“If the columns of a newspaper or magazine or pages of a book can be read for many minutes at a time without straining or difficulty, then we can say the type has good readability. The term describes the quality of visual comfort — an important requirement in the comprehension of long stretches of text, but paradoxically not so important in such things as telephone directories or air-line timetables.”

— Walter Tracy, Letters of Credit: A View of Type Design
Typography: Art or science?

- Typography once was a craft practiced by trade specialist.
- Computer has democratized typography.
- But computers should come with a label, “Knowledge not included.”
Typography: Art or science?

- What the pros do often seems ugly or hard to read or both.
- Despite hundreds of studies, hard and fast rules are hard to come by.
An attribute of the type, or of the alphabet of a typeface.

Concerns the shapes of letter and how easily we can tell them apart.
DEARBORN — You’d have a hard time finding proof that Ford Motor Co.’s J. Mays is qualified to join the top rank of automotive designers.

Evidence is just as scant that he can achieve the elusive goal of creating cars that are beautiful and affordable.

Unless you ask him.

What sets this Oklahoma farm boy apart is a deep personal conviction that he’s different from hundreds of other auto designers. That’s understandable for someone who went from the Midwest to the famed auto design studios of Europe, decided to step off the corporate ladder and then abruptly found himself at its top rung.

This conviction now spills over into a determination to make Ford the world’s styling leader.

“By the turn of the century, I would like Ford to be considered at the top of the heap,” he says.

That is an ambitious goal coming from a designer whose biggest claim to fame is his work on the concept car that inspired the creation of Volkswagen’s New Beetle and who has only spent little more than six months as Ford’s top designer.

But Mays, 43, claims he is a designer and a corporate strategist, a blend of both creativity and discipline that he considers unique in the auto industry. His ultimate goal: transform Fords and Mercurys and Lincolns into well-known brand names every bit as recognizable as Levis and Coca-Cola.

“Most designers have traditionally been trained at art schools that said, ‘Express yourself and do the best design and they will come,’” Mays said. “My approach is to say, ‘All right, let’s try to set that aside and all think strategically.’”

Mays is Ford’s answer to one of its biggest weaknesses: styling.
Readability not at issue

- Other kinds of type do not require the same kind of readability: EXIT signs, STOP signs, provocative display type in magazines and newspapers, ads, brochures, and “subjective typography,” made up of “grunge,” post-modern or “deconstructivist” typography.

- English designer Phil Baines attacks the basic notion of legibility as presenting “information as facts rather than as ex-
Type is measured in points (bottom left), where 72 points equal one inch. A pica equals 12 points, and six picas equal one inch.

Type size is stated as its height: 12-point type is nominally 12 points tall. This nominal height (A in the diagram at left) or body height (below) is slightly more than the height of the actual letters, measured from the top of the ascender the bottom of the descender. This actual height is sometimes called the “k-p” height (B in the diagram at left).

This difference in actual to nominal height is remnant of metal type. In hand-set type, the letters were on a body that had to be slightly bigger than the letter itself to provide support (right). The point size referred to the height of this slug, they were measuring the body. This convention carried over when type foundries converted their metal typefaces first into photo typesetting and then into computer fonts.

The x height is measured from the baseline to the meanline and equals the height of the small letter x (top left). A typeface with a large x height can look much bigger than a typeface of the same size but with a smaller x height.
Proportional vs. Monospace Type

Typewriters used monospaced typefaces. Each letter had the same amount of horizontal space, regardless of its shape: The i is stretched while the m is crowded. The top illustration shows the two common sizes of Courier, a popular typewriter font: 10-pitch (10 characters to the inch), also known as elite, and 12-pitch with 12 characters to the inch, also known as pica.

Proportional spacing

In typesetting, alphabets are proportional; each letter takes up less or more space depending on its width. As the type size changes, the proportions stay the same. Proportional type looks better and is easier to read than monospaced type.

