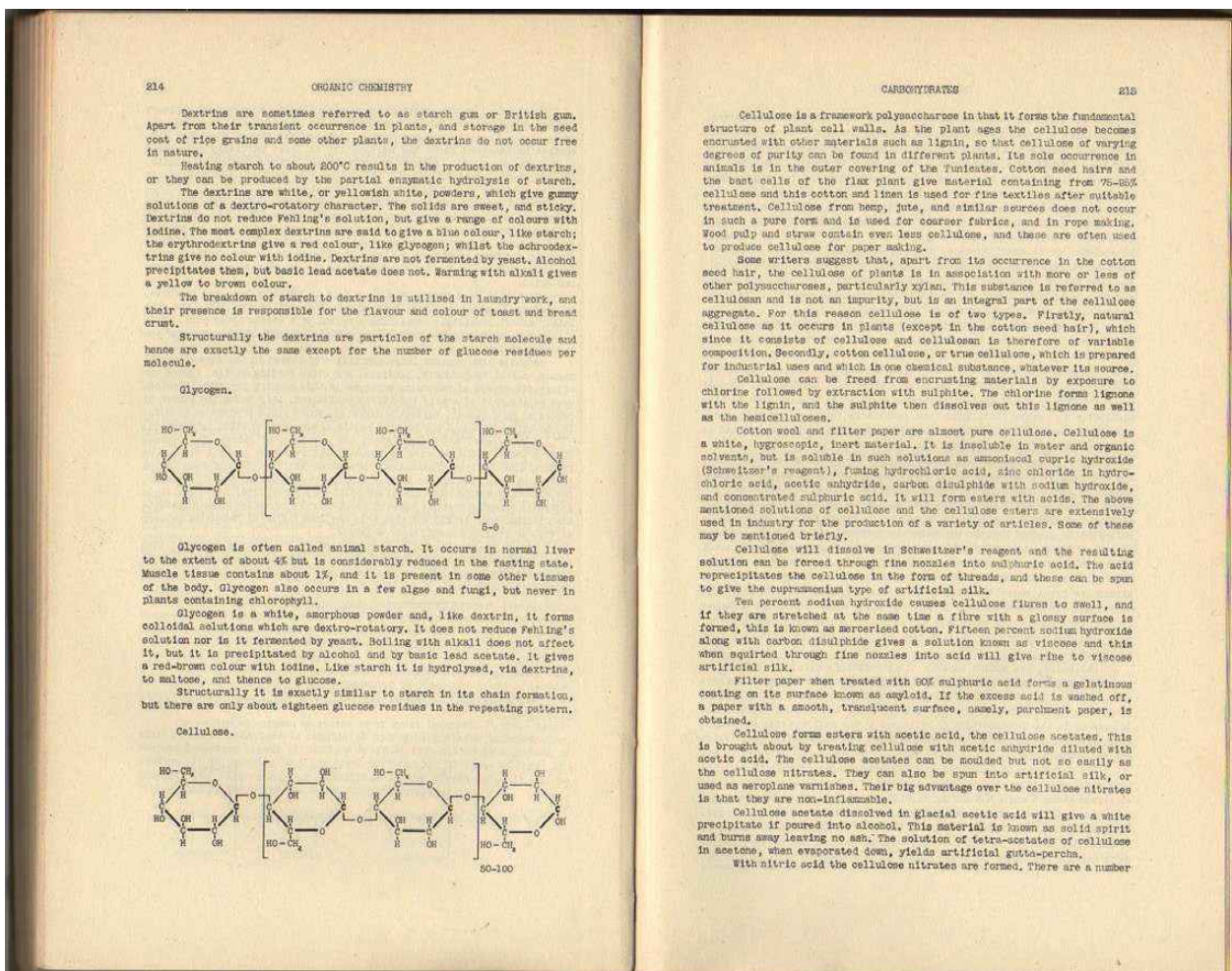
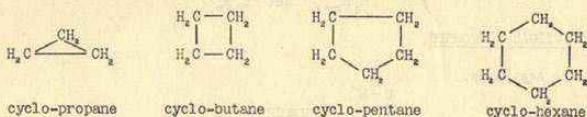


Fig 4. Detail and spread of opening paragraph indentation Tyler (1946). These examples show the justified lines that would have resulted from a second typing on a Varytper. The author decided on the large paragraph indent and, most unusually, a double-line indentation at chapter openings. (As reported to Michael Twyman, in conversation with Cyril Tyler in the 1970s).

Most typists would have accepted ragged-right setting without much ado. Though some would have acquired the relevant skills to justify lines, the additional time required to do this would have been a deterrent in everyday work. For most people, however, ragged-right was what happened when you used a typewriter, and they would have encountered it in everyday typewritten documents. As Robin Kinross has pointed out, this is likely to have contributed to the general acceptance of unjustified setting.³² Indeed, in 1952, Herbert Spencer asserted in *Design for Business Printing* that readers did not notice the difference; he introduced a page of unjustified setting in a book that was set justified and challenged his readers to notice the change.

Hierarchy and structure: ‘display and setting out’

Authors of typing manuals focused on centring and capitals (of headings and titles, in particular) to represent formality and authority. For example, Morton noted:

Title headings require a certain amount of display, or setting out, and, by exercising a little ingenuity, very effective results can be produced. The chief item in the heading should be typed in capitals, and the whole should occupy a central position over the writing beneath. If the heading consists of not more than one or two words of average length, it is as well to divide the letters by spacing after each, with a double or treble space between each word.³³

He went on to illustrate how ‘setting out’ might be enhanced by ornament and space. The acceptability of such conventions stemmed from typesetting practice in book and similar kinds of printing. Producing top-quality centred display work was regarded as a specialist skill and not something to be rushed into: ‘This kind of typing not only requires great patience but time must be spent in making the necessary calculations and in balancing the headings to the best advantage’.³⁴ The ‘how to’ in Pitman’s typewriter manual is long and detailed, and many manuals show typists’ handwritten workings-out of the spaces that they need to leave before typing a heading so that it appears centred on the page, and there are endless exercises to be done to foster efficiency.³⁵ Trainees learned the art of ‘display’, which was closely aligned with ‘taste’:

Taste in typewriting is almost entirely limited to display. This is a technical term which may be defined as being concerned with the most pleasing distribution of typewritten matter over the paper on which it is to appear.³⁶

‘Artistic setting out’ was another phrase used to describe display work, along with an assumption that this for some was a ‘natural gift’ and that others might acquire it through ‘careful study of good typewritten models and of high-grade printed matter’.³⁷ Walmsley and Walmsley continued: ‘Free lessons may be taken by studying the bills posted on public hoardings. Printers are, or should be, masters of the art of displaying’.³⁸ Many typing manuals contained exercises for creating borders and decorative elements for insertion into the text, using characters and character combinations,³⁹ and that heralded what is now known as ‘typewriter art’.⁴⁰ Competence in centred typing and display was ratified through success in typing exams, which affirmed its acceptability and promoted resistance to change by typists.

Centring and whole word capitalization were advocated in manuals until the 1970s when, with acceptance of the ‘semi-blocked’ and ‘blocked’ styles for setting out correspondence, display no longer referred only to centred typography. This was noted by Edith Mackay: “Display” does not imply that the work must be centred. First-class display work can be produced by use of both the centred and blocked style of layout’.⁴¹

By the 1970s most of the key typing manuals recommended the blocked or semi-blocked styles of layout because they were more efficient: centring headings and titles on a typewriter took time because it involved counting characters and aligning the carriage at the correct starting point. Efficiencies gained through use of ranged-left setting interested researchers James Hartley and Peter Burnhill in the 1970s, in the context of typing tables:

We would argue that the centring of items is irrational and time-consuming, both for typists and for printers, and that it would be more economical and rational if both text and tables were set 'ranged-left' or 'unjustified'.⁴²

They ran a series of tests in which typists were timed when typing centred and ranged-left versions of a simple and complex table and found that typists produced ranged-left tables more quickly and with fewer errors. They noted that when they centred text typists worked with the 'rules of thumb' they had been taught, and that while typists acknowledged that ranged-left tables were easier to do 'they did not look as nice'. This supported the view that typists' training strongly influences their opinions about visual organization and consequently about what is 'correct'. Such views were prevalent beyond office work, and centred text remained a visual attribute that many typists and lay people associated with formality, authority and correctness.

For trainee typists, along with centring, the 'art of display' included making the structure of a text clear—whether a legal document, specification or a commercial letter—and the rules in the typing manuals provided a toolkit for structuring and articulating text. Typists put this into practice by copying handwritten material using the limited flexibility and character set of the typewriter to visually translate the handwriting so that its structure and meaning was clear. The prescribed hierarchical treatment—within the constraints of machines with black ribbons only—in order of importance was as follows:

S P A C E D C A P S U N D E R L I N E D
S P A C E D C A P S
C A P S U N D E R L I N E D
C A P S
U p p e r l o w e r u n d e r l i n e d
U p p e r l o w e r

This system for denoting hierarchy appeared in most major typing manuals and quickly became standard and conventional practice, lasting until well into the twentieth century. Centring and using capital letters were regarded as correct and appropriate for posters and other documents produced by lay people. The rules became well established: in the 1960s, for example, the guidance for civil servants working in government departments in *The Design for Forms in Government Departments*, recommended and illustrated a similar set of principles.⁴³

Differentiation of elements in the text: the underscore and the bi-chrome ribbon

Typing manuals are a source of information for the rules and principles of the articulation of text at a micro level, which are referred to by printers as 'house style'. Many of the rules presented in typing manuals followed those in printers' style manuals, though with considerable time lag, and as many were produced in numerous editions, the dates of changes can be recorded. In relation to the preferred form of writing the date,

for example, the form 17 March 1967 was not prescribed as the correct form in typing manuals until the 1970s, whereas many printers' house style manuals prescribed this form from the 1940s.⁴⁴ In this context, the manuals provide a rich resource for considering the role of prescription in the evolution of written language.

In typeset text composition, bold and italic variants, and changes of typeface and type size are used for emphasis and differentiation and there are rules associated with their usage. On a standard typewriter, capital letters and underlining, sometimes combined with a second colour or additional horizontal space, were typically the means through which words, phrases and larger components of text could be differentiated or emphasized. Underlining was and remains a characteristic visual attribute of typed text, despite being a time-consuming procedure. It necessitated typing the words normally and then reversing the horizontal escapement so that the underscore could be typed below the relevant characters. Rules for the use of the underscore reflected prescription and use of italic in print: for titles of books, newspapers and plays; for foreign words and for emphasis.⁴⁵ In commercial correspondence it was the preferred treatment for subject headings in business letters, and capitals and the underscore were used for strong emphasis in, for example, legal and insurance work [5].

Typewritten material, on the whole, was monochrome, but some document types typically required the use of a second colour to fulfil a particular function. Typing in colours other than black involved either the use of coloured carbon paper, special two- or three-colour attachments, or a bi- or tri-chrome ribbon. Red, the preferred second colour, was recommended for emphasis and particular words in a text, and was referred to in *Pitman's Typewriter Manual* in 1897 as 'variegated typewriting'.⁴⁶ In the typing of plays, for example, underlining in red was prescribed to denote non-spoken elements, such as stage directions, as shown in the illustration [6]. However, as affirmed in *Pitman's Typewriter Manual*,⁴⁷ in recognition of the fact it was time-consuming to do, typists were encouraged to do the red ruling with a pen or pencil—a pragmatic solution. Later typing manuals proposed that when a typewriter was fitted with a red-black bi-chrome ribbon, the non-speaking parts in a play should be typed in red (with no underlining)—an example of simplicity of operation changing conventional practice.

Tabular matter

Tabular matter was probably the most typographically complex work that typists encountered, and where the capabilities of the typewriter were pushed to their limit, even if the machine was fitted with a tabulator—'a device for moving the carriage to any predetermined position . . . it is a great time-saver in the typing of tabular matter'.⁴⁸ Most manuals

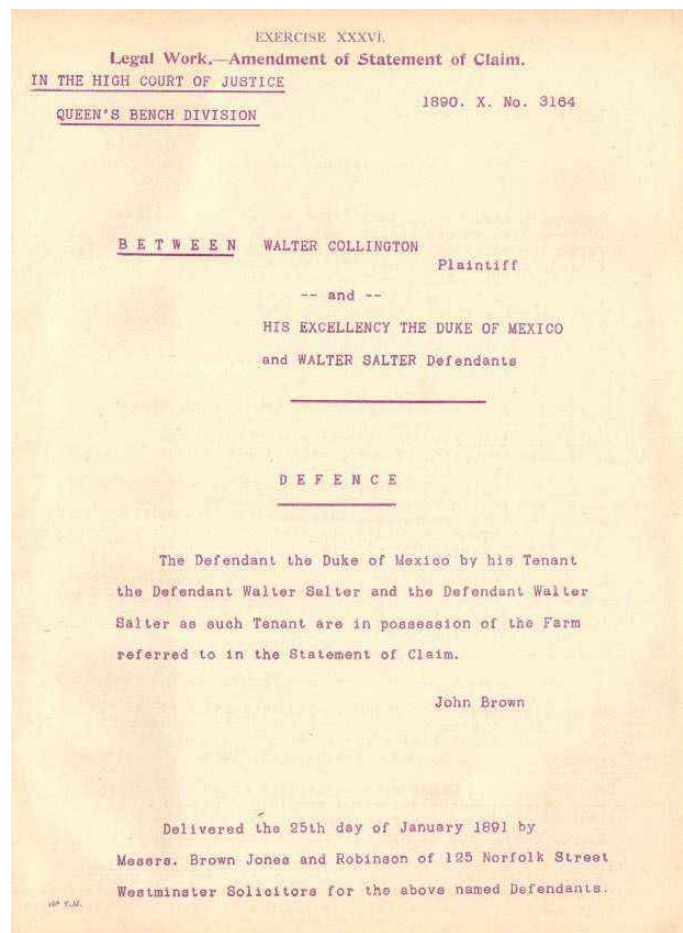


Fig 5. Facsimile example for an Insurance Office Report showing prescribed use of capital letters and underlining. (Pitman 1897: Exercise XXXVI)

