

Prebles'

ARTFORMS

PATRICK
Frank

eighth EDITION



VISUAL ELEMENTS

Remember that a picture—before being a war horse, a nude woman, or some anecdote—is essentially a plane surface covered with colors assembled in a certain order.

MAURICE DENIS¹

Painter Maurice Denis might have gone on to say that the *plane*, the two-dimensional picture surface, can also be covered with lines, shapes, textures, and other aspects of visual form (visual elements). Sculpture consists of these same elements organized and presented in three-

dimensional space. Because of their overlapping qualities, it is impossible to draw rigid boundaries between the elements of visual form.


For example, a glance at Swiss artist Paul Klee's *LANDSCAPE WITH YELLOW BIRDS* reveals his playful interpretation of the subject. Fluid, curving *lines* define abstract *shapes*. Klee simplified and flattened the solid *masses* of natural plant and bird forms so that they read as flat shapes against a dark background *space*. Such abstraction emphasizes the fantastic, dreamlike quality of the subject. The whimsical positioning of the upside-down bird suggests a moment in *time* without *motion*. *Light* illuminates and enhances the yellow *color* of the birds and the unusual colors of the leaves. Surface *textures* provide further interest in each area of the painting.

This chapter introduces the visual elements identified in *LANDSCAPE WITH YELLOW BIRDS*: line, shape, mass, space, time, motion, light, color, and texture. Not all these elements are important, or even present, in every work of art; many works emphasize only a few elements. In order to understand their expressive possibilities, it is useful for us to examine—one at a time—some of the expressive qualities of each of the aspects of visual form.



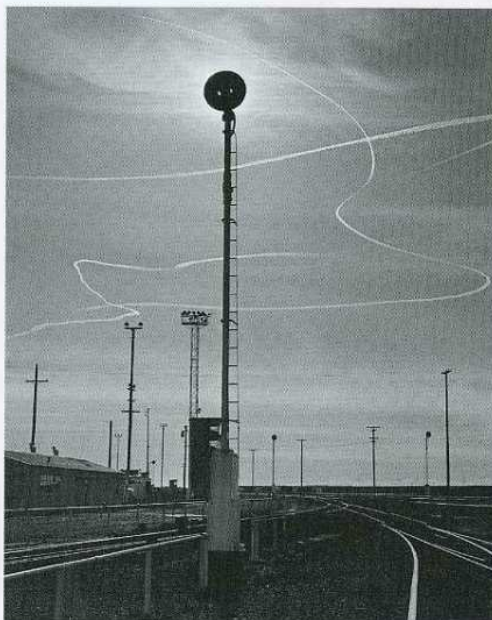
53 Paul Klee.
LANDSCAPE WITH YELLOW BIRDS. 1923.
Watercolor, newspaper, black base. 14" × 17³/₈".
Photograph: Hans Hinz/Artothek.
© 2002 Artists Rights Society (ARS), NY/VG Bild-Kunst, Bonn.

LINE

We write, draw, plan, and play with lines. Our individualities and feelings are expressed as we write our one-of-a-kind signatures or make other unmechanical lines. Line is our basic means for recording and symbolizing ideas, observations, and feelings; it is a primary means of visual communication. (An interactive exercise about line can be found on the  *Discovering Art* CD.)

A line is an extension of a point. Our habit of making all kinds of lines obscures the fact that pure geometric line—line with only one dimension, length—is a mental concept. Such geometric lines, with no height or depth, do not exist in the three-dimensional physical world. Lines are actually linear forms in which length dominates over width. Whenever we see an edge, we can perceive the edge as a line—the place where one object or plane appears to end and another object or space begins. In a sense, we often “draw” with our eyes, converting edges to lines.

In art and in nature, we can consider *lines* as paths of action—records of the energy left by moving points. Many intersecting and contrasting linear paths form the composition in Ansel Adams’ photograph RAILS AND JET TRAILS.



54 Ansel Adams.
RAILS AND JET TRAILS, ROSEVILLE, CALIFORNIA. 1953.
Photograph.
Copyright © 1997 by the Trustees of the Ansel Adams Publishing Rights Trust.
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Characteristics of Line

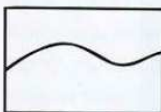
Lines can be active or static, aggressive or passive, sensual or mechanical. Lines can indicate directions, define boundaries of shapes and spaces, imply volumes or solid masses, and suggest motion or emotion. Lines can also be grouped to depict light and shadow and to form patterns and textures. Note the line qualities in these LINE VARIATIONS.



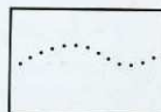
c. Actual straight lines and implied curved line.



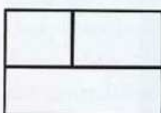
d. Line created by an edge.



a. Actual line.



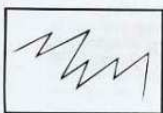
b. Implied line.



e. Vertical line (attitude of alert attention); horizontal line (attitude of rest).



f. Diagonal lines (slow action, fast action).



g. Sharp, jagged line.



h. Dance of curving lines.

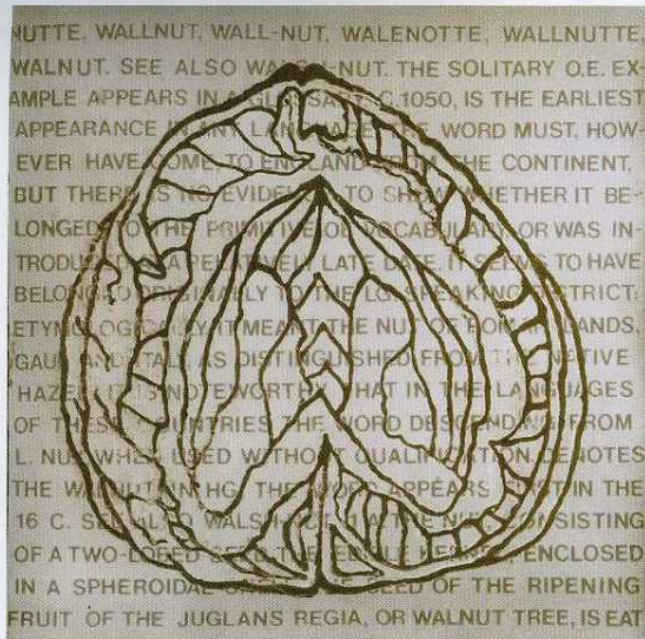


i. Hard line, soft line.



j. Ragged, irregular line.

55 LINE VARIATIONS.



56 Abby Leigh. **WALLENOTE**, 2002.
Linen on abaca on cotton, 30¾" × 30¾".
Paper made at Dieu Donne Papermill.
© Abby Leigh. Courtesy of the Betty Cunningham Gallery, NY.



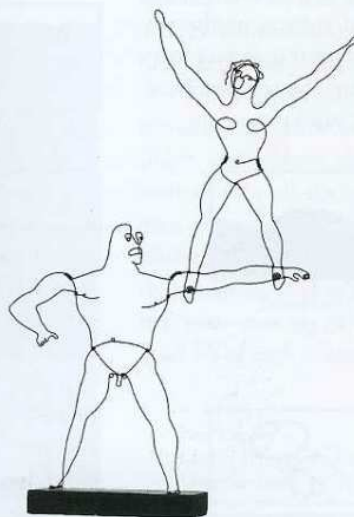
57 Bridget Riley. **CURRENT**, 1964.
Synthetic polymer paint on composition board.
58¾" × 58¾".
The Museum of Modern Art, New York/Licensed by Scala-Art Resource, NY.
Phillip Johnson Fund. Photograph © 2001 The Museum of Modern Art, NY.

Consider the range of qualities expressed in Abby Leigh's simple **WALLENOTE**, in the vibrant energy of painted lines in Bridget Riley's **CURRENT**, and in the spontaneous dance of gestural line in Jackson Pollock's **DRAWING. ACROBATS** is one of many whimsical pieces of wire sculpture in which Alexander Calder took advantage of the descriptive and expressive potential of wire to draw in space.

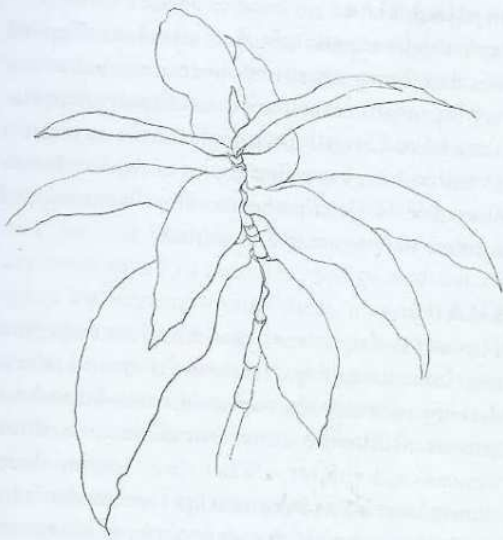
Recording the outlines of three-dimensional shapes on a two-dimensional surface is a fundamental process of drawing—and one of the most important functions of line in art. In the descriptive drawing **BLUE GINGER**, contour lines depict the edges of leaves. Notice the contrasting ways contour lines are used to express lyric sensuality and brusque aggressiveness in the Japanese woodcut prints by Kiyonobu (**WOMAN DANCER WITH FAN AND WAND**) and Kiyotada (**ACTOR IN A DANCE MOVEMENT**).



58 Jackson Pollock. **DRAWING. ACROBATS**, 1950.
Duco on paper.
56.6 × 152.2 cm.
Staatgalerie, Stuttgart. © 2002
The Pollock-Krasner Foundation/Artists
Rights Society (ARS), NY.



59 Alexander Calder. **TWO ACROBATS**, 1928.
Brass wire.
Height with base 34".
Honolulu Academy of Arts, Gift of
Mrs. T.A. Cooke, Mrs. W.F.
Dillingham, and Mrs. P.E. Spalding,
1937. #4595. © 2002 Estate of
Alexander Calder/Artists Rights
Society (ARS), NY.



60 Duane Preble.
BLUE GINGER. 1993.
Pencil. 13 $\frac{3}{4}$ " \times 11".



63 John Sloan.
THE FLUTE PLAYER. 1905.
Etching. 3 $\frac{3}{16}$ " \times 2 $\frac{3}{4}$ "; sheet 8" \times 6".
Philadelphia Museum of Art; Purchased: Lessing J. Rosenwald gift and Katherine Levin Forell Fund. 1956-35-61. Photo by Lynn Rosenthal, 2000.

