Building User Interfaces

Visual Design

Professor Yuhang Zhao

Adapted from Prof. Mutlu's slides

Adjustments to Quizzes

- Go over the quizzes from last class
- Cancel in-class quizzes, instead, you will have 24 hours to finish the quizzes after class
- We'll remove the 3-minute time limit for each quiz, but keep the 24-hour deadline

What we will learn today?

— Elements and principles of design
— Color, type, and images

Elements of Design

Elements of Design

1. Space
2. Line
3. Shape
4. Size
5. Pattern
6. Texture
7. Value

Space[1]

Definition: Space is the canvas on which visual elements are placed.

- Space can be *positive* or *negative*
- *Positive:* where the subject is positioned
- *Negative:* the space surrounding the subject
- Negative space can be used as positive

[1] Image sources: this slide, next slide: left, right

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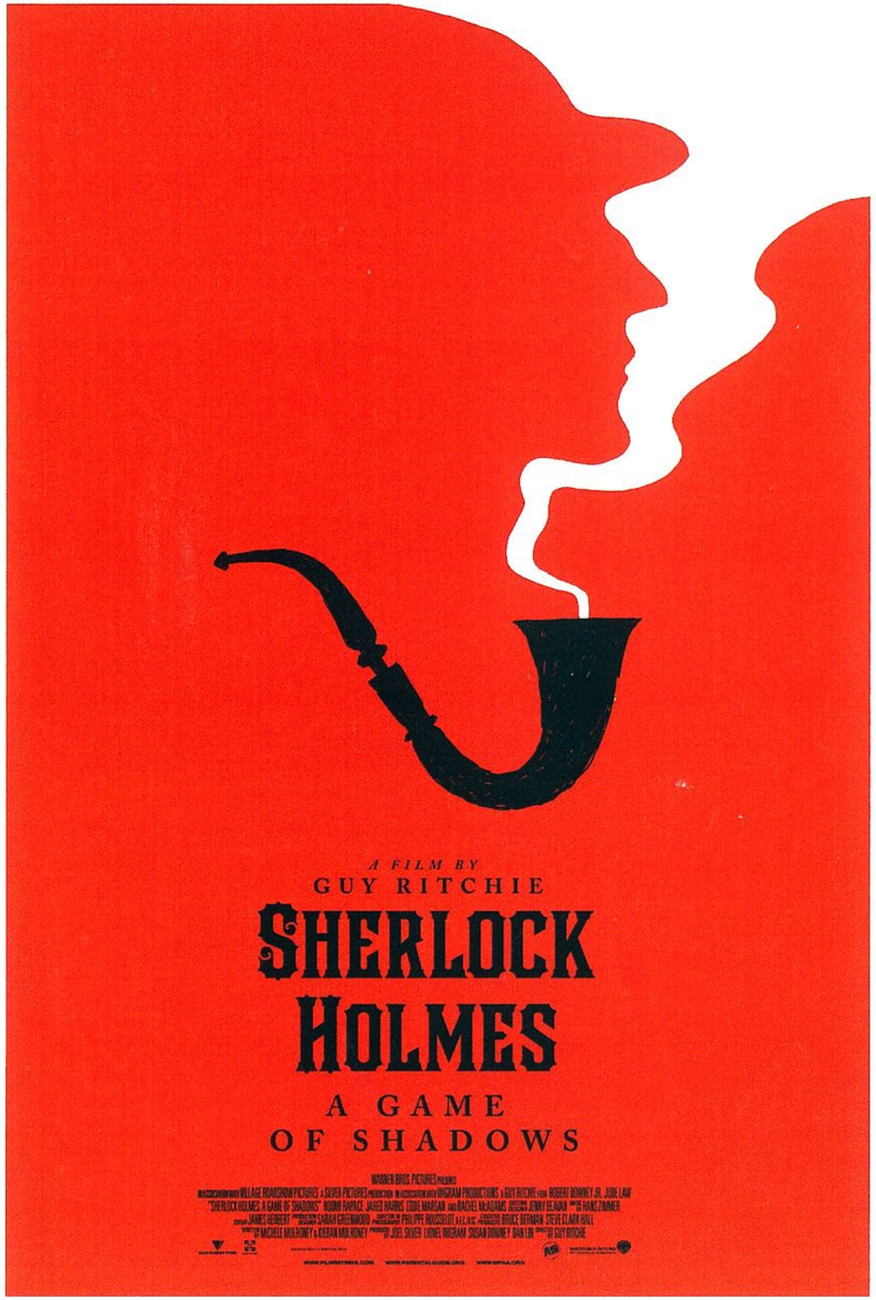

A FILM BY
GUY RITCHIE
SHERLOCK
HOLMES
A GAME
OF SHADOWS

Line[2]

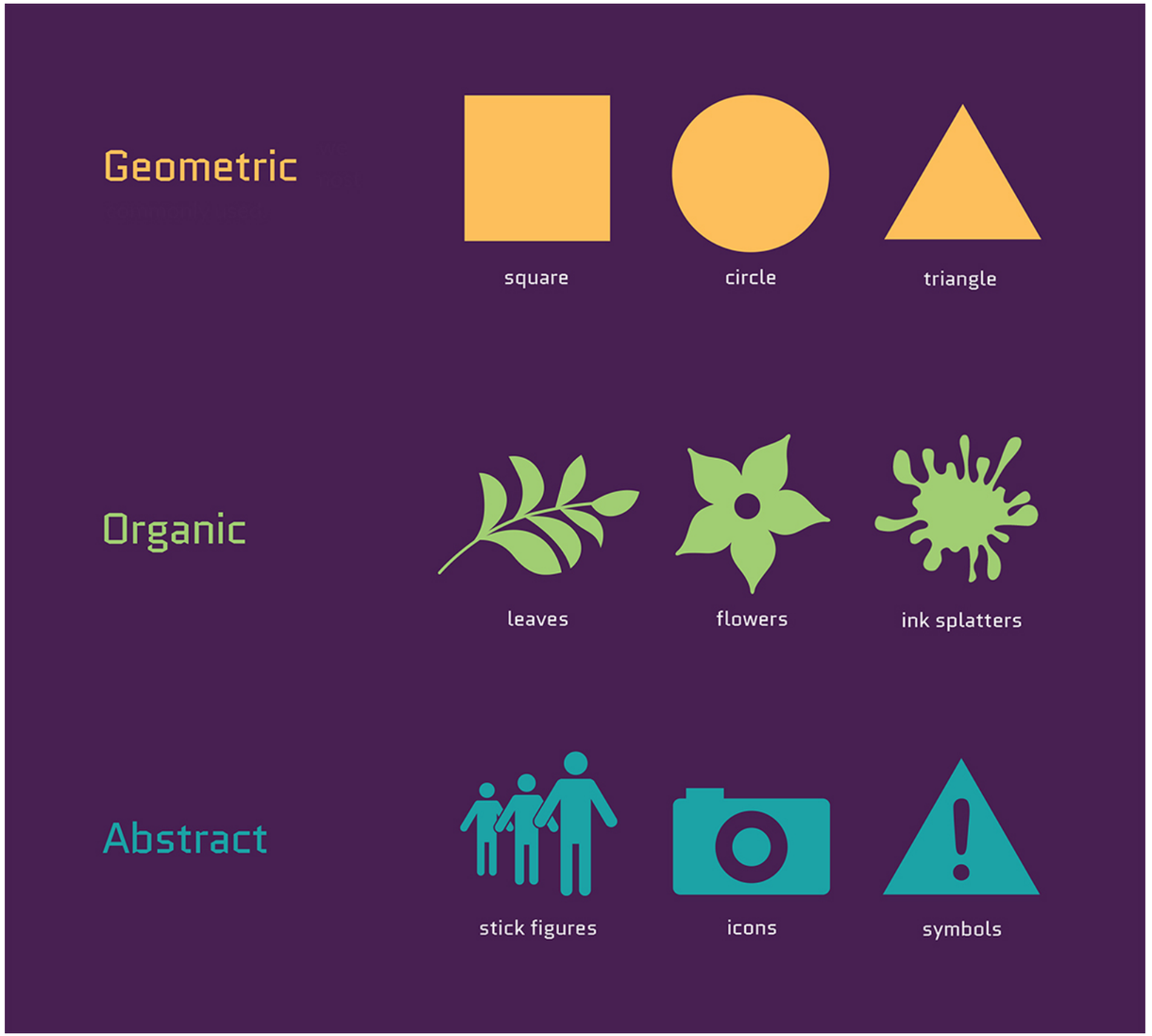
Definition: The most primal design element that can divide space, call attention to, organize, and make up other elements.

[2] Image source

Shape[3]

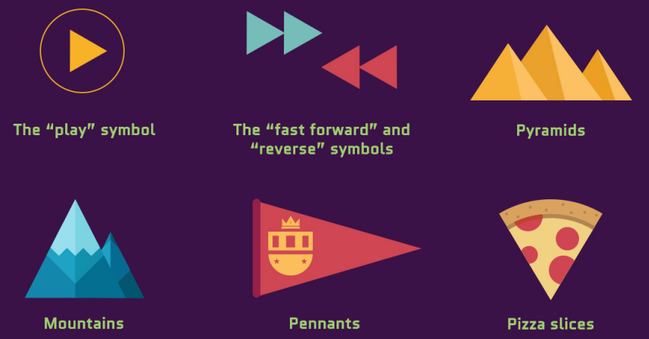
Definition: Space outlined by a contour.

— *Organic* vs. *inorganic* shapes

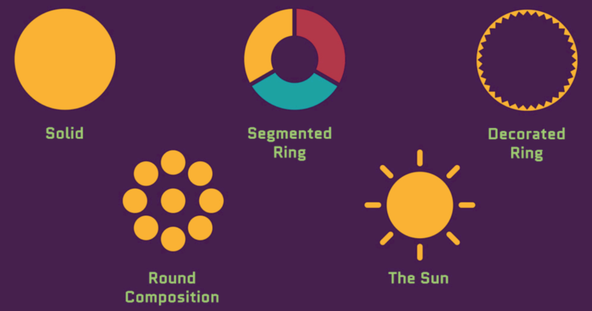


[3] Image sources: this & next slides

Triangles we see in everyday life



Some of the ways you can use circles as part of a design



Examples of well-known pentagons, hexagons and octagons

Pentagons
school crossing

Hexagons
beehive

Octagons
stop sign

What do we associate stars with?

Five-pointed stars with the point facing up

Size[4]

Definition: Size, or *scale*, is the relative extent of the design elements such as shapes and lines.

[4] Image source

Pattern[5]

Definition: Pattern, or *repetition*, systematic duplication of other design elements such as shapes and lines.

[5] Image source

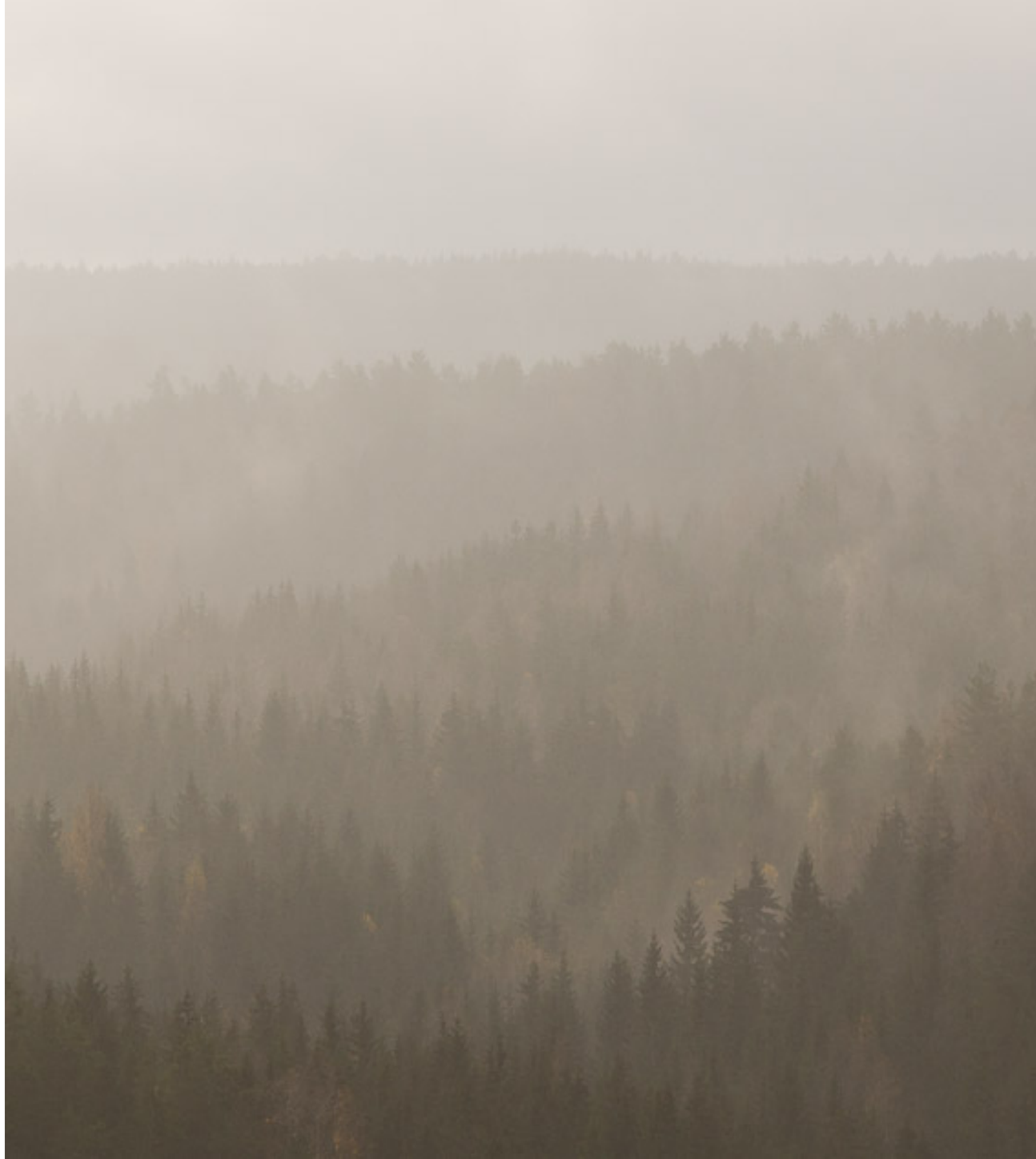
Texture[6]

Definition: Tactile and visual quality of a shape or space made up of different colors, materials, and different structures.

