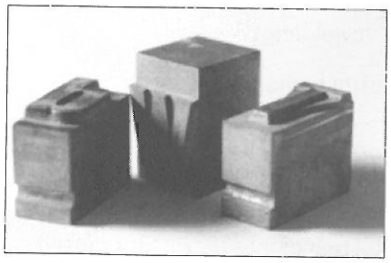
Character Characteristics

The nomenclature and morphology of type used today evolved primarily from the technological development of writing substrates, writing tools and printing technologies. A complete knowledge of this typographic anatomy provides a foundation for concise and consistent communication with service bureaus, clients, and other designers or art directors. The ability to distinguish one face, font, or family from another is essential to the development of a designer's aesthetic sense. As this typographic lexicon is mastered, the selection of a typeface to communicate meaning and enhance the visual message becomes easier.



8.1 Pieces of type.

Key Concepts
base
centered
cicero
concave
convex
descender line
didot
dingbats
display type
em
en
family
flush left
flush right
font
force-justified
italic
justified
kerning
leading
lining figures
lowercase numerals
negative leading
oblique
Old Style figures
phrasing
pica
platform
point
roman
set width
small caps
subscript
superscript
terminal
tied letters
tracking
typeface
uppercase numerals
weight
width

Upper- and Lowercase Letterforms

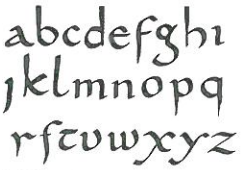
Although writing itself can be traced back to several millennia BCE, to Egyptian hieroglyphics and Sumerian cuneiform inscriptions, modern letterforms have their most immediate heritage in Roman inscriptions from around 50–120 CE, such as the one on the base of Trajan's column in the Roman forum. Early Latin writing was heavily influenced by these chiseled-in-stone letterforms, and over the centuries it evolved into a variety of other shapes, including uncials and the related Carolingian script. It is through this period of the

8.2 Square capitals.

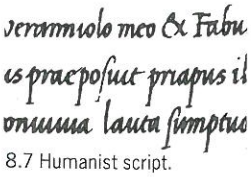
8.3 Rustic capitals.

8.4 Uncials.

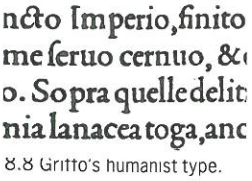
8.5 Half uncials.



8.6 Carolingian minuscules.



8.7 Humanist script.



8.8 Gritto's humanist type.

sixth to tenth centuries that we see the development of the lowercase (minuscule) letter as different from the uppercase (capital or majuscule).

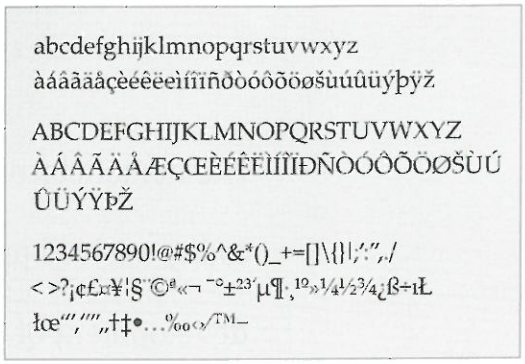
Handwritten articles resembled printed letters until scholars changed the form of writing, using capitals and small letters and writing with more slanted, connecting letters. Gradually writing became more suited to the speed the new writing instruments permitted. The credit for inventing Italian "running hand" or cursive handwriting with its capital and small letters goes to Aldus Mantius of Venice, who departed from the old set forms in 1495. By the end of the sixteenth century, the old Roman capitals and Greek letterforms had been transformed into the twenty-six letters we know today, both upper- and lowercase.

There are stages that can be identified in the evolution from capital or uppercase letters to their lowercase counterparts: square capitals (fourth to eighth centuries), rustic capitals (sixth century), uncials (fifth century), half-uncials (eighth and ninth centuries), Carolingian minuscules (ninth century), black letter (twelfth century), humanist (fifteenth century) and chancery.

The modern Latin alphabet consists of fifty two letters, including upper- and lowercase, plus ten numerals, punctuation marks, and a variety of other symbols such as &, %, and @. Many languages add a variety of accents to the basic letters, and a few also use extra letters and ligatures.

These accented letters can have a number of different functions:

- Modifying the pronunciation of a letter
- Indicating where the stress should fall in a word
- Indicating emphasis in a sentence



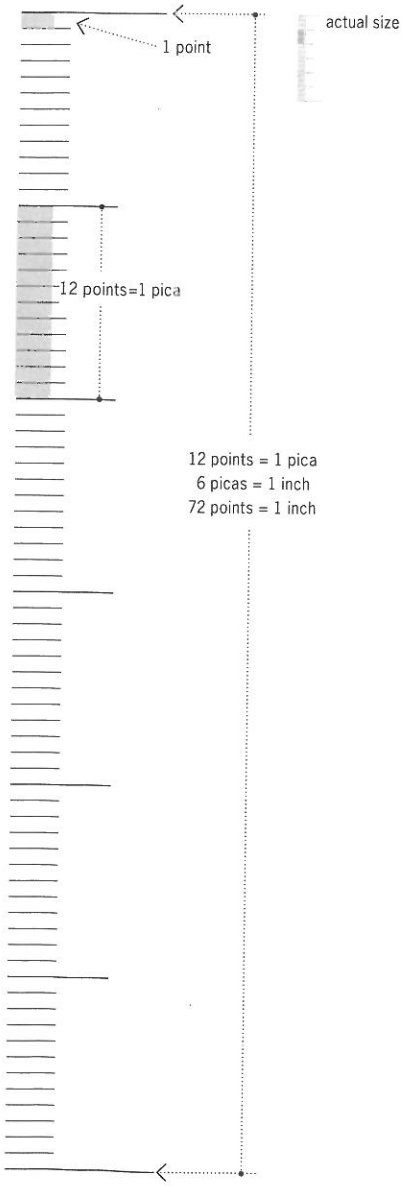
8.9 Examples of upper- and lowercase characters, numerals, special characters, and accented characters are shown.

- Indicating pitch or intonation of a word or syllable
- Indicating vowel length
- Distinguishing homophones

Measuring Type

For three hundred years after Gutenberg, no standard system of measurement existed. Type foundries used their own systems of dimension. This meant that type from one house often could not be used successfully by other foundries or printers. Sometimes the name given to a size of type from one foundry was the same as that given to a different type size from another foundry.

Typographic units are different from common measurement units such as centimeters and inches, as the typographic measurements were established before these other systems existed. The first attempt at a standard system of measurement was devised in 1737 by a French type designer, *Pierre Fournier Le Jeune*. His *Table of Proportions* named different sizes of type. Later editions of this book introduced the idea of a family of type, and the use of visually compatible type that could be combined in one printed piece for consistency. He divided one pre-metric French foot into 144 equal parts and called each of these parts a *point*. One of Fournier's



8.10 A pica is divided into 12 points; approximately 6 picas equal 1 inch.

points was equivalent to 0.0137 inch. After Fournier's death, another type designer, *Françoise Ambroise Didot* advocated that Fournier's systems should be based on the legal foot measure of France. The *didot* point equals 0.0148 English inch, and the *cicero*, Didot's equivalent of the pica, measures 0.1776 inch. The Didot system is still used in continental Europe.

Other attempts by English-speaking designers followed the French example, but no consensus of opinion was reached until the late nineteenth century. In 1871, the great fire of Chicago destroyed the premises of Marder, Luse, and Co., one of America's leading type foundries. As a result, a new system was devised to replace the lost matrixes. It was decided to use the *pica* as the main measurement system. This pica was divided into 12 parts called points. In 1898, British type founders adopted the American measurement, and the system became the international standard for English-speaking countries.

Points are used to measure all manner of typographical elements, including the thickness of spaces, the height of type, leading, and the size of rules and borders.

A pica is equivalent to 0.166044 inch, and is divided into twelve points. Although not mathematically precise, 72-point sizes are specified as being equivalent to one inch, and 36-point sizes are half an inch.

The point size measurement of type is determined by the distance from the top of the ascender or the top of the capital letter (whichever is higher) to the bottom of the descender. This area of measurement evolved from the piece of the cast lead type called the *base* or *platform*. Each letterform, regardless of actual size, was cast on the same

Typographic Measurement Systems Over Time
1 point (Truchet) = 0.188 mm (obsolete today)
1 point (Didot) = 0.3759 mm = 1/72 of a French Royal inch (27.07 mm) = about 1/68 inch
1 point (ATA) = 0.3514598 mm = 0.0138366 inch
1 point (TeX) = 0.3514598035 mm = 1/72.27 inch
1 point (PostScript) = 0.3527777778 mm = 1/72 inch
1 point (l'Imprimérie nationale, IN) = 0.4 mm

Key Players

Françoise Ambroise Didot

Pierre Fournier Le Jeune

Key Type Anatomy Concepts

apex
arm
ascender
ascender line
baseline
body line
bowl
bracketing
cap height
cap line
counter
cross bar
cross stroke
crotch
descender
descender line
ear
eye
fillet
finial
flag
hairline stroke
leg
ligature
link
loop
serif
shoulder
spine
stem stroke
swash
tail
terminal
vertex
x-height
x-height line

8.11 Depending on the specific design of a font, the *ascender line* may be above or below the *cap height line*. Although the point size of a font is estimated by measuring from the tip of the *ascender* to the bottom edge of the *descender*, this is not wholly accurate due to wide variation in the design.

