



Jennifer's

Introduction to Typography

An Advanced Communication Design Project
by Jennifer Simmer
Winter Term 2005



Chapter 1:

An introduction to basic fonts, their characteristics, and basic typography terms.

An overview of five fonts, representing the five stages in font development:

Garamond

An Old Style typeface from France. Originally credited to Claude Garamond, but was actually designed by Jean Jannon in 1615. Features include little contrast between thicks and thins, heavy serifs, and oblique vertical stresses.

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
1234567890&\$.,'-;:!?

Baskerville

A Transitional font by John Baskerville in 1757. Letters are wide for their x-height which results in excellent proportions. Thicks and thins have a greater contrast than Old Style, serifs are lighter, and the stress is more vertical.

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
1234567890&\$.,'-;:!?

Didot

Designed in the 1800's by the Didot family of designers, Didot is a Modern typeface similar to Bodoni. Its characteristics include strong contrast between thicks and thins, fine serifs, and strong vertical stress.

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
1234567890&\$.,'-;:!?

Century

L.B. Benton and T.L. DeVinne designed this Egyptian typeface for the Century magazine in 1894. Contrast between thicks and thins is little, serifs are strong, and vertical stress is not emphasized.

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
1234567890&\$.,'-;:!?

Helvetica

A contemporary typeface with a Swiss origin, developed in 1957 by the Haas typefoundry. Sans serif fonts did not become widely used until the 20th century. X-height is large and letters are narrow. Strokes are even, serifs are nonexistent, and there is no stress due to the optically equal strokes.

ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz
1234567890&\$.,'-;:!?

Display type can be categorized into five kinds:

Roman: based on traditional letter forms

Egyptian: also called square serif, generally bold

Sans serif: contemporary, uniform weight

Script: cursive, modeled on handwriting

Miscellaneous: designed to attract attention, can be very ornate

A serif font (Big Caslon) with and without serifs. Just for fun.

ABCDEFGHIJ

ABCDEFGHIJ

abcdefghijkl

abcdefghijkl

An experiment with italics.

This is Baskerville Italic.

This is Baskerville Regular sheared.

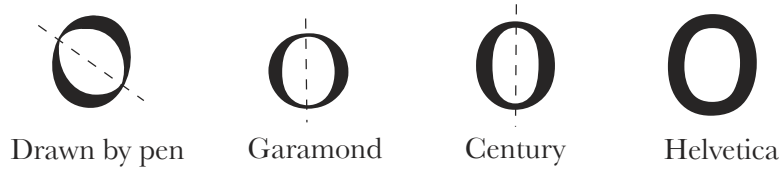
This is Futura.

This is Futura Italic.

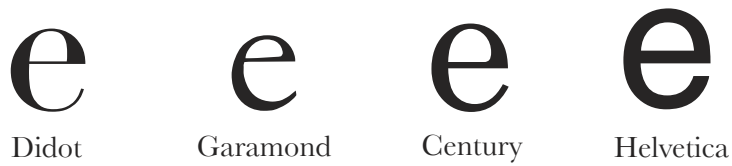
This is Futura sheared at nine degrees.

The common characteristics in type:

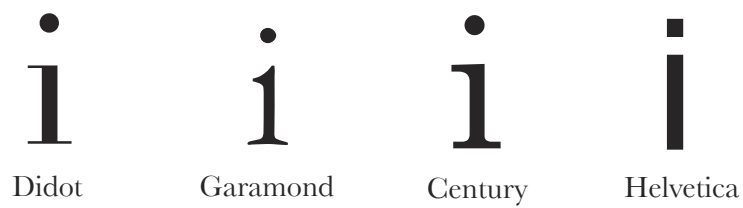
Variations in stress



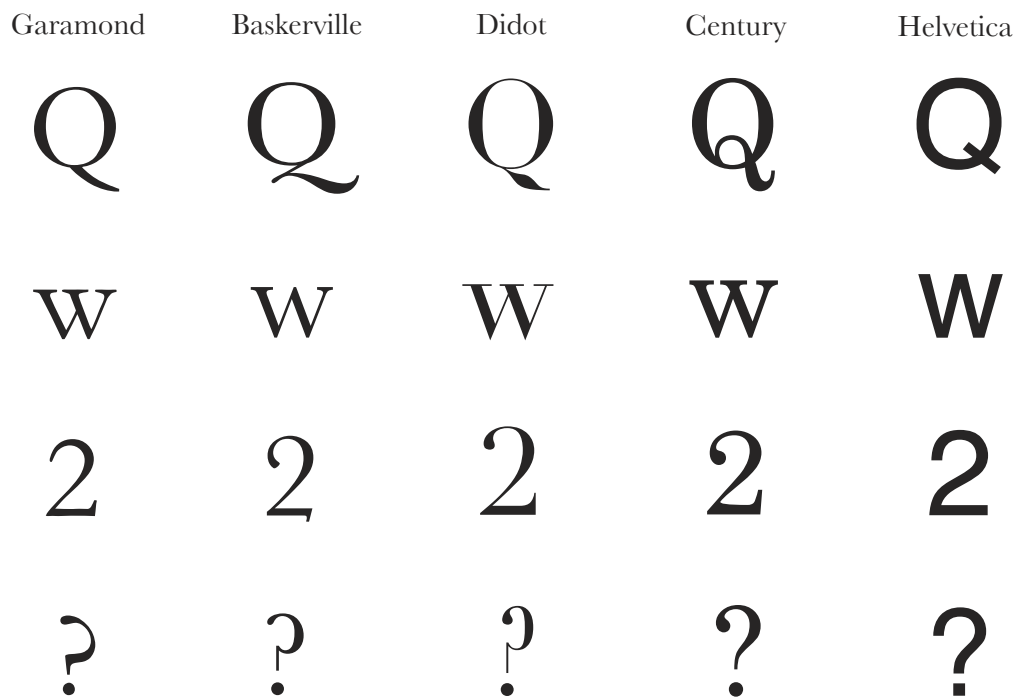
Variations in strokes



Variations in serifs

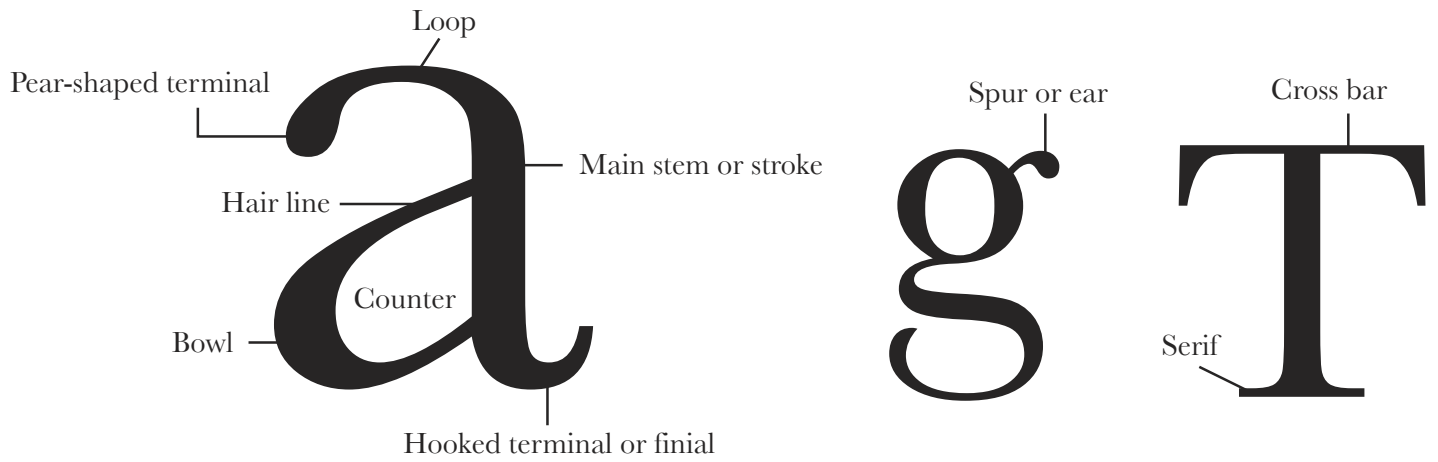


A comparison of different fonts using the same characters:



Characteristics of letters:

Parts of a letter:



Bracketed serif



Hairline serif



Wedge serif



Slab serif

Old face figures

1234567890

Modern or lining figures

1234567890

Leading

Many factors can alter the amount of leading or linespacing needed. Leading is the amount of space between lines of type on a page, and the word comes from the fact that strips of lead were placed between lines of letters set on a press. Pronounced “ledding.”

X-height

A font with a large x-height requires more leading.

Since the x-height is bigger, there is less space between lines, so more space needs to be added through leading. Since the x-height is bigger, there is less space between lines, so more space needs to be added through leading.

This is Century. The x-height is bigger than Garamond, so the white space between lines appears smaller. But really, the space between the lines is the same.

Since the x-height is bigger, there is less space between lines, so more space needs to be added through leading. Since the x-height is bigger, there is less space between lines, so more space needs to be added through leading.

This is Garamond. There appears to be more space between the letters. Since the x-height is smaller, the letters appear smaller too, but the white space between lines appears bigger.

