The letters of a word are fitted together so that there is a general effect of evenness. This evenness is only to be attained by practice: it is characteristic of rapid skilful writing, and cannot be produced satisfactorily by any system of measurement while the writer's hand is still slow and uncertain. It is worth noting, however, that the white interspaces vary slightly, while the actual distances between the letters vary considerably, according to whether the adjacent strokes curve (or slant) away or are perpendicular (figs. 53, 152).

It is sufficient for the beginner to take care that two curved letters are made very near each other, and that two straight strokes are spaced well apart.

If the curves are too far apart there will be spots of light, and where several heavy stems are made too close together, "blots" of dark, marring the evenness of the page.

Acquiring a Formal Hand: (3) Models

Words are kept as close as is compatible with

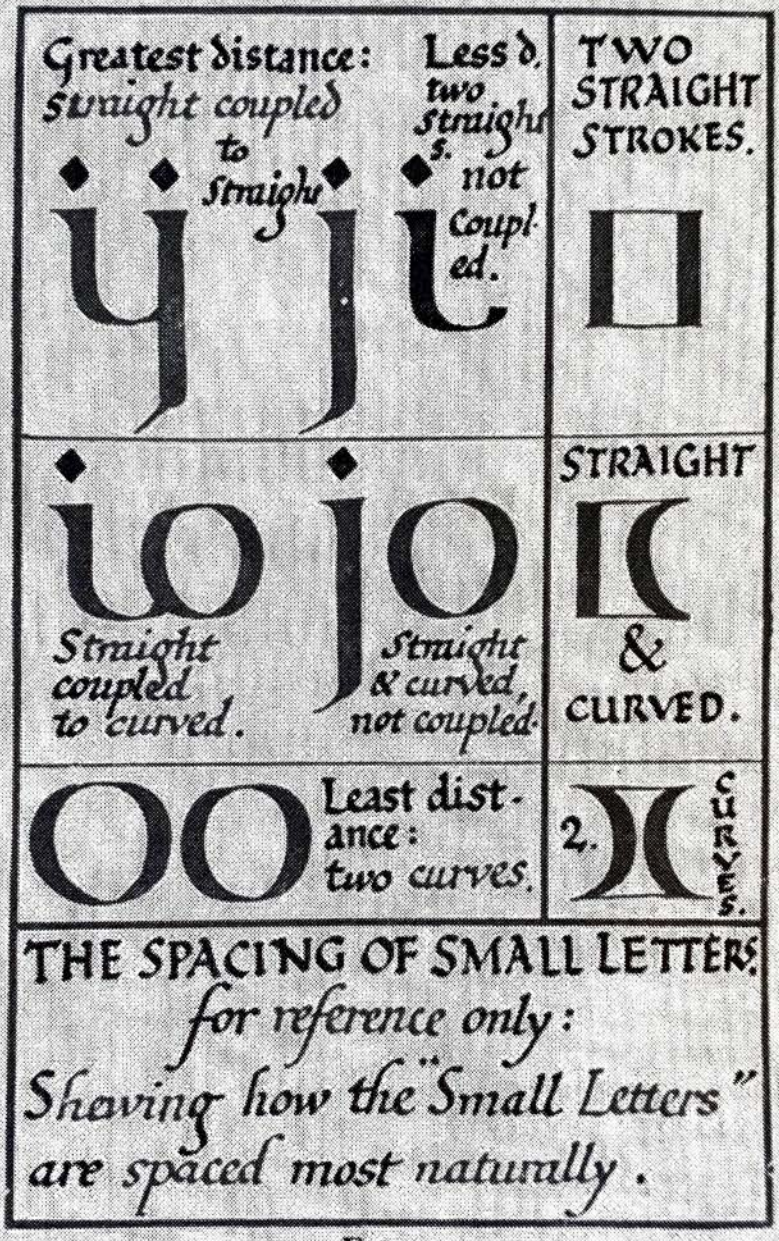


FIG. 53.

legibility. The average space between two words is less than the width of the letter o (fig. 54).

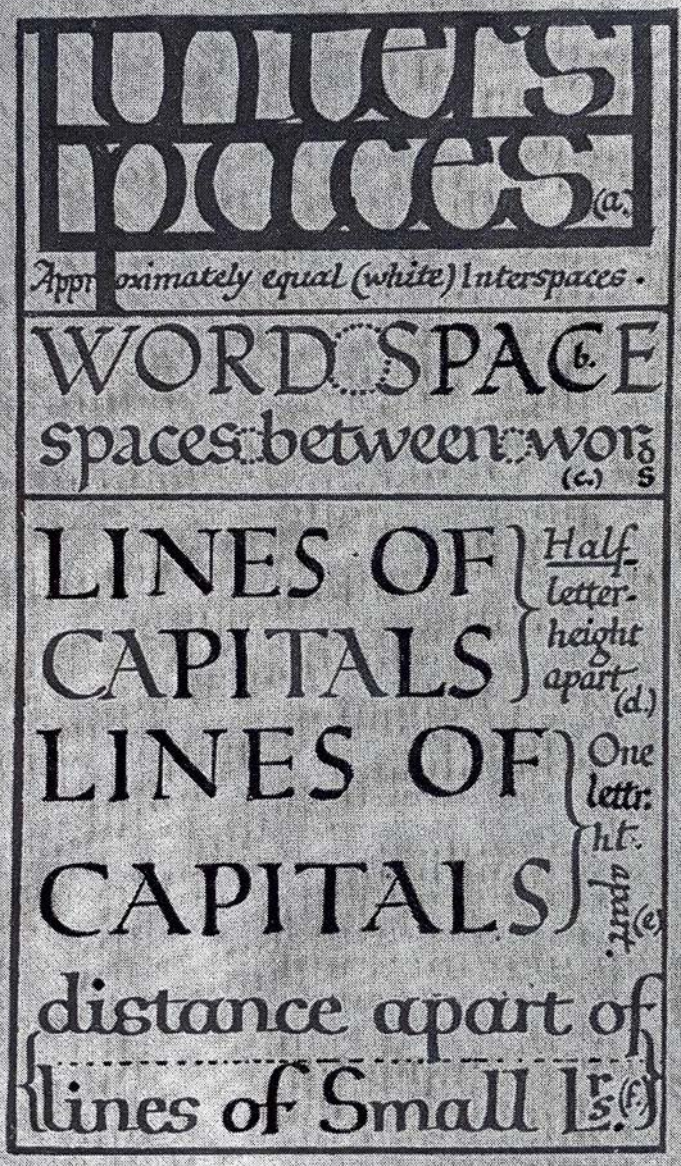
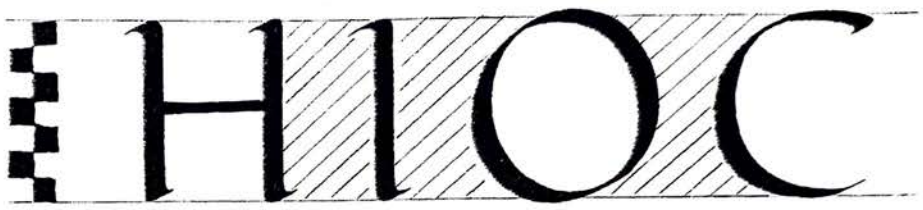

(a.)
Approximately equal (white) Interspaces.
WORD SPACE (b.)
spaces between words (c.)
LINES OF CAPITALS
Half-letter-height apart (d.)
LINES OF CAPITALS
One lettr. ht. apart. (e)
distance apart of lines of Small Lrs. (f.)

FIG. 152.

SPACING

When spacing weighted Roman capitals, as with any script, make sure that the space inside and between letters appears equal along the writing line (see "The Rule of Three," page 25). Weighted letters should be spaced slightly closer than skeleton letters. This is because the weight of the broad nib slightly reduces the counter space (the space enclosed inside a letter) in a weighted letter compared with that in a skeleton letter of the same height. The area between weighted letters therefore has to be correspondingly smaller to maintain the balance of spacing.

Establishing the area of space between the letters in the "H I O C" diagram will help you develop accurate, even spacing when writing with a broad-nibbed pen.