Some of the Languages Written with the Latin Alphabet

Afaan, Afrikaans, Albanian, Aymara, Azeri, Basque, Breton, Catalan, Cheyenne, Cimbrian, Comanche, Cornish, Corsican, Croatian, Czech, Danish, Dutch, English, Esperanto, Estonian, Faroese, Finnish, French, Galician, German, Hausa, Hawaiian, Hungarian, Icelandic, Ido, Indonesian, Interlingua, Irish, Italian, Jermais, Kiribati, Kurdish, Latin, Latvian, Lingua Franca Nova, Lithuanian, Lojban, Lombard, Luxembourgish, Malay, Maltese, Manx, Mori, Nahuatl, Navajo, Nixi, Norwegian, Occitan, Oromo, Piedmontese, Polish, Portuguese, Quechua, Romanian, Samoan, Scots, Scottish Gaelic, Slovak, Slovene, Slovio, Spanish, Swahili, Swedish, Tagalog, Tatar, Taiwanese, Turkish, Turkmen, Vietnamese, Volapük, Welsh, Yoruba, Zulu

size base so that all of the letters could fit into the composing stick and neatly align on both the top and bottom.

Type can have different apparent sizes but still be set as the same point size. Different typefaces appear to be larger or smaller than other typefaces of the same point size because of differences in the body height and body width of the individual characters. This dimension is identified by the body line, mean line, or more commonly the *x-height*. Because the legs of the lowercase letter *x* are easy to accurately align with both the mean line (or body line) and the baseline of the set type, it is used as a standard reference.

In order to maintain the same point size, the flexibility in the proportions is in the ascenders and descenders. That is, faces with large x-heights may have shorter ascenders and descenders, while faces with smaller x-heights may have proportionately longer ascenders and descenders.

Distinguishing Font Styles

There are two easily distinguishable styles of font: roman and italic. The *roman* version of a font is based on the perpendicular relationship, or a 90° angle, between the baseline and the strokes of the letterforms. The stress or bias of a roman font is the angle determined by the direction of the thicker stem strokes. Angled or oblique stress in the letterform developed when a flat-tipped pen or chisel was held at an angle as the letter was drawn or carved. The thickest area of the stroke is the area of maximum stress, and is not always parallel to the main stroke in serif fonts. Many sans serif fonts have stress, although it is less pronounced.

The *italic* version of a font is slanted to the right, often at an angle between 12° and 15°. Although the italic version maintains many visual characteristics of its roman counterpart, it often incorporates additional embellishment such as hooked finials or terminals.

There is a difference between a true italic font and an oblique font. A true italic font is developed by the designer as such, and the letter design refers back to fifteenth-century Italian cursive handwriting. An *oblique* font is a slanted version of its roman counterpart, most commonly seen in sans serif type and in computer-generated variations of popular software applications.

abcdefg

abcdefgh

abcdefg

8.12 The roman version of a font is characterized by the vertical and horizontal strokes. A true italic is a separate but complementary design, while the oblique variation can be generated by altering settings in the computer.

Other font variations are based on the width and weight of the letterforms. The *width* of a character or face is referred to with terms such as *condensed*, *extended* or *expanded*. The width or set determines how many characters will fit in one line of typeset copy. The same line of type set in a condensed font will take less space than if it were set in a regular or extended font. The variation of width is most common in roman serif fonts and in both roman and italic versions of sans serif fonts. Seldom has a condensed or extended italic font been designed as part of a type family.

The term *weight* refers to the relative blackness of a particular font. The terminology for this changes from one typeface to another, though terms such as *light*, *book*, *heavy*, *bold*, and *extra bold* are often applied. Weight variations appear in both roman and italic serif and sans serif fonts.

Fonts, Faces, and Families

The term *typeface* refers to the upper- and lowercase letters of a given design. The term *font*, however, is a formal term that includes all of the upper- and lowercase letterforms, numerals, symbols, punctuation, accented characters, and small caps that comprise a particular size, style, and weight. The font is a complete selection of all the characters in a specific point size and design, ready for use in a composition or printing project.

A *family* of type includes all of the variations of a type design in all sizes. A family of fonts may include different weight versions of the original face—extra light, light, book, demi, bold, extra bold, heavy, and ultra. A family of fonts may include variations on width as well—condensed, regular, and extended or expanded. The most comprehensive font family may include sets of fonts based on combinations of weight, width, roman, and italic variations.

Typeface Design

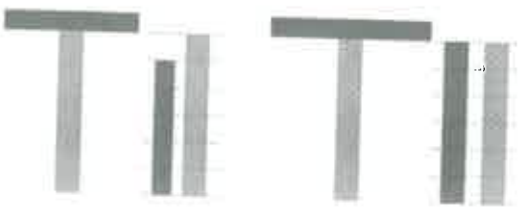
The way that the human eye and brain perceive, process, and interpret visual information provides a sound basis for the foundation of type design. Traditional type designers must explore and understand both aesthetic and technological constraints when designing or altering a font design.

Horizontal and Vertical Proportions of Type

The human brain interprets linear elements positioned horizontally in a composition differently than linear elements positioned vertically. Given the same weight, the vertically oriented line appears thinner than the horizontal line. Since this is a universal phenomenon among human beings, type designers take this into consideration by reducing the thickness of the horizontal strokes of letters, in order to create the appearance of balance and even weight.

Designing Optically Correct Circles, Triangles, and Squares

The basic geometric shapes of circle, triangle, and square are perceived differently by the human eye and brain than one might



Width
Width

8.13 Condensed and regular width variations within the Futura family of type.

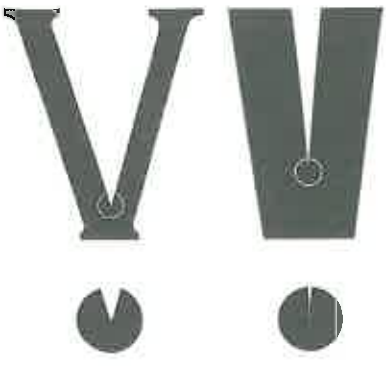
Weight
Weight
Weight
Weight
Weight

8.14 Weight variations from Futura Book, Futura, Futura Demi, Futura Bold, and Futura Extra Bold. The heavier the stroke, the more width a letterform occupies.

8.15 Letterform proportions are not always what they seem at first glance. In the letter *T* on the left, Futura Book, the lengths of the two bars are different. The horizontal naturally appears longer to the human eye than the equivalent vertical, so it must be adjusted visually. The *T* on the right is constructed from two equal bars, and the letterform appears top-heavy and unstable.

8.16 The weight of the horizontal and vertical strokes often appears equal, but closer inspection reveals the differences used to create visual balance.

8.17 Notice that the curved letterforms extend beyond the baseline and the x-height line to create the illusion of equal height.



8.18 The intersection of two strokes is often designed to accomodate printing practices. The vertex is either opened by spreading the strokes apart, or by extending the white space into the black area so that it does not appear "chunky" or clogged.

think. The four points of an invisible square align along the *baseline* and *cap line* of a font and provide a foundation for uppercase letterforms such as *T*, *E*, and *L*. The square always appears larger than an equivalent triangle or circle. Because of this, characters that are round, such as an *O* or *C* extend slightly below the baseline and slightly above the cap line. Pointed or triangular letters such as the letter *A* extend slightly above the cap line, and those such as the *V* and *W* extend slightly below the baseline. An understanding of these design concepts affects how the type aligns when it is set or comped correctly, especially in headline type or logotype designs.

Designing Joined Strokes

Where two lines intersect in a letterform, the junction is perceived as heavier than the weights of the two individual strokes. To minimize this effect, which causes the appearance of dark and uneven areas in the character design and subsequent typeset text, the area of the intersection is tapered to adjust the visual amount of the strokes.

