The Art & Technology of Typography

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The Art and Technology of Typography

Compugraphic Corporation
Type Division
Wilmington, Massachusetts

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UNLIKE A DICTIONARY, the terminology contained in this booklet is not arranged alphabetically. Instead, the words are grouped into sections based on their relationship with one another. Within each section you'll find the words in alphabetical order.

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Text for the illustrations was taken from *Alice's Adventures in Wonderland & Through the Looking-Glass,* by Lewis Carroll. Punctuation and grammar follows the original text.

Introduction

THIS BOOKLET DEFINES the terminology surrounding type. The terms are not particularly complex or difficult, in fact many are quite logical. Others are carry-overs from the days of hot metal; some used as originally defined, some modified to reflect today's technology.

The terms pertaining to the art of typography are illustrated. The illustrations allow you to quickly grasp the concept behind a word instead of just an isolated meaning. The pictures tell the story of type. If you want more than the illustrations portray, you have the definitions to read.

The section on technology is not exactly suited to our picture-book concept. Rather than do away with bugs, bauds, bits and bytes, we've included these and many more computer terms. Here the words, not the pictures, tell the story of typesetting technology.

Although this booklet does have some resemblance to a dictionary, it is not a reference guide you glance through once, then store away on your bookshelf. It is meant to be studied. The illustrations alone will take you into the world of type. The definitions enhance your journey.

The Art and Technology of Typography is just one of the many educational pieces created for your use by Compugraphic. Whether you are an experienced typographer or just starting out, you'll find this booklet to be a useful as well as enjoyable learning tool.

Type in General

DISCOVERING a new subject sometimes requires a brief visit to the ground floor, where you can take in all the basics. Type awareness is no exception. The words defined and illustrated here give you a foundation to build your type awareness on.

angle
The slope of a character from the vertical position. The slope is typically to the right. (See also *Variations within a Type Family.*)

calligraphy
The art of beautiful handwriting. In calligraphy, the characters are formed by the natural movement of the hand as opposed to manipulated movements in built-up letterforms. An edged metal pen, reed or brush is used in calligraphy. (See *lettering* for a comparison.)

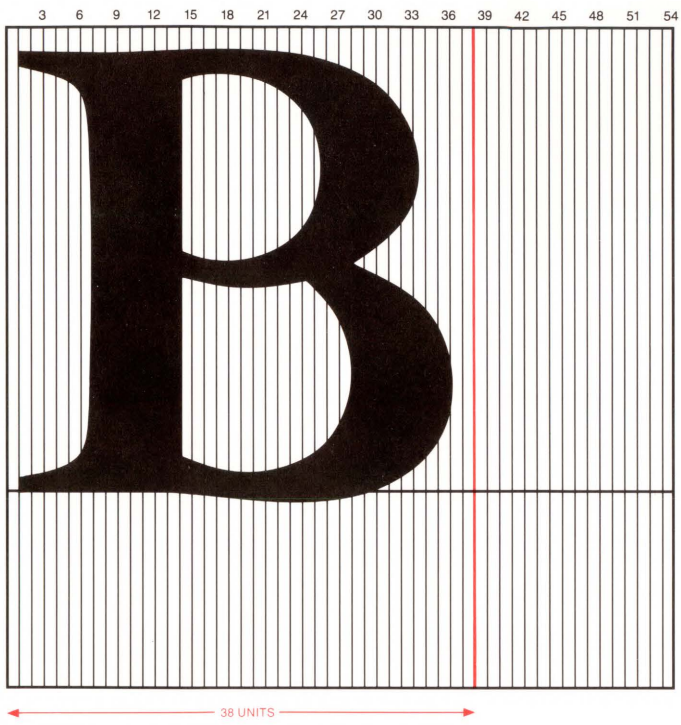
250 PT. CG NASHVILLE BOLD

250 PT. CG NASHVILLE BOLD ITALIC

Angle

Calligraphy

250 PT. CG COLLAGE BOLD



Character Width

80 PT. GARTH GRAPHIC

÷ A % 5 z ☆

Characters

character width
The horizontal dimension of a character, including its assigned white space on the left side and right side.

characters
Individual letters, numerals, punctuation, diacritical marks, or any symbol existing on a font.

color
The visual tone or texture created by a block of type on the background of a page. Type selection, line length, leading, x-height, word and character spacing all affect color. The illustration to your right shows how the choice of type can affect color.

10/11 SHANNON OBLIQUE

Alice was beginning to get very tired of sitting by her sister on the bank, and of having nothing to do: once or twice she had peeped into the book her sister was reading, but it had no pictures or conversations

10/11 SHANNON BOOK

in it, "and what is the use of a book," thought Alice, "without pictures or conversations?" So she was considering, in her own mind (as well as she could, for the hot day made her feel very sleepy

10/11 CG SYMPHONY ITALIC

and stupid), whether the pleasure of making a daisy-chain would be worth the trouble of getting up and picking the daisies, when suddenly a White Rabbit with pink eyes ran close by her. There was

10/11 CG SYMPHONY

nothing so very remarkable in that; nor did Alice think it so very much out of the way to hear the Rabbit say to itself, "Oh dear! Oh dear! I shall be too late!" (when she thought it over afterwards, it occurred

10/11 ITC NOVARESE BOOK

to her that she ought to have wondered at this, but at the time it all seemed quite natural); but, when the Rabbit actually took a watch out of its waistcoat-pocket, and looked at it, and then hurried on,

10/11 ITC NOVARESE BOOK ITALIC

Alice started to her feet, for it flashed across her mind that she had never before seen a rabbit with either a waistcoat-pocket, or a watch to take out of it, and, burning with curiosity, she ran across the field after it, and was just in time to see it pop

10/11 CG COLLAGE ITALIC

down a large rabbit-hole under the hedge. In another moment down went Alice after it, never once considering how in the world she was to get out again. The rabbit-hole went straight on like a tunnel for some way, and then dipped suddenly

10/11 CG COLLAGE

down, so suddenly that Alice had not a moment to think about stopping herself before she found herself falling down what seemed to be a very deep well. Either the well was very deep, or she fell very

10/11 CG OMEGA MEDIUM ITALIC

slowly, for she had plenty of time as she went down to look about her, and to wonder what was going to happen next. First, she tried to look down and make out what she was coming to, but it

10/11 CG OMEGA MEDIUM

was too dark to see anything: then she looked at the sides of the well, and noticed that they were filled with cupboards and book-shelves: here and there she saw maps and pictures hung

10/11 CG TRIUMVIRATE ITALIC

upon pegs. She took down a jar from one of the shelves as she passed: it was labeled "ORANGE MARMALADE," but to her great disappointment it was empty: she did not like to drop the jar,

10/11 CG TRIUMVIRATE

for fear of killing somebody underneath, so managed to put it into one of the cupboards as she fell past it. "Well!" thought Alice to herself. "After such a fall as this, I shall think nothing of tumbling down-

10/11 SCHNEIDLER

stairs! How brave they'll all think me at home! Why, I wouldn't say anything about it, even if I fell off the top of the house!" (Which was very likely true.) Down, down, down. Would the fall never come to an end?

10/11 SCHNEIDLER ITALIC

"I wonder how many miles I've fallen by this time?" she said aloud. "I must be getting somewhere near the centre of the earth. Let me see: that would be four thousand miles down, I think—" (for, you see, Alice had learnt several things of this sort in her

10/11 GARTH GRAPHIC ITALIC

lessons in the school-room, and though this was not a very good opportunity for showing off her knowledge, as there was no one to listen to her, still it was good practice to say it over) "—yes, that's about

10/11 GARTH GRAPHIC

the right distance—but then I wonder what Latitude or Longitude I've got to?" (Alice had not the slightest idea what Latitude was, or Longitude either, but she thought they were nice grand

10/11 ANTIQUE OLIVE ITALIC

words to say.) Presently she began again. "I wonder if I shall fall right through the earth! How funny it'll seem to come out among the people that walk with their heads down-

10/11 ANTIQUE OLIVE

wards! The antipathies, I think—" (she was rather glad there was no one listening, this time, as it didn't sound at all the right word) "—but I shall have to ask them what the name of

10/11 CG OMEGA BOLD ITALIC

the country is, you know. Please, Ma'am, is this New Zealand? Or Australia?" (and she tried to curtsey as she spoke—fancy curtseying as you're falling through the air! Do you think you could manage it?)

10/11 CG OMEGA BOLD

"And what an ignorant little girl she'll think me for asking! No, it'll never do to ask: perhaps I shall see it written up somewhere." Down, down, down. There was nothing else to do, so Alice soon began

10/11 CG NASHVILLE MEDIUM ITALIC

talking again. "Dinah'll miss me very much tonight, I should think!" (Dinah was the cat.) "I hope they'll remember her saucer of milk at tea-time. Dinah, my dear! I wish you were down here

10/11 CG NASHVILLE MEDIUM

with me! There are no mice in the air, I'm afraid, but you might catch a bat, and that's very like a mouse, you know. But do cats eat bats, I wonder?" And here Alice began to get rather sleepy,

10/11 CG COLLAGE BOLD

and went on saying to herself, in a dreamy sort of way, "Do cats eat bats? Do cats eat bats?" and sometimes, "Do bats eat cats?" for, you see, as she couldn't answer either question, it didn't much matter

10/11 CG COLLAGE BOLD ITALIC

which way she put it. She felt that she was dozing off, and had just begun to dream that she was walking hand in hand with Dinah, and was saying to her, very earnestly, "Now, Dinah, tell me the truth: did you ever eat a

10/11 CG SYMPHONY BOLD

bat?" when suddenly, thump! thump! thump! down she came upon a heap of sticks and dry leaves, and the fall was over. Alice was not a bit hurt, and she jumped up onto her feet in a moment: she looked

10/11 CG TRIUMVIRATE BOLD

up, but it was all dark overhead: before her was another long passage, and the White Rabbit was still in sight, hurrying down it. There was not a moment to be lost: away went Alice like the wind,

10/11 CG TRIUMVIRATE BOLD ITALIC

and was just in time to hear it say, as it turned a corner, "Oh my ears and whiskers, how late it's getting!" She was close behind it when she turned the corner, but the Rabbit was no

10/11 SHANNON BOLD

longer to be seen: she found herself in a long, low hall, which was lit up by a row of lamps hanging from the roof. There were doors all round the hall, but they were all locked; and when Alice

10/11 SCHNEIDLER BOLD ITALIC

had been all the way down one side and up the other, trying every door, she walked sadly down the middle, wondering how she was ever to get out again. Suddenly she came upon a little three-legged table, all made of solid

10/11 SCHNEIDLER BOLD

glass: there was nothing on it but a tiny golden key, and Alice's first idea was that this might belong to one of the doors of the hall; but, alas! either the locks were too large, or the key was too small, but at

10/11 GARTH GRAPHIC BOLD ITALIC

any rate it would not open any of them. However, on the second time round, she came upon a low curtain she had not noticed before, and behind it was a little door about fifteen inches high:

10/11 GARTH GRAPHIC BOLD

she tried the little golden key in the lock, and to her great delight it fitted! Alice opened the door and found that it led into a small passage, not much larger than a rat-hole: she knelt down

10/11 ANTIQUE OLIVE MEDIUM ITALIC

and looked along the passage into the loveliest garden you ever saw. How she longed to get out of that dark hall, and wander about among those beds of bright

10/11 ANTIQUE OLIVE MEDIUM

flowers and those cool fountains, but she could not even get her head through the doorway; "and even if my head would go through," thought poor Alice, "it would be

10/11 CG SYMPHONY BLACK

of very little use without my shoulders. Oh, how I wish I could shut up like a telescope! I think I could, if I only knew how to begin." For, you see, so many out-of-the-

10/11 SHANNON EXTRABOLD

way things had happened lately, that Alice had begun to think that very few things indeed were really impossible. There seemed to be no use in waiting by the little door, so

10/11 CG NASHVILLE BOLD ITALIC

she went back to the table, half hoping she might find another key on it, or at any rate a book of rules for shutting people up like telescopes: this time she found a little bottle on it ("which

10/11 CG NASHVILLE BOLD

certainly was not here before," said Alice), and tied round the neck of the bottle was a paper label, with the words "DRINK ME" beautifully printed on it in large letters. It was

10/11 ITC NOVARESE BOLD ITALIC

all very well to say, "Drink me," but the wise little Alice was not going to do that in a hurry. "No, I'll look first," she said, "and see whether it's marked 'poison' or not"; for she had read several nice little

10/11 ITC NOVARESE BOLD

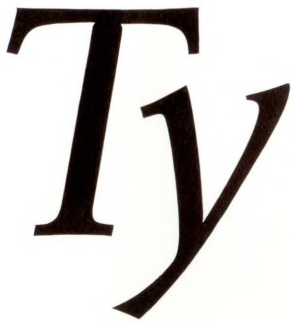
stories about children who had got burnt, and eaten up by wild beasts, and other unpleasant things, all because they would not remember the simple rules their friends had

display cut
Type designed for optimum setting at 14 points and above.

galley
A sheet containing a proof of unpaginated type composition.

legibility
The clarity of individual characters and how quickly they're deciphered. Legibility refers to type design, such as the shape, weight and relative size of the letters.

140 PT. HOLLAND SEMINAR ITALIC (T)



Text Cut

140 PT. HOLLAND SEMINAR ITALIC (D)

Display Cut

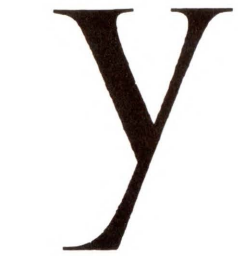
46 PT. SHANNON BOLD

White Rabbit

46 PT. OLD ENGLISH

WHITE RABBIT

Legibility



Lettered—Manipulated Strokes

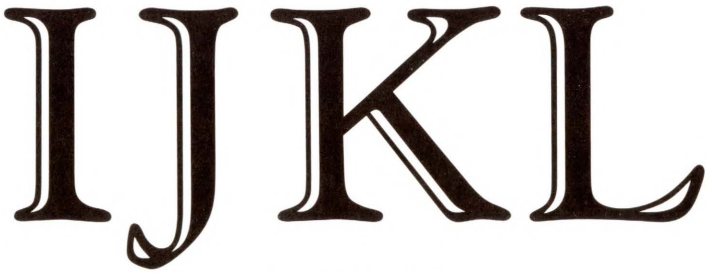
Calligraphy—Free-Flowing Strokes

110 PT. GARAMOND ANTIQUA

Uppercase also known as Capital Letters

Lowercase Letters

110 PT. GOUDY HANDTOOLED



Ornamental Typeface

lettering
The art of constructing a letter with more strokes than the essential parts of the letter as in type designing; characters that are constructed or built-up. (See *calligraphy* for a comparison.)

lowercase
Small letters. The term "lowercase" is derived from the days of hot metal, where the small letters were kept in a separate type case on the lower shelf, and capital letters were kept on the upper shelf.

ornamental typefaces
This includes inline, contour, outline and outline-shadow typefaces, as well as other miscellaneous categories collectively. (See page 26 for further explanation.)

readability
The level of comprehension and visual comfort when reading printed material. Readability is concerned with how the type is arranged on a page. Readability is affected by line length, word spacing, letterspacing and leading.

text cut
Type designed for optimum setting of 6 to 12 point. (See page 6 for illustrated explanation.)

Word Spacing

10/12 CG SYMPHONY

As she said this she looked down at her hands, and was surprised to see that she had put on one of the Rabbit's little white kid-gloves while she was talking. "How *can* I have done that?" she thought. "I must be growing small again." She got up and went to the table to measure herself by it, and found that, as nearly as she could guess, she was now about two feet high, and was going on shrinking rapidly: she soon found

Too little word spacing makes it difficult to distinguish words.