Vertical stress

Typefaces with a strong vertical stress need more leading. Typefaces with a strong vertical stress need more leading.

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Sans serif

Sans serif fonts require more leading to promote horizontal flow. Sans serif fonts require more leading to promote horizontal flow.

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Length of line

The longer the line, the more leading needed. If leading is too small, it may be very easy to read the same line twice, which is called doubling.

Wordspacing

Too much wordspacing leads to rivers of white running down the page. This makes it hard to read. Try to avoid this. It is distracting when trying to read. This vertical emphasis should be avoided. Remember, horizontal flow is necessary for good readability. Watch your wordspacing and keep the rivers to a minimum. Now put away your paddles and canoe.

Justified type

Justified type is when all lines of type are the same length. To make the lines the same length, extra space is inserted between words. This uneven spacing is less apparent in long lines of type.

Newspapers used justified type, and they need to be careful because lines can be short. Big words like newspaper can leave funny spaces.

Length of line

The length of a line is important to the reader. Long lines can cause fatigue because the reader has to move his head to go from line to line and must search for the beginning of the next line. A general guideline is that a line should be about two and one half alphabets, or 65 characters. This will change the length of line depending on the size of the font.

abcdefghijklmnopqrstvwxyzabcdefghijklmnopqrstvwxyzabcdefghijklmnopkl

abcdefghijklmnopqrstvwxyzabcdefghijklmnopqrstvwxyzabcdefghijklmnopkl

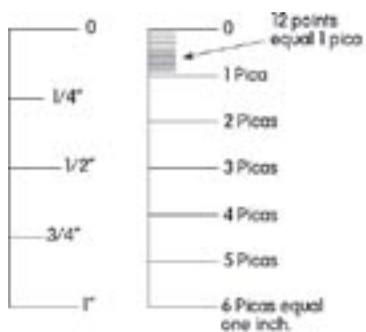
abcdefghijklmnopqrstvwxyzabcdefghijklmnopqrstvwxyzabcdefghijklmnopkl

Don't make lines too short. It can break up words and phrases and forces the reader to jump from line to line.

Sometimes, a single point can make all the difference.

Does one point make a difference? Does one point make a difference?	Size 7 Baskerville Size 8 Baskerville
Does one point Does one point	Size 37 Baskerville Size 38 Baskerville

Calculate the height of your font with this handy scale.



X-height determines the visual size of a font.

These are all the same size, but they don't really look like it. That is because they have different x-heights. The x-height of a font is the height of the lowercase letters without ascenders or descenders.

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Clockwise from top left: Baskerville, Georgia, Helvetica, and Courier, all 12 point fonts

Letterspacing and wordspacing should be compatible.

If your letterspacing is tight, your wordspacing probably should be too. The terms normal, tight, very tight, loose, and open are usually used to describe letterspacing and wordspacing.

Tight and tight Normal and normal Loose and loose Tight and loose Loose and tight

Many factors affect a font's readability.

It is easier to read the top
half of words than the
bottom half of words

It is easier to read the top half of words than the bottom half because the outline of the words is more distinguishable. For this reason, it is easier to read lowercase letters than uppercase letters.

rectangle

Serif font is easier to read because the serifs enhance the horizontal flow necessary for reading.

Black type on white is easier to read than white type on black because we are used to it, and because white on black tends to sparkle. Also, ink squeeze can make white on black harder to read.

Bold type can be effective in small doses, but in large quantities, the heavy strokes cause the white spaces of the letters to fill in, hurting readability.

RECTANGLE

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Three things to consider when selecting a typeface:

Aesthetics

Some people may think this font, Giddyup Std, is ugly, but others may love it.

Some people may think this font, Oxford, is ugly, but others may love it.

SOME PEOPLE MAY THINK THIS FONT, STOP, IS UGLY, BUT OTHERS MAY LOVE IT.

Appropriateness

Use a font that complements the message.

Welcome to our nursing home.

No Girls Allowed.

Kids Eat Free with Regular Purchase.

Get Thee to a Nunnery!

My dog peed on your rug.

Please grace us with your presence.

CHURCH SERVICES BEGIN AT 9:00.

THE CIRCUS IS COMING TO TOWN.

Please observe a moment of silence.

Look who's turning five!

Legibility

Legibility issues can include size.

LEGIBILITY ISSUES CAN ALSO INCLUDE READABILITY.

THIS IS IMPACTED BY HOW TRUE THE FONT IS TO BASIC LETTERFORMS.

IT MAY ALSO HAVE TO DO WITH WORDSPACING OR LETTERSPACING.

Interesting facts about typography

The font used by Gutenberg had more than 300 characters. Modern fonts have far fewer.

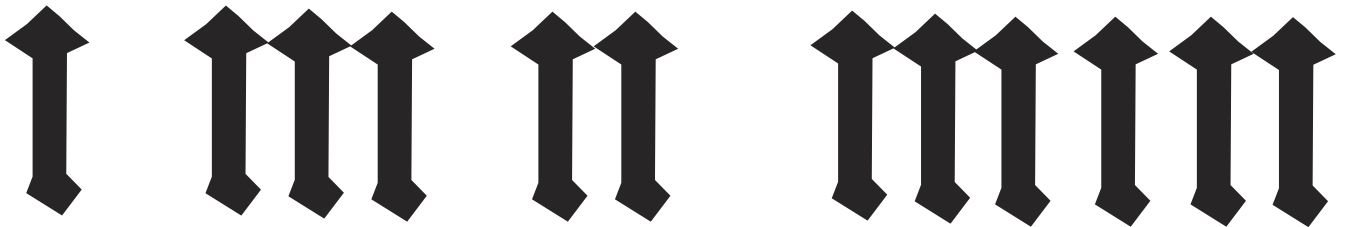
Modern Monotype casting machines use lead plus 6-12% tin and 15-24% antimony. Tin is added for toughness and to make the lead melt more easily, and antimony is to add strength and hardness.

According to this book, the quality of Gutenberg's ink has never been improved on, in terms of depth of black and permanence.

Gutenberg made an estimated thirty copies of the Bible on vellum, which comes from calf skins. Each copy requires 170 calf skins, so the thirty copies needed 5,100 calves.

The increased demand for vellum by printers could have impacted the diet of Germans in the fifteenth century. The demand for calf skins perhaps made veal a part of a nutritional dinner.

Black letter fonts can be hard to read. They are condensed, possibly to economize on space and therefore vellum. Some are hard to read: m's and n's are actually three i's and two i's next to each other, so 'min' would be confusing.



Sans-serif letters can be hard to read. What does the example below say? Three in Roman numerals? The number one hundred and eleven? Or does it say ill?



Research has proven that black type on yellow paper is most legible, but that doesn't mean it's good for every design. Black on red or vice versa is hard to read because both colors are very 'dense'.

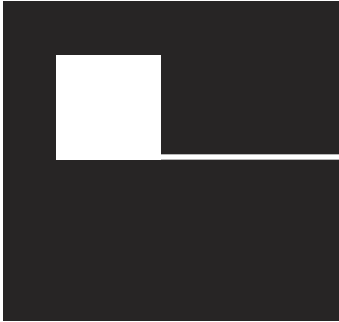
BLACK

RED

BLACK

When does a letter cease to be that letter? Are the following a's?





Chapter 2:

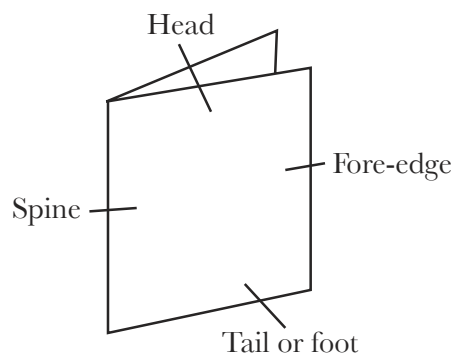
Information about typography related to books,
page layout, font usage, and legibility.

Paper

Cellulose: a chemical compound of the elements carbon, hydrogen, and oxygen in the form of minute threads

Main qualities

1. Cellulose is a chemical substance rather than inert; it is not easily attacked by chemical reagents. Due to this, paper can be made that has a high degree of resistance to the effects of light and air.
2. The fibers are tubular and swell when immersed in water. When swollen, a suspension of the fibers can be deposited as pulp, and when the water is squeezed out, a mass remains. So these fibers act as their own cement when they dry in close contact with one another. The easy absorption makes paper naturally porous.
3. The fibers are colorless and translucent, so they naturally make a paper that is white and opaque.
4. The fibers are light, strong, and flexible. Paper can be made virtually untearable, and when paper is torn, it is seldom the fibers that tear, but rather the bond between them. This bond is reduced when paper is wet, and that is why wet paper is weaker than dry paper.



When paper is folded, the uncut edges are called bolts.

When a sheet of paper is printed as one page, it is called a broadside.

If it is folded once, it's called a folio

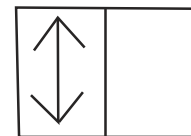
folded twice is a quarto

folded thrice is a octavo

You cannot fold a piece of paper more than seven times, no matter how thin the paper.

When printing a book, the grain of the paper should run up and down.

If it runs across the page, the book may bow, and not lay flat.