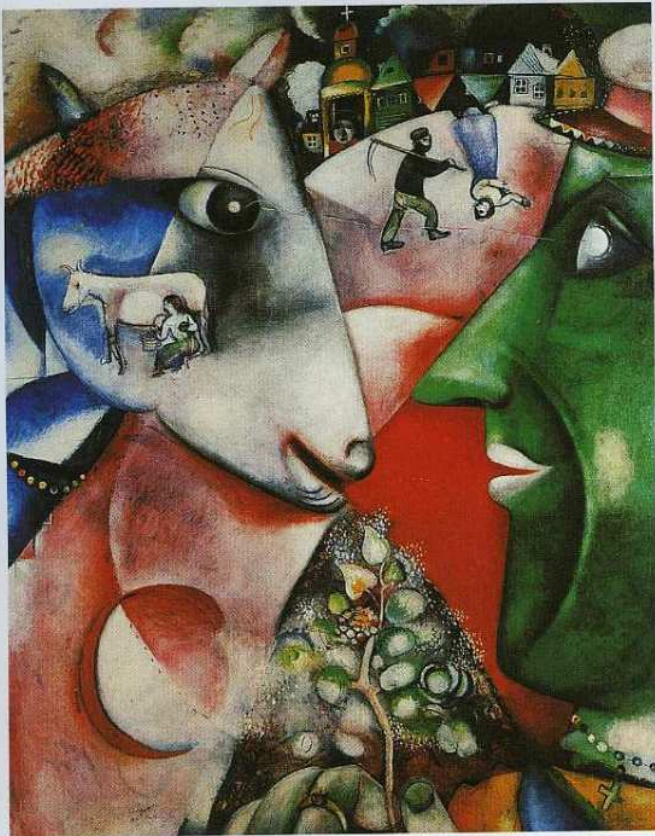


61 Attributed to Torii
Kiyonobu I.
WOMAN DANCER WITH
FAN AND WAND.
c. 1708.
Woodblock print.
21 $\frac{3}{4}$ " \times 11 $\frac{1}{2}$ ".
The Metropolitan Museum of
Art, New York. Harris Brisbane
Dick Fund and Rogers Fund,
1949 [JP3098]. Photograph:
© 1979 The Metropolitan
Museum of Art.



62 Torii Kiyotada.
AN ACTOR OF THE
ICHIKAWA CLAN IN A
DANCE MOVEMENT OF
VIOLENT MOTION.
c. 1715.
Hand-colored
woodcut. 11 $\frac{3}{4}$ " \times 6".
The Metropolitan Museum of
Art, New York. Harris Brisbane
Dick Fund and Rogers Fund,
1949 [JP3075]. Photograph:
© 1979 The Metropolitan
Museum of Art.

Many kinds of prints are made up entirely of lines. Artists give these lines varying weights and functions, as we can see in the small etching *THE FLUTE PLAYER*. John Sloan used very light lines to suggest objects far away, as in the background at the upper left where lines indicate the edges of the lamppost. The lines are thicker and heavier where they describe nearer objects, such as the fire hydrant. Heavy lines close together help to emphasize the central figure of the flute player. In addition, Sloan deftly suggested the roundness of the figure by shading it from light to dark with parallel crossed lines called *crosshatching*. The density of the lines changes with the degree of shading on the subject. In the brightest areas, such as the flat street, there are no lines at all. Even a small work such as this—which is reproduced here near full size—shows sensitive use of line.



64 Marc Chagall.
I AND THE VILLAGE. 1911.
 Oil on canvas. 75½" × 59½".
 The Museum of Modern Art, NY/Licensed by Scala-Art Resource, NY. Mrs. Simon Guggenheim Fund. Photograph ©2002 The Museum of Modern Art, New York. © 2002 Artists Rights Society (ARS), NY/ADAGP, Paris.



64b Marc Chagall.
I AND THE VILLAGE. 1911.
 Oil on canvas. 75½" × 59½".
 The Museum of Modern Art, NY. Mrs. Simon Guggenheim Fund. Photograph ©2002 The Museum of Modern Art, New York. © 2002 Artists Rights Society (ARS), NY/ADAGP, Paris.


Implied Line

Implied lines suggest visual connections. Implied lines that form geometric shapes can serve as an underlying organizational structure. In **I AND THE VILLAGE**, Marc Chagall used implied lines to create a circle that brings together scenes of Russian Jewish village life. Notice that he also drew in the implied sightline between man and animal.

SHAPE

The words *shape*, *mass*, and *form* are sometimes used interchangeably. Here *shape* is used to refer to the expanse within the outline of a two-dimensional area or within the outer boundaries of a three-dimensional object. When we see a three-dimensional object in natural light, we see that it has mass, or volume. If the same object is silhouetted against a sunset, we may see it only as a flat shape. Enclosing lines or changing color sets a shape or mass apart from its surroundings so that we recognize it. In **BLUE GINGER** (preceding page), lines define variations in similar leaf shapes.

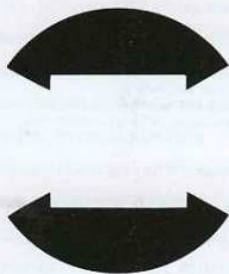
We can group the infinite variety of shapes into two general categories: *geometric* and *organic*. *Geometric shapes*—such as circles, triangles, and squares—tend to be precise and regular. *Organic shapes* are irregular, often curving or rounded, and seem relaxed and more informal than geometric shapes. The most common shapes in the human-made world are geometric. Although some geometric shapes exist in nature—in such forms as crystals, honeycombs, and snowflakes—most shapes in nature are organic.

In **I AND THE VILLAGE**, Chagall used a geometric structure of circles and triangles to organize the organic shapes of people, animals, and plants. He softened the severity of geometric shapes to achieve a natural flow between the various parts of the painting. Conversely, he abstracted natural subjects toward geometric simplicity in order to strengthen visual impact and symbolic content. (An interactive exercise showing how shapes function in other artworks is on the  *Discovering Art* CD.)

When a shape appears on a *picture plane* (the flat picture surface), it simultaneously creates a second shape out of the background area. The subject or dominant shapes are referred to as *figures* or *positive shapes*; background areas are *ground* or *negative shapes*. The figure-ground relationship is a fundamental aspect of perception; it allows us to sort out and interpret what we see. Because we are conditioned to see only objects, and not the spaces between and around them, it takes a shift in awareness to see the negative shapes in **A SHAPE OF SPACE**. An artist, however, must consider both positive and negative shapes simultaneously, and treat them as equally important to the total effectiveness of an image.

Interactions between figure shapes and ground shapes are heightened in some images. **NIGHT LIFE** can be seen as white shapes against black or as black shapes against white, or the figure-ground relationship can shift back and forth. In both this and M. C. Escher's woodcut **SKY AND WATER**, the shifting of figure and ground contributes to a similar content: the interrelatedness of all things.

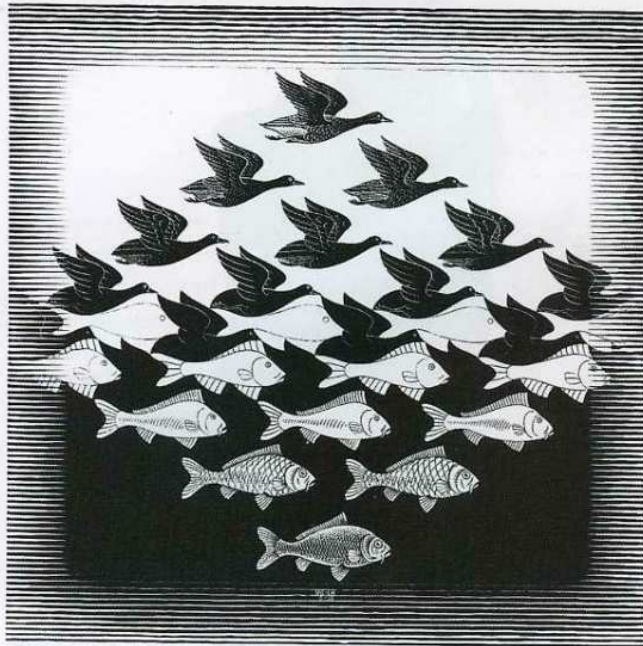
In the upper half of Escher's print, we see dark geese on a white ground. As our eyes move down the page, the light upper background becomes fish against a black background. In the middle, however, fish and geese interlock so perfectly that we are not sure what is figure and what is ground. As our awareness shifts, fish shapes and bird shapes trade places, a phenomenon called *figure-ground reversal*.



65 **A SHAPE OF SPACE.**
(implied shape).



66 Duane Preble.
NIGHT LIFE (figure-ground reversal).



67 M. C. Escher.
SKY AND WATER I, 1938.
Woodcut, 17¼" × 17¼".
© 2001 Cordon Art B.V., Baarn, Holland. All rights reserved.

MASS

Whereas a two-dimensional area is called a shape, a three-dimensional area is called a *mass*—the physical bulk of a solid body of material. When mass encloses space, the space is called *volume*. The word *form* is sometimes used instead of mass to refer to physical bulk.

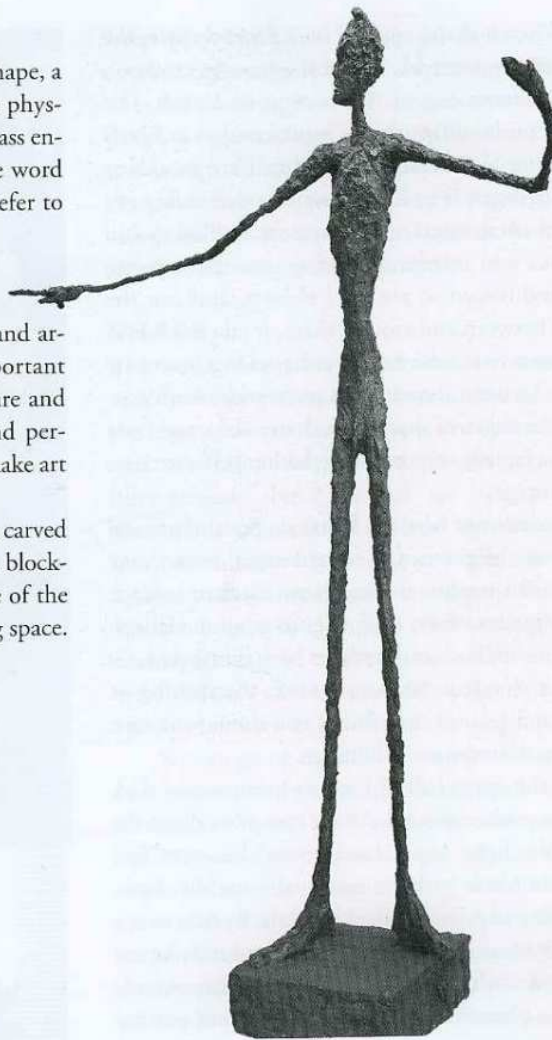
Mass in Three Dimensions

Mass is often a major element in sculpture and architecture. Monumental mass was an important characteristic of ancient Egyptian architecture and sculpture. Egyptians sought this quality and perfected it because it expressed their desire to make art for eternity.