10/12 CG SYMPHONY

out that the cause of this was the fan she was holding, and she dropped it hastily, just in time to save herself from shrinking away altogether.

"That *was* a narrow escape!" said Alice, a good deal frightened at the sudden change, but very glad to find herself still in existence. "And now for the garden!" And she ran with all speed back to the little door; but, alas! the little door was

Proper word spacing creates an even "color" essential to good readability.

10/12 CG SYMPHONY

shut again, and the little golden key was lying on the glass table as before, "and things are worse than ever," thought the poor child, "for I never was so small as this before, never! And I declare it's too bad, that it is!"

As she said these words her foot slipped, and in another moment, splash! she was up to her chin in salt water. Her first idea was that she had some-

Too much word spacing interrupts the thought, separating the words into unconnected elements.

Letterspacing

10/12 GARAMOND ANTIQUA

how fallen into the sea, "and in that case I can go back by railway," she said to herself. (Alice had been to the seaside once in her life, and had come to the general conclusion that, wherever you go to on the English coast, you find a number of bathing-machines in the sea, some children digging in the sand with wooden spades, then a row of lodging-houses, and behind them a railway station.) However, she soon made out that she was in the pool of tears which she had

Too tight letterspacing makes it difficult to recognize individual characters.

10/12 GARAMOND ANTIQUA

wept when she was nine feet high.

"I wish I hadn't cried so much!" said Alice, as she swam about, trying to find her way out. "I shall be punished for it now, I suppose, by being drowned in my own tears! That *will* be a queer thing, to be sure! However, everything is queer today."

Just then she heard something splashing about in the pool a little way off, and she swam nearer to make out what it was: at

Proper letterspacing creates an even "color."

10/12 GARAMOND ANTIQUA

first she thought it must be a walrus or hippopotamus, but then she remembered how small she was now, and she soon made out that it was only a mouse, that had slipped in like herself.

"Would it be of any use, now," thought Alice, "to speak to this mouse? Everything is so out-of-the-way down here, that I should

Loose letterspacing makes it difficult to recognize words.

Line Spacing

10/9 TRIUMVIRATE

think very likely it can talk: at any rate, there's no harm in trying." So she began: "O Mouse, do you know the way out of this pool? I am very tired of swimming about here, O Mouse!" (Alice thought this must be the right way of speaking to a mouse: she had never done such a thing before, but she remembered having seen, in her brother's Latin Grammar, "A mouse—of a mouse—to a mouse—a mouse—O mouse!" The mouse looked at her rather inquisitively, and seemed to

Too little line spacing causes the eye to skip a line.

10/12 TRIUMVIRATE

her to wink with one of its little eyes, but it said nothing.

"Perhaps it doesn't understand English," thought Alice. "I daresay it's a French mouse, come over with William the Conqueror." (For, with all her knowledge of history, Alice had no very clear notion how long ago anything had happened.) So she began again: "Où est ma chatte?"

Proper line spacing is affected by line length as well as the amount of copy.

10/18 TRIUMVIRATE

which was the first sentence in her French lesson-book. The Mouse gave a sudden leap out of the water, and seemed to quiver all over with fright. "Oh, I beg your pardon!" cried Alice hastily, afraid that she had hurt the poor animal's feelings.

Too much line spacing causes the eye to re-read the same line twice, greatly diminishing readability.

Line Length

10/12 SCHNEIDLER X 7 PICAS

"I quite forgot you didn't like cats."

"Not like cats!" cried the Mouse in a shrill, passionate voice. "Would *you* like cats, if you were me?"

"Well, perhaps not," said Alice in a

Too short a line length disrupts the eye's ability to scan word groups or phrases.

10/12 SCHNEIDLER X 15 PICAS

soothing tone; "don't be angry about it. And yet I wish I could show you our cat Dinah. I think you'd take a fancy to cats, if you could only see her. She is such a dear quiet thing," Alice went on, half to herself, as she swam lazily about in the pool, "and she sits purring so nicely by the fire, licking her paws and washing her face—and she is such a nice soft thing to nurse—and she's such a capital one for catching mice—oh, I beg your pardon!"

A comfortable line length contains an average of 8 to 10 words.

10/12 SCHNEIDLER X 30 PICAS

cried Alice again, for this time the Mouse was bristling all over, and she felt certain it must be really offended. "We wo'n't talk about her any more, if you'd rather not."

"We, indeed!" cried the Mouse, who was trembling down to the end of its tail. "As if *I* would talk on such a subject! Our family always *hated* cats: nasty, low, vulgar things! Don't let me hear the name again!"

"I wo'n't indeed!" said Alice, in a great hurry to change the subject of conversation. "Are you—are you fond—of—of dogs?" The Mouse did not answer, so Alice went on eagerly: "There is such a nice little dog near our house, I should like to show you! A little bright-eyed terrier, you know, with oh, such long curly brown hair! And it'll fetch things when you throw them, and it'll sit up and beg for its dinner, and all sorts of things—I ca'n't

Too long a line length makes it difficult to locate the beginning of the next line and tends to tire the eye.

type family
A progression of design weights, with corresponding italics, condensed, expanded and ornamental styles within a type design. A family can have as few as two weights.

type font
A set of characters that have a unified design and purpose; letters, numerals, punctuation, diacritical marks or symbols of a type design needed for a particular purpose. Synonymous term for character set. In the technological sense, the term "font" is the hardware or software carrier of the character set. (See section on *Technology*.)

type style
A synonymous term for typeface.

typeface
A single style variation in a type family, such as light, bold, condensed or outline.

24/28 ANTIQUE OLIVE FAMILY

Antique Olive Light
Antique Olive
Antique Olive Italic
Antique Olive Medium
Antique Olive Medium Italic
Antique Olive Bold
Antique Olive Compact
Antique Olive Condensed
Antique Olive Bold Condensed
Antique Olive Wide
Antique Olive Nord
Antique Olive Nord Italic

A Type Family

18/21 GARAMOND ANTIQUA

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
abcdefghijklmnopqrstuvwxyz
1234567890 1234567890/1234567890
(.,:;‘’*?¿!¡)ffl ffi fl ff fi %¢¢$$£ ℓ[]{}†‡¶§@#«»
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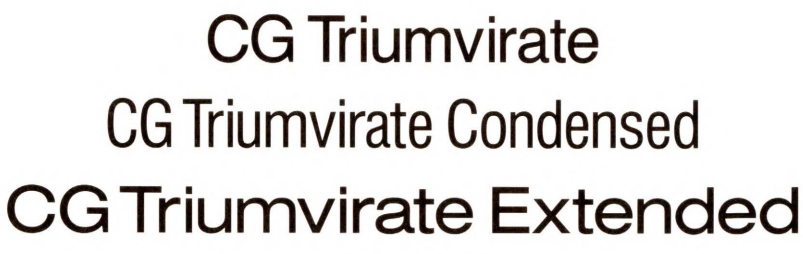
Type Font
(Quadex/CG 9600, 210 Program Driven Character Emulation)

36/38 CG TRIUMVIRATE FAMILY

Weight Variations

24/32 CG TRIUMVIRATE FAMILY



Width Variations

typeface weight
The relative thinness or thickness of a character stroke in relation to its regular or book face. (See section on *Variations within a Type Family*.)

typeface width
The extending or condensing of a character width in relation to its regular or book face. (See section on *Variations within a Type Family*.)

typesetting
The craft of setting text or display copy from typefaces for output at medium and high resolutions.

typography
The art and technique of selecting and arranging type styles, point sizes, line lengths, interline spacing, character spacing and word spacing for typeset applications.

uppercase
More commonly known as capital letters. (See page 7 for illustration.)

Parts of a Character

Obvious differences exist between a folk and classical guitar. The strings and neck are different, along with the machines. But the subtle differences, such as the height of the frets, may only be apparent to those actively involved with the instrument. Because each part of a guitar plays a role in the overall quality of sound, a proficient guitarist knows every part intimately.

The same relationship should happen between you and type. First you must learn the parts of a character. And only then will you be able to recognize the uniqueness that each typeface possesses.

apex
The outside upper or lower points at which two strokes meet, as in A, M, W.

arm
The projecting upward or horizontal strokes not enclosed within a character, as in E, L, K. (See page 14 for illustration.)

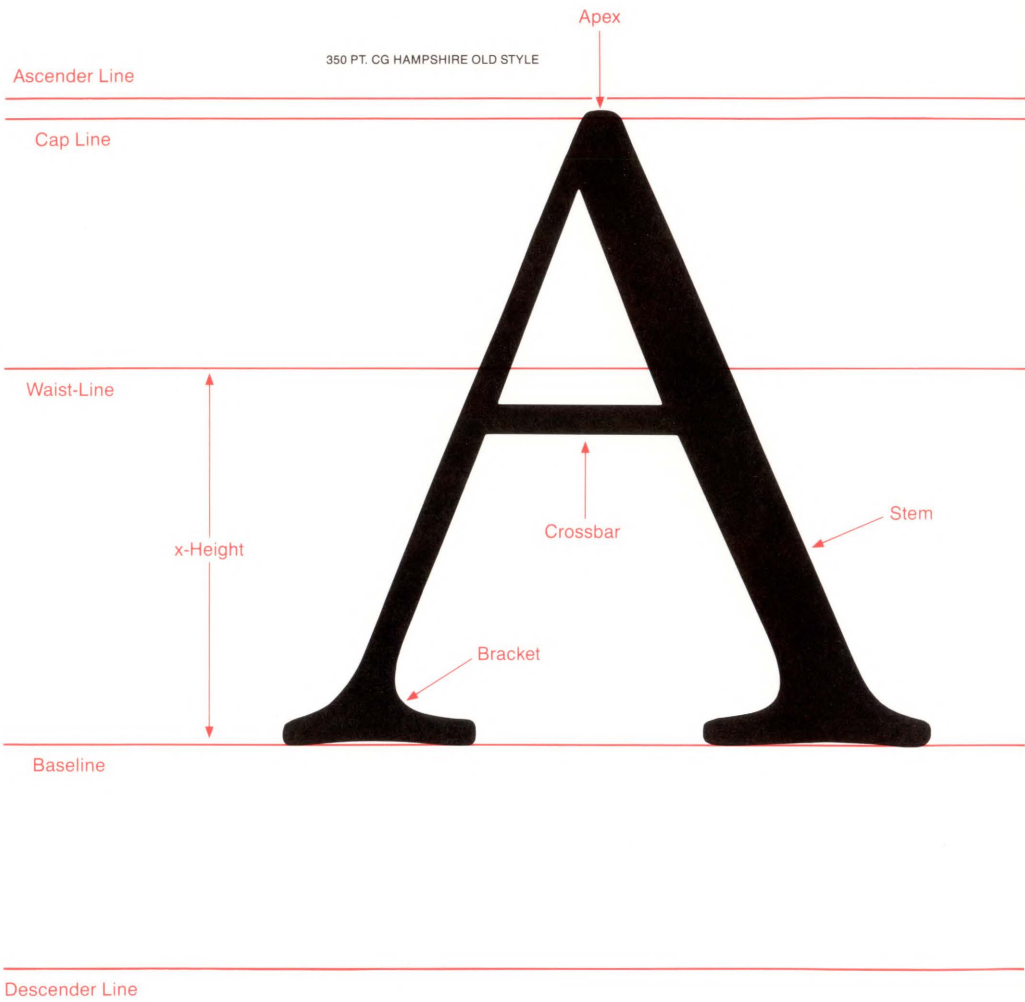
ascender
The stem of a lowercase letter that extends above the x-height, as in lowercase b, d, k.

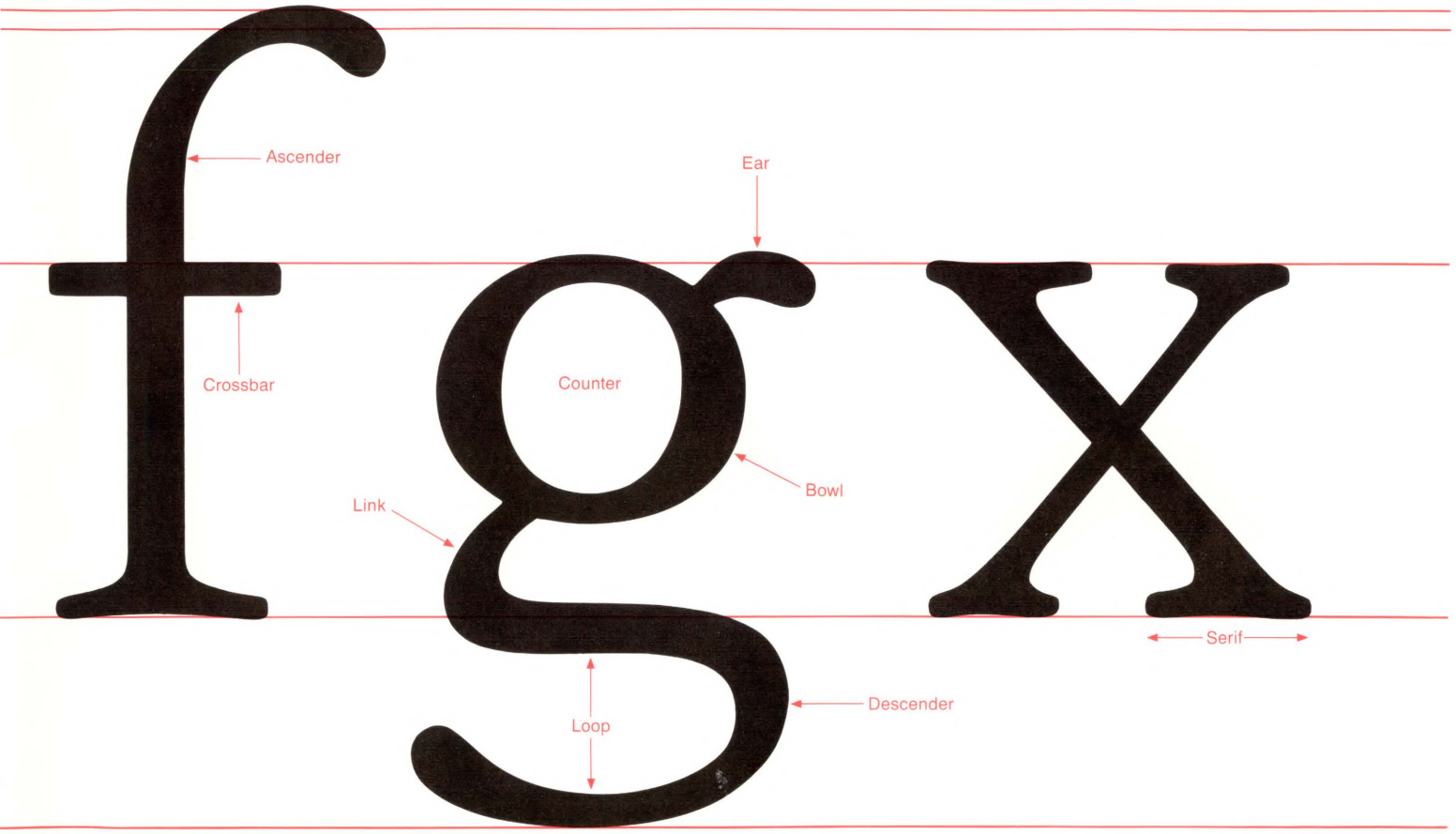
bowl
The enclosed round or oval stroke, as in p, g, O.

bracket
The round or curved joint between the stem and serif.

counter
The fully or partially enclosed interior white space, as in p, q, g.

crossbar
The connecting horizontal stroke between two stems, as in A, H; or the projecting stroke necessary for the formation of a letter, as in f and t. Also known as cross-stroke or bar.




Ascender
Ear
Crossbar
Counter
Bowl
Link
Serif
Descender
Loop

descender
The stem or lower part of a lowercase letter that extends below the baseline, as in p, q. (See page 13 for illustration.)

ear
The small projecting stroke attached to the bowl of a lowercase g or the stem of a lowercase r. (See page 13 for illustration.)

link
The stroke that connects the bowl and loop of a lowercase g. (See page 13 for illustration.)

loop
The lower portion of a lowercase g. (See page 13 for illustration.)

serif
The horizontal or diagonal strokes drawn across a stem, arm or tail. Serifs have many variations, such as hairline, slab and wedge. (See section on *Variations within Classifications*.)

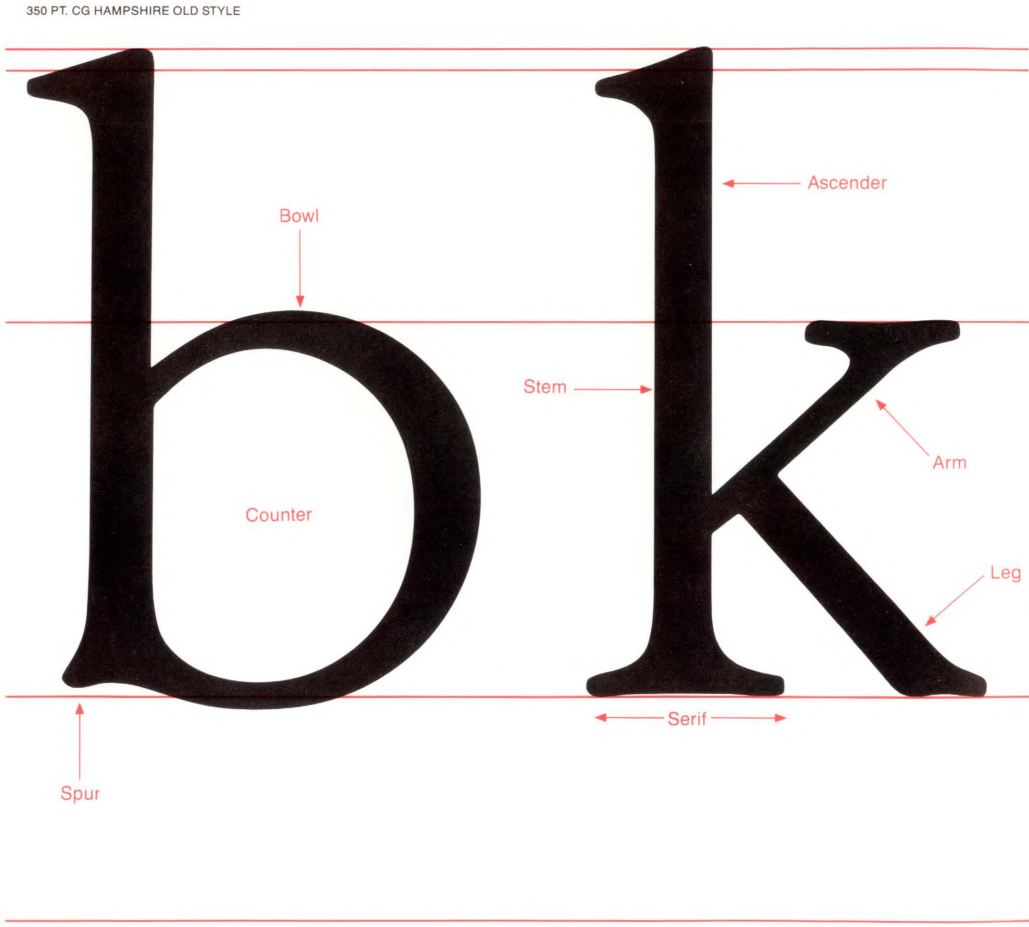
spur
The pointed projection off the main stem of a lowercase b.

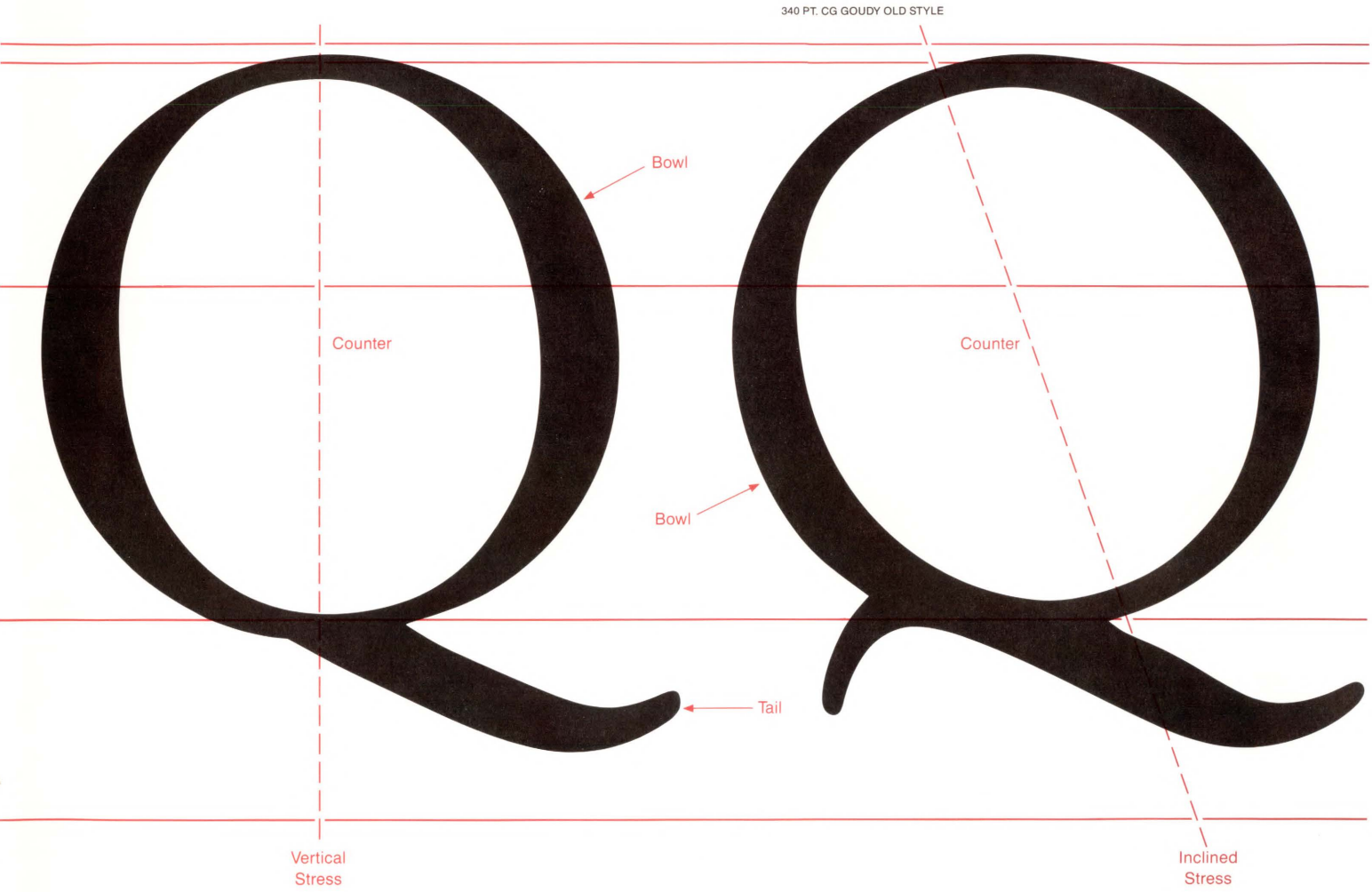
stem
The main vertical stroke, as in L, Y, B; or the main oblique stroke(s), as in V, W, A.

stress
The degree of incline formed by the relationship between thicks and thins of the bowl in round, non-linear letters. There are two kinds of stress: inclined or vertical. Also known as curve stress or axis.

stroke
Essential straight or curved lines.

tail
The short, diagonal stroke that rests on the baseline in R, K (also known as leg), and below it in Q.




340 PT. CG GOUDY OLD STYLE
Bowl
Counter
Counter
Bowl
Tail
Vertical
Stress
Inclined
Stress

Typeface Evolution

From Gutenberg's textured Blackletter to the geometric Sans Serifs of the Bauhaus, our illustrations and text provide an outline of type's evolution through the centuries.

Blackletter originated during the mid-fifteenth century and was based on contemporary northern, Germanic manuscript hands. These pointed, dense designs were the predominant letterforms used in German-speaking, Scandinavian, and Slavonic countries until well into the nineteenth and twentieth centuries.

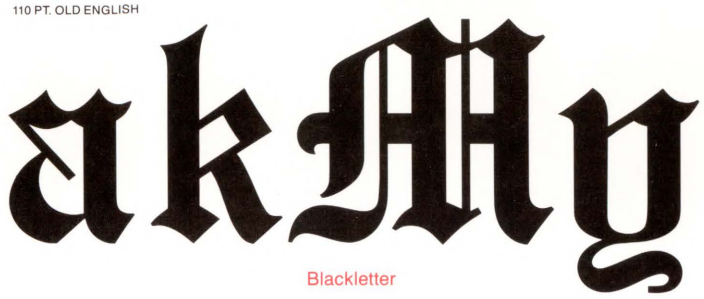
In the 1470s in southern Europe, where more open and rounded forms were favored, Roman capitals and the humanist bookhand were the basis of Venetian Oldstyle typefaces. In sixteenth-century France and seventeenth-century Holland and England, the Venetian Oldstyle letterforms were further developed by native artisans.

As its name implies, Transitional was an intermediate step between Oldstyle and Modern. 'Modern' (1780s) marks the ascent of the engraver's hand over the scribe's. Its contrasting hairline horizontals and thick verticals were influenced by the copperplate-engraved scripts of the writing masters.

Although based on the proportions of Modern, Slab and Sans Serifs represented a radical departure in their even-weight, linear quality. They were the two most successful varieties of ornamented typefaces produced for display work in the nineteenth century.

Typeface Classification

110 PT. OLD ENGLISH

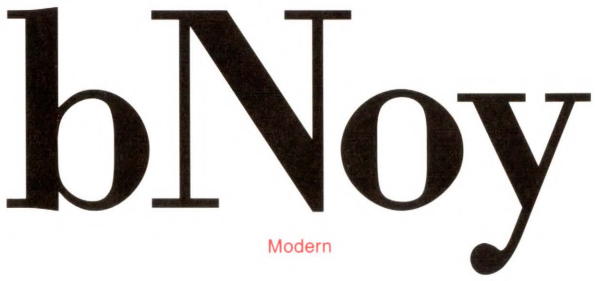


Blackletter

110 PT. RAPHAEL

Decorative/Novelty

110 PT. CG BODONI



Modern

IN TYPOGRAPHY there are no blacks and whites. No steadfast rules. No concrete reasons why. Only shades of grey.

But the nature of man is to eliminate the grey. To simplify. To pigeonhole. Organizing information so it can be readily and easily grasped. Classification systems are an example of man's attempt to do this with type.

The system of typeface classification illustrated here is based on typeface evolution as well as similar features and common usage. Although the classifications appear to be neatly grouped, be aware that many typefaces fall between the categories.

Blackletter
From the manuscript lettering of fifteenth-century Northern Europe, these typefaces are tightly woven and heavy. Old English is an example. Further distinction is dependent upon four variations: Textura, Gothic-Antique, Rotunda and Bastarda. (See section on *Variations within Classifications*.)

Decorative/Novelty
Besides being ornamental in appearance, these typefaces negate any true style consistencies from family to family. An example is Raphael.

Modern
Displaying design characteristics from the late eighteenth century, Modern typefaces have an extreme variation between thick and thin strokes; narrow, straight-sided counters; a vertical curve stress; and straight, unbracketed serifs. An example is CG Bodoni.

Modified Sans Serif
Several of these typefaces were inspired by chiselled letters that were originally brush written. Their stems are flared, giving the appearance of a slight serif. Also known as Glyphic. An example is Shannon.

Non-Latin
These typefaces include Arabic, Armenian, Cyrillic, Greek and Indian languages.

Oldstyle
Possessing design characteristics from the fifteenth to the seventeenth century, Oldstyle typefaces have a subtle contrast between the thick and thin strokes; an inclined curve stress; bracketed, concave serifs; and a diagonal bar on the lowercase e (Venetian only). An example is Schneidler. Further distinction is dependent upon three historical variations: Venetian, Aldine-French and Dutch-English. (See section on *Variations within Classifications*.)

Sans Serif
Having design characteristics from the nineteenth and twentieth centuries, these typefaces are linear and without serifs. CG Triumvirate is an example. Further distinction is dependent upon three variations: Grotesque, Humanist, and Geometric. (See section on *Variations within Classifications*.) Sans Serif is also called Gothic, Antique or Grotesk.

110 PT. SHANNON BOLD

Abmv

Modified Sans Serif

110 PT. ARABIC NEWS BOLD

أعلمر

Non-Latin

110 PT. SCHNEIDLER BOLD

emW

Oldstyle

110 CG TRIUMVIRATE

Ghos

Sans Serif

110 PT. CITADEL SCRIPT

Script/Cursive

110 PT. CG NASHVILLE MEDIUM

akR

Slab Serif

110 PT. ITC CHELTENHAM BOOK

eHn

Transitional

Script/Cursive
These typefaces have joining and/or separate characters patterned after handwriting styles. Citadel Script is an example. Further distinction is dependent upon three variations: Calligraphic, English Round-Hand and Brush Script. (See section on *Variations within Classifications*.)

Slab Serif
Originating from the nineteenth century, these typefaces have a monotone stroke weight; a vertical curve stress; and, typically, unbracketed, square-cut serifs of the same weight as the stem. CG Nashville is an example. Slab Serif is also known as Square Serif or Egyptian.

Transitional
Having design characteristics from the mid-eighteenth and nineteenth centuries, Transitional typefaces have a notable variation between thick and thin strokes, a horizontal bar on the lowercase e, a near vertical curve stress, and essentially flat-topped serifs. ITC Cheltenham is an example.

Variations within Classifications

IF YOU ARE GOING through this booklet from cover to cover, you're at the point where you have learned some basic type lingo as well as the parts of the character. And although you may not be a type historian, you have acquired a knowledge about the history of type and its classifications.

This section further enhances your type awareness. It depicts the variations of type design within Blackletter, Oldstyle, Sans Serif and Script/Cursive.

Blackletter Variations

Bastarda
A hybrid of features from Textura, Rotunda and a semi-cursive. It is lighter and more open than Textura. Like a semi-cursive, Bastarda has flourishes on both the capital and lowercase letters. An example is Modern Blackletter.

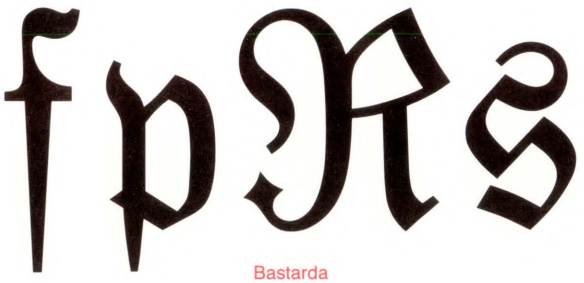
Gothic-Antique
Less formal and rounder than Textura, with most of the vertical strokes lacking feet or serifs.