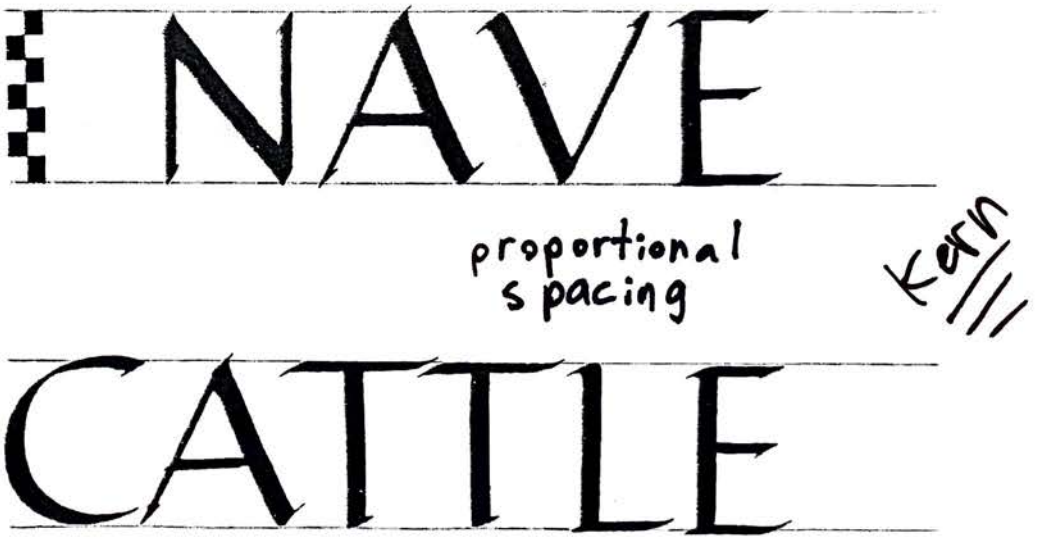
1 *Rule lines to a height of 7 nib widths of a Mitchell's No. 1½ nib.*
2 *Write the H and place an I next to it slightly closer than the width of the H counter as shown.*
3 *Place an O slightly closer still, and a C even closer. Because curved letters allow slightly more space between letters at the top and bottom, they need to be placed a little closer to adjacent letters to create equal interletter space.*
4 *Rewrite the "H I O C" diagram several times (shading the area between the letters) to check that you can reproduce the same letter widths and spacing each time.*

WORD PRACTICE

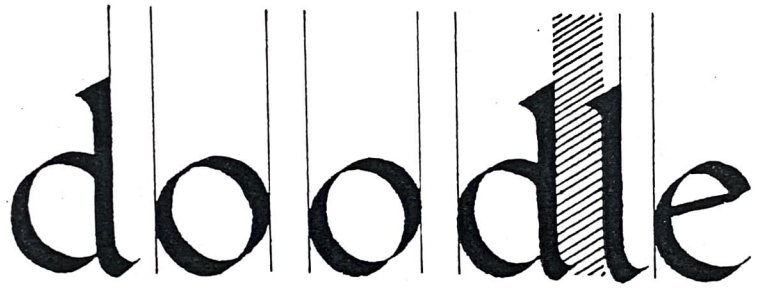
Begin writing words as soon as you feel confident with the alphabet, because different letter combinations put spacing to the test. Concentrate on getting a few words right before tackling a longer text. The space between words should be equal and the width of a Roman capital O.

Practice the words shown at right, which contain some tricky letter combinations. Later you can try some words of your own choosing.

1. *Write at a letter height of 7 nib widths of a Mitchell's No. 1½ nib.*
2. *Repeat each word several times, checking for letter width, correct pen angle, and spacing each time.*
3. *Apply the Rule of Three spacing check.*



These five spaces are measurably equal. The most noticeable error is between the two vertical strokes of the "d" and "l."



The "d-l" spacing has been adjusted wider, but the other four spaces remain equal, giving the word the appearance of being too spread out.

Spacing has been adjusted throughout, the word creating a more balanced image.

HIOC

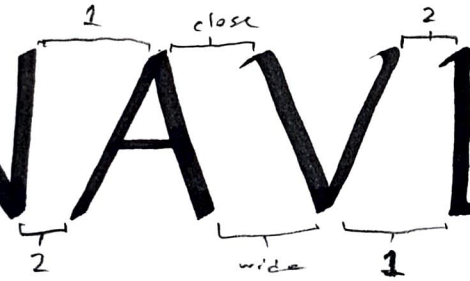
HIOC

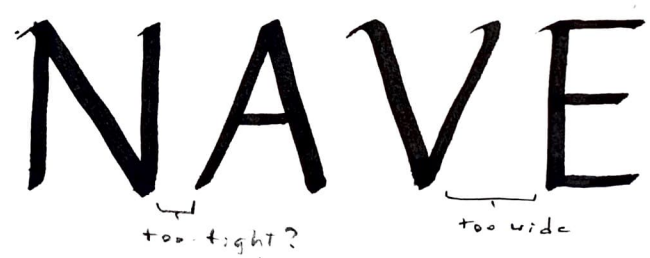
HIOC NAVE

- good

- wider

1 ≈ 1
2 ≈ 2





- tighter

CARPE DIEM

3 2 2 2 2 1 2

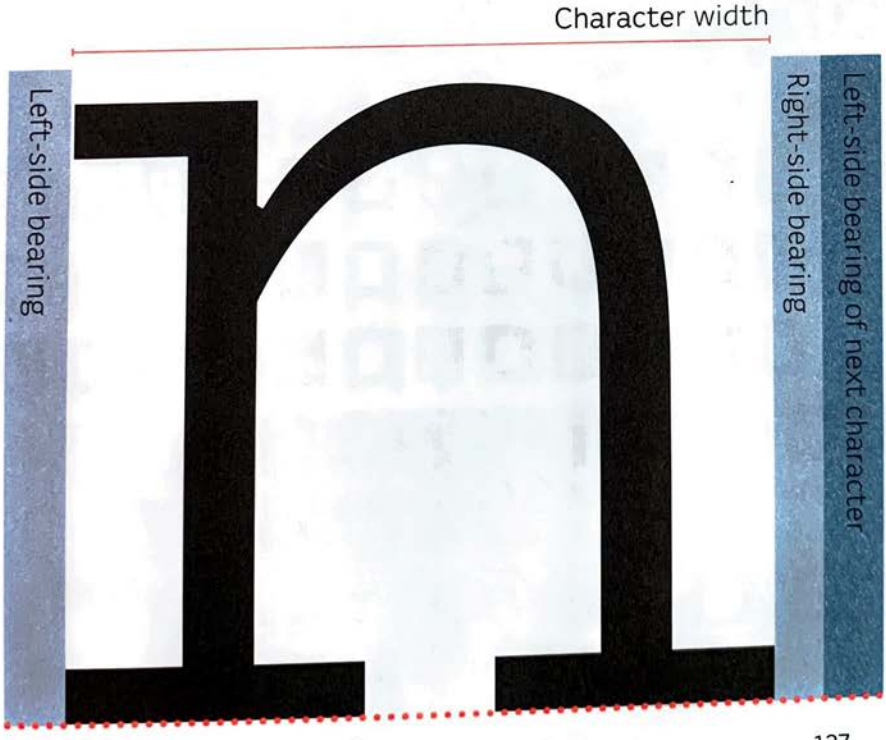
CARPE DIEM

6. METRICS AND KERNING

Words are designed out of three basic design elements. One is the letter forms, the other is the counter form within the letter forms, and the third is the space between the letter forms. These elements are all equally important for the design of a functional typeface.

To create optimal texture, without clusters of dark and white areas, the amount of space inside a letter and the amount of space between two letters should appear equal. Since the inside space varies significantly throughout the alphabet, the spacing will also have to vary.

The challenge is to adjust the spacing of the individual letter optically to make it appear to be centred between any adjoining letters.



To adjust the space between the letters so that it is equal to the space within the letters, try to think of the areas as containers that you are filling with sand. The containers inside the letters and the container between the letters should contain an approximately even amount of sand.

Swift Neue.

Metrics and kerning

The two main parameters to consider when spacing a digital typeface are metrics and kerning. Metrics refers to the space on the left and right side of each character, and kerning refers to the space between two specific characters.