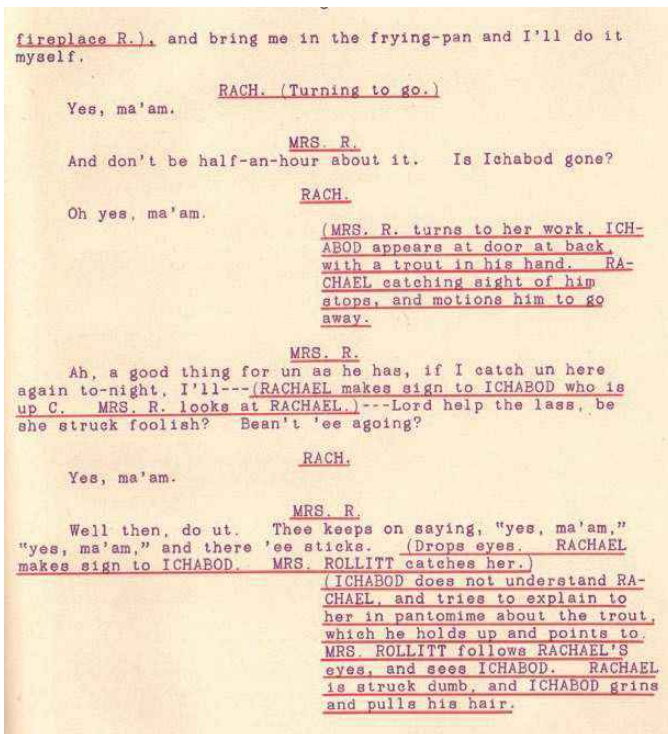


Fig 6. Detail from plate XIV showing use of red underscoring to denote non-spoken parts in a play. (Pitman 1897)

went into considerable detail about the mechanics of setting the tabulator stops,⁴⁹ but few mention matters of style. When they do, references to layout are vague: 'The work should be balanced and judicious use made of line and margin spacing'.⁵⁰ Some manuals contained facsimile examples of tabular work with headings centred over columns, leader dots and horizontal and vertical rules. Most of the manuals provided instructions to rule lines in red once the table had been typed, recognizing the challenge of producing horizontal and vertical lines using the underscore and the | character.⁵¹ However, in the tabular arrangement shown in the illustration the typist was advised to fold the paper and insert it into the machine sideways to type the vertical rules (and presumably the rotated column heading) [7]. Such examples emphasize both the cumbersome nature of the machine as well as the fiddly and inventive ways of overcoming challenges. Tabular work was time-consuming and inefficient (as noted earlier with reference to headings) but as tabular work featured in much commercial and office work it was a necessary skill—the complexity of the texts that typists had to deal with is demonstrated through the handwritten examples that typists were asked to translate into typed form as part of their training.⁵²

A contribution to the history of graphic language and document design

Typewriters have made a significant contribution to the history of graphic language and document design, equivalent to the impact of desktop publishing (DTP) in the late twentieth century.⁵³ Those who trained as typists to be able to have careers in commerce, business or the Civil Service became 'lay typographers' acquiring skills training in the visual organization of everyday documents that reflected elementary principles of typography, albeit at a basic level. As we have seen, those parts of the publishing industry that embraced typewriter composition in the 1960s employed typists in the role of compositor. Typists, who had acquired specialist knowledge about the visual organization of language through their training, made documents that reflected the limitations of the machines that produced them. The manuals that codified typing practice and skills acquisition, therefore, had considerable influence on everyday graphic language, which thereby shaped readers' views of what were the 'correct' conventions to use for articulating text. These became so well-established that in the late 1980s and 1990s when DTP became widespread, books such as *The Mac is Not a Typewriter* (1990) and *Collier's Rules for Desktop Design and Typography* (1990) emphasized the difference between typesetting and typing conventions to lay users of DTP.

The availability of typewriters and their relative ease of use also meant that unskilled typewriter composition predominated in community, underground and activist publishing in the 1970s and early 1980s, not least because it could be combined with reproduction by stencil-duplicating—a cheap and easy way of making multiple copies.⁵⁴ In this context

typewriter users were not bound by the rules and principles presented in typing manuals. The documents they produced were done so with minimal means in terms of skill and technological constraints, and that resulted in a particular visual style such as that seen in punk zines and community flyers.⁵⁵

A contribution to typographic education

Herbert Spencer was one of the first to acknowledge in print that typewriters were a useful and relevant component of a designer's toolkit. In *Design in Business Printing* (1952) he drew a connection between typewriting and unjustified setting in support of his argument that asymmetric typography was the most suitable for business printing:

Typewritten matter is always asymmetrical—on the typewriter lines cannot conveniently be centred or forced to an even length—an only on asymmetrically arranged stationery and forms can typewritten matter be accommodated, as it should be, as an integral part of the design.⁵⁶

He used letterhead design as an example. When typewritten letters were the norm it was regarded as good practice to position the pre-printed elements of a letterhead so that it was easy for the typist to match their alignment across or down the page, so that a date could be typed directly underneath the sender's address, or a reference next to its cue.⁵⁷ The fine horizontal increments of typesetting, therefore, had to be synchronized with the much coarser horizontal increments of the typewriter, and the type body sizes and line spacing had to be synchronized with the increments by which the typewriter platen advanced. Combining pre-printed matter and typewriting in this way meant understanding the measuring systems of both print and typewriters, and working out where the typewriter's 10- and 12-pitch increments coincided with traditional printers' increments to determine convenient positions for aligning text.⁵⁸

Norman Potter, in his inspirational *What is a Designer* (first published in 1969, revised and extended in 1980), reinforced the value of typewriters in an educational context. He advised students:

Come to terms with the graphic potential of a portable typewriter ... Touch-typing is a skill worth having but its possession may entail bad graphic habits: some training courses are notorious in this respect. Two-finger typing is still faster than handwriting (with a bit of practice) so for layout purposes and occasional use, this is an acceptable alternative to the proper thing. The typewriter is good for controlled experimentation because there are mechanical constraints to be respected ... they include, of course, a built in asymmetry deriving from the 'ranged-left and open ended nature of the platen movement (usually ignored by typing instructors).⁵⁹

Potter suggested that typewriters provided a quick way to think about different ways of signalling the start of a paragraph, or to structure text in reports and other

ANALYSIS of the Vital and Moral Statistics of the Sanitary Districts of the Metropolis, after Complete Distribution of Deaths occurring in Public Institutions during the Fourth Quarter of 1892.

Sanitary Areas.	Estimated Population made up of 1000	Births.	Deaths.	Annual rate per 1,000 living.		
				Births.	Deaths.	Principal Diseases.
LONDON	4,263,294	31,585	19,272	29.7	18.1	1.9
West Districts.						
Paddington	119,199	594	456	23.4	15.3	1.2
Kensington	166,721	857	603	20.6	14.5	1.1
Hammermith	100,642	698	380	27.8	15.1	1.6
Fulham	98,195	835	402	34.1	16.4	1.8
Chelsea	97,300	659	427	27.6	16.8	1.4
St. George's, Hanover Square	76,946	366	304	19.1	15.9	1.2
Westminster	55,203	322	257	23.4	16.7	1.3
St. James, Westminster	24,368	130	88	21.4	14.5	0.7
North Districts.						
Marylebone	140,799	1,055	596	30.3	17.0	1.4
Hampton	71,552	321	193	18.0	10.8	0.7
St. Pancras	234,207	1,706	1,096	29.2	18.8	1.8
Islington	324,451	2,300	1,391	28.4	17.2	1.9
Hackney	235,370	1,694	982	27.3	16.7	2.1
Central Districts.						
St. Giles	39,071	288	200	29.6	20.5	1.6
St. Martin's-in-the-Fields	14,204	48	76	13.5	21.5	2.8
Strand	24,256	145	141	24.0	23.3	1.0
Holborn	32,912	198	215	24.1	25.2	1.7
Clerkenwell	65,482	546	346	33.5	21.2	2.3
St. Luke's	41,850	456	224	43.7	21.5	2.5
London City	36,692	146	155	16.0	16.9	1.5
East Districts.						
Shoreditch	123,683	1,034	619	33.5	20.1	1.8
Bethnal Green	129,408	1,142	747	35.4	23.2	3.8
Whitechapel	74,853	704	437	37.7	23.4	1.9
Linehouse	57,480	469	335	32.7	22.7	2.2
St. George-in-the-East	45,343	421	290	37.8	25.7	2.7
Mile End Old Town	107,811	962	586	35.8	21.8	2.2
Foplar	167,857	1,451	862	34.7	20.6	2.2
South Districts.						
St. Saviour, Southwark	26,973	205	154	30.5	22.9	3.6
St. George, Southwark	59,846	534	355	35.8	23.8	1.9
Newington	116,649	997	576	34.3	19.8	1.7
St. Olave, Southwark	12,787	117	81	36.7	25.4	0.9
Bermondsey	84,440	799	400	37.9	19.0	1.1
Rotherhithe	39,459	324	191	32.9	19.4	2.7
Lambeth	277,917	2,252	1,292	32.9	18.7	1.9
Battersea	156,313	1,198	613	30.7	15.7	1.7
Wandsworth	164,003	1,026	564	25.1	13.8	1.5
Camberwell	241,465	1,837	1,043	30.5	17.3	2.0
Greenwich	169,734	1,508	837	30.9	19.8	2.5
Lewisham	74,673	456	255	24.5	13.7	1.7
Woolwich	41,376	297	194	28.8	18.8	2.4
Plumstead	91,704	658	339	28.8	14.8	2.2