Rotunda
A rounder and more open variation of Textura developed in Southern Europe.

Textura
The main historical group in Blackletter design. Textura, also known as Text, is squarely drawn and lacks curves, resulting in angular arches. An example is Old English.

Blackletter Variations

110 PT. MODERN BLACKLETTER



Bastarda

110 PT. OLD ENGLISH

Textura

Oldstyle Variations

110 PT. GARAMOND ANTIQUA

Aldine-French

110 PT. CASLON 540

Dutch-English

110 PT. KENNERLY BOLD

Venetian

Oldstyle Variations

Aldine-French

A sixteenth-century design variation having a more noticeable contrast between thick and thin strokes than Venetian and a straight crossbar on the lowercase e. An example is Garamond Antiqua.

Dutch-English

An eighteenth-century design variation having a pronounced contrast of strokes, wedge-shaped brackets on lowercase letters, and straight-edged serifs. An example is Caslon 540.

Venetian

A fifteenth-century design variation having concave serifs, a subtle contrast between the thick and thin strokes, a noticeable inclined curve stress, and a diagonal bar on the lowercase e. An example of Venetian is Kennerly Bold.

Sans Serif Variations

Geometric

Originally developed from the Bauhaus movement of the 1920s, these types feature geometric letters, combining linear strokes with circular counters, as in a and g. An example is Futura II.

Grotesque

A nineteenth-century design variation, Grotesque types are typically Slab Serifs without the serifs. An example is ITC Franklin Gothic.

Humanist

Returning to the Renaissance Oldstyle letterforms, Humanist Sans Serifs have Oldstyle proportions. An example is Gill Sans.

Sans Serif Variations

110 PT. FUTURA BOOK II

Geometric

110 PT. ITC FRANKLIN GOTHIC MEDIUM

Grotesque

130 PT. GILL SANS MEDIUM

Humanist

Script/Cursive Variations

110 PT. BROPHY SCRIPT

Brush Script

130 PT. ITC ZAPF CHANCERY LIGHT ITALIC

Calligraphic

130 PT. CITADEL SCRIPT

English Round-Hand

Script/Cursive Variations

Brush Script
Derived from brush lettering rather than pen. An example is Brophy Script.

Calligraphic
Derived from broad-pen lettering. An example is ITC Zapf Chancery.

English Round-Hand
True joining scripts. An example is Citadel Script.

Serif Variations

hairline
These serifs are thin, unbracketed horizontals and are most prevalent in Modern letters.

slab
The monotone serif featured in Slab Serif letters. The weight of the serif is visually equal to the stem.

wedge
A triangular-shaped serif as in ITC LSC Caslon Regular No. 223.

Serif Variations

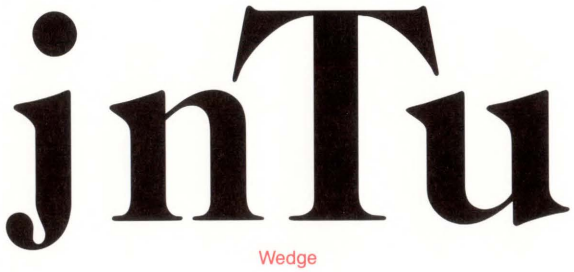
110 PT. BAUER BODONI BOLD

Hairline

110 PT. CG NASHVILLE MEDIUM

Slab

110 PT. ITC LSC CASLON REGULAR NO. 223



Wedge

Variations within a Type Family

Angle Variations

23/26 HOLLAND SEMINAR ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

abcdefghijklmnopqrstuvwxyz

Italic

23/26 HOLLAND SEMINAR

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

abcdefghijklmnopqrstuvwxyz

Roman

21/25 CG OMEGA ITALIC

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

abcdefghijklmnopqrstuvwxyz

Oblique

21/25 CG OMEGA

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

abcdefghijklmnopqrstuvwxyz

Roman

A TYPE FAMILY is just that—a family. It is made up of various members that bear some resemblance to one another, yet differ in many ways. A member in a type family, such as italic or bold, is commonly used to add emphasis to words. If overused, however, the uniqueness a type variation offers is gone.

Angle Variations

backslant
These typefaces slope towards the left and are commonly Decorative and Novelty faces.

italic face
These faces have a slight slope towards the right, emulating the movement of cursive writing. A true italic is a total design change from its roman counterpart.

oblique face
Common in Sans Serif typefaces, the oblique face is a sloped roman. Unlike an italic, the oblique retains the forms of its roman counterpart.

roman
Typically, all typefaces that stand upright as opposed to backslant, italic or oblique.

contour variation
A typeface with a black outline around its characters.

inline variation
A typeface with white lines within its character strokes.

outline variation
A typeface with only the silhouette of its characters delineated by a black outline. Also known as open.

outline shadow variation
An outline typeface with a shadow effect that typically appears to the right of its characters.

250 PT. ITC FRANKLIN GOTHIC CONTOUR

Contour Face

250 PT. ITC CLEARFACE OUTLINE

Outline Face

250 PT. BELWE INLINE

Inline Face

250 PT. ITC CHELTENHAM OUTLINE SHADOW

Outline Shadow Face

Weight and Width Variations

Weight Variations

bold face
A type style that has thick letter strokes. The thickness of strokes in relation to its regular or book face determines whether the typeface is demi-bold, bold or extra bold.

light face
A type style that has thin letter strokes. The thinness of strokes in relation to its regular or book face determines whether the typeface is light, extra light or ultra light.

Width Variations

condensed face
A type style that has narrow letter widths. The narrowness of its character width in relation to its regular or book face determines whether the typeface is condensed, extra condensed or ultra condensed.

expanded face
A type style that has wide letter widths. The expansion of its character width in relation to its regular or book face determines whether the typeface is expanded, extra expanded or ultra expanded.

Letter and Line Measurements

An exclusive set of measurements are used by typographers, which are uncommon to any other profession. Although these measures may at first seem strange, they will soon become second nature to you.

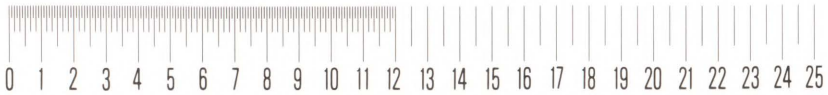
agate line
A system used for measuring column depth in the newspaper industry. Fourteen agates equal an inch.

baseline
The imaginary line that supports characters, excluding descenders of lowercase letters and, typically, the tails of capital letters such as Q.

body size
The distance from the top of the highest ascender or capital to the bottom of the lowest descender plus the remaining space within the point size. This distance and the white space vary from one typeface to another according to the intention of the designer. The visual impression of a typeface as being large or small on its body, however, is primarily caused by its x-height.

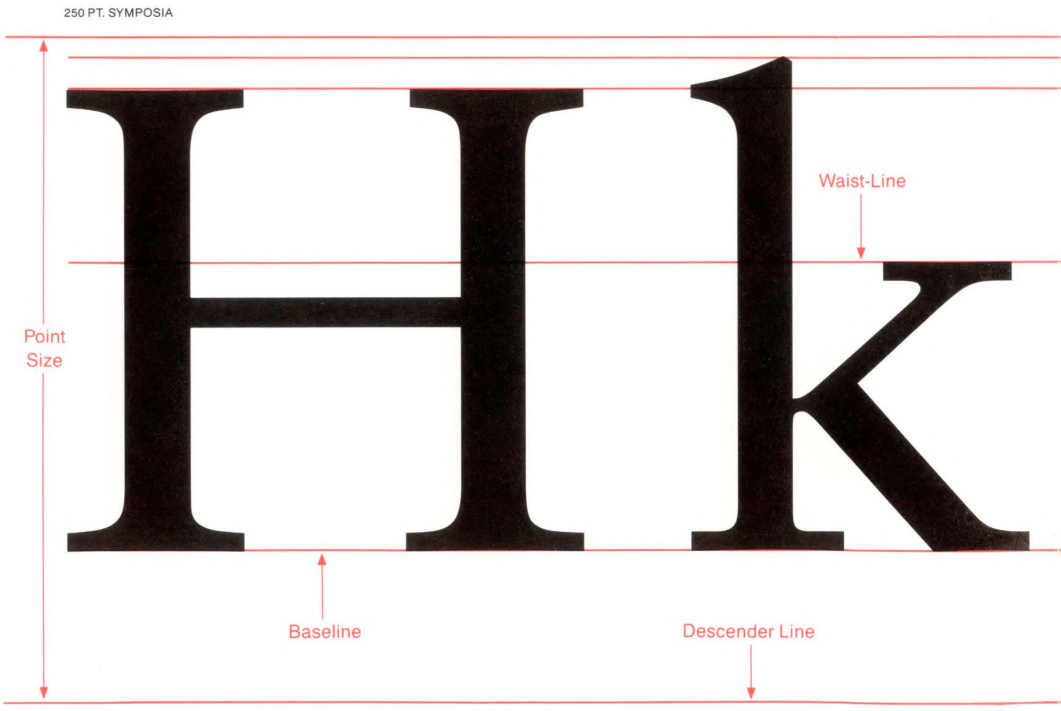
cap height
The measurement from the baseline of a letter to its capital line.

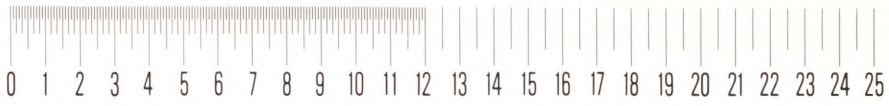
Agate Lines



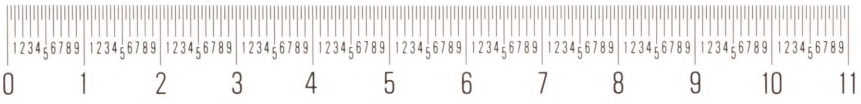
Picas and Points

Inches

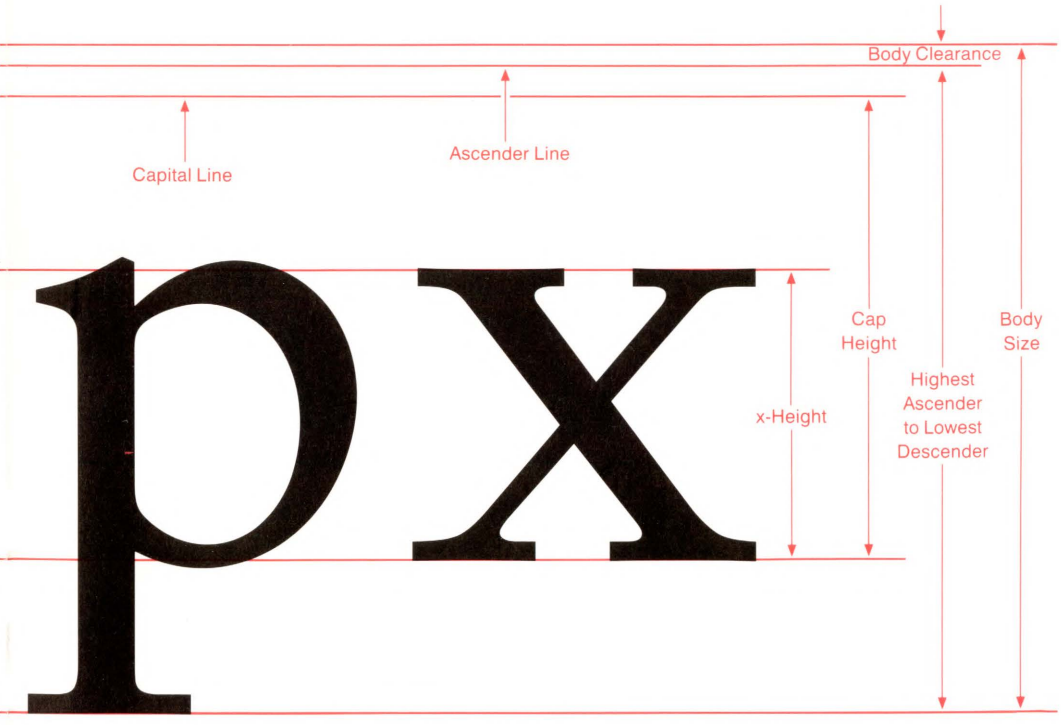




Ciceros and Corps



Millimeters and Centimeters



capital line
The imaginary line that runs across the top of capital letters.

cicero
A standard typographic measuring unit from the European Didot system. One cicero is the Didot equivalent of a pica.

column width
A synonymous term for measure.

corps
The base measuring unit from the European Didot system. One corps is the Didot equivalent to a point.

Didot system
The standard European typographic measuring system. The Didot system originated in the eighteenth-century French typefoundry, Didot.

em space
During the days of hot metal, the em space, as well as the en and thin, were actually non-printing blocks of metal used to add space between printed elements. An em space was equal to the square of the point size being used, and most likely, it was equal to the width of the capital M. For example, a 12-point em was 12 points high and 12 points wide. In phototypesetting, the em is generally typeface sensitive, proportional to the design of the typeface. For instance, a 12-point em in a condensed typeface will take up less space than a 12-point em in an expanded typeface.

en space
In both hot metal and phototypesetting, the en space is equivalent to half the width of an em. (See *em space* for more information.)

line length
A synonymous term for measure.

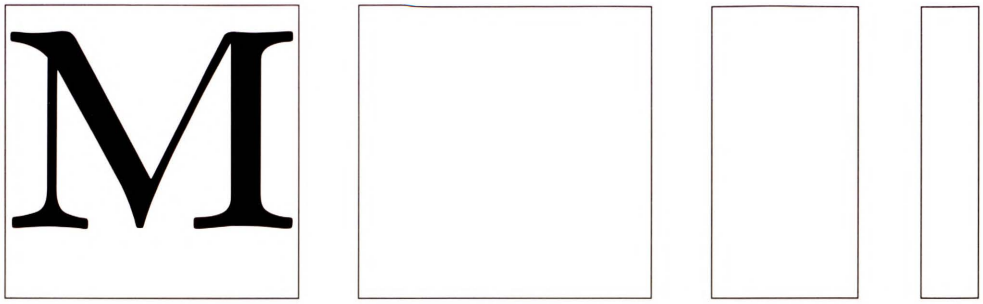
measure
The length of a line expressed in picas and points or ciceros and corps. Also known as line length or column width.

mechanical alignment
The accurate alignment of one element to another or within a specified area. Aligning elements mechanically involves exacting use of precision measuring tools. (See *visual alignment* for a comparison.)

numeral space
A space, typically used in tabular settings, that denotes the body width of a numeral.

pica
A standard typographic measuring unit from the Anglo-American Point System. Six picas nearly equal an inch. (See page 28 for illustrated explanation.)

110 PT. CG HAMPSHIRE OLD STYLE SEMIBOLD



9/10 ITC NOVARESE BOOK

The Caterpillar was the first to speak.

"What size do you want to be?" it asked.

"Oh, I'm not particular as to size," Alice hastily replied; "only one doesn't like changing so often, you know."

"I *don't* know," said the Caterpillar.

Alice said nothing: she had never been so much contradicted in all her life before, and she felt that she was losing her temper.

"Are you content now?" said the Caterpillar.

9½ Pica Measure

14/15 ITC NOVARESE BOOK

"Well, I should like to be a *little* larger, Sir, if you wouldn't mind," said Alice: "three inches is such a wretched height to be."

"It is a very good height indeed!" said the Caterpillar angrily, rearing itself upright as it spoke (it was exactly three inches high).

"But I'm not used to it!" pleaded poor Alice in a piteous tone. And she thought to herself, "I wish the creatures wouldn't be so easily offended!"

