8

TIME AND MOTION

IN THIS CHAPTER

All things move, all things run, all things are rapidly changing. . . . On account of the persistency of an image upon the retina, moving objects constantly multiply themselves; their form changes like rapid vibrations, in their mad career. . . . To paint a human figure you must not paint it; you must render the whole of its surrounding atmosphere.

—Umberto Boccioni, "Technical Manifesto of Futurist Painting," April 11, 1910. (From Helen M. Franc, *An Invitation to See* [New York: The Museum of Modern Art, 1973], p. 54.)

The **Futurist** poets and painters of early-twentieth-century Italy were seduced by the motion and speed of the instruments of the industrial age—locomotives, automobiles, airplanes, power generators, and the pistons and turbines that drive factory and machine. Their goal was to express this speed, this sensation of rapid movement—a fourth dimension—in two- and three-dimensional art. Much of Boccioni's "Technical Manifesto of Futurist Painting" was devoted to suggestions on how to see and how to replicate the "dynamic sensation" of movement and speed in pictorial art. If the Renaissance masters perfected the representation of the third dimension—depth, mass, and volume—on a two-dimensional surface, the Futurist artists brought us as close to the representation of motion in painting and sculpture as one can imagine.

Futurism / An early-twentieth-century style of art that portrayed modern machines and the dynamic character of modern life and science.

< **Henri de Toulouse-Lautrec.** ***Study for Loïe Fuller at the Folies Bergère*** (1893) Oil on cardboard (24 7/8" × 17 7/8").

▲ **8.2 Umberto Boccioni.** ***Dynamism of a Soccer Player*** (1913) Oil on canvas (76 1/8" × 79 1/8").

▲ **8.3 Niki de Saint-Phalle.** ***The Firebird*** (1983) Stravinsky Fountain, Paris. Sculpture, fiberglass, and steel.

Boccioni's *Dynamism of a Soccer Player* (Fig. 8.2), a signature Futurist painting, is the physical manