Spaces and difference in typography

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This response to both Peter Burnhill and Gerrit Noordzij gathers a number of threads. Peter starts by referring to the exchange between Gerrit and Robin Kinross in *Typography papers* 2. That exchange continued, in turn, a discussion around 1992–4 in Budapest, Antwerp, and London, in which I also took part. Peter then points back to a debate between Ernest Hoch and John Mountford in the late 1960s. This continued in various guises into the early 1980s, and took its final form at Reading under the hospitality of the Working Party on Typographic Teaching. The participants then included Peter, Robin Kinross, Richard Southall, and me, among others. In passing I should note that Peter's mention of Ernest Hoch points also to the more vigorous – a better word may be vicious – exchanges about type size description which took place from the late 1960s through to the mid 1980s, when they were more or less killed off in San Jose by the solidification of lead in the vocabulary of digital typography. This topic – concepts of and designators for type size – was partially exhumed in the first issue of *Typography papers* by Andrew Boag.

Peter Burnhill's 'Type spaces'

If anyone was likely to hit on the idea of measuring the accidental spoor of rising spaces in incunables, and of extrapolating from them a system of dimensional norms, it was Peter Burnhill. Thirty or so years ago at Stafford he initiated and published a series of typographic analyses of the effects of variations in spacing and configuration within typeset text.[1] And for as many years he has argued that space in typographic composition is not arbitrary and random – left over to be swept into gaps and corners – but a positive attribute, and, furthermore, that the preservation of spatial integrity between textual elements is more valuable to both producers and readers than is the pattern of edge profiles of columns of text. In 1969 he wrote, to fellow typographers, with irresistible logic:

> When a particular typographical sign ... is repeated in the context of a meaningful sequence of signs, we expect the dimensional attributes of the sign to be consistent at every appearance. If it does not appear so, we replace it by a sign of the correct sort. ... The particular sign we use to group signs meaningfully within the context of a sentence is, by convention, the absence of a mark. We call this 'not-mark' sign a word space. We could replace this sign by a particular sort of mark which we would expect to be dimensionally consistent at every appearance. The fact that we prefer to use a not-mark sign does not change the need for particular signs to be dimensionally consistent. By establishing a standard for word space in the context of a sentence, we grant ourselves the freedom to use multiples of the norm for other functional purposes. ... If we accept the argument for a standard word space and we agree that not-marks ... are signs of a particular sort, we can go on to examine the implications of the argument for all not-marks which exist in the structure of the language, from the space which occurs between individual marks, upwards.[2]

The themes of 1969 – 'dimensional attributes ... consistent ... a standard ... multiples of the norm for other functional purposes ... structure of the language' – reappear in Peter's new and inventive exposition of Aldine typography: 'unified system of dimensional control ... applied at every level of linguistic order ... modular co-ordination'. His conjectural restoration of 'in-house norms' at Aldus's

1. He wrote several of these himself, including: *Headings in text* (Stafford: Stafford College of Art and Design, 1970); *Dimensional relationships in the composition of text* (Stafford: Stafford College of Art and Design, 1970); *Comparative settings of text: the paragraph*, (Stafford: Design Department, Stafford College of Further Education, 1977).

2. Peter Burnhill, *The case for a standard word space*. SIAD/STD Typographers' Computer Working Group, Study panel 4: Rationalization of typographical conventions and terminology; 20 October 1969. Recent support came in J. H. Gumpert's account of design in manuscript books; describing the reinvention of word division by the Irish in the seventh century after centuries of *scripta* continua, he referred to their 'use of the space as its mark; since then this space has become an essential part of our writing system, and would deserve to be counted among the letters, just like the zero is counted among the numbers.' ('"Typography" in the manuscript book', *Journal of the Printing Historical Society*, no. 22, 1993, p. 10.)

press is as innovative as his measurements from enlarged images of pages are provocative. It is as if much of his inspiring work as a teacher of, and single-minded campaigner for, rational typography has led him inexorably to this topic and to these findings. My nagging doubt that his conclusions are too good to be true leads me to the following questions – innocent ones, as I have no expertise whatever in this area.

Straight off I decline the invitation, that Peter will no doubt offer me, to measure the pages myself. He may object that until I do this I am not entitled to comment. But where would the measuring end? Not with Aldus, for sure: offhand, and merely to start with, I guess that I would have to scrutinize the mathematical books of Erhard Ratdolt, who printed in Venice before Aldus; and the work of Johann Froben, the great midwife of humanist scholarship and printer to Erasmus in Basel; and also pages from Henri Estienne and probably from his son Robert too.

