

e t a i o r s n u c m b w h d l p g f y v k q x j z

WEDGE

Design Rationale by Bruce Rotherham
(1926–2004)

‘Wedge’ is the outcome of a search for the essence of a formal alphabet for text—for 26 letters of the simplest form consistent with ease of reading.

the study began in 1947 when as a student of architecture i came upon the ‘universal alphabet’ designed at the bauhaus by herbert bayer in 1927, consisting of 26 lower-case letters (arguing that formal capital letters were redundant, being more difficult to read in text and no different in pronunciation). but why was this alphabet, so clear in its geometry, virtually unreadable?

Also at that time there was a growing tendency to set the text of art and architectural publications in sans-serif type because of their clean lines and association with new beginnings. It occurred to me then that there must be a face that was as elementary as the ‘universal alphabet’ but that would be as readable as the recognized book faces.

Pondering on what made favoured text faces readable a number of considerations acting one on another soon became evident: form, formation, perception, lower-case-ness, combine-ability, distribution of letter area, percentage use of each letter, spacing, greyness, familiarity, historic precedence, acceptable change, geometry, contrast of forms, avoidance of static forms, the eye’s travel, movement, nature of termination of strokes, function of ascenders and descenders, b-q-x-height, overall character, paper surface, printing process, (and the list has been ever growing). The design task this set in motion was to try to understand and order these influences. (The unreadability of the bauhaus alphabet may now be explained by the apparent non addressing of some of these factors.)

As formation by line, brush and chisel modified Phoenician symbols til flowering in Roman Capitals, so the pen modified the same symbols culminating in Humanistic Cursive as a model for our Italic faces, and Humanistic Minuscules for our lower-case text faces. I have come to believe, some of the early Printers’ fonts got nearer to a basic face than more modern fonts as they have greater variation in x-height contributing to word shape, and a range of weights to the termination of strokes (from sans-serif to exaggerated serif, often one sided) arguably not serifs but an essential part of the letter. However, it was not long before Printers’ faces added symmetrical serifs of similar size to many straight strokes: while these provided for wear on the part of the type most exposed to imprinting pressure and cleaning brush damage, contributing to the nugget(ty) shape of early Printers’ serifs, and the rounded serifs of later fonts, they may have masked an important function of letter shape: When lower case letters are assembled into words, their tops form an undulation line, where the shape of the word (more than the individual letters) can be recognized; it follows that characterless tops to letters would not contribute to readability.

On lower-case-ness, it is noticeable that the letters most used (e, t, a, i) have developed as lower case forms far more completely than letters less used (like v, w, x, z: still virtually capital in form and detail), and the two most used (1 in 5 are either e, t) are really neither serif nor sans-serif, but are very precisely proportioned shapes (or areas) with the ability to combine when forming words and distribute the ink evenly within the word; at the same time they have no superfluous detail and yet have much individual character; they are peculiarly type shapes, no longer formed by hand, but copied from drawings. As the characteristics of these two letters are adhered to in all favoured text faces, it seems reasonable to adopt them as the basis of the sought alphabet, and use them as models to return to when proposing change to less developed letters.

Other letters with average percentage use (r, n, m, p) have lower case form but retain detail of pen formation; one can but surmise what part this detail plays at the minuscule sizes of text in the context of word and phrase and look for the equivalent in the single Printers' form (as found in the point of 'e', the foot of 'b', the top of 'q').

In the absence of influence on geometry of chisel, pen, punch-cutting tools or printing press wear, where shape is defined by a drawn outline and mechanically manipulated by pantograph or computer, I have adopted two disciplines to create a design framework within which to handle the influences: a progressing scale of preferred dimensions based on the golden proportion to reduce the dimensional decisions on each letter from an infinite to a manageable number, and a variable shape to control detail based on the wedge. The wedge is found in its simplest form in the top of the 't' (of all favoured text faces). The wedge is non-symmetrical. The eye rests on its centre of gravity, not its dimensional centre. There is a visual movement within the form; it is not static. It also occurs where the eye is understood to travel, along the top of words where most detail lies, in ascenders 'l, b, h, k, d' and 'i, j, u' (and also v, w, x, y in 'Wedge'). It is echoed in the taper from thick to thin of curved letters. But most convincingly it occurs in all major lettering of the past (pre Phoenician Cuneiform, Chinese calligraphy, Aramean derivatives, Irish Anglo-Saxon Round Hand, to name a few) where the wedge is used to balance the forms within themselves and with their neighbouring characters.

Static form in individual letters on the other hand interrupt the eye's travel by drawing attention to themselves. A 't' in the form of a cruciform (t), occurring so frequently, is death to any text face. Other potentially static forms are 'v (w) x' and the even-weight sans-serif letters 'i, l, o, y'. Similarly, new forms or out of character forms may interrupt the eye, which means that the search for lower-case-ness of undeveloped letters may have to take place over time.

WEDGE the text face is the outcome of decisions taken within the Wedge design framework at any given time. Wedge '58 and Wedge '93 are generated in the same way, differing mainly in the view taken of the role of left-hand and right-hand side of letters, but the character of the face appears to have changed. The 'Wedge framework' is intended to allow the development of the lower case alphabet by means of small controlled changes, drawing on precedence when necessary, including the period before the appearance of Printers' fonts; there is the possibility that the technical labyrinth between drawing and printed image may have fixed errors continually repeated.

