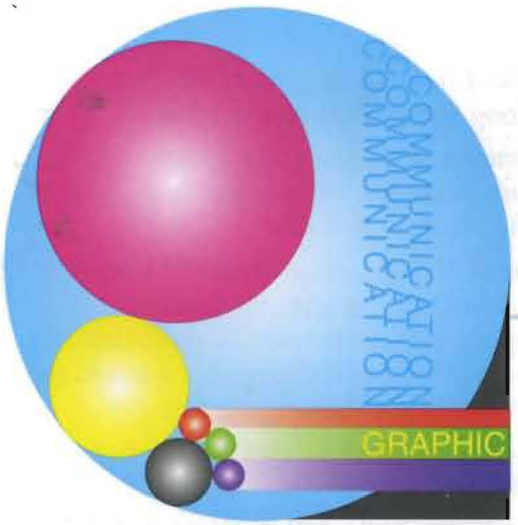


Typography 4

Learning Objectives

After studying this chapter, you will be able to:

- Describe the development of type styles.
- Identify the basic terms used to describe type.
- List seven typeface classifications.
- Explain the difference between a family, a series, and a font of type.
- Identify the common type sizes and units used in typography.
- List and explain the factors that contribute to the legibility of type.
- Summarize how the computer has increased the capabilities of typography.

Important Terms

ascender
descender
font
justify
leading
legibility
point size
Roman
sans serif
x-height

This chapter introduces the role that typefaces play in producing printed images. Typefaces are important, not only to the communication of thoughts, but to the overall appearance or aesthetic characteristics of the printed image. Careful study of this chapter will help you understand the information presented in later chapters.

Typefaces

Typefaces are distinctive designs of visual symbols (images) that are used to compose a printed page on paper or another substrate (printing surface). ***Characters*** are the individual visual symbols in a particular typeface. An assortment of characters — letters, numerals, punctuation marks, and special symbols (such as the ampersand) — is necessary to put words into print.

Just as every person has a name, every typeface has a name. It would be very difficult to identify specific typefaces without names, just as it would be difficult to identify individual human beings if there were no names. There are literally thousands of typefaces available to the producer of printed products. With the introduction of computerized typesetting, the number of new typefaces has increased dramatically and continues to grow steadily.

Typography

Typography is the art of expressing ideas in printed form through the selection of appropriate typefaces. The ***typographer*** (print designer) must determine how the manuscript should be expressed in type as well as other details of reproduction and physical format.

For example, if the typographer is selecting a typeface to use in an advertisement for a new electronic device, he or she would *not* select an old-fashioned-appearing type style with ornate, curly letters. A modern, clean-looking type would be more appropriate and representative.

Typeface terminology

The alphabet used for English and most European languages consists of only 26 letters. However, since there are thousands of typefaces, the letters of that alphabet are represented in many different ways. To be able to differentiate among the various typefaces, you must understand the basic terms relating to type and know how they affect the printed image.

The fundamental terms relating to a typeface are shown in **Figure 4-1**. They include:

- ***Uppercase***. The capital letters, usually abbreviated "caps."
- ***Lowercase***. The body letters, abbreviated "lc."
- ***Body height***. The distance from top to bottom of the lowercase letters, not including the ascenders and descenders. Also called *x-height*.
- ***Ascender***. The part of a letter that extends above the body height.
- ***Descender***. The part of a letter that extends below the body height.
- ***Base line***. An imaginary line drawn along bottom of body height letters. Descenders go below it.
- ***Waist line***. An imaginary line drawn along top of body height letters.
- ***Counter***. The nonprinting area surrounding a letter or inside the loop of a letter, such as d or p.
- ***Point size***. A vertical measurement used to identify or specify the size of a typeface. Measurement is approximately from the top of the ascender space to the bottom of the descender space.

Basic terms relating to specific characters, as shown in **Figure 4-2**, are:

- ***Hairline***. A thin line or element of the character.
- ***Stem***. The vertical part of the character.
- ***Stroke***. The thickness of a line forming a character element.
- ***Stress***. The slant or tilt of a character.
- ***Serif***. The thickened tips or short finishing-off strokes at the top and bottom of character.
- ***Set width***. The distance across a character from side to side.

Later sections of this chapter, and other chapters, will discuss these terms in greater detail. You will learn how these typeface components and characteristics can be used to alter the form and function of words, sentences, and the general "look" of the printed image.

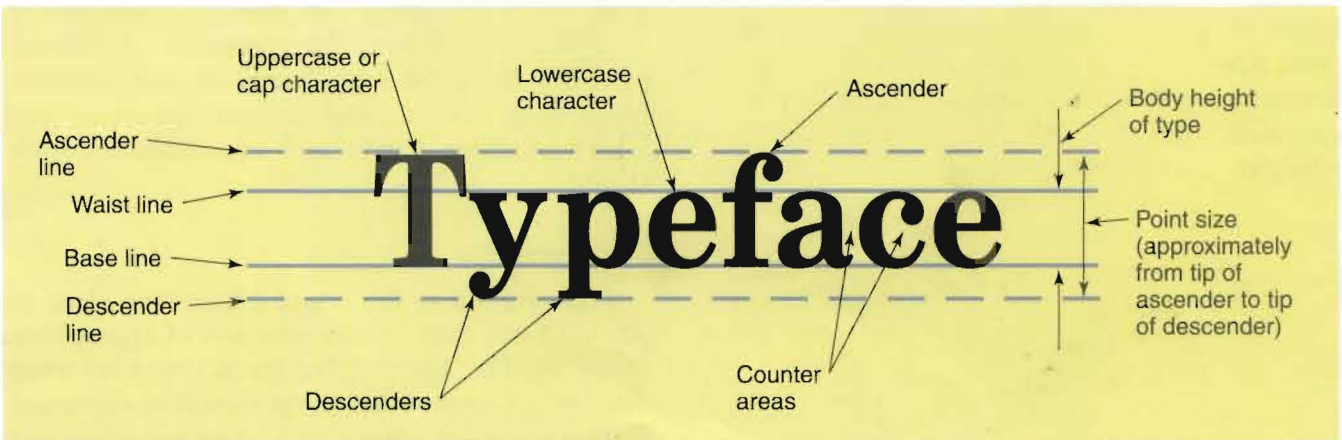


Figure 4-1. Basic terms relating to a typeface.