Proportional type is measured horizontally using a system based on the em quad. Letter widths, word spaces, letter spaces and indents are based on the em quad, defined as the width of the letter M squared. For practical purposes, an em quad equals a square of the nominal letter size. For example, the em quad for 24-point ITC New Baskerville would be 24 points. The middle illustration shows em quads for various type sizes, each divided up into 18 units. Note that as point size increases, the units get bigger, maintaining space in proportion to the type.
The Golden Rule of Spacing

The Golden Rule of Spacing is simple: More letters on a line means more spacing is needed.

Erik Spiekermann writes: Long texts require a setting not unlike the way a marathon is run. Everything has to be comfortable — once you’ve found your rhythm, nothing must disturb it again.”

Spiekermann adds that rhythm depends on spacing. Letters need to be far enough apart to be distinguishable from one another, Spiekermann says, but not so far apart that they become “separate, unrelated signs.”

Word spaces must allow the reader to see individual words but also group them for quick comprehension.

Space between lines of type has to be generous enough to prevent the eye from slipping to the next line before it’s finished with the current one.

The example is spaced for comfortable long-distance reading.

At the Juilliard School a few weeks ago, a young violinist entered the studio of Dorothy DeLay, the school’s preeminent teacher of virtuosos—her ex-students include Itzhak Perlman, Nigel Kennedy, Gil Shaham, Midori, and Sarah Chang—and unpacked her instrument, a three-quarter-size Rocca, dating from 1852. The student, Rachel Lee, a Korean-American born in Chicago, is about four feet seven inches tall. She was wearing a brown jumper with white and orange flowers printed on it, a white short-sleeved shirt, white socks, and white sandals. After greeting Miss DeLay, she nodded at the accompanist and, without hesitation, without excuses or ritual self-deprecation—without any of the stalling that most of us do when we have to perform something or even make a presentation at the office—launched into the first movement, marked adagio, of Bach’s Sonata in E Major for violin and harpsichord. Planting her feet, Rachel swayed slightly as she played and kept her eyes downcast and her face expressionless. Her arms are not long enough to play a full-sized instrument, but even with her Rocca she produced a rich, perfectly centered tone; she also produced a boldly incisive shaping of Bach’s long-limbed phrases, such that the music seemed to leap out at the listener. The performance was technically secure and almost disturbingly intense. Rachel is a child prodigy. She is eleven years old.

“Thank you, Rachel. I love what you do with that,” Miss DeLay said, and then Rachel played the next piece she had prepared, a shortened version of the first movement of the Paganini Violin Concerto No. 1, a nineteenth-century bravura display complete with double-stopping, skittering sixteenth notes, and some honeyed melodies. “Very good,” Miss DeLay said, “but I think the cadenza might sound better a little slower. That way, we can hear your fingers pop on every note.” Rachel played it slower, so you could hear her articulate each note. Since she had played both pieces without music, I asked her how long it had taken her to memorize the Paganini.

“Oh, a few days,” she said. “Less than a week.” She speaks in a soft voice—a tiny voice with a slight but brilliant smile, and, after she says what she has to say, she remains silent.

When the lesson was over, I spoke to Dorothy DeLay, who was sitting at a desk with musical scores and a box of tissues and a teapot arrayed before her. DeLay, who is eighty-two, is a large person, majestic but informal, who wears black boots and has a full head of gray hair and beautiful eyes. She has been teaching violin at Juilliard since 1948, and her manner with Rachel, who clearly loves to play, is extremely benevolent. DeLay has led many such children through the difficulties of adolescence and sudden fame; she has also had students who have known disappointment and worse. “They have the capacities of an adult but the emotional development of a child,” DeLay said of her young students. “I don’t want them to feel that they are on trial, so they have to make their mothers feel good—that’s death.
Letter Spaces

To Tr Ve Wo r. y, 7.

w-

No kerning

Kerning applied

Kerning

Unsightly gaps occur between some letter pairs unless they are kerned, meaning letter space—the space between two letters—is adjusted. The diagram above shows a few of the more difficult pairs. Note how kerning helps letters fit together. But each kerning pair requires its own special amount of space.