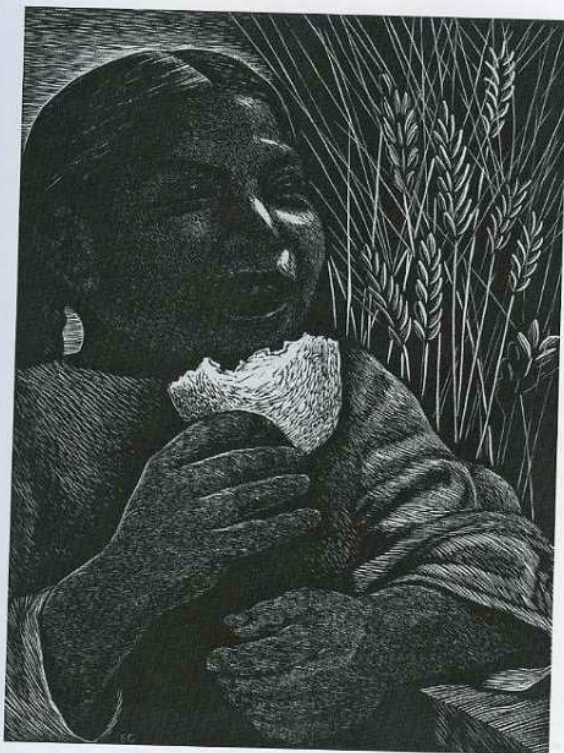
QENNEFER, STEWARD OF THE PALACE, was carved from hard black granite and retains the cubic, block-like appearance of the quarried stone. None of the limbs projects outward into the surrounding space.



68 QENNEFER, STEWARD OF THE PALACE. c. 1450 B.C.E.
Black granite. Height 2'9".
The British Museum, Department of Egyptian Antiquities. © The British Museum.



69 Alberto Giacometti.
MAN POINTING. 1947.
Bronze. 70½" × 40¾" × 16¾".
The Museum of Modern Art, NY/Licensed by Scala-Art Resource,
NY. Gift of Mrs. John D. Rockefeller III.
Photograph © 2002 The Museum of Modern Art, NY.
© 2002 Artists Rights Society (ARS), NY/ADAGP, Paris.



70 Elizabeth Catlett.
BREAD, 1962.
Linocut on paper.
Courtesy of Library of Congress, Prints and
Photographs Division.

The figure sits with knees drawn up and arms folded, the neck obscured by a ceremonial headdress. The body is abstracted and implied with minimal suggestion. This piece is a good example of *closed form*—form that does not openly interact with the space around it. Here, compact mass symbolizes permanence. Egyptian portrait sculpture acted as a symbolic container for the soul of an important person in order to insure eternal afterlife.

In contrast to the compact mass of the Egyptian portrait, modern sculptor Alberto Giacometti's *MAN POINTING* conveys a sense of fleeting presence rather than permanence. The tall, thin figure appears eroded by time and barely existing. Because Giacometti used little solid material to construct the figure, we are more aware of a linear form in space than of mass. The figure reaches out; its *open*

form interacts with the surrounding space, which seems to overwhelm it, suggesting the fragile, impermanent nature of human existence.

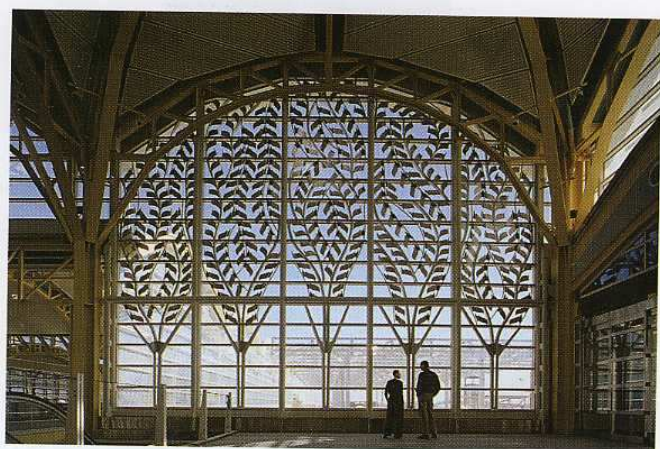
Giacometti's art reveals an obsession with mortality that began when he was twenty, following the death of an older companion. Later, expressing the fleeting essence of human life became a major concern visible in his work. For Giacometti, both life and the making of art were continuous evolutions. He never felt that he succeeded in capturing the changing nature of what he saw, and therefore he considered all of his works unfinished.

Mass in Two Dimensions


With two-dimensional media, such as painting and drawing, mass must be implied. In *BREAD*, Catlett drew lines that seem to wrap around and define a girl



71 a. Cesar Pelli and Associates.
NORTH TERMINAL RONALD REAGAN WASHINGTON
NATIONAL AIRPORT. 1997.
Photographer: Jeff Goldberg/ Esto Photographics, Inc.



b. CLOSE-UP INTERIOR.
Photographer: Jeff Goldberg/ Esto Photographics, Inc.

in space, implying a solid mass. The work gives the appearance of mass because the lines both follow the curvature of the head and build up dark areas to suggest mass revealed by light. Her use of lines convinces us that we are seeing a fully rounded person. (Interactive exercises showing how artists imply mass in two dimensions are found on the  *Discovering Art* CD.)

SPACE

Space is the indefinable, general receptacle of all things—the seemingly empty space around us. It is continuous, infinite, and ever present. The visual arts are sometimes referred to as *spatial* arts because most of these art forms are organized in space. In contrast, music is a *temporal* art because musical elements are organized primarily in time. In film, video, and dance, form is organized in both time and space.

Space in Three Dimensions

Of all the visual elements, space is the most difficult to convey in words and pictures. To experience three-dimensional space, we must be in it. We experience space beginning with our own positions in relation to other people, objects, surfaces, and voids at various distances from ourselves. Each of us has a sense of personal space—the area surrounding our bodies—that we like to protect, and the extent of this invisible boundary varies from person to person and from culture to culture.

Architects are especially concerned with the qualities of space. Imagine how you would feel in a small room with a very low ceiling. What if you raised the ceiling to fifteen feet? What if you added skylights? What if you replaced the walls with glass? In each case you would have changed the character of the space and, by doing so, would have radically changed your experience.

Whereas we experience the outside of a building as mass in space, we experience the inside as volume and as a sequence of enclosed spaces. Cesar Pelli's design for the NORTH TERMINAL at Ronald Reagan Washington National airport takes the passenger's experience of space into account. There are many large windows that offer views of the runways and

also of the Potomac River and the nearby Washington Monument. The interior is divided into many small domed modules: “The module has an important psychological value in that each one is like a very large living room in size,” the architect said.² “It’s a space that we experience in our daily life. . . . The domes make spaces designed on the scale of people, not on the scale of big machines.”

Space in Two Dimensions

With three-dimensional objects and spaces, such as sculpture and architecture, we must move around to get the full experience. With two-dimensional works, such as drawing and painting, we see the space of the surface all at once. In drawings, prints, photographs, and paintings, the actual space of each picture’s surface (*picture plane*) is defined by its edges—usually the two dimensions of height and width. Yet within these boundaries, a great variety of possible pictorial spaces can be implied, creating depth in the picture plane.

Paintings from ancient Egypt show little or no depth. Early Egyptian painters made their images clear by portraying objects from their most easily identifiable angles and by avoiding the visual confusion caused by overlap and the appearance of diminishing size. *POND IN A GARDEN* demonstrates this technique. The pond is shown from above while the trees, fish, and birds are all pictured from the side.

Implied Depth

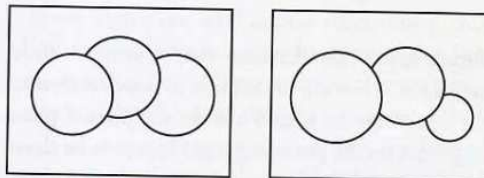
Almost any mark on a picture plane begins to give the illusion of a third dimension: depth. Clues to seeing spatial depth are learned in early childhood. A few of the major ways of indicating space on a picture plane are shown in the diagrams of *CLUES TO SPATIAL DEPTH*.

When shapes overlap, we immediately assume from experience that one is in front of the other (diagram a). Overlapping is the most basic way to achieve the effect of depth on a flat surface. The effect of overlap is strengthened by *diminishing size*, which gives a sense of increasing distance between each of the shapes (diagram b). Our perception of distance depends on the observation that distant



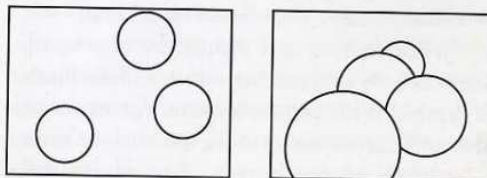
72 *POND IN A GARDEN*.
Wall painting from the tomb of Nebamun.
Egypt, c. 1400 B.C.E.
Paint on dry plaster.
British Museum, London.
Photograph: © The British Museum.

73 *CLUES TO SPATIAL DEPTH*.



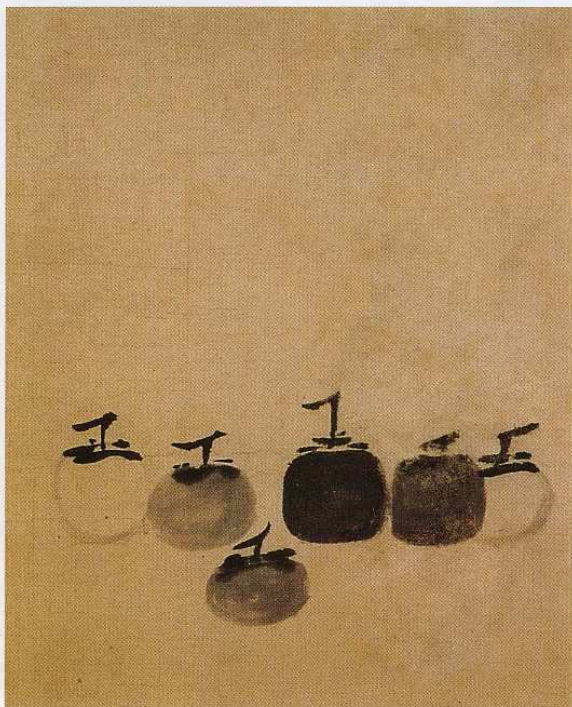
a. Overlap.

b. Overlap and diminishing size.



c. Vertical placement.

d. Overlap, vertical placement, and diminishing size.



74 Mu Qi. SIX PERSIMMONS. c. 1269.
Pen and Ink on paper, width 36.2 cm.
Daitoku-ji Monastery, Kyoto, Japan. The Bridgeman Art Library International Ltd.

objects appear smaller than near objects. A third method of achieving the illusion of depth is *vertical placement*: objects placed low on the picture plane (diagram c on the preceding page) appear to be closer to the viewer than objects placed high on the plane. This is the way we see most things in actual space. Creating illusions of depth on a flat surface usually involves one or more such devices (diagram d).

When we look at a picture, we may be conscious of both its actual flat surface and the illusion of depth that the picture contains. Artists can emphasize either the reality or the illusion—or strike a balance between these extremes. For centuries, Asian painters have paid careful attention to the relationship between the reality of the flat picture plane as well as the illusion of depth they wish to imply. Mu Qi's ink painting *SIX PERSIMMONS* has only a subtle

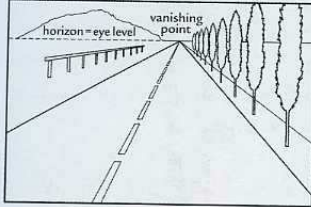
suggestion of depth in the overlap of two of the persimmons. By placing the smallest persimmon lowest on the picture plane, Mu Qi further minimized the illusion of depth; since we interpret the lower part of the picture as being closer to us, we might expect the persimmon there to be larger.

The persimmons appear against a pale background that works as both flat surface and infinite space. The shapes of the fruit punctuate the open space of the ground. Imagine what would happen to this painting if some of the space at the top were cut off. Space is far more than just leftovers; it is an integral part of the total visual design.

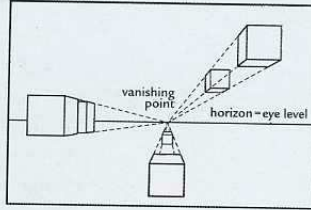
Linear Perspective. In general usage, the word perspective refers to point of view. In the visual arts, *perspective* refers to any means of representing three-dimensional objects in space on a two-dimensional surface. In this sense it is correct to speak of the perspective of Persian miniatures, Japanese prints, Chinese Song Dynasty paintings, or Egyptian paintings—although none of these styles is similar to the linear perspective system, which was developed during the Italian Renaissance. It is a difference in intention and tradition rather than mere skill that results in various ways of depicting depth.

In the West, we have become accustomed to *linear perspective* (also called simply *perspective*) to depict the way objects in space appear to the eye. This system was developed by Italian architects and painters in the fifteenth century, at the beginning of the Renaissance.

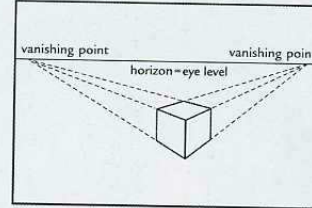
Linear perspective is based on the way we see. We have already noted that objects appear smaller when seen at a distance than when viewed close up. Because the spaces between objects also appear smaller when seen at a distance, parallel lines appear to converge as they recede into the distance, as shown in the first of the *LINEAR PERSPECTIVE* diagrams. Intellectually, we know that the edge lines of the road must be parallel, yet they seem to converge, meeting at last at what is called a *vanishing point* on the horizon—the place where land and sky appear to meet. On a picture surface, the horizon (or *horizon line*) also represents your eye level as you look at a scene.



a. One-point linear perspective.



b. One-point linear perspective. Cubes above eye level, at eye level, and below eye level.



c. Two-point linear perspective.

Eye level is an imaginary plane, the height of the artist's eyes, parallel with the ground plane and extending to the horizon, where the eye level and ground plane appear to converge. In a finished picture, the artist's eye level becomes the eye level of anyone looking at the picture. Although the horizon is frequently blocked from view, it is necessary for an artist to establish a combined eye-level/horizon line to construct images using linear perspective.

With the LINEAR PERSPECTIVE system, an entire picture can be constructed from a single, fixed position called a *vantage point*, or *viewpoint*. Diagram a. shows one-point (one vanishing point) perspective, in which the parallel sides of the road appear to converge and trees in a row appear smaller as their distances from the vantage point increase.

Diagram b. shows cubes drawn in one-point linear perspective. The cubes at the left are at eye level; we can see neither their top nor their bottom surfaces. We might imagine them as buildings.

The cubes in the center are below eye level: We can look down on their tops. These cubes are drawn from a high vantage point, a viewing position above the subject. The horizon line is above these cubes and their perspective lines go up to it. We may imagine these as boxes on the floor.

The cubes at the right are above our eye level; we can look up at their bottom sides. These cubes are drawn from a low vantage point. The horizon line is below these cubes and their perspective lines go down to it. Imagine that these boxes are sitting on a glass shelf high above our heads.

In *one-point perspective*, all the major receding "lines" of the subject are actually parallel, yet visually they appear to converge at a single vanishing point on the horizon line. In *two-point perspective*, two sets of parallel lines appear to converge at two points on the horizon line, as in diagram c.

When a cube or any other rectilinear object is positioned so that a corner, instead of a side, is closest to us, we need two vanishing points to draw it. The parallel lines of the right side converge to the right; the parallel lines of the left side converge to the left. There can be as many vanishing points as there are sets and directions of parallel lines.

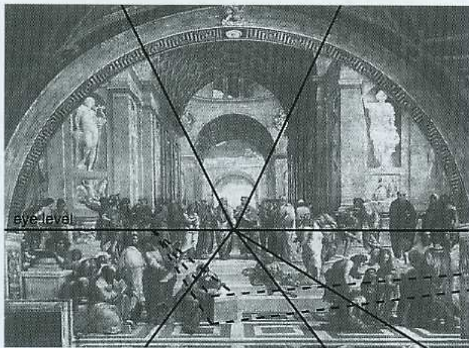
Horizontal parallel lines moving away from the viewer above eye level appear to go down to the horizon line; those below eye level appear to go up to the horizon line. (Linear perspective and spatial depth are explored on the *Discovering Art* CD.)

In *THE SCHOOL OF ATHENS* (on the following page), Raphael invented a grand architectural setting in the Renaissance style to provide an appropriate space for his depiction of the Greek philosophers Plato and Aristotle and other important thinkers. The size of each figure is drawn to scale according to its distance from the viewer; thus the entire group seems natural. Lines superimposed over the painting reveal the basic one-point perspective system used by Raphael. However, the cube in the foreground is not parallel to the picture plane or to the painted architecture and is in two-point perspective.

Raphael used perspective for emphasis. We infer that Plato and Aristotle are the most important

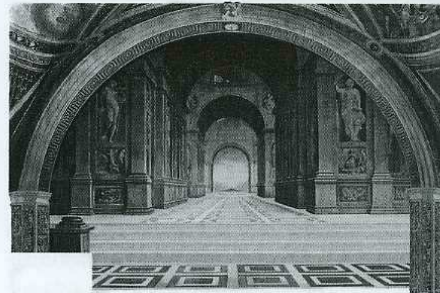


76 Raphael.
 THE SCHOOL OF ATHENS. 1508. Fresco. Approximately 18' × 26'.
 Stanza della Segnatura, Vatican Palace, Vatican State. © Erich Lessing/Art Resource, NY.



Perspective lines showing eye level, main vanishing point, and left vanishing point for the stone block in the foreground.

76B Raphael.
 THE SCHOOL OF ATHENS. 1508.
 Stanza della Segnatura, Vatican Palace, Vatican State.
 © Erich Lessing/Art Resource, NY.



77 Study of Raphael's THE SCHOOL OF ATHENS.

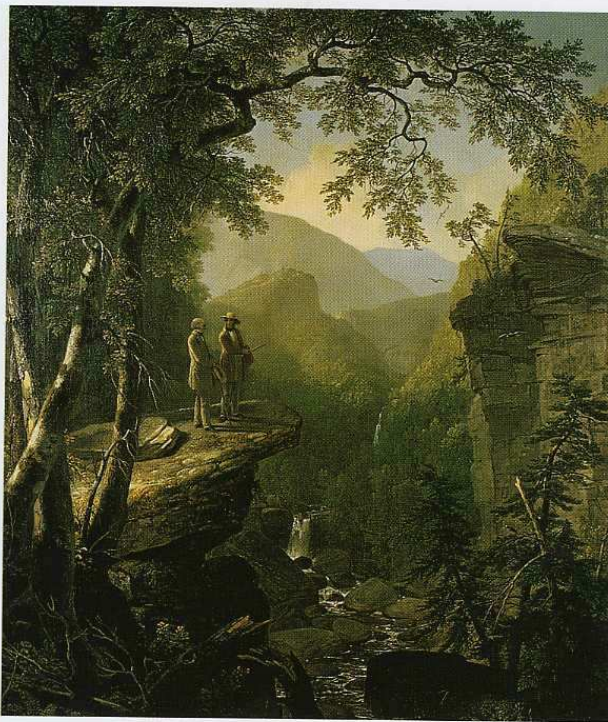
figures in this painting because of their placement at the center of receding archways in the zone of greatest implied depth.

If the figures are removed, as shown in the study of Raphael's *THE SCHOOL OF ATHENS*, our attention is pulled right through the painted setting into implied infinite space. Conversely, without their architectural background defined by perspective, Plato and Aristotle lose importance.

Atmospheric Perspective. *Atmospheric* or *aerial perspective* is a nonlinear means for giving an illusion of depth. The illusion of depth is created by changing color, value, and detail. In visual experience of the real world, as the distance increases between the viewer and faraway objects such as mountains, the increased quantity of air, moisture, and dust causes the distant objects to appear increasingly bluer and less distinct. Color intensity is diminished, and contrast between light and dark is reduced.

Asher Brown Durand used atmospheric perspective in his painting *KINDRED SPIRITS* to provide a sense of the vast distances in the North American wilderness. The illusion of infinite space is balanced by dramatically illuminated foreground details, by the figures of the men, and by Durand's lively portrayal of trees, rocks, and waterfalls. We identify with the figures of painter Thomas Cole and poet William Cullen Bryant as they enjoy the spectacular landscape. As in *THE SCHOOL OF ATHENS*, the implied deep space appears as an extension of the space we occupy.

Traditional Chinese landscape painters have differed from their European counterparts in their use of atmospheric perspective. In Shen Zhou's painting *POET ON A MOUNTAIN TOP*, near and distant mountains are suggested by washes of ink and color on white paper. The light gray of the farthest mountain implies space and atmosphere. Traditional Chinese landscape paintings present poetic symbols of landforms rather than realistic representations. Whereas *KINDRED SPIRITS* draws the viewer's eye into and through the suggested deep space, *POET ON A MOUNTAIN TOP* leads the eye across (rather than into) space.



78 Asher Brown Durand.
KINDRED SPIRITS. 1849.
Oil on canvas. 44" × 36".
Collection of the New York Public Library,
Astor, Lenox and Tilden Foundations.

