CH. 4 WHAT THE BRAIN SEES

- COLOR, FORM, DEPTH AND MOVEMENT
COLOR

- Trichromatic Theory –
  - 3 kinds of photoreceptors in the eye – each sensitive to a particular color

- Color Perception –
  - A result of mixing red, green, and blue by photoreceptors
Color Basics

- Every color composed of 3 primary colors –
- Red, green, and blue – not red, yellow and blue
- Equal amounts of red, green and blue light will produce white light
Primary Colors - Red, Blue, and Yellow
Secondary Colors - Orange, Green, and Violet
Complementary colors are opposite on the color wheel. Red and green, yellow and violet, blue and orange, are the three simple pairs of complementary colors. These colors always go well with each other, hence the term complimentary.

- Contrasting schemes use shades from opposite segments on the color wheel. Contrasting bold primary and secondary colors - red and green, yellow and violet, or blue and orange - will create a very dramatic look. Contrasting colors can also be created using pastel shades, also found as opposites on the color wheel.
Intermediate Colors - The Remaining Six
Half of the color wheel--from red to yellow-green--is considered WARM. These colors appear as if they are advancing toward you, appearing nearer. They can help create a warm, cozy atmosphere.
The “Temperature” of Color

From green to red-violet--is considered **Cool**. These colors appear to recede, as though the space is expanding.

*Green and violet may appear to advance or recede, depending on the colors used with them. So some interior designers consider them neutrals that can complement any color scheme.*
Triad Colors

A combination of three colors that are equally spaced on the color wheel is known as a TRIAD.

*These combinations can create a bold, yet balanced decorating palette.*
**Hue:** Another name for color

**Value:** the lightness or darkness of a color

**Intensity:** the brightness or dullness of a color

**Tint:** color + white, resulting in a lighter value

**Tone:** color + grey, resulting in a darker value

**Shade:** color + black, delivering the darkest versions of color
3 Ways of Discussing Color

- Objective – scientifically measurable
- Comparative – colors compared or linked to outside source – red=blood or blue=sky
- Subjective –
  - Lighter colors viewed as soft & cheerful
  - Darker colors have a harsh or moody emotional quality
Cross-culturally, there are some generalities that can be made about the human response to color, largely because of the psychological associations and physiological reactions to color that are universal. For example, why does red always provoke attention? Why is it that in every spoken language, it is the first color to be named after black and white?

The psychological association that goes back to the beginning of time is the association of red to blood and fire, two very important elements that are necessary to sustain life.
A chemical message is sent to your adrenal medulla and releases the hormone epinephrine. This alters your body chemistry, causing you to breathe more rapidly, increases your blood pressure, pulse rate, heartbeat, your flow of adrenaline, GSR — Galvanic Skin Response (a fancy term for perspiration and the basis of lie detector tests). These reactions are physiological, and we have no control over the effect. As a result, red is indelibly imprinted on the human mind to connect with excitement and high energy.

Warm tones are known as high-arousal colors and red, in particular, creates the highest arousal threshold in humans. So from negligees to sports cars to food, red stimulates all kinds of appetites — it is true that red literally can turn you on. In print or at point of purchase, red is virtually un-ignorable. It has an aggressive nature, commanding attention and demanding action. The consumer responds to wine tones as rich, refined, expensive; they see the shade as more authoritative, mature, lush, opulent, and elegant than vivid red.
Impact of Black

- Indelibly imprinted in the human mind, black is most closely associated with...
  - the **magical mysteries of night**. That impenetrable, after dark, powerful essence of black is seen in every product category as the **most sophisticated and highly stylized shade**. The consumer sees black as the most **powerful, dramatic, elegant, and expensive presence**. This extends into food packaging, where the consumer will pay more for this “gourmet image.”
In recent years, attitudes about black have changed more than those about any other color, with positive associations outweighing the negative. In some cultures, black is still associated with mourning; however, that somber attitude has given way to sophistication as more people identify it with black limos, polished granite, expensive leather, and many other upscale looks that give black an elegant caché.

Black gives the message of strength wherever it is used. In consumer products, this is a definite plus wherever power, potency, longevity, or weight is implied. Black will always seem to weigh more than other colors, even though, in fact, it may not.
In order to establish an immediate message, color combinations should contain visual color cues that trigger specific responses — those that best express the intention and/or purpose of the product or service. As a general rule of thumb, there should be a rank order of dominant color, subordinate color, and color accents.
Sociological Uses of Color

☐ Cultural heritage, training and personal experiences give colors special meanings
  ■ Western brides wear white yet in China they wear red
  ■ In China white is worn in funerals as a sign of mourning
  ■ Puerto Rico – purple is a sign of death?
Dominant Colors and Responses

- **Light Pink:** Romantic, Soft, Sweet, Tender, Cute, Babies, Delicate
- **Terracotta:** Earthy, Warm, Wholesome, Country, Welcoming
- **Red Purple:** Exciting, Sensual, Flamboyant, Creative, Unique
- **Light Blue:** Calm, Quiet, Peaceful, Cool, Water, Clean
- **Bright Green:** Fresh, Grass, Irish, Lively, Spring, Foliage, Outdoorsy
- **Charcoal Gray:** Professional, Classic, Expensive, Sophisticated, Solid, Enduring, Mature
- **Silver:** Classic, Cool, Expensive, Money, Valuable, Futuristic
Color Factoids

☐ When two variations of the same color, one light and one dark, are placed next to each other, the lighter shade will seem lighter, and the darker shade will appear to be darker.

☐ A lavender shade will appear to be paler against a purple background.