When type was produced photographically employing the use of a negative and projected light source, additional considerations made the design of type more complicated. The distortions inherent to the photographic process caused vertices of letters such as *W* and *M* to fill slightly and appear rounded, since it was difficult to accurately project light into the tiny, angled spaces. Those who designed type during the era of phototypesetting learned to extend a thin white line into the areas where the letter strokes joined. This exaggeration of the

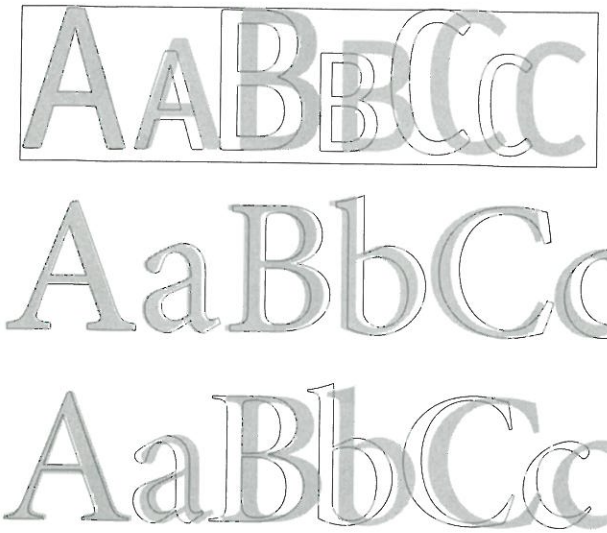
8.19 Phototypeset letterforms were extended slightly at the corners in order to appear crisp and clear.

pointed areas allowed the exposed letterform to appear clear, sharp, and pointed, as desired.

The opposite design was required for letterforms with squared-off terminals. When the flash of light exposed a letterform such as an *F* or *E*, the negative required the extension of a small line from the outside corner so that it would appear crisp and sharp instead of rounded.

Type for Use in Different Sizes

Historically, type designers refined three different versions of one font in three slightly different weights to accommodate the variation in point sizes. Four-point type has very different legibility concerns than 36-point headline sizes or 100-point and larger display sizes. To maintain the visual consistency, legibility, and the aesthetic personality of the font, variations on the original design were required. The first was used for 4-point through 14-point sizes, the second was used for 16-point through 36-point sizes, and a third weight was used for sizes larger than 36 points, all of which were separately refined.



8.20 Outline indicates Officina Sans Book set in small caps using the computer software application, while the solid gray area is Officina Sans Book small caps; notice the difference in the stroke weight and letter spacing.

8.21 Outline indicates Minion Pro caption while the solid gray area is Minion Pro Regular. The caption variation is designed for greater legibility at smaller sizes.

8.22 Outline indicates Minion Pro Display while the solid gray area is Minion Pro Regular. Again, notice the difference in stroke weight and in the default letter space designed for use at larger sizes.

The smallest version often utilized a slightly larger x-height than the version used for larger sizes. This larger x-height improved legibility and allowed for greater detail at the small size. Counterforms, such as the eye on the lowercase *e* were enlarged so that they would not clog or close up on the press. The medium size, ranging from 12 to 36 points, most resembled the original design, since the counters did not require enlarging and the height of the lowercase letterforms could hold the subtle details of the original design without enlarging the x-height. The third variation of the font design requires a great deal of attention in the refinement process, including subtleties in the bracketing of the serifs, weights of the strokes, and optical adjustments to ensure crisp corners and stroke intersections in sizes for wall posters as well as billboards.

Design of an Italic Font

Italic fonts are not merely slanted variations of a roman counterpart. Careful inspection of a true italic font reveals a new translation of the letterforms that incorporates the visual resemblance to a roman variation with the addition of hand-lettered qualities. Many lowercase letters, such as the letter *f*, incorporate a descender while others include swashes and other decorative details not seen in a roman version of the same family. Teardrop terminals are popular in italic fonts, as are the use of Old Style figures.

Other common variations in the letterforms include changes in the shape of the loop on the lowercase *g*, the lowercase *a* appearing as a single bowl form, the lowercase *k* incorporating a loop to replace the arm, lowercase letters *m*, *l*, *i*, and *n* with hooked finials, and lowercase *v*, *x*, *w*, and *y* with teardrop terminals.

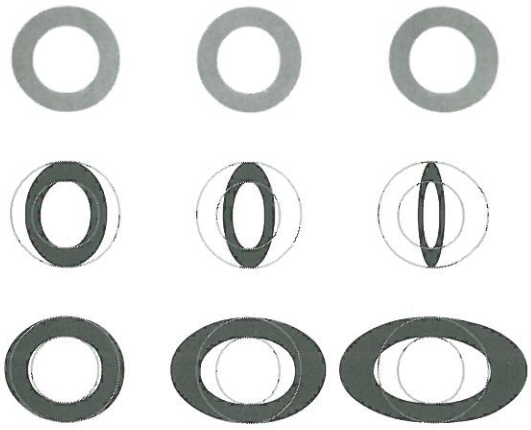
Designing Font Variations of Weight and Proportion

The subtleties of each character are reviewed and refined at both lighter and heavier weight variations. Different stroke weights require that the characters be drawn in slightly different proportions than the original to maintain visual harmony and balance, as well as the visual aesthetic relating the fonts to a family. Commonly the counterforms in bolder weights are opened up to maintain legibility in smaller sizes.

At times designers explore the option of adding a stroke (outline) to a letterform to

8.23 Garmond is a classic face in both the roman and italic styles.

8.24 The top two examples compare Garamond (outline) to Garamond bold, while the bottom two examples compare Garamond semibold (outline) to Garamond bold.



8.25 Artificailly changing a standard font design to condensed or extended by stretching and squeezing the letter ruins the stroke weight and proportions of the form as designed. Select a true condensed or extended font instead.

create a bold version when one is not readily available. This is not recommended because it changes the designed proportions of the letterforms, altering the legibility (especially at smaller sizes) and covering up the subtle details in the apices, vertices, and corners of the form. The added stroke often destroys the proportions of the serifs and the bracketing as well, resulting in an undesirable aesthetic.

Just as the regular or book proportions of a font are designed with specific considerations, so are condensed and extended fonts. The condensed and extended variations are changed structurally to accommodate the exaggerated proportions of height to width, to maintain the visual personality of the type family. Designers should be discouraged from stretching type on the computer to create the illusion of a condensed or extended font, as this destroys the subtle design of the typeface.

When a font is mechanically condensed on the computer, the letters are squished, which destroys the optical adjustments and subtlety in the design. The horizontal strokes of the letterforms, originally designed to be thinner than vertical strokes, become thicker, while the vertical strokes become thinner. The bracketing of serifs as well as the length of the serifs are pushed and pulled, just as are the strokes. When a font is mechanically extended on the computer, the thin horizontal strokes become much thinner than originally designed and the weight of the vertical strokes is increased, causing an awkward, uneven appearance. The visual harmony and balance are destroyed.

8.26 At top, the original letterform. In the middle is visual comparison between the original letterform with the bold style of the letterform. At bottom, notice the change in the proportions of the letterform between a true bold variation of the font (outline) as compared to a normal setting with a stroke applied.

H_2O $4^2=16$

H_2O $4^2=16$

8.27 (Left) A visual comparison of a computer-generated subscript (top) and a true subscript font (bottom); notice the diference in weight and proportion between them.

8.28 (Right) A visual comparison of a computer generated superscript (top) and a true superscript font (bottom).

Lining Figures, Small Caps, Superscript, Subscript, and Dingbats

Uppercase numerals, also called *lining figures*, are numbers within a particular font that match the cap height of the uppercase letters. In addition to the comparable height, these numbers are kerned to match the width of the uppercase letters. *Old Style figures* or *lowercase numerals* are set to the x-height of the font, with ascenders and descenders extending above and below. Lowercase numerals are more widely available in serif fonts than in sans serif fonts.

Small caps are uppercase letterforms set to the dimension of the x-height of any given font. True small caps may be found as part of an expert font set; most popular software applications include a command that allows the generation of a small cap lookalike using the standard uppercase letterform of the selected font. Artificially generated small caps are not of the same weight and proportion of a true small cap.

A *superscript* is a small character written near the cap line of a particular font. Superscripts are used to denote exponents in a scientific or mathematical equation, or the numerators in fractions. A *subscript* is a small character set near the baseline. They are often used to denote molecular combinations of chemical substances or to represent denominators in fraction sets.

Dingbats are sets of decorative swashes, special characters, and symbols. Although some of these symbols are offered in a font set, most dingbat sets are sold as a separate font based on a particular theme or subject area.

Type Anatomy

Just as the human body consists of numerous individually identifiable components, so are letterforms. The primary anatomy of a letterform includes the strokes and cross strokes, the terminals and serifs (or lack thereof), shoulders, arms and legs, links and tails, and so on. Many of these parts are named according to their similarities to their counterparts on the bodies of humans and animals.

Stroke

The weight of the font depends on the type and weight of the stroke. The *hairline stroke* refers to the lighter weight, and the *stem stroke* refers to the heavier weight or main stroke of the letterform. In most sans serif fonts there is a single stroke weight that determines the unique appearance of the

8.29 The crossbar or cross stroke is a horizontal portion of the letterform that connects two main strokes, or extends from a main stroke of the letter.

8.30 The link is a portion of the main stroke that connects the two main parts of the lowercase *g*.

8.31 The arms are horizontal or angled strokes that extend in an upward direction at 90° or less from the main stroke.

8.32 The legs are horizontal or angled strokes that extend from the main stroke in a downward direction at 90° or less as seen on the *R* and *K*. The tail is the angled stroke that extends from the *Q*.