Fig 7. Example of a table with vertically typed headings. To execute this, typists were advised to fold the paper and insert it sideways into the machine. (Morton 1902: 130)

documents where ‘clear graphic *sequence*’ is important. Michael Twyman extended this notion in his teaching as a means of explaining the numerous ways that headings and sub-headings could be treated.⁶⁰ In Twyman’s system of notation lowercase ‘o’ was used to represent ‘main text’ and ‘x’ used to denote headings. Capitals of each of these added a further level of differentiation, and horizontal space—for indentation or separation of elements – were used in the usual way. Used in this way typewriters provided a quick and easy way to make schematic representations of typographic configurations. Use of the system was extended by Paul Stiff who used it in lectures to students to explain the variety of ways that tabular matter could be arranged.⁶¹

Typewriters and their limitations as a method of composition had an impact on students of typography and graphic communication who, as part of their education in design for reading, benefited from knowing about the graphic capability of composition systems and designing within their limitations and constraints as a result. In this context the limited graphic capability of typewriters drew attention to the importance of structure and hierarchy. Designing within technological constraints is something that many typographers welcome and value as a means of getting to the essence of a particular communication challenge—how can text be structured with just one typeface in one size, and with crude spatial variants. When I was an undergraduate in the 1970s, manual typewriters were treated as a method of character assembly alongside hand-composition in metal type, Monotype and Intertype composition—and indeed handwriting. Student projects often involved setting out text in three or four different ways to learn how to articulate text using space and the means of graphic differentiation offered by the different methods of composition.⁶² Using typewriters revealed that it was possible to produce documents that reflected sound typographic practice and demonstrated how the graphic capabilities of a typewriter related to other methods of assembling text. This drew attention to the value of designing within minimal means, emphasizing the importance of the clear articulation of the structure of a text through the use of space and available graphic attributes. It highlighted the job of the typographer, to understand that different graphic and spatial means can be used for emphasis, differentiation, separation and connection, quotation, interpolation and so on within a text.⁶³ Such functions within a text can be fulfilled, albeit in different ways, whatever the composition system being used.

In conclusion, typewriters are a somewhat neglected part of typographic history—their technical limitations do not offer the beauty of form and subtlety of spacing that typographers yearn for. Yet, as we have seen, their use as a design tool has been recognized and exploited to good effect by many twentieth-century designers and educators. Typing manuals deserve to assume a key position in the history of graphic communication due to their impact on the visual organization of graphic language and its dissemination. They are a rich and largely undiscovered source of information about rules for organizing graphic language, particularly relevant because of their connection to everyday communication. For many, though, it is the endearing technical clunkiness of typewriters that is fascinating—as it was for archy:

colon the fact is that
the mechanical exigencies of
the case prevent my use of
all the characters on the
typewriter keyboard period

capital i apostrophe m
doing the best capital
i can under difficulties semi colon⁶⁴

In the next chapter Mehitabel unlocked the shift key: CAPITALS AT LAST.

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Notes

- 1 An early association of 'modern' with the typewriter can be found in the title of Arthur E. Morton's *Modern Typewriting and Manual of Office Procedure*. The term is used here to refer to the ubiquitous use of the typewriter 'in every department where writing is done'; and to the method through which typing was 'systematically taught and properly learned'. Arthur E. Morton, *Modern Typewriting and Manual of Office Procedure* (London: The Smith Premier Typewriter Co. and Sir Isaac Pitman & Sons Ltd, 1902), 5.
- 2 Ken Garland, *Graphics Handbook* (London: Studio Vista, 1966), 66.
- 3 Herbert Spencer, *Design in Business Printing* (London: Sylvan Press, 1952), 11.
- 4 Paul Stiff cites Spencer's use of the term 'utility printing' as the first item in his timeline: 'Some documents for a history of information design', *Information Design Journal + Document Design* 13, no. 3 (2005): 227. See also Charles Kostelnick, 'From pen to print: the new visual landscape of professional communication', *Journal of Business and Technical Communication* 8, no. 1 (1994): 91–117, in relation to business and technical communication.
- 5 See the 'Typewriter composition' supplement in Alistair McIntosh, *Typewriter Composition and Standardization in Information Printing*. Old Woking: The Gresham Press, 1965. This provides a useful illustrated account of typewriter composition in the 1960s, including comparisons of the typographic features of the IBM Executive, Justewriter, Vartypewriter and IBM 72.
- 6 Richard Southall, 'First principles of typographic design for document production', *TUGboat* 5, no. 2 (1984): 83.
- 7 McIntosh, 69.
- 8 For example, George Carl Mares, *The History of the Typewriter: being an Illustrated Account of the Origin, Use and Development of the Writing Machine*. London: Pitman, 1909; G. Tilgheman Richards, *The History and Development of Typewriters*. London: HMSO, 1964. Mares provides an extensive technical account of different kinds of typewriter in the early years of the machine's development. Richards offers an excellent, brief, general account; Michael Adler, *The Writing Machine: a History of the Typewriter*. London: George Allen & Unwin, 1973 and Wilfred Beeching, *Century of the Typewriter*. London: Heinemann, 1974 (2nd edn 1990 published by the British Typewriter Museum, Bournemouth) provide accessible historical accounts. Recent growing interest in typewriters has led to the creation of numerous websites, such as The Classic Typewriter Page <http://site.xavier.edu/poltp/typewriters/index.html> and The Virtual Typewriter Museum <http://www.typewritermuseum.org/index.html>, accessed 30 April 2017.
- 9 The Civil Service hand was developed through collaboration between the Prime Minister, Lord Palmerston and Vere Foster—who developed a script that was a rounder, more upright and bolder version of copperplate, and better

- suiting to the speed and clarity required in government work. See Vivien H. Crellin, 'Introduction', in *Writing by Rote: the Rise and Fall of Copperplate Handwriting Seen Through School Copy-books and Exercise Books from the Nineteenth Century* (Reading: Department of Typography & Graphic Communication, 1982), 9–10.
- 10 Sir Isaac Pitman & Sons, *A Manual of the Typewriter: A Practical Guide to Commercial, Literary, Legal, Dramatic and All Classes of Typewriting Work* (London: Sir Isaac Pitman & Sons, 1893), plate 1.
 - 11 The second edition of *A Manual of the Typewriter* published in 1897 was entitled *Pitman's Typewriter Manual. A Practical Guide to Commercial, Literary, Legal, Dramatic and All Classes of Typewriting Work*.
 - 12 See Sue Walker, *Typography and Language in Everyday Life* (Harlow: Pearson, 2001), 195–98, for a select bibliography of typing manuals and articles about typing from 1876 to 1981. This listing of over fifty titles and the numerous editions that they were published in underpins a detailed survey of rules for house style and the layout of correspondence. See also: Sue Walker, 'How typewriters changed correspondence: an analysis of prescription and practice', *Visible Language* XVIII, no. 2 (1984): 102–17. Good holdings of typing manuals can be found in the Bodleian Library, Oxford and the Julie Peverett Typing Collection at the University of Reading.
 - 13 Walker, 2001.
 - 14 G.A. Keeler, 'Style, uniformity and "form" in commercial typewriting', *Pitman's Phonetic Journal* 1 October–5 November (1904): 836.
 - 15 Walker, 1984.
 - 16 Joanne Yates and Wanda J. Orlikowski, 'Genres of organizational communication: a structural approach to studying communication and media', *The Academy of Management Review* 17, no. 2 (1992): 299–326.
 - 17 See Alan Bartram, 'Typewriter typefaces', *Typographica* 6 (1992): 42–59. Bartram's selection of typewriter faces includes those produced for typewriters with proportional spacing, used in IBM machines (and therefore widely available) from around 1940.
 - 18 Morton, 34.
 - 19 Morton, 50.
 - 20 Pitman, 33.
 - 21 Edith Collens *The typists' manual; a text-book for commercial students*, 7th edn, (Manchester: John Heywood Ltd, 1909), 142
 - 22 Collens, 149.
 - 23 Even as late as the mid-1970s, Edith Mackay noted that leaving one space after a full point would be penalized in typing examinations. Most designers (and design students) at this time would have regarded one space after a full point as 'correct'. Edith Mackay, *The Typewriting Dictionary*. London: Pitman, 1977.
 - 24 See Sue Walker, *Book Design for Children's Reading*. London: St Bride Foundation, 2013. Even in the 1930s Jan Tschichold felt the need to write: 'There should be no extra space after full points'. Jan Tschichold, *Asymmetric typography* (London: Faber & Faber, 1967), 40.
 - 25 As Paul Stiff remarked: 'And unjustified setting is still associated with relatively ephemeral and informal kinds of discourse. By contrast, justified setting is commonly assumed to be the norm for those document genres associated with formality and permanence'. Paul Stiff, 'The end of the line: a survey of unjustified typography', *Information Design Journal* 8, no. 2 (1996): 125–52.
 - 26 Mackay, 117–18.
 - 27 For example, the Hammond typewriter in the USA, which in the 1920s was renamed the Varityper. With such machines it was theoretically possible to produce a justified right-hand edge.
 - 28 Mackay, 233. Some attempts to produce justified lines were rather more extreme: 'Vogeltype Aligning Paper' was developed in the 1930s in the USA by Joseph Spielvogel, and involved typing on stretchable paper so that short lines could be cut, pulled to the right length and stuck down again. <http://oztypewriter.blogspot.co.uk/2011/04/typesetting-with-typewriters-literary.html>, accessed 30 April 2017; US patent Art of Reproduction 2177539, 1935 <http://www.freepatentsonline.com/2177539.html>, accessed 30 April 2017.
 - 29 Martin Jamison, 'The changeable course of typographic justification', *Scholarly Publishing* 29, no. 2 (1998): 82.
 - 30 The note, written by Michael Twyman, recalls a conversation he had with Cyril Tyler about the production of the book. A copy can be found in the A. F. Johnson Collection, Department of Typography & Graphic Communication, University of Reading.
 - 31 Robert H. Marks and A. W. Kenneth Metzner, 'Typewriter composition cuts journal costs, speeds publication', *IEEE Transactions on Professional Communication* PC-16, no. 3 (1973): 73.
 - 32 Robin Kinross, *Unjustified Texts: Perspectives on Typography* (London: Hyphen Press, 2002), 289ff.
 - 33 Morton, 35.
 - 34 William Walmsley and Elizabeth Walmsley, *Pitman's Commercial Typewriting: a Progressive Course in Touch Typewriting Arranged in the Rhythmic Method* (London: Sir Isaac Pitman & Sons Ltd, 1929), 75.
 - 35 Pitman, 1897, 24–26.