There are several very beautiful text faces often favoured for one use or another; it seems unlikely there is a 'universal alphabet' for the printed page, in the way the Romans found one for stone.

PERCENTAGE USE OF EACH LETTER

latin

e	12.2
i	10.8
u	9.0
s	8.8
t	8.6
a	7.4
n	6.8
r	6.3
o	4.8
m	4.5
c	4.3
d	3.9
l	3.0
p	2.5
q	1.7
f	1.3
b	1.2
g	1.1
x	.8
h	.7
k	.1
y	.1
z	.1

english

e	12.0
t	8.4
a	8.0
i	7.5
o	7.4
r	6.6
s	6.5
n	6.4
h	5.0
d	4.0
l	3.8
p	3.0
u	2.9
c	2.8
m	2.5
b	2.4
w	2.4
g	2.3
f	2.0
y	1.5
v	.8
k	.8
q	.3
x	.3
j	.2
z	.2

The dimensions of the Wedge letters were based on the Golden Ratio.

PROGRESSING SCALE OF PREFERRED DIMENSIONS

based on dividing a line into two parts, so that the smaller part to the larger part is in the same ratio as the larger part to the whole.

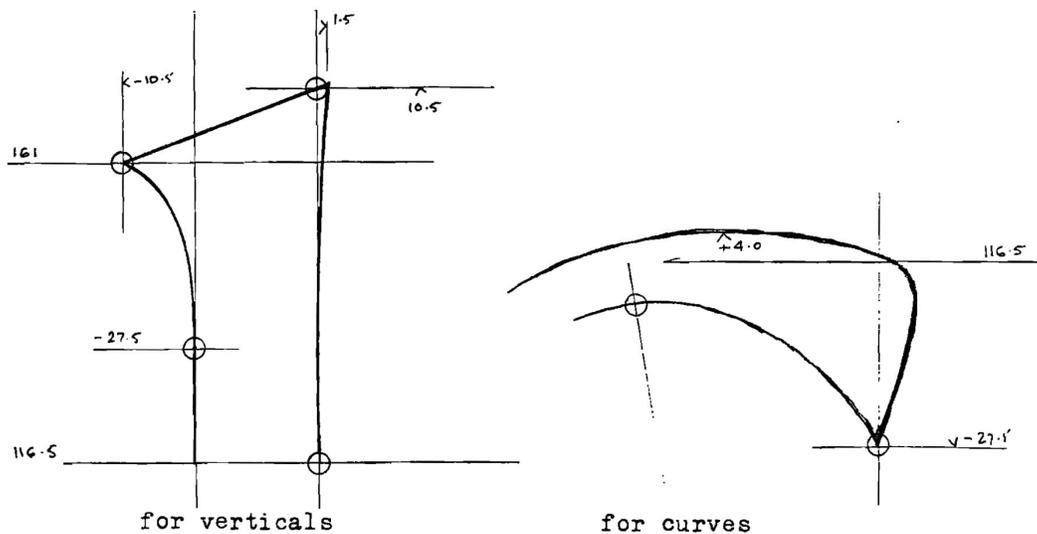
thus $\frac{a}{b} = \frac{b}{a+b}$ or 1 : 1.618034

(also $\sqrt{.618034} : 1 : 1.618034 : 2.618034 : 4.236068 : \dots$) $\sqrt{.381966}$

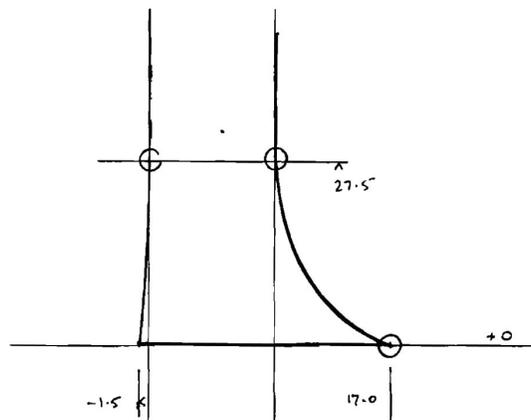
For drawing size let 1 = 72mm and 1.618034 = x-height giving:

Preferred dimensions:	116.5 (116.498)	= x-height
(each dimension	72.0 72	= 'e' cross stroke
divides into the	44.5 (44.498)	= ascenders and descenders
two below)	27.5 (27.502)	
	17.0 (16.997)	
	10.5 (10.505)	= positive stroke terminations
	6.5 (6.492)	with linking or directional
		function
	4.0 (4.012)	
	2.5 (2.480)	= optical allowance for curves
	1.5 (1.533)	+ embryonic terminations
(.95)	1.0 (.947)	= optical correction for square

'WEDGE' TERMINATION OF STROKES



'WEDGE' FOOT-LINK DETAIL



THOUGHTS ON EACH WEDGE LETTER

Heading samples used for comparison:

(1) Wedge, (2) Roman capital, (3) Roman handwriting 1st c. AD, (4) Carolingian Minuscules 9th c., (5) Humanistic Minuscules 15th c.; *Early type faces:* (6) Sweynheim et Pannartz (Subiaco) 1464, (7) Johannes Oporinus 1543; *Typical favoured text faces:* (8) Garamond, (9) Baskerville, (10) Perpetua, (11) Times 1932, (12) Gill Sans 1928, and finally (13) percentage use.

e E f e e e e e e e e e 12.0%

A formalization of the two stroke Humanistic Minuscule letter, with high cross bar so as not to be confused with 'o', a sharp pointed eye not to be confused with 'c' and sharp inner angle replacing written curve, the weight of the foot coming well under (with possible link action) it is a single form, without serif, drawn not written, clear, distinct, economic, its area well balanced.

t T I τ τ t t t t t t t 8.4%

A natural yet amazing transformation from a symmetrical capital to an asymmetrical lower case form. The one sloping side of the wedge top replaces four profile lines of the alternative static cruciform head. The sweeping foot, replacing the static capital foot, infers a linking. Again, it is a single form, without serif, drawn not written, clean distinct, economic, its area well balanced.