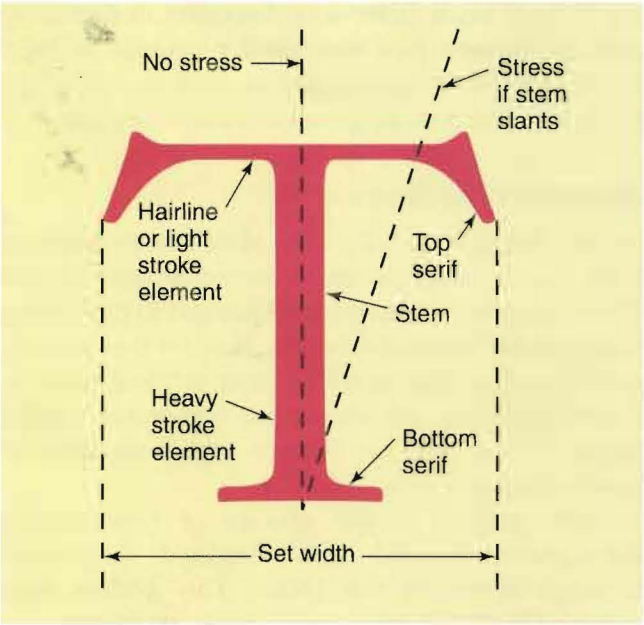


Figure 4-2. The parts of a character.



Figure 4-3. Foundry type, cast in metal, was the major form of type used by printers for more than 500 years. Ink was applied to the raised surface of the letter and transferred to paper to form an image.

Type Style Development

Throughout history, humans have striven to perfect the art of making written or printed images. The scribes of medieval Europe produced hundreds of beautiful and masterful letter forms as they hand-lettered book pages. The scribes developed very beautiful lettering, making each character into an "art form." Across Europe, the style of the letters varied from country to country, or sometimes even from region to region within a country.

When the process of mechanical printing from individual pieces of type was introduced in Europe in the 15th Century, typographers modeled their letters upon those drawn by scribes. Each letter was cut by hand from hard metal to form a punch, which then was driven into softer metal to make a mold. The mold, in turn, was used to produce many copies of the letter. Molten ***type metal*** (an alloy of lead, tin, and antimony) was poured into the mold to form an individual piece of type that could be aligned with type containing other letters to form words and sentences. **Figure 4-3** shows a piece of ***foundry type*** produced by the modern version of this method. Although it is used only in a few specialized applications today, "hot metal" type (another term for foundry type) was the major form of type for used for printing from the 1400s through the mid-1900s.

New printing methods introduced in the past 50 years have given rise to photographic and electronic (computer-based) methods of typesetting. These methods, which will be described later, also made it easier to design and produce new typefaces. Many of these new faces are radically different from those that have been widely used for many years.

Black letter

The ***manuscript*** (literally "hand written") style of lettering used by the scribes of Germany, France, Holland, and other countries was similar to the type style known today as *black letter*, *text*, or ***Old English***, **Figure 4-4**. This letter style was the basis for development of the earliest metal type, since the typographer or printer typically imitated the manuscript style common to a locality or geographic area.

Graphic Arts Display of Fine Printing Reveals Skillful Arrangement of Type

Figure 4-4. Black letter is a style of type based on hand-lettering done by scribes in European countries. (ATF)

Development of the Roman type style

As the art of printing developed, changes in type styles also increased. This was especially true in Italy, where many of the German printers had

migrated. The German black letter type styles gradually were replaced by a more delicate and lighter type style that became known the *Roman*. Several books were printed in an early version of the Roman face, known as the ***Subiaco face*** (named for the town where the printing was done).

A major figure in the development of the Roman type style was Nicolas Jenson. He was a master engraver for the French government who learned the new craft of printing in Mainz, Germany, and later moved to Italy.

Jenson is credited with designing and cutting the Roman letter forms that first appeared in printed pieces in 1469 and 1470. His designs, **Figure 4-5,** were based on the letters cut into stone monuments by the ancient Romans. Since the letters on the monuments were all capitals, Jenson developed Roman lowercase letters that would merge readily into word forms. This was significant, since we recognize words by their shape. The Jenson designs were the models used by type designers for hundreds of years. Nicolas Jenson is credited with printing about 150 books during his ten years in Italy.

ABCDEFGHIJKLMNOPQR
STUVWXYZ
abcdefghijklmnopqrstuvwxyz

Figure 4-5. Nicolas Jenson modified Roman letters and developed a lowercase alphabet so that it would more readily form words. This is a modern version of his typeface.

Jenson followed the traditions of the manuscript scribe in his lowercase letters. When enlarged, these letters revealed the feeling of the pen-drawn letter on a parchment surface. Each letter could be considered independently, yet they merged into the identity of the word.

Many other designers produced type styles in Italy during the same period. The slanted ***italic type***, modeled on a form of handwriting, was developed and first used by Aldus Manutius, a printer in Venice.

The black letter, Roman, and Italic type styles were used universally in Europe for two centuries. For a time, black letter was dominant in Germany and the Roman face was used primarily in Italy. Eventually however, Roman became the principal letter style used in all countries except Germany.

Modern typefaces

As noted, the early type styles were adapted from hand-drawn or stone-carved letters. By the 1700s, however, the emphasis changed to producing typefaces by copying from those styles that already existed, rather than working from original sources. Aesthetics were no longer an important design factor. Types became thinner and lines became much sharper.

The decline in the quality of type design throughout Europe and England continued through much of the 1800s. The decline was reflected in the poorly printed books of the era.

In 1890, William Morris, an English architect, artist, and poet, set out to demonstrate that books could again be beautiful. His interest brought about the revival of many early typefaces, such as Jenson, Garamond, Janson, and Caslon. These faces are the basis for many of the typefaces used today in book publication. See **Figure 4-6.**

BRAZIL, CHILE AND OTHER
A It shows civilization at the time so

AT BRAZIL AND OTHER
It shows civilization at a time so
B remote that it is doubtful whether

CHESS-KNIGHT
C After an apprentice

SOME KNIGHTS OF
D After an apprentice as

Figure 4-6. Roman typefaces revived for modern use are the basis of many faces employed today. A—Today's Garamond type is faithful to the original style. (ATF) B—The Caslon face is considered a classic. (ATF) C—Baskerville developed a type with letter forms designed specifically for printing. D—The extreme contrast of elements in Bodoni identifies it as a modern Roman typeface. (ATF)

Claude Garamond, a French printer, was influenced by Nicholas Jenson's Roman typeface, but designed a more elegant and refined face that was typically French. Garamond's 1540 design was redesigned in 1919 in the United States. The redesign resulted in a light-lined, more open design that would print more clearly.

The Janson typeface of today is a recutting of the face issued in about the year 1675 by Anton Janson. Janson (not to be confused with Nicholas Jenson) modified the manuscript letter by lightening the lines for better printing on a rough-surfaced stock.

Also designed for printing on rough stock was the typeface issued by William Caslon in England in about the year 1722. Caslon's typeface was an immediate success. The design by Caslon continued the trend toward lighter lines and more open design for better printing.

The English printer John Baskerville developed a typeface that is considered the beginning of the transition from letters based on manuscript to letters designed solely for printing. This type style was suitable for printing on smooth paper. Baskerville established a paper mill, type foundry, and printing office in Birmingham, England, and conducted extensive experiments with type and paper from 1750 to 1758. Baskerville's principle of considering type, paper, ink, and presswork together was the basis of today's planning of a printed job.