24 Pica Measure

40/44 ANTIQUE OLIVE MEDIUM

Alice said nothing:

Mechanical Alignment

Alice said nothing:

Visual Alignment

Sans Serif

90 PT. FUTURA BOOK II

Small x-Height

90 PT. CG TRIUMVIRATE

Medium x-Height

90 PT. ANTIQUE OLIVE

Large x-Height

Serif

90 PT. CG COLLAGE

Small x-Height

90 PT. ITC NEW BASKERVILLE ROMAN

Medium x-Height

90 PT. AMERICAN CLASSIC BOLD

Large x-Height

point
The base measuring unit from the Anglo-American Point System, where 72 points nearly equal an inch and 12 points equal a pica. The American Point System originated during the nineteenth century in the Chicago typefoundry, Marder, Luse & Co. (See page 28 for illustrated explanation.)

point size
The vertical dimension of a typeface in points, measurable from baseline to baseline in text set solid. (See *body size* for more information.)

thin space
Traditionally the thin space is equivalent to ⅕ the width of an em space. Today it's often the space assigned to a period or comma. (See *em space* for more information.)

visual alignment
The estimated alignment of one element to another or within a specified area. Aligning elements visually does not involve the use of measuring tools, however, to human eyes the elements appear aligned. (See *mechanical alignment* for a comparison.)

waist-line
The imaginary line that runs across the top of the lowercase letters, excluding ascenders. Also known as x-line. (See page 29 for illustration.)

x-height
The height of lowercase letters as compared to the height of the capital letters. Typically this is the distance from the waist-line to the baseline. A typeface may have a small, medium or large x-height. (See pages 12 and 29 for further illustrations.)

Letter and Line Spacing

THE SPACE BETWEEN LINES of type or around blocks of copy is like the space between and around your living room furniture. The addition or subtraction of space between a coffee table, bentwood rocker and sofa can create extreme openness or cozy comfort.

Space, whether it's in a room or within a line of type, is one of many mood factors that you have to play with.

centered
Centering a block of type, line or character within a line measure.

character spacing
Pertaining to type design, an allocation of space on each side of a character in order to achieve a visual balance of white both inside and outside a character when used in combination with other characters. Character spacing is a compromise solution that is improved upon by text kerning. (See *kerning* for more information.)

48/40 ITC NOVARESE BOLD ITALIC

A Mad Tea-Party

14/15 ITC NOVARESE BOOK

There was a table set out under a tree in front of the house, and the March Hare and the Hatter were having tea at it: a Dormouse was sitting between them, fast asleep, and the other two were using it as a cushion, resting their elbows on it, and talking over its head. "Very uncomfortable for the Dormouse," thought Alice; "only as it's asleep, I suppose it doesn't mind."

♦ ♦ ♦ ♦

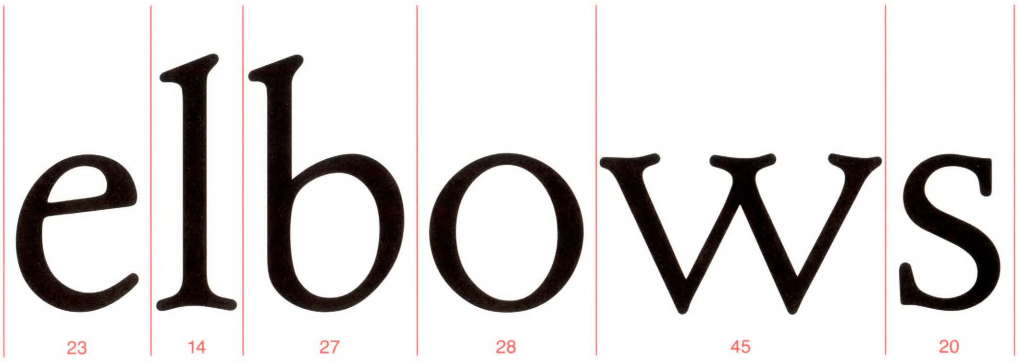
The table was a large one, but the three were all crowded together at one corner of it. "No room! No room!" they cried out when they saw Alice coming. "There's *plenty* of room!" said Alice indignantly, and she sat down in a large arm-chair at one end of the table.

♦ ♦ ♦ ♦

"Have some wine," the March Hare said in an encouraging tone.

Centered Copy

130 PT. SCHNEIDLER



Character Spacing
(Number of units assigned to each character using a 54-unit em system.)

character compensation
The uniform reduction of white space between all characters in a line or block of type.

18/20 GARTH GRAPHIC

The table was a large one, but the three were all crowded together at one corner of it. "No room! No room!" they cried out when they saw Alice coming.

Set With No Character Compensation

The table was a large one, but the three were all crowded together at one corner of it. "No room! No room!" they cried out when they saw Alice coming.

Set With Character Compensation

The table was a large one, but the three were all crowded together at one corner of it. "No room! No room!" they cried out when they saw Alice coming.

Set With Tight Character Compensation

The table was a large one, but the three were all crowded together at one corner of it. "No room! No room!" they cried out when they saw Alice coming.

Set With Tighter Character Compensation

flush left
Pertaining to a block of text, lines are set to align with the left margin, creating a serrated effect on the right margin. Also known as unjustified or ragged right.

flush right
Pertaining to a block of text, lines are set to align with the right margin, creating a serrated effect on the left margin. Flush right is less common and more difficult to read than flush left or justified copy. Also known as ragged left.

hanging punctuation
Pertaining to a justified block of type, punctuation marks appear outside of the line measure, hanging into the left and/or right margins. When compared to normal punctuation, the text with hanging punctuation appears aligned on both the left and right margins.

justified
Vertically-aligned side margins; line lengths of equal measure. Readability studies show that flush left copy is easier to read than justified copy due to consistent letter and word spacing.

9/10 ITC BOOKMAN LIGHT

"Not the same thing a bit!" said the Hatter. "Why, you might just as well say that 'I see what I eat' is the same thing as 'I eat what I see'!"

"You might just as well say," added the March Hare, "that 'I like what I get' is the same thing as 'I get what I like'!"

"You might just as well say," added the Dormouse, which seemed to be talking in its sleep, "that 'I breathe when I sleep' is the same thing as 'I sleep when I breathe'!"

"It *is* the same thing with you," said the Hatter, and here the conversation dropped, and the party sat silent for a minute, while Alice thought over all she could remember about ravens and writing-desks, which wasn't much.

Flush Left

9/10 ITC BOOKMAN LIGHT

"Not the same thing a bit!" said the Hatter. "Why, you might just as well say that 'I see what I eat' is the same thing as 'I eat what I see'!"

"You might just as well say," added the March Hare, "that 'I like what I get' is the same thing as 'I get what I like'!"

"You might just as well say," added the Dormouse, which seemed to be talking in its sleep, "that 'I breathe when I sleep' is the same thing as 'I sleep when I breathe'!"

"It *is* the same thing with you," said the Hatter, and here the conversation dropped, and the party sat silent for a minute, while Alice thought over all she could remember about ravens and writing-desks, which wasn't much.

Flush Right

9/10 CG OMEGA MEDIUM

The Hatter was the first to break the silence. "What day of the month is it?" he said, turning to Alice: he had taken his watch out of his pocket, and was looking at it uneasily, shaking it every now and then, and holding it to his ear.

Alice considered a little, and then said "The fourth."

"Two days wrong!" sighed the Hatter. "I told you butter wouldn't suit the works!" he added, looking angrily at the March Hare.

"It was the *best* butter," the March Hare meekly replied.

"Yes, but some crumbs must have got in as well," the Hatter grumbled: "you shouldn't have put it in with the bread-knife."

The March Hare took the watch and looked at it gloomily: then he dipped it into his cup of tea, and looked at it again: but he could think of nothing better to say than his first remark, "It was the *best* butter, you know."

Justified with Hanging Punctuation

9/10 CG OMEGA MEDIUM

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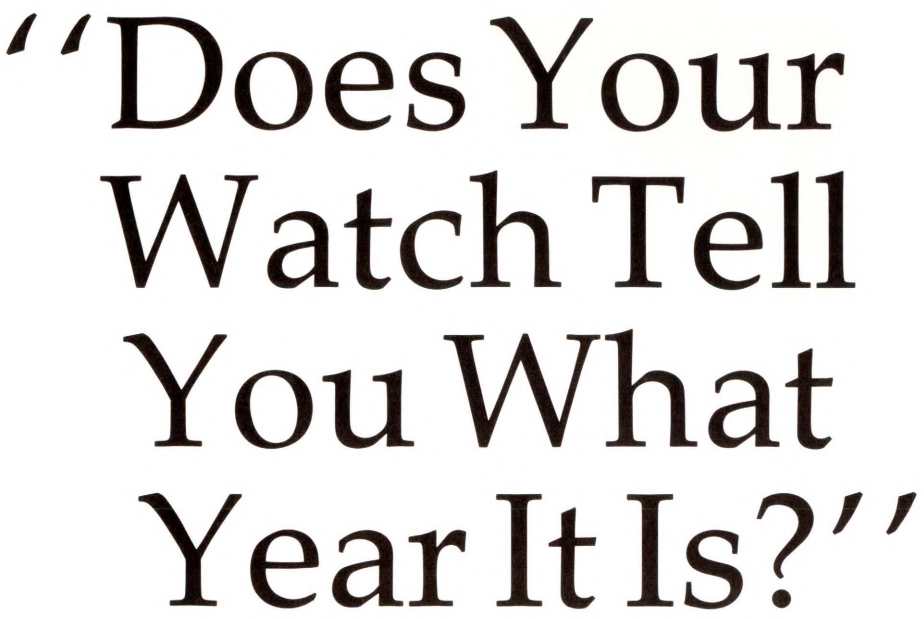
Justified

60/60 CG PALACIO



Unkerned

60/60 CG PALACIO

Kerned

kerning
The elimination of excess white space between letters in combination. Kerning is used when the assigned character spacing of a given letter or letters results in too much intercharacter white space within a character pair. In text applications, kerning will usually affect only the character pairs that possess the greatest amount of excess white space, such as an ov or We. In display applications, it affects more character pairs than in text, and intercharacter space reduction may be greater.

leading
The value, typically expressed in points, of the additional white space between lines of type. For example, 10-point type set with 2 points of lead. The term "leading" is derived from the days of hot metal, where thin strips of non-printing lead were used to separate the lines of type.

letterspacing
The selective insertion of white space between letters of a word(s), improving the overall appearance of the line. To achieve a visual balance certain capital letters, such as H and I, may need letterspacing. Lowercase letters, however, do not need letterspacing.

line depth
Interline spacing, measured from baseline to baseline, that includes the type size and the addition or subtraction of lead. For example, 10-point type set with a line depth of 12 points.

HEAD: 30 PT. ITC GARAMOND BOLD
SUBHEAD: 20 PT. ITC GARAMOND BOLD ITALIC
TEXT: 13/15 ITC GARAMOND LIGHT

Who Stole the Tarts?

42 POINTS

Judge and Jury

32 POINTS

15 POINTS

The King and Queen of Hearts were seated on their throne when they arrived, with a great crowd assembled about them—all sorts of little birds and beasts, as well as the whole pack of cards: the Knave was standing before them, in chains, with a soldier on each side to guard him; and near the King was the White Rabbit, with a trumpet in one hand, and a scroll of parchment in the other. In the very middle of the court was a table, with a large dish of tarts upon it: they looked so good, that it made Alice quite hungry to look at them—"I wish they'd get the trial done," she thought, "and hand round the refreshments!" But there seemed to be no chance of this; so she began looking at everything about her to pass away the time.

Alice had never been in a court of justice before, but she had read about them in books, and she was quite pleased to find that she knew the name of nearly everything there. "That's the judge," she said to herself, "because of his great wig."

Line Depth

48 PT. CG TRIUMVIRATE

EXHIBITION

No Letterspacing

48 PT. CG TRIUMVIRATE

EXHIBITION

Letterspacing Added

Leading

12/11 CG CENTURY SCHOOLBOOK

The judge, by the way, was the King; and, as he wore his crown over the wig (look at the frontispiece if you want to see how he did it), he did not look at all comfortable, and it was certainly not becoming.

"And that's the jury-box," thought Alice; "and those twelve creatures," (she was

Negative Leading

12/13 CG CENTURY SCHOOLBOOK

the meaning of it at all. However, "jurymen" would have done just as well.

The twelve jurors were all writing very busily on slates. "What are they doing?" Alice whispered to the Gryphon. "They ca'n't have anything to put down yet, before the trial's begun."

Plus One Point Leading

12/12 CG CENTURY SCHOOLBOOK

obliged to say "creatures," you see, because some of them were animals, and some were birds), "I suppose they are the jurors." She said this last word two or three times over to herself, being rather proud of it: for she thought, and rightly too, that very few little girls of her age knew

Set Solid

12/14 CG CENTURY SCHOOLBOOK

"They're putting down their names," the Gryphon whispered in reply, "for fear they should forget them before the end of the trial."

"Stupid things!" Alice began in a loud indignant voice; but she stopped herself hastily, for the White Rabbit cried out, "Silence

Plus Two Points Leading

Word Space

11/12 SHANNON BOOK

in the court!" and the King put on his spectacles and looked anxiously round, to make out who was talking.

Alice could see, as well as if she were looking over their shoulders, that all the jurors were writing down "Stupid things!" on their slates, and she could even make out that one of them didn't know how to spell "stupid," and

Justified—Word Space Varies

11/12 SHANNON BOOK

that he had to ask his neighbour to tell him. "A nice muddle their slates'll be in before the trial's over!" thought Alice.

One of the jurors had a pencil that squeaked. This, of course, Alice could *not* stand, and she went round the court and got behind him, and very soon found an opportunity of taking it away. She did it so quickly that

Ragged—Word Space is Consistent

negative leading
The value, typically expressed in points, of the negative white space between lines of type. For example, 11-point type minus 1 point of lead.

ragged
Synonymous term for flush left and/or flush right.

set solid
No addition or subtraction of points from the type size being used; equal point size and line depth. For example, 11 point type set with a line depth of 11 points.