8.33 The shoulder is the curvilinear transitional portion of the stroke that connects a somewhat horizontal stroke and a vertical stroke.

particular font, so all strokes that compose the letterform are light or all are heavy.

The *cross bar* is a horizontal stroke that connects two other strokes in a character, as seen in the letters *A* and *H*. Both ends of the crossbar meet and are joined by a stem or hairline stroke. The *cross stroke* is a horizontal stroke that intersects one of the main strokes of a character, but remains free on one end as seen in the *f*, or both ends, as seen in the *t*. Both crossbars and cross strokes are the same width as the hairline stroke of the font, and can be curved, angled, or stepped, depending on the design of the type.

Link

Link is the term for the stroke that connects the bowl and the loop on a lowercase *g*.

Arms and Tails

Arm and *leg* refer to the parts of a letter that extend out from the main stroke that are free on the terminal end. Strokes that extend sideways straight out at a 90° angle or extend upward at less than a 90° angle are arms, as seen on the letters *E* and *Y*. A stroke that extends downward at less than 90° is a *leg*, as seen on the letters *R* and *K*. The capital letter *K* has both an arm and a leg, while the capital letter *Q* has a *tail*.

The Spine and Shoulder

Spine is a term that refers to the double curve found in the main stroke of the uppercase and lowercase *S*. Often the thickest part of the letterform, the term is easy to remember because of its reference to the backbone in human anatomy.

The *shoulder* is the transition area in lowercase letters between the curved part of a

8.34 The spine is the portion of the curved stroke on a letter *S* that reverses from one direction to the opposite direction.

stroke and the vertical part of the same stroke. Shoulders are found on the letters *f*, *h*, *j*, *m*, *n*, and *u*. The weight of this area of the stroke is carefully refined to create a subtle change, and the shape of the shoulder determines the round, oval, or squared-off appearance of the font.

Serifs, Brackets, Terminals, and Finials

A *serif* is the slight extension at the beginning and end of the letter stroke, drawn at a right angle or obliquely across the arm, stem, or tail of a letter. Serifs are thought to have been retained from the days when type was cut into stone with a chisel, although this is debated. Serifs are categorized according to their physical shape. Again, there is great variation in the names and variation of serif shapes among historical examples.

8.35 *Bracketing* (also called the *fillet*). This transitional curve between the stroke and the serif on a letterform is a smooth addition based on the tangents of each of those elements.

Bracketing refers to the curved connecting area between the stroke of the letter and the serif. Bracketing is not essential, but rather is included or left out based on the aesthetic decision of the type designer. The bracket may have differing degrees of weight or thickness. The inclusion or absence of a bracketed serif is one clue to the identification of a face or font. The less common term *fillet* is synonymous with the term *bracket*.

The *terminal* is the ending of a stroke with some sort of self-contained treatment instead of a serif or finial. Author J. Ben Lieberman identifies straight, sheared, acute, grave, convex, concave, flared, hook, tapered, and pointed terminals. The variety of labeling and identification is dependent upon the historical source.

The *finial* is a non-serif ending to the stroke of a letter—for example, a ball, swash, ear, spur, or hook.

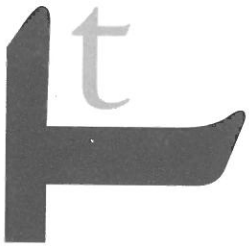
Counters and Bowls

The *bowl* is a round stroke that encloses a space and the *counter* is the enclosed space. If the bowl touches a stem stroke, it creates a closed counter as often seen in the letters *a*, *b*, *d*, *g*, *o*, *p*, and *q*. If the bowl does not touch the stem stroke, an open counter

8.36 Beaked serif. The serif terminal of the arm of a letter in the shape of a bird's beak, occurring in such capital letters as *E*, *F*, *K*, and *L*. Sometimes referred to as a half-serif, the beak may extend in two directions from the arm of the letter but only appears at the end of straight strokes.

8.37 Barbed serif. The beaked serif is referred to as a barb when it appears at the end of a curved stroke, as seen on the capital letters *C* and *S*. Like their beaked counterparts, barbs sometimes extend in both directions from the curved stroke.

8.38 Hairline serif. A light stoke that is generally unbracketed. This type of serif is common to the modern class of types.



8.39 Spur serif. A serif in certain types of Dutch original (Janson) and on the crossbar of the lowercase *f* or *t* as seen in Goudy Old Style and Erasmus Mediæval.

8.40 Hooked serif. Common in lowercase italic fonts, in such letters as *m*, *n*, and *u*.

8.41 Wedge serif. A wedge-shaped serif seen in fonts such as the Latin Series (Latin Bold, Wide Latin, and Chisel) and in many of the Dutch-English Old Styles on lowercase letters such as *b*, *d*, *h*, and *i*.

8.42 Slab serif. A monotone serif of equal weight as the stem is considered a feature of Egyptian or square serif fonts.

8.43 The lowercase *r* is an interesting form for studying and comparing finials. This is Bodoni, with a ball.

8.44 The lowercase Caslon italic *r* is an example of a teardrop shape. This portion of the letter *r* is sometimes called an ear.

8.45 The bowl is the round stroke that encloses the counter.

8.46 The counter (sometimes called a counterform) is the internal enclosed or semienclosed space within a letterform.

8.47 The eye is the specific name of the counter of a lowercase e.

8.48 The swash and the flag are decorative extensions of an arm or stroke that bring attention to a particular character within its typeset context.

results. An open counter may be recognized in many versions of the letters *a*, *c*, *h*, *v*, and *u* regardless of the curved or angled stroke enclosing the space. The term *loop* is the name used to refer to the bowl created in the descender of the lowercase *g* in some fonts.

The term *eye* refers to the counter on the lowercase *e* regardless of whether it is open or closed. The eye is given important consideration in the design and the selection of type for specific applications, since it is often the first area to fill in, or clog, with ink on press.

Apices, Crotches, and Vertices

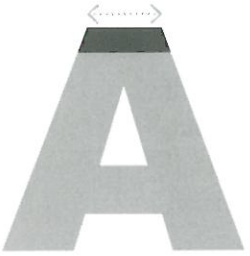
The *apex* of a letter is formed when two angled strokes come together. The apex usually extends slightly past the cap height so that it appears to be the same height as the other letters. There are pointed, rounded, sheared, hollowed, and flat apices.

Crotch refers to the interior space created by the juncture of two angled strokes as in the *K*, *M*, *N*, *W*, *X*, and *Z*. An acute crotch is based on an angle less than 90°, while an obtuse crotch is created when the strokes meet at an angle greater than 90°.

The *vertex* of a letter is the inverse of the apex; it is the juncture of two downward-slanting strokes. The vertex variations include flat, sheared, pointed, and rounded versions.

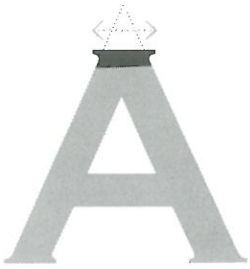
Swashes and Flags

A *swash* is a decorative extension of an arm or tail that accents characters, particularly in script fonts such as Bickham Script (designed by Richard Lipton), Arcana Script (Gabriel Martínez Meave), and Balmoral (Martin Wait). Swashes can be twisted or

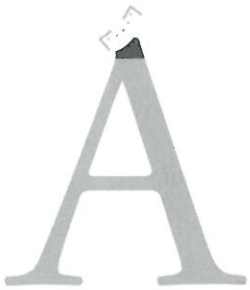


8.49 Flat apex

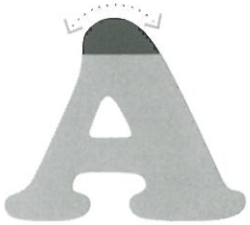
8.50 Pointed apex



8.51 Extended apex



8.52 Hollowed apex



8.53 Rounded apex

8.54 A visual comparison of the word took as set in default mode (gray outline), and as tightly kerned by hand (solid black).

Kerning Pairs: Combinations of Capital and Lowercase Letters

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

curled and are considered elegant additions. Some decorative fonts offer alternate swash characters, which may be used to draw attention to the beginning of an article or story. Families such as Adobe Garamond Pro (Robert Slimbach) include alternate Latin capitals with swashes.

A *flag* is a small swashlike stroke that appears in a calligraphic font such as black letter. These small flourishes add decoration to the end of the horizontal stokes.

Horizontal Spacing and Measurement

There are two dimensions used to measure horizontal spaces and dashes in typesetting: the em and the en. An *em* is the square of a type size. In 8-point type this dimension equals 8 points. This term is not synonymous with pica; only the em in a 12-point type size measures 12 points. The name for this measurement may stem from the fact that the letter *M* in the Roman alphabet did have a width that filled the full width of a square based on the height. This is not true with condensed fonts, extended fonts, and many contemporary type designs.

In traditional typesetting, an *em quad* is a space the size of an em, used to indent the first line of a paragraph. An *em dash* is used to join two phrases together into one sentence instead of using a conjunction, to insert information that could have been included in parentheses, or to add a final thought or emphasis at the end of a sentence. Occasionally an em dash is used as a replacement for the colon when introducing a list as part of the text.