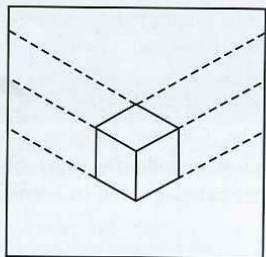
A third system for suggesting depth is isometric perspective, which is employed by engineers and is often used by traditional Asian artists. In isometric perspective, parallel lines remain parallel; they do not converge as they recede. Instead, rectangular planes that turn away from the viewer are drawn as parallelograms. The illustration *ISOMETRIC PERSPECTIVE* shows a cube drawn in isometric perspective. Industrial designers and architects also find isometric perspective useful because it enables them to maintain accurate measurements in working drawings. The detail from the Chinese hanging scroll *EIGHTEEN SCHOLARS* (on the following page) shows furniture and another hanging scroll in isometric perspective.



79 Shen Zhou.
 POET ON A MOUNTAIN TOP (CHANGI-LI YUAN-T'IAO).
 Series: LANDSCAPE ALBUM: FIVE LEAVES by Shen Zhou, ONE LEAF
 by Wen Cheng-Ming (Shen Shih-t'ien Wen Cheng-ming shan-shui-
 ho-chuan). Ming Dynasty (1368-1644).
 Album leaf mounted as a handscroll. Ink on paper.
 15¼" × 23¾". Overall (38.73 × 60.32 cm).
 The Nelson-Atkins Museum of Art, Kansas City, Missouri. [Purchase: Nelson Trust] 46-51.

80 ISOMETRIC PERSPECTIVE.

81 Anonymous.
 EIGHTEEN SCHOLARS. Detail.
 Song Dynasty (960-1279).
 Hanging scroll. Ink and color on silk.
 67⅞" × 40¼".
 National Palace Museum, Taipei, Taiwan.



TIME AND MOTION

Time is the nonspatial continuum, the fourth dimension, in which events occur in succession. Because we live in an environment combining space and time, our experience of time often depends on our movement in space and vice versa. Although time itself is invisible, it can be made perceptible in art. Time and motion become major elements in visual media such as film, video, and kinetic (moving) sculpture.

Many traditional non-Western cultures teach that time is cyclic. The Aztecs of ancient Mexico, for example, held that the earth was subject to periodic destruction and recreation, and their calendar stone embodies this idea. At the center of the AZTEC CALENDAR STONE is a face of the sun god representing the present world, surrounded by four rectangular compartments that each represent one previous incarnation of the world. The whole stone is round, symbolizing the circular nature of time.

The Judeo-Christian tradition of Western culture teaches that time is linear—continually moving forward. The early Renaissance painter Sassetta implied the passage of linear time in his painted narration of THE MEETING OF SAINT ANTHONY AND SAINT PAUL. The painting depicts key moments during Saint Anthony's progression through time and space, including the start of his journey in the city, which is barely visible behind the trees. He first comes into view as he approaches the wilderness; we next see him encountering the centaur; finally, he emerges into the clearing in the foreground, where he meets Saint Paul. The road on which he travels implies continuous forward movement in time.



82 AZTEC CALENDAR STONE. 1479.
National Museum of Anthropology, Mexico City.
© Robert Frerck/Woodfin Camp and Associates.

83 Sassetta and Workshop of Sassetta.
THE MEETING OF SAINT ANTHONY AND SAINT PAUL. c. 1440.
Tempera on panel, .475 × .345 (18¾" × 13⅝");
framed: .616 × 1.254 × .076 (24¼" × 49¾" × 3").
© 2001 Board of Trustees, The National Gallery of Art, Washington, D.C.
Samuel H. Kress Collection. 1939.1.239.(404)/PA.

artists at work

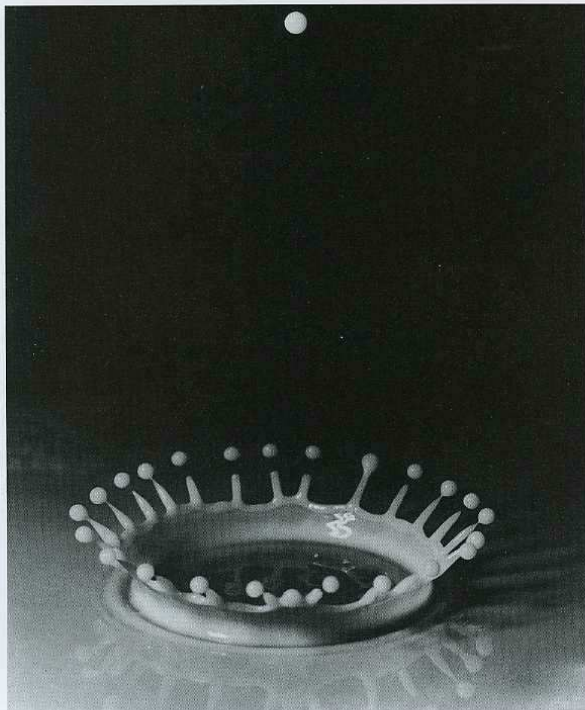
KRISTIN Jones and ANDREW Ginzel

Contemporary artists have found new ways to include time in their works. Kristin Jones and Andrew Ginzel suggest the passage of time in a clever way in their work called **MNEMONICS**, which was created for Stuyvesant High School in New York City. They embedded objects from remote times and places in over 400 glass bricks distributed around the school in no apparent order. These include fragments from New York's past, sand from remote deserts, or pieces of ancient monuments such as the Great Wall of China. Each graduating class contributes its own brick as well, so that the building itself mirrors the passage of time.

Kristin Jones and Andrew Ginzel. 84

MNEMONICS. 1992.

Detail of installation at Stuyvesant High School, NYC.
Photograph courtesy of the artists.



Stopped Time

The desire to record events in time goes back to before written history. More recently, this urge helped to inspire the development of photography. Initially, only static, inanimate objects could be photographed, but improvements in the process made it possible to photograph people standing or sitting very still; and, by the end of the nineteenth century, even a galloping horse could be photographed.

In the early twentieth century, electronics engineer Harold Edgerton explored the unseen world of events in motion. He invented the strobe light and pioneered its use in photography. In stroboscopic photography, light pulses flash on a moving subject in order to “stop” the action and record it (without blurring) on film. Such means have greatly increased our ability to observe changes in objects as they move. Edgerton’s high-speed photograph of a **MILK SPLASH** (revealed by a flash of light no more than

85 Harold Edgerton.
MILK SPLASH RESULTING FROM DROPPING A BALL. 1936.
Photograph.
© Harold and Esther Edgerton Foundation, 1999. Courtesy of Palm Press, Inc.

1/100,000 of a second) shows the fleeting beauty of the “crown” of a milk drop, not otherwise visible to the human eye.

Manipulated Time

The word *movies* underscores the central feature of the filmmaker’s art: the appearance of motion. In films, still pictures are shown at the rate of twenty-four images per second, creating the illusion of actual motion. Past, present, and future time can be implied and intermixed, and events that occur too quickly or too slowly to be perceived can be made visible by slowing them down or speeding them up. In both film and television, the impression of time can be compressed, expanded, run backward, and rerun. Contemporary music videos often present widely disparate moments of time in quick succession, as if time moves in a series of sudden jumps of unpredictable length. This creates a feeling of disjunction from the passage of clock time.

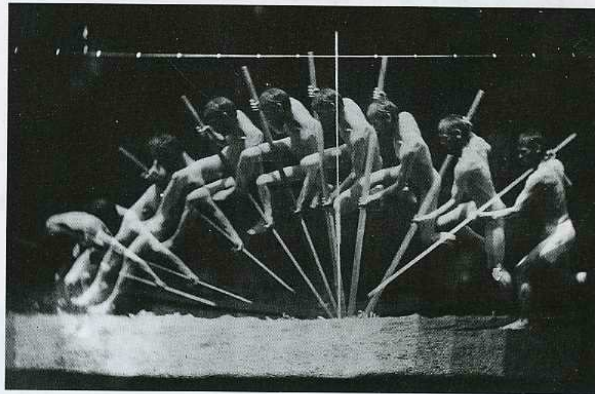
Implied Motion

To give lifelike feeling, artists often search for ways to create a sense of movement. Sometimes movement itself is the subject or a central quality of the subject. An appealing depiction of movement, *DANCING KRISHNA* portrays the Indian Hindu god as a playful child who just stole his mother’s butter supply and now dances with glee. The cast bronze medium provides the necessary strength to hold the dynamic pose as the energy-radiating figure stands on one foot, counterbalancing arms, legs, and torso.

A sense of motion can be created by actual or implied changes in position. In 1884, American painter and pioneer photographer Thomas Eakins used a single camera and a movable photographic plate to capture sequential images that show the movements of a *MAN POLE VAULTING*. Eakins also designed a camera with revolving discs to produce stop-action stills, anticipating the principle of the motion picture camera.



86 *DANCING KRISHNA*.
Tanjor, Tamil Nadu, South India. Chola Dynasty.
c. 1300. Bronze, 23 $\frac{3}{8}$ ".
Honolulu Academy of Arts. Partial gift of Mr. & Mrs. Christian H. Aall,
partial purchase, The Jhamandas Watumull Family Fund, 1997. (8640.1).
Photograph: Shuzo Uemoto.

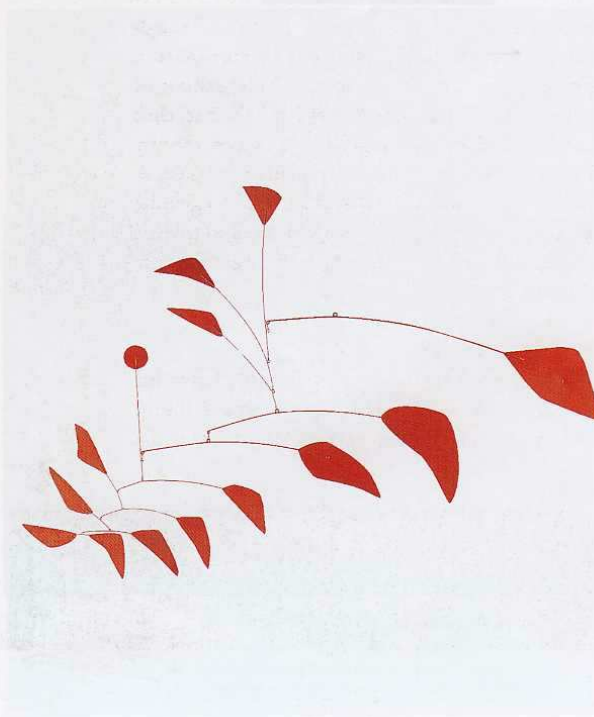


87 Thomas Eakins.
MAN POLE VAULTING. 1884.
Multiple-exposure photograph of George Reynolds. 3 $\frac{3}{4}$ " \times 4 $\frac{3}{4}$ ".
The Metropolitan Museum of Art, New York. Gift of Charles Bregler, 1941 (41.142.11).