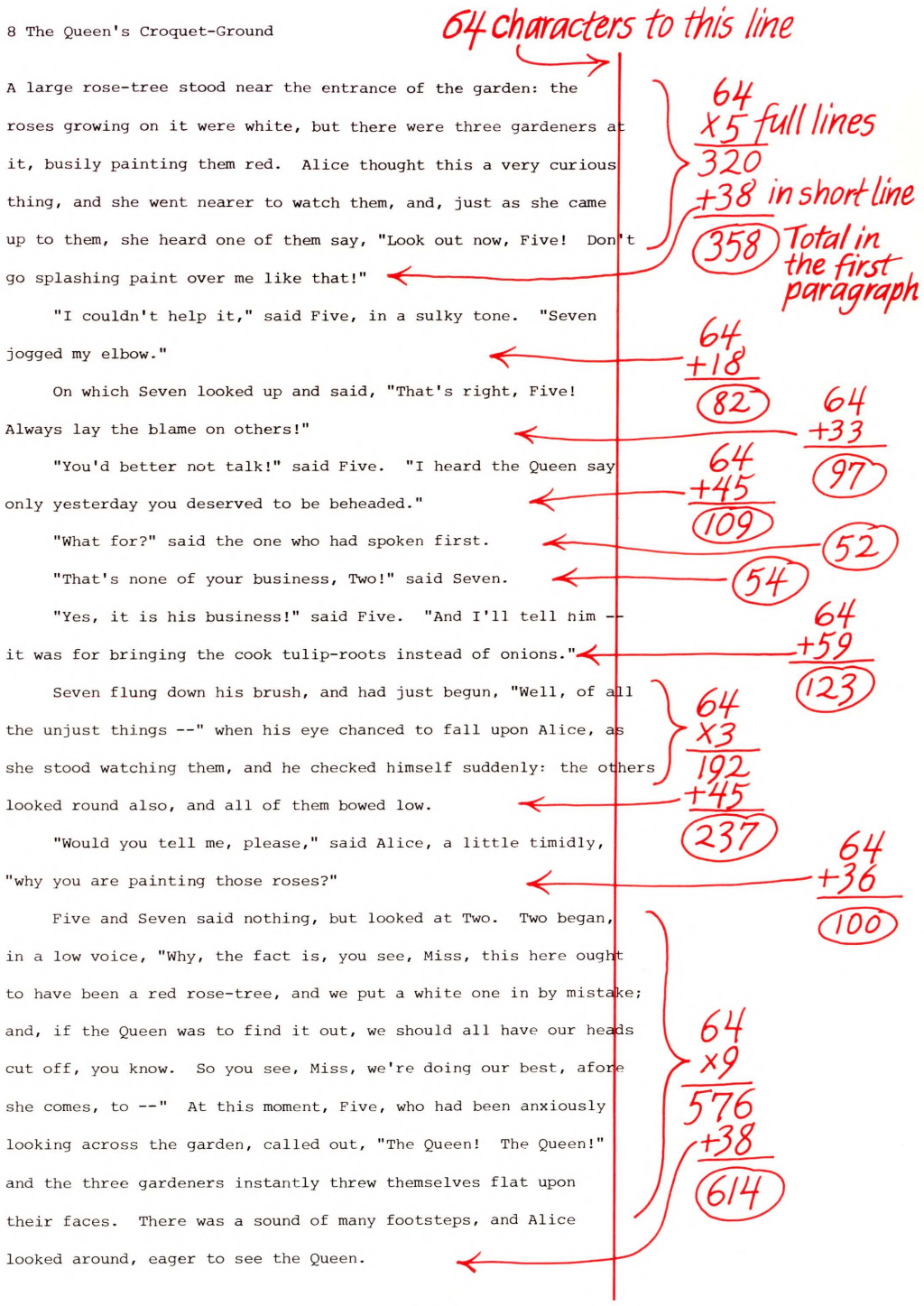
unjustified
Not justified. Synonymous term for flush left and/or flush right.

word space
The amount of white space between words. Word space varies within a specified range if the copy is set justified. If set unjustified, the word space throughout the copy remains consistent to the specified amount. Too much or too little word space can impair readability.

Copy Preparation and Proofreading

As a typographer, you'll be faced daily with strange marks and calculations scribbled all over your manuscript copy and typeset galleys. At first you'll think them to be hieroglyphics. But after time you will know them as well as you know the language of type.

character counting
Determining how many characters (including word spaces) are in the original manuscript copy. Character counting is the first step in the copyfitting process.



Character Counting
(Each paragraph's character total is circled.)

Elite Typewriter—12 Characters per Inch

Pica Typewriter—10 Characters per Inch

Garamond Antiqua

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
abcdefghijklmnopqrstuvwxyz1234567890
(.,:;'"*?¿!¡)%¢$/£ÇÑçéıñß

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
ffffiffiflfl1234567890

Characters per Pica Table

6 PT.	7 PT.	8 PT.	9 PT.	10 PT.	11 PT.	12 PT.	14 PT.	18 PT.	24 PT.	30 PT.	36 PT.	48 PT.	60 PT.	72 PT.
4.60	3.94	3.45	3.07	2.76	2.51	2.30	1.97	1.53	1.15	0.92	0.77	0.58	0.46	0.38

CG Trump Mediaeval

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
abcdefghijklmnopqrstuvwxyz1234567890
(.,:;'"*?¿!¡)%¢$/£ÇÑçéıñß

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
ffffiffiflfl1234567890

Characters per Pica Table

6 PT.	7 PT.	8 PT.	9 PT.	10 PT.	11 PT.	12 PT.	14 PT.	18 PT.	24 PT.	30 PT.	36 PT.	48 PT.	60 PT.	72 PT.
4.17	3.57	3.12	2.78	2.50	2.27	2.08	1.79	1.39	1.04	0.83	0.69	0.52	0.42	0.35

Characters per Pica

characters per inch
The number of typewritten characters (including word spaces) to an inch. This value is used in character counting. A pica typewriter has 10 characters to an inch and an elite has 12 characters to an inch.

characters per pica
The average number of typeset characters (including word spaces) of a chosen type size and typeface within a pica. This information is typically available in typeface listing books and is used in copyfitting.

copyfitting
Determining how much space (depth) original manuscript copy will consume when typeset in a chosen typeface, point size, line length and leading.

11 point Garamond Antiqua has a 2.51 character per pica value (from table on previous page)

2.51 CPP value
x 22 Line length in picas
55.22 Characters per line
• Drop any value that is not a whole number

358 First paragraph character total (page 38)
÷55 Characters per line
6.5 (7 lines) ← A short line still counts as a line

82
÷55 Second paragraph
1.49 (2 lines)

97
÷55 Third paragraph
1.76 (2 lines)

109
÷55 Fourth paragraph
1.98 (2 lines)

52
÷55 Fifth paragraph
.94 (1 line)

54
÷55 Sixth paragraph
.98 (1 line)

123
÷55 Seventh paragraph
2.23 (3 lines)

237
÷55 Eighth paragraph
4.30 (5 lines)

100
÷55 Ninth paragraph
1.8 (2 lines)

614
÷55 Tenth paragraph
11.1 (11 lines)
(.1 is too small to count as a line)

36 Total of all lines
x13 Line depth in points
468 points
÷12 points per pica
39 PICAS
TOTAL COPY DEPTH
Excluding the headline

18/30 Garamond Halbfett flush left [3]

8 The Queen's Croquet-Ground

48 pts, space, baseline to baseline

CAP/SC

11/13 Garamond Antiqua X22 flush left, ragged right

A large rose-tree stood near the entrance of the garden: the roses growing on it were white, but there were three gardeners at it, busily painting them red. Alice thought this a very curious thing, and she went nearer to watch them, and, just as she came up to them, she heard one of them say, "Look out now, Five! Don't go splashing paint over me like that!"

"I couldn't help it," said Five, in a sulky tone. "Seven jogged my elbow."

On which Seven looked up and said, "That's right, Five! Always lay the blame on others!"

□/ital

"You'd better not talk!" said Five. "I heard the Queen say only yesterday you deserved to be beheaded."

"What for?" said the one who had spoken first.

□/ital

"That's none of your business, Two!" said Seven.

□/ital/|1/M|

"Yes, it is his business!" said Five. "And I'll tell him -- it was for bringing the cook tulip-roots instead of onions."

Seven flung down his brush, and had just begun, "Well, of all

|1/M|

the unjust things --" when his eye chanced to fall upon Alice, as she stood watching them, and he checked himself suddenly: the others looked round also, and all of them bowed low.

"Would you tell me, please," said Alice, a little timidly, "why you are painting those roses?"

Five and Seven said nothing, but looked at Two. Two began,

ital

in a low voice, "Why, the fact is, you see, Miss, this here ought to have been a red rose-tree, and we put a white one in by mistake; and, if the Queen was to find it out, we should all have our heads cut off, you know. So you see, Miss, we're doing our best, afore

|1/M|

she comes, to --" At this moment, Five, who had been anxiously looking across the garden, called out, "The Queen! The Queen!" and the three gardeners instantly threw themselves flat upon their faces. There was a sound of many footsteps, and Alice looked around, eager to see the Queen.

Marked-Up Manuscript

mark-up
A set of instructions for the typographer to work from that may contain up to seven essential parameters: typeface, point size, leading, word spacing, line length, justification mode and letterspacing.

proofreader marks
A standard set of symbols used to indicate corrections, additions and deletions to typeset and/or manuscript copy.

type specifications
A synonymous term for mark-up.

18/30 GARAMOND HALBFETT

8

The Queen's Croquet-Ground

11/13 GARAMOND ANTIQUA

A LARGE ROSE-TREE stood near the entrance of the garden: the roses growing on it were white, but there were three gardeners at it, busily painting them red. Alice thought this a very curious thing, and she went nearer to watch them, and, just as she came up to them, she heard one of them say, "Look out now, Five! Don't go splashing paint over me like that!"

"I couldn't help it," said said Five, in a sulky tone. "Seven jogged my elbow."

On which Seven looked up and said, "That's right, Five! Always lay the blame on others!"

"*You'd* better not talk!" said Five. "I heard the Queen say only yesterday you deserved to be beheaded."

"What for?" said the one who had spoken first. "That's none of *your* business, Two!" said Seven. "Yes, it *is* his business!" said Five. "And I'll tell him—it was for bringing the cook tulip-roots instead of onions."

Seven flung down his brush, and had just begun, "Well, of all the unjust things—" when his eye chanced to fall upon Alice, as she stood watching them, and he checked himself suddenly: the others looked round also, and all of them bowed low.

"Would you tell me, please, said Alice, a little timidly, "why you are painting those roses?"

Five and Seven said nothing, but looked at Two. Two began, in a low voice, "Why, the fact is, you see, Miss, this here ought to have been a *red* rose-tree, and we put a white one in by mistake; and, we should all have our heads cut off, you know. So you see, Miss, we're doing our best, afore she comes, to—" At this moment, Five, who had been anxiously looking across the garden, called out, "The Queen the Queen!" and the three gardeners instantly threw themselves flat upon their faces. There was a sound of many footsteps, and Alice looked around, eager to see the Queen.

Typeset Example with Proof Marks

Explanation	Margin Mark	Copy Errors—Marked	Corrected Type
Delete letter, letters or words indicated		Seven jogged my elbow.	Seven jogged my elbow.
Replace with lowercase		Seven Jogged my elbow.	Seven jogged my elbow.
Reset in italic		Seven jogged my elbow.	Seven jogged *my* elbow.
Reset in roman		Seven jogged *my* elbow.	Seven jogged my elbow.
Reset in bold		Seven jogged my elbow.	Seven **jogged** my elbow.
Replace with capital		seven jogged my elbow.	Seven jogged my elbow.
Use small capitals instead of type now used		Seven jogged my elbow.	Seven jogged my elbow.
Insert space		Seven joggedmy elbow.	Seven jogged my elbow.
Insert letter		Seven joged my elbow.	Seven jogged my elbow.
Insert word		Seven jogged elbow.	Seven jogged my elbow.
Insert period		Seven jogged my elbow	Seven jogged my elbow.
Insert hyphen		A large rose tree...	A large rose-tree...
Insert comma		Yes Seven jogged my elbow.	Yes, Seven jogged my elbow.
Insert apostrophe		I couldnt help it.	I couldn't help it.
Insert asterisk		Seven jogged my elbow.	*Seven jogged my elbow.
Insert dagger		Seven jogged my elbow.	†Seven jogged my elbow.
Insert indicated material		Seven my elbow.	Seven jogged my elbow.
Insert inferior figure		Water is HO.	Water is H_2O.
Insert superior figure		E = MC	E = MC^2
Insert question mark		Who jogged my elbow	Who jogged my elbow?
Insert copy from manuscript		Seven elbow.	Seven jogged my elbow.
Wrong font		Seven jogged my elbow.	Seven jogged my elbow.
Transpose letters or words as indicated		Seven my jogged elbow.	Seven jogged my elbow.
Let it stand as is. Disregard all marks above dots		Seven jogged my elbow.	Seven jogged my elbow.
Move left to point indicated		Seven jogged my elbow.	Seven jogged my elbow.
Move right to point indicated		Seven jogged my elbow.	Seven jogged my elbow.
Center		Seven jogged my elbow.	Seven jogged my elbow.
Lower to point indicated		Seven jogged my elbow.	Seven jogged my elbow.
Raise to point indicated		Seven jogged my elbow.	Seven jogged my elbow.
Align left or right as indicated		Seven jogged my elbow.	Seven jogged my elbow.
Enclose in quotation marks		Seven jogged my elbow.	Seven "jogged" my elbow.
Enclose in parentheses		He Seven jogged my elbow.	He (Seven) jogged my elbow.
Enclose in brackets		He Seven jogged my elbow.	He [Seven] jogged my elbow.
Take out space, close up		Seven jog ged my elbow.	Seven jogged my elbow.
Use ligature as indicated		Seven flung down his brush,	Seven flung down his brush,
Spell out word(s) as indicated		2 days	two days
Start a new paragraph, (run on)		bowed low. "Would you tell	bowed low. "Would you tell
Should not be a new paragraph, (run back)		in a sulky tone. "Seven jogged my elbow.	in a sulky tone. "Seven jogged my elbow.
Question to author. Circled		Seven my elbow.	Seven jogged my elbow.
Use em dash		I'll tell him it was for...	I'll tell him—it was for...
Use en dash		1954 1973	1954–1973
Indent 1 em		Seven jogged my elbow.	Seven jogged my elbow.
Indent 2 ems		Seven jogged my elbow.	Seven jogged my elbow.

Proofreader Marks

Elements of a Page

KNOWING THE ELEMENTS of a page and the various ways in which they can be manipulated is like having more than one solution to a jigsaw puzzle. Because type is an important piece of the puzzle, you need to become familiar with all its potential shapes.

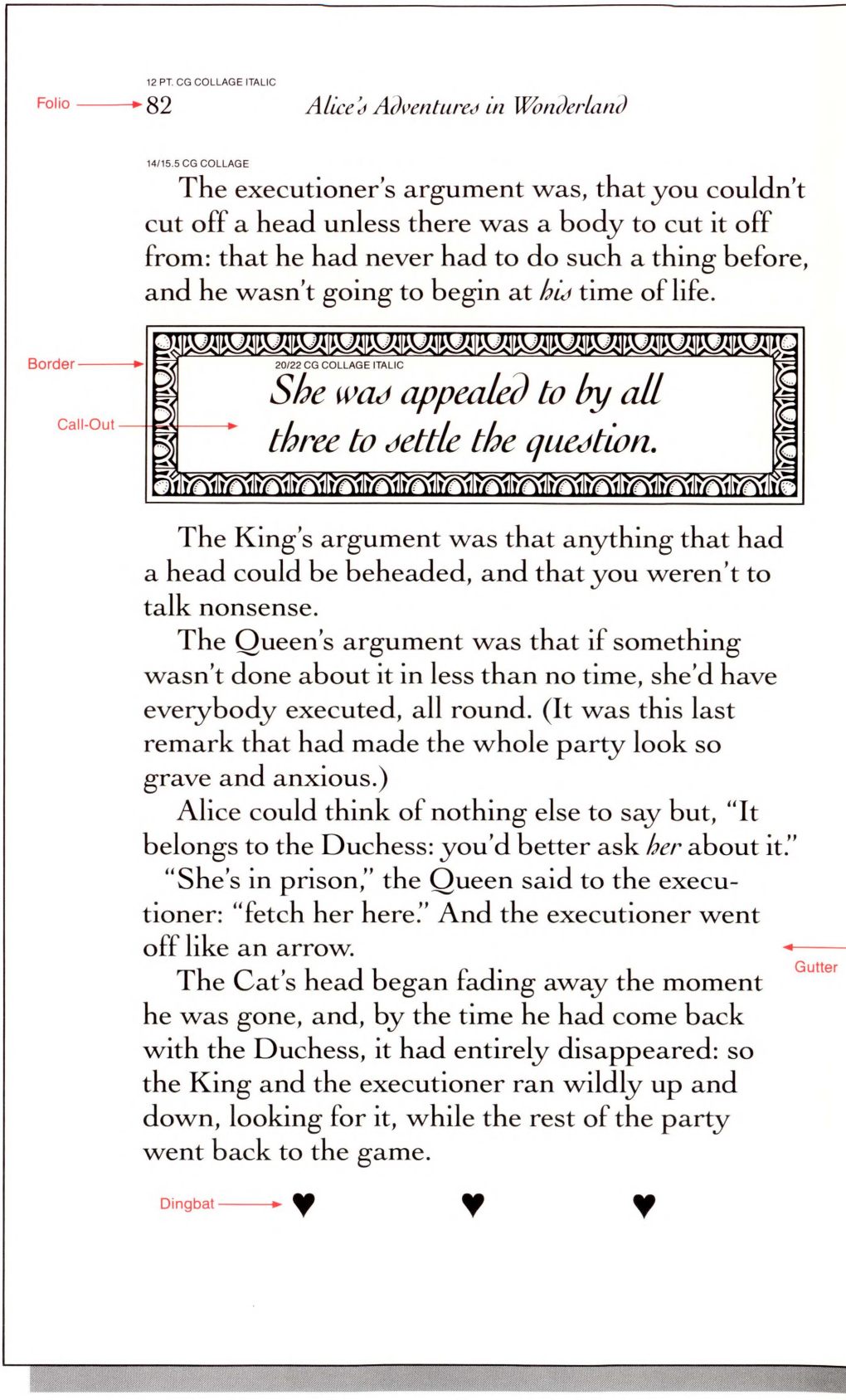
borders
A plain or decorative frame around a page or any element of a page.

call-out
Specially treated copy that is drawn out of the main body of text.

cross-head
A synonymous term for subhead.

dingbat
An unique character, such as a starburst or arrow, that is not part of a standard alphanumeric character set.

display type
Within a page, the special treatment of heads, subheads, chapter openings, title pages, etc.