An *en* measurement is equivalent to one half of the em, and again is named after the space commonly occupied by the width of a

8.55 A visual comparison of the hyphen, en or nut dash, and an em or mutt dash.

Kerning Pairs: Capital Letter Combinations

A' 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 F. F,
GE GO GR GU
HO
IC IG IO
JA JO
KO
L' LC LT LV LW LY LG LO LU
M 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 P. P, P; P: 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
ZO

Kerning Pairs: Lowercase Letter Combinations

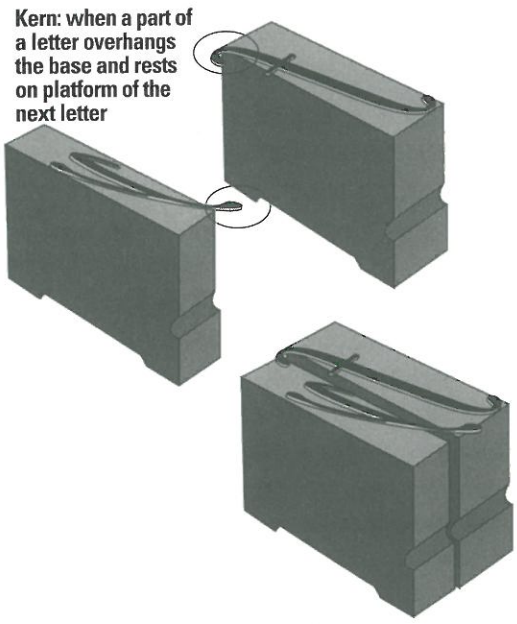
ac ad ae ag ap af at au av
aw ay ap
bl br bu by b. b,
ca ch ck
da dc de dg do dt du dv dw
dy d. d,
ea ei el em en ep er et eu ev
ew ey e. e,
fa fe ff fi fl fo f. f,
ga ge gh gl go gg g. g,
hc hd he hg ho hp ht hu hv hw hy
ic id ie ig io ip it iu iv
ja je jo ju j. j,
ka kc kd ke kg ko
la lc ld le lf lg 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 o. o,
pa ph pi pl pp pu p. p,
qu t.
ra rd re rg rk rl rm rn ro rq rr
rt rv ry r. r,
sh st su s. s,
td ta te to t. t,
ua uc ud ue ug uo up uq ut
uv uw uy
va vb vc vd ve vg vo vv vy v. v,
wa wx wd we wg wh wo w. w,
xa xe xo
y. y, ya yc yd ye yo

capital letter *N*. An *en dash* is most often used to indicate a range of numbers, such as "pages 17–44." It is also used in dates (December 2002–March 2003), to connect words in a few cases (the London–Paris train), with open compounds (post–World War II), and dates to indicate that something continues (Jane Doe [1950–]). An *en quad* is the white space that measures the same as an en. This white space is also sometimes referred to as a *nut*. This term was used in noisy print shops so that it would not be confused with the em when spoken.

The term *set width* refers to the total width of a letter and its surrounding space. Letter spacing allows the designer to optically space letters in a word or phrase so that the visual texture changes and a different line spacing results. Too much letter space will cause the word or phrase to become illegible. Negative letter space can be used to more effectively communicate a message, but once again, too much causes the word or phrase to become unreadable. In contemporary software applications, letter spacing is referred to as *tracking*.

Tightening the space between letters in a word is called *kerning*. The term comes from the German word "kern" meaning "corner." When a typesetter had to kern lead type, both letters had to be filed down manually, or "cornered," to remove part of the cast lead platform. The letters were then fit into the composing stick and checked for proper letter spacing.

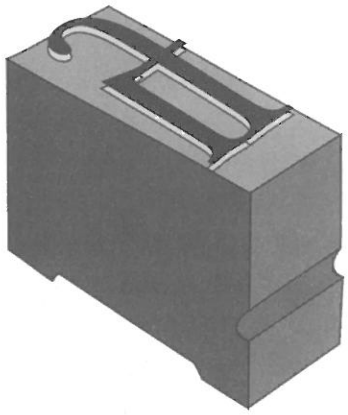
There are certain combinations of letters that should always be kerned. As a general rule, tighter kerning makes it easier for the brain to recognize the letter groups as words, which results in faster and easier reading. The



8.56 The term *kerning* originates from the cornering, or removal, of the lead base from behind the typeform so that the letters can overlap onto another letter's base for less space between each.

refinement of the letter spacing within words affects the density of the type on the page. The designer or typesetter strives to create an even tone of gray; if one area becomes significantly darker or lighter, then the blocks of text are set too tightly or too loosely. The general rule for spacing is the tight-not-touching (TNT) approach.

The same combination of characters that require kerning in the uppercase version of a font may not be the same as the lowercase combinations, since the shapes are not similar. Type designers know that some character combinations automatically require kerning—for example, any letter set next to an uppercase *F, W, T, V,* or *Y*. It is undesirable to allow letters to actually touch, since this often creates a dark area that attracts too



8.57 Originally ligature forms were cast on one piece of lead (called the body) together with the proper amount of letter space. This avoided the time-consuming practice of trying to hand-kern the delicate letters in the soft lead substrate.

much visual attention, especially in the case of two rounded characters.

Most software applications intended for publishing include preset kerning tables that automatically correct letter spacing whenever kerning pairs appear in the body text of an article. One of these contemporary applications may have two hundred to five hundred sets of kerned characters for each font, depending on the character forms in both uppercase and lowercase, the fastidiousness of the type designer, and the software manufacturer.

The refinement that is now available using popular publishing software is more precise than was possible with traditional hand-set type. Unfortunately, this has created a couple of generations of computer users who do not always understand the details of correct typography well enough to correctly refine the appearance of type on the page. The craft of typesetting has been watered down and the standards lowered with the proliferation of poor-quality typography set by untrained typists. Mastering correct kerning and tracking techniques results in more legible and attractive type solutions.

Ligatures

A ligature is when two or more characters are joined on a single body (one piece of lead) of type. The development of ligatures was based on the need to maintain legibility and readability in the closely spaced, hand-lettered manuscripts; ligatures were referred to as *tied letters* in the manuscript era. Although the need to maintain the ligature sequence in some combinations remains, the use of most pairs has been eliminated.

Common ligatures include *f* combinations originally intended to protect the kern of the letter from contact with an ascending character in a line below, as well as the *st* and *ct* combinations. All type that is connected, such as most scripts, is said to be ligated.

Word Space

In addition to the space between letters within each word, the designer must pay

Alice laughed so much at this, that she had to run back into the wood for fear of their hearing her; and when she next peeped out the Fish-Footman was gone, and the other was sitting on the ground near the door, staring stupidly up into the sky.

8.58 A typical practice is to imagine a lowercase *i* between each word in a sentence, phrase, or paragraph for greatest readability. Today's software applications calculate optical word spacing based on the beginning and ending letters of each word.

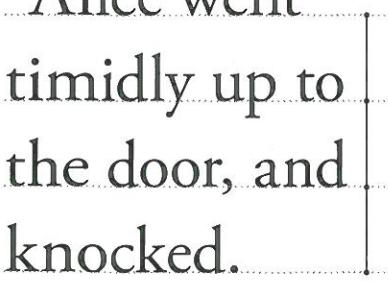
Ligatures

In some fonts the ligature version of a letter combination may be available by using a key command on the keyboard for special characters, or sometimes is automatically inserted by the software application. On occasion it requires the expert version of a font or appears only in the italic version of a font.

f fi fl ff ffi ffl
fj ffj Th ct
fi fl ff ffi ffl fj
ffj ct st Th Th

Although it is possible to create ligatures by closely spacing letters in the set type, this often appears crowded and muddy when the dark area of the touching letters is contrasted with the rest of the set type. This practice is an aesthetic decision that is recommended for professionals who have been practicing for a period of time, who have developed a sense of proportion, and who have mastered the basics of setting type well.

8.59 Wood type with strips of lead used to alter the vertical space between hand-set compositions.



8.60 The vertical space between lines of text is determined by measuring from one baseline to the subsequent baseline.

attention to the space between words, called *word spacing*. The general rule of thumb for word spacing is to visualize the width of a lowercase *i* in the space between each word. This means that the word spacing changes with the use of different fonts and different sizes of fonts.

Spacing type correctly for optimal legibility is one of the most important tasks. Poorly spaced type renders even the best design unreadable, defeating the purpose of the communication. Correct spacing involves aesthetic training and practice, in addition to an acquired intuitive sense that is best developed over time by critiquing and refining your designs. Evaluation of the type you see in your environment leads to a refined typographic sense more quickly.

Vertical Spacing

Leading or *line spacing* refers to the vertical space between stacked lines of type. This term originated with hand-set lead type when a compositor would place thin strips of lead between the lines of type to open the space. This extra space makes it easier for readers to maintain the horizontal movement and flow of their eyes as they read across a page of type, then jump effortlessly to the next line below.