- 36 Pitman, 1897, 24.
- 37 Walmsley and Walmsley, 75.
- 38 The Walmsleys were prolific typing manual authors. They made occasional reference to the difference in character sets available to printers and to typists. For example: 'Of course, the printer has the advantage over the typist, inasmuch as he has an almost unlimited number of styles and sizes of type with which to work, while the typist is limited to the use of one style and one size'. Walmsley and Walmsley, 75.
- 39 See examples in Kostelnick, 1994.
- 40 See Barrie Tullet, John Dowling and Jodi Simpson, *Typewriter art: a modern anthology*. London: Laurence King, 2014.
- 41 Mackay, 61.
- 42 James Hartley and Peter Burnhill, 'On the typing of tables', *Applied Ergonomics* 6, no. 1 (1975): 39.
- 43 *The Design for Forms in Government Departments* (London: HMSO, 1962), 51.
- 44 *Hart's Rules for Compositors and Readers at the University Press, Oxford* recommended the form 16 May 1921 in the 1925 edition (Walker, 2001, 101–102, 106), though the Chiswick Press did so in 1913. Chiswick Press, *A Few Notes on the Style and Customs of the Chiswick Press*. London: Chiswick Press, 1913.
- 45 See Morton, 48; Pitman, 1897, 83.
- 46 Pitman, 1897, 33. Typewriter inks were of two kinds—for permanent records and for copying; that is, for when copies of documents had to be inserted into a 'copying book' or 'letter book' (Morton, 89–90). Some kinds of official work required other colours (such as greenish blue for copies of government documents (Morton, 17).
- 47 Pitman, 1897, 56.
- 48 Walmsley and Walmsley, 86.
- 49 For example, A. J. Sylvester (1913), *Underwood Typewriter Manual* (London: Sir Isaac Pitman & Sons, 1913), 47–53; Morton, 101–03.
- 50 Walmsley and Walmsley, 87.
- 51 Morton, 100.
- 52 Patricia Norrish used the term 'translatability of text' to refer to: 'the presentation of material, originally produced in a system with one range of resources, on one in which the range is different [in terms of character set and spatial flexibility]; and the production of complex material on systems designed to handle less complex material'. Patricia Norrish, *The graphic translatability of text*, British Library R & D Report 5854 (Reading: Department of Typography & Graphic Communication. 1987), 2.
- 53 Walker, 2001; Helen Colman, 'The Graphic Translatability of Text in Relation to Desktop Publishing', unpublished undergraduate dissertation, Reading, Department of Typography & Graphic Communication, 1988; Kostelnick, 1990.
- 54 Chris Treweek and Jonathan Zeitlyn, *The Alternative Printing Handbook*. Harmondsworth: Penguin, 1983.
- 55 See, for example, Teal Triggs, 'Scissors and glue: punk fanzines and the creation of a DIY aesthetic', *Journal of Design History* 19, no. 1 (2006): 69–80, with reference to punk zines; and Walker, 2001, 73, for examples of community-produced flyers.
- 56 Spencer, 37.
- 57 Spencer, 39–40.
- 58 'Pitch' in this context referred to the number of characters per inch.
- 59 Norman Potter, *What is a Designer: Things, Places, Messages* (Reading: Hyphen Press, 1980), 132.
- 60 Michael Twyman, 'Typography withoutwords', *Visible Language* 15, no. 1 (1981): 5–12.
- 61 See the example in Walker, 2001, 175.
- 62 Twyman used the terms 'intrinsic' and 'extrinsic' to refer to features that reside in the characters themselves, such as size, style and weight of letters (intrinsic) and what can be done to those characters by manipulating the space around them (extrinsic). Michael Twyman, 'The graphic presentation of language', *Information Design Journal* 3, no. 1 (1982): 2–22.
- 63 cf Potter, 132; Walker, 2001, 85–125.
- 64 don marquis, archys life of mehitabel (London: Faber & Faber, 1934), 57–58.