24 PT. CG COLLAGE BOLD
14/15.5 CG COLLAGE

9
The Mock Turtle's Story

Head

Drop Cap

You ca'n't think how glad I am to see you again, you dear old thing!" said the Duchess, as she tucked her arm affectionately into Alice's, and they walked off together.

Alice was very glad to find her in such a pleasant temper, and thought to herself that perhaps it was only the pepper that had made her so savage when they met in the kitchen.

"When *I'm* a Duchess," she said to herself (not in a very hopeful tone, though), "I wo'n't have any pepper in my kitchen *at all*. Soup does very well without—Maybe it's always pepper that makes people hot-tempered," she went on, very much pleased at having found out a new kind of rule, "and vinegar that makes them sour—and camomile that makes them bitter—and—and barley-sugar and such things that make children sweet-tempered. I only wish people knew *that*: then they wouldn't be so stingy about it, you know—"

Gutter

She had quite forgotten the Duchess by this time, and was a little startled when she heard her voice close to her ear. "You're thinking about something, my dear, and that makes you forget to talk. I ca'n't tell you just now what the moral of that is, but I shall remember it in a bit."

drop cap
The first letter in a paragraph that is set as an oversized capital and inserted into two or more lines of indented body copy. Also known as hung initial cap.

folio
A page number.

gutter
The inside margins of a bound publication.

head
A summary phrase to a main section of material. The type treatment and use of white space for a head differs from the body copy. Heads organize the text into sections, draw the reader's attention and inform the reader of what follows. Also known as headlines.

initial caps
The capitalization of the initial letter in words within a title, excluding prepositions, conjunctions and articles that do not appear at the beginning of the phrase.

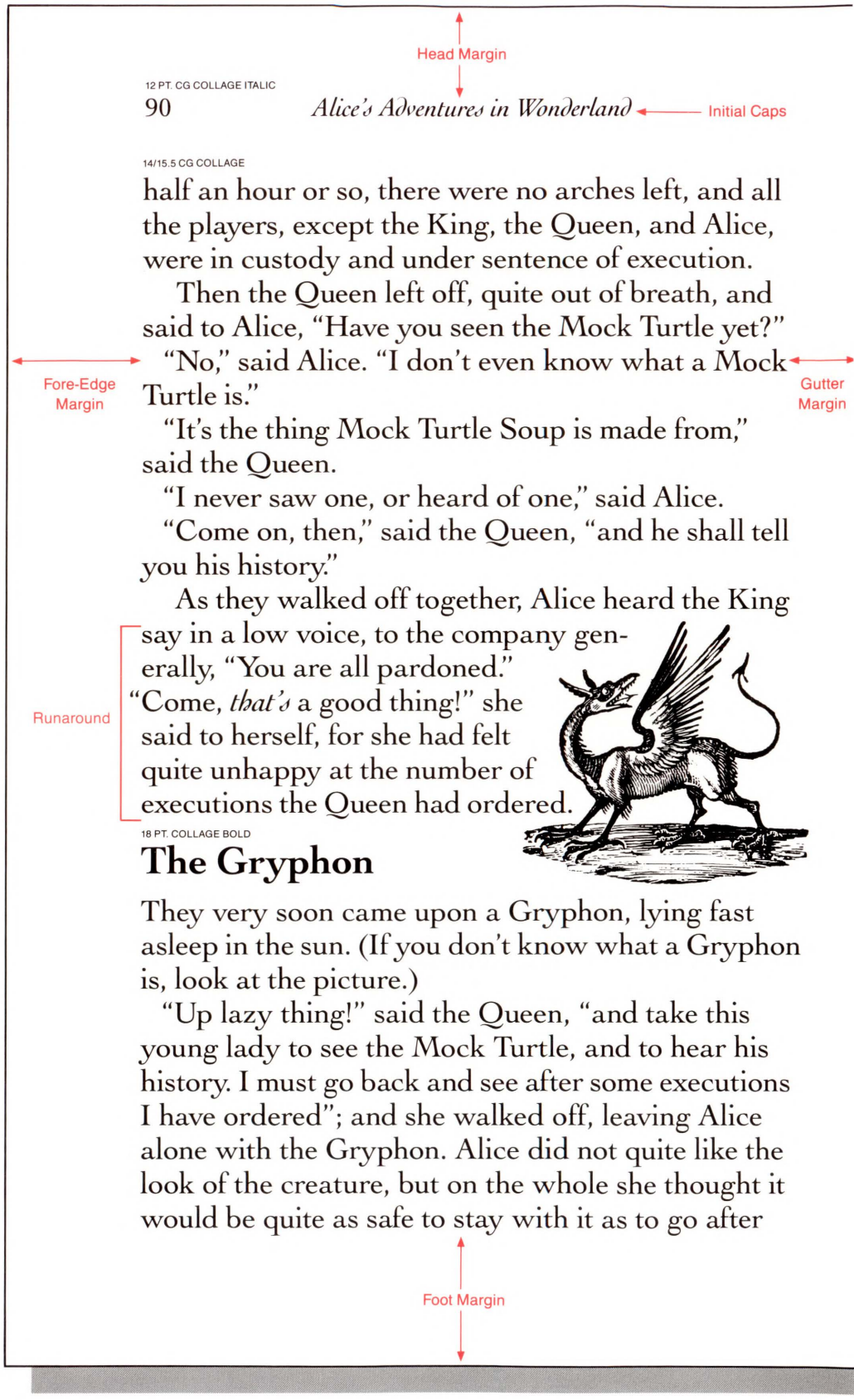
margins
The boundaries of white space surrounding a text area within a page. There are four margins, known as fore-edge, gutter, head and foot.

orphan
A short line, single word or part of a word that ends a paragraph on the first line of a column. Because they impair readability, orphans should be avoided.

runaround
Body copy shaped around artwork. Also known as contour or shaping.

running foot
Copy appearing at the bottom of a page, which identifies a book, chapter title and/or page number.

running head
Copy appearing at the top of a page, which identifies a book, chapter title and/or page number.



Running Head → *The Mock Turtle's Story* 91

that savage Queen: so she waited. ← Orphan

The Gryphon sat up and rubbed its eyes: then it watched the Queen till she was out of sight: then it chuckled. "What fun!" said the Gryphon, half to itself, half to Alice.

"What *is* the fun?" said Alice.

"Why, *she*," said the Gryphon. "It's all her fancy, that: they never executes nobody, you know. Come on!" ← Widow

"Everybody says 'come on!' here," thought Alice, as she went slowly after it: "I never was so ordered about before, in all my life, never!

Text

The Mock Turtle ← Subhead

They had not gone far before they saw the Mock Turtle in the distance, sitting sad and lonely on a little ledge of rock, and, as they came nearer, Alice could hear him sighing as if his heart would break. She pitied him deeply. "What is his sorrow?" she asked the Gryphon. And the Gryphon answered, very nearly in the same words as before, "It's all his fancy, that: he hasn't got no sorrow, you know. Come on!" ← Underscore

So they went up to the Mock Turtle, who looked at them with large eyes full of tears, but said nothing.

"This here young lady," said the Gryphon, "she wants for to know your history, she do."

"I'll tell it her," said the Mock Turtle in a deep, hollow tone. "Sit

Editor's Note: We have taken a few liberties with this classic story by Lewis Carroll by adding copy that didn't exist (for example, we've added the bold cross-heads "The Gryphon" and "The Mock Turtle," and the underscore).

↑ Side Bar

side bars
Footnotes or copy that appear in the right or left margins.

subhead
A summary phrase to a division of a main section. The type treatment and use of white space for a subhead differs from the body copy. Subheads help to organize the text into manageable blocks, draw the reader's attention and inform the reader of what follows.

text
The main block of type in a printed piece. Also known as body copy.

underscore
Rules set directly below typeset characters for emphasis.

widow
A short line, single word or part of a word that ends a paragraph. Because they impair readability, widows should be avoided.

Character Sets

THE DICTIONARY DEFINES a set as a group of *things* of the same kind that belong together and are used together. The things can be anything from trains to teacups to chess pieces.

In the world of type, characters are the things grouped together for a specific purpose or application. And as you will learn, a character set can contain more than the basic ABCs.

alternate characters
Design characters used as alternatives for standard alpha characters. (See page 51 for illustration.)

character set
A group of characters, typically comprised of standard alphanumerics, punctuation and pi characters, used for particular type applications. Also known as a font.

18/21 GARTH GRAPHIC—OUTPUT ON AN AGFA 3400 PS LASER PRINTER

Macintosh Character Set

18/21 GARAMOND ANTIQUA—OUTPUT ON A CG 9600 LASER IMAGESETTER

Quadex/CG 9600, 210 Program Driven Character Emulation

18/21 CG TIMES—OUTPUT ON A HEWLETT-PACKARD LASERJET II

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
abcdefghijklmnopqrstuvwxyz
1234567890^{1234567890}/(.,:;‘’*!?‼¡¿)
fiflffffifflÆIJŒæijœ℅%‰¢$£₤ƒ¥{}[]†‡¶§@#«»‹›
TMSM®©Ⓜ°ª º¤ℓ/\-–—…'"′″“”„,½ ¼ ¾
ÁÀÄÂÃÅÇÐÉÈËÊÍÌÏÎŁL·ÑÓÒÖÔÕØPtŖŠÚÙÜÛ
ÝŸŽáàäâãåçðéèëêíìïîıłl·ñ’nóòöôõøÞþšßúùüûýÿž
+ − ± = × ÷ ¬ ∟ ⌐ ·

Type Director, Typeface Sensitive Complement

18/21 ITC TIFFANY MEDIUM—OUTPUT ON AN MCS 8600 DIGITAL TYPESETTER

ABCDEFGHIJKLMNOPQRSTUVWXYZ&
abcdefghijklmnopqrstuvwxyz
1234567890^{1234567890}(.,:;‘’*?!)%¢$/[]—-_
CKLNQRSTh&fhkmnrsvwxy

MCS Swash and Alternate Complement 534

complement
Part of a character set used for particular type applications, such as greek and math symbols used in scientific journals.

diacritical marks
Marks placed above or below a letter to indicate a specific phonetic sound. This includes accent marks.

inferior
A small symbol, numeral or letter that appears below the baseline and to the right of another character. Also known as subscript.

ligature
Two or more joined characters that are accessed through a single keystroke. Common ligatures include fi, fl, ff, ffi, ffl.

logotype
A name, trademark or signature; a single type character containing a design of one or more characters. Also known as logo.

oldstyle numerals
X-height numerals that may have ascenders and descenders.

18 PT. GARAMOND ANTIQUA

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

Roman Capitals

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

Italic Capitals

ABCDEFGHIJKLMNOPQRSTUVWXYZ&

Small Caps

abcdefghijklmnopqrstuvwxyz

Roman Lowercase

abcdefghijklmnopqrstuvwxyz

Italic Lowercase

1234567890 $¢$¢£ 1234567890

Numerals, Monetary Symbols and Oldstyle Numerals

(.,:;‘’?¿!¡«»)[]{}/%#@†‡¶§*

Punctuation and Reference Symbols

ffl ffi fl ff fi

Ligatures

1234567890H1234567890

Superior and Inferior Numerals

⅛ ¼ ⅓ ⅜ ½ ⅝ ¾ ⅔ ⅞

Fractions

ÇÉÌÑÔÜßçéìñôü

Language Accents and Characters

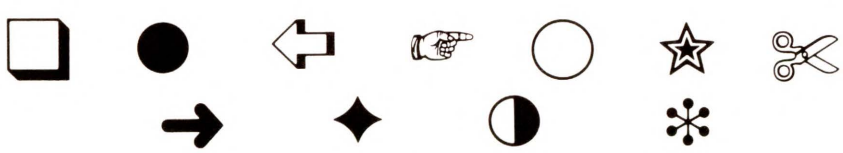
18/21 ITC AVANT GARDE GOTHIC BOOK

Alternate Characters

18/21 GREEK AND MATH SERIF

Greek and Math Characters

Logotypes



Pi Characters

18/21 ITC BOOKMAN LIGHT

Swash Characters

pi characters
Characters contained on a font that are not typeface oriented; generic symbols and some reference marks.

reference marks
Symbols typically used to reference footnotes or notations. For example, an asterisk is used to indicate the first footnote reference.

small caps
Specially designed capitals that are approximately the same height as the lowercase x. Not all type designs have a small cap character set.

superior
A small symbol, numeral or letter that appears above the baseline and to the right of another character. Also known as superscript.

swash character
A decorative, flourish version of a standard character.

Technology

In some way, technology has touched us all. Whether it's in the workplace or home, it has crept into our lives and, hopefully, made them better.

Technology is also making its mark in the typesetting industry, bringing the once-distant worlds of traditional typesetting and desktop publishing closer together. In the future, it may only be the presence or absence of type awareness that keeps the two worlds apart.

access time
The time between the request and the actual delivery of information from the computer to the user. (See *real time* for a comparison.)

analog art
Pertaining to type design, a black-and-white character drawing. The lettercard images used to produce fonts for second-generation filmstrip typesetters are considered analog art. For third-generation CRT typesetters, analog art is converted into digital data by typically defining it as vector outline data.

analog signal
A continuous wavelike electronic transmission with varying intensities. (See *digital data* for a comparison.)

archive
The process of storing computer data onto an off-line medium, such as a disk or tape, for later use.