☐ Confining a color to a particular feature or usage will give greater emphasis to that feature. Repeating a color too many times can create a distraction or dilution of attention.
Impact of White

☐ Clean
☐ Inspiring
☐ Independent
Form

- Defines the outside edges of an object
  - 3 components
    - Dots
    - Lines
    - Shapes
Dots

- A dot anywhere in a frame demands attention
- Center – becomes the hub (as in wheel)
- Off to a side – creates tension
- 2 Dots – also creates tension – as it divides viewers attention
- 3 or more Dots will promote the viewer to connect them
- Hundreds of Dots grouped can form complex pictures
Lines

- Composed of dots without space

- Lines are horizontal, vertical or diagonal
Lines & Implications

- Horizontal lines low on the frame promotes the viewer to sense growth

- Horizontal line high on the frame promotes confinement

- Vertical lines bring the eye of the viewer to a halt (a stopping place)
Lines – Horizontal lines tend to send message of rigidity – in the middle of page transmits balance
Lines – in the bottom transmits room to grow
Lines – at top can be constricting
Lines & Implications

- Diagonal Lines
  - Most restful – from top right to lower left corner
  - Any diagonal line – moves the eye in the line’s direction
  - Several diagonal lines – create nervous dynamic energy
Lines & Implications

- Curved lines – imply movement – playfulness – and soften the content of the message

- Thick/dark lines – strength and confidence

- Thin/light lines – delicate and timid
Shapes

- Combination of dots and lines into patterns
- Figures that sit on the plane of the visual field without depth and define the outside edges of objects

- 3 basic shapes
  - Parallelograms
  - Circles
  - Triangles
Shapes to Delineate Form with Feelings
Parallelograms

- 4 sided figure with opposite sides that are parallel and equal in length
- Squares and Rectangles
  - **Square**: Unsophisticated, Balanced, Sturdy, Straight-forward
  - **Rectangle**: opposites of above

- Squares and rectangles are the most common shapes in man-made objects.
- Because so much of the man-made world is composed of these shapes, squares and rectangles are familiar, safe, and comfortable, but their uniformity can also create a conservative or rigid effect.
- They can be used to suggest stability and truth. Squares are considered to be one of the most honest shapes, even more than other types of rectangles, because of their mathematical and visual simplicity.
Circles

- Always associated with endless rhythmic patterns or time
  - Eternity
  - Clear beginnings or endings
- The viewer’s eye will immediately be drawn to this shape
- Circles suggest infinity, completion, softness, and security.
- Many ancient cultures considered the circle to be a perfect and even a sacred form. Circles are useful for focusing attention because of the closure of the shape, and because they are less common in man-made objects than shapes with straight lines.
  Ellipses share the psychology of circles, but to a lesser extent depending on the how close they are to a true circle.
The most dynamic and active

- Equilateral & Isosceles

- Equilateral – serene mood symmetrical balance

- Isosceles draws power from its point and not its base – thus the eye will be drawn to its point

Triangles suggest action because of movement from the corners “pointing” in a direction.

- Equilateral triangles are the most stable of the triangle shapes because all sides and angles are the same.

Triangles can suggest growth or “reaching the top.”
Depth

- Related to volume because it exhibits the illusion of weight and mass
- 5 forms
  - Cube
  - Cylinder
  - Sphere
  - Pyramid
  - Cone
Volumetric Forms

- Cube – composed of six squares
- Cylinder – Rectangle with two circular shapes on each end
- Sphere – 2 circles cut in half and joined at the middle
- Pyramid – 4 triangles
- Cone – a circular shape and a triangle combined
8 Depth Cues

Depth is related to volume – when a basic shape has volume it exhibits the illusion of weight & mass

☐ Space
☐ Size
☐ Color
☐ Lighting
☐ Textural gradients
☐ Interposition
☐ Time
☐ Perspective
Space

- The frame in which image is located
  - Natural scene, the space depends on how close you are to the subject.
Size

- Size can help in the illusion of depth perception
  - Size is closely related to an object’s distance
  - Size also related to scale and mental attention
Color

- Warm colored objects appear closer than cool colored objects

- High contrast pictures seem closer
Lighting

- Differences in light intensities can communicate depth

  - The prevalence of shadows indicates an object’s volume and gives the viewer another depth cue
Textural Gradients

- The ripple effect seen in a still pond and the ridges from wind against a sand dune

  - Ridges appear closer together as the viewer moves away
Interposition

- The placement of an object in front of another to give the illusion of depth

- A near object will appear in the foreground – a far object appears in the background
Time?

- Culture that places more importance on past events will place close objects on the same level as distant objects.

- Cultures that emphasize long-term planning and the future exhibit images without any recognizable depth perceptual dimensions.
Perspective

- Illusionary Perspective
  - Achieved through size, color, lighting, interposition, and linear perspective

- Geometrical Perspective
  - Near objects in the lower portion of the picture – objects further away higher in the frame

- Conceptual Perspective
  - Multiview & social
    - Multiview – the viewer sees many sides at the same time
    - Social – the most important person is larger or appears larger than others
Movement

- Real Movement
  - Not mediated movement

- Apparent Movement
  - Motion pictures portray apparent movement as the eye will blur the lapse between frames that move at least at twenty four frames/second

- Graphic Movement
  - Where the eye will follow a picture in either left to right or up and down – and thus the illustrator can take advantage of this to communicate movement

- Implied Movement
  - Through high contrast line placement or type of line, or the use of complementary colors, wavy patterns, etc. may be perceived as motion, as if powered by an unseen light source