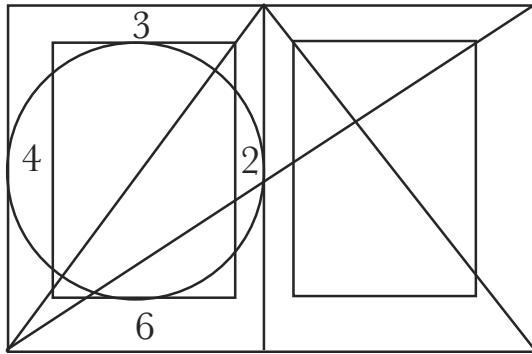
To test which way the grain is going, run the edge between two fingernails.

If it crinkles, that edge is across the grain.

 = across grain

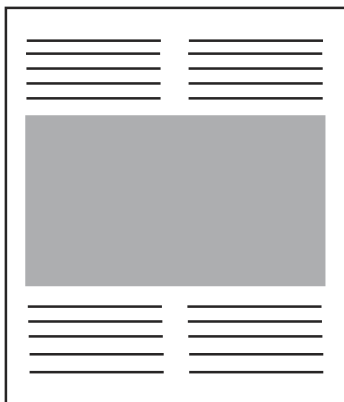
Book design

Page proportions discovered by Jan Tschichold. Margins are 2:3:4:6. The page proportion is 2:3, and the text and page are of the same proportions.

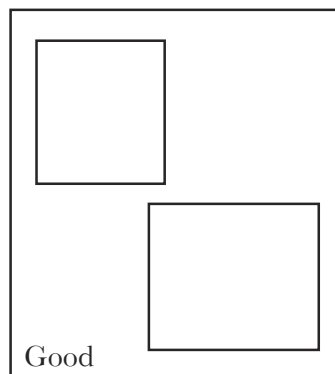
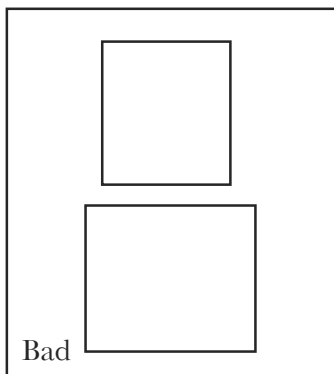


The proportions that seem to be most elegant are called the 'golden section' or 'golden rectangle'. It is defined as 21:34 or 1:1.618.

Bad page layout



The eye jumps to the nearest column, which in this case is the wrong column. Place illustrations carefully.



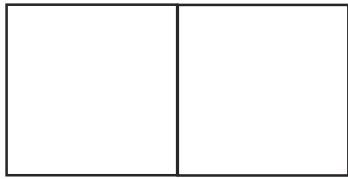
When two pictures are close in width but not identical, do not place them directly above one another like in the first example, but on opposite sides of the page.

When including pictures of people, it is best to place them looking toward the inside of the book. Also, when two pictures are placed on top of one another, the one with the most distant horizon should be placed on top, and the one with the closest horizon should be on the bottom.

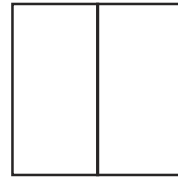
Page proportions

History, natural science, geometry, and mathematics all play a role in typography.

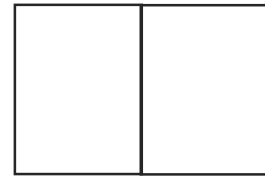
Proportions from music:



Unison, 1:1



Octave, 1:2



Fourth, 3:4

Major 7th, 8:15

Minor 7th, 9:16

Major 6th, 3:5

Minor 6th, 5:8

Fifth, 2:3

Diminished 5th/Augmented 4th, $1:\sqrt{2}$

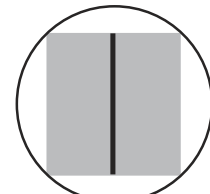
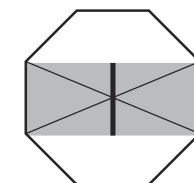
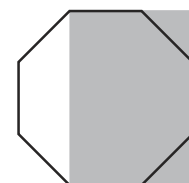
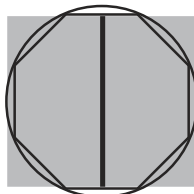
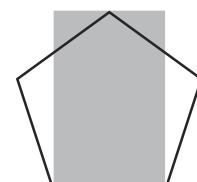
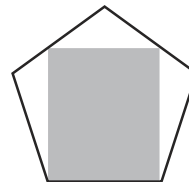
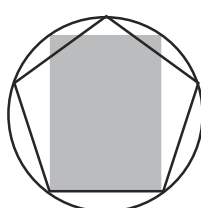
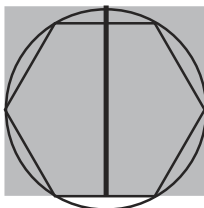
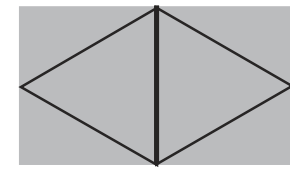
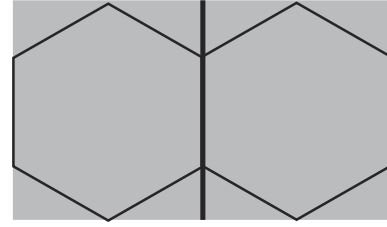
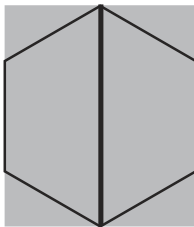
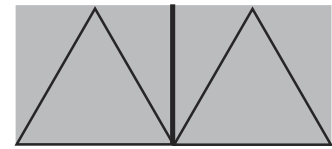
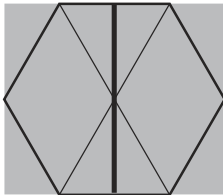
Major 3rd, 4:5

Minor 3rd, 5:6

Major 2nd, 8:9

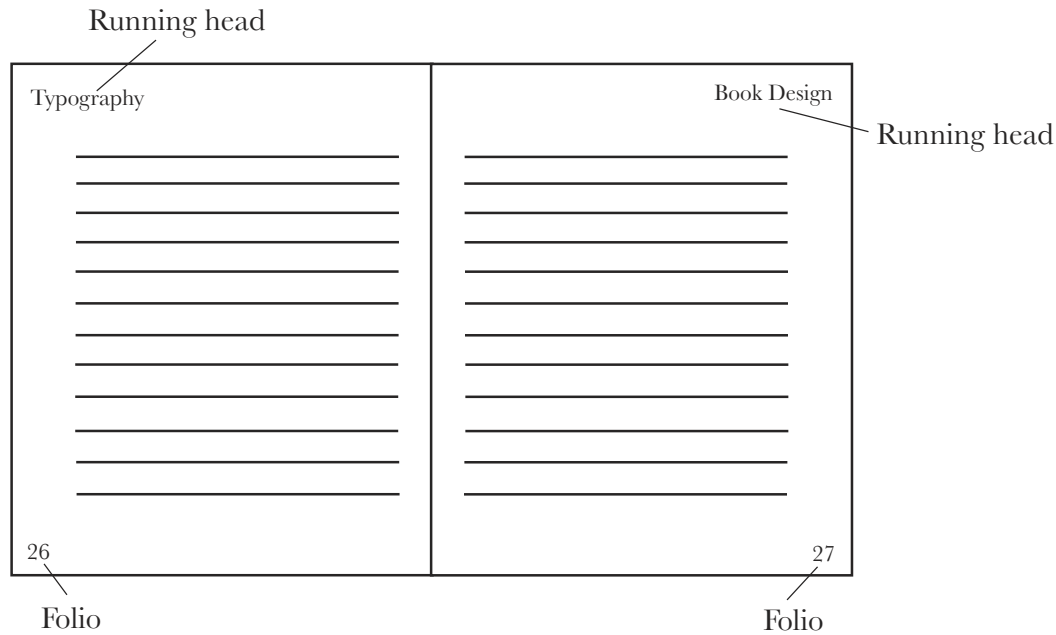
Minor 2nd, 15:16

Proportions from geometric shapes:



More book design

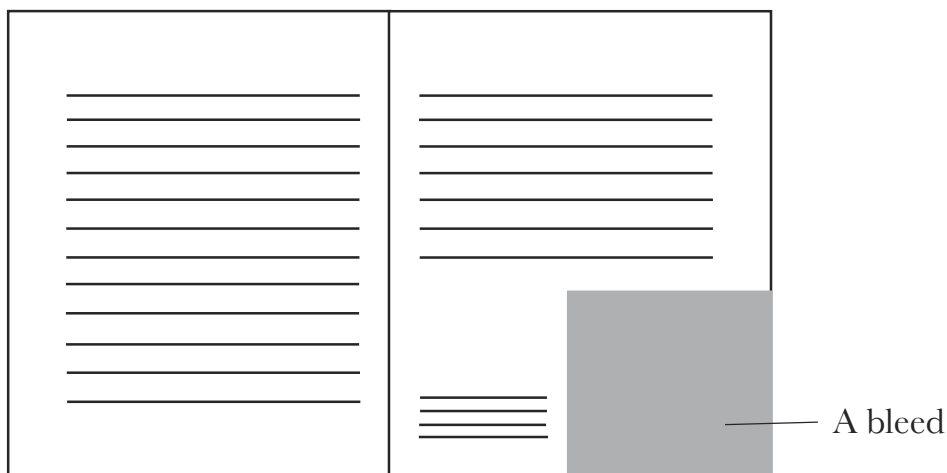
The page number is called the folio, and running heads are the title or chapter labels at the top of the page.