[e and t, apparently fully resolved, are models for other letters.]

a A λ a a a a a a a a 8.0%

Another much used letter greatly transformed by writing. If the bowl, representing the left-hand and cross bar of the capital, increases to x-height it forms an Italic 'a' (similar to q, g, c, o); when the bowl is smaller and the right-hand stroke turned over, the letter becomes distinct from all others—probably accounting for its place in text alphabets. In many favoured faces the top curve comes well over finishing with a swelling. Is this a reference to the original diagonal of the capital? Are some letters identified by weight in their top left (t) while others not (e)? Is it simply a balancing of letter form? Accepting all three reasons, the Wedge 'a' terminates with the wedge-detail for curves. The (right-hand) wedge-foot-link is used to resolve bowl and stem into one flowing detail (as point of 'e').

i I l l í í í í í í 7.5%

The Wedge '58 'i' seemed to evolve naturally applying the wedge-detail to the top of the x-height stem and the wedge-foot-link to the bottom, giving a curved right-hand side to the letter, required to keep it optically upright; the dot presumably identifies this important vowel from the host of stems of other letters. Wedge '93 'i' make two changes: the dot is elliptical, a miniature 'o' outline, set slightly to the right on the tangent of the curve of the stem (a central circular dot being static). Secondly, the size of the dot and the wedge below it have been reconsidered (here there is room for experimentation, perhaps a smaller dot as in Jenson, with offset printing the dot will not wear away).



O and I, circle and straight line, the basic geometry of the classical alphabet, are both intrinsically static. To overcome this in 'o', the taper from thick to thin, with weight bottom left and top right (as in 'e'), distributes the letter area evenly in 'oo'. To achieve this weight distribution the Wedge 'o' is outlined by two ellipses with a common centre: the inner major axis leaning backwards as in the Roman capital, the outer leaning forward to the diagonal of the 'n'.



'r' together with 'n' are the two most frequently used letters to retain detail of pen formation. The search is for the single form Wedge counterpart. The trial paragraph of Wedge '58 revealed two fundamental errors: that all letters would have weight bottom left and top right, and secondly, that one could remove detail without reconsidering form; these made 'r' too much like 'c' and 'n' too much like 'o'. In Wedge '93 'r', the stem foot is sans-serif, with only slight swelling to overcome optical encroachment of the white surrounding it. Where arm meets stem, the inner angle is sharp (as in e, f, t); the softer lower-case-ness is provided by the upper curve, with the arm ending in the wedge-detail for curves. The external angle of stem and arm has only slight wedge formation, just enough to resolve the form (if a full wedge detail is added, as if terminating the stem, the letter is given an Irish-Anglo-Saxon Bound Hand appearance). With these modifications, the pen detail of existing 'r' and 'n' is replaced by a crisp meeting of a straight and a curved shape.

[e, t, a, i, o, r occur as frequently as the remaining 20 letters. While the subtlety of their resolution, if ignored, is likely to preclude an alphabet from favour as a text face, so the remaining 20 letters if not in character could by distracting make a face unacceptable. Where letters have developed least the danger of proposing new forms is greatest and changes may have to be tested in use over time.]



Typical 's' form, with wedge-detail for curves at top and sans-serif at bottom replacing the capital serif often used for this letter.



As described in 'r' above, with the right-hand outline a continuation of the upper curve til joining the wedge-foot-link detail, creating a continually curving right-hand member. Again, a crisp meeting of a straight and a curved shape.

'Wedge' has been designed with short ascenders and descenders, like Times Roman and many sans-serif faces, giving a big body to the letters and firm lines of text. (This was a subjective choice and could be re-examined). A smaller bowl for 'b, d, p, q, (h, k)' has been adopted, not only to differentiate these letters from 'o', but to retain a recognizable proportion between bowl and ascender/descender.

Thus x-height is replaced by b-q-x-height (found in some early fonts). The b-d-p-q bowl has an outer ellipse which is a slight reduction of the 'o' outer ellipse with the same axis. The inner ellipse however is wider and non concentric, as only part of this construction is used when combined with ascender or descender. The construction for b-p is rotated through 180° for d-q.

h H ꝛ h h b h h h h h h 5.0%

The ascender has a wedge top and sans-serif foot as 'r'. The curved member is b-height; it has a wedge-foot-link detail, and joins the ascender similarly to the second loop of 'm'.

d D D d d d d d d d d d 4.0%

'd' has the b-d-p-q bowl which combines with the wedge-foot-link detail of the ascender to form one flowing detail as in 'a'.

l L l l l l l l l l l l 3.8%

The lower case 'l' is the nearest letter to a straight line. The slight offset to the right of the top wedge detail, and to the left of the wedge-foot-link detail are adjustments to keep the letter optically upright and unbent.

p P p p p p p p p p p 3.0%

'p' uses the b-d-p-q bowl, but where it meets the top of the descender it is detailed as 'r' and 'n', for the same reasons. The descender is unstressed, as bottom left of 'r, n, h, k, x'.

u V V u u u u u u u u u 2.9%

'u', the second most frequently used letter in latin, is the pen form of the formal incised 'V'. The pen entry forms a natural wedge detail (seen above in the 'u' of scribes, early printers, Garamond and Bembo), avoiding the hard horizontal line of flat topped serifs. This top detail is a model for the group 'u, v, w, x, y'. 'Wedge' proposes some redistribution of area of the right hand wedge, a reduced wedge and slightly higher stem, adding to the general undulation of the top of a line of letters. The right hand foot is resolved as 'a'.

c C C c c c c c c c c c 2.8%

The most natural curved letter, unchanged since Roman times, also a pure wedge curve.

m M M m m m m m m m m m 2.5%

Formally a very difficult letter in Wedge (having abandoned the two piece 'n' of the pen it is no longer possible to add a third stroke to make an 'm'). However, the right-hand loop seems to flow naturally out of the central stem; I believe it is necessary to complement this with a similar curve to the inside of the first loop. The outer left-hand profile is available for adjustment of the letter's appearance: using the wedge-detail to keep the letter familiar, or a simpler form based on 8c. uncials or the bauhaus 'm' may be acceptable in time. In Wedge 'm, h' are one group and 'n, r, p' a different group, they are drawn forms not pen forms.

b B ß b b b b b b b b 2.5%

'b' combines the b-d-p-q bowl with ascender without adjustment. The bottom left-hand detail is found in many fonts. It is one of the natural lower case letters of tilted 'o' alphabets.

W W W W W W 2.4%

Curved as argued in 'v', with left-hand and right-hand top details differentiated as group 'u, v, w, x, y'. The centre top is sans-serif being the mid choice between serif and pointed.

g G G g g g g g g g g 2.3%

The flourish of the 'g' tail in Humanistic miniscules was almost completely below the line of letters, the bowl being near 'o' size. To squeeze all this sweeping form into a letter of short descender dimension seems to result in unnecessary complexity. 'Wedge' unwinds most of the flourish and increases the bowl size, resulting in a kind of Italic letter with Carolingian overtones.

f F f f f f f f f f f 2.0%

The curved top comes well over as in favoured text faces, combining comfortably with 'o, e and a' and forming ligatures with 'l and i'. The wedge detail is employed to eliminate the static crossing of the (cross bar).

y Y Y y y y y y y 1.5%

Top detailed as group 'u, v, w, x, y', tail detailed as left-hand foot of 'x', though could equally be wedge-curve detail.

v V V u u v v v v v .8%

'Wedge' finds 'v' and 'w, y' out of character with 't' (more in character with cruciform 't'), too static, the white inside the letter too pinched, and the white between vv too generous. To overcome all these 'Wedge' proposes to curve both sides and round the bottom point, somewhere between 'u' and 'v' as in many Italic faces. The top details as proposed for the group 'u, v, w, x, y'.

k K K k k k k k k .8%

An old pre Phoenician symbol not used in Latin and therefore not modified by pen to any extent. 'Wedge' uses the b-height for the upper sloping stroke and softens slightly the lower stroke to infer a linking (also in 'x' and 'R').

q Q Q q q q q q q q q q .3%

'q' combines the b-d-p-q bowl with descender without adjustment. Another natural lower case letter. The one-sided wedge ending to the descender is consistent with use of non static form, and occurred in early fonts.

x X X x x x X X X X X X .3%

X marks the spot. The ultimate static form, especially when sans-serif or with four equal serifs. Wedge attempts to overcome this by recognizing the four different functions of the stroke ends: top left wedge entry and higher right as 'u, v, w, x, y', a trailing wedge left foot as 'y', and a slightly curved right foot to infer a linking as 'k'. (Thus in Wedge the height of x does not measure x-height, in the same way as lower case is not where you are likely to find it).

j I l l í í j j j j j .2%

'j' is naturally Wedge from top to tail (and virtually identical to Garamond 'j'). Being a little used consonant there seems to be a case to drop the dot (if not the dot would be as 'i').

z Z Z z z z Z Z Z Z Z Z .2%

Usually pure capital. Wedge softens the top and diagonal in the manner of 'v' and gives the bottom stroke a linking function as inferred in 'e, t and c'. As in early fonts the weight is in the horizontals, the diagonal is fine as in 'v, y, x'.

ADDITIONAL NOTES

1946 – I became aware of the 'universal alphabet' produced at the Bauhaus in 1927. Its logic and clean geometry were persuasive, but it was noticeably unreadable when used for text.

1947 – In the first edition of 'planning', the magazine of the Architectural Group, Auckland NZ, I wrote in a typographical note:

The text is in serif type because there is no sans serif face available that is fluent enough for the purpose.