[6] Image source

Value[7]

Definition: The intensity in which a design elements is expressed.



[7] Image source

Principles of Design

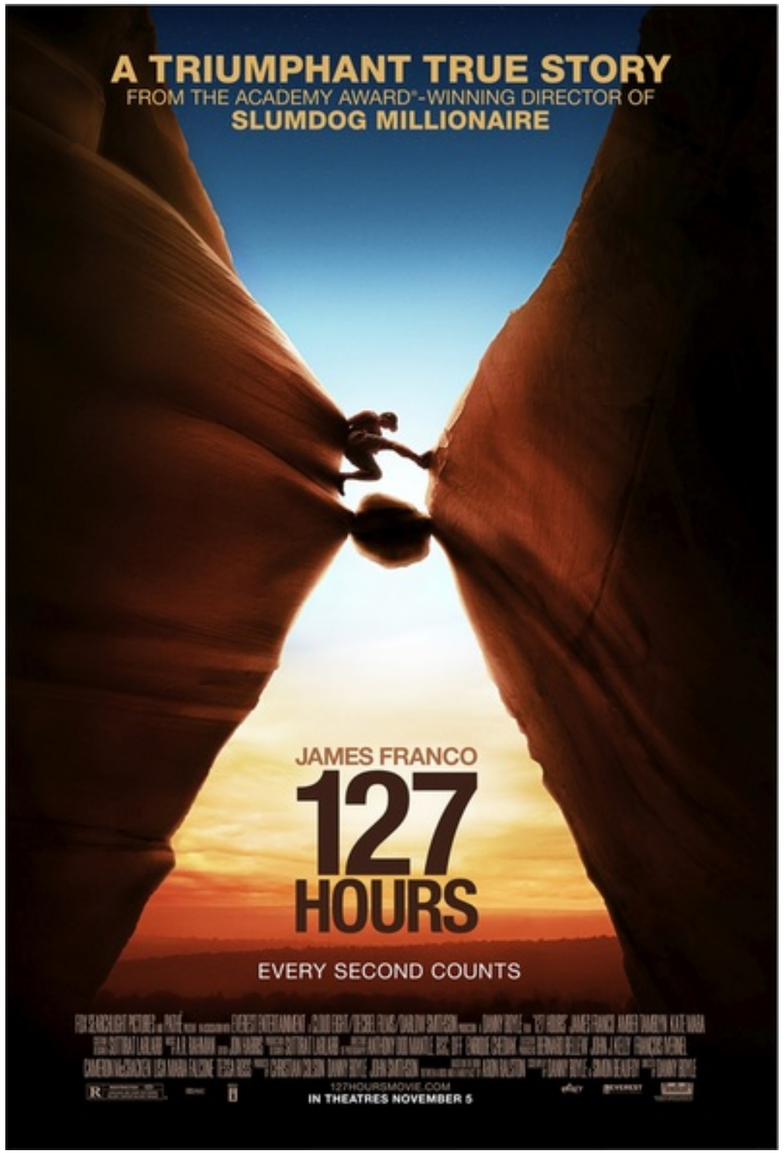
Principles of Design

1. Focal Point
2. Contrast
3. Balance
4. Movement
5. Rhythm
6. Perspective
7. Unity

Focal Point[8]

Definition: Focal point, or the area of visual interest, is where the design directs the attention of the viewer first.

[8] Images sources: this slide, next slide: left, right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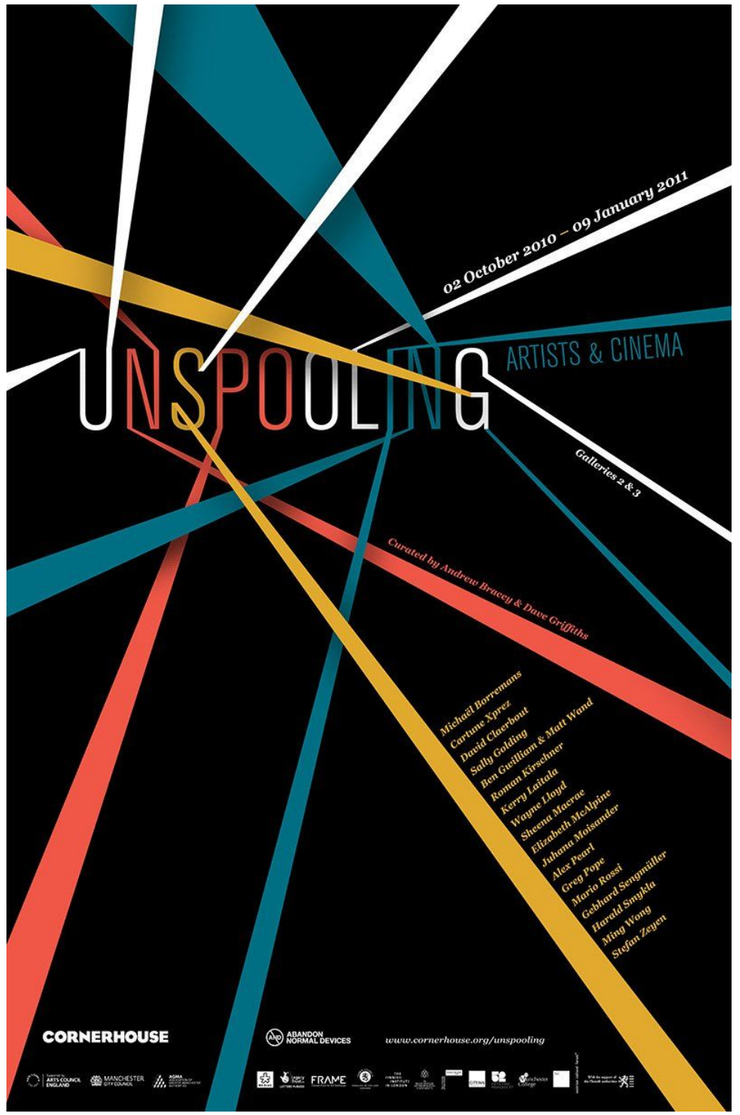
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Harald Smykla
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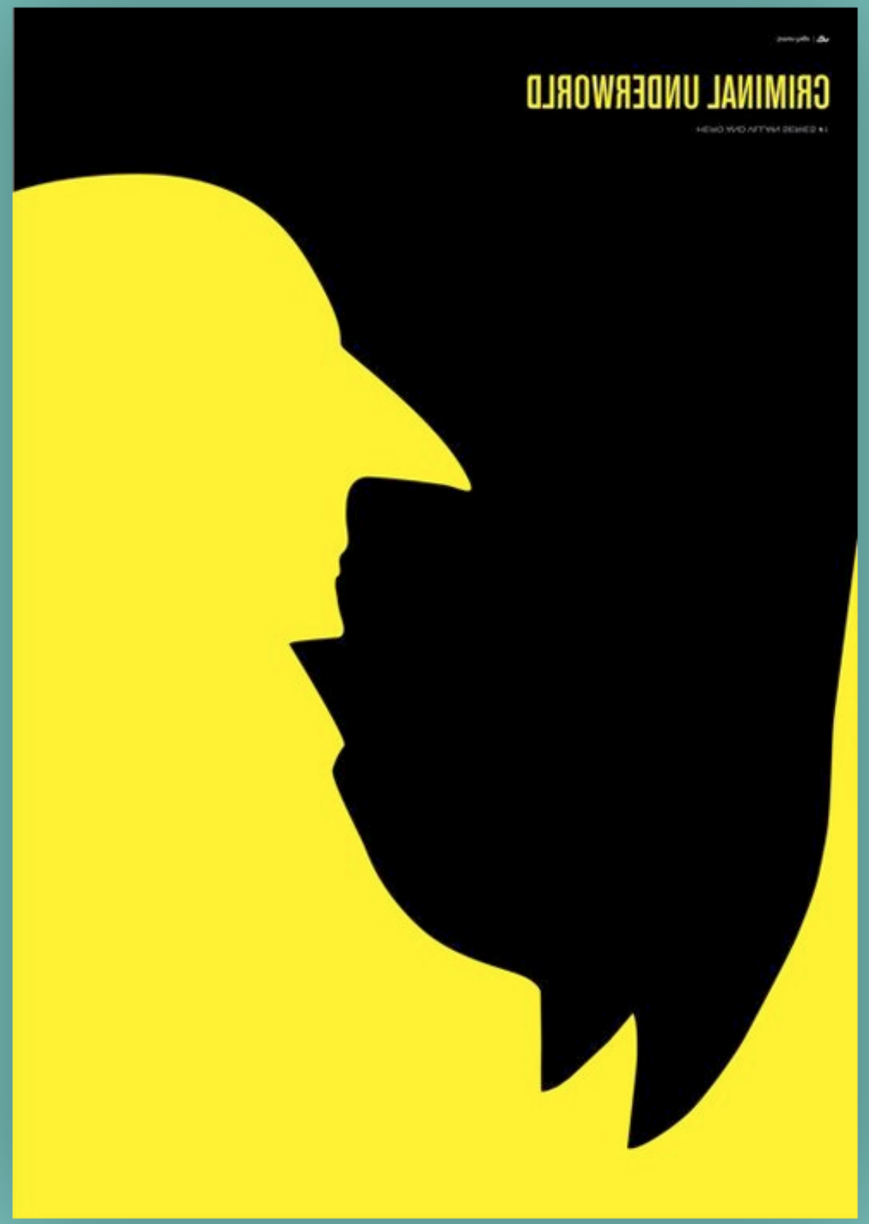
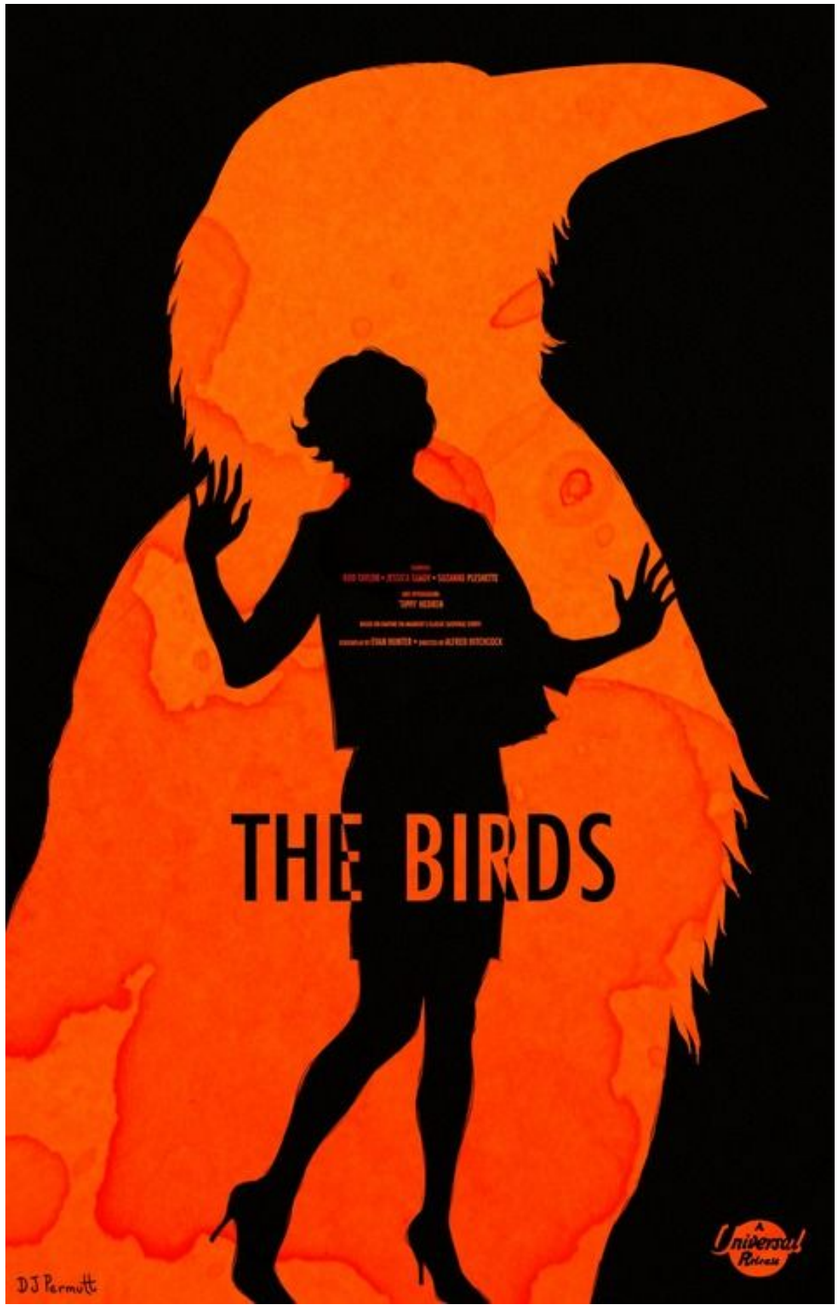
FRAME

Contrast[9]

Definition: Contrast, is the juxtaposition of design elements that strikingly differ from each other to guide user attention and action.