Another widely used type style was designed by Giambattista Bodoni, an Italian printer active in the late 1700s and early 1800s. Bodoni's typeface had greater differences between the light and heavy elements than any other face at that time, and is considered to be a modern Roman typeface. Bodoni typefaces used today show extreme difference between light and heavy elements. The typeface known as *Bodoni Book* has less pronounced contrast between elements, and closer to Bodoni's earlier designs.

Contemporary typefaces

Contemporary typefaces are primarily the contributions of the 20th century, and can be divided into three groups. First, there are the modern versions of the basic book faces of the early printers, as described in the preceding section. Second, there are the modifications of the basic book faces made for newspapers. Third, there are the many new display faces. The substantial increase in the number of typefaces paralleled the rapid growth of advertising and commercial printing during the first half of this century.

Today, thousands of faces are in existence. While this number seems large, think of the carpenter or auto technician who keeps a large chest of tools so the right one will be available when needed. In the same way, a typographer needs many "tools" so he or she can choose the correct typeface for a specific job. For use in computerized typesetting, numerous typefaces are available on CD-ROM. Printed samples of the faces available on the disk allow the designer to easily select a specific font. See **Figure 4-7.**



Figure 4-7. Literally thousands of fonts are available on disk for computer-based typesetting. This is a typical disk containing just typefaces. Most page layout and drawing programs also include sizable typeface libraries.

Sometimes, typefaces will look very much alike, yet have different names. Since typefaces cannot be copyrighted, it is possible for a designer to change a typeface slightly and gave the style a new name.

Roman typeface elements

Three elements contribute to the appearance of a character in a Roman typeface and help to differentiate between faces. They are the heavy elements, light elements, and serifs.

The ***heavy elements*** of the type character give identity, while the ***light elements*** tie the heavy elements together. The contrast between heavy and

light elements help give a typeface its distinctive character. See **Figure 4-8**.

The curves of the characters should vary to emphasize difference or unlikeness of the letters and to neutralize the vertical thrusts of the letters.

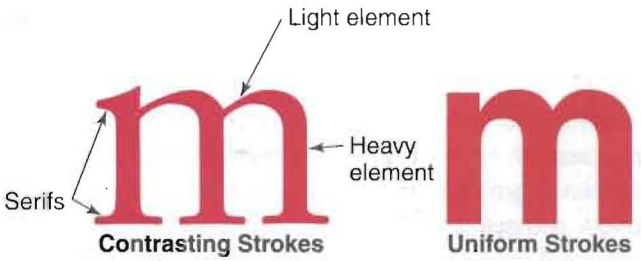


Figure 4-8. The contrast between heavy and light strokes makes differences in letter shape more pronounced. Serifs are finishing strokes at the tips of letters. Uniform strokes have the same thickness, so there is no contrast.

The *serifs* found on the *bottom* of letters imply the horizontal base line, helping tie the letters together to form words. The *top* serifs contribute to the unique appearance of the letter and help readability. The *ascenders* and *descenders* are also useful as identifiers and assist in the recognition of a word, **Figure 4-9**.

Typeface Classifications

The number of typeface classifications is not totally agreed upon, since some experts will list more classifications than others. For purposes of this book, seven classifications will be identified:

- Roman (also called serif)
- Sans serif
- Square serif (also called slab serif)
- Black letter or Text
- Script or Cursive.
- Novelty or Decorative.
- Italic (a variation of other classifications).

Roman

The ***Roman typefaces*** are numerous in number and are the most widely used. The characteristics commonly associated with Roman types are the contrast between the heavy and light elements, and the use of the finishing off lines or serifs.

Roman typefaces are further classified into three groups: Oldstyle faces, Transitional faces, and Modern faces. These are shown in **Figure 4-10**.

Oldstyle faces

The ***Oldstyle Roman*** typefaces have a rugged appearance, with relatively little contrast between heavy and light elements. The fillets of the serifs are curved. Oldstyle letters look better as words; thus, faces such as Caslon and Garamond were typically used for book text matter.

Readability

Figure 4-9. Top serifs and ascenders are critical to readability. Cover the top half of word and try to read it. Then, cover the bottom half and read. Note how ascenders help you identify the word.

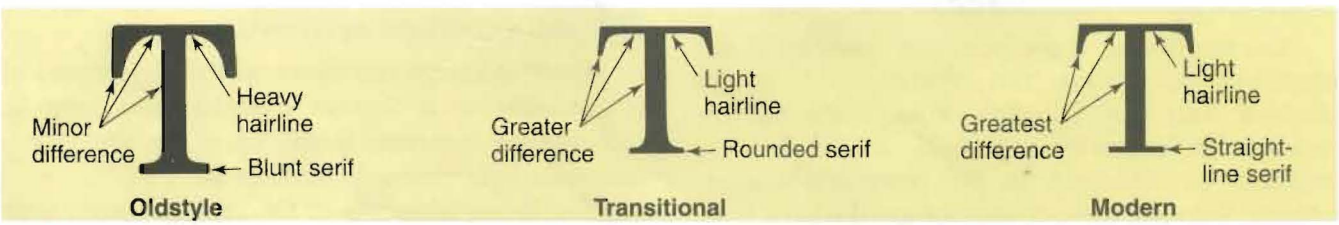


Figure 4-10. Roman typefaces are classified into three groups: Oldstyle, Transitional, and Modern. The differences in stroke weights and serifs are shown.

Transitional faces

Transitional Roman faces are a remodeling of Oldstyle typefaces. Greater contrast is evident between the heavy and light elements. The characters were also wider than the equivalent Oldstyle characters. John Baskerville improved on the Caslon typeface and produced Baskerville, the first typeface used to print on smooth paper. The Oldstyle characters were designed to print *into* thick, rough paper, rather than on the surface of thinner and smoother stock.

Modern faces

The most distinguishing feature of ***Modern Roman*** typefaces, first designed by Bodoni in 1789, is the increased contrast between the very thin, light elements and heavy elements. The Bodoni typeface has long ascenders and descenders and the serifs are straight lines without fillets.

Sans serif

"Sans" in French means "without." Thus, the classification ***sans serif*** is used for typefaces *without serifs*. See **Figure 4-11.** This typeface classification is second only to Roman in popularity today. Sans serif typefaces usually have a *monotone* appearance, meaning that the heavy and light elements are approximately the same thickness. While most are formed with strokes of uniform weight, a few sans serif faces have heavy and light elements.



Figure 4-11. A sans serif typeface is normally formed with strokes of uniform thickness, and has no finishing strokes (serifs).

Square serif

Square serif typefaces are usually formed with strokes of equal weight, like sans serif types, but have finishing-off strokes added. The shape of the serif is square or block-like and the serif has the same weight as the main portion of the letter face, **Figure 4-12.**



Figure 4-12. On a square serif typeface, the serif strokes are often the same weight as the rest of the letter strokes. This sample is set in the typeface named Stymie.

Very seldom is a square serif typeface used for straight matter composition or text of a page, because it is not as easy to read as type with thinner serifs. These contemporary typefaces are most often used as display or headline types.