88 Jenny Holzer.
 UNTITLED
 (Selections from Truisms,
 Inflammatory Essays, The Living
 Series, The Survival Series, Under a
 Rock, Laments, and Child Text),
 1989. Installation in rotunda of
 extended helical tricolor L.E.D.
 electronic-display signboard in two
 sections, site-specific dimensions.
 Solomon R. Guggenheim Museum, Partial gift of
 the artist, Gift of Donatella and Jay Chiat. 89.362
 and 96.4499. © Jenny Holzer/Artists Rights
 Society (ARS), New York.
 Photograph: Donald Heald.

89 Alexander Calder.
 BIG RED. 1959.
 Painted sheet metal and steel wire.
 74" × 114" (188 × 289.6 cm).
 Collection of Whitney Museum of American Art,
 New York. Purchase, with funds from the Friends
 of the Whitney Museum of American Art, and
 exchange [61.46]. Photograph copyright
 © 2001: Whitney Museum of American Art.
 © 2002 Estate of Alexander Calder/Artists Rights
 Society (ARS), NY.



Contemporary artist Jenny Holzer made a clever use of implied motion in an UNTITLED work, in which she installed light boards on the inner edge of the spiral ramp in the Guggenheim Museum in New York. These boards are commonly used for advertising, but she populated this extended helix with sayings of her own invention. The sayings seem to process down the ramp in a continuous flow, but in reality the lights only go on and off at carefully programmed intervals. In this welter of constantly shifting slogans, she hoped to show how the mass media bombard us with input.

Actual Motion

Before the advent of electric motors, artists created moving sculpture by harnessing the forces of wind and water. Fountains, kites, banners, and flags have been popular since ancient times.

Alexander Calder's mobiles, such as BIG RED, rely on air movement to perform their subtle dances. Calder, a leading inventor of kinetic sculpture, was one of the first twentieth-century artists who made movement a major feature of their art.

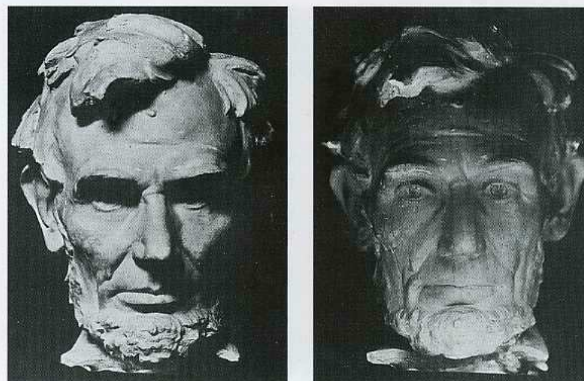
LIGHT

Our eyes are light-sensing instruments. Everything we see is made visible by the radiant energy we call light. Sunlight, or natural light, although perceived as white, actually contains all the colors of light that make up the visible part of the electromagnetic spectrum. Light can be directed, reflected, refracted, diffracted, or diffused. The various types of artificial light include incandescent, fluorescent, neon, and laser. The source, color, intensity, and direction of light greatly affect the way things appear; as light changes, surfaces illuminated by it also appear to change.

Seeing Light

A simple shift in the direction of light dramatically changes the way we perceive the sculpture of ABRAHAM LINCOLN by Daniel Chester French. When the monumental figure was first installed in the Lincoln Memorial in Washington, D.C., the sculptor was disturbed by the lighting: The character of the Lincoln figure was radically altered by sunlight reflected from the floor of the entrance to the building. Light alone had changed the content of French's portrait from wise leader to frightened novice. The problem was corrected by placing spotlights in the ceiling above the statue. Because the spotlights are stronger than the natural light reflected from the white marble floor, they illuminate the figure with the kind of overhead light we are accustomed to seeing.

Light coming from a source directly in front of or behind objects seems to flatten three-dimensional form and emphasize shape. Light from above or from the side, and slightly in front, most clearly reveals the form of objects in space.



90 Daniel Chester French.

ABRAHAM LINCOLN, detail of seated figure, 1922. Professional historical composite photograph of full-size plaster head, 6 $\frac{3}{4}$ " \times 9 $\frac{3}{8}$ "

a. As originally lit by daylight.

b. With the addition of artificial light.

Chesterwood, A National Trust Historic Site, Stockbridge, MA. Photograph: De Witt Ward.

In the terminology of art, *value* (sometimes called *tone*) refers to the relative lightness and darkness of surfaces. Value ranges from white through various grays to black. Value can be considered a property of color or an element independent of color. Subtle relationships between light and dark areas determine how things look. To suggest the way light reveals form, artists use changes in value. A gradual shift from lighter to darker tones can give the illusion of a curving surface, while an abrupt value change usually indicates an abrupt change in surface direction.

Implied Light

The diagram DARK/LIGHT RELATIONSHIPS shows that we perceive relationships rather than isolated forms: the gray bar has the same gray value over its entire



91 DARK/LIGHT RELATIONSHIPS.

Value scale compared to uniform middle gray.



92 DRAWING OF LIGHT ON A SPHERE.
Value gradations suggest light on a curving surface.



93 Annibale Carracci.
HEAD OF A YOUTH.
Charcoal and white chalk on green/grey paper.
27.1 × 24 cm.
Hermitage, St. Petersburg, Russia. The Bridgeman Art Library International Ltd.

length, yet it appears to change from one end to the other as the value of the background changes.

The DRAWING OF LIGHT ON A SPHERE illustrates *chiaroscuro*—the use of gradations of light and shade, in which forms are revealed by the subtle shifting from light to dark areas, without sharp outlines. This technique, developed in the Renaissance, makes it possible to create the illusion that figures and objects depicted on a flat surface appear as they do in natural light conditions. Chiaroscuro, originally an Italian word, is now used in English to describe the interaction of light and shade in two-dimensional art. The word's origins suggest its meaning: *chiaro* means light or clear, and *oscuro* means dark or obscure.

Using charcoal and white chalk on middle-value paper, Annibale Carracci used *chiaroscuro* to create the illusion of roundness in his drawing HEAD OF A YOUTH. The face on its brighter side is close to the shade of the paper. At times the distinction between subject and background is difficult to see, as in the clothing. On the areas where light strikes the subject most directly, the artist used white chalk, as on the forehead and nose, making these areas brighter than the background. Areas around the mouth and chin are delicately shaded, showing that the artist is sensitive to the subtlest curves of the face. The shadowy areas stand in contrast both to the white highlights and to the color of the paper; the darkest area, at the left, forms a silhouette against the background.

The choice of colored paper is in some ways advantageous because we tend to perceive white areas as flooded with light. Middle-value paper tends to heighten the contrasts of light and dark within the subject itself.

The preoccupation with mass or solid form as revealed by light is a Western tradition which began in the Renaissance. Most of the world's pictorial art before the twentieth century did not show shadows. When the Japanese first saw Western portraits, they wanted to know why one side of the face was dirty!

Color, direction, quantity, and intensity of light strongly affect our moods, mental abilities, and general well-being. California architect Vincent Palmer has experimented with the color and intensity of

interior light, and he has found that he can modify the behavior of his guests by changing the color of the light around them. Light quality affects people's emotions and physical comfort, thereby changing the volume and intensity of their conversations and even the lengths of their visits.

As light technology has developed, and people have increased their awareness of the important functions of light, lighting design has become more important. Qualities of light must be carefully considered in most of the visual arts, but especially in photography, cinematography, television, stage design, architecture, and interior design.

Light as a Medium

Some contemporary artists use artificial light as their medium. One of the best known of these was Dan Flavin, who began in the 1960s to make works using neon tubes. His UNTITLED installation at Dia Center for the Arts was created for that particular space. Viewers passing from one floor to another experience intense blue and green light on each level. This light transforms the space into an environment resembling an aquarium or a cave.

Light used in combination with visual media and sound has become of increasing interest to contemporary artists. Lighting has also become important in performances of all kinds, including rock concerts and videos.

COLOR

Color, a component of light, affects us directly by modifying our thoughts, moods, actions, and even our health. Psychologists, as well as designers of schools, offices, hospitals, and prisons, have acknowledged that colors can affect work habits and mental conditions. People surrounded by expanses of solid orange or red for long periods often experience nervousness and increased blood pressure. In contrast, some blues have a calming effect, causing blood pressure, pulse, and activity rates to drop to below normal levels.

Dressing according to our color preferences is one way we express ourselves. Leading designers of everything from clothing and cars to housewares and



94 Dan Flavin.
UNTITLED, 1996.
Light installation in stairway at Dia Center for the Arts, New York.
548 West 22nd St., NYC. Courtesy Dia Art Foundation. Photograph Cathy Carver.

interiors recognize the importance of individual color preferences, and they spend considerable time and expense determining the colors of their products.

Most cultures use color symbolically, according to established customs. Leonardo da Vinci was influenced by earlier European traditions when he wrote, "We shall set down for white the representative of light, without which no color can be seen; yellow for earth; green for water; blue for air; red for fire; and black for total darkness."³ In traditional painting in North India, flat areas of color are used to suggest certain moods, such as red for anger and

blue for sexual passion. The artist may paint the sky or the ground with a bright shade that relates not to the appearance of the area, but to the feeling appropriate to the work. In spoken Austrian German, yellow describes a state of envy or jealousy, while blue means intoxicated.

In China and Japan, traditional painters have often limited themselves to black ink on white. Before the mid-nineteenth century, color was used in limited, traditional ways in Western art. In the 1860s and 1870s, influenced by the new science of color, the French Impressionist painters revolutionized the way color was seen and used.

The Physics of Color

What we call “color” is the effect on our eyes of light waves of differing wavelengths or frequencies. When combined, these light waves make white light—the visible part of the electromagnetic spectrum. Individual colors are components of white light.

The phenomenon of color is a paradox: color exists only in light, but light itself seems colorless to the human eye. Objects that appear to have color are merely reflecting the colors that are present in the light that illuminates them. In 1666, British scientist Sir Isaac Newton discovered that white light is composed of all the colors of the spectrum. He found that when the white light of the sun passes through a glass prism, it is separated into the bands of color that make up the *visible spectrum*, as shown in the diagram WHITE LIGHT REFRACTED BY A PRISM.

Because each color has a different wavelength, each travels through the glass of the prism at a dif-

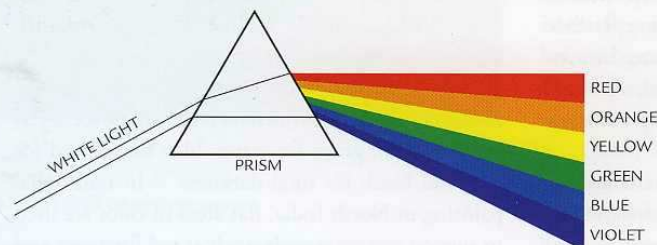
ferent speed. Red, which has the longest wavelength, travels more rapidly through the glass than blue, which has a shorter wavelength. A rainbow results when sunlight is refracted and dispersed by the spherical forms of raindrops, producing a combined effect like that of the glass prism. In both cases, the sequence of spectral colors is: red, orange, yellow, green, blue, and violet.