[9] Image sources: this slide, next slide: left, right


THE BIRDS
DJ Permutt
Universal Pictures

Balance[10]

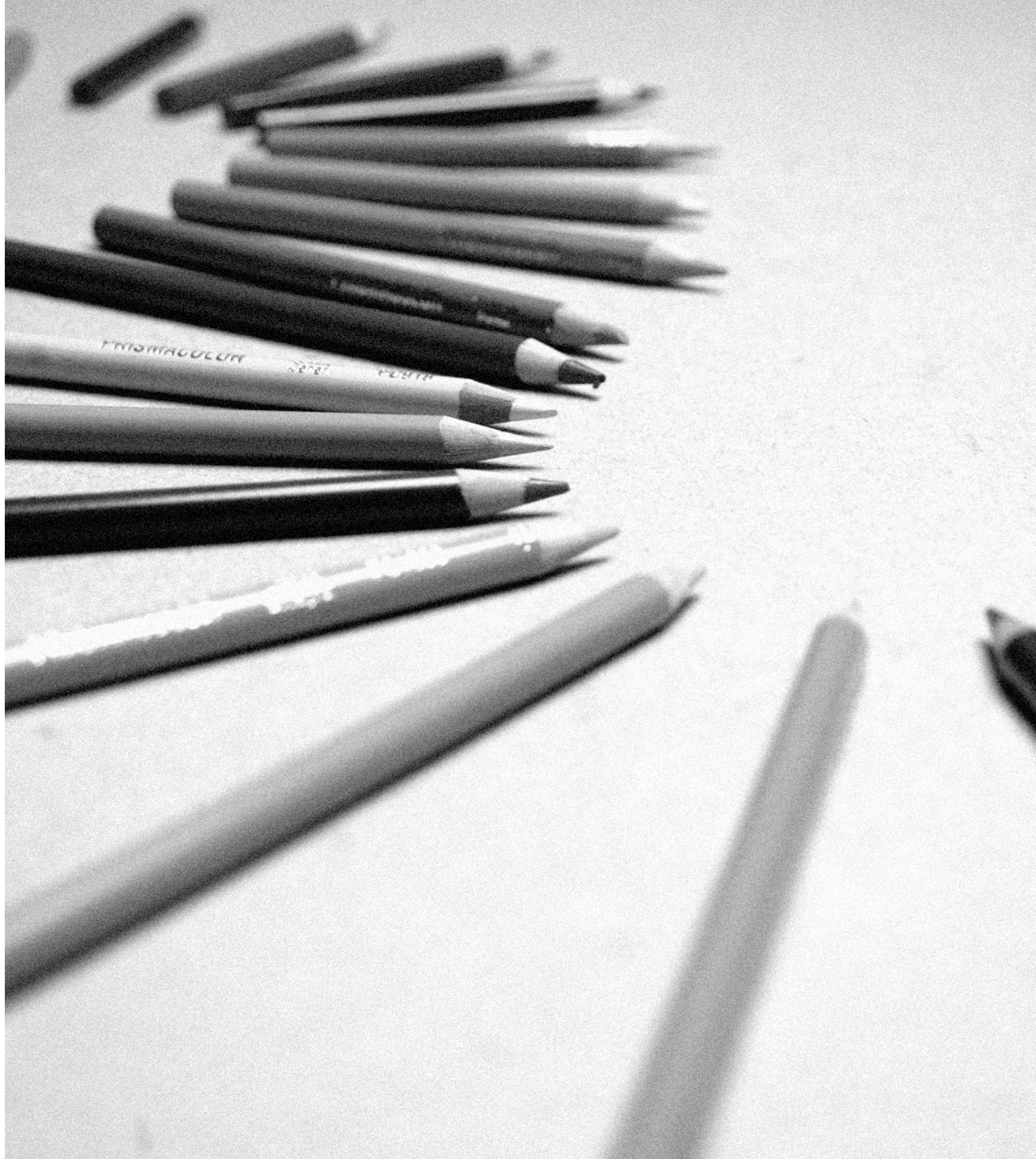
Definition: The organization of design elements on a canvas to provide a sense of visual balance or imbalance.

Pro Tip: Balance can be achieved through *symmetry* or *asymmetry*.

[10] Image source

Movement[11]

Definition: The organization of design elements in a way that suggests a particular flow on the canvas to direct the user's attention in a particular pattern.



[11] Image source

Rhythm[12]

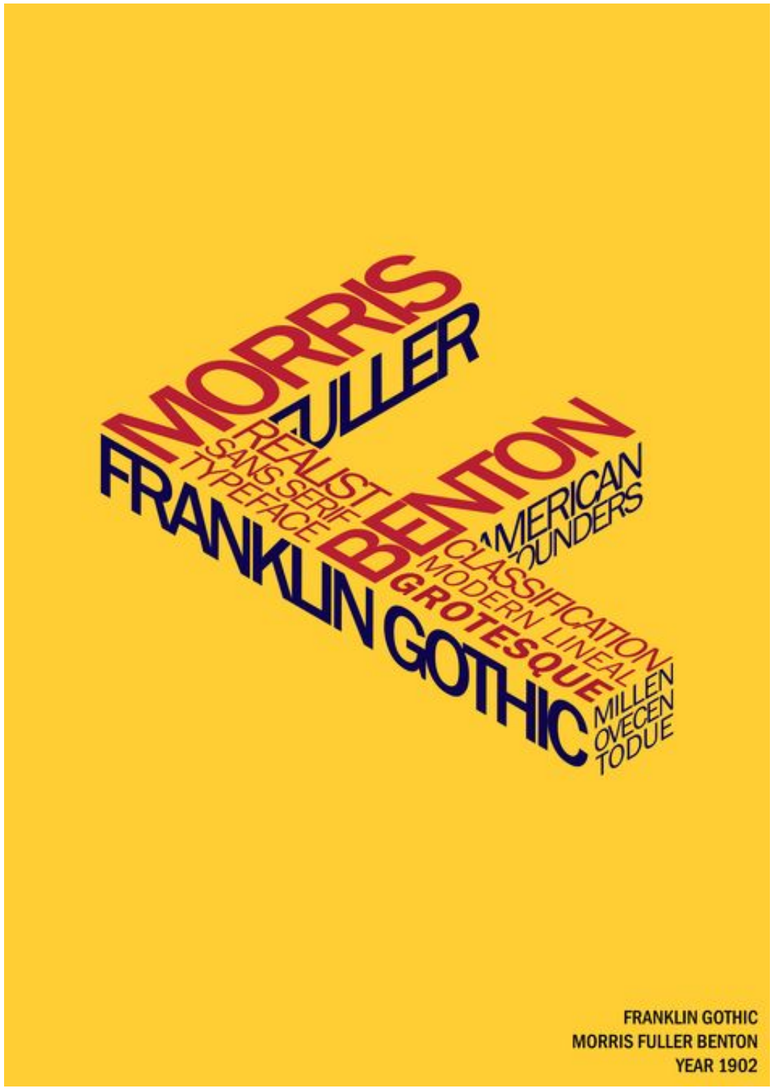
Definition: Patterned use of design elements in a way that communicates movement or order.

[12] Image source

Perspective[13]

Definition: Creating a sense of horizon and movement along the depth axis of canvas.

[13] Image sources: this slide, next slide: left, right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REALIST
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TYPEFACE
BENTON
AMERICAN
FOUNDERS
CLASSIFICATION
MODERN LINEAL
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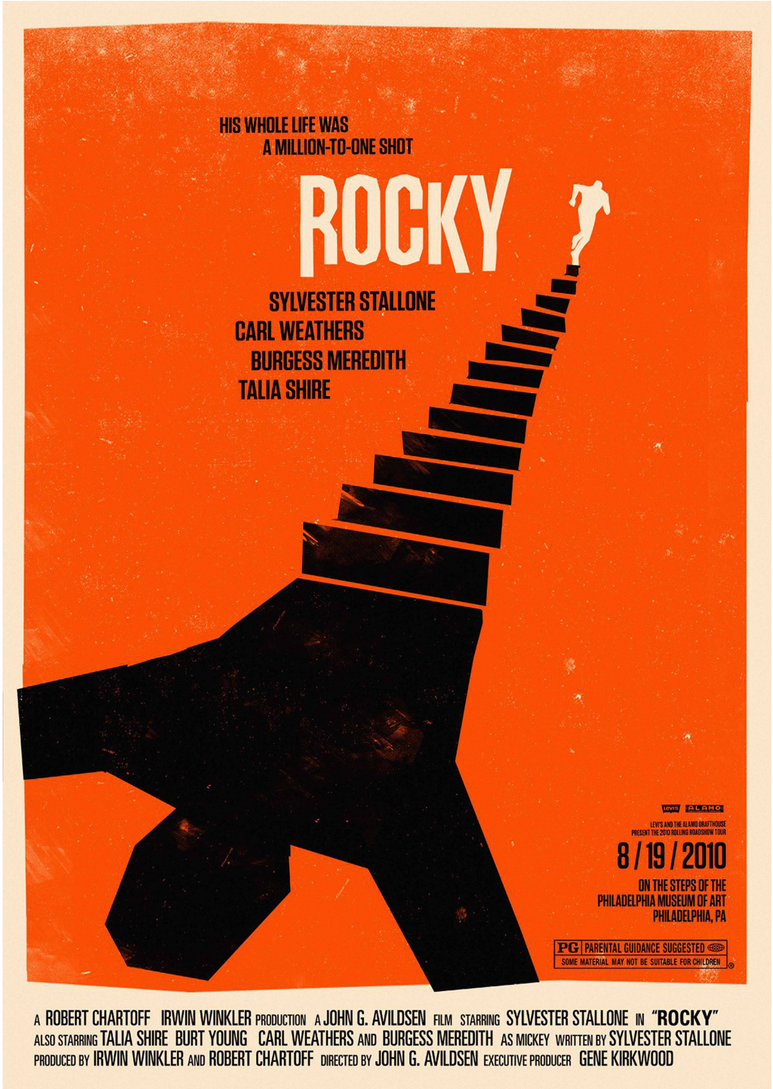
MILLEN
OVECEN
TODUE
FRANKLIN GOTHIC
MORRIS FULLER BENTON
YEAR 1902


HIS WHOLE LIFE WAS
A MILLION-TO-ONE SHOT
ROCKY
SYLVESTER STALLONE
CARL WEATHERS
BURGESS MEREDITH
TALIA SHIRE
8/19/2010
ON THE STEPS OF THE
PHILADELPHIA MUSEUM OF ART
PHILADELPHIA, PA
PG PARENTAL GUIDANCE SUGGESTED
SOME MATERIAL MAY NOT BE SUITABLE FOR CHILDREN
A ROBERT CHARTOFF IRWIN WINKLER PRODUCTION A JOHN G. AVILDSEN FILM STARRING SYLVESTER STALLONE IN "ROCKY"
ALSO STARRING TALIA SHIRE BURT YOUNG CARL WEATHERS AND BURGESS MEREDITH AS MICKEY WRITTEN BY SYLVESTER STALLONE
PRODUCED BY IRWIN WINKLER AND ROBERT CHARTOFF DIRECTED BY JOHN G. AVILDSEN EXECUTIVE PRODUCER GENE KIRKWOOD

Unity[14]

Definition: Unity reflects the holistic consistency in the use of design elements.

[14] Image sources: this slide, next slide: left, right

CHICAGO
WORLD'S FAIR
MAY 27TH NOV. 1ST
1833 A CENTURY OF PROGRESS 1933

PROCESS OF SHOES CREATION
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3. Producing
2. Designing
1. Sketching

This all sounds good. But how do we actually use these?

Some Strategies

- Create *cheat sheets*, and *checklists*
- Analyze existing designs using these tools to build visual analysis skills
- *Practice* designing using the principles
  - *Pro Tip:* Your canvas should have no elements that do not follow an overall principle

In-class Design Exercise 1

Analyze an existing page using the design elements and principles

— What elements, principles can you see in use?

— What problems do you see that can be addressed using design principles?

Make a copy of the Google Drawings template, annotate, and submit a PDF within 24 hours as *Quiz 4*.

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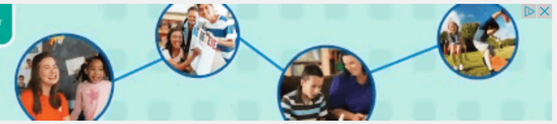

JUST IN US outlines sweeping plan to provide free COVID-19 vaccines. Get the highlights.

Breaking News

Big Ten announces football returning Oct. 23-24

Colten Bartholomew | Wisconsin State Journal

Daily COVID-19 testing, cardiac screening after positive tests are keys to conference's plan.