Black letter or text

The ***black letter*** or ***text face*** resembles the ***calligraphy*** (hand-drawn lettering) of German monks of the 1400s. Black letter is most often used for printed materials relating to special occasions. Typical examples are: certificates, wedding and graduation announcements, religious materials, diplomas, and official documents.

A text face set in all caps is very difficult to read, **Figure 4-13.** For this reason, the use of both capital and lowercase letters is recommended when setting copy.



Figure 4-13. Black letter typefaces are very difficult to read when set in all capital letters.

Script or cursive

Both script and cursive typefaces are designed to simulate handwriting. The distinction between them is whether the individual letters in a word are joined or not. The letters in a ***script*** typeface are joined; letters in a ***cursive*** face are not. See **Figure 4-14.** The contrast of characters varies with the typeface design. Like text face types, script and cursive typefaces are used primarily for special effects. These include headlines, announcements, invitations, and letterheads. Since they are hard to read when copy length is more than a sentence or two, script and cursive types are seldom used for setting a full printed page or a large block of body copy.



Figure 4-14. Script typefaces have joined letters; cursive letters are separate. A—Examples of script typefaces. B—Examples of cursive styles.

Novelty or Decorative

This typeface classification is used for a wide variety of types whose primary intent is to command special attention, **Figure 4-15.** A ***Novelty*** (sometimes called an "Occasional" or "Decorative") face must be carefully chosen to express a mood or provide a specific appearance for a theme or an occasion. Each style has individuality and is suited for a special situation. These faces are *not* intended to be used as body copy.



Figure 4-15. Decorative typefaces are intended to draw your attention. They are normally used for headlines in advertisements and similar applications.

Italic

Italic is a slanted version of the upright letter, and is often treated as a separate classification. Most Roman faces have a companion italic of related design, **Figure 4-16.** In electronic composition, the term ***oblique*** is sometimes used to describe a simulated italic character produced by electronically slanting an upright Roman character. Italic type is often used to indicate emphasis in body copy. It is also used for titles, for foreign words, for terms being defined, and for quotations. Poetry is often typeset in an italic face.

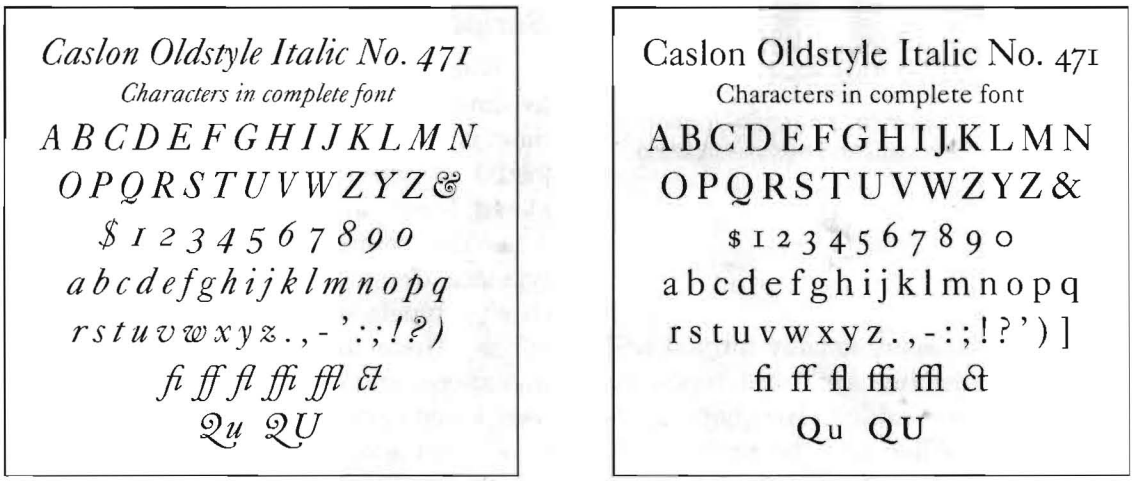


Figure 4-16. An italic is a slanted companion version of a Roman typeface.

Reverse type

Reverse type usually consists of white characters on a solid black or color background. This is done occasionally and can be done to stress the importance of the message or information in the copy. For example, a small newspaper advertisement might be reversed to make it stand out on the page and be noticed. Care must be used in choosing a typeface and type size for reversing. Many types are difficult to read when reversed, especially in small point sizes. See **Figure 4-17.**

Typeface Families, Series, and Fonts

In addition to the classifications discussed so far, typefaces can be grouped by specific name or style of type. The term associated with a given style is called ***family.***

Typeface family

A ***typeface family*** consists of the variations of one style of type, **Figure 4-18**. The design elements of the characters sets one family apart from another. Even though some typefaces are very similar in appearance, this does not make them part of the same family. As an example, Garamond is one family, and Caslon is another, even though their design is very similar. Refer to Figure 4-6.

Every variation of the designated typeface style becomes a part of that family. Knowledge of the variations in character widths and weights within a family are important to working effectively with type.

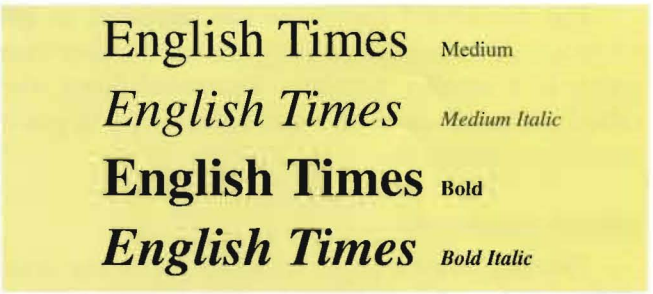


Figure 4-18. A type family is made up of all the variations within one style of type, such as different weights or stresses.

Width variations

Some typefaces are designed to include width variations. These include the normal width types, as well as types with condensed, extra condensed, and expanded widths. Examples of such variations are found in **Figure 4-19**.

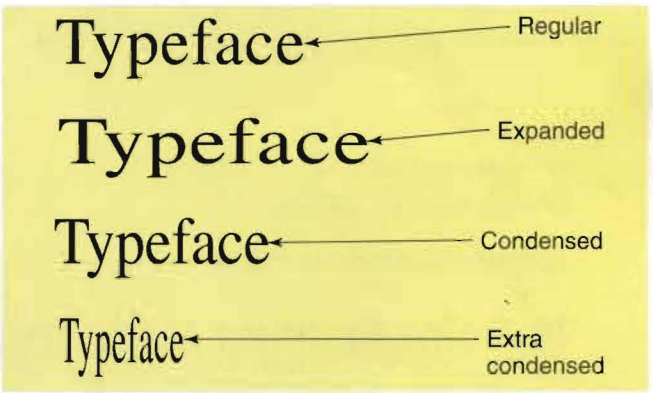


Figure 4-19. Width variations in a given typeface might include regular, expanded, condensed, and extra condensed type.

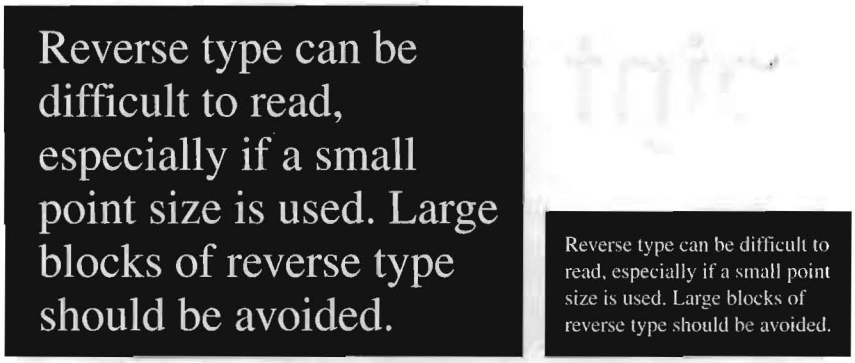


Figure 4-17. While reverse type can be effective as an attention-getting device, legibility suffers when the type is too small. Compare these examples on 18- point and 8-point type.

The ***condensed typefaces*** are intended to get more words in less space. They are used rather than going to a smaller typeface. ***Expanded faces***, also called ***extended faces***, fill more space without going to a larger point size.

Weight variations

The ***weight*** of a letter refers to the image area. The readable image might have a light, medium, bold, or extra-bold printing surface. Refer to Figure 4-18. With this range of weights, it is possible to vary the contrast for words or lines of type without changing the point size.

Typeface series

A ***typeface series*** is the range of sizes of each typeface in a family, **Figure 4-20**. The common type sizes used in printing are 6, 8, 10, 12, 14, 18, 24, 36, 48, 60, and 72 point. In traditional *relief* (raised letter) printing, type in sizes 96 points and larger was made from wood, rather than metal, **Figure 4-21**.

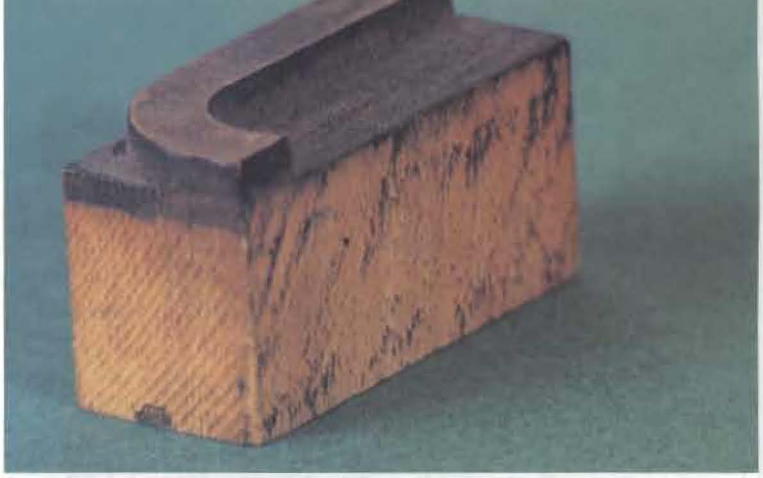


Figure 4-21. Type over 96 points used for letterpress printing was traditionally made from wood.

The introduction of phototypesetters allowed the use of sizes, such as 7, 9, and 11 point, that were not common to the relief process. More recently, electronic (computer-based) composition has made it possible to generate typefaces in virtually any size needed, even in hundredths of a point increments. This can be a major advantage in design and copyfitting.



Figure 4-20. A typeface series is a full range of sizes of one typeface.

Type font

In computer-based or phototypesetting composition methods, a *font* consists of all the characters (letters, numerals, punctuation marks, and symbols) that make up a specific typeface, such as 9-point Bodoni or 12-point Helvetica Bold.

When applied to foundry type, where each character is on a separate piece of metal, "font" has a somewhat different meaning. As shown in **Figure 4-22**, a foundry type font consists of different quantities of each character in one size and style of type. This is necessary because the individual characters are physically assembled into words, **Figure 4-23**. Enough copies of each character must be available to make up a number of words.

The kinds and total number of characters differ from font to font. While most will include a full set of cap and lowercase letters, the numerals 0 to 9, and the usual punctuation marks, they often will differ in the symbols and special characters they include. For example, some fonts include *ligatures*, which are joined letter combinations such

AAAAAABBBBCCCCCDDDDEEEEE(G
EEEEFFFFGGGHHHIIIIIIJJJKKKLLLL.0
LLLMMMMMMMNNNNNNNNOOOOOO,–
OPPPPPQQRRRRRRSSSSSTTTTTUZ
TTTUUUUVVVWWWWXXXXYYYYZZZ
&&&$$$$111?111222333444555666777
888999000((()))........,,,,,,,,,,,,’’’’!!;;::‘‘‘‘—??
aaaaaaaaaaaaaaaaabbbbbbbcccccc
cddddddddddddeeeeeeeeeeeeeeeerr
eeeeffffffffffffgggggggghhhhhhhiiiiiiiiri
iiiiiijjjjjjkkkkkllllllllllmmmmmmmmmnnnnss
nnnnnnnnnnnnnnnooooooooooooooooos
opppppppqqqqrrrrrrrrrsssssssssss
xsttttttttttttuuuuuuuuuvvvvvvvwwwwwwff
• • • • • • • ` ` ` ` `
wxxxxyyyyyyzzzz,,,, ---’’’’’::;;!!??

Figure 4-22. A foundry type font consists of a full assortment of characters for one size typeface. The varying number of characters is based on frequency of use: more e characters are needed than x or z characters.



Figure 4-23. Setting copy in foundry type involves selecting individual pieces of type and assembling the letters in a holder called a "stick." This method was used by printers for hundreds of years.

as **fi, ff, fl, ffi,** and **ffl.** Other fonts might include ***small caps,*** which are capital letters smaller than the normal caps of the font.

In fonts for computer or phototypesetting, such symbols as stars, asterisks, arrows, percent signs, or checkmarks are known as *pi characters,* **Figure 4-24.** In foundry type, such special characters are called *sorts,* or "dingbats."

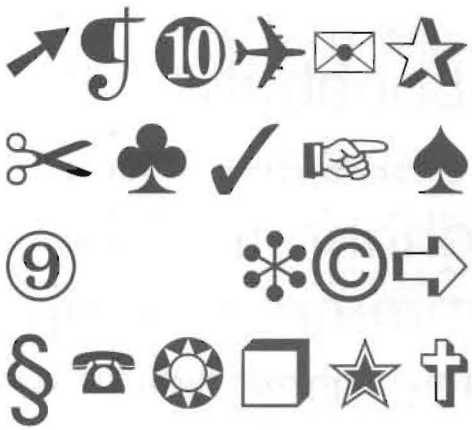


Figure 4-24. Symbols such as these are known as pi characters, sorts, or dingbats. They add to the interest of printed materials.