Did printers of this stature invent a comparable dimensional system? If not, why was Aldus a very special case? Was it the hermetic, 'in-house', character of his enterprise – a full-service organization, all typographic works under one roof – that fostered Griffo's remarkable ingenuity? Were these the conditions, rather than division of labour in a more open market, in which technical innovation would flourish? If so, when does the period of 'in-house' typographic production end? (By the 1530s or the 1540s?) Before its end, which other typographic enterprises might we also think of as having generated candidate innovators? Was Aldus's ingenuity not sustainable by his heirs? These questions cannot, of course, be answered by measuring printed images, and Peter will rightly say that answers, either way, would in any case not refute his hypothesis. I merely suggest that they give a context, and perhaps a supportive one, for his measurement evidence.

There are more questions. Given that Aldus's Greek founts were so influential (certainly the second, simplified and reduced, fount), why not also the system of dimensional attributes which they embodied? Was it because no-one could see it? And if no-one could see either the system or its benefits, what was the payoff? A display of immaculate technical skill? A demonstration, to set alongside perspective constructions in painting and sculpture, and the achievements of masons and decorators of chapels and tombs, would be comprehensible. But an *invisible* demonstration? In any case, Aldus the entrepreneur had a business to run: was intellectual satisfaction a sufficient rationale for this extra outlay? Perhaps a wide repertoire of lateral spaces could make the assembly of a typographic printing surface (the 'image carrier') easier than otherwise; or if it did not lead to easier assembly then at least to a surface capable of finer tuning. But so much easier, or so much better tuned, as to justify the investment? The second cursive Greek fount had around 450 sorts – bad enough, one might think, at three times as many as an average roman. But in addition to this, a modular dimensional system, entailing sub-modules which require a barely-modular unit (the 'very thin', 1.5 times one-twelfth of an em), *and* kerning descenders? Too much of a good thing? (I imagine some friction between Griffo, the geek in the shed, and Aldus, calculating margins.)

What was it in Lascaris's text, and in any other under the Aldine imprint, that warranted such fine degrees of articulation? Was there

anything in readers' envisaged use of the text that called for it? Aldus's dimensional system appears to contribute, in principle, to the visual structure of the printing surface. A contribution may have been specifiable but its result may not have been salient – perhaps not even perceptible – to readers. This means that it would not have been available to readers in the ordinary course of the various mental and bodily activities which constitute reading. So it could have contributed little or nothing to readers' attempts 'to get at the meaning of the matter', to use Peter's words.

Again, none of these questions refute Peter Burnhill's hypothesis – that within the first decades of printing there was invented a 'unified system of dimensional control', capable in principle of application at 'every level of linguistic order'. I admire his effort of reconstruction, and see how instructive it is for present-day purposes – not least to encourage the search for 'a manageable and unified system of dimensional control'. While I am sceptical about his hypothesis, I can think of no other exchange on typography in which I would be so happy to be proved wrong.

Gerrit Noordzij's writing and typography

Gerrit Noordzij argues[3] that the difference between typography and handwriting is at best obvious, and that the banal facts of this difference have distracted attention from more interesting facts: 'the secret correspondence between typography and handwriting', and 'the coherence of all writing'. He questions the 'comfortable view' of typography as 'writing with prefabricated characters', and asserts that 'there is little to understand about typography and type design once we understand writing'. But 'much of what has been taught and believed for centuries obstructs this understanding' – and one of these obstructions is 'the dogma of typographic autonomy'.

By 'writing' Gerrit means skilled handwriting, 'the construction of writing, building characters with pen strokes.' (He uses the two words – 'handwriting' and 'writing' – interchangably.) In a soft interpretation of his argument, we can learn much from handwriting about how typefaces were designed in the past, and about how they should be designed now. He points to the importance of a kind of practical research, the promise of which is: if we look hard enough, and tread in the footsteps of past designers, setting ourselves the problems which they must have faced, we can not only reconstruct the shapes of letters from the past, but we can recover the mental pictures which guided their makers' intentions. And in doing this, we at the same time acquire formidable practical skills.

In a stronger interpretation, Gerrit claims that his opponents have merely paid lip-service to the idea of learning about type design from handwriting, that they have not grasped it with the tenacity which is needed for genuine discovery, and so do not understand practical research: 'The construction of writing is beyond the scope of scholars.' The orthodoxies of paleography, he says, along with the dogma of typographic autonomy, continue to prevent us from appreciating the power of his concepts – 'running or interrupted' construction, con-

3. In 'Reply to Robin Kinross', *Typography Papers*, no. 2, 1997; but more especially in his bulletin *Letterletter* (published by ATypI); here his quoted words are mainly from *Letterletter*, no. 13 (no date, but c. 1993).

trast made through 'translation or expansion' – and how well these concepts explain 'cursive and text scripts'.