Today, typeset copy is measured from the baseline of one line to the baseline of the next line above or below. This convention is used because it is consistent. Remember that the body height or x-height, the ascender length, and the descender length may vary from font to font and would not provide consistent results.

Some computer software provides the choice between traditional measurement from baseline to baseline and digital measurement

Alice went timidly up to the door, and knocked.
"There's no sort of use in knocking," said the Footman, "and that for two reasons. First, because I'm on the same side of the door as you are; secondly, because they're making such a noise inside, no one could possibly hear you." And certainly there was a most extraordinary noise going on within—a constant howling and sneezing, and every now and then a great crash, as if a dish or kettle had been broken to pieces.

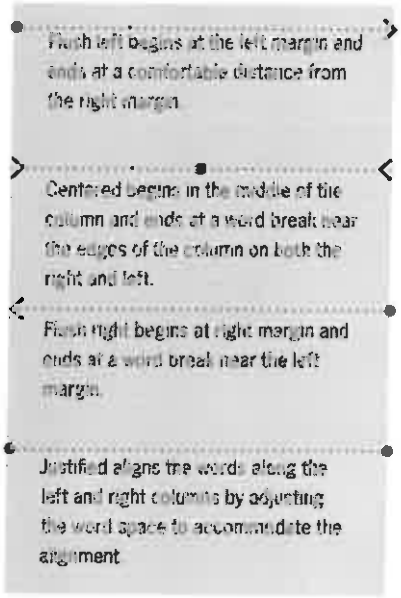
8.61 Garamond 10/6 (negative 4 points of vertical space per line).

Alice went timidly up to the door, and knocked.
"There's no sort of use in knocking," said the Footman, "and that for two reasons. First, because I'm on the same side of the door as you are; secondly, because they're making such a noise inside, no one could possibly hear you." And certainly there was a most extraordinary noise going on within—a constant howling and sneezing, and every now and then a great crash, as if a dish or kettle had been broken to pieces.

8.62 Garamond 10/10.

Alice went timidly up to the door, and knocked.
"There's no sort of use in knocking," said the Footman, "and that for two reasons. First, because I'm on the same side of the door as you are; secondly, because they're making such a noise inside, no one could possibly hear you." And certainly there was a most extraordinary noise going on within—a constant howling and sneezing, and every now and then a great crash, as if a dish or kettle had been broken to pieces.

8.63 Garamond 10/14.



from the center of one line of text to the center of the following line of text. Choosing the digital measurement for leading will cause the paragraph to appear more vertically centered in the type box than choosing the traditional measurement.

In type specification, the first number refers to the point size of the font, while the second number refers to the size of the leading. Ten-point type with two points of vertical space or leading added would be written as 10/12.

Type Alignment

Flush Left

Flush left refers to the alignment of type along an invisible vertical line or margin on the left side of a composition. The term implies that the type is allowed to remain misaligned, or ragged, on the right side. Some people believe that the flush left/ragged right composition is more inviting to the reader, that its somewhat casual appearance encourages reader involvement. Unless there is excessive white space between words, readers don't seem to care, or even to notice, whether they are reading justified or ragged right columns of text. Numerous studies, under a variety of conditions, continue to prove this.

The biggest advantage of unjustified typesetting is the ability to control word spacing. You can have tight, even word spacing in any length line. Not only does consistently tight word spacing look better, it's also an important aspect of efficient and legible typography. Tight word spaces speed up the reading process and allow the reader to absorb thoughts and phrases rather than individual words, which helps to maintain high levels of comprehension.

The disadvantage of unjustified typesetting is that it can be difficult to

Flush left begins at the left margin and ends at a comfortable distance from the right margin.

Centered begins in the middle of the column and ends at a word break near the edges of the column on both the right and left.

Flush right begins at right margin and ends at a word break near the left margin.

Justified aligns the words along the left and right columns by adjusting the word space to accommodate the alignment.

8.64 Explanation of the alignment of type according to standard settings.

"Please, then," said Alice, "how am I to get in?"

"There might be some sense in your knocking," the Footman went on without attending to her, "if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know." He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. "But perhaps he can't help it," she said to herself; "his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?" she repeated, aloud.

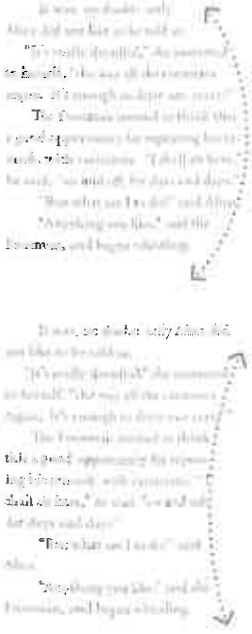
"Please, then," said Alice, "how am I to get in?"

"There might be some sense in your knocking," the Footman went on without attending to her, "if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know." He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. "But perhaps he can't help it," she said to herself; "his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?" she repeated, aloud.

"Please, then," said Alice, "how am I to get in?"

"There might be some sense in your knocking," the Footman went on without attending to her, "if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know." He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. "But perhaps he can't help it," she said to herself; "his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?" she repeated, aloud.

8.65 Examples of flush left, centered, and flush right specifications within a column, set in Garamond 10/14.



“Please, then,” said Alice, “how am I to get in?”

“There might be some sense in your knocking,” the Footman went on without attending to her, “if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know.” He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. “But perhaps he can't help it,” she said to herself; “his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?” she repeated, aloud.

“Please, then,” said Alice, “how am I to get in?”

“There might be some sense in your knocking,” the Footman went on without attending to her, “if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know.” He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. “But perhaps he can't help it,” she said to herself; “his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?” she repeated, aloud.

“Please, then,” said Alice, “how am I to get in?”

“There might be some sense in your knocking,” the Footman went on without attending to her, “if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know.” He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. “But perhaps he can't help it,” she said to herself; “his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?” she repeated, aloud.

8.66 Examples of justifed type specifications within a column, set in Garamond 10/14. Software applications provide the option of justification beginning and ending the paragraphs with flush left, centered, flush right, and force-justified.

8.67 *Convex* means curving or bulging outward, while *concave* is just the opposite.

produce it as high-quality typography. Very long lines followed by very short ones can cause awkward shapes that are not inviting to the eye. Ideally, unjustified composition should appear to be optically justified. If the right edge of a column describes a shape, it should be *convex* (curving outward)rather than *concave* (curving inward).

In most typesetting situations, the machine logic determines where a line ends. The problem is that logical decisions are not necessarily attractive aesthetic decisions. The person creating the graphic communication needs to carefully review the first set of production proofs and rebreak lines of copy to correct an unattractive set of line endings. If at all possible, copy should be rewritten to facilitate this process. Unfortunately, the real world rarely provides the graphic communicator the luxury of manually rebreaking lines, let alone the power to request that sentences be rewritten.

Flush Right

Flush right type aligns against the right side of the composition or column width. Just as with flush left text, the designer is able to control the word space for greater legibility. The difficulty is with reading large blocks of text set ragged left; as a reader's eyes scan from the beginning of a line on the left toward the right it is difficult to ascertain the beginning of the next line of type if it does not align under the first line or above the third. This causes breaks in the reader's mental flow and understanding of the information, slowing down the absorption of the message. Flush right/ragged left type should be used only for small areas of type used to accent a composition—perhaps as a few lines of an address and telephone number.

Justified

Justified type aligns on both the left and the right sides of the column. The major problem with setting justified copy is the risk of creating excessive word spacing inside the column. Many times the computer is presented with remaining space

"Please, then," said Alice, "how am I to get in?"

"There might be some sense in your knocking,' the Footman went on without attending to her, "if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know." He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. "But perhaps he can't help it," she said to herself; "his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?" she repeated, aloud.

"Please, then," said Alice, "how am I to get in?"

"There might be some sense in your knocking," the Footman went on without attending to her, "if we had the door between us. For instance, if you were INSIDE, you might knock, and I could let you out, you know." He was looking up into the sky all the time he was speaking, and this Alice thought decidedly uncivil. "But perhaps he can't help it," she said to herself; "his eyes are so VERY nearly at the top of his head. But at any rate he might answer questions.—How am I to get in?" she repeated, aloud.

8.68 Examples of *force-justified* specifications within a column, set in Garamond 10/14. Normally, a single lowercase *i* is the correct amount of space between words.

on the line, but not enough to set another word or a hyphenation of it. As a result, the word shifts down to next line, causing the previous line to be spaced out with too much space. Short line measures are especially difficult to set justified. A look at many newspaper columns will show you excessive word space and "rivers" of white running through the copy. The longer the line measure, the less often this problem occurs.

Most desktop publishing software applications provide the option of justification by beginning and ending the paragraphs flush right, flush left, centered, or *force-justified*. The latter is most likely to cause uncomfortable white spaces and be the most difficult to read.