Type and Typesetting Measurements

While people in most occupations measure in units of inches, fractions of inches, centimeters, or millimeters, people working in graphic communications use special measuring units with names like *points* and *picas.*

Points and picas

The two principal units of measure used in the graphic communications industry are the point and the pica. A ***point*** is equal to 0.0138". A ***pica*** is equal to 0.166". *Twelve points* equals one pica and *six picas* almost equals one inch (0.996").

Points are used to measure the vertical height of a line of type, while picas are used to measure ***line lengths*** and *composition depth.* The ***point size*** of type is based on distance from the top of the ascenders to the bottom of the descenders, as shown in **Figure 4-25.** The point size of type should not be confused with the ***x-height,*** which is the height of the lowercase "x."



Figure 4-25. The point size of type is measured from the top of the ascenders to the bottom of the descenders.

The size of type is difficult to distinguish when in print, because two typefaces of the same point size may have x-heights that are quite different. The letters of one typeface may appear to be larger or smaller than the letters of the other, but lines set in the two faces would require the same amount of vertical space. See **Figure 4-26.**



Figure 4-26. Typefaces of the same point size may vary greatly in body height (x-height), as shown by the lowercase letters here. These typefaces are all set in 36-point.

Type sizes that range from 4-point through 12-point are usually referred to as ***text*** or ***body type.*** Sizes above 12-point are referred to as ***display type.***

Ems and ens

The *em* is a unit of printer's measure equal to the height and width of the capital M in the given size of type. For example, in 12-point type, an em would

measure 12 points wide and 12 points high; in 18-point type, an em would be 18 points wide and 18 points high. In foundry type, an *em quad* (nonprinting type block that was a square of the type size) was used to indent the beginning of a paragraph. Sentences set in foundry type were separated by spaces that were half an em quad in width. That spacing element was called an *en quad*. See **Figure 4-27**.

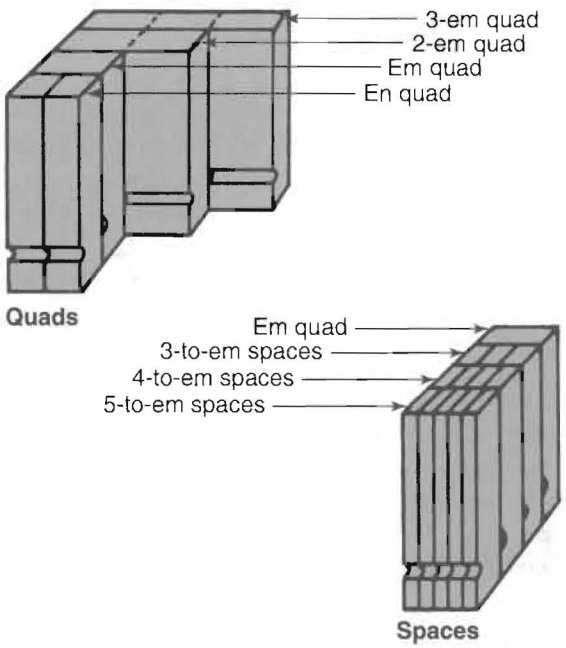


Figure 4-27. Foundry type used blocks called quads for spacing. Blocks narrower than the en quad were referred to as spaces.

Units

The *unit* is a measure that results from splitting the em into uniform narrow widths. The number of units per em will vary with the composing method. The most common are the 18-unit count and 54-unit count, **Figure 4-28**. Typefaces used in phototypesetting are given assigned unit widths, but a very small amount of space is allowed on each side. When the characters are composed, they will not touch.

Set size

As you learned, *point size* refers to the *height* of the type. *Set size*, or *set width*, refers to the *width* of a character. Electronic composition has made it possible to change the set width of characters, and the words they make up.

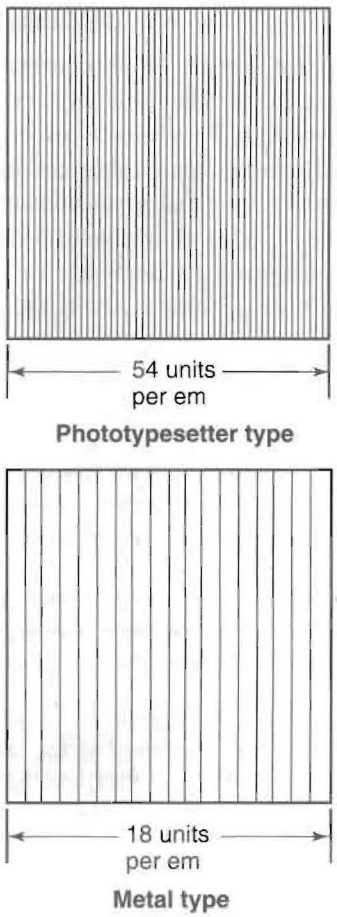


Figure 4-28. The em is typically divided into 54 units in phototypesetting. Eighteen units to the em was usual with metal type.

When the character is electronically expanded or condensed, the height is not changed, **Figure 4-29**. For example, 12-point type with a 12-set would be normal. If 12-point is programmed as "8-set," the type would be condensed. If 12-point is programmed for a "14-set," the type would be expanded. Although width of the character is changed, spacing between characters remains the same.

THIS IS 12 POINT WITH 8 SET.

THIS IS 12 POINT WITH 12 SET.

THIS IS 12 POINT WITH 14 SET.

Figure 4-29. Set size is modern term that refers to width of characters. Computerized typesetting allows letters to be condensed or expanded easily.

Letterspacing and wordspacing

Letterspacing refers to a change of spacing between letters, while ***wordspacing*** involves varying the spacing between words, **Figure 4-30**. When carefully done, increasing or decreasing the space between letters and words can improve the legibility of type. It is also possible to increase or decrease the amount of copy to fit an allocated space by altering the letterspacing or the wordspacing.

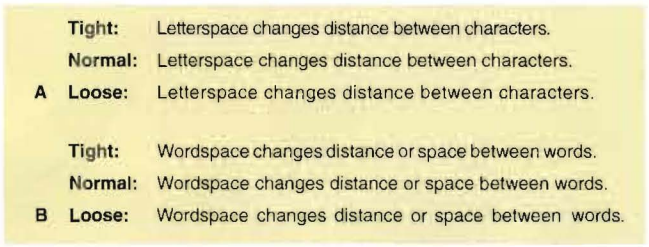


Figure 4-30. Letterspacing compared to wordspacing. A—Letterspacing alters amount of space between each character or letter. B— Wordspacing changes space between complete words.

If letterspacing other than normal is used, it is expressed as ***loose-set*** (large spacing) or ***tight set*** (small spacing). Spacing is expressed in units, with different composing systems varying in capability. Full units and half units are common. *Plus units* (loose set) and *minus units* (tight set) give the designer freedom to change the spacing to best fit the desired style or available space.

Character compensation is a method of tight-setting copy by electronically reducing very slightly the width of each character and space. This results in a reduction of white space between characters, allowing the copy to "shrink" and fit a smaller space.