SUMMARY OF FACTORS TO BE CONSIDERED AND RELATED [as summarized 1957]

greyness:	ink to paper ratio
evenness:	of greyness; effect of ascenders and decenders
spacing:	within the letters, between the letters, words and lines
combine-ability:	(see spacing between letters),
nature of form:	area v line; a plastic conception
lower-case-ness:	resolution proportional to use?
contrast of forms:	individual letters and groups of letters (elimination of any superfluous part of a form)
familiarity with:	the eye's travel
% use:	of each letter or group of letters (the idea of bqx-height)
terminations of strokes:	serifs. sans-serif . the 'wedge'
printability:	clear cut, open, resistance to breaking etc
precedence:	
change:	
formation:	

LOWER-CASE-NESS

resolution proportional to use.
 the letters most used seem to have undergone the most change:
 have more individual character:
 the serif (usually none) plays little part:
 conversely where a letter is little used it has retained in its capital state [with serif]
 especially (k), v, w, x, (y), z

E	e	12% usage
T	t	8.4% usage
A	a	8.0% usage
I	i	7.5% usage
O	o	8.4% usage
R	r	6.5% usage

i.e. these first six letters have a 50% usage!

THOUGHTS ON THE NATURE OF THE TERMINATIONS TO STROKE

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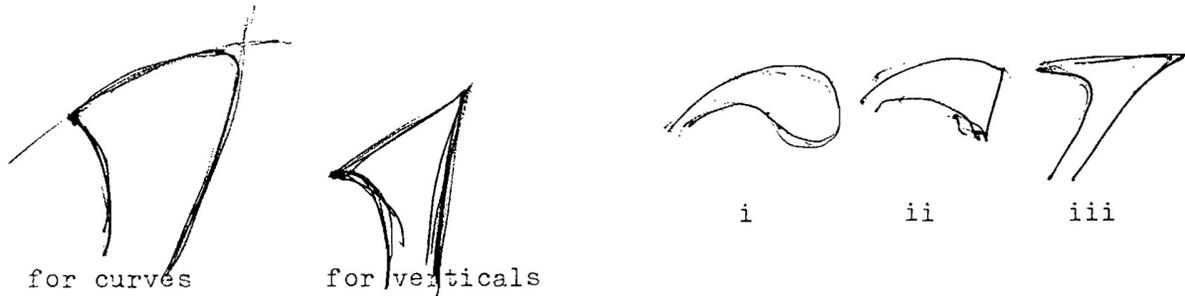
square end: the excess of white around the corners tends to eat away the stroke and make same indeterminate (apart from wear). also characters like i, l, x are made more static—virtually halting the eye at each appearance.
- 

serif: overcomes the woolly ends but still static
- 

the taper: (i think) tends to ease the eye from its centre to its centre of gravity: a starting point: also very common on l.c. ascenders l.b.h where the eye tends to travel.
- 

the bottom serif: should overcome point (1) above and at the same time act as a link.

THE WEDGE DETAIL FOR TERMINATION OF STROKES



the detail has some of the softness and lower-case-ness of (i): some of the crispness of (ii) (as found in the l.c. 's' a capital serif): and functioning in place of (iii) for letters that have not previously been modified from their capital form.

GREYNESS

The greyness of a page depends on the direct ratio of the area of each letter to the area of the white (reflected light) allotted to that area. If this ratio is adhered to in the design of each letter then the greyness will be even, if not there will be an irregular blotchy effect. How grey a page should be is a subject for experiment¹. It is clear that the paper will affect the greyness as the area of black ink is always equally absorptive of light, while the remaining area of paper reflects light according to the nature and colour of the surface, and the ratio of black to light area is thereby affected. An art paper therefore requires a bolder face than a matt paper to achieve the same effect.

1. a ratio number could be given to every type face as a guide to printers (to avoid mistakes by comparing examples on different papers, different pressures, different inking. (greyiness number)

LETTERS

to Linotype and Machinery Limited

22.11.56

Dear Sirs,

I have been working on a design of a text-type-face off and on now for many years. The design problem involved attracted me while a student of architecture, and because of its elusive and intriguing nature I have found myself continually returning to it.

I have tried to find out what constitutes lower-case-a-ness or b-ness, what constitutes legibility etc, etc, and to evolve an empiric design—something simple, basic and useful. But I do not claim to have finished (the face that is materialising is, however, neither serif nor sans-serif!).

27.11 56

Dear Mr Rotherham,

I have read your letter of 22nd November with great interest. I am always interested in ideas for new typefaces and would certainly be glad to see sonetning of your own designs.

Walter Tracy, Manager of Typographic Dept.

We met 30.11.55 and had an interesting discussion. We agreed there was a long way to go, but he urged I keep the proposed name for the face 'Wedge'

Extracts from letters between W C Rotherham in New Zealand Bruce Rotherham in London 1955–1959

2.12.55

Dear Bruce, I called on the Patent Attorney today in respect to Copyright of Type design. He tells me that there is no provision in the British Patent Act for protecting a design of type. If Type founders do not copy one another's designs he states it must be by mutual agreement only, not protection by copyright.

He therefore suggests that you should approach a possible typefounder or client, such as Linotype Corporation, and seek their advice as to whether any protection is available and the best way of proceeding.

..... it would be advisable to give a description of the characteristics of the new design, such as its suitability for reproduction by photographic purposes for photoengraving and photo-lithographic plate making.

W. C. Rotherham

c 3.56 (BR to WCR)

... instead of each letter being represented by a line with thickness (modulated or otherwise) it is thought of as an area, each part of which is doing its job of distributing black that forms the grey of the page.