Centered

Centered type aligns along a middle axis in the composition. Just as with flush right or flush left text, the designer is able to control the word space for greater legibility. However, just as with flush right paragraphs, it is difficult for the reader to find the beginning of the next line of text and continue reading. Centered alignment is most effectively used with small paragraphs, as in a formal invitation; with short lists as in a menu; or with large headlines and mastheads as in a poster, brochure, magazine, or newsletter.

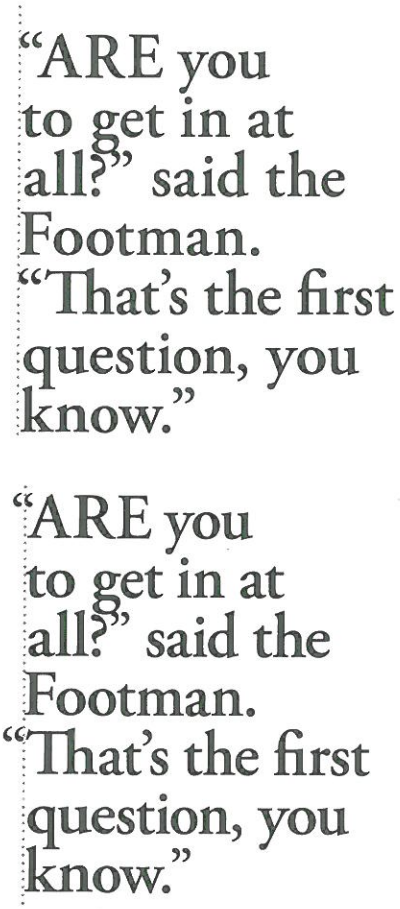
"Please, then," said Alice, "how am I to get in?"

8.69 Although the term *display type* often refers to anything above 14 points in size, we often assume something much larger for a headline. The contrast in size establishes the compositional importance or hierarchy that tells the viewer where to look first.

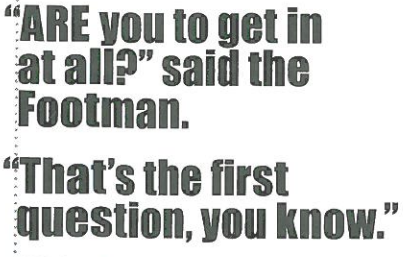
Spacing Type and Punctuation in Display Sizes

Headline copy often is the most important typographic element in the composition, as it quickly draws the attention of the potential reader by summarizing the content of the ad, brochure, magazine article, or newspaper article. If the reader does not become engaged by the headline, chances are that the rest of the copy will go unread.

Display type is type that is 14 points or larger. Because headlines are set in display-sized fonts, they can be crowded, angled, turned upside down, mirrored, tinted, and decorated so long as a significant amount of legibility is maintained. Because of the larger size of headline type,



8.70 Align the vertical edge of the text along the letterforms, and kick the punctuation or quotation marks out to the left for a stronger visual solution. The lines that appear indented due to quotation marks may lend a ragged, unprofessional finish to large text.



8.71 Some fonts have strong vertical strokes and lend themselves to the visual impact needed for display.

special consideration must be paid to the letter spacing, word spacing, leading or line spacing, and phrasing.

Usually headlines are kerned and tracked to a greater extent than body copy. This forces the letters to optically group into stronger visual statements, making them easier to read. Word spacing is also tighter in headlines for greater legibility and visual impact, so the spacing within words and that between words must complement each other. For example, if the word spacing is tight but the letter spacing is normal, then it would be difficult for readers to discern which letters belong to which words in a sentence; both the letter spacing and the word spacing must be changed proportionally to maintain the meaning of the message.

Word spacing is affected by the first and last letters of adjacent words. Because each character is a slightly different shape and proportion, it is necessary to use aesthetic judgment when altering the word spacing in a headline. Although the rule of using the area of a lowercase *i* works for spacing body copy, this cannot be applied universally in larger fonts since certain characters will have a tendency to appear larger or smaller depending on the font and the surrounding white space.

If one word ends with an *l* and the next word begins with an *i* then consider tightening the space between the words to a comfortable optical dimension. If one word ends in a rounded character such as an *e* and the next word begins with a rounded character such as *d* then the word space may be slightly larger to accommodate the protruding bowls.

Much experimentation and exploration are required to arrive at the perfect solution. In the past, letter and word spacing was handled by the typesetter, with the direction of the designer. Now that many designers set their own type in their layouts, they must learn to adjust the subtle differences on their own. The letter spacing and word spacing will vary depending on whether the text is all uppercase, small caps, or mixed upper- and lowercase letters. There are no absolute rules to assist the designer in correctly setting all possible combinations. This is complicated even further by the technology; some are fooled by the assumption that type on the computer screen appears exactly as it will on the printout. Screen fonts are only a close approximation of the printer fonts, so testing is required in the printing process as well.

Line spacing for headlines varies from that used for line spacing body copy. Remember that opening or enlarging the leading between lines of body copy often makes the text more readable, since the viewer's eye can more easily discern the separate lines. When setting headline type solid (the same size type set over the same size leading), often the words appear too far apart and are not grouped comfortably for easy reading and understanding; the words appear to float apart and the reader must assemble them in their mind. This is due to the vertical space automatically allowed for the ascenders and descenders.

Negative leading is the practice of setting type in a smaller vertical space. As an example, 48-point type with 6 additional points of leading would be indicated as 48/54; type set solid would be 48/48; type set with -12 points (negative) leading would be 48/36. Negative leading means that the space of the descenders share the space of the ascenders in

Spacing display text according to the default setting results in distracting spaces and less visual impact.

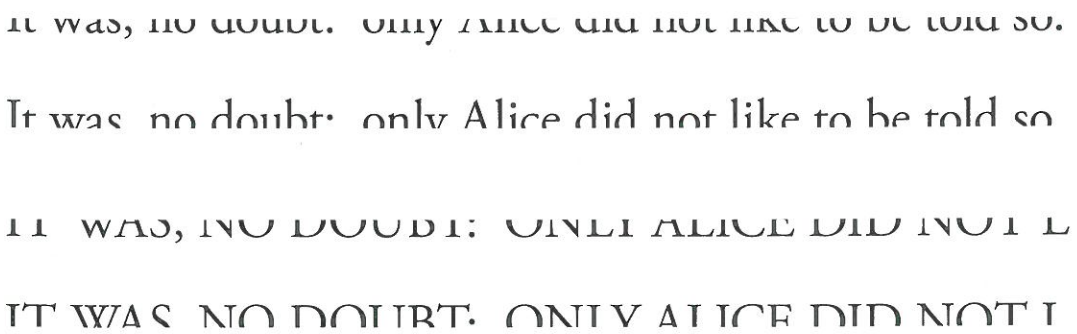
Spacing display text visually has pleasing results with greater visual impact.

8.72 Combinations of upper- and lowercase type in larger sizes require the designer to pay attention to line space and letter space. The auto-leading setting or solid setting creates a weaker visual statment (top) than the example that has been more tightly spaced (bottom).

SPACING DISPLAY TEXT ACCORDING TO THE DEFAULT SETTING RESULTS IN DISTRACTING SPACES.

SPACING DISPLAY TEXT VISUALLY HAS PLEASING RESULTS WITH GREATER VISUAL IMPACT.

8.73 Using all caps in larger sizes requires the designer to pay attention to line space and letter space. The auto-leading setting or solid setting creates a weaker visual statment (top) than the example that has been more tightly spaced (bottom). The addition of an initial or drop cap also directs the viewer's eye to an important starting position.



8.74 Mixed upper- and lowercase letterforms are easier to read than all caps. The ascenders and the descenders provide more information for the eye and brain to discern the forms and translate the meaning of the message.

It was, no doubt: only Alice did not like to be told so.
"It's really dreadful," she muttered to herself, "the way all the creatures argue. It's enough to drive one crazy!"

IT WAS, NO DOUBT: ONLY ALICE DID NOT LIKE TO BE TOLD SO.
"IT'S REALLY DREADFUL," SHE MUTTERED TO HERSELF, "THE WAY ALL THE CREATURES ARGUE. IT'S ENOUGH TO DRIVE ONE CRAZY!"

IT WAS, NO DOUBT: ONLY ALICE DID NOT LIKE TO BE TOLD SO.
"IT'S REALLY DREADFUL," SHE MUTTERED TO HERSELF, "THE WAY ALL THE CREATURES ARGUE. IT'S ENOUGH TO DRIVE ONE CRAZY!"

8.75 Upper- and lowercase letters are easier to read than all caps, even when there is slightly more leading to open the vertical spacing.

the line below, so the words must be carefully integrated to prevent overlapping.

Phrasing refers to the breaks in the lines of type according to the intended meaning. The phrases should make sense, so the goal is to group descriptive adjectives with the appropriate noun or pronoun; try to keep modifiers on the same line with the word they modify. Poorly phrased headlines may be difficult to read and may change the meaning of the message.

Line breaks must be in logical places, so change the font to support the correct phrasing by trying a condensed version within the same family, or switch from a round serif font to a regular or condensed sans serif font to make the correct fit. Read the phrases out loud with a slight pause at the end of each line to determine if the phrasing is logical and sensible.