Pigments and Light

Our common experience with color is provided by light reflected from pigmented surfaces. Therefore, the emphasis in the following discussion is on pigment color rather than on color coming from light alone.

When light illuminates an object, some of the light is absorbed by the surface of the object and some is reflected. The color that appears to our eyes as that of the object (called *local color* or *object color*) is determined by the wavelengths of light being reflected. Thus, a red surface illuminated by white light (full-spectrum light) appears red, because it reflects mostly red light and absorbs the rest of the spectrum. A green surface absorbs most of the spectrum except green, which it reflects; and so on with all the hues.

When all the wavelengths of light are absorbed by a surface, the object appears black; when all the wavelengths are reflected, the surface appears white. Black and white are not true colors: white, black, and their combination, gray, are *achromatic* (without the property of hue) and are often referred to as *neutrals*.

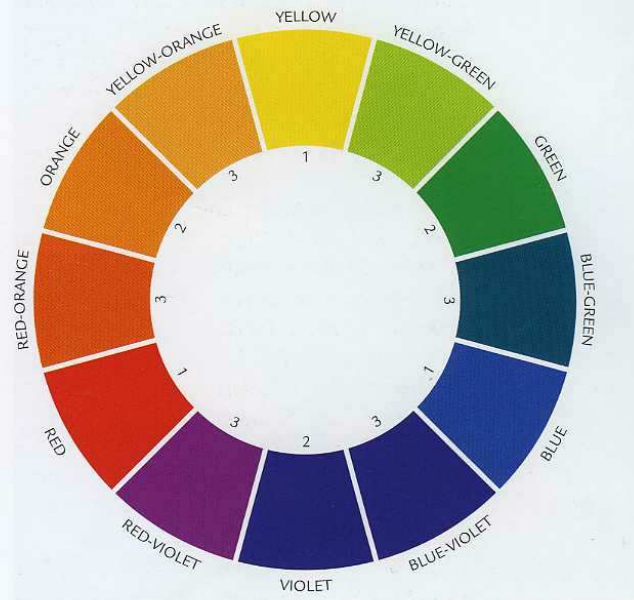


95 WHITE LIGHT REFRACTED BY A PRISM.

Each of the millions of colors human beings can distinguish is identifiable in terms of just three variables: hue, value, and intensity.

- *Hue* refers to a particular wavelength of spectral color to which we give a name. Colors of the spectrum—such as yellow and green—are called hues.
- *Value* refers to relative lightness or darkness from white through grays to black. Pure hues vary in value. On the color chart shown in THE THREE DIMENSIONS OF COLOR, hues in their purest state are at their usual values. Pure yellow is the lightest of hues; violet is the darkest. Red and green are middle-value hues. Black and white pigments can be important ingredients in changing color values. Black added to a hue produces a *shade* of that hue. For example, when black is added to orange, the result is a brown; when black is mixed with red, the result is maroon. White added to a hue produces a *tint*. Lavender is a tint of violet; pink is a tint of red.
- *Intensity*, also called *saturation*, refers to the purity of a hue or color. A pure hue is the most intense form of a given color; it is the hue at its highest saturation, in its brightest form. With pigment, if white, black, gray, or another hue is added to a pure hue, its intensity diminishes and the color is thereby *dulled*.

When the pigments of different hues are mixed together, the mixture appears duller and darker because pigments absorb more and more light as their absorptive qualities combine. For this reason, pigment mixtures are called *subtractive color mixtures*. Mixing red, blue, and yellow will produce a dark gray, almost black, depending on the proportions and the type of pigment used.



a. HUE—the color wheel.



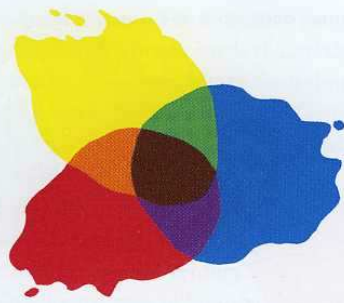
b. VALUE—from light to dark. Value scale from white to black.



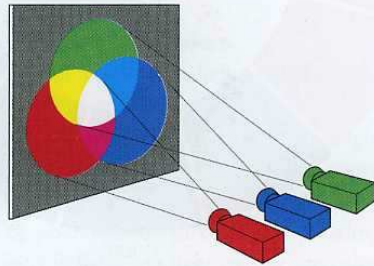
Value variation in red.



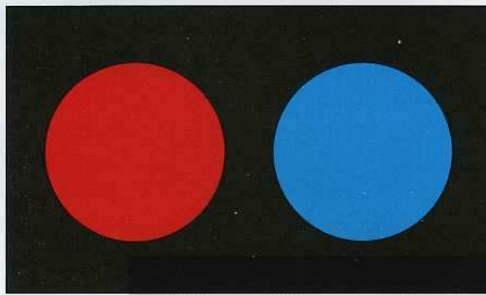
c. INTENSITY—from bright to dull.



97 PIGMENT PRIMARIES: SUBTRACTIVE COLOR MIXTURE.



98 LIGHT PRIMARIES: ADDITIVE COLOR MIXTURE.



99 WARM/COOL COLORS.

Most people are familiar with the three **PIGMENT PRIMARIES**: red, yellow, and blue. Printers use *magenta* (a bluish red), *yellow*, and *cyan* (a greenish blue) because magenta and cyan provide the specific purplish red and greenish blue that work best for four-color printing.


A lesser-known triad is the three **LIGHT PRIMARIES**: red-orange, green, and blue-violet—actual electric light colors that produce white light when combined. Such mixtures are called *additive color mixtures*. Combinations of the light primaries produce lighter colors: red and green light, when mixed, produce yellow light. Color television employs additive color mixture.

Color Wheel

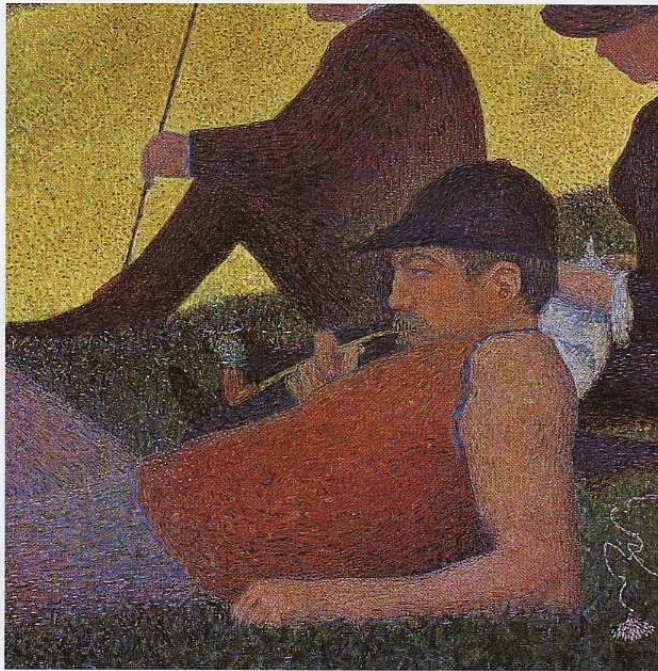
The color wheel is a twentieth-century version of a concept first developed in the seventeenth century by Sir Isaac Newton. After Newton discovered the spectrum, he found that both ends could be combined into the hue red-violet, making the color wheel concept possible. Numerous color systems have followed since that time, each with its own basic hues. The color wheel shown here is based on twelve pure hues and can be divided into the following groups:

- *Primary hues* (see 1 on the color wheel): red, yellow, and blue. These pigment hues cannot be produced by an intermixing of other hues. They are also referred to as primary colors.
- *Secondary hues* (see 2 on the color wheel): orange, green, and violet. The mixture of two primaries produces a secondary hue. Secondaries are placed on the color wheel between the two primaries of which they are composed.
- *Intermediate hues* (see 3 on the color wheel): red-orange, yellow-orange, yellow-green, blue-green, blue-violet, and red-violet. Each intermediate is located between the primary and the secondary of which it is composed.

The blue-green side of the wheel seems *cool* in psychological temperature, and the red-orange side is *warm*. Yellow-green and red-violet are the poles dividing the color wheel into warm and cool hues. The difference between warm and cool colors may come chiefly from association. Relative warm and cool differences can be seen in any combination of hues. Color affects our feelings about size and distance as well as temperature. Cool colors appear to contract and recede; warm colors appear to expand and advance, as in the WARM/COOL COLORS diagram.

Color sensations more vibrant than those achieved with actual pigment mixture can be obtained when dots of pure color are placed together so that they blend in the eye and mind, to create the appearance of other hues. This is called *optical color mixture*. For example, we see rich greens when many tiny dots or strokes of yellow-green and blue-green are placed close together. (View the interactive exercise Elements of Color and Light on the  *Discovering Art* CD.)

Painter Georges Seurat worked with these effects in the 1880s as a result of his studies of Impressionist paintings and recent scientific discoveries of light and color. He wanted his paintings to capture the brilliance and purity of natural light. Seurat called his method *divisionism*; it is now usually called *pointillism*. The result is similar to modern four-color printing, in which tiny dots of ink in the printer's three primary colors—magenta (a bluish red), yellow, and cyan (a greenish blue)—are printed together in various amounts with black ink on white paper to achieve the effect of full color. Seurat, however, used no black. Compare the detail of Seurat's *A SUNDAY ON LA GRANDE JATTE* with the color separations and the enlarged detail of the reproduction of Botticelli's *BIRTH OF VENUS* (on the following page). The eye perceives subtle blends as it optically mixes tiny dots of intense color both in Seurat's painting and in four-color printing.



100 OPTICAL COLOR MIXTURE.
Detail of Georges Seurat's
A SUNDAY ON LA GRANDE JATTE, 1884–86.
Oil on canvas, 207.6 × 308 cm.
Helen Birch Bartlett Memorial Collection, 1926.224.
Photograph: © The Art Institute of Chicago. All Rights Reserved.



a. Yellow.



b. Magenta.



c. Yellow and magenta.



d. Cyan.



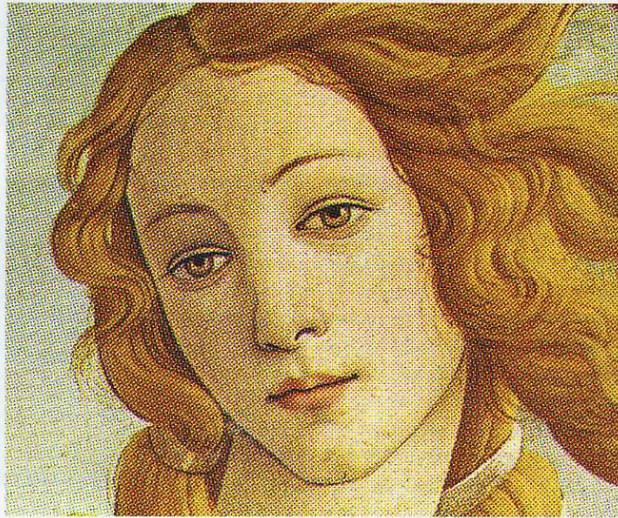
e. Yellow, magenta, and cyan.



f. Black.



g. Yellow, magenta, cyan, and black.