The metrics setting should always be in place before you begin to work on the kerning setting. If you kern too early in the process, you risk producing too many kerning pairs in order to compensate for badly defined metric values.

The side bearings of each character have the same values regardless of the following character.

Fago

Kerning

An example of a letter pair that will usually require kerning is 'A' and 'V'. Without a negative kern, the space between the two letters will stand out and break up the rhythm of reading.

Fago.

Without kerning

With kerning

In his book *Letters of Credit*, typographer Walter Tracy proposed the following method of spacing upper- and lowercase letters.

Ocre Serif.

Uppercase metrics

Divide the letters into the following groups:

Straight vertical strokes:

H B D E F I J K
L M N P R U

Round strokes:

O C D G P Q

Triangular letters:

A V W X Y

The odd ones:

S T Z

Step 1

For the spacing of the remaining letters, Walter Tracy recommended to apply the following values:

Step 5

- Same as 'H'
- Slightly less than ■
- About half of ■
- Minimum space
- Same as 'O'
- Spaced visually between standard letters

A B C D E

F G I J K

L M N P Q

R S T U V

W X Y Z

Lowercase metrics

Step 1

Divide the letters into the following groups:

Straight vertical strokes:

bdhijklmn
pqru

Round strokes:

bcdeopq

Triangular letters:

vwxy

The odd ones:

afgstz

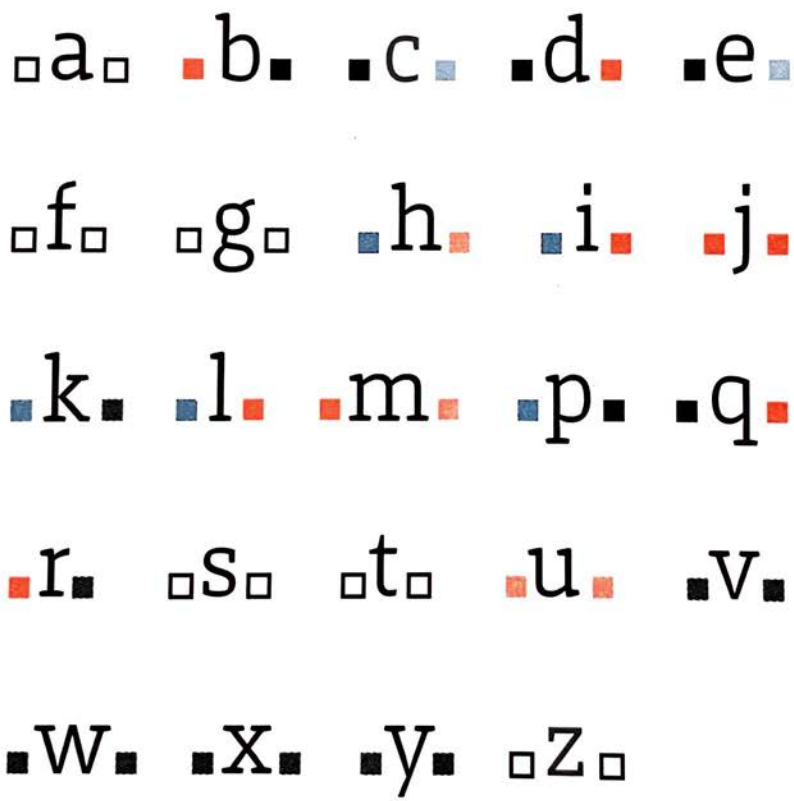
The standard letters of the lowercase alphabet are:

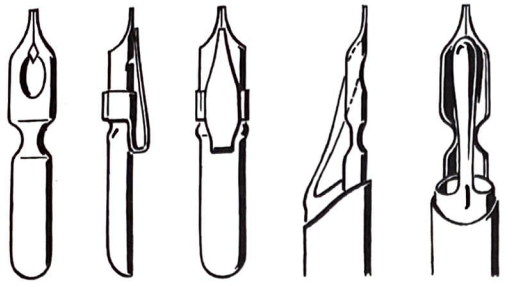
no

For the spacing of the remaining letters, Walter Tracy recommended to apply the following values:

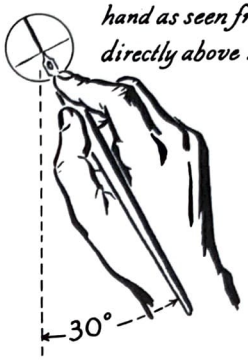
Step 5

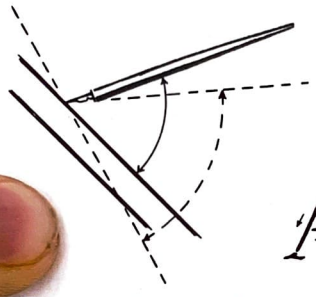
- Same as the left side of 'n'
- Same as the right side of 'n'
- Slightly more than the left side of 'n'
- Minimum space
- Same as 'o'
- Slightly less than 'o'
- Spaced visually between the standard letters





Position of pen and hand as seen from directly above.





Six simple strokes

Freely written capitals — make the serifs as finishing strokes — without too much fuss.

AVWMAVWMAVWM≈

OCGDQOCGDQOCGD

EFLBPRSEFLBPRSEFLBR

KXYKXYKXYKXYKXYKX

HIJTUHIJTUHIJTUHIJT

NZNZNZNZNZNZNZ

THE ROMAN CAPITALS ▲

THE TRAJAN COLUMN ▲

Letters and Lettering is characteristic: "The effect of even color over a whole panel is obtained by keeping, as nearly as possible, the same area of white between each letter and its neighbor; but the shape of this area will be determined in every case by the letters which happen to be juxtaposed." Since the possible combinations run into millions, this is almost like saying that one must trust one's eye or feeling about even tone in the lettered word, line, or page. In the final analysis, that is just about what is done by the trained lettering artist. But there are some systems, rules, and cautions which may be examined briefly.

One method of arranging letters is called the "counter system." The counter has already been defined as the white area enclosed in the letter design; it is, of course, an integral part of the design. In fact the early type founders cut their designs around the counter—this part of the punch being first countersunk by the use of a counter-punch. The origin of the name, counter, is clear enough. This system proposes a balancing of the areas between letters with the areas represented by the open counters. An examination of the first three lines in the illustration on page 227 will explain the idea. Obviously, the shapes of these intervening areas and of the counters will vary greatly; but the actual area—in square millimeters, inches, etc.—should be about the same. The sequence, $a = b = c = d = e$, etc., as shown, provides a graphic illustration of the method; for small letters it works approximately as for capitals, as the diagram shows. Actually, part of the white area—between the letters and in the counters—is not effective; there is a certain amount of irradiation from the black designs, which gives to each letter an optical influence a bit beyond the edge of the design. The effect of this factor is suggested in the diagrams.

The fact that the spacing problem in Gothic letters became a matter of making equidistant, upright strokes has been mentioned. This "stroke system" is characteristic of Gothic style; but a good part of all small letter arrangement—both in upright and cursive designs—depends upon the effect of even stroking. The lettering artist uses a combination of these systems, plus a well-trained eye and taste. The classic capitals are the most difficult letters to arrange; minuscules or—to use the type name—lower-case letters are not nearly as difficult; while cursive letters, or italics, are still easier to handle.

From the foregoing explanation of systems, several general rules may be derived. The area allowed between capitals should approximate their counters; a good basic rule-of-thumb is to neutralize the O—this should never have the effect of staring out of the line like a solitary eye. The same general rule applies to all

AVWMNOJ

CGQSLAIHI

a = b = c = d = e = etc.

extra stroke for bracket

ascender-line

waist-line

fmnripbareasq

base-line

drop line

beak descender finishing stroke

branching

hook, lobe, etc. stem counter arch ascender

Land of Smiles

bowl

Serifs made by turning pen.

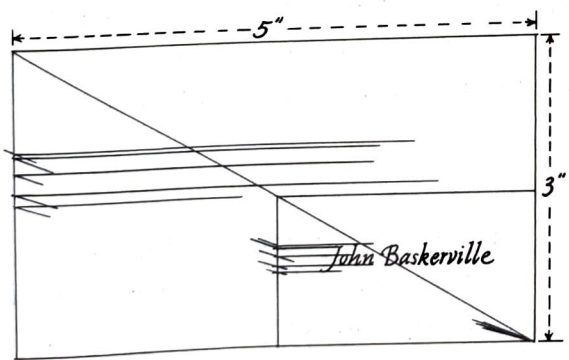
swell

Optical line-up.

AOJY

CVIT

YOUR NAME



How to scale a drawing.

John Baskerville

small letters. Between words, a break of one full o is usually sufficient; between lines a minimum distance at least as great should be allowed. Of course, lines of lower-case or italics should never be planned so that ascenders and descenders could touch or interlock. Lines of capitals may be brought closer together—they then give a strong, horizontal decorative effect.

The cautions concern optical illusions—optical effects in general. All design is subject to certain misleading or distorting effects; the eye, while it is a wonderful organ, is not perfect enough to make allowances for such effects. In these instances the trained designer will make an almost intuitive adjustment to satisfy the eye and banish the distortion or illusion. A few of the usual trouble spots in letters must serve to illustrate the point; these are to be observed in the two lines of capitals and in the so-called "optical line-up," explained in the next paragraph.

All of the round letters, C, G, O and Q, will seem smaller than the other characters in a word of capitals unless they are extended a bit above and below the guide lines. The letter S is often subject to this rule, although less so than are the wide rounds. If the bottom of the J is not carried below the guide line, it will seem too short. The points of the N, V and W should also be carried slightly below the bottom guide line. When the A is styled as a pointed letter, the point ought to be brought above the guide. The optical principle involved is that in which a round or point never seems to be on the line when it merely touches, or "kisses," it; to be optically on the line it must go through it. The letter I should usually be allowed a little more area on each side than is allowed between the other letters in a line. There is a tendency, since I is so narrow, for it to appear squeezed. The outside legs of the M must be spread slightly in order to avoid a bow-legged appearance, the strength of the V-shape causing this distortion if the legs are exactly upright. All these cautions concern capital letters; but, when the same or similar designs appear in the lower-case or italics, they are equally affected. The "optical line-up" is a visual representation of how round, triangular, or overhanging letters may be optically lined up; the principle explained above functions here also.

Scaling a Drawing:

Students usually need name cards for use on their desks, portfolios, lockers, etc.; these may be lettered in capitals, lower-case, or cursive. Note that the name is placed above the actual center of the card, at the optical center—a bit higher. It

Spacing

Spacing is an essential and critical consideration when designing with type. Proper and appropriate spacing not only affects the legibility and readability of type, but, more importantly, the overall meaning of any visual communication that uses type as its primary communicative element.

Specific criteria for evaluating and determining proper and effective spacing for letters, words, and lines of text is achieved by the following methods—letter spacing, kerning, word spacing, and line spacing. Tracking allows for the adjustment of spacing located between groups of letters in text settings or sentences. Desktop publishing software programs provide digital features for the detailed adjustment of space located between letters. Letter spacing (see page 166) refers to the adjustment of inter-character spacing applied throughout an entire text

LETTER SPACING

Spacing

TIGHT (-50 PT)

Spacing

NORMAL (+0 PT)

Spacing

OPEN (+50 PT)

SPACING

TIGHT (+0 PT)

SPACING

NORMAL (+50 PT)

SPACING

OPEN (+125 PT)

setting, whereas kerning (see page 167) refers to the adjustment of horizontal spaces located between pairs of individual letters.

Letter Spacing

Letter spacing, also known as tracking, is the adjustable space located between letters, which is adjusted unilaterally rather than individually to achieve an even density to a type setting.

The scale or size of type is a critical factor to be considered when making adjustments to letter spacing. Type set at smaller text sizes tends to lose clarity and visual distinction and therefore may need increased letter spacing to optimize its readability. Larger sizes, such as with display type, may need decreased letter spacing to bring uniformity and visual cohesiveness to the setting.

When using all capitals for any type setting, ample letter spacing needs to be carefully considered to optimize its readability and legibility.

Kerning

Kerning is the adjustment of horizontal space located between one or more pairs of individual characters. Kerning allows for an individual reduction or incremental increase to letter spacing; tracking increases or reduces spaces between words.

For example, some letterform combinations, such as TA, possess visually awkward spatial relationships. This inter-letter space, or letter spacing, can be adjusted, making the spatial interval more consistent with

KERNING PAIRS

Aw Ky Pj

Ty Va Wi

Xe Ye YA

KERNING

WITHOUT KERNING

WITH KERNING

other letterform combinations. Digital typesetting can be programmed to account for automatic adjustments when these awkward letterform combinations appear. Well-designed kerning creates a consistent visual flow of interchangeable space, which enhances legibility and readability of any typesetting.

Kerning Pairs

A well-designed typeface contains embedded information that defines optimum kerning for specific letterform pairs that would otherwise create disproportionate spaces in any text setting. Kerning pairs, such as Ty, Ye, Va, or YA, require special spatial attention especially when using larger-scale display type sizes.

Manual Kerning

Another letter spacing option is to make manual adjustments to individual inter-character spacing optically, or "by eye," to achieve a more visually consistent appearance. Traditionally, manual kerning is a spacing option relied upon for larger-scale display type sizes, since it is impractical to use effectively on smaller-scale, continuous text settings.

Word Spacing

Word spacing is defined as the space located between words, ideally equivalent to the width of a lowercase i in most small-scale, text settings. With larger-scale display type settings, word spacing can be adjusted manually to achieve optimum visual results.

WORD SPACING

Line Spacing

Line spacing, also known as Leading, is the adjustable vertical space located between lines of type, specified as a measurement in points from baseline to baseline. Leading is a term that originated from hot metal printing, when strips of lead were placed between lines of type to provide sufficient spacing.

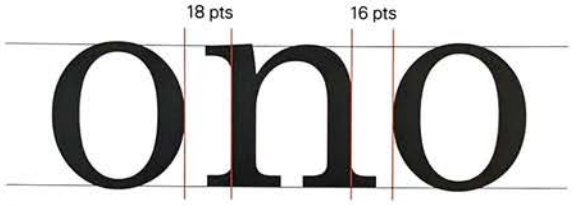
The default setting in most desktop publishing software programs is 120 percent of a specific type size. For example, ten (10) point type is set on twelve (12) points of line spacing (or leading). When line spacing is increased, lines of continuous text appear

Letter Sidebearings

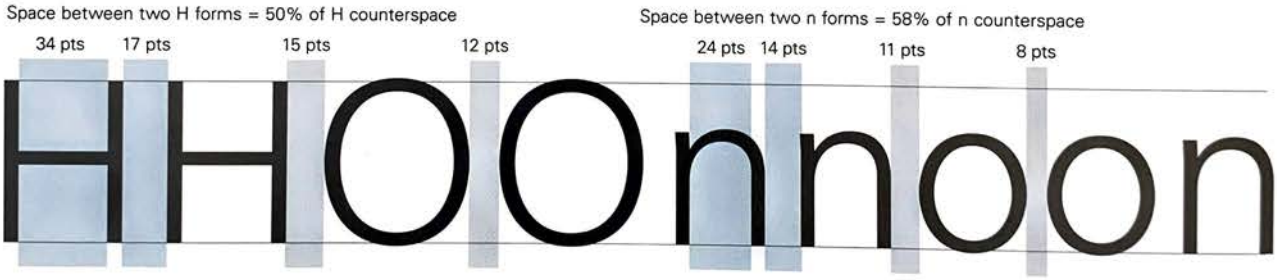
There are two components that set the initial letterspacing in a font: the left and right sidebearings. Conceptually, the method is unchanged from the first invention of letterpress printing. Letterpress type was individually cast or engraved on a uniform metal block called the type body. When type blocks were set side-by-side to make words, the sidebearings (the distance between the character and the ends of the block) created the appropriate spacing. It was easy to increase letterspacing by inserting blank metal strips, but reducing space was far more tedious, as the sides of each block had to be filed away. Of course, in the digital world, this physical constraint has vanished. With type design software such as FontLab or Fontographer, virtual sidebearings are easily adjusted to any width.

Determining the proper sidebearings for each letter is a time consuming task. The main principle is simple: sidebearings are proportional to counters and letter profiles. However, because there are many different shapes within a font, there are many different sidebearing widths, even among sets of similarly shaped letters. For example, even though the M, N, E and H all have vertical sides, the M and N sidebearings are smaller, since their verticals are thinner and lighter.

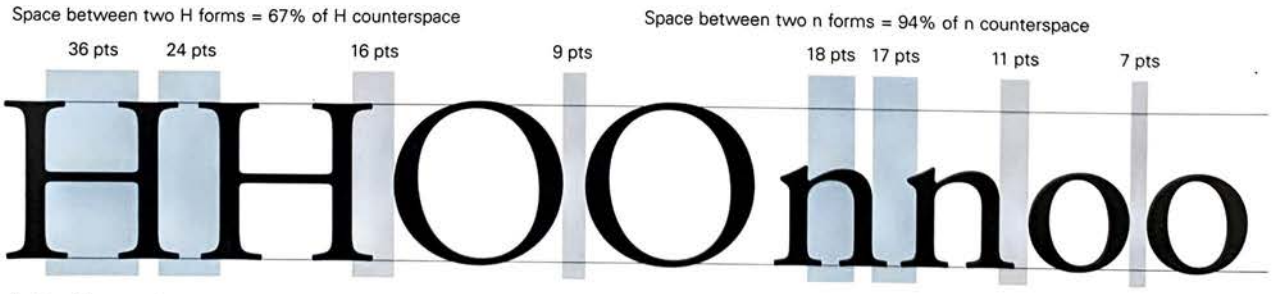
Fortunately, a simple formula for estimating letter sidebearings was documented by the typographer Walter Tracy in his book *Letters of Credit: A View of Type Design*. This procedure uses the H, O, n and o to determine spacing for all other letters. The recommended process is shown at right, on the opposite page.



The left sidebearing of the n is larger than the right (the shoulder needs less space than the stem).



Univers
(Neo-Grotesque)



Adobe Garamond
(Garalde)

Spacing Capital Letters

1. Set the left and right sidebearings of the H.
   Each sidebearing is 25 – 50% of the width between the stems.
   Sans serifs have tighter spacing than serif fonts.

2. Test the sidebearings of the H by setting the word 'HHHH'.
   The letters should be harmonious – not too open or cramped.

3. Set the left and right sidebearings of the O. These sidebearings are slightly less than the sidebearings of the H.

4. Test the O by setting the word 'HOH'. The O should appear balanced between the two H forms, and the colour of the word should be even. If not, revise the sidebearings of the O.

5. Re-test the O by setting the word 'HHOOHH'. Again, all six letters should be harmonious, and the colour of the word should be even. If not, revise the sidebearings of the O. The initial H may also require readjustment.

6. Once the H and O are satisfactory, the other upper case sidebearings can be set as follows:

Diagonal and open letters with minimum space:
4–**A**–4 4–**V**–4 4–**W**–4 4–**X**–4 4–**Y**–4
4–**T**–4 4–**J**–1

Straight sided letters with heavy verticals:
1–**D**–5 1–**P**–5 1–**R**–4 1–**L**–4 1–**K**–4
1–**B**–3 1–**E**–3 1–**F**–3 1–**U**–2 1–**I**–1

Straight sided letters with light verticals:
2–**N**–2 2–**M**–1

Letters with round sides:
5–**Q**–5 5–**C**–3 5–**G**–2

Letters with a central spine:
3–**Z**–3 *–**S**–*

1 Equal to the sidebearing of the H
2 Slightly less than the sidebearing of the H
3 Half of the sidebearing of the H
4 Minimum sidebearing
5 Equal to the sidebearing of the O
* Must be adjusted visually

Spacing Lower Case Letters

1. Set the left and right sidebearings of the n. The right sidebearing will be slightly thinner than the left, since the arched corner is lighter than the vertical stem. The left sidebearing is 25 – 50% of the n counter.

2. Test the sidebearings of the n by setting the word 'nnnn'.
   The word should be even in colour, and neither tight nor loose.

3. Set the left and right sidebearings of the o.
   The sidebearings of the o are smaller than those of the n.

4. Test the o by setting the word 'non'. The o should appear balanced between the n forms, and the colour of the word should be even. If not, revise the sidebearings of the o.

5. Re-test the o by setting the following words:
   'nnonn' 'nnonon' 'nnoonn'
   Adjust sidebearings of the o and/or n as necessary.

6. Once the n and o are satisfactory, the other lower case sidebearings can be set as follows:

Diagonal letters with minimum space:
4–**v**–4 4–**w**–4 4–**x**–4 4–**y**–4

Letters with short vertical stems:
1–**r**–4 1–**m**–2 1–**j**–1 2–**u**–2

Letters with tall vertical stems:
1–**b**–5 3–**p**–5 3–**k**–4
3–**l**–2 3–**h**–2 3–**i**–1

Letters with round sides:
5–**c**–6 5–**e**–6 5–**q**–1 5–**d**–1

Irregularly shaped letters:
*–**g**–* *–**a**–* *–**s**–* *–**z**–*
*–**f**–* *–**t**–*

1 Equal to the left sidebearing of the n
2 Equal to the right sidebearing of the n
3 Slightly more than the left sidebearing of the n
4 Minimum sidebearing
5 Equal to the sidebearing of the o
6 Slightly less than the sidebearing of o
* Must be adjusted visually

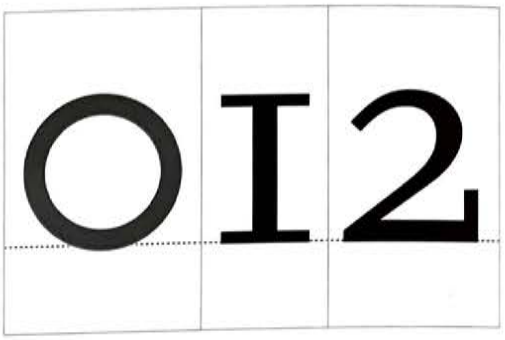
Adapted from *Letters of Credit: A View of Type Design* by Walter Tracy. Used by permission of David R. Godine, Publisher. Copyright © 1986 by Walter Tracy.

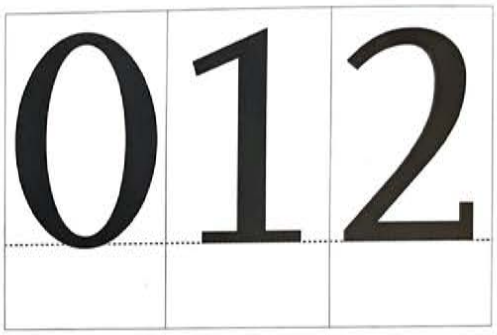
Word Space, Numbers and Punctuation

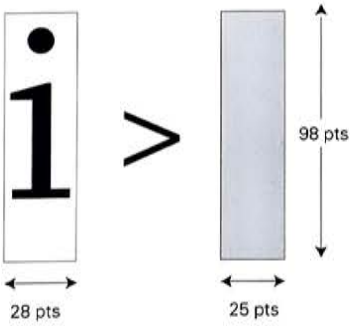
The word space is a character with an inherent conflict of interest: the space must be wide enough to separate individual words, but narrow enough to encourage grouping into sentences and paragraphs. Traditionally, in the early years of printing, the word space was about half an em (this fraction is called the en). However, as described previously, metal type was more loosely spaced than digital type is today. Contemporary type designers usually make the word space slightly less than the width of an i – about half an en, or a quarter of an em. Light or expanded typefaces usually need more space to complement their wider counters. Bold or condensed designs look better with a tighter word space.

The spacing of numbers and punctuation are related. These characters are usually centred within fixed widths to simplify their settings (and facilitate tabular alignments). The comma, colon, semi-colon and single quote are centred in half of the space of a numeral (a quarter em). Double quotes require a wider body. The question mark and exclamation point vary, but most often, the question mark uses the double quote width, while the exclamation point needs slightly more than the single quote width.