Running heads do not have to be on every page. Traditionally, the title of the book is on the left-hand page and the title of the chapter is on the right. The main goal in designing these is convenience for the reader.

Folios in the 'gutter', or inside edge of the page are less helpful since the book has to be all the way open to see them. They must be placed far enough away from the text to avoid confusion, especially if it involves figures.

A bleed is when a picture runs off a page and leaves no margins. These must be done carefully, because part of the picture will be trimmed off, which can affect composition or even leave the image incomplete.



Parts of a book:

1. Prelims

Traditionally including the following, but d through i are often condensed.

- a. Half-title or bastard title
- b. Blank or frontispiece, or other books by author
- c. Title page
- d. Verso of title
- e. Dedication
- f. Acknowledgments
- g. Preface or forward
- h. Contents
- i. List of illustrations

2. Main text

Things to consider when designing main text:

The length of the text - long books may need to be designed in a condensed format.

Backing up - The lines of type may need to fall in the same position as the lines on the back side of the page. If you can see through the paper, the type or heavy illustrations may affect legibility.

Running heads, folios, quotations, footnotes, and chapter openings also are part of the main text.

3. Captions

Often a different size or weight or type is used for captions to set them apart from the text.

4. Appendices

5. Bibliography

6. Index

7. End-papers

8. Case

A case is the hard cover that is fixed to a book by adhesive. It is often hidden by the jacket, however it still must be well designed. The spine of the book must have the title of the book on it, and possibly the names of the author and publisher. The lettering may read across, up, or down. Across is the most natural way, but often the words do not fit this way. If the title must run vertically, it makes the most sense to start at the top and go down. A person expects to start reading at the top, and if the book is laid on the back, the title will be right side up.

9. Jacket

The primary purpose of the jacket is to sell, but it also protects the book. The main elements of the design, including title and author, should be legible from fifteen feet.

Analphabetic characters

An analphabetic character is a typographic symbol used with the alphabet but lacking a place in the alphabetical order. The following are some of the ones you might not know.

† dagger	˘ breve
‡ double dagger	¸ cedilla
# octothorp	˙ ogonek
^ caret	¨ umlaut/diaeresis
ˆ circumflex	Þ thorn
ˇ caron	¶ pilcrow
° ring	§ section
◦ degree	pipe
· overdot	ß eszett
· midpoint	μ mu
• bullet	«» guillemets

These symbols can be very important to the legibility of writing. Take the following example:

Twenty one night stands
Twenty one-night stands
Twenty-one nightstands

Dingbats are typographic glyphs or symbols. They have no apparent relation to the alphabet, and many of them are pictograms. Others are abstract symbols.



The fist is an example of a dingbat . It is a silent, pointing hand from the Baroque period.

The gutter is the blank column between two columns of type or the margins at the spine between two facing textblocks.

There are eight basic arithmetical signs in the standard ISO character set, but often the subtraction sign and the en dash are identical. If signs other than the basic eight are desired but not included in your font, it would be best to take all symbols from the same font so they match.

+ - = > < ± ÷ ×

A bicameral alphabet is two alphabets joined together. The modern Latin alphabet is an example; it has an upper and lower case. Unicameral alphabets, such as Arabic and Hebrew, only have one case.

The ISO is the International Organization for Standardization. It is headquartered in Geneva, and is an agency for interntaional cooperation on industrial and scientific standards. Its membership contains organizations from more than one hundred countries.

Rules to remember

Only one space is necessary after a sentence. Using two spaces following a period is a habit from the Victorian era. The period and the following uppercase letter are enough to distinguish sentences from one another.

A kern is a part of a letter that extends into the space of another. Used as a verb, kern means to adjust the space between letters. Uppercase letters that often require kerning are A, L, T, V, W, and Y, and often it is with the combination of one of these lowercase letters: a, c, d, e, g, m, n, o, p, q, r, s, u, v, w, x, y, and z. Not all of these combinations happen in English, but beware of other languages.

Don't forget that numbers can benefit from kerning, too. The number one is often thinner than the others but assigned the same space.

The indentation of an opening paragraph is unnecessary. A paragraph is to mark a pause, and therefore indentation is not needed following a title or subhead. A normal indentation is usually one em, but one lead is also commonly used. Short lines followed by large indents can make the page look tattered.

And then the frog jumped
on the lily pad. It sat there
and contemplated for a
while. And then it jumped
in the water.

A little while
later, a fly came by. It did
not suspect the frog lurking
just below the surface. It sat
on a reed.

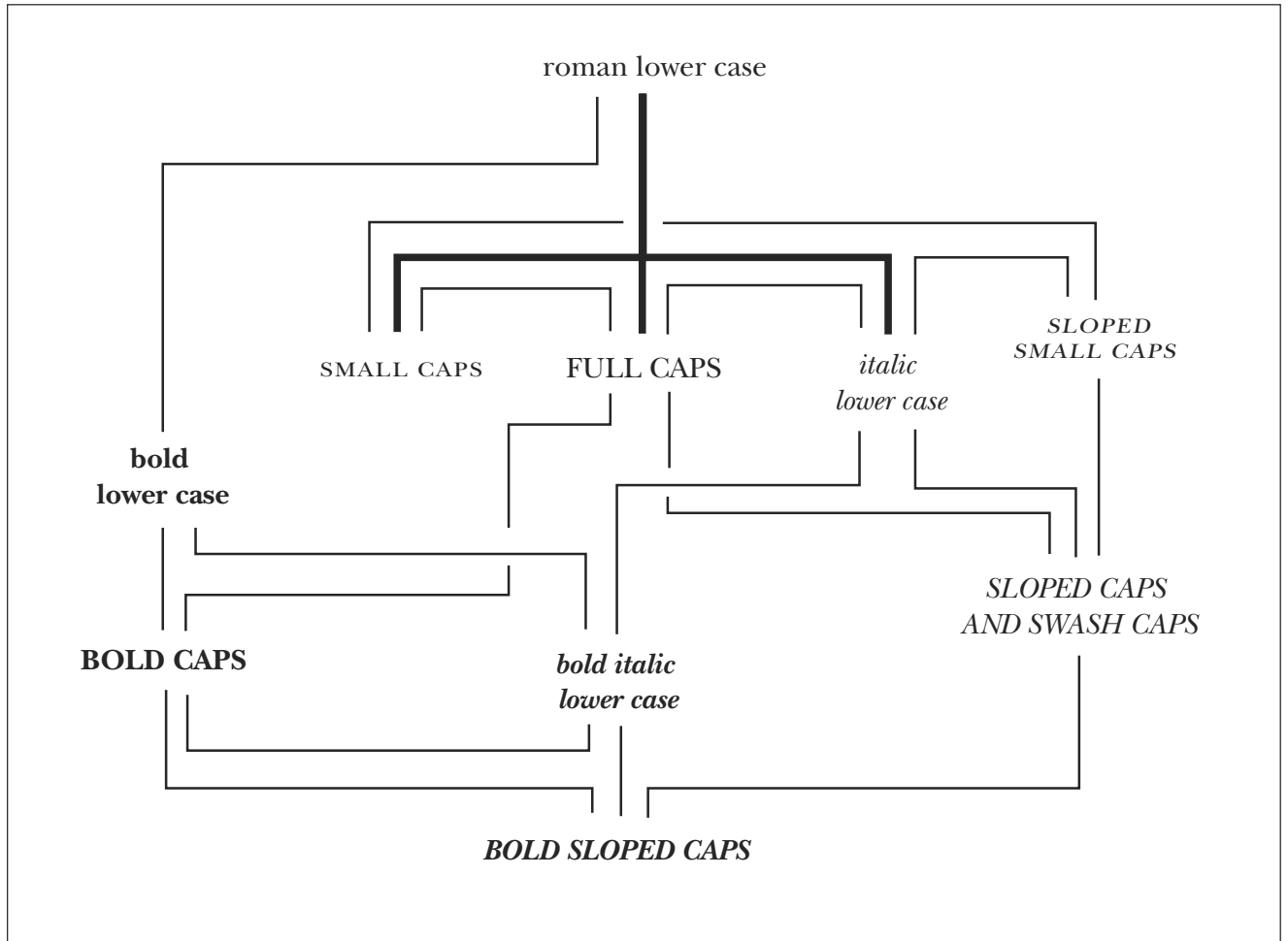
All of a
sudden, the frog leapt from
the murky refines of the
pond and captured the fly
with its sticky tonuge. And
then it sat back down on the
lily pad.

When hyphenating, leave at least two characters behind and take at least three forward. More than three hyphenated lines in a row should be avoided. Line-end hyphens often look best hung in the right margin.

When the frog has finished digest-
ing, he rolled over and decided
to take a nap. Just as he was start-
ing to doze off, a gigantic bald
eagle flew down and snatched him
in its vicious claws.

When the frog has finished digest-
ing, he rolled over and decided
to take a nap. Just as he was start-
ing to doze off, a gigantic bald
eagle flew down and snatched
him in its vicious claws.