101 COLOR PRINTING

h. Color printing detail of Sandro Botticelli's BIRTH OF VENUS, 1486. Detail.
Tempera on canvas, 175 × 134 cm. Uffizi, Florence, Italy.
Erich Lessing/Art Resource, NY.

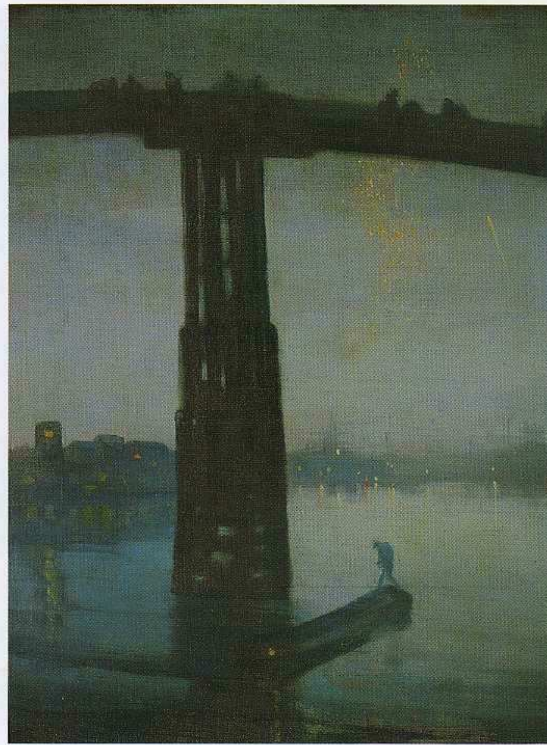
Color Schemes

Color groupings that provide distinct color harmonies are called *color schemes*.

Monochromatic color schemes are based on variations in the value and intensity of a single hue. In a monochromatic scheme, a pure hue is used alone with black and/or white, or mixed with black and/or white. Artists may choose a monochromatic color scheme because they feel that a certain color represents a mood. Pablo Picasso, for example, made many blue paintings in the early years of the twentieth century, at a time in his life when he was very poor. Other artists adopt the monochromatic color scheme as a kind of personal discipline, in order to experiment with the various shades and gradations of a relatively narrow band of the spectrum. James McNeill Whistler did just that in the 1870s when he embarked on a series of works called *NOCTURNES*. The series began when he noticed that after sunset the world becomes in effect more monochromatic as the brightest hues disappear. The challenge, which he met in *NOCTURNE: BLUE AND GOLD—OLD BATTERSEA BRIDGE*, is to create a visually rich surface with limited tonal means. The gold flecks are the only counterfoil to the monochromatic blue-green scheme.

Analogous color schemes are based on colors adjacent to one another on the color wheel, each containing the same pure hue, such as a color scheme of yellow-green, green, and blue-green. Tints and shades of each analogous hue may be used to add variations to such color schemes.

Jennifer Bartlett's three-dimensional installation *VOLVO COMMISSION* uses the analogous colors yellow-orange, yellow, and yellow-green, which are adjacent to one another in the spectrum and on the



102 James Abbott McNeill Whistler.
NOCTURNE: BLUE AND GOLD—OLD BATTERSEA BRIDGE,
1872–1875.
Tate Gallery, London, Great Britain. © Erich Lessing/Art Resource, NY.

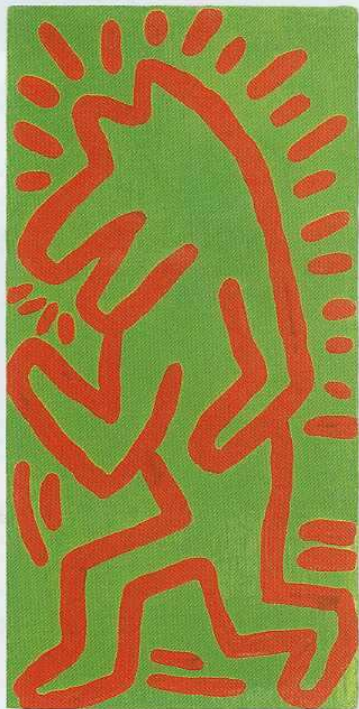


103 Jennifer Bartlett.
VOLVO COMMISSION, 1984.
Relaxation room, detail: table, painted wood,
29" × 35" × 35"; chair, painted wood, 35" × 18" × 18";
portfolio of twenty-four drawings, pen, brush, and ink on
paper, 20" × 16"; house cigarette box, painted wood,
5" × 5"; boat ashtray, silver, 5" × 2"; screen, enamel on six
wood panels, 6' × 10'3".
Volvo Corporate Headquarters, Sweden. Courtesy of the artist.

color wheel. The analogous color scheme supports the mood of quiet relaxation appropriate to the pleasant rural subject.

Complementary color schemes emphasize two hues directly opposite each other on the color wheel, such as red and green. When actually mixed together as pigments in almost equal amounts, complementary hues form neutral grays; but when placed side by side as pure hues, they contrast strongly and intensify each other. Complementary hues red-orange and blue-green tend to “vibrate” more when placed next to each other than do other complements because they are close in value and produce a strong warm/cool contrast. The complements yellow and violet provide the strongest value contrast possible with pure hues. The complement of a primary is the opposite secondary, which is obtained by mixing the other two primaries. For example, the complement of yellow is violet.

Keith Haring’s *UNTITLED* shows the effect of complementary colors. The bright red and green are near-opposites on the color wheel. When seen to-



104 Keith Haring.
UNTITLED. 1982.
Dayglo paint on wood. 8½" × 4½".
© The Estate of Keith Haring.

gether they vibrate. This “loud” color scheme supports the simple execution and brash subject matter of the painting in providing an almost comically crude effect. The artist used Dayglo paints, which are known for their gaudy brightness.

These examples provide only a basic foundation in color theory. In fact, most artists work intuitively with color harmonies more complex than the schemes described above.

TEXTURE

In the visual arts, *texture* refers to the tactile qualities of surfaces or to the visual representation of those qualities. As children, we explored our surroundings by touching everything within reach, and we learned to equate the feel with the look of surfaces. As adults we know how most things feel, yet we still enjoy the pleasures that touching gives; we delight in running our hands over the fur of a pet or the smooth surface of polished wood.

All surfaces have textures that can be experienced by touching or through visual suggestion. Textures are categorized as either actual or simulated. *Actual* textures are those we can feel by touching, such as polished marble, wood, sand, or swirls of thick paint. *Simulated* (or implied) textures are those created to look like something other than paint on a flat surface. A painter can simulate textures that look like real fur or wood but to the touch would feel like smooth paint. Artists can also invent actual or simulated textures. We can appreciate most textures even when we are not permitted to touch them, because we know, from experience, how they would feel.

Meret Oppenheim’s fur-covered teacup, titled *OBJECT*, is a rude tactile experience. She presented an intentionally contradictory object designed to evoke strong responses ranging from revulsion to amusement. The actual texture of fur is pleasant, as is the smooth texture of a teacup, but the idea of touching



105 Meret Oppenheim.
 OBJECT (LE DEJEUNER EN FOURRURE). 1936.
 Fur covered cup 4 $\frac{3}{8}$ " (10.9 cm) diameter; saucer 9 $\frac{3}{8}$ " (23.7 cm) diameter; spoon 8" (20.2 cm) long; overall height 2 $\frac{7}{8}$ " (7.3 cm).
 The Museum of Modern Art, New York. Purchase.
 Photograph: © 2002 The Museum of Modern Art, NY. © 2002 Artists Rights Society (ARS), NY/Prolitteris, Zurich.

one's tongue to fur rather than porcelain is startling. Abundant social and psychological implications are intended.

Sculptors and architects make use of the actual textures of their materials and the relationships between them. They can also create new textures in the finishing of surfaces. Compare the eroded surfaces of Giacometti's figure on page 46 with the youthful, skinlike textures of the figures in Rodin's *THE KISS* on page 31, which in itself has strong textural contrast. Each artist used texture to heighten emotional impact.

Texture is also extremely important for an appreciation of pottery, which we may take in our hands or even bring to our mouths. For example, handling the *FLASK* from Tang Dynasty China is likely to be even more interesting than looking at it. The potter achieved the complex texture of the surface by splashing a lighter glaze of a different chemical composition over the original dark glaze.



106 FLASK.
 China, Tang Dynasty, 9th century.
 Stoneware with suffused glaze.
 Height 11 $\frac{1}{2}$ ".
 Metropolitan Museum of Art. Gift
 of Mr. and Mrs. John R. Menke, 1972. (1972.274)
 Photograph: Schechter Lee.
 © 1986 The Metropolitan Museum of Art.



107 Vincent van Gogh.
Detail of *STARRY NIGHT*. 1889.
Oil on canvas. 29" × 36¼" (73.7 × 92.1 cm).
The Museum of Modern Art, NY/Licensed by Scala-Art Resource, NY.
Photograph: © 2002 The Museum of Modern Art, New York.

Incomplete mixing of the two left a mottled surface. Elsewhere in the body of the piece, the clay has loops and ridges that disclose the origin of the shape to be the leather flasks carried by horsemen. These varied textures make our experience of this object multisensory.

A painter may develop a rich tactile surface as well as an implied or simulated texture. We can see actual texture on a two-dimensional surface in the detail of van Gogh's *STARRY NIGHT* (the entire painting appears in Chapter 21 and in the interactive exercise on Texture and Pattern on the *Discovering Art* CD). With brush strokes of thick paint, called *impasto*, van Gogh invented textural rhythms that convey his intense feelings.

Five centuries earlier, painter Jan van Eyck used tiny brush strokes to show, in minute detail, the incredible richness of various materials. In his painting of *GIOVANNI ARNOLFINI AND HIS BRIDE*, van Eyck simulated a wide range of textural qualities. In the section of the painting reproduced here (close to actual size) we see the smooth textures of the mirror, amber beads, metal chandelier, a corner of a whisk broom, and the fur of the man's coat. Many other textures can be seen in the entire painting reproduced in Chapter 17.

We have explored some of the expressive powers of the visual elements. The ways in which the elements work together according to the principles of design are the focus of the next chapter.

108 Jan van Eyck. Detail of *THE MARRIAGE OF GIOVANNI ARNOLFINI AND GIOVANNA CENAMI*. 1434.
National Gallery, London.
Bridgeman Art Library, International, Ltd.