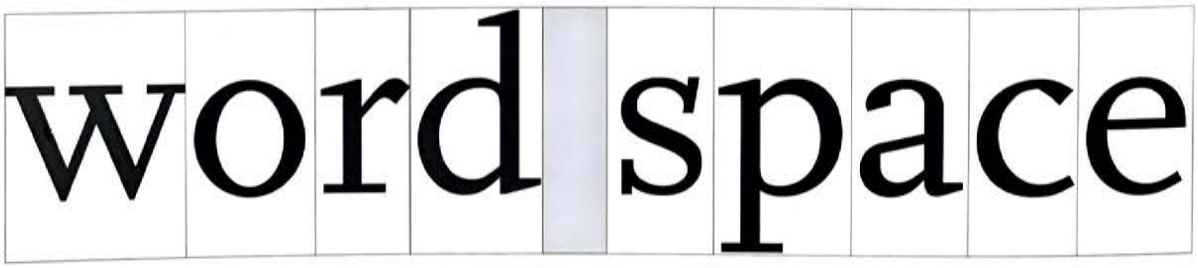
Some typographers offset the exclamation, question, colon and semi-colon to the right. This shift prevents punctuation from merging with the preceding letter – especially important when the question or exclamation follows a lower case L.



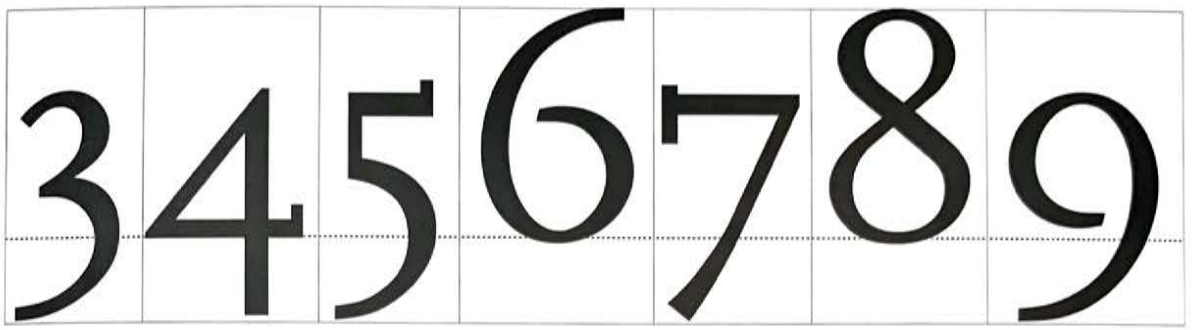


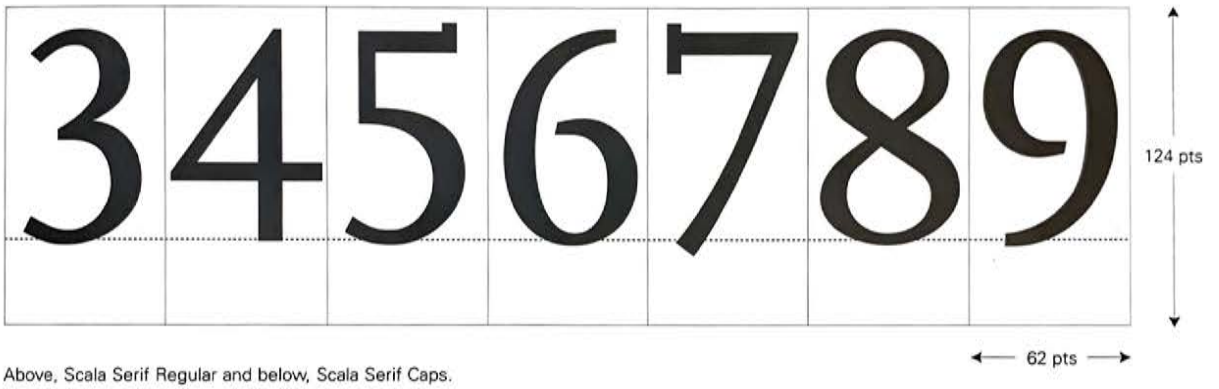


In most fonts, the word space is slightly more than one quarter of the em-space – a little less than the width of the lower case i.



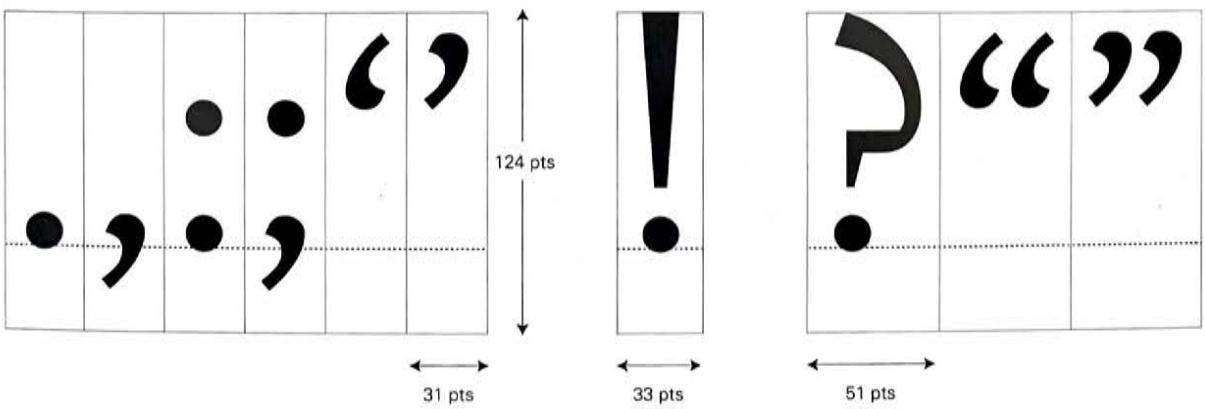
Scala Serif Regular
(New Transitional Serif)





Above, Scala Serif Regular and below, Scala Serif Caps.
Proportional figures have varying character widths.
Titling figures are centred within an en-space for tabular/monospaced alignment.

Below, Scala Serif Regular.
Narrow punctuation is fitted in a quarter em-space (half of an en-space).
The exclamation point requires a slightly wider measure.
Wide punctuation (the question mark and quotes) needs approximately 40% of the em-space.



Kerning

Unfortunately, letter sidebearings alone often fail to completely resolve the colour of a typeface. Certain glyph combinations are consistently problematic. For example, 'Ty' is a letter pair that usually needs tighter spacing, since the diagonal of the y can be nested under the crossbar of the T to avoid an awkward open gap. The process of finding and improving these difficult character combinations is called kerning.

The term kerning is somewhat confusing, since it had a slightly different meaning when type was cast in metal. Then, a kern was a physical component – the part of a letter that extended beyond the outer edge of the metal type body. Kerns were fairly unusual, since the extended form was fragile and difficult to manufacture. However, kerned type enabled better spacing for certain characters, since the overhanging element could be positioned closer to the neighbouring letter.

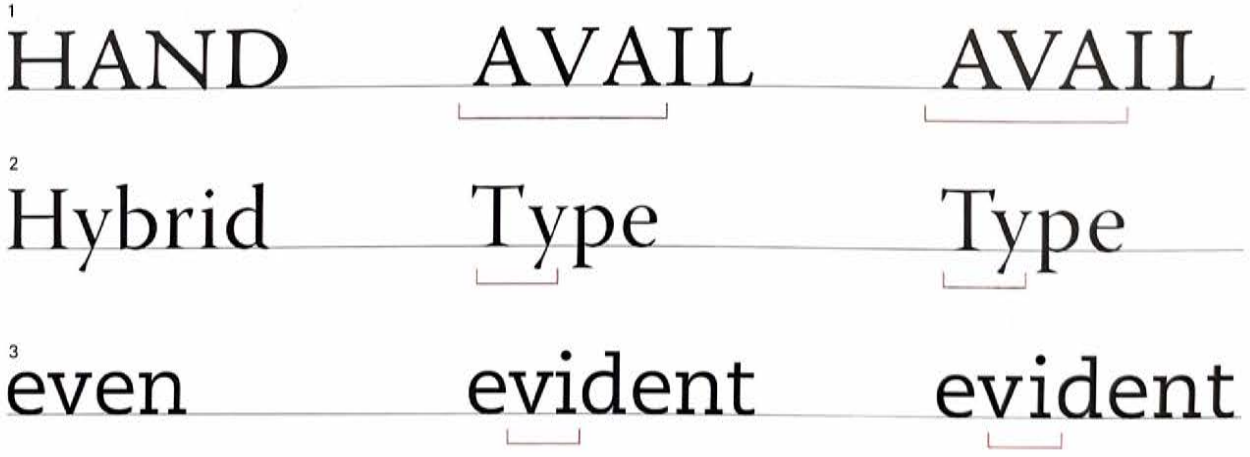
Today, kerning is, of course, accomplished digitally. Using font design software (such as FontLab or FontMaster), designers can specify precise shifts in spacing for any number of letter pairs. The optimum number of pairs varies according to the overall design. Faces that have fairly consistent profiles look fine without too much kerning, but display faces without repeating forms need many pairs to produce even colour. Additionally, larger sizes of type need more kerning than small sizes, since the gaps between letters are more obvious when enlarged.