ASCII
American Standard Code for Information Interchange; a 7-bit character code typically used in microcomputers. ASCII encodes 128 alphanumerics and symbols into numbers for electronic storage and communication between computers. For example, the lowercase "a" is ASCII number 98, "b" is 99 and so on. (See *EBCDIC* for a comparison.)

backup
A duplicate file, program, power supply or system.

baud
A unit of signalling speed, expressed in bits of audio per second, used to describe the rate of electronic data transmission. Morse code, for example, uses bauds to measure its signalling speed as does binary code. Common computer baud rates are 300, 1200, 2400, 4800 and 9600.

bezier curves
Computerized curves created through a mathematical expression that uses a few designation points. Presently viewed as the newest technology employed in type design, bezier curves provide a quick way to create characters with smooth curves. To better understand bezier curves, imagine a line being drawn by a travelling steel ball. The ball immediately becomes attracted to a magnet that is directly north and heads towards that magnet. Before the steel ball hits the first magnet, a much stronger magnet located in a northeasterly direction draws the ball towards it. Each time the ball travels northeast towards a magnet, it becomes distracted by another much stronger magnet located even further north and east. This continues until finally the steel ball hits the last magnet. Because the steel ball never hits a magnet until the end, its continuous motion northeast creates a smooth curve. (See *curvilinear* and *vector outline data* for comparisons.)

binary code
A computer's system of counting that uses two digits, one and zero, which represent two extremes (e.g., on/off, yes/no or true/false).

bit
(1) Abbreviation for binary digit; each one or zero digit in the binary code. A bit is the smallest unit of data a computer will recognize. (2) Pertaining to bitmapped graphics, a bit is a dot that is printed or displayed on a computer screen.

bitmap fonts
A font whose characters are formed on a screen and stored as patterns of tiny dots. "On" or "black" bits represent the character. "Off" or "white" bits represent the space around and inside the character. Bitmap fonts are point-size specific.

bitmap graphics
A screen image made of triangular-shaped pixels (dots). The actual image consists of "on" or "black" pixels, and the white space inside or around the image is "off" or "white" pixels. The image is stored and/or printed as a pattern of dots.

boot
To start up a computer or activate a program that resides in the computer's memory; "kicking" operating software into the computer's memory.

bugs
Errors or defects in the program code. This term originated during the days of vacuum tube computers. Insects attracted by the warmth of the vacuum tube would eventually die and fall into the computer, causing heat build-up and system failure.

byte
A group of bits (ones and zeroes) that form a character, symbol or operation in binary code.

CAD/CAM
Computer-Aided Design and Computer-Assisted Manufacturing devices. In type design, CADs are used as graphic workstations that allow type designers to accurately create and manipulate on-screen type characters. CADs are also used to electronically draw sophisticated, three-dimensional, on-screen line drawings.

commands
Requests for action that a user sends to a computer. In traditional typesetting, commands are usually mnemonics, (e.g., PS = point size, T = typeface). In Macintosh-based desktop publishing, commands are typically icons accessed through pull-down menus. (See *icons* for a comparison.)

computerized photocomposition
A technology that outputs type directly onto photographic paper, film or plate material via a high-resolution photographic process. Characters are exposed in their requested type style and point size through an optical system onto a photographic medium.

configuration
An arrangement of hardware and software components. Typically, this includes a keyboard, CPU, storage device, video display terminal, an output device and optional peripheral devices.

contour data
Intricate data used by the computer in the mathematical formula that generates curvilinear data and bezier curves.

CPU
Central Processor Unit; the "brain" of a computer; a microprocessor that performs mathematical computing, data processing and operational controlling of the entire system, including subsystems and peripheral devices.

crash
The abrupt, unexpected failure of a computer, its program or peripheral devices.

CRT typesetter
A typesetter that exposes photosensitive material via a writing beam that passes through a cathode-ray tube, creating overlapping, parallel scan lines. The scan lines are used to build characters one at a time. CRT typesetters use vector data, which is a form of digitized data, to build typeface characters.

curvilinear data
Curves created and stored as segments or true arcs of differing sized circles. In the typesetting industry, curvilinear data can be used to define fonts for laser typesetters. Curvilinear characters have the smoothest edges, sharpest corners and straightest lines. (See *bezier curves* and *vector outline data* for comparisons.)

defaults
Preprogrammed or built-in computer settings that can be manually overridden.

desktop communication
The use of a microcomputer to access another computer's operating system.

desktop publishing
The use of microcomputers, page layout software and printers to produce printed material. Called "desktop" because the computers are small enough to fit easily on a desktop, yet powerful enough to handle electronic page layout with text and graphics.

digital data
Electronic data in the form of binary code used for transmission. Digital data are a series of on/off signals. In contrast, analog signals are a continuous flow of "more" or "less" with no extremes or absolutes. (See *analog signals* for a comparison.)

dot matrix printer
An impact printer with a head consisting of tiny vertical pins. As the head moves across the page it presses the pins against the ribbon and the paper, forming characters and images through a pattern of pin dots. Dot matrix printers are considered low-resolution devices.

downloadable fonts
Software information that defines a font in mathematical terms to the printer. Downloadable fonts are typically transferred from the computer's memory into the printer's memory.

downloading
The process of transmitting data from one device or system to another. Uploading puts information into the system's main memory. Downloading takes information already in the system's memory and transfers it to another system or peripheral device.

downtime
Any period during which a computer system is not operating due to a planned shutdown, malfunction or mechanical/electronic failure.

dpi (dots per inch)
A measure of resolution of a printed image. The higher the number of dots per inch, the finer the resolution.

driver
A computer program that controls the operations of a peripheral device.

EBCDIC
Extended Binary Coded Decimal Interchange; an 8-bit character code typically used in mainframes. EBCDIC encodes 256 alphanumerics and symbols into numbers for electronic storage and communications between different computers. (See *ASCII* for a comparison.)

exception word dictionary
A user-compiled word list of known deviations from the normal rules of computer hyphenation. For example, the word "product" is computer-hyphenated as pro-duct, which is incorrect. The word prod-uct would have to be listed in the exception word dictionary so the computer could hyphenate the word correctly.

fiber optics
A method of sending signals by encoded light waves through tiny glass fibers. Fiber optics, a replacement for copper wire, provides fast transmission and a near-immunity to interference and electrical noise.

file
An orderly arrangement of related data stored as a unit that is comprehensible to the computer and the user. The exact structure of a file is dependent upon the system it was created on.

floppy disk
A flat, circular storage medium that has a magnetic coating on a flexible plastic base. Floppy disks are enclosed in jackets or shells to protect them from dust and contaminants. Floppies are typically available in 3½-inch, 5¼-inch and 8-inch formats. Although floppies are inexpensive, their storage capacity is limited. (See *hard disk* for a comparison.)

font
A hardware or software carrier of a typeface character set. A font in hot metal days was individual pieces of metal type of the same point size and character set stored together in a type case. A font in today's technology consists of a floppy diskette that may carry data for numerous character sets, none of which are point-size sensitive.

font cartridge
A cartridge, which contains font information, that plugs into a laser printer.

font id number
Identification code used to request fonts from the computer and printer.

format
(1) The storage of a sequence of commands and/or text that is used repetitively. (2) To divide a hard disk into file storage sections.

front-end system
The main computer system. The front-end system controls all peripheral operations, and its terminals function as text input/edit stations.

handshaking
The modem's acknowledgment and acceptance of transmitted data.

hard disk
A flat, circular storage medium that has a magnetic coating on a rigid metal platter. A hard disk can store millions of data bits and is 10 to 20 times faster than a floppy disk. (See *floppy disk* for a comparison.)

hard wire
Built-in program information; physical connections that are soldered together, plugged into one another or built into the microchip circuitry.

hot type
Metal type formed by pouring molten lead into molds.

icons
Instructions in the form of screen symbols that are selected by the user. Icons replace command codes and convey information quickly.

impact printer
A printer that creates output by striking the paper through an inked ribbon. Examples are typewriters, daisy wheel printers or dot matrix printers.

ink jet printer
A non-impact printer that uses a high-precision ink jet to shoot a tiny stream of electrostatic ink drops onto paper, forming characters and graphic images.

Intellifont
A typeface character outline scaling process that can provide bitmap font data for any resolution device at any point size. Intellifont was developed to reduce the aesthetic problems encountered when character outlines are mathematically scaled and rasterized at low resolutions using standard linear techniques. The basis for the Intellifont process is the use of "scaling intelligence" specific to each character, employed in conjunction with the character outline definition during rasterization. This character-encoded intelligence provides the rasterization process with information about important character shapes and relationships, both within a single character and among a set of characters. Thus the optimal bitmap can be generated, and the important design elements can be preserved.

interface
A connection between two devices that generally consists of a cable, communication board and software.

kerning
A mathematical reduction of white space between two characters, input as commands by the user, then calculated and carried out by the computer.

landscape
The 90-degree rotation of a page image to accommodate a width larger than 8½ inches. Because of their wide column measure, spreadsheets are usually landscaped. (See *portrait* for a comparison.)

laser printer
A non-impact printer that has a single-colored, narrow beam which writes images to a photosensitive drum. The images are developed with toner, then fused to paper. The resolution of laser printers varies from low to medium. Laser stands for Light Amplification by Stimulated Emission of Radiation.

laser typesetters
A typesetting device that uses a helium-neon gas laser to produce the red laser beam you see in laser demonstrations. The movement of the laser beam to draw or paint an image is accomplished via a series of mirrors or hologons that deflect the beam onto laser-sensitive material. The beam forms the image via precisely drawn scan lines. Curvilinear data is employed in some laser typesetters to define characters. Laser typesetters are high-resolution output devices.

logic justification
Computerized justification via a mathematical operation or by a set of computer rules.

magnetic tape
An acetate or mylar-coated tape used to archive massive amounts of computer data for storage.

mainframe
A large, powerful computer. A mainframe usually works with data chunks and supports scores of users simultaneously.

media conversion device
A device that reads, converts, then writes data from one medium to another. An example is reading data from a 3½-inch diskette, converting and writing it to a 5¼-inch diskette. Some conversion devices are also able to translate data from one computer language to another.

medium
(1) A variety of magnetically coated materials that store computerized data. (See *floppy disk, hard disk, magnetic tape* and *WORM.*) (2) Photosensitive material, such as resin-coated paper, film or plate material, used in a typesetter.

memory
A computer's internal storage of programs. The amount of memory a computer has greatly affects its range of functionality.

menu
On-screen word or pictorial list that displays available choices presented by a computer. Through menus, the user can initiate action.

mnemonic coding
An easily remembered acronym or abbreviation for a computer instruction, routine or format. For example, PS6 could represent point size of six.

modem
Modulator/Demodulator; a device that converts digital data into analog signals or vice versa for transmission over phone lines from one computer to another.

MS-DOS
Microsoft Disk Operating System; an operating system, developed by Microsoft Corporation and Seattle Computer, for a 16-bit microcomputer. MS-DOS is most commonly associated with IBM or IBM-compatible personal computers.

network
The electronic linking of workstations and peripheral devices for the purpose of sharing resources from the same operating system.

OCR device
Optical Character Recognition; a device that scans printed, typewritten or even handwritten characters, then converts the scanned images into computer code so they can be used as captured keystrokes.

off line
Hardware that is not physically connected to the main operating system; a stand-alone device. (See *on line* for a comparison.)

on line
Hardware that is directly connected to the main operating system. (See *off line* for a comparison.)

operating system
A software program or set of programs the computer uses to manage its resources, such as processing data, controlling and monitoring peripheral devices, and accessing memory.

output
(1) Hard copy or typeset galleys of text and/or graphics. (2) To send information from a computer to an output device. (3) Pertaining to the device that produces hard copy or typeset galleys such as a typesetter or printer.

page-description language
A sophisticated printer software program that defines the appearance of a page.

parallel interface
Simultaneous sending of bits from a computer to a peripheral device via a ribbon-like cable. Each wire in a parallel interface cable carries one individual bit. (See *serial* for a comparison.)

parameters
Computer instructions stated as mnemonics with/without an argument attached; command codes. For example, leading, line length, point size and typeface are considered parameters.

PCL
A page-description language developed by Hewlett-Packard for its printers.

peripheral device
Hardware components, such as modems, printers, storage devices or typesetters, attached to and driven by the main CPU.

phototypesetter
An output device that receives electronic data from a computer, then converts the data into a code that generates high-quality type and graphics, via an optical system, onto photographic medium.

pixels
The rectangular-shaped dots on a bit-mapped screen. Pixels (picture elements) can be given their own color and intensity. The higher the number of pixels per inch, the finer the screen resolution.

portrait
An image printed at its normal orientation; printing horizontally across the narrow measure of a page. (See *landscape* for a comparison.)

***PostScript* page-description language**
A device-independent, page-description language developed by Adobe Systems, Inc. *PostScript* language describes a page using mathematical formulas. Images defined as whole outline shapes are solidified by the printer with tiny dots. Typeface characters are also defined as outline shapes that are sent to the printer for sizing and solidifying.

protocol
Pertaining to data transmission, a set of instructions, such as the transmission rate, that governs the orderly exchange of information.

queue
A computer's equivalent to a waiting line; a group of items waiting to be processed.

RAM
Random Access Memory; temporary computer memory; a type of computer memory that retains an operating program only until the computer is switched off or another program is rebooted. (See *ROM* for a comparison.)

rasterization
A process that converts analog art into bitmap form.

real time
The speed of the computer coinciding with the speed of the user; no delay in computer response time, giving the impression of instantaneous response. (See *access time* for a comparison.)

relative unit
A fractional unit of an em space that is in proportion to a type size. The higher the number of relative units, the finer the word and character spacing.

resident font
Font information permanently held in the printer's memory.

resolution
(1) The measurement of image sharpness and clarity on a video display terminal, usually measured by the number of pixels per inch. (2) The sharpness and clarity of text and graphics output usually measured by dots per inch. The higher the resolution, the better the output quality.

RIP
Raster Image Processor; a device that takes a mathematical description of a to-be-printed image and converts it into tiny dots for output to a printer.

ROM
Read-Only Memory; permanent computer memory that is preprogrammed into the computer's microchips. ROM is information that is retained in the computer memory even after the power is turned off. (See *RAM* for a comparison.)

scalable outline font
A character outline that is not point-size specific and can be reduced or enlarged for screen display or printer output.

scanner
An electronic instrument that converts images into digitized signals via a moving light beam. The digitized images can then be read by a computer.

scrolling
Movement of text and/or graphics up, down and sideways on a display screen.

SCSI port
Small Computer Systems Interface; a high-speed parallel transfer interface that connects a microcomputer to a peripheral device.

serial
The sending of one bit of information after another from a computer to a peripheral device via a single-wired cable. (See *parallel* for a comparison.)

service bureau
An establishment that offers a variety of graphic art services. Typically, two types of service bureaus exist. There are those that rent their equipment by the hour; and full service shops that provide services and expertise in pre-press production including design, high-resolution typesetting, paste-up, camera work and sometimes printing.

slave
An output device, with no intelligence of its own, driven by a master computer. Typically, typesetters and printers are slaves to front-end systems.

stand-alone
Self-supporting hardware and software; a device that's able to perform without the aid of a master computer.

subsystem
A system within a larger system; a component that has its own power supply and controller, yet is still part of a total system configuration.

system
A computerized device that uses a variety of hardware and software components that are joined together to perform designated tasks.

telecommunications
The sending and receiving of information between two terminals or computers via phone lines and modems.

UNIX
An operating system, developed by AT&T Bell Laboratories, for running minicomputers with multiple users.

uploading
Loading data into a system's main memory. (See *downloading* for a comparison.)

VAX
An operating system for microcomputers manufactured by Digital Equipment Corporation.

vector outline data
A method of recording digital information by defining straight lines between two designated points. In type design, the points are designated by X/Y coordinates that are joined by straight lines to form the outline of a character. Curves are drawn in the same manner, except they require more points and smaller lines. Vector outline data can be used by CRT typesetters.

WORM
Write Once, Read Many; an off-line disk that has an enormous storage capacity. WORM allows the user to write data to it only once, eliminating the ability to erase old data and reuse the disk.

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Compugraphic Corporation, Type Division, 90 Industrial Way, Wilmington, Massachusetts 01887