12.7.57 (BR to WCR)

Dear father, it is nearly a year since I wrote about my design for a type face suitable for all round jobbing work—especially for small section of text, and also I believe for certain types of books (for example there is sometimes a demand for even sans-serif for this purpose).

The basis of my design is this: the letters most used (e, t, a, i, o) have developed as lower case forms far more completely than letters less used (w, v, x, z which are still virtually capital in form and detail) and the letters most used are really neither serif nor sans-serif (?) but are very precisely proportioned shapes (or areas) which when combined to form words distribute the ink evenly; at the same time they have no redundant detail and yet have plenty of individual character. From this point I have tried to find within the accepted framework of the alphabet similar basic forms for each letter, keeping in mind that where letters are little used greater changes from existing forms are possible without affecting the general appearance of the page. The modulation in thickness of the straight lines of the alphabet has been my biggest preoccupation recently; I think it is a new idea and quite relevant—its purpose is twofold: firstly as an aid to the even distribution of the 'letter-area' and secondly to serve as a link in design between the present modulated curved lines of all text faces; 'o' being the basis of the idea—thick at the bottom left hand side and top right hand side. Relating this to straight lines, lines on the left hand side taper up, while lines on the right hand side taper down. This tends to unify the design of each letter breaking up the battery of characterless verticals in words like 'minimum'.

The photostat of the alphabet enclosed (which is about equivalent to 42–48 point and therefore about four times larger than the finished text size) is itself a reduction to one quarter the size of my original drawings and as such shows up certain faults which do not appear on the original.....the swelling 'wedge' termination of strokes may have to be further increased in the smaller text sizes Here are some of my thoughts about each letter taken in order of frequency in use, bearing in mind that the alphabet in use looks quite different to the straight twenty six letters:

e (one in every eight letters) on this typical text e (not unlike Times Roman) I have based the alphabet. The fairly high cross bar is essential for readability as the eye travels along the tops of letters (see also Bembo and Garamond). As a result of this 'e' I have got the alphabet a little condensed in an effort to achieve even greyness throughout.

- t (one in twelve) another typical letter which is a further example of a beautifully resolved lower case form neither serif nor sans-serif.
- a (one in twelve and a half) here in the attempt to clean up irrelevant detail and resolve the letter to a single form I have modified the bottom right hand corner (a precedence for this is Eric Gill's Perpetua lower case 'd'). But the problem of 'a' is primarily a question of combine-ability, in particular following c, r, s, and e, f, t. In Bembo, Garamond and Times, and all successful text faces the top loop comes well over.
- i (one in thirteen) notice that the right hand side is curved.
- o (one in thirteen and a half) perhaps the basic letter
- r (one in fifteen and a half) has been resolved to a single form. The vertical stroke being treated with the left hand taper and the curved arm given the 'wedge' termination as on s, c, w, f, y, v, k, x.
- n (one in fifteen and a half) the resolution of this letter has been my greatest headache. The solution came with the idea of left hand and right hand strokes to letters, which solved simultaneously letters r, p, u, m, f.....

The idea of left and right hand weight distribution stayed with the alphabet to the trial paragraph stage when serious errors were revealed when seen in text sizes. See letters s, h, d, l, p.

- u (one in thirty-three) a sloping serif is often used on this letter (Perpetua, Bembo but not Times) but note the left hand stroke is not the full x-height—I believe there is an optical effect which makes the left hand side look higher. In making the stroke lower this effect is overcome, at the same time further differentiating the left and right hand side. The same applies to letters w, y, v, x, (m).
- c, m, b, w,
- g (one in forty-three) the alternative 'spectacle g' may be best, but I think there will be a form of the italic that should work just as well and in the long run be a more suitable form as a lower case letter.
- f, y, k,
- v (one in a hundred and twenty five) I feel a truly lower case form more related in design to the 'e' than has been the case in any previous text type (see Times etc). The inward curve to the right hand stroke reduces the white space between the next letter.
- x (one in three hundred and thirty) another difficult letter previously-capital to which I have tried to impart lower case properties.
- q, j,
- z (one in five hundred) softened with curves similar to 'v' on its side.

19.7.57 (WCR to BR)

Under separate letter I will give you my comments on the alphabet, but in the meantime my comments are that the 'a' and 'e' go blind about 10pt and the 'f' loses the part in the circle at 18pt. The dot on the 'i' and 'j' become very weak about 10pt and would most likely be lost or become broken when reproduced photographically for lithography or line photoengravings. It is my intention to make a negative with my camera and enlarge or reduce prints on my enlarger. I will send on to you with comments in due course.

30.11.57 (*BR to WCR*)

Enclosed is an idea for the italic type to go with (or contrast with) the Wedge face. This is not a final ink drawing but these take so long to do I thought some reduction experiments and comments at this stage would be advantageous.

11.12.57 (*WCR to BR*)

I will take off some prints of the Italic type face and send them on to you. My first reaction is that not enough slope is incorporated.

1.1.58 (*BR to WCR*)

I am looking forward to further comment on the italic face—it is really more a semi-formal face suitable for small areas of text, forewords etc. As an accompanying face to the formal text 'Wedge' the slope must be sufficient to contrast. I have noticed that the Bernard Shaw phonetic alphabet is not to be completely shelved, and that an open competition is to be held. I certainly intend to enter.