The table on the opposite page lists the most commonly kerned letter combinations. However, this is merely a starting point; a modern font may have 500–3000 kerning pairs. Thomas Phinney, program manager for fonts at Adobe, recommends no more than 3000 kern pairs in a font, because larger numbers increase the size of font files and, more critically, overwhelm the processing capacity of many publishing applications.

Recent innovations in digital type founding may eventually make pair based kerning obsolete. Open Type, a new font format developed jointly by Adobe Systems and Microsoft, uses class-based kerning rather than pairs. Class-based kerning requires the definition of several groups (or classes) of similarly shaped letters. Since these letters need the same amount of kerning, a single value can be propagated to the entire class. The concept is similar to style sheets in publishing applications; many individual instances are replaced with a more efficient array.

Class-based kerning can be a powerful, time-saving tool, but its proper use requires careful planning. Mistakes in class definition can result in unforeseen and undesirable kerns. Luckily, the structure of class-based kerning does allow for exemptions; specific pairs can be given a unique kerning value. However, exemptions should be used with discretion; a large number of unique values defeats the efficiencies of the class system.

Unfortunately, both pair kerning and class-based kerning have limited value, since not all applications recognize or implement the kerning information imbedded in a font. For this reason, most designers view the initial spacing created by sidebearings as more important than kerning. Kerning is a support and refinement of the initial spacing; a well-crafted typeface should still set adequately without kerning.



Top: Adobe Jenson. The A is evenly spaced between the verticals of H and N in HAND, but too loose around the V in AVAIL.
Centre: Adobe Warnock Pro. The y is evenly spaced between the verticals of H and b in Hybrid, but too loose after the T in Type.
Bottom: PMN Caecilia. The v is evenly spaced between the round e's of even, but too tight against the i in evident.
All spacing problems are corrected (in the last column) by adding or removing space between pairs of letters.

Upper Case - Upper Case

AC AG AO AQ AT AU AV AW AY
BA BE BL BP BR BU BV BW BY
CA CO CR
DA DD DE DI DL DM DN DO DP DR DU
DV DW DY
EC EO
FA FC FG FO
GE GO GR GU
HO
IC IG IO
JA JO
KO
LC LG LO LT LU LV LW LY
MC MG MO
NC NG NO
OA OB OD OE OF OH OI OK OL OM ON
OP OR OT OU OV OW OX OY
PA PE PL PO PP PU PY
QU
RC RG RY RT RU RV RW RY
SI SM ST SU
TA TC TO
UA UC UG UO US
VA VC VG VO VS
WA WC WG WO
YA YC YO YS

Upper Case - Punctuation

apostrophe - A' L' and 'S
quotes - A" L"
period - B. C. D. F. J. N. O. P. S. T. U. V. W. Y.
comma - B, C, D, F, J, N, O, P, S, T, U, V, W, Y,
semi-colon - F; P; T; V; W; Y;
colon - F: P: T: V: W: Y:
hyphen - T- V- W- Y-

Upper Case - Lower Case

Ac Ad Ae Ag Ao Ap Aq At Au
Av Aw Ay
Bb Bi Bk Bl Br Bu By
Ca Cr
Da
Eu Ev
Fa Fe Ff Fi Fo Fr Ft Fu Fy
Gu
He Ho Hu Hy
Ic Id Iq Io It
Ja Je Jo Ju
Ke Ko Ku Kv Kw Ky
Lu Ly
Ma Mc Md Me Mo
Nu Na Ne Ni No Nu
Oa Ob Oh Ok Ol
Pa Pe Po
Rd Re Ro Rt Ru
Si Sp Su
Ta Tc Te Ti To Tr Ts Tu Tw Ty
Ua Ug Um Un Up Us
Va Ve Vi Vo Vr Vu Vy
Wa Wd We Wi Wm Wr Wt Wu Wy
Xa Xe Xo Xu Xy
Yd Ye Yi Yp Yu Yv

Lower Case - Lower Case

ac ad ae ag ap af at au av aw ay ap
bl br bu by
ca ch ck
da dc de dg do dt du dv dw dy
ea ei el em en ep er et eu ev ew ey
fa fe ff fi fl fo
ga ge gh gl go gg
hc hd he hg ho hp ht hu hv hw hy
ic id ie ig io ip it iu iv
ja je jo ju
ka kc kd ke kg ko
la lc ld le lf lg lo lp lq lu lv lw ly
ma mc md me mg mn mo mp mt mu mv my
nc nd ne ng no np nt nu nv nw ny
ob of oh oj ok ol om on op or ou
ov ow ox oy
pa ph pi pl pp pu
qu
ra rd re rg rk rl rm rn ro rq rr rt rv ry
sh st su
td ta te to
ua uc ud ue ug uo up uq ut uv uw uy
va vb vc vd ve vg vo vv vy
wa wx wd we wg wh wo
xa xe xo
ya yc yd ye yo

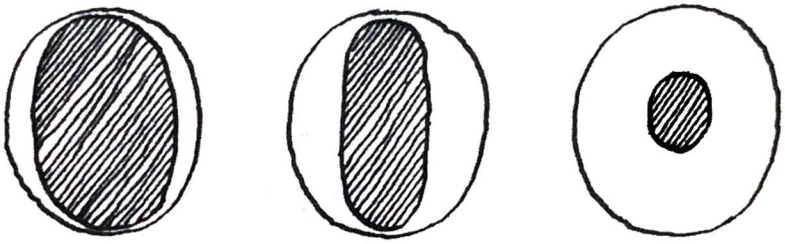
Lower Case - Punctuation

apostrophe - f' and 's 't
period - b. d. e. f. g. j. o. p. r. s. t. v. w. y.
comma - b, d, e, f, g, j, o, p, r, s, t, v, w, y,
hyphen - r-

[rt jf vwy LT JP VAWY 47]

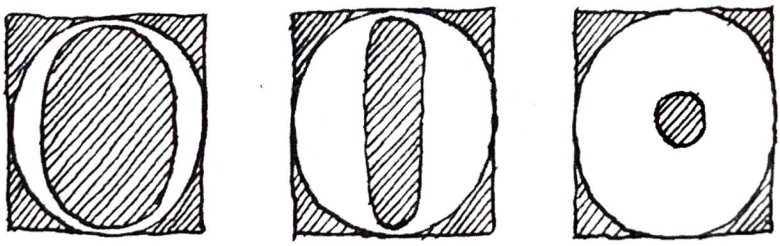
In general, the most problematic characters to space are the open-sided and diagonal forms shown above.
The exact number of kerning pairs depends on the specific design of the font – consistent forms (i.e., monospaced fonts) require less kerning.
The most commonly kerned pairs are listed in the table above.

A letter is two shapes, one light, one dark. I call the light shape the white of the letter and the dark shape the black. The black consists of the regions of the letter that enclose the white. White and black can be replaced by any combination of a light colour and dark colour, and light and dark can switch roles, but the intriguing effects of these permutations lie outside the scope of this book. Thus I will call the strokes the black of the letter and the enclosed shapes the white of the letter, even in the case of figure 1.1, where I represent the white shape with a dark area.



1.1

The black shape cannot be altered without the enclosed white shape changing and vice versa.