LOCAL EDUCATION

Lake Mills Area School District stops in-person school, activities for rest of week due to COVID-19

Jeff Richgels | 42 min ago

The COVID-19 pandemic continues to affect the start of school, with the Lake Mills Area School District the latest to halt in-person school an...

LOCAL GOVERNMENT

As COVID-19 cases surge, Gov. Tony Evers doesn't rule out extending mask order, other actions

Mitchell Schmidt | Wisconsin State Journal | 47 min ago

Evers said he is exploring the possibility of extending his statewide mask order, which is slated to expire Sept. 28.

UW-Madison threatens 'more drastic action' as experts say COVID-19 outbreak impacting broader community

David Wahlberg | Wisconsin State Journal | 2 hrs ago

UW-Madison threatened "more drastic action" Tuesday if quarantines in two large dorms don't greatly reduce COVID-19 infections, as health experts said a campus coronavirus outbreak is putting the general public at risk with flu season nearing.

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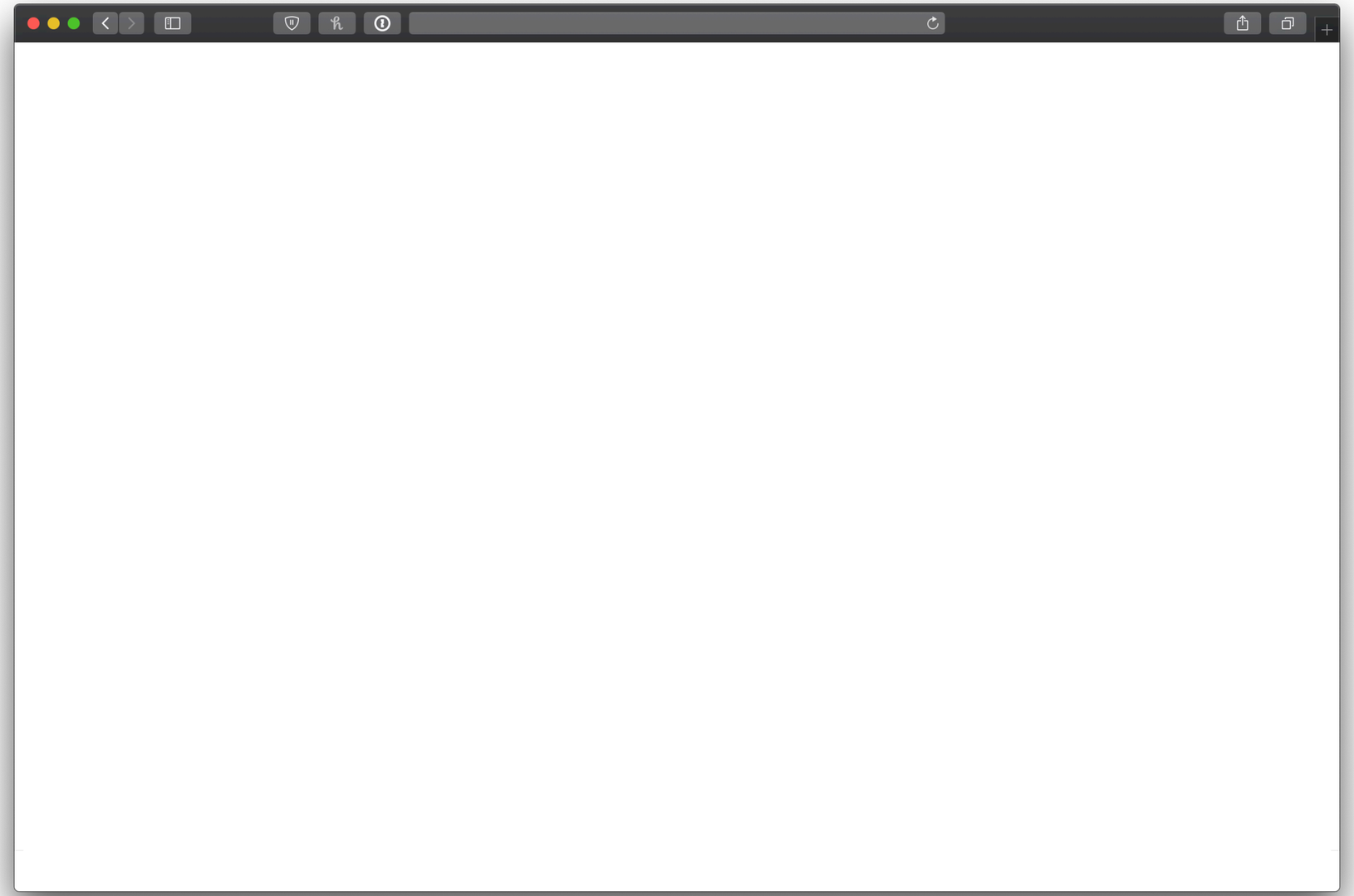
In-class Design Exercise 2[15]

Consider the *last* product you purchased online. Design a product page with the following elements:

— Product photo
— Product description, reviews, similar items
— Action buttons: choose color, add to cart, add to wishlist

Make a copy of the template, place elements & annotate with your decisions, and submit a PDF as *Quiz 4*.

[15] Image sources: this slide, elements/principles: first, second



The Elements of Design
(the tools to make art)

Line		Horizontal, vertical, diagonal, straight, curved, dotted, broken thick, thin.
Shape		2D (two dimensional)/ flat Geometric (square, circle, oval, triangle) Organic (all other shapes)
Form		3D (three dimensional), Geometric (cube, sphere, cone), Organic (all other forms such as: people, animals, tables, chairs, etc).
Colour		Refers to the wavelengths of light. Refers to hue (name), value (lightness/darkness), intensity (saturation, or amount of pigment), and temperature (warm and cool). Relates to tint, tone and shade.
Value		The lightness or darkness of an image (or part of an image).
Texture		The feel, appearance, thickness, or stickiness of a surface (for example: smooth, rough, silky, furry).
Space		The area around, within, or between images or parts of an image (relates to perspective). Positive and negative space.

The Principles of Design
(how to use the tools to make art)

Pattern		A regular arrangement of alternated or repeated elements (shapes, lines, colours) or motifs.
Contrast		The juxtaposition of different elements of design (for example: rough and smooth textures, dark and light values) in order to highlight their differences and/or create visual interest, or a focal point.
Emphasis		Special attention/importance given to one part of a work of art (for example, a dark shape in a light composition). Emphasis can be acheived through placement, contrast, colour, size, repetition... Relates to focal point.
Balance		A feeling of balance results when the elements of design are arranged symmetrically or asymmetrically to create the impression of equality in weight or importance.
Scale		The relationship between objects with respect to size, number, and so on, including the relation between parts of a whole.
Harmony		The arrangement of elements to give the viewer the feeling that all the parts of the piece form a coherent whole.
Rhythm/ Movement		The use of recurring elements to direct the eye through the image; the way the elements are organized to lead the eye to the focal area. The eye can be directed, for example, along edges and by means of shape and colour.
Unity		All parts of an image work together to be seen as a whole.
Variety		Using different elements in an image to create visual interest.

LINE

A line is a mark between two points. There are various types of lines, from straight to squiggly to curved and more. Lines can be used for a wide range of purposes: stressing a word or phrase, connecting content to one another, creating patterns and much more.

COLOR

Color is used to generate emotions, define importance, create visual interest and more. CMYK (cyan/magenta/yellow/black) is **subtractive**; RGB (red/green/blue) is **additive**.

Some colors are **warm** and **active** (orange, red); some are **cool** and **passive** (blue, purple).

There are various **color types** (primary to analogous) and **relationships** (monochromatic to triad) worth learning more about as well.

TEXTURE

Texture relates the to surface of an object; the look or feel of it. Concrete has a rough texture; drywall has a smooth and subtle texture. Using texture in design is a great way to add depth and visual interest. Printed material has actual, textile texture while screen material has implied texture.

paper leaf

created by Paper Leaf Design. www.paper-leaf.com

SHAPE

Height + width = shape. We all learned basic shapes in grade school - triangles, squares, circles and rectangles. Odd or lesser seen shapes can be used to attract attention.

There are three basic types of shape: **geometric** (triangles, squares, circles etc), **natural** (leaves, animals, trees, people), and **abstracted** (icons, stylizations, graphic representations etc).

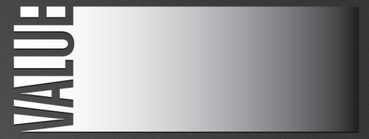
ELEMENTS OF DESIGN

quick reference sheet

SIZE

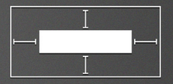
Size is how small or large something is: a small shirt vs. an extra large shirt, for example. Use size to define importance, create visual interest in a design (via contrasting sizes), attract attention and more.

VALUE



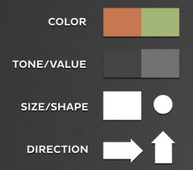
Value is how light or how dark an area looks. A gradient, shown above, is a great way to visualize value – everything from dark to white, all the shades in-between, has a value. Use value to create depth and light; to create a pattern; to lead the eye; or to emphasize.

SPACE



Space is the area around or between elements in a design. It can be used to separate or group information. Use it effectively to: give the eye a rest; define importance; lead the eye through a design and more.

CONTRAST

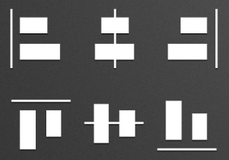


Unique elements in a design should stand apart from one another. One way to do this is to use contrast. Good contrast in a design – which can be achieved using elements like color, tone, size, and more – allows the viewer's eye to flow naturally.

To the left, you can see 4 ways to create contrast in your design.

ALIGNMENT

Proper alignment in a design means that every element in it is visually connected to another element. Alignment allows for cohesiveness; nothing feels out of place or disconnected when alignment has been handled well.



PRINCIPLES of DESIGN

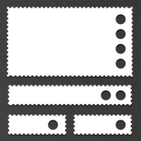
quick reference poster

REPETITION

Repetition breeds cohesiveness in a design. Once a design pattern has been established – for example, a dotted border or a specific typographic styling – repeat this pattern to establish consistency.

The short version?

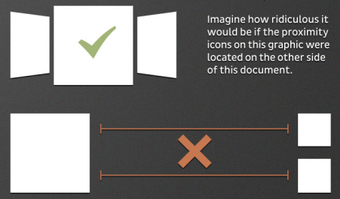
Establish a style for each element in a design and use it on similar elements.



PROXIMITY

Proximity allows for visual unity in a design. If two elements are related to each other, they should be placed in close proximity to one another. Doing so minimizes visual clutter, emphasizes organization, and increases viewer comprehension.

Imagine how ridiculous it would be if the proximity icons on this graphic were located on the other side of this document.



a handy paper leaf resource

Key Components for UX Design

Key Components for UX Design

We will focus on *type*, *color*, and *images*.

Type

Definition: Printed letters and characters of language.

Associated Concepts

— A **font** is the style in which type is created.

— A **typeface** is a font family that includes fonts of different variations that follow the same style.

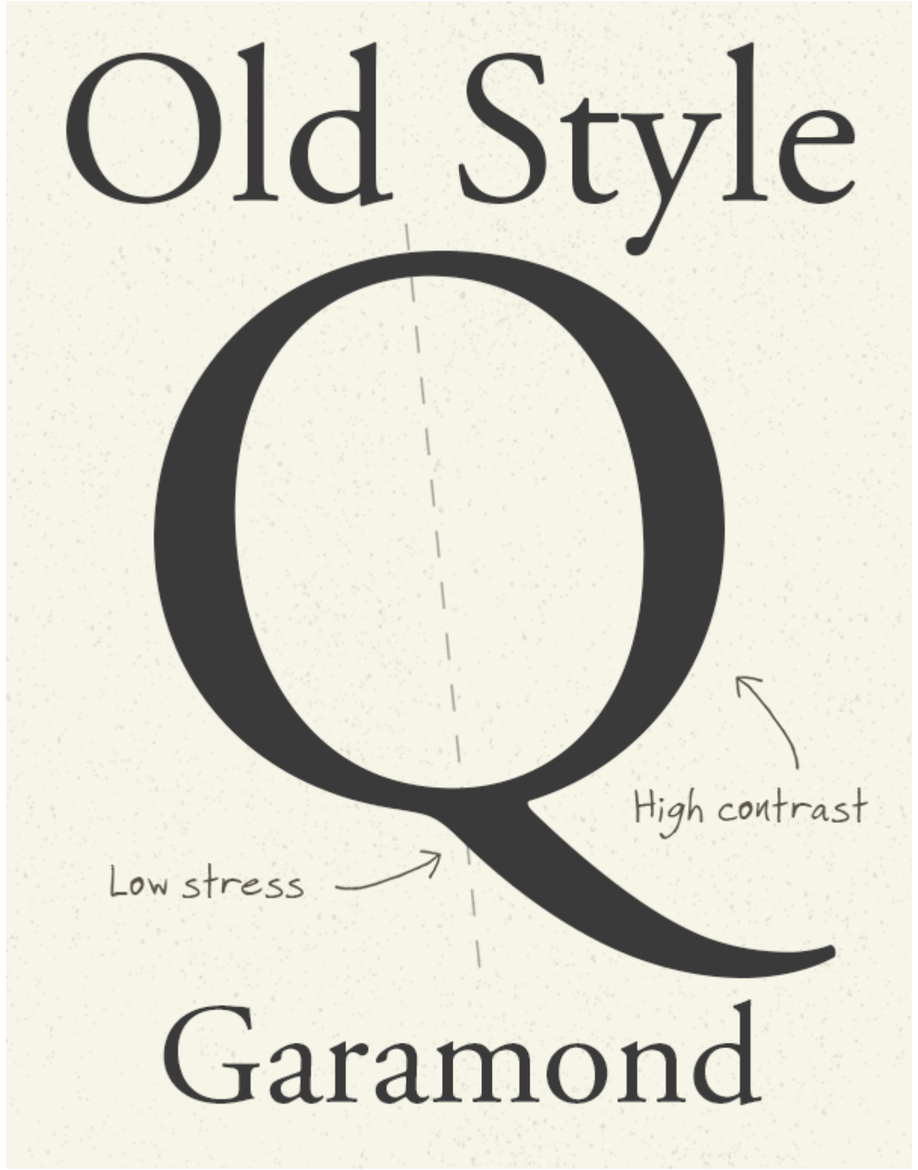
— A **glyph** is a particular character.

Categories of Typefaces

1. Old style
2. Modern
3. Slab serif
4. Sans serif
5. Script
6. Decorative

Old-style fonts

Definition: Old-style fonts have "serifs" at the tips of a glyph that taper closer to the tip.

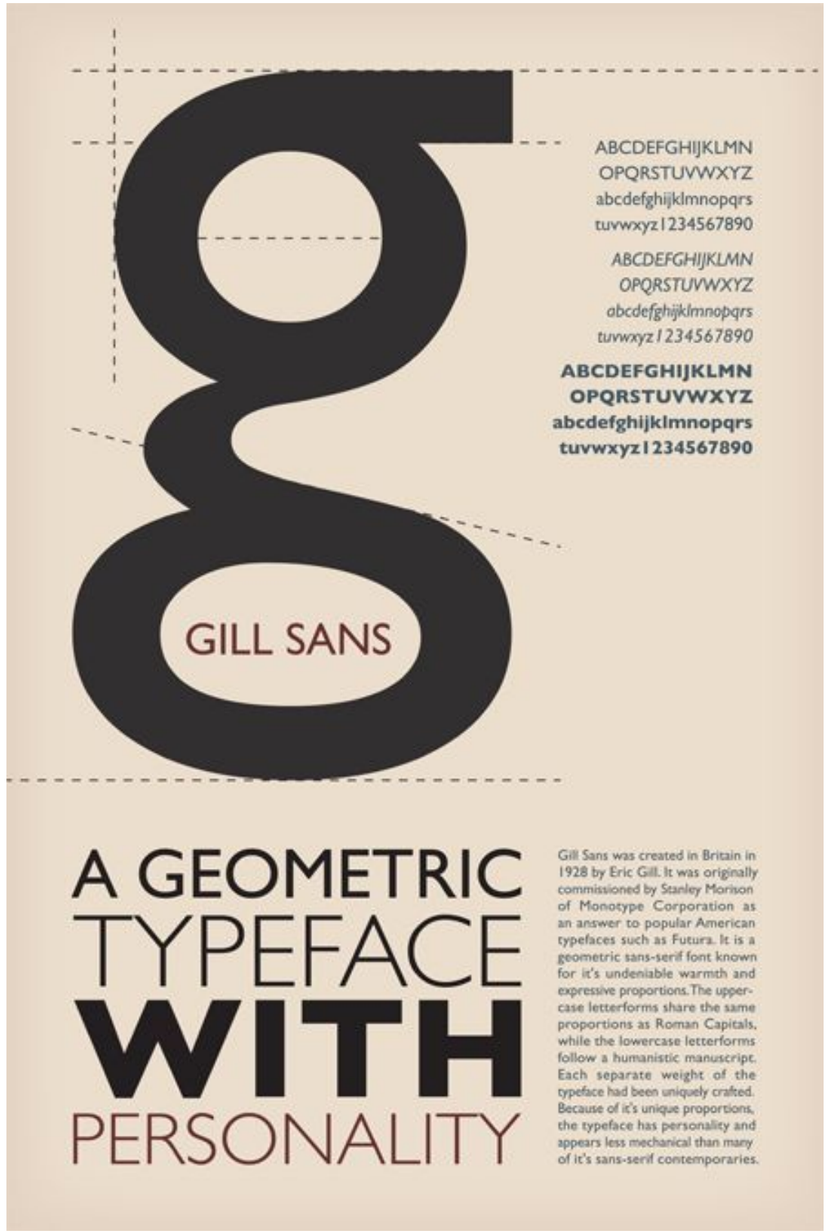


Modern & slab-serif fonts

Definition: Modern and slab-serif fonts have very thin or very thick serifs.

Sans-serif fonts

Definition: Sans-serif fonts lack the serif at the tips of the glyphs, and their strokes follow uniform weight.



Script fonts

Definition: Script fonts simulate cursive writing where glyphs connect with each other at the downstroke.

Decorative fonts

Definition: Decorative fonts are designed specifically to convey a particular context or elicit a particular feeling, e.g., "gothic."

Font parameters

— **Style variations:** bold, italic, oblique

— **Caps:** all caps, small caps

— **Weight:** extra light, light, medium, bold

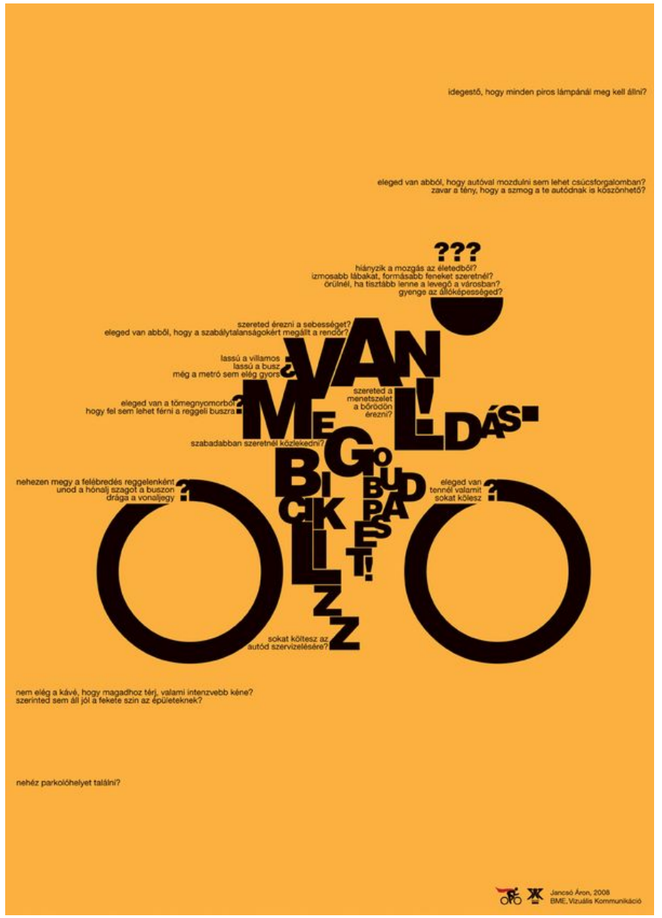
Pro Tip: Type alone can be used to achieve design principles, such as *hierarchy* and *movement*.

You'll probably see this last.

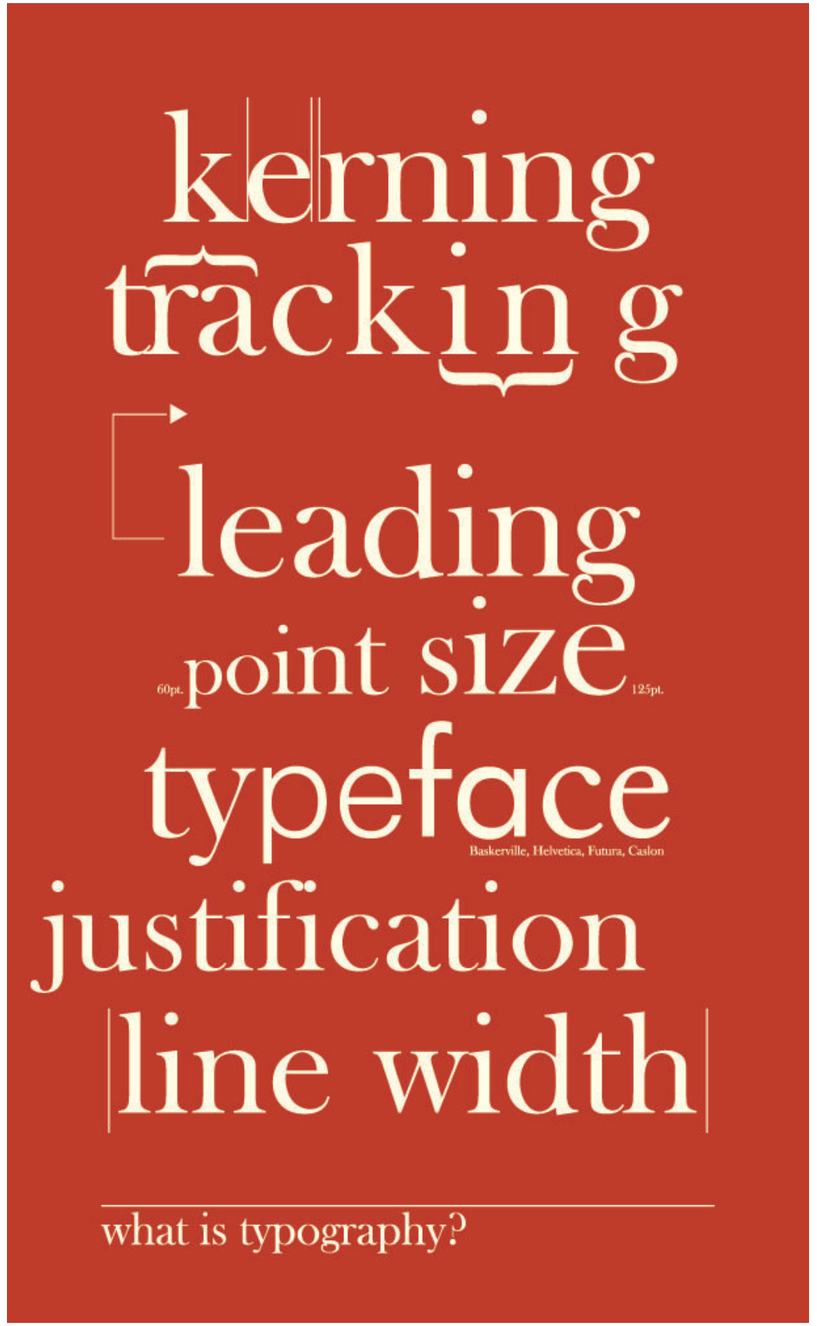
First, you'll read this.

Then, you'll read this.

And then this.



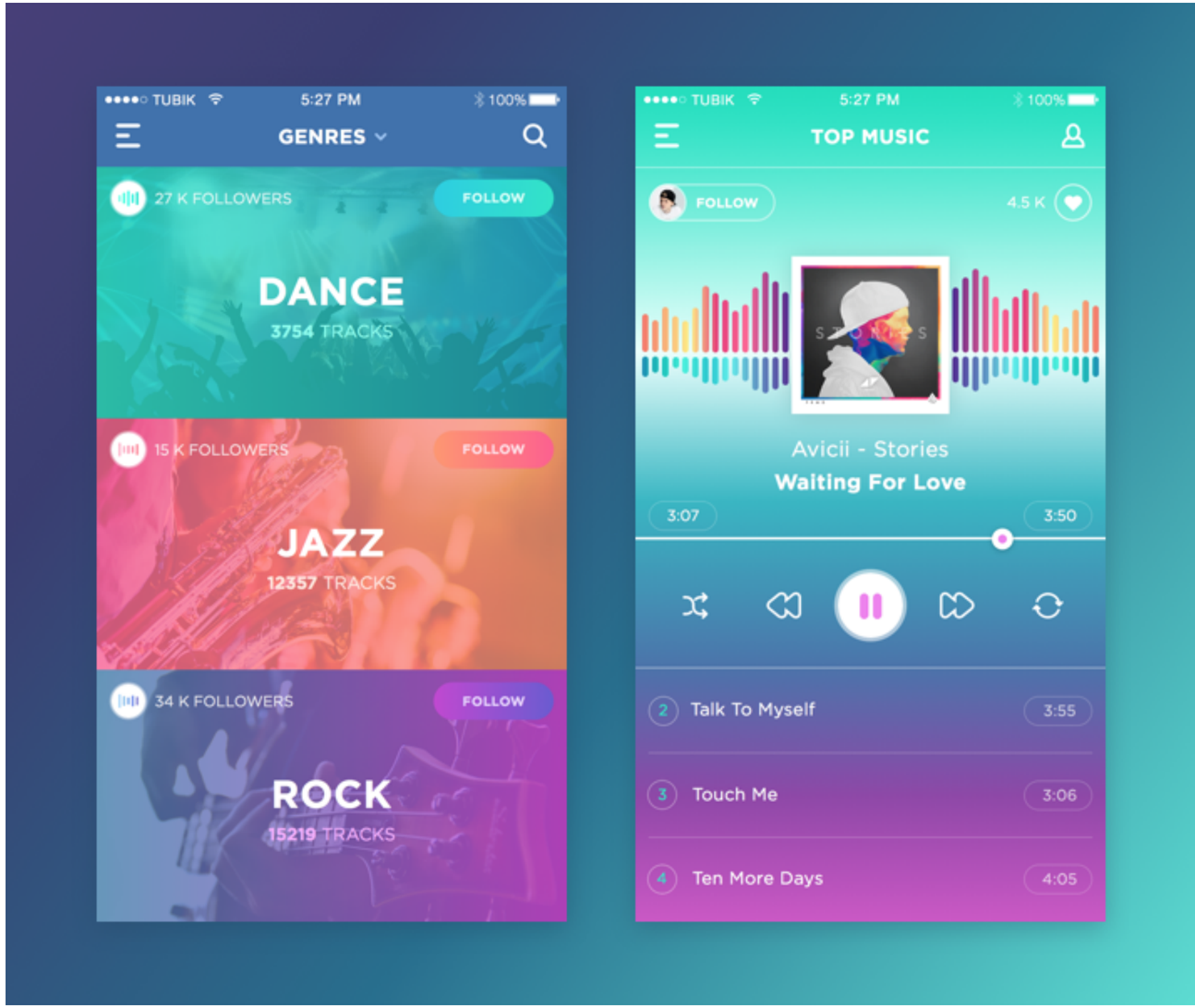
Pro tip: For good typography, become familiar with *leading*, *tracking*, *kerning*, *widows*, *orphans*, *rags*, *rivers*.

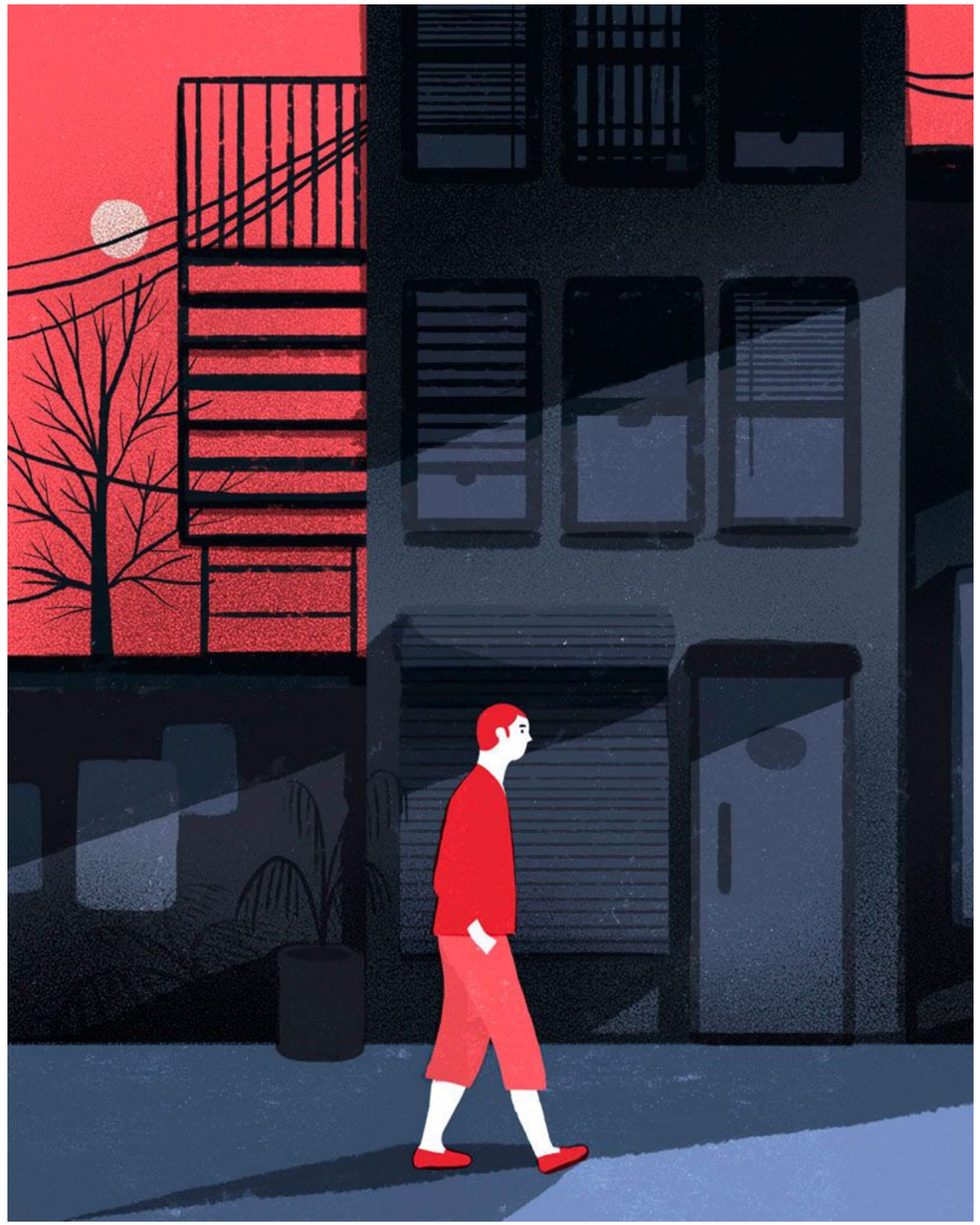


Color

Definition: Human visual perception of light reflecting from an object.

— Creates emphasis
— Organizes content
— Evokes emotion





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Digital Content Team

Client: **UNIVERSITY OF WATERLOO**

Presented by: **GEORGE ZANDER**

Our Objectives

- To develop creative, high-impact executions that reach large groups of consumers and maximize viewership.
- To deliver cost effective business to consumer communications that builds a strong consumer realtionship.

> “Don’t settle: Don’t finish crappy books. If you don’t like the menu, leave the restaurant. If you’re not on the right path, get off it.”

Our Overview

Your marketing plan should start with an executive summary. The summary gives a quick overview of the main points of the plan.

Although the executive summary appears at the beginning of the plan, you should write it last. Writing the summary is a good opportunity to check that your plan makes sense and that you haven’t missed any important points.

COLORS CONVEY

Emotions

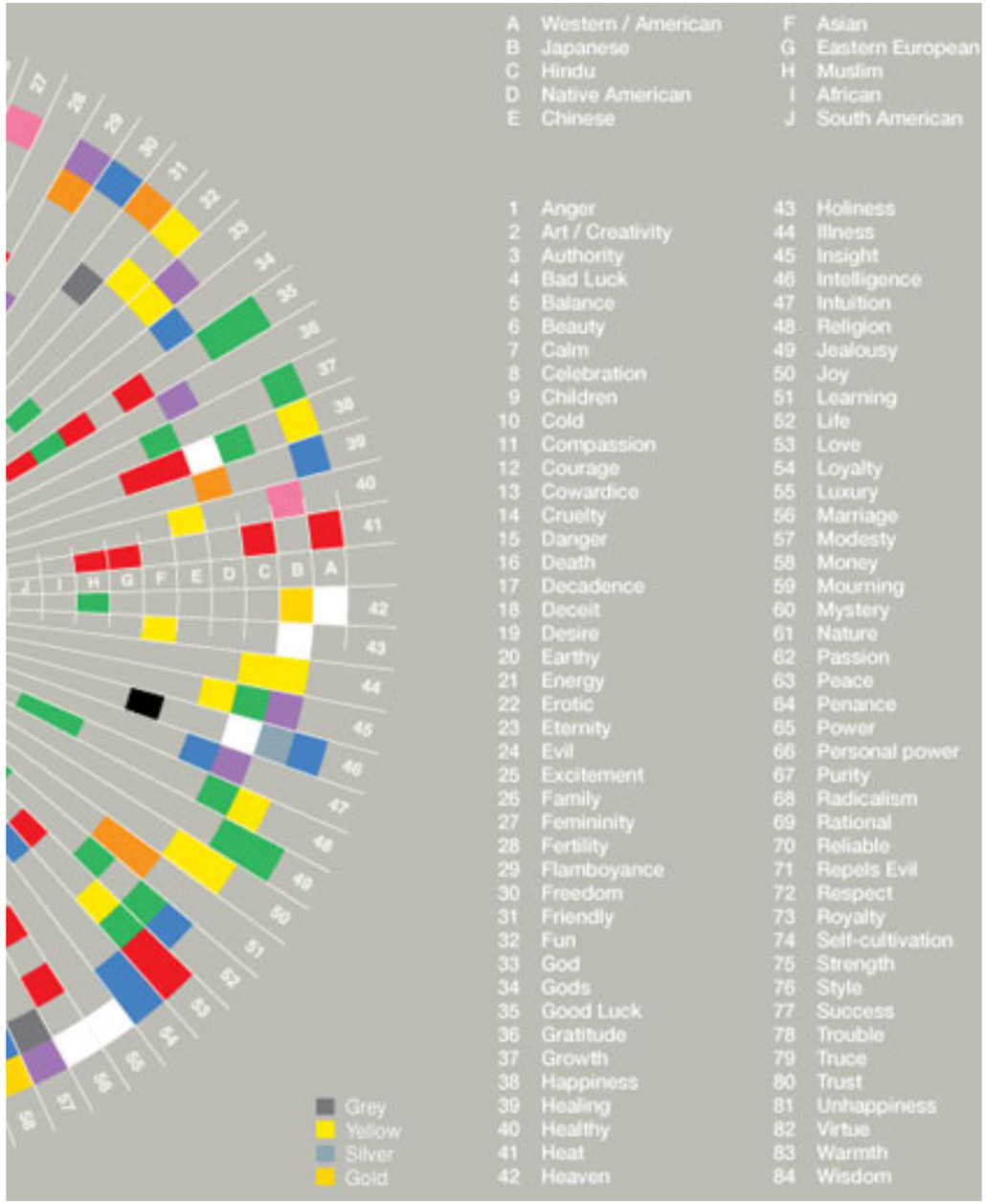
BLUE	TURQUOISE	GREEN	YELLOW
TRANQUILITY, SECURITY, INTEGRITY, PEACE, LOYALTY, TRUST, INTELLIGENCE	SPIRITUAL, HEALING, PROTECTION, SOPHISTICATED	FRESHNESS, ENVIRONMENT, NEW, MONEY, FERTILITY, HEALING, EARTH	BRIGHT, SUNNY, ENERGETIC, WARM, HAPPY, PERKY, JOY, INTELLECT
COLDNESS, FEAR, MASCULINITY	*ENVY, FEMININITY*	*ENVY, JEALOUSY, GUILT*	*IRRESPONSIBLE, UNSTABLE*

PURPLE	PINK	RED	ORANGE
ROYALTY, NOBILITY, SPIRITUALITY, LUXURY, AMBITION, WEALTH	HEALTHY, HAPPY, FEMININE, SWEET, COMPASSION, PLAYFUL	LOVE, PASSION, ENERGY, POWER, STRENGTH, HEAT, DESIRE	COURAGE, CONFIDENCE, FRIENDLINESS, SUCCESS
MYSTERY, MOODINESS	*WEAK, FEMININITY, IMMATURITY*	*ANGER, DANGER, WARNING*	*IGNORANCE, SLUGGISHNESS*

BROWN	TAN	GOLD	SILVER
FRIENDLY, EARTH, OUTDOORS, LONGEVITY, CONSERVATIVE	DEPENDABLE, FLEXIBLE, CRISP, CONSERVATIVE	WEALTH, WISDOM, PROSPERITY, VALUABLE, TRADITIONAL	GLAMOROUS, HIGH TECH, GRACEFUL, SLEEK
DOGMATIC, CONSERVATIVE	*DULL, BORING, CONSERVATIVE*	*EGOTISTICAL, SELF-RIGHTEOUS*	*INDECISIVE, DULL, NON-COMMITTAL*

WHITE	GRAY	BLACK
GOODNESS, INNOCENCE, PURITY, FRESH, EASY, CLEAN	SECURITY, RELIABILITY, INTELLIGENCE, SOLID	PROTECTION, ELEGANCE, DRAMATIC, CLASSY, FORMALITY
ISOLATION, PRISTINE, EMPTINESS	*GLOOMY, SAD, CONSERVATIVE*	*DEATH, EVIL, MYSTERY*