Uppercase versus Mixed Upper- and Lowercase Type

Historical sources have proven that a combination of upper- and lowercase letters is more legible or easier to read than the same word or sentence set in all caps. This is due to the fact that uppercase letters are all the same height and a similar width, whereas lowercase letters vary greatly in shape with their ascenders and descenders. This rule holds true for both body copy and headline copy, with estimates of reading speed being up to 15 percent slower for all caps. The reader is forced to identify the individual letterforms before assembling them into words, whereas mixed upper- and lowercase type allows the brain to recognize entire words at once. This does not mean that all caps should never be used; rather, they work best in limited applications for special emphasis and visual excitement.

Optical Character Alignment in Headlines

The capital letters *A, C, G, J, O, S, T, V, W, X,* and *Y* represent special alignment challenges due to their inherent rounded or angled shapes. If these characters are set flush left, relying on the mechanical settings of the software application, more often than not they appear out of line. Commonly these characters must be set to the left of the alignment of the other letters above and below to make them appear in the correct position.

Different software applications have different ways of allowing optical alignment. One method is to use a soft return (Shift + Enter) at the end of each line of type. Add a

space at the beginning of each line of type, then highlight the space and change the tracking of the space as necessary to optically align the characters. A negative number shifts the line of type to the left, and a positive number shifts the line of type to the right.

Optical alignment applies to punctuation in headlines. A common example is the inclusion of opening quotes at the beginning of a headline, which causes the type to appear indented from the subsequent lines below. To alleviate the visually irregular margin, use hanging punctuation to vertically align the rest of the lines of type. The quotes become less of a distraction.

Punctuation marks are set in a slightly smaller point size in headlines. This allows the type to remain dominant in the written message, with the punctuation remaining secondary in the visual hierarchy. When the size of quotation marks or apostrophes is reduced in size, the baseline must be shifted to match the baseline or cap line of the original headline copy.

Chapter Eight Review

Circle one answer for each definition to indicate the correct key concept term or key player, or key type anatomy concept for each. When necessary, determine whether the phrase provided is true or false.

1. Accented letters can have a number of different functions:
   a. Indicating pitch or intonation of a word or syllable
   b. Indicating vowel length
   c. Distinguishing homophones
   d. All of the above

2. This term refers to the vertical space between stacked lines of type.
   a. Word spacing
   b. Letter spacing
   c. Leading
   d. Set width

3. This dimension is identified by the body line, mean line, or more commonly the _____.
   a. Cap height line
   b. Ascender line
   c. x-height line
   d. Descender line

4. It is the juncture of two downward-slanting strokes. The variations include flat, sheared, pointed, and rounded versions.
   a. Apex
   b. Crotch
   c. Link
   d. Vertex

5. Strokes that extend sideways straight out at a 90° angle or extend upward at less than a 90° angle are _____ as seen on the letters *E* and *Y*.
   a. Arms
   b. Crossbars
   c. Legs
   d. Tails

6. The first attempt at a standard system of measurement was devised in 1737 by a French type designer, Pierre Fournier Le Jeune in his Table of Proportions.
   a. True
   b. False

7. Each letterform, regardless of actual size, was cast on the same size base so that all of the letters could fit into the composing stick and neatly align on both the top and bottom. This base is also called the
   a. Set width
   b. Platform
   c. Font
   d. Terminal

8. This is formed when two angled strokes come together. It usually extends slightly past the cap height so that it appears to be the same height as the other letters.
   a. Spine
   b. Vertex
   c. Crotch
   d. Apex

9. Historical sources have proven that a combination of upper- and lowercase letters is more legible or easier to read than the same word or sentence set in all caps.
   a. True
   b. False

10. Tightening the space between letters in a word is called _____.
   a. Tracking
   b. Kerning
   c. Letter spacing
   d. Weighting

11. Points are used to measure all manner of typographical elements, including the thickness of spaces, the height of type, leading, and the size of rules and borders.
   a. True
   b. False

12. This is a decorative extension of an arm or tail that accents characters, particularly in script fonts
   a. Swash
   b. Finial
   c. Terminal
   d. Apex

13. This is a formal term that includes all of the upper- and lowercase letterforms, numerals, symbols, punctuation, accented characters, and small caps that comprise a particular size, style, and weight.
   a. Typeface
   b. Family
   c. Font
   d. Face

14. The major problem with setting copy this way is the risk of creating excessive word spacing inside the column.
   a. Justified
   b. Flush right
   c. Centered
   d. Flush left

15. Italic fonts are merely slanted variations of a roman counterpart.
   a. True
   b. False

16. This is a small swashlike stroke that appears in a calligraphic font such as black letter.
   a. Spine
   b. Swash
   c. Flag
   d. Finial

17. A pica is equivalent to 0.166044 inch, and is divided into twelve _____.
   a. Didots
   b. Points
   c. ATAs
   d. Truchets

18. If the right edge of a column describes a shape, it should be concave (curving outward) rather than convex (curving inward).
    a. True
    b. False

19. This refers to the counter on the lowercase *e* regardless of whether it is open or closed. It is given important consideration in the design and the selection of type for specific applications, since it is often the first area to fill in, or clog, with ink on press.
    a. Apex
    b. Ligature
    c. Eye
    d. Tail

20. This dimension is the square of a type size.
    a. Didot
    b. Em
    c. En quad
    d. Pica

21. The term _____ refers to the upper- and lowercase letters of a given design.
    a. Font
    b. Family
    c. Roman
    d. Typeface

22. The term _____ refers to the relative blackness of a particular font. The terminology for this changes from one typeface to another, though terms such as light, book, heavy, bold, and extra bold are often applied.
    a. Width
    b. Extended
    c. Set width
    d. Weight

23. Link is the term for the stroke that connects the bowl and the loop on a lowercase italic *d*.
    a. True
    b. False

24. This is a round stroke that encloses a space on a letterform. If it touches a stem stroke it creates a closed counter.
    a. Bowl
    b. Shoulder
    c. Eye
    d. Link

25. This is the ending of a stroke with some sort of self-contained treatment. Types of this are categorized as straight, sheared, acute, grave, convex, concave, flared, hook, tapered, and pointed.
    a. Apex
    b. Serif
    c. Descender
    d. Finial

26. The designer must pay attention to the space between words, called _____ .
    a. Tracking
    b. Kerning
    c. Word spacing
    d. Leading

27. These characters are often used to denote molecular combinations of chemical substances or to represent denominators in fractions.
    a. Superscript
    b. Small caps
    c. Display text
    d. Subscript

28. A pica is equivalent to 0.166044 inch, and is divided into twenty points.
    a. True
    b. False

29. Accented letters can have a number of different functions:
    a. Modifying the pronunciation of a letter
    b. Indicating where the stress should fall in a word
    c. Indicating emphasis in a sentence
    d. All of the above

30. Because the legs of the lowercase letter *k* are easy to accurately align with both the mean line (or body line) and the baseline of the set type, it is used as a standard reference.
    a. True
    b. False

31. Strokes that extend sideways straight out at a 90° angle or extend downward at less than a 90° angle are _____as seen on the letters *E* and *Y*.
    a. Arms
    b. Crossbars
    c. Legs
    d. Tails

32. This term refers to the heavier weight or main stroke of the letterform.
    a. Hairline stroke
    b. Crossbar
    c. Stem stroke
    d. Counterform

33. The less common term *fillet* is synonymous with this term.
    a. Finial
    b. Terminal
    c. Bracket
    d. Spine

34. The term set width refers to the total width of a letter and its surrounding space.
    a. True
    b. False

35. This is most often used to indicate a range of numbers, such as "pages 17–44." It is also used in dates (December 2002–March 2003), to connect words in a few cases (the London–Paris train), with open compounds (post–World War II), and dates to indicate that something continues (Jane Doe [1950–])
    a. Em quad
    b. En dash
    c. En quad
    d. Em dash

36. The same combination of characters that require kerning in the uppercase version of a font are the same as the lowercase combinations, since the shapes are similar.
    a. True
    b. False

37. This term refers to the alignment of type along an invisible vertical line or margin on the left side of a composition.
    a. Justified
    b. Flush right
    c. Centered
    d. Flush left

38. Align the vertical edge of the large text along the letterforms, and kick the punctuation or quotation marks out to the left for a stronger visual solution. The lines that appear indented due to quotation marks may lend a ragged, unprofessional finish to large text.
    a. True
    b. False

39. This means that the space of the descenders share the space of the ascenders in the line below, so the words must be carefully integrated to prevent overlapping.
    a. Phrasing
    b. Negative leading
    c. Set solid
    d. Kerning

40. This font is a slanted version of its roman counterpart, most commonly seen in sans serif type and in computer-generated variations of popular software applications.
    a. Italic
    b. Justified
    c. Superscript
    d. Oblique

41. Dingbats are sets of decorative swashes, special characters, and symbols.
    a. True
    b. False