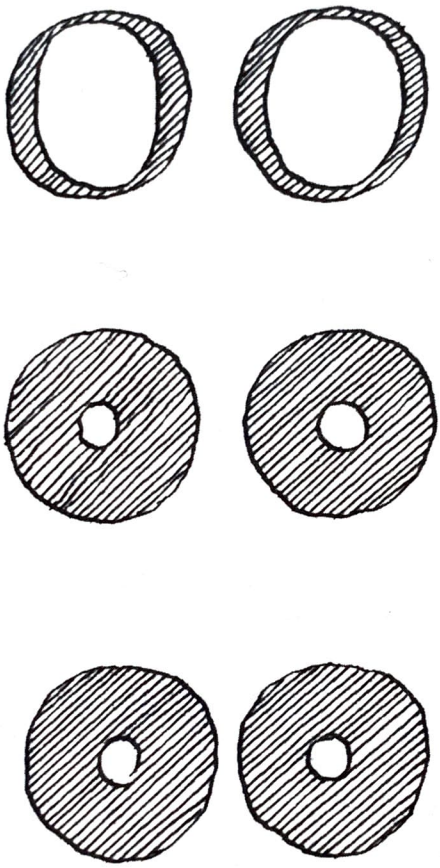


1.2

In figure 1.2 the letters from figure 1.1 appear on 'white' rectangles. In all three cases the exterior shape of the *o* has the same surface area. The surface area of this white does not change when the black shape undergoes changes, but the relation of this surface area to the surface area of the interior

shape does change. In the third rectangle the perceptual significance of the exterior shape is much greater than in the first rectangle because in the first rectangle the exterior shape is overwhelmed by the large interior shape.

In practice a free-standing letter on a small rectangle is a rarity. A word usually consists of two or more adjacent letters. Figure 1.3 is a simple schematic of this.



1.3

The white space between the letters in the second combination is identical to that in the first, but the perceptual significance of this white is so much greater that it drives the letters apart. In the third combination the bond is restored by the drastic reduction of the space between the letters. Maintaining the equilibrium in the white shapes makes all the difference. The white of the word is my only holdfast.

The relation between shape and countershape, which in writing amounts to the relation between white and black, is the foundation of perception. The interpretation of every sensation from any sense organ works on this principle. Writing is a good model for perception because, with its strict rules, it creates an artificial laboratory-like workspace that everyone has within his or her reach. The interaction between light and dark exists wherever and whenever there is something to see, but the game only becomes interesting when the opponents are well matched – I can only experience the relationship if the relationship is clear. If I enlarge the rectangle of 1.2, I diminish the effect that changing the interior shape has on the perceptual significance of the background. In figure 1.1, where the background is the page itself, I can no longer perceive this effect. The relationship is not manifest.

Manifest relationships can be divided into groups. The format of the page derives its meaning mainly from the shape and placement of the text block; the blackness and length of the line are in interaction with the white between the lines; and the forms of the letter variously affect each other within the variable contexts of the word. The word is the smallest organic unit in writing. Whatever can be said about a letter or the stroke must be said with one eye on the word. In this book I pull apart the organism, but only to be able to make the word.

Writing rests on the relative proportions of the white in the word. The various kinds of writing with their various constructions and their various strokes can be compared with each other only in terms of the white of the word – every comparison requires a vantage point that makes things comparable. The white of the word is the only thing all the various kinds of writing have in common. This universal vantage point holds for handwriting and typography alike, for ancient writing as well as modern writing, for western writing as well as the writing of other cultures, in short, it holds for writing.

In principio erat verbum

Joh.1:1

Current studies of writing do not attend to the *white* of the *word*, but to the *black* of the *letter*. Consequently considerations of writing exhaust themselves in the exploration of superficial differences. The universal vantage point that renders handwriting and typographic letters comparable is not to be found in the black of the letter. The black of a typographic letter is so different from the black of a handwritten letter that as strict comparatives they appear incommensurate. Wherever typography concerns itself only with the black shapes of the prefabricated letters printable on paper, the academic study of writing is coerced into separating the consideration of handwriting from a history of type. But even the remainders of such a separation cannot be viewed from this vantage point. Consideration of past writing – insofar as it appears in books – falls to palaeography, diplomacy investigates past writing in original sources and letters, and epigraphy studies past writing on walls. Contemporary handwriting is totally ignored. It is at the mercy of the pedagogues who, through their wilful action, place the entire civilization at risk. This may appear immoderate, but what is western civilization if not the cultural community that avails itself of western writing? Pedagogues pride themselves on the fact that they do not burden school children with an introduction to writing. In so doing they undermine western civilization at its foundation. The frightening in-

crease in illiteracy begins with the neglect of writing in the schools. This threat to civilization goes together with the differentiation of the writing disciplines. The black starting-point forces the educated to this differentiation, which has no place for contemporary handwriting, because the black strands of this handwriting have next to nothing in common with the black shapes of the handwriting that the palaeographers seek to chart. It is no exaggeration to say that the school teacher only allows bad handwriting, because he or she regards good handwriting as 'drawn' instead of 'written'. The differentiation protects the point of view. Without it the school teacher would have to test his exemplars against good writing, and this confrontation would be fatal. Now he can serenely face good handwriting, because that belongs to a different subject on the other side of the partition.

In the same manner the academic viewpoints are safeguarded. It is inadmissible to suggest that type is writing, because such speculations undermine the prejudice (a prejudice is a viewpoint that may not be placed in question). When the facts still compel us to compare type with handwriting, the facts are suppressed. The history of the 'romain du roi' is a good example of this. The 'romain du roi' was cut around 1700 according to the directives of a scientific commission. The proposal was worked out on a grid – the traditional way of transposing drawings to scale. The minutes of the commission confirm what anyone can ascertain: the designs follow in detail the handwriting of Nicholas Jarry, who worked around 1650 as calligrapher for the Cabinet du Roi. This history leaves us no other choice than to view the 'romain du roi' – the type – in terms of the handwriting of Jarry. But if this were the case the foundation beneath the sciences of writing would fall away. Scholars forestall the landslide by keeping the affair under wraps. In its place they present the 'romain du roi' as a turning point in history. The grid would then have had to have been the true starting point of the design, and the typographical letter would have become, once and for all, independent of handwriting.

This falsification is intended to rescue an untenable viewpoint, but the effect is just the opposite. It is impossible to say anything about the autonomous typographic letter without calling to mind this historiographic falsification. Falsification is a familiar phenomenon in science. Scholars revert to it when the theory on which they have spent a lifetime threatens to be swept away. Studies of the typographic letter and pedagogy readily occasion forgetting, overlooking or obscuring the actual facts because the view of writing of these disciplines is keyed to the view that the typographic letter and informal handwriting are autonomous. And this point of departure can only be maintained at the cost of the facts.

Science is the art of finding a fitting question for every answer. Theories serve to elicit questions and questions serve to undermine theories. Questions engender perplexity, which is as it should be. When my theoretical house of cards collapses, all it means is that better insight replaces my own, and I will be glad to relinquish my opinion for a better one. Science is lost when the questions that endanger a theory are warded off or ignored.

My objection against science is not that the starting-points for the differentiation of writing are untenable, for that would, in the end, appear to be the case for every theory in every vital scientific endeavour. What bothers me is the unassailability of the starting-points. This unassailability changes science into superstition. The superstitions of the scribal scholars seep into disciplines that rely – recklessly – on the very same superficial consideration of the *black* in the *letter*. I encounter it in psychology, art history, mathematics, the linguistic sciences, etc.

It is impossible for me to stick my tongue out any further. But this must be enough to get anyone who loves jousting onto their horse. In this book I put my starting-point on display, with the friendly but urgent request to hold it up against the light.

THE LINE or page of handlettering should be so spaced as to present an even tone. Spacing is not a matter of mechanics but rather of feeling and taste. If the letters are set mechanically and spaced equidistant from each other, the effect is uneven and bad:

Same measure between points

Note crowded condition here

BAD SPACING

Too much space

Note open spaces

FOR an even appearance & maximum legibility, the white space within and around the letters must be considered and weighed as in any other kind of all-over design. Note again that the average space between words is approximately the width of small o:

In good spacing, determining the distance between letters is a matter of feel

CORRECT SPACING

TO implement good spacing of letters within the words, follow this "rule of thumb":

The greatest distance is left between two straight strokes → II as in HILL

A curved stroke next to a straight one is a little closer →)I as in JOIN

Two curved strokes are still closer →)(as in BOOK

Two points are placed as close together as possible

CALVERT

A point or curve can be tucked under

FOR decorative purposes, letters are sometimes spread out:

L E T T E R S P A C I N G