For a still stronger interpretation than Gerrit's, writing would have to mean something more than building characters with pen strokes or with any other tool. If the stroke of the pen is Gerrit's microscope upon history, a parallel history could be written through a larger lens: as a history of the articulation of textual differences through the development of a system of visual contrasts, contrasts which are registered, and are only visible, against a norm. And if this history was written from a strictly functional view then the particular ways in which textual differences were marked by graphic signs and spaces would not matter. As long as those differences were visible, recognizable, and interpretable by readers, it would not in principle matter how they were designed, nor what they looked like. But typographers have never seen it that way: they have always wanted to assert the value of some kinds of differences rather than others. They have done this by appealing to history, to tradition, or to what they see as the prevailing visual culture. When Stanley Morison asserted 'that no German understands roman typography … is proved beyond all question by the fact that they do not use small cap[ital]s, do not use italics for the purpose of articulating the text',[4] he was appealing to typographic conventions established by the middle of the sixteenth century and canonized in his own histories of the prevalent visual culture. Morison complained that their text typography in *Antiqua* was inarticulate; but his only evidence was that the Germans used, as he saw it, the wrong kind of difference markers – instead of differentiating a phrase with italic letters they used letter-spacing.

A quick sketch for a macroscopic history of writing – alongside Gerrit's microscopy – begins with the development of repertoires of graphic marks: the starter set of marks, a unitary alphabet ('capitals'); a supplementary set to articulate the verbal string, marks of punctuation; a second set of alphabetic marks, the small-letters, used in combination with capitals in a dual-alphabet system; ways of orchestrating stylistic variants of the alphabet to signal the status of different kinds of text (the 'hierarchy of scripts'[5]); a discrete set of numeric marks, governed by a number system ('Arabic' numerals).

In parallel, there is the development of conventional configurations of marks: writing horizontally, from left to right; the graphic list (the first 'book', so called, was a list of property ownership); sequential arrangement of continuous text (and principles of division of the text string, e.g. where and how to break lines); word division (e.g. spaces between words); the graphic table (the matrix); 'diagramming writing': displaying relations of both sequence and concurrency through branching formats (e.g. genealogical trees); diagramming topography (maps).

The repertoires of marks and conventions for arranging them were established before mechanical writing. What happened in the next 500 years? According to Peter Burnhill, a co-ordinated system of dimensional norms for typography. Certainly, typographic measurement systems. Otherwise, not that much. Conventions of graphic arrangement were systematized; colour was harder to produce in print, so typographers eventually developed new resources like the bold letter. Once the graphic resources of writing had been fixed in metal, type

4. His letter to Walter Lewis, 25 July 1934, quoted in: Nicolas Barker, *Stanley Morison*, London: Macmillan, 1972, p. 335.

5. 'One of the outstanding characteristics of Carolingian writing … was the careful distinction of different styles for different purposes … square capitals were used for book headings, rustic capitals for explicits, uncials for chapter headings, tables of contents, and first lines, half uncials for second lines, prefaces, and the like. Thus there was established what has been called the hierarchy of scripts.' (B. L. Ullman, *Ancient writing and its influence*, New York: Longmans, Green, 1932, p. 113).

designers set about making endless variations on a more or less settled theme. They adapted their work to the changing technologies of manufacture, to changing texts (newspapers, timetables, dictionaries), and perhaps even to the changing needs of readers – but it is hard to find evidence for this. The attribution of cultural values to letters meant shifting ideas about their appropriateness for formal and informal use, and about script as an expression of political power or as an artistic manifesto.

Gerrit talks of writing in white. Does anyone still think that type designers make the black marks, leaving typographers to arrange them in white space? When we read Eric Gill's letter to Stanley Morison about trial proofs of Perpetua and hear that 'the space between letters wants alteration, but, as you say, that can be done independently of me',[6] we learn that Gill was not a type designer in the present-day sense. What he did was draw sets of letter shapes, which were then passed on to someone else (a team of anonymous artisans at 'the Works') to turn them into typefaces. This also tells us something about the division of labour in English typography between gentlemen and workers.

I once invited students to answer this question: 'Who needs new digital typefaces?' From those few who did, the answer was: type designers and type sellers. Perhaps it seemed to them that while it has never been so easy to design new typefaces, so it has never been less necessary to have more new typefaces. It would be good to have answers to that question from type designers. Are they still trying to design device-independent typefaces which are robust over a range of resolutions, and which have 'intelligence' (such as automatic optical scaling and context sensitivity)?[7] Their explanations would offer a late riposte to the inane 'Type 90' slogan: 'By 2000 everyone will have a favorite typeface'.