A grammatical road map of a conventional large family of type



Ways to measure legibility

1. Speed of Perception

Measures quickness and accuracy of perception, usually by using a short-exposure technique. Material is flashed in view briefly; 1/10th of a second provides enough time for a clear view. The apparatus used to test short-exposure is called a tachistoscope.

2. Perceptibility at a Distance

Measures the distance from the eyes at which perception is accurate. A wooden rail with a movable car and a distance scale are often used for tests, or the subject may walk toward the material until he can just read it.

3. Perceptibility in Peripheral Vision

Involves measuring the horizontal distance from a fixed point a symbol can be accurately perceived.

4. Visiblility

Usually measured with the Luckiesh-Moss Visibility Meter. This is a device that has two filters with circular gradients that range from almost clear to very dark. The device is held in front of the eyes and the filters are rotated until a printed word cannot be recognized. The filters reduce the apparent brightness of the field as they get darker, reducing the contrast between the object and background.

5. The Reflex Blink Technique

The assumption with this method is that the frequency of blinking increases with the reduced legibility of print. The validity of this method is questionable. Experiments using this technique have indicated that reading 7-point newsprint is easier than reading 12-point book type, when that is false.

6. Rate of Work

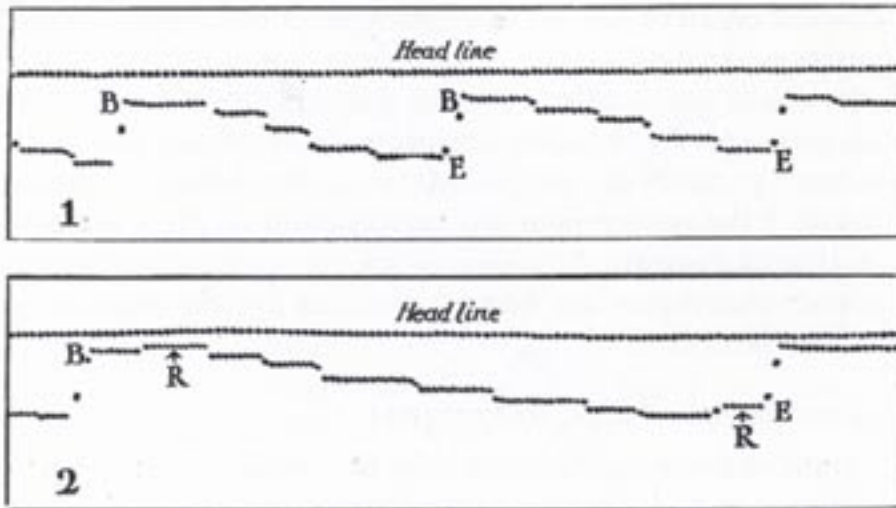
Experiments that fall under this method include speed of reading, amount of reading completed within a certain time, time needed to find a certain item such as a telephone number, or amount of work output. When using reading speed as the measurement, it is necessary to include comprehension checks, because reading without understanding is not reading.

7. Eye Movements

The measurement of eye movement can be taken by using corneal reflection or by using electrical methods. When a person is reading, the eyes move in quick jerks, called saccadic moves, from one fixation point to another. The fixation points are periods of clear vision, and perception of reading material only occurs during these pauses. Saccadic interfixation moves are so rapid that no clear vision is possible, and these moves take up six to eight percent of the reading time, while the pauses take up 92 to 94 percent. A regression is a backward movement within a line to re-examine material not understood. By analyzing eye movements, it is possible to get information about why something is not legible. By noting an increase of fixation pauses, a longer fixation pause, or an increase in regression frequency, a problem with printed material can be corrected. See illustration on next page.

8. Fatigue in Reading

This is hard to measure since fatigue is not necessarily indicated by a reduction in the rate of work. Also, if one's eyes are normal, the print is legible, and the lighting is adequate, a person can read at least six hours without measurable signs of fatigue or loss of efficiency.



Eye Movement Chart

FIG. 2.1—A sample eye-movement record. The upper figure (1) shows the eye movements of a "good" reader reading two lines of print, whereas the lower figure (2) shows the eye movements of a "poor" reader reading one line of the same text.

A speed of reading test:

When I am enjoying anything very much, time seems to go very quickly. I noticed this the other day, when I spent the whole afternoon reading a very uninteresting book.

Readers should cross out the word uninteresting because it spoils the meaning of the paragraph.

The letters of the alphabet, in order from most to least legible, in capitals:

W M L J I A T C V Q P D O Y U F H X G N Z K E R B S

This is just the findings of one study, many other studies disagree with this list. Letters can be low in legibility due to confusion with others letters, such as B with R, G with C, Q with O, and M with W.

Letters of the alphabet, in order from most to least legible, in lowercase:

k d q b p m w f h j y r t x v z c o a u g e i n s l

Factors affecting a letter's legibility:

Size - In comparing similar letters, when they are bigger it is easier to see their specific differences, not just their basic shapes.

Simplicity of outline - q has a simple outline compared to g and thus is more legible.

Serifs - Heavy or long serifs at the top of a letter with double strokes such as u or n should be avoided.

Shading - Contrast between thick and thin strokes should be avoided. A hairline for the horizontal stroke of an e makes it harder to differentiate between it and c.

White space - The greater the enclosed white space of a letter, the greater the legibility.

Distinguishing characteristics - Letters like b, d, and k have differentiating parts, while n and u don't.

Interesting proposed changes

E. B. Huey thinks a vertical arrangement of words printed in columns might produce a more efficient typographical arrangement. A vertical arrangement would eliminate practically all horizontal eye movements during reading. This method also allows more words to be in clear vision during a fixation pause since it utilizes the vertical and horizontal span of vision. After his preliminary testing, he thinks it also might eventually be read faster. Try it out below:

There	a drop	in the	for someone
was not	of ink	house	had broken...

N. W. Taylor thinks the dictionary should be reformatted. He proposes that once a syllable or series of letters has been given, they should be omitted. When several letters at the front of a word are the same, it can be hard to locate the differences. Here is an example of his proposed system:

Usual System	Proposed system
schmelz	schMELZ
schmelzarbeit	ARBEIT
schmelzbar	BAR
schmelzhafen	HAFEN
schemlzwerk	WERK
schmer	schMER
schmergel	GEL
schmerhaft	HAFT

Handwriting

Percentage of characteristic illegibilities in handwriting:

Words crowded	20
Too angular	15
Rewriting	13
Breaks between letters	13
Loops too long	10
Letters crowded	7
Poor spelling	5
Crowding at side of paper	5
Miscellaneous	12

Letters of the alphabet that cause the most trouble in handwriting are capital I, and lowercase r, n, e, a, d, and o. Those six lowercase letters account for about 50 percent of all illegibilities.

Studies have shown that the older the subjects get, the less legible their handwriting. Adults wrote three times more illegibly than elementary school children in one experiment. Students are also better at writing numbers. Only the digit 4 was more legible when written by adults. The number 5 is the most illegibly written number.



Chapter 3:

Typography and fonts from a technological stand-
point.

Fonts on your computer

PostScript

PostScript fonts were launched in 1984 by Adobe. It is a programming language optimized for printing text and graphics. It describes images in a device-independent matter, which means that it isn't limited by output device features like printer resolution and can be printed with any PostScript printer. PostScript is supported by imagesetters, who produce very high resolution (2400 dpi) images that are camera ready. It is an object-oriented language, which means it sees images as collections of geometrical objects rather than bitmaps. It uses an algebraic function of a cubic polynomial, and a circle takes twelve points.

TrueType

TrueType was developed by Microsoft and Apple in 1991. They were both battling for position in the computer industry, and neither wanted to pay a third party to include scalable fonts with their operating systems. So Apple came up with TrueType and traded it to Microsoft. It is calculated by using a quadratic polynomial, and a circle takes only eight points.

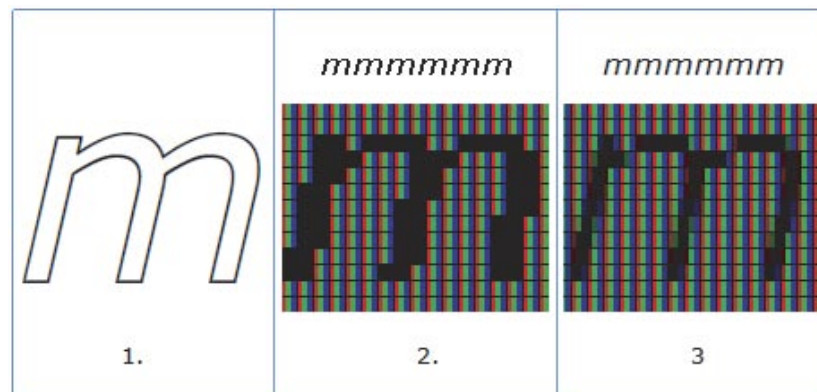
OpenType

OpenType was developed by Adobe and Microsoft in 1996. It is a hybrid font format that can contain either PostScript or TrueType data. It was created as an attempt to simplify the use of fonts by making them cross-platform compatible - they can work on Macintosh or Windows computers. OpenType fonts also have the capability to support widely expanded character sets.