Computer fonts come with kerning tables specifying how much space goes between each kerning pair. In Quark Xpress, kerning is applied automatically to all type above a certain point size set in the program’s preferences (top right). Kerning isn’t applied to small type because the extra space aids readability.
**Letter Spaces**

**Tracking**

Computer programs such as Quark Xpress allow you to adjust letter spaces *globally*. A block of type is selected, then equal amounts of space are added or subtracted between every letter. But be careful. As space is added, the difficulty increases in comprehending words as cohesive units. Subtracting space also can make type difficult to read by running letters together. In the example to the right, the top word has normal spacing. The middle word has 25/1000th of an em added between each letter. The bottom word has 25/1000th subtracted from between each letter.

To apply tracking in Quark Xpress, first select a block of type, then follow the same procedure as for kerning. Go to STYLE—CHARACTER (or SHIFT-OPTION-D). When the cursor was between two letters, the character attributes box had a place for *Kern Amount*. When a block of type is selected, the label changes to *Track Amount* (bottom right). Kerning and tracking also can be applied through the measurement palette (below) or through these keyboard shortcuts:

- + 10/1000th of an em  \( \text{SHIFT-COMMAND-} \) (right bracket)
- – 10/1000th  \( \text{SHIFT-COMMAND-} \) (left bracket)
- + 1/1000th  \( \text{SHIFT-OPTION-COMMAND-} \)
- – 1/1000th  \( \text{SHIFT-OPTION-COMMAND-} \)
Four score and seven years ago

The traditional rule of thumb for headlines was to put space between words equal to the width of the small letter “i” (above). Be aware that when tracking to a block of type, the word spaces get smaller, too. Years ago, a Wisconsin newspaper ran a headline about the state’s Gov. Thompson wielding his veto power. The headline read:

Thompson’s pen is a sword

To make the headline fit, editors applied severe tracking, causing the second and third words to run together and causing great embarrassment.

Word spacing is set in Quark through the hyphenation and justification table. See the next page for instructions.

Any honest examination of the national life proves how far we are from the standard of human freedom with which we began. The recovery of this standard demands of everyone who loves this country a hard look at himself, for the greatest achievements must begin somewhere, and they always begin with the person. If we are not capable of this examination, we may yet become one of the most distinguished and monumental failures in the history of nations.

For most uses, 100 percent of the default word space setting works well with lines of more than 10 words or just more than 50 characters (top). Shorter lines always need tighter word spacing (right).
Adjusting Word and Letter Spaces

H&Js under the Edit menu allows you to group Hyphenation and Justification settings that can be saved and applied through the Paragraph Attributes dialogue box. You can create up to 127 H&J specs in Quark.

To edit an H&J specification, first set up text in the column width, type size and paragraph format you want. Column width is a key ingredient because it affects how often words are hyphenated at the end of a line. Once you have the type in its final configuration, look at its alignment to decide if more aggressive hyphenation is needed. If so, go to the H&J dialog box (EDIT–H&Js).

To create custom hyphenation, click on NEW; you’ll get the H&J specification box. Give your H&J specs a name. Make sure Auto Hyphenation is checked. (You also can edit existing H&J tables).

Space refers to word spaces. Char refers to character or letter spacing. The hyphenation zone setting applies to flush left text. It specifies how far from the right edge of a column Quark Xpress can place a hyphen.

Justification Method fields allow you to adjust how space is distributed between words and characters. When Quark justifies text, it first tries to space words by the Optimum Character values. These values also are used to control space in unjustified text. The Maximum Space field sets the maximum space Quark can place between words to justify lines, stated in a percent of the default value. In the Minimum Space field, you set the minimum space that can be placed between words to justify lines.

The Maximum Character field lets you adjust the maximum space that can be placed between letters in justified paragraphs. In the Minimum Character field, you set the least space that can be placed between characters. The values in these fields are expressed as a percentage of an en space and can have negative values.
The top box shows an aggressive hyphenation spec that will result in many more words being hyphenated. To counter legibility problems created by too many hyphenations, try changing Hyphens in a Row from unlimited to a more conservative number such as 4.

In samples A and B, word space of 100% minimum, 100% optimum and 150% maximum are specified. The character specs are 0% min, 0% opt and 15% max. Usually, changing these values from 5 percent to 15 percent has a little effect on how the font looks but can tighten up justifications considerably.

The bottom samples have space values of 85%, 85% and 145%, with character values of –5%, –5% and 10%.