Gerrit complains of 'the dogma of typographic autonomy'. Is this dogma as banal as he says it is? And is the idea of 'writing with prefabricated characters' as comfortable and as uninteresting as he thinks? On the contrary. Most of the obvious differences between handwriting and typography are relative.[8] To be autonomous a difference would have to be absolute. Prefabrication is such a difference. The writer, or letterer, produces inscriptions. This word points to an absolute difference between writing (constructing the shapes of characters with pen strokes) and typography (writing with prefabricated letters). The writer knows, or can know, the precise content of the text to be written before work begins, before the letters are made and their spacing determined. And even if the overall graphic form of the inscription is decided before work starts, the writer is still free at any time to make adjustments to both the shaping and the spacing of letters.

Type designers cannot do this. Typefaces are designed and manufactured before texts are written: both the shaping of characters and their spatial relationships has to be fixed in advance. Unless they design a typeface exclusively for a particular and known text, type designers cannot predict either the content or the length of future texts which might be composed in the typeface which they are designing. They cannot predict with any certainty the sequence of characters in

6. Letter of 16 June 1928, quoted in: Nicolas Barker, *Stanley Morison*, London: Macmillan, 1972, p. 233.

7. Richard Southall once described some of the difficulties in designing fonts for electronic texts – fonts with an x-height of 5–9 pixels, for documents to be read on screen. He argued that font manufacture for such applications should deal with the appearance of letters and words rather than with their shapes, but that then-current outline technology could describe only shapes, not appearances; and we still have no theory, let alone a computational theory, which satisfactorily relates shape to appearance. ('Too gaily hopdancing: interpretation and control in 20th-century type manufacture', lecture given at Reading for the Institute of Printing, November 1993).

8. The following outline owes much to past and present colleagues at Reading who have no responsibility for its roughness.

those texts; all they can know is the average frequencies of occurrence of characters (and character pairs, and so on) in particular languages.

Type designers and manufacturers supply prefabricated character shapes along with recommended spatial relationships for those shapes. More precisely, they supply spatial relationships for the characters of the small-letter alphabet in running text for 'average' readers in 'normal' circumstances. There is a lot of guessing there. They have to make the best compromises they can, from limited information. The stroke of the pen does not fill all the gaps in their information. Typographers are still further removed from the pen's track. They spend their time specifying arrangements which together constitute part of the specification for the image carrier which Peter Burnhill wants us to hold on to. A complex text can be, and may have to be, designed in some detail before a typeface is chosen, although the properties and functional requirements of suitable typefaces can be specified in advance.

From this macroscopic view, typography is far more about configuring and positioning characters than about the shapes of characters. A theory of writing and typography based solely on the construction of letters, allied to a view of reading which looks no further than 'legibility', is like traditional linguistics in which nothing much of interest happens outside the sentence.

From the telescopic perspective of information design the challenging problems today are not connected with what type designers and typographers do or do not do. This is because most designing is done by people who are not professional designers and who get no help from professionals. Some digital typographers have tried to solve the problems which non-designers face by devising 'automatic typography' systems which do the designing work. The aim of these systems has been to design documents as they are written. The idea is to let authors get on with their writing, and let the designing take care of itself: so all that authors have to do is declare, as they write, that *this* bit of text is a chapter heading, and *this* is a list, and so on. Realizing the idea means that a 'meta-document' has to be designed before any real document is written. Designing a meta-document entails prefabricating a whole repertoire of graphic formats for text elements ('chapter heading', 'list', 'sub-heading', 'caption', and so on) which visually represent the whole range of text elements which may occur in any text which has not yet been written.

This is different from what professional typographers normally do: design texts after they have been written. Here there is an obvious parallel with lettering and type design: the fifteenth-century revolution in 'automatic typography' systems led for the first time to sets of letters, and their spatial relations, being designed before the texts in which they would be used were written.

Gerrit demonstrates that handwriting can explain much about typefaces. I agree with him that the separation of type design from handwriting weakens our understanding of both. I see why he wants to bring them together again. But in the next breath I want to reassert the autonomy of typography by saying that it is more than handwriting, however skilled and well informed by history.

Some people have looked for a word which covers both hand- and

9. Michael Twyman, 'Criteria for education in *Schrift und Leser*' (*Typographic* [Canada], vol. 11, no. 3, 1979, pp. 9–12).

machine-writing, and which recognizes the connections between them. In this sense they, like Gerrit, wish to dissolve the separation between writing and typography, to acknowledge 'the coherence of all writing'. Years ago Michael Twyman looked for an English word that had the sense of the German *Schrift*, which is 'more general in meaning than the English words "writing" and "typography"... it covers all aspects of verbal communication in its graphic forms. I use the word *Schrift* here as synonymous with design for reading.'[9] There is no English word which offers the sense 'design for reading', so a few English-speakers use the word typography to mean just that. Others think that 'typography' is best left alone, and they use 'information design' instead. A continuing problem for them all is that just as 'writing' and 'typography' are often trivially understood, so is 'reading'. Gerrit is confident that once we understand writing, we will understand typography. Here he is quite wrong: we will not understand typography until we understand reading.