ClearType

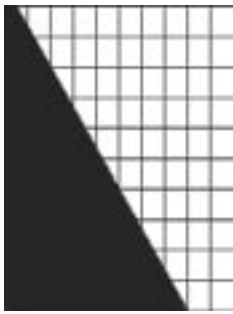
ClearType was developed by Microsoft to improve the readability of text on LCDs (Liquid Crystal Displays). It works by accessing the individual vertical color stripe elements of every pixel on the screen. This new technology allows fonts to be displayed using fractions of pixels.



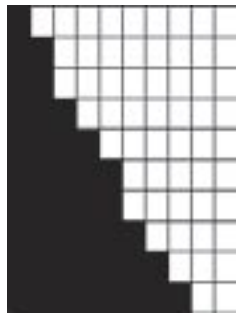
Font technologies

Anti-aliasing

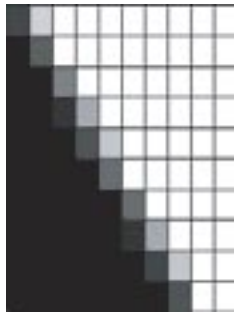
Using various gray levels at the edges of strokes to remove jaggedness.



A diagonal line



A diagonal line drawn by pixels



An anti-aliased diagonal line



Not anti-aliased



Anti-aliased

Bitmap

An array of intensity values, normally rectangular, used to create an image. The bits are mapped onto screen or paper.

Erosion

The thinning of vertical strokes in letterforms that results from characteristics of the output device.

Greeking

The use of gray bars or "dummy" characters to represent text that is too small to be legible on screen. Also used in graphic design when the design of the document will be emphasized rather than the content.

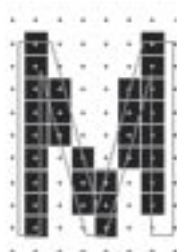
Jaggies

The stepped effect of bit-mapped type and graphics caused when square pixels represent curved or diagonal lines.

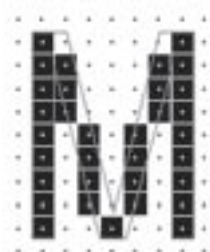
Grid-fitting

When the points of a character's outline are moved around until they fit the pixel grid.

Not grid-fitted

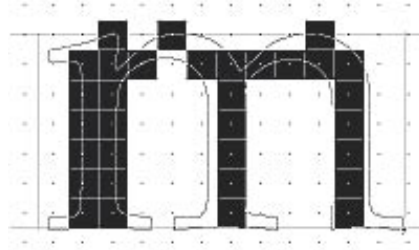
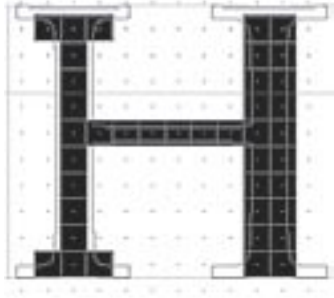


Grid-fitted



Hinting

The process of defining outlines for digital type when resolution is low or sizes are small. A program is run and it decides which pixels should show up. Hinting can correct issues related to color, readability, spacing, weight, alignment, symmetry, and local aesthetics. Other ways of changing type include shape modification, optical scaling, non-linear scaling, and diagonal control.



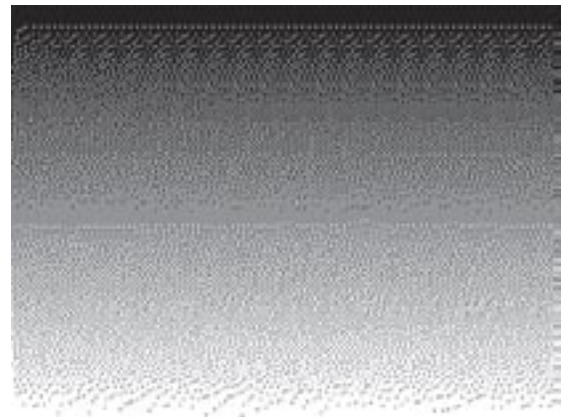
Not using hinting can cause loss of serifs or uneven strokes

Dithering

Method of creating digital halftones, also called spatial dithering or halftoning.



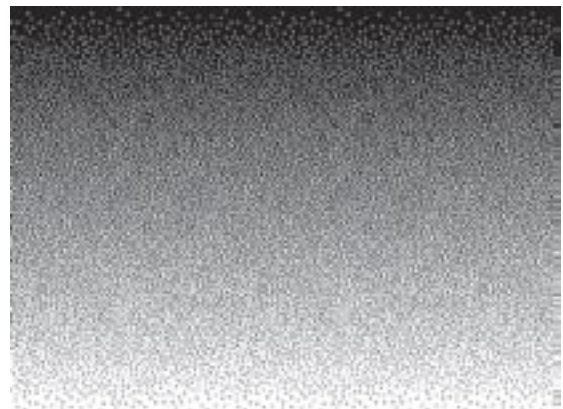
Gray scale ramp



Error diffusion



Conventional ordered dither



Void-and-cluster ordered dither



Chapter 4:

An introduction to typographers.

El Lissitzky

Lazar Markovitch Lissitzky was born in 1890 in Russia. He left at the age of 19 to study engineering and architecture in Germany. After graduation he was appointed professor of architecture at Vitebsk art school. His colleague, a Suprematist painter, influenced his work, and he started doing experiment work called "Prouns," which were non-objective works. He described them as "the interchange station between painting and architecture." He began to add typographical elements into his paintings, and also dabbled in making posters and designing book covers. In 1922, Lissitzky was very active, designing rooms for exhibitions and magazine covers. However, in 1923, he got sick with pneumonia and was diagnosed with tuberculosis. The remainder of his career was marked with periods of intense activity interspersed with illness. He died in 1941.



Poster design for Pelikan ink, photogram



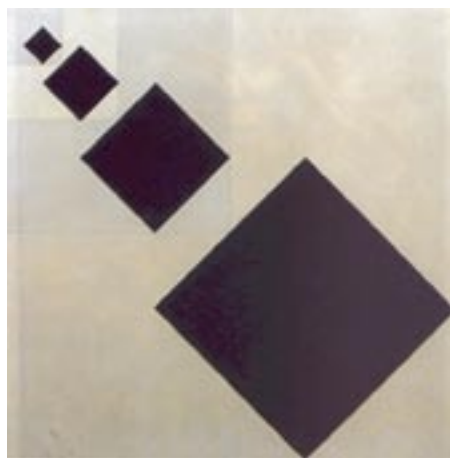
Book design: *For reading out loud.*



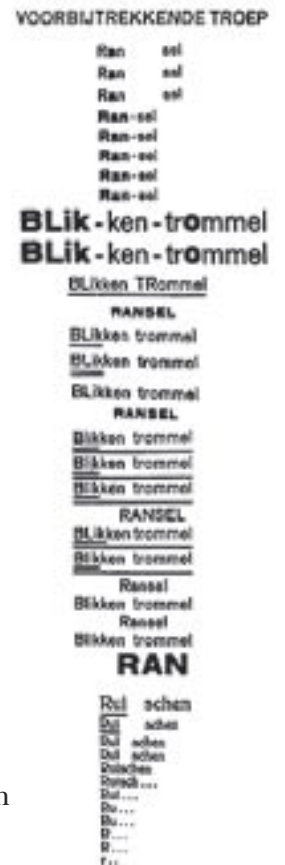
Poster: 'Beat the Whites with the Red Wedge'

Theo van Doesburg

Christian E. M. Kupper was born in Holland in 1883. His early life included painting, exhibiting, being an art critic, and serving in the army. He is one of the founders of the group de Stijl. His repertoire grew to include sculpture, architecture, and Dadaist poetry, which he often published under several pseudonyms. He also designed rooms, a cafe, and had prepared plans for his house, but died at the age of 47 before it was completed.



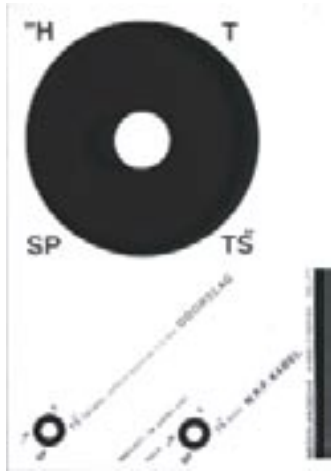
Arithmetic Composition, 1930



A visual poem

Piet Zwart

Piet Zwart was born in 1885 in Amsterdam. He studied some architecture in school and received commissions for furniture and interior design starting in 1911. He met Jan Wils, an architect and one of the members of de Stijl in 1919, and was employed by him until he left to become the assistant to the famous Dutch architect H. P. Berlage. During this time, he was also designing advertisements and brochures, and working on industrial design. In 1928, he developed a passion for photography, and started using his photographs in his work. He was also his own copywriter. He died in 1977 at the age of 92.