Once you have your custom H&J fine-tuned, you can apply it paragraph by paragraph. For instance, with a narrow a column for a mug shot, apply an aggressive H&J table. Note that H&J specs can be applied only to an entire paragraph.

Here’s one final trick: Let’s say you want no hyphenations. Create a new H&J specification but uncheck Autohyphenation. Name it something like No Hyphens and save it. Apply it to any style sheet where hyphens are unwanted.

A woman came up to me and said, “Young man, take that banana out of your mouth when speaking to a lady.” I said, “That ain’t no banana; that’s my nose!”
Comfortable Letter and Word Spacing

The examples at top right illustrate the Golden Rule of Spacing.

Letter spaces, tracking and word spaces all increase as the lines widen from a very narrow 6 picas to 10p6 to 16p6.

One way to judge letter spacing is through the consistency of type color. Dark spots or white spots attract the eye and distract readers, interrupting their rhythm.

In example A, the text has tight word and letter spacing. Notice how certain words, such as six sisters, stepsister and profession, create dark spots.

Example B has more generous word and letter spacing, including a slight positive tracking. The color is more uniform.

Example C has more generous spacing yet. Now the problem becomes white rivers of space between words.

Eugen Rosenstock was born in Berlin on July 6, 1888, the son of Theodor and Paula Rosenstock. Theodor was a banker who had entered that profession to support his widowed stepmother and stepsister; if he had been able to choose, he would have pursued a scholarly education. In due course, however, he became a member of the prestigious Berlin Stock Exchange. Paula Rosenstock was the daughter of the head of a well-known Jewish school in Wolfenbüttel. Eugen was the fourth child among six sisters.

After his first years in a school for wealthy families, Eugen Rosenstock transferred to the Joachimsthaler Gymnasium, a school known for its rigorous academic standards, particularly in the classics. Following his father’s wish, Eugen went on from there to study law at the universities of Zürich, Eugen Rosenstock was born in Berlin on July 6, 1888, the son of Theodor and Paula Rosenstock. Theodor was a banker who had entered that profession to support his widowed stepmother and stepsister; if he had been able to choose, he would have pursued a scholarly education. In due course, however, he became a member of the prestigious Berlin Stock Exchange. Paula Rosenstock was the daughter of the head of a well-known Jewish school in Wolfenbüttel. Eugen was the fourth child among six sisters.

After his first years in a school for wealthy families, Eugen Rosenstock transferred to the Joachimsthaler Gymnasium, a school known for its rigorous academic standards, particularly in the classics. Following his father’s wish, Eugen went on from there to study law at the universities, and Eugen Rosenstock was born in Berlin on July 6, 1888, the son of Theodor and Paula Rosenstock. Theodor was a banker who had entered that profession to support his widowed stepmother and stepsister; if he had been able to choose, he would have pursued a scholarly education. In due course, however, he became a member of the prestigious Berlin Stock Exchange. Paula Rosenstock was the daughter of the head of a well-known Jewish school in Wolfenbüttel. Eugen was the fourth child among six sisters.

After his first years in a school for wealthy families, Eugen Rosenstock transferred to the Joachimsthaler Gymnasium, a school known for its rigorous academic standards, particularly in the classics. Following his father’s wish, Eugen went on from there to study law at the universities.
Line Spacing or ‘Ledding’

Line spacing, usually called *ledding*, is the space between lines of type. The term “ledding” comes from hot-type days when lines were spaced by putting extra metal — a lead alloy — between the lines. We’ll spell it *ledding* to avoid confusion with *leading*, as in *Gov. Bush is leading in the polls*.

Ledding is measured from one baseline to the next and is stated as the size of the type plus white space between lines. In the top example, the 60-point type has 6 points of space specified, so it’s 60 point on 66 leading (60/66).

In Quark, leading is set in the Paragraph Attributes box (middle). Go to **STYLE–FORMATS** or **SHIFT–OPTION–F**. Or you can set leading in the measurement palette. Ledding is applied to full paragraphs. Quark allows you to specify ledging three ways:

**Absolute leading** is set to a specific value in points regardless of type size. This allows you to set negative leading that is less than the type size. Use absolute leading in most circumstances and always when a paragraph may have mixed type sizes, such as a large *pop cap* initial (bottom).