Tracking

Tracking is a feature of computer typesetting programs that allows you to control the letter and word spacing together. The common choices for tracking are very tight, tight, normal, loose, and very loose. See **Figure 4-31**.

Horizontal *scaling* of letters is often an option, as well. This is not a form of letter spacing, since the actual widths of the characters are changed, but the proportion of character to space is not.

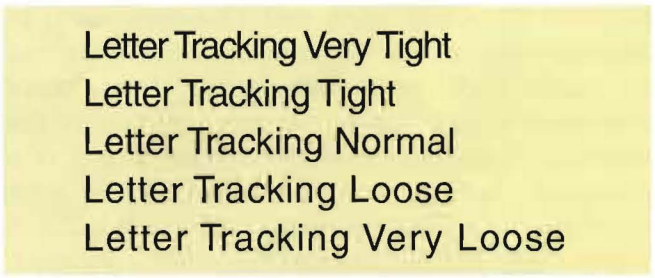


Figure 4-31. Letter tracking allows letter spacing and word spacing to be varied simultaneously.

Justifying type

Letter-spacing and word-spacing are used to *justify* lines of type so that the lines are all equal in length. This results in blocks of copy with even left and right margins (like the paragraph you are reading right now). Justification can be done automatically with modern typesetting equipment.

Widow

A *widow* is a very short word, or part of a word, forming the final line of a paragraph. The rest of the line is empty. To avoid this undesirable amount of white space, the line will usually be lengthened or the previous line will be shortened, usually by adding or deleting words.

Kerning

Kerning is a typesetting technique that that involves closing up space between certain characters in the alphabet to improve the appearance and readability of the word. Kerning is normally done for letters that are top- or bottom-heavy.

For example, as shown in **Figure 4-32,** the capital letter "T" is top-heavy and the space

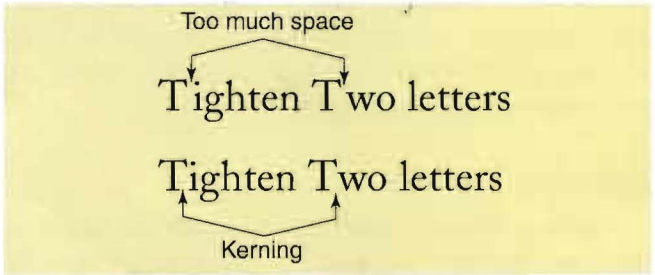


Figure 4-32. Kerning is similar to letterspacing, but changes only spaces between specific letters to improve appearance and readability.

between it and the next letter would appear to be too wide. Kerning moves the adjoining letter closer to the "T" for better appearance. **Figure 4-33** illustrates a number of letter combinations that can be improved in readability by using kerning.

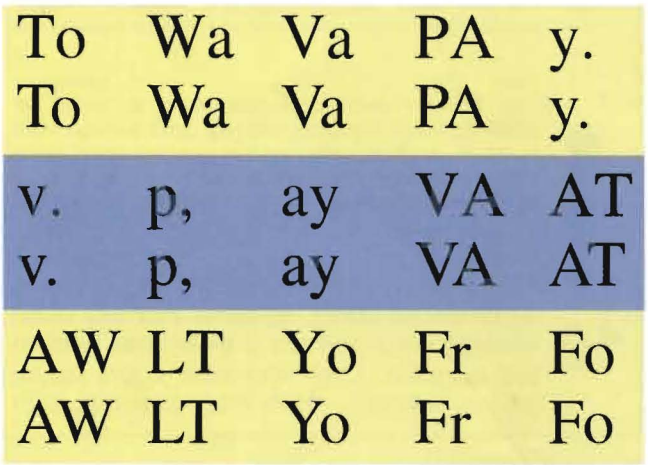


Figure 4-33. Examples of letter combinations before and after kerning. (Compugraphic)

Legibility Factors

Legibility, sometimes termed ***readability***, is a measure of how difficult or easy it is to read printed matter. When selecting a typeface, legibility can be a very critical factor.

The major consideration when selecting a typeface is *purpose*. If the content of the copy is the main purpose (for example, in a textbook), legibility of the printed page should be the aim in selecting a typeface. When appearance is of major importance, (as in designing an advertisement), then the aesthetic characteristics of the type must be given more attention.

The type you are now reading is what a printer calls ***straight matter***. Examples of products in which straight matter is used extensively are books, newspapers, magazines, and pamphlets.

Good legibility of the straight matter is the result of a proper combination of *type*, *paper*, and *ink*. It can make reading printed material less tiring to the eyes. Many printed pieces will have thousands of readers of varying ages and physical conditions. This makes good legibility a high priority.

Physical factors that contribute to legibility in the printed pages are: visibility, letter forms, definition, type size, line length, and leading.

Visibility

Visibility results from the contrast of the dark typeface against the light reflected by the paper. This is due to the paper's *brightness*, *smoothness*, and *opacity*,

The term whiteness is *not* used because ***brightness*** is a property of both white and colored papers. The brightness of paper varies greatly. The smoother the paper, the more light it reflects, therefore, paper ***smoothness*** also affects visibility of the images. A paper with high ***opacity*** does not allow print from the opposite side to show through.

The contrast of the printed material is affected by ***ink darkness.*** That term is used, rather than *ink color*, because both black and colored inks have degrees of darkness. Darkness depends on the ink's covering power — complete coverage hides the surface of the paper.

The type style is also a factor: the thicker the elements of the letter, the more ink will be deposited on the paper for contrast. As type size decreases, this factor gains in importance.

Letter forms

Readers are accustomed to the basic letter forms. The Roman letter form is the "tried and true" classification, but the sans serif classification has also become a familiar form. Straight matter is made up almost entirely of lowercase letters. Capital (uppercase) letters are used sparingly, because they do not form distinctive word shapes.

Letter forms that merge readily into words and phrases contribute to legibility. This means that the letter elements must relate to each other. The thick elements of a Roman letter give identity while the thin elements tie them together. The more unlike or dissimilar the letters, the more certain their identity. For example, **c**, **e**, and **o** should be as different as possible.

The distribution of white space within and between letters should be uniform to help shape the letters into words. Whenever letters have serifs, the intent is to aid the eye to mark the terminals or finishing marks of the letter elements. Serifs also make the letters more distinctive for easy reading.

Definition

Definition refers to the sharpness or distinction of the printed image. Sharply defined letter forms

are essential for easier reading. The relationship between the typeface and paper is very important. A small type size requires a smoother paper for good definition. Top-quality pressmanship contributes to sharp images on the page.

Special consideration must be given when placing type over a screened background, because poor definition may result. See **Figure 4-34**. The same principle applies when the background for type is a halftone image, such as a photo of clouds or foliage.



Figure 4-34. Selecting the proper typeface for placement on a screen pattern is very important to legibility.

Type size

The legibility of copy, as it relates to type size, increases dramatically up to 10-point type. This increase flattens out with larger type sizes. Straight matter set in 10-point type is considered a norm for comfortable reading by young and middle-aged adults. **Figure 4-35** compares blocks of copy set in three different point sizes.