Advertisement for NKF, 1926



Page from NKF catalog, 1928



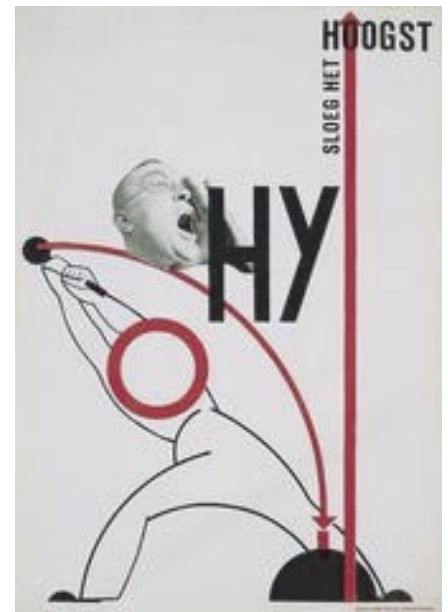
Cover for NKF catalog, 1928

Paul Schuitema

Paul Schuitema was born in Holland in 1897. He received training as a painter, but turned to graphic design soon after. He started using photography in his designs and got frustrated with the work of professional photographers, so he started taking his own pictures. He was fascinated by movement, and began work on a film in 1929. He did two more films, and all of them were concerned with some type of movement. He became a teacher in 1930, and taught for over forty years. He died in 1973.



Book cover, 1940.



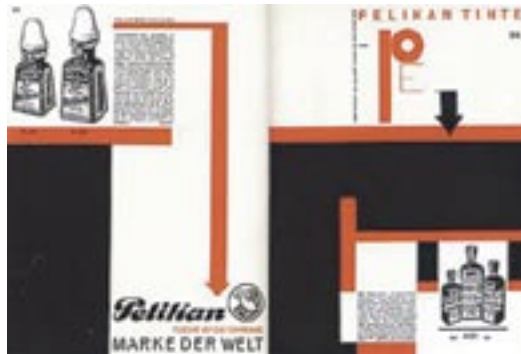
Advertising Leaflet, 1929

Kurt Schwitters



Cover of the first issue of Merz, 1923.

Kurt Schwitters was born in 1887 in Germany. He produced his first MERZ pictures in 1919, which were composed of "disparate elements merged into a work of art with the help of nails, glue, paper and rags, hammers and oil, paint, parts of machinery and bits of lace." In 1923, he published his first issue of Merz, a periodical. Contributions to his magazine in the first year included Mondrian, Lissitzky, and Man Ray. He also worked as a typographer and was the typographical advisor to the City of Hanover. He died in 1948.



Page from Merz 11, 1924.

H. N. Werkman

H. N. Werkman was born in 1882 in the Netherlands. He became interested in art when he saw a Van Gogh exhibit, and eventually named one of his kids Vincent. He was apprenticed to a printer, and found an interest in newspapers. After becoming a journalist, he got married and then started his own press. He picked up painting after his first wife's death, and also began his own publication, *The next call*. To make some of his images in his publications, he would lay paper on the press bed and push an inked object down onto the paper. This gave him control over things like color, inking, and pressure, and as a result, there are variations between pieces of the same publication. He also did experimental prints called "druksels" and "tikfels." He had great care for his materials, once saying, "some paper is so beautiful that you would like just to caress it and leave it chaste." In 1934, his work became more figurative, and he started using paper shapes as stencils. Some describe his work as creating paintings using the press and printing ink. During World War II, he produced a series of subversive broadsheets. He was arrested by the Nazis and executed with nine other people three days before the Allied armies reached Northern Holland.



De Blauwe Schuit

The next call



Alexander Rodchenko

Alexander Rodchenko was born in Russia in 1891. He grew up in a theatrical world, but enrolled in art school at the age of twenty. In 1913, he was influenced by a visit from Mayakovsky and a group of Futurist poets and painters. He gave up representational painting and began to produce geometrical compositions. In 1921, he decided to abandon 'pure art,' and turned to industrial design and typography. He designed animated film titles for documentaries and worked on magazines and posters. He started shooting photographs and incorporating them into his work, and later in his career did work in the theater and cinema. He eventually became a photo-journalist, which he did until his death in 1956.



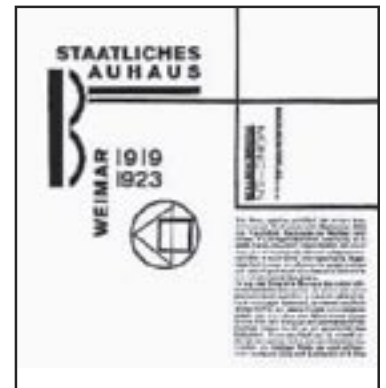
Change of All, 1927



Photograph, 1932

Laszlo Moholy-Nagy

Laszlo Moholy-Nagy was born in 1895 in Hungary. He began his schooling studying law, but then had to serve in the army during World War I. He started drawing during the war, and then began painting in a non-representational style after completing his law studies. He moved to Berlin, where Lissitzky was a great influence on him. He began to experiment with photography and started making photograms. In 1923, he was appointed to teach at the Bauhaus. After teaching for five years, he left and went on to design stage sets, make films, and work as a typographical designer. He died in Chicago in 1946.



Bauhaus prospectus, 1923



Book spread, 1925

Herbert Bayer

Herbert Bayer was born in Austria in 1900. He was an apprentice for an architect, and then he went on to work in an office doing interiors and packaging. He enrolled as a student at the Bauhaus where he studied under Kandinsky and Moholy-Nagy. In 1923, he was commissioned to design bank notes, which were a complete departure from tradition with bold sanserif type. After that, he spent a year wondering through Italy and Sicily, sometimes working as a house painter. He was appointed as a teacher at the Bauhaus after it was moved to Dessau. He was strongly in favor of having only one alphabet, and the Bauhaus began to abandon the use of capital letters. Bayer left the Bauhaus and opened his own design studio. He developed a like for photography and for a time was art editor of Vouge. He moved to the United States in 1938.



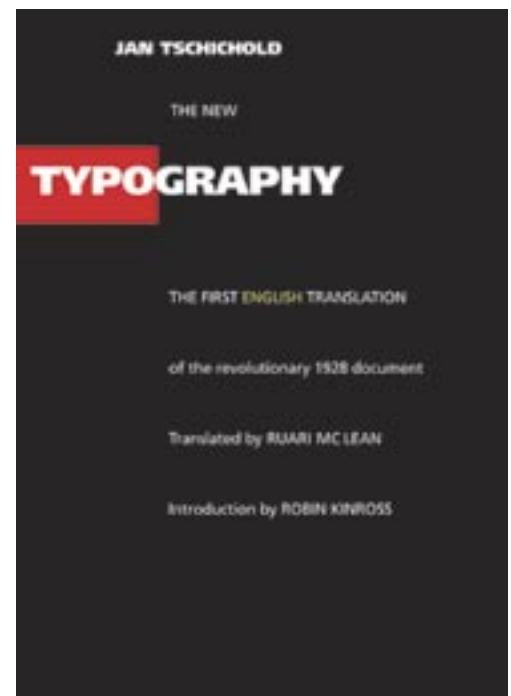
Poster design, 1926



Exhibition announcement, 1923

Jan Tschichold

Jan Tschichold was born in 1902. His father was a script writer, so Tschichold was exposed to writing at an early age. He became a drawing teacher and studied calligraphy in his spare time. He wrote many books and designed typefaces. His most famous book, *The New Typography*, was a drastic change from the status quo. Read more about the book and see examples of Tschichold's work on the following pages.



The New Typography

by Jan Tschichold, from Germany in 1928

Typography is related to architecture

“Anyone who has recognized the deep underlying similarity between typography and architecture and has understood the true nature of the new architecture can no longer doubt that the future will belong to the new typography and not the old,” (13).

The Old Typography

Stretching from 1440 to 1850, the old typography consists mainly of two typefaces, gothic and gothic cursive. Initials were often large and colored or painted gold. Texts were in two columns, and title pages may be asymmetric, but were organized illogically. Roman fonts came about around 1500. And while Gutenberg made important advancements to the field, he “was more the imitator of medieval manuscripts.” (18). Aldus Manutius was the first to recognize the character of books, and can be seen as the beginner of book design.



A page from the Gutenberg Bible, in Gothic, two columns, and large initials.

Topography of Typography

By El Lissitzky, but quoted in the book:

1. On the printed page words are seen, not heard
2. Ideas are communicated through conventional words, the concept is designed by means of letters.
3. Economy of expression - visual not phonetic.
4. The spatial arrangement of the book, by means of the type matter and according to the mechanical rules of printing, must express the strains and stresses of the contents.
5. The spatial arrangement of the book by means of process blocks, which embody our new visual concepts. The supernaturalistic reality of the perfect eye.
6. The continuity of page-sequence - the bioscopic book.
7. The new book demands the new writer. Ink-pots and goose-quills are dead.
8. The printed page transcends space and time. The printed page, the infinity of the book, must be transcended.

Principles of the New Typography

Function

The old typography was less concerned with function and more concerned with art. Readers in the past read line by line, but now people don't have time. If the goal of the material is to gain attention, the typography must serve this purpose. Designers can't continue to repeat what has been done before: "the succession of historic styles...are nothing but proof of creative incompetence," (65).

Clarity

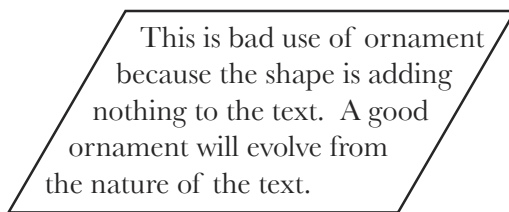
The aim of typography is not beauty. Clarity is essential due to the increased demands for a viewer's attention. It is worth it to study how things are read, and important to anticipate how your work will be read.

Asymmetry

In the old typography, the vast majority of printed materials were done using a central axis. "We believe it is wrong to arrange a text as if there were some focal point in the centre of a line which would justify such an arrangement...Axial arrangements are illogical because the distance of the stressed, central parts from the beginning and end of the word sequences is not usually equal but constantly varies from line to line," (66).

No ornaments for the sake of being ornamental

"The use of ornament, in whatever style or quality, comes from an attitude of childish naivety. It shows a reluctance to use "pure design," a giving-in to a primitive instinct to decorate...It is so easy to employ ornament to cover up bad design!" (69).



White Space

New Typography takes the former "background" and turns it into a formal element of the design. White space is more active with the new asymmetrical design. "The real meaning of form is made clearer by its opposite," (70). Strong contrasts between white and black can be used for emphasis.

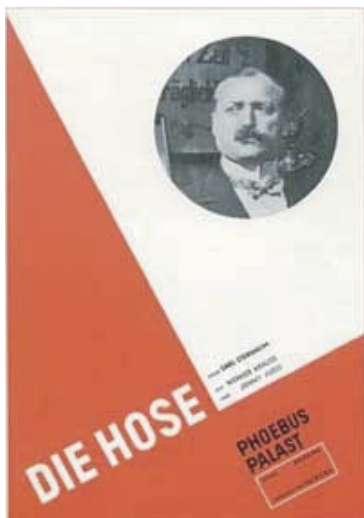
Color

Color should not be used decoratively, but functionally. White reflects light and may seem to shine, black recedes, and red comes forward. "The liveliness of red corresponds to our own natures, and we prefer it to all other colours," (73).

Type

Sanserif type is always better. A typeface only expresses the age in which it was created, not anything else. A good typeface has no purpose except clarity and can be used for everything. Capitals and lowercase alphabets were not designed to go together, and we should change to using only the lowercase alphabet.

The Work of Jan Tschichold



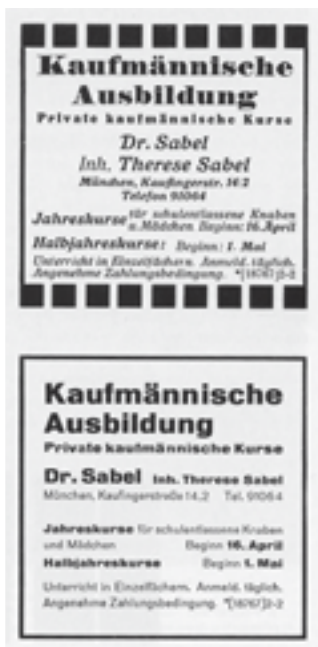
Good layout



Bad layout



- Newspaper advertisement
- Unnecessary ornaments
- Too many types and sizes (7)
- Centered design
- Reading is difficult
- Unightly



- Newspaper advertisement, redesigned by Tschichold
- No use of ornament
- Clear types, few sizes (5)
- Good legibility
- Good appearance

Every piece of typography which originates in a preconceived idea of form, of whatever kind, is wrong," (66).



Paul Rand



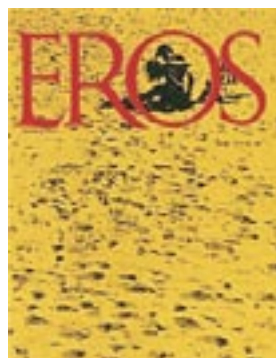
An influential figure in American graphic design. He explored the vocabulary of the European Avant Garde movement, and his work is characterized by simplicity, wit, and a rational approach to problem solving. He has been a large force in editorial design, working as art director for *Esquire* and what later became *GQ*. He has created corporate identities for businesses such as IBM and Westinghouse. He taught design at Yale before his death in 1996.



"Good typography, American or otherwise, is not a question of nationality but of sensibility to form and purpose. In the twenties, when Tschichold wrote his revolutionary book on modern typography, he did not call it German or Swiss or French he called it simply - Die Neue Typografie."

Herb Lubalin

Also an editorial designer, he worked on publications such as the Saturday Post, Eros, and Avant Garde. He designed the typeface Avant Garde originally for the masthead of the magazine. He also served as editorial design director for the ITC (International Typeface Corporation) promotional publication U & I. His work often demonstrates meaning through typographical design.



"The realization came to many of us in the early 50s that type was not just a mechanical means of setting words on a page, but was, rather, a creative and expressive instrument in the hands of imaginative designers."

Milton Glaser

A designer-illustrator, his work is direct, simple, and original. He was one of the founders of the Pushpin Studios, and opened his own studio later in life. His work ranges from book jackets to record covers to magazine illustrations to direct mailers and beyond. He also did architectural designs and logos.



I ♥ NY



"There is no more significant element in the entire repertoire of graphic design than typography. Until recently, it was perhaps the most obvious formal element that distinguished graphic design from painting. The practice of typography is one that requires both an intuitive grasp of form and a considerable amount of technological study to achieve mastery.

Tom Carnase



A typeface designer, he also worked in packaging, corporate identities, and logos. He was vice president and partner in Lubalin, Smith and Carnase Inc., and he founded the magazine *Ligature*, which was a direct competitor of ITC's *U&lc*.

"Fine typography is the result of an attitude. Its attraction comes from love and care in its planning. Designs of swirling pattern, strange marbled and curious free-form shapes, trapped in texture, are sophisticated examples of expressionism."

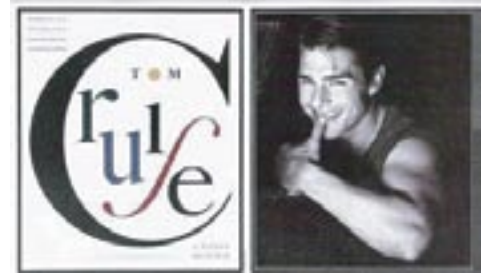
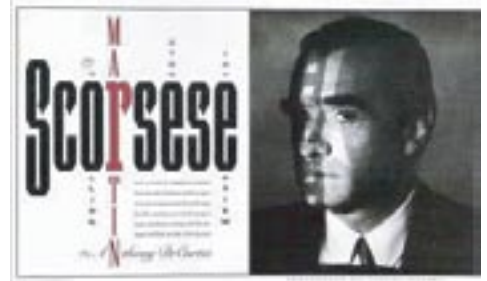
SAKS
FIFTH
AVENUE

Fred Woodward

He has developed a visual language for *Rolling Stone* through his designs containing cool modernism combined with the American vernacular. In 2001, he became design director at *GQ* magazine, and his redesign a year later won awards.



" I like type. I've always liked type. I use a lot of it. I believe there is one perfect use for every face ever drawn, no matter how hideous. I have taken it upon myself to use every single one of them at least once before I lose the energy to care or become too senile to keep score."

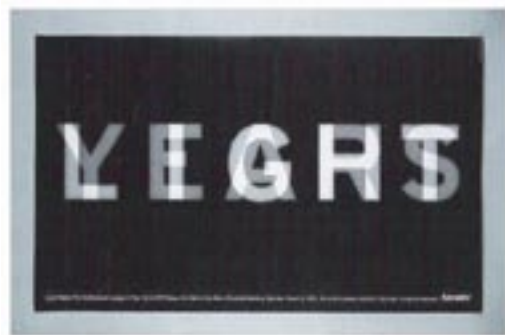


Other examples of typography as art



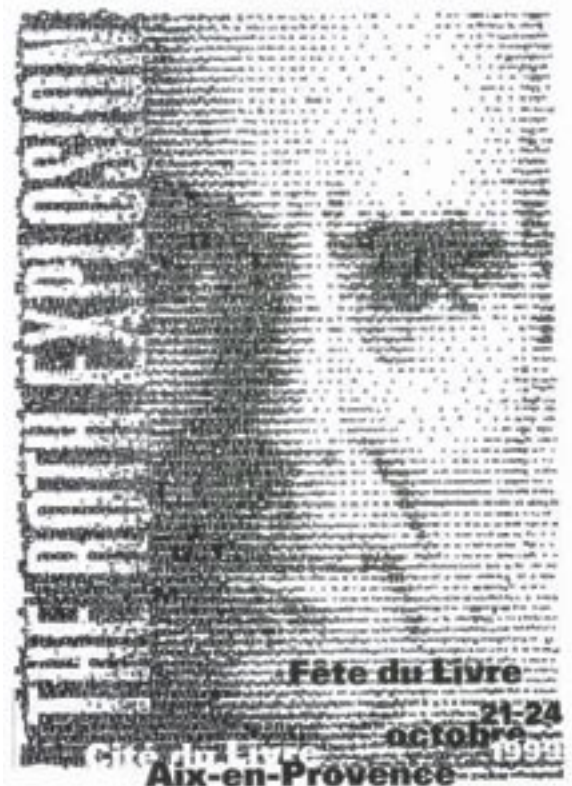
Album cover, Gerard Huerta

Poster, Paula Scher



Poster, Michael Bierut

Poster, Philippe Apeloig





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