**Relative leading** is stated as plus or minus points. If you type in +3, Quark will add 3 points to the largest type size in the paragraph. A –3 would set the leading at 3 points less than the largest font.

**Automatic leading:** Quark adds a percentage of the font size as leading. Type *auto* in the leading box. The percentage is specified in the Document Preferences box under the Edit menu. The default is 20 percent, but a smaller percent often looks better.

Be still when you have nothing to say; when genuine passion moves you, say what you’ve got to say, and say it hot.
— D.H. Lawrence

18-point Pop Cap
The Golden Rule of Spacing applies to vertical space, too: *More letters on a line means more spacing is needed*. The examples to the right all are 10-point New Baskerville Roman.

Column A is set 12 picas wide, yielding an average of five words and about 29 characters a line. The legging is slight: 10/10.5

Column B is set 17p6 wide, yielding about six words and about 45 characters per line, closer to the optimum line length for this size of type. Legging has been increased to 10/12.

Column C is set 32 picas wide, yielding about 13 words and 78 characters per line. This is a bit too wide for this size of type, but generous legging of 10/16 helps make it readable.

The theory is that generous legging helps the eye find its way back to the beginning of the next line when lines are long. When lines are short, tighter legging may aid readability, although very short or very long lines of type are not desirable for long texts.

Eugen Rosenstock was born in Berlin on July 6, 1888, the son of Theodor and Paula Rosenstock. Theodor was a banker who had entered that profession to support his widowed stepmother and stepsister; if he had been able to choose, he would have pursued a scholarly education. In due course, however, he became a member of the prestigious Berlin Stock Exchange. Paula Rosenstock was the daughter of the head of a well-known Jewish school in Wolfenbüttel. Eugen was the fourth child among six sisters.

After his first years in a school for wealthy families, Eugen Rosenstock transferred to the Joachimsthaler Gymnasium, a school known for its rigorous academic standards, particularly in the classics. Following his father’s wish, Eugen went on from there to study law at the universities of Zürich, Heidelberg, and Berlin. At age 17 he joined the Protestant Church, which did not seem much of a conversion to him because Christian habits had already become a part of family life. Gradually, however, his faith became...
Not all typefaces are created equal. Some typefaces take up more space than others. Alphabet length refers to the length in points of the lowercase alphabet. You can determine this using Quark by creating a text box and typing in the lowercase alphabet. Select the typeface and size you want, then adjust the text box until the alphabet just fits. Read the width of the text box and alphabet in the measurement palette.

The difference in alphabet widths is due to the design of the letters. Excelsior, for instance, has a much larger x-height than does New Baskerville, so Excelsior takes up more space at the same point size.

An ideal line length (or column width) for a given font and size can be determined through copy fitting. The next page provides a chart on which you can find the alphabet length on one side, optimum line length in characters in italics, acceptable range in bold, and corresponding column width at top in picas.

Eugen Rosenstock was born in Berlin on July 6, 1888, the son of Theodor and Paula Rosenstock. Theodor was a banker who had entered that profession to support his widowed stepmother and stepsister; if he had been able to choose, he would have pursued a scholarly education. In due course, however, he became a member of the prestigious Berlin Stock Exchange. Paula Rosenstock was the daughter of the head of a well-known Jewish school in Wolfenbüttel. Eugen was the fourth child among six sisters.

After his first years in a school for wealthy families, Eugen Rosenstock transferred to the Joachimsthaler Gymnasium, a school known for its rigorous academic standards, particularly in the classics. Following his father’s wish, Eugen went on from there to study law at the universities of Zürich, Heidelberg, and Berlin. At age 17 he joined the Protestant Church, which did not seem much of a conversion to him because Christian habits had already become a part of family life. Gradually, however, his faith became central for his work. In 1909, at the age of 21,
### Line Length Chart

Read down in the left column for the length of the lowercase alphabet in points.

Read across the top row for line length in picas.

**Bold numbers** indicate the acceptable range for line length.

The *italic* numbers indicate the ideal line lengths.