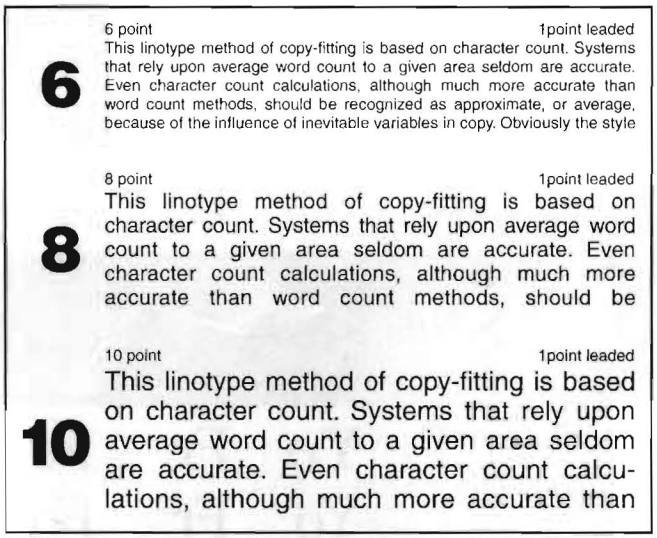


Figure 4-35. Smaller type sizes (those below 10-point) are difficult to read for the average person. The same copy is shown here in 6-point, 8-point, and 10-point type.

The x-height of the font also contributes to legibility. A large x-height would increase the size of the letters, and decrease the length of ascenders and descenders.

Line length

Line length, also called ***line width,*** is the distance from the left to right sides of a line or body of copy. It is usually measured in picas.

Eye span is the width people can see with one fixation (sweep or adjustment) of the eye muscles. With body copy, the normal eye span is about one and one-half alphabets (about 40 characters). This width will vary with typeface classification and size, however.

When the width of the line corresponds to the eye span of the reader, the physical task of reading is made easier. Longer lengths require extra physical effort when reading (the more eye fixations per line, the more effort required). Horizontal travel of the eye is considered more tiring than moving vertically from one line to the next.

Line spacing

Line spacing determines the distance separating each line of copy. It is measured in points from one line to the next. This spacing is also called ***leading*** (pronounced *"ledding"*), since lines of hand-set foundry type were separated by strips of lead-based type metal. See **Figure 4-36.**

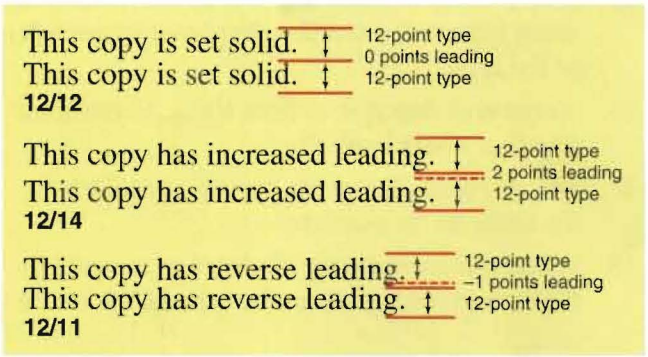


Figure 4-36. Linespacing, usually called leading, is the amount of vertical space separating one line of type from the next.

When line spacing is equal to the size of the type, the type is said to be ***set solid***. For example, if the typeface is 12-point and there is no extra line spacing, it would be set solid. On a specification, the size would be written 12/12 (in spoken form, "twelve on twelve").

When a customer or designer wants more space between lines of type, one or more points of leading would be added. For example, 10-point type might be used with 2 points of leading. The specifications would be written as 10/12 ("ten on twelve"). The typeface point size is normally written before the line spacing.

Many of today's typesetting systems have the capability of reducing spacing below the type size. This interline spacing, is called ***negative leading*** or ***minus leading.*** The specifications might be written as 10/9. This means the space between lines is to be reduced by one point ("ten on nine").

Proper leading helps the reader's eye to readily separate one line from another. The white space gives the eye better access to the top portions of the lowercase letters. As stated earlier, the tops of letters are the more unlike portions, and contribute most to word identity.

Leading also unites a line horizontally. Close word spacing will help to achieve unity in the line. Visibility is increased when extra leading is used on paper with low brightness. The extra leading lightens the tone of the page, and tends to make the type seem larger.

It is also possible to fit copy into a designated area by changing leading. By increasing leading, the copy will take up more space or area. Decreasing leading does just the opposite.

Typefaces for Display

Display type is intended to draw attention to a message. To emphasize the importance of the message and capture the reader's attention, display lines are larger in size. Generally, the smallest typeface size used in display is 14 point.

The position of the display line also gives it prominence. The words of that line supply the language and theme of the printed page or a block of copy. For this reason, it may be necessary to keep a complete thought in one line. This is shown in **Figure 4-37.**

Different weights of type can be used for emphasis by contrast. Different sizes show the relationship between principal and subordinate thoughts. Selection becomes very important to make sure that the typeface fits the intended use.



Towns getting together to fight against sprawl

By Marles Humphrey
Special to the Tribune

Residents of Crystal Lake and Lakewood long have been aware that urban sprawl threatens to blur the boundaries that preserve the two towns' distinctive characters.

Until recently, however, the two communites failed to engage in any cooperative efforts to address the issue.

That might change following a recent meeting between representatives of Crystal Lake and

Figure 4-37. Newspaper headlines are an example of display type in use. Note that the major thought, "Towns getting together," is on the first line. The subordinate or secondary thought is on the second line. This is commonly done in newspapers.

Review Questions

Please do not write in this text. Write your answers on a separate sheet of paper.

1. The art of expressing ideas through the selection of appropriate typefaces is called _____.
2. Define the term "body height."
3. An ascender extends _____ and a descender _____ the x-height letters.
4. What is the base line?
5. The finishing-off stroke at the top or bottom of a character is called a _____.
6. The _____ _____ type style is based on the hand-written lettering of German scribes
7. Who is credited with designing and cutting the first Roman typefaces?
8. Which designer first developed a typeface with letters designed solely for printing?
9. Other than the use of serifs, what is the major difference between Roman and sans serif typefaces?
10. List and describe the seven basic typeface classifications.
11. A typeface _____ consists of the variation of one style of type.
12. A type _____ consists of the letters, figures, and punctuation marks that are of one size and style.
13. On a type specification, what does "10/12" mean?
14. Changing the distance between words in a line of copy is called _____.

    a. letter spacing.
    b. leading
    c. kerning.
    d. word spacing.
15. _____ refers to changing the distance between some letters of a word to improve appearance of the type.
16. Name and describe at least three physical factors that affect legibility
17. *True or False?* The point size of a typeface is the same as its x-height.
18. When the line spacing dimension is equal to the size of the typeface, the type is said to be _____.

    a. reverse leaded.
    b. letter spaced.
    c. set solid.
    d. tight set.
19. Which is the larger unit of measure, the em or the en?
20. Briefly discuss some of the advantages the computer has brought to typography and typesetting.