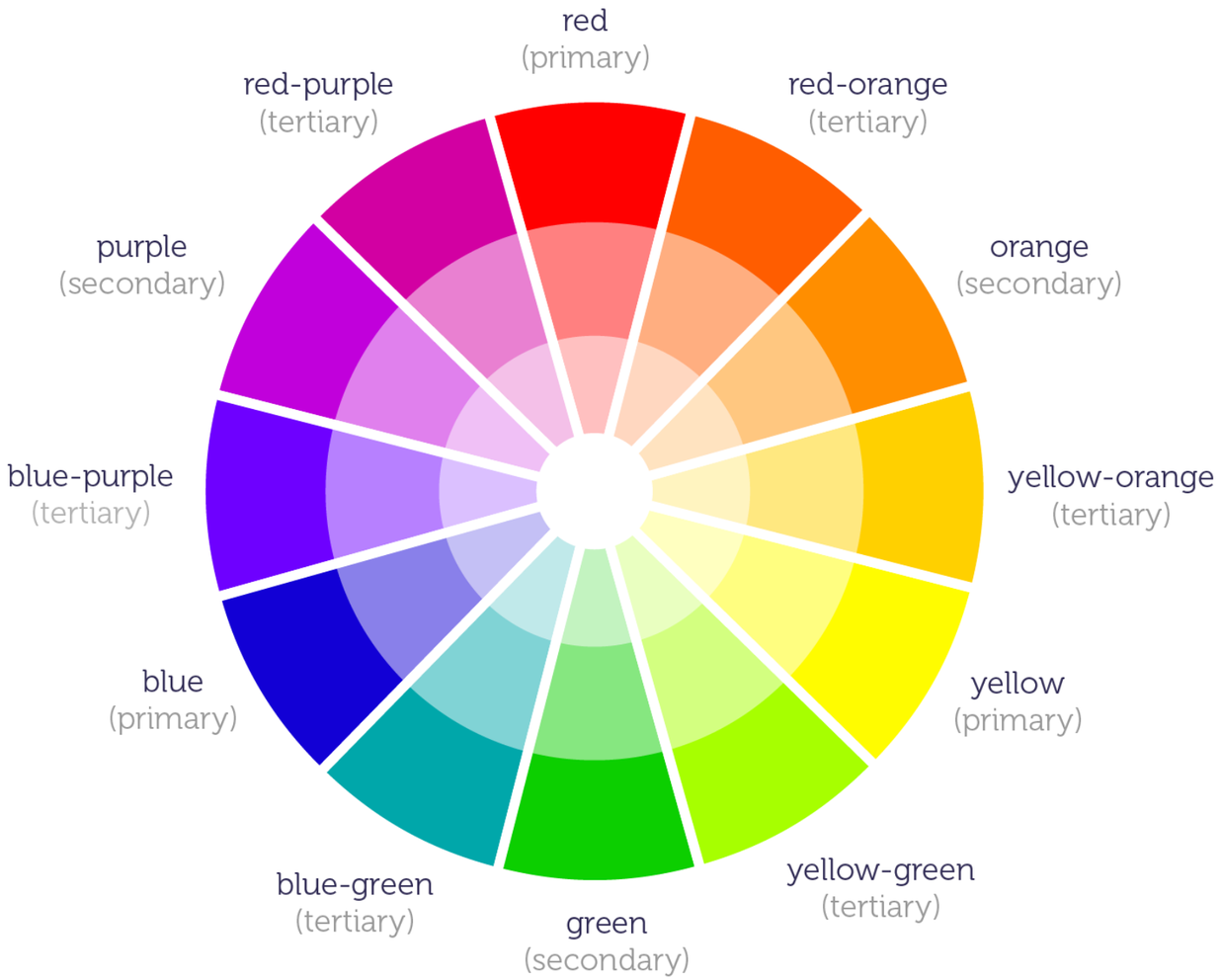
CoSchedule



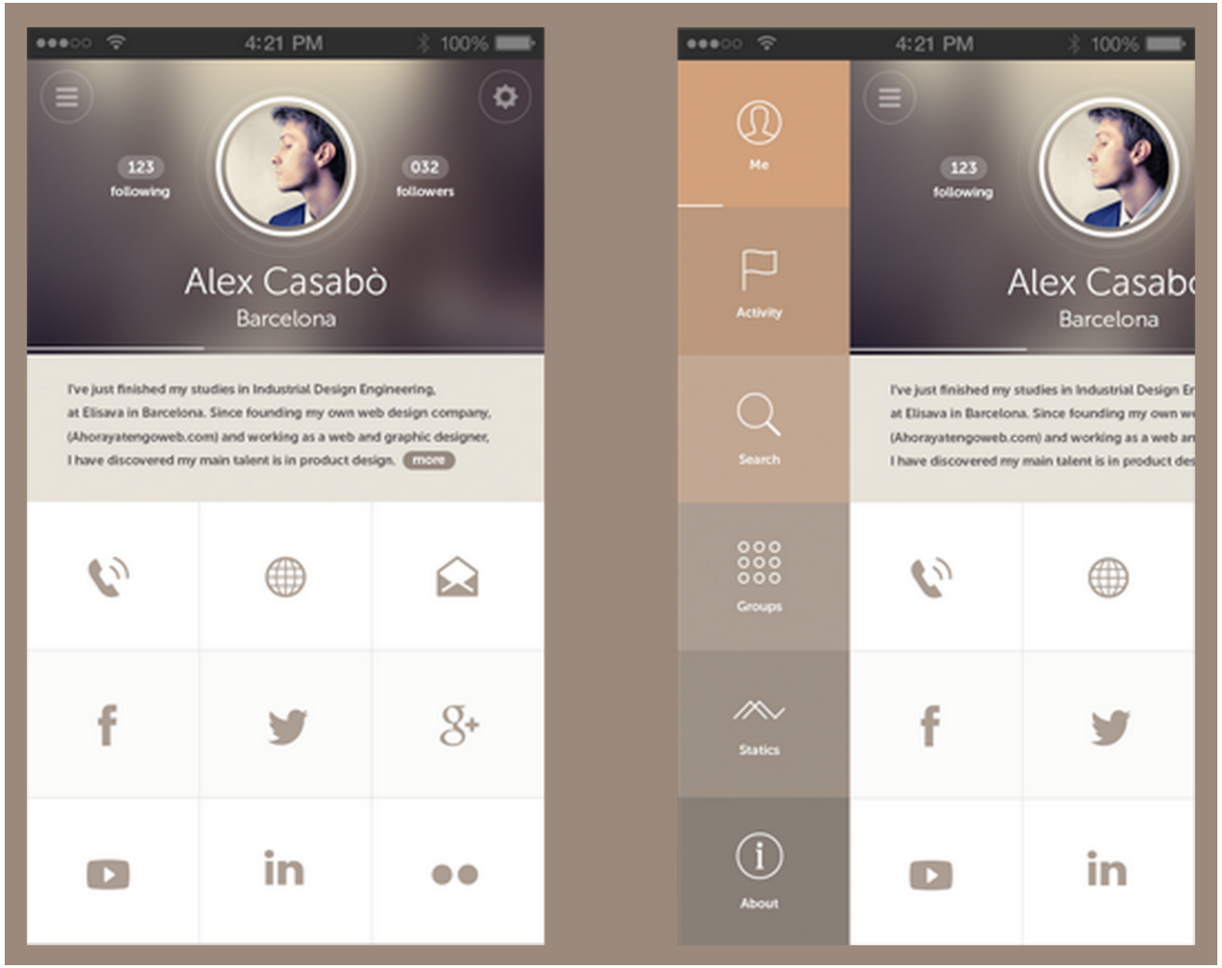
The Color Wheel

— *Primary*, *secondary*, *tertiary* colors
— *Tints*, *shades*,*tone*
— *Complementary* colors
— *Warm*, *cool* colors

The basic colors



MENU
0 Items
Coffee
Lorem ipsum dolor sit amet
Sweet
Consectetur adipisicing elit
Food
Nullam eu auctor enim
Drink
Fusce auctor est in ultricies
MENU
1 Items
DONE
Coffee
ESPRESSO
$3
CAPPUCCINO
$4
LATO
$4
Sweet
Food
Drink
dribbble.com/galshir


4:21 PM
100%
123
following
032
followers
Alex Casabò
Barcelona
I've just finished my studies in Industrial Design Engineering,
at Elisava in Barcelona. Since founding my own web design company,
(Ahorayatengoweb.com) and working as a web and graphic designer,
I have discovered my main talent is in product design.
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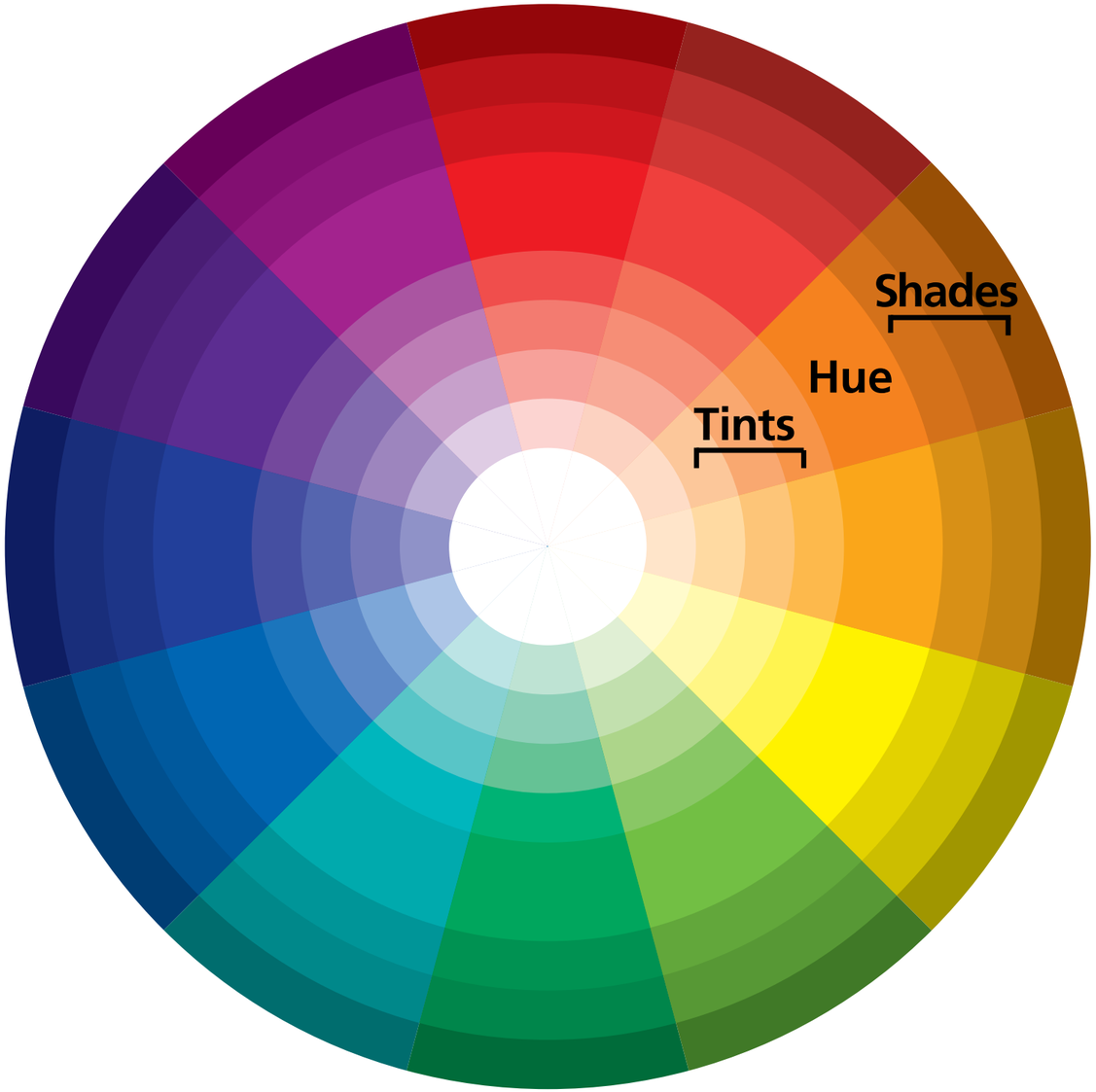


Hue

Low

High

Saturation

Light

Dark

Value

Color Palettes

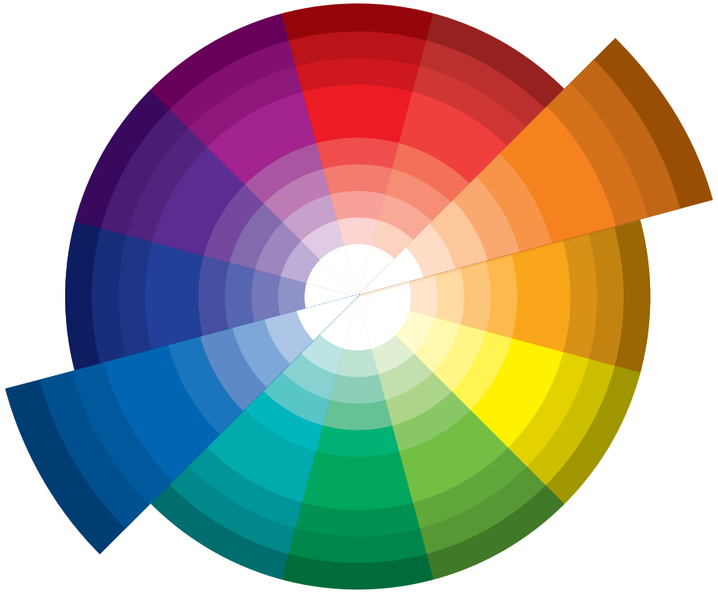
1. Analogous
2. Complementary
3. Split Complementary
4. Triadic
5. Monochromatic
6. Achromatic