14.2.58 (*WCR to BR*)

I enclose photo prints of enlargement from 8pt to 60pt from the two negatives I took. I could not get down to 6pt or up to 72pt. Copy was not flat hence the negatives are not sharp. You will however get a fair indication of what the face would look like in type. I think the design would lend itself to the extensive range of a 'family' type face, light, medium, bold and extra bold if required plus the italic or variation of italic that you contemplate. I am not familiar with the conditions of the Shaw competition but it looks as if an alphabet to express the sounds in the English language is contemplated.

2.3.58 (*BR to WCR*)

Thank you very much for your letters and the range of photographs which are most helpful and revealing. They are excellent as I know how hard pencil is to photograph: the negative used for the 14pt and up gives I feel the truer effect of the weight of the alphabet. As the letters were drawn large (of necessity) it is not surprising that that below about 18pt they start to lose their character and errors of form are greatly magnified. The 'e' and 'a' would have to be opened up and the terminations of strokes slightly increased. Critically, and so on; but nothing that couldn't be fixed up by redrawing, re-reducing and re-redrawing etc. But this laborious work need only be done if someone were interested. I presume a designer works with a firm when they are developing a new face. The question now seem which firm would be interested? As you, through Abel Dykes Limited, have had long associations with many firms (buying and using their equipment) and as I worked for Abel Dykes as a typographer and designer, I feel some contact via AD would carry a great deal more weight than if I were to write direct. I would like to know what you think?

9.3.58 (*WCR to BR*)

I am pleased to hear the prints are of some use to you. I think it would be advisable for you to write to Ludlow advising them you have a design for a new type and asking if they are interested to see it and what arrangements could be made for them to view it and at the same time protect your interests. I would be inclined to mention the fact that at one time you worked for Abel Dykes and in the course of your duties you were given the job of selecting the type faces needed to equip their composing room. A very serious deficiency in designs became evident, particularly as a considerable use would be made of the type for letterpress blocks and offset lithographic reproduction. The tendency to lose the character of a sans-serif and also that of faces with fine serifs and fibre lines is very well known and the new design has been developed to hold its character with a minimum of loss when printed from letterpress blocks and by offset lithography. It should fill a place not only in display but in a solid mass of a book will make for easy reading and beauty.

28.4.58 (*WCR to BR*)

I enclose an extract from the January 58 issue of 'International Bulletin' the official organ of the International Bureau of the Federation of Master Printers. The editor is Mr E. Kopley and he is also the Director of the Bureau. I met Mr Kopley when I was in London on the possibility of our New Zealand

Federation of Master Printers joining the International Bureau, which we did on my return to New Zealand. I have taken the liberty of writing to him to see if the Bureau would advise you the best way to proceed and perhaps put you in touch with the newly formed (if it is yet formed) International Typographical Association who may if they have commenced to function advise you how to proceed.

17.5.58

Dear Mr Rotherham,

I thank you for forwarding to me your father's letter dated 2nd May.

The President of the International Typographical Association is Mr Charles Peignot, Managing Director of the Paris firm of type-founders Deberny + Peignot, 18 Rue Ferrus, Paris.

I suggest, however, that you will be able to obtain some very sound advice in regard to the possibilities of marketing your new type face from the Monotype Corporation in London. I enclose a letter of introduction to Mr A.D.B.Jones for this purpose.....

E Kopley, International Bureau of the Federation of Master Printers

17.5.58

Dear Mr Jones,

The bearer of this letter is Mr W.D.B. Rotherham of 60 South Hill Park, London, NW3.

His father is Mr W.C. Rotherham, of 305 Riddell Road, Glendowie, Auckland, E1, New Zealand, a prominent Master Printer and formerly President of the NZ Federation of Master Printers which is affiliated to this International Bureau.

The object of this introduction to you is that Mr Rotherham has designed a new type face which he would like to market and perhaps you or someone else in your organisation could advise him to whom to turn to achieve this object.....

E Kopley, International Bureau of the Federation of Master Printers

20.5.58

Dear Mr Kopley,

Thank you very much for your letter 17th May, for Mr Peignot's address, and also for your advice and letter of introduction to Mr A D B Jones. I am following this up in a few days time. .

W D B Rotherham

I met Mr Jones that May showing him the alphabet which at that time was drawn in pencil. He was enthusiastic and offered to help produce a trial paragraph; for this he required an ink drawing.

8.9.58

Dear Mr Jones,

I must thank you for arranging the making of a line block of my Wedge alphabet and for your offer to take pulls. I feel the ink drawings enclosed are at a stage where a test in text seems to be called for, though I still have some reservations about some of the letters. The block size will be near 4 1/2" x 3". Mr Dreyfus suggested an initial reduction to half the drawn size, which I have indicated on the drawing. This will approximate 36pt type.

I do not know how far the process of photographic composition has been developed, but this would seem to be the simplest method of testing a new face? There may however be other complications, and I am quite looking forward to the sticking job ahead.

Bruce Rotherham

18.9.58

Dear Mr Rotherham,

I am returning herewith the artwork on your type face, together with a block pull. I am having 100 copies run off by our Printing Department, and will let you have these as soon as possible.

A D B Jones, Advertising Manager, The Monotype Corporation Limited

4.11.58

Dear Mr Dreyfus,

I would like to recall the interview I had with you last May, when I briefly outlined my thoughts for a text face (the chief considerations being: a lower-case form for each letter; a general system for the distribution of letter area as an aid to even greyness and combine-ability; one flexible detail for the termination of strokes) and showed you the resulting designs, at that stage in pencil. You suggest that I should have a block made from these drawings and produce a trial paragraph to see whether the design worked as an alphabet or merely existed as a series of letters.

Subsequently I redrew the alphabet in ink (together with capitals and ligatures) and Mr Jones very kindly arranged for a line block to be made and 100 pulls to be taken. Now the trial paragraph is completed, (It is in approximately 36pt type, having an x-height similar to Times Roman) (a further reduction to a 21em line produced an 11pt face 3pt leaded).

I would like very much to have your criticism and further advice on how to proceed.

Bruce Rotherham

7.11.58

From John Dreyfus

Thanks for your news of progress. I shall be at Monotype House next Tuesday afternoon and also on Wednesday. If possible, please send your trial to await my arrival on Tuesday: and in any event come in on Wednesday.....

1.1.59

on typography [from entry to Shavian competition, BR]

... The redesigning of the alphabet provides an unprecedented opportunity to restate the problem of design of printed letters. After 500 years of printing, a type face should no longer be a copy of hand lettering but a design matter in its own right. Yet many of the forms less used like v, w, x, z have remained Capital in form and detail, while others more often used like n, r, p retain details of written forms; only e and t (20.5%) and a few others like o, l, c have forms that are essentially printed forms. The design of 'e' in Times Roman with its weight on the lower left and upper right hand sides is a pointer to the general system of distribution of letter area as an aid to the 'combine-ability' of letters and to the even 'greyness' of the printed page. Again, the letters most used have developed two intrinsically lower case details for the terminations of strokes (fig 1 and 2); from these wedge-like shapes, two variable details have been developed to cover all cases (for straight or curved terminations, for important or unimportant strokes). This simplification of the existing string of details used in text today should unify the design of the larger 42 letter alphabet.

Jan 59 Notes on 'e' and 't' [BR]



- 1 is a resolution of the written two stroke *e*. This 'writing' detail is inferred but not copied. The inner curve has been replaced by a sharp angle.
- 2 it is for type only (it cannot be written).
- 3 it is a single form: clear, distinctive, economic, its area well distributed.
- 4 *e* the italic counterpart is a copy of the written one stroke *e*.



- 1 resolution of T via *z* and *t*.
- 2 it is for type only (it cannot be written).
- 3 again a single form: clear, distinctive, economic, its area well distributed.

20.2.59

Dear Mr Jones,

Several months have passed due to recent events: change of address, change of employment (I am now with Design Research Unit) and an entry to the Shavian competition on which I perhaps spent too much time. But this entry has helped me clarify some of the points relating to the design of my text face.

I enclose a copy of the trial paragraph and make the following criticisms and proposals which I hope may be of some interest. Mr Dreyfus' suggestion to put the design aside for a time has proved most helpful.

The large scale reduction has inevitably revealed many design weaknesses (and discrepancies in letter widths and weight); but the worst of these relates to the family of letters n, r, m, h, p (which has been for a long time an unresolved, perhaps unstated, problem; on n, r, p, in particular Mr Dreyfus expressed grave doubts).

The 'Wedge' 'n' in the trial paragraph has the inner curve rising up from the left hand stroke as in the normal two stroke 'n'. I now propose to make the inner outline start as a straight line at right angles to the left hand stroke to compensate for the loss of detail at the top left hand corner (I still believe that a single printed form exists for this and every letter; my notes, herewith, on 'e' and 't' build up a better argument for this than I have previously been able to put forward).

A second point, the left hand foot swelling to the right was unsatisfactory (the combination of these two details make 'n' too much like 'o', and 'r' too much like 'c'). A more symmetrical swelling is proposed (for left hand foot of n, m, r, h, k, f) based on the idea that in writing the pen returns along the line giving a non-directional non-stressed (sans-serif) termination and a definite straight line.

'v' and especially 'w' could have alternative straighter forms.

The right hand foot of 'd' and 'u' is still unresolved: note an alternative 'd' is used in the last line of the trial paragraph.

The capital 'R' does not reduce well: I feel the leg could splay more.

Bruce Rotherham

2.3.59

Dear Mr Rotherham,

Many thanks for your letter and for the specimen. I am seeing Mr Dreyfus on Wednesday and I shall be able to discuss them with him.

A D B Jones, Advertising Manager Monotype

4.3.59

Dear Mr Rotherham,

I have discussed your letter with Mr Dreyfus and here are our comments:

Your "Wedge" design is clearly a specialist face, drawn to satisfy your own notions of how to make a type which will be at one and the same time sturdy, economical, and handsome. The trial shows that "Wedge" possesses many letters which are individually handsome; some of the less satisfactory you propose to alter, but it is clear that "Wedge" will remain a specialist face, with an appeal which we expect to be so limited that we cannot encourage you to think that this design will ever be accepted for manufacture by The Monotype Corporation.....

A D B Jones, Advertising Manager

In light of the preceding help and advice this letter came as a surprise, especially as the trial paragraph was suggested as mid step in the design process, exploring the combinability of letters. I put the work aside for thirty years before hearing by chance a BBC 'Science Now' programme on the subject of computer type-setting and, realizing my work was still relevant, contacted the speakers. Their encouragement has lead to the development of this computer font.

Bruce Rotherham