ANALOGOUS

#1b75bb #00a9ac #8ccfb6

#adc5e6 #00888a #00888a

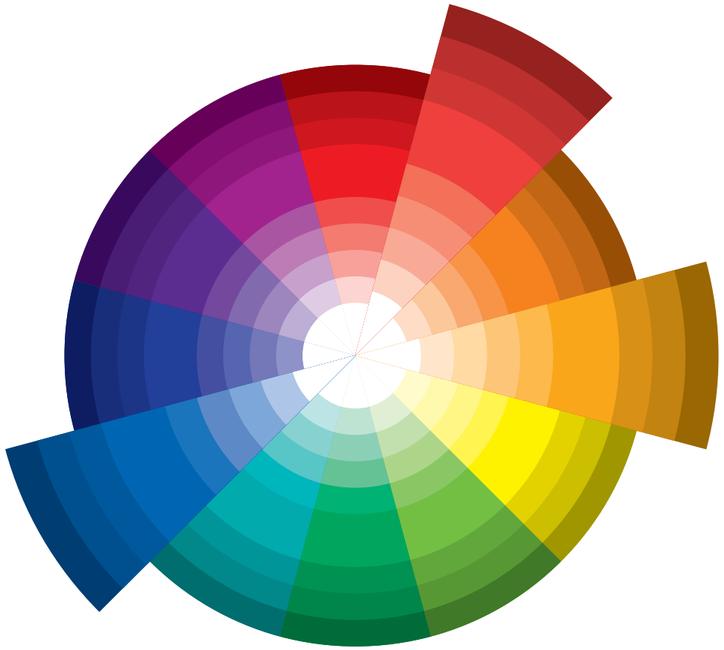
COMPLEMENTARY



#1b75bb #fcc69a #c06615

#004f8f #1b75bb #f5821f

SPLIT-COMPLEMENTARY



#004f8f #fcb94c #bb302d

#7da7d8 #ffd9a1 #f58d76

TRIADIC

#f5821f #5c2d91 #65c194

#f79447 #bbaed5 #009252

MONOCHROMATIC

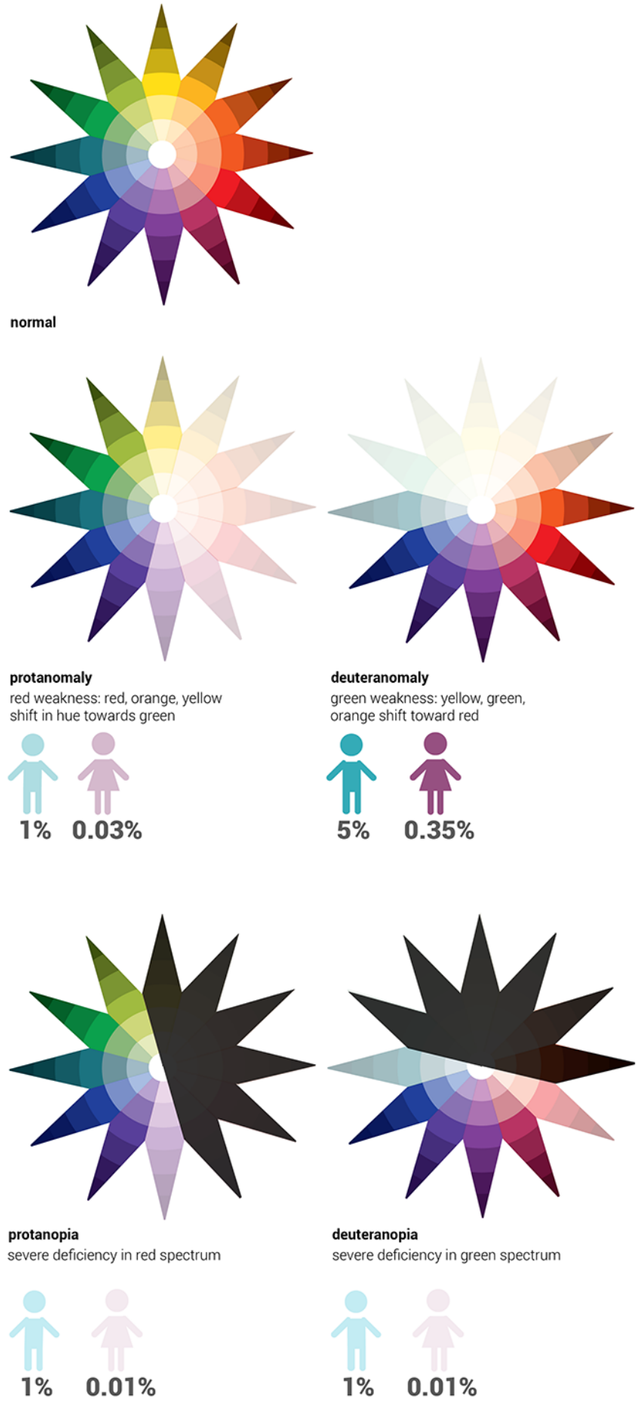
ACHROMATIC

Color Vision Deficiencies

— Affects 8% of males, 0.5% of females

— Consider alternatives
  - *Intensity* vs. *hue* for emphasis
  - *Size* of colored elements
  - *Proximity* of similar colors

— Use ***tools*** to check designs



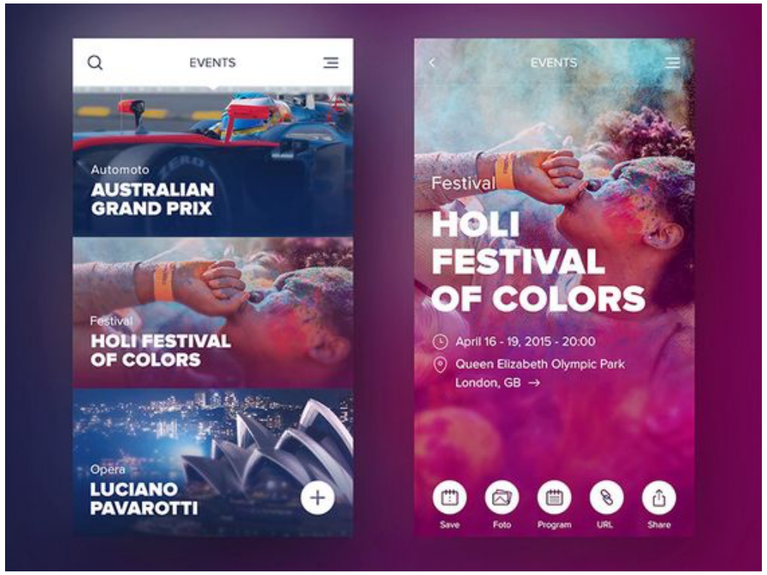
Images

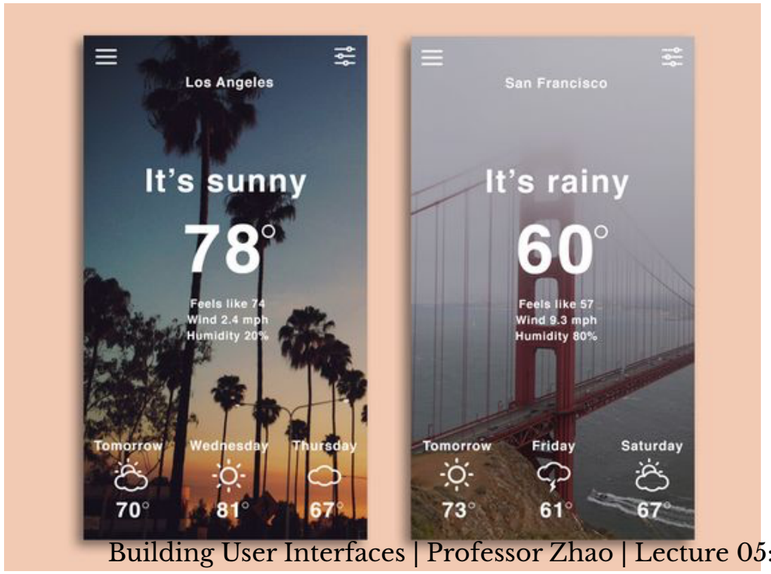
Definition: Photographs, illustrations, three-dimensional art, silhouettes, icons, dingbats, infographics, and simpler shapes that convey rich information or context.

TABLE 5.1. Graphic types to use for varied goals.

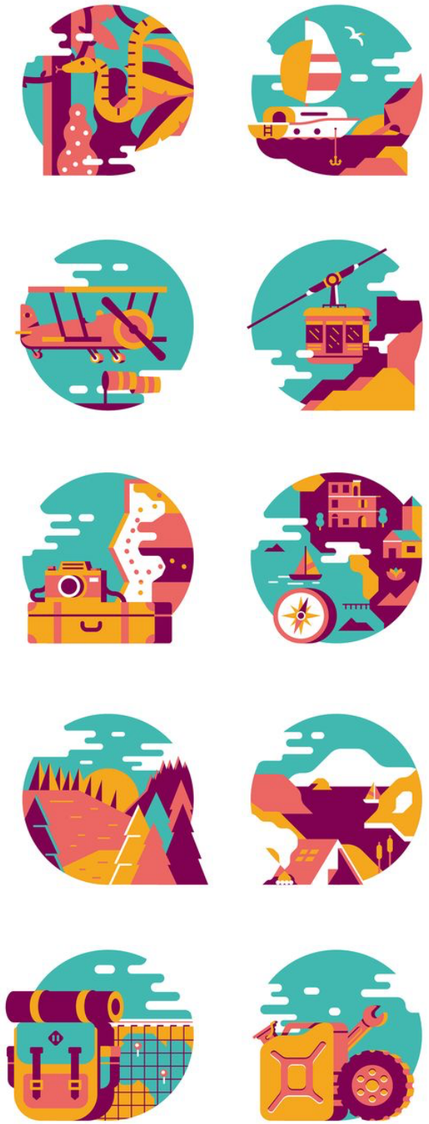
Instructional or Communication Purpose	Consider These Graphic Types
Depict concrete objects	Photograph 3-D graphic Illustration Clip art (particularly in diagrams and as game elements)
Tell a story or provide a scenario	Sequence of photographs Sequence of illustrations Timeline
Persuade an audience	Sequence of photos or illustrations to tell a story Photographs that evoke emotions Visualization of statistics and data
Explain unfamiliar or complex concepts and theories	Visual metaphor Diagram showing connections
Demonstrate a procedure	Show the steps in a sequence of photos or illustrations Flow chart Series of screen captures for software simulation
Explain a process	Diagram the stages or operations of the process Icons or simple illustrations to represent each component
Point out something specific	Arrow or pointed shape Highlight Outline of a circle
Depict components of a system	Illustrated object with labels Diagram of the structure
Make comparisons	Bar graph Pictograph Line graph with multiple lines Table (when specific values are important)
Demonstrate trends in data	Line graph Scatter plot
Organization of information	Various chart types (hierarchical, radial, etc.) Concept map
Demonstrate motion without animation	Show object moving along a path Illustrations with motion lines Illustrations with arrows or dashed lines depicting movement
History or changes over time	Timeline (these don't have to be arrows) Sequence of photos or illustrations

RASTER GRAPHICS

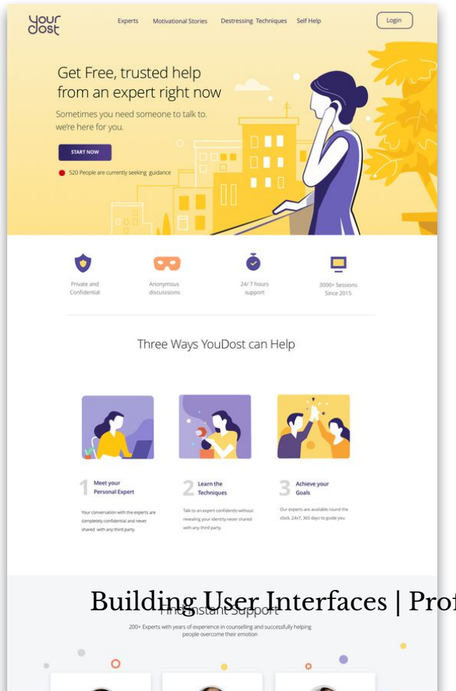




VECTOR GRAPHICS



◀More Realistic
Less Realistic▶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Destressing Techniques
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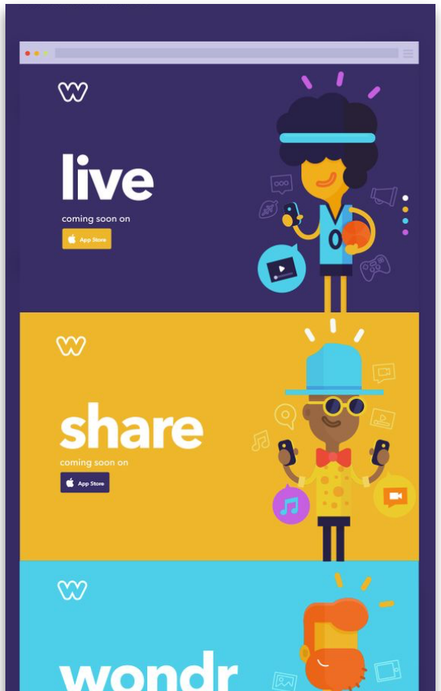
Get Free, trusted help from an expert right now
Sometimes you need someone to talk to. we're here for you.
START NOW
520 People are currently seeking guidance
Private and Confidential
Anonymous discussions
24/7 hours support
3000+ Sessions Since 2015
Three Ways YouDost can Help
1 Meet your Personal Expert
2 Learn the Techniques
3 Achieve your Goals
Instant support

SNOW
-6 上海 SHANGHAI
23:08 SHANGHAI DEC 31
-6°
SANDSTORM
-3 北京 BEIJING
23:08 BEIJING DEC 31
-3°
SUNDAY
2 SUZHOU
23:08 SUZHOU DEC 31


live
coming soon on
App Store
share
coming soon on
App Store
wondr

3 Quizzes

Complete the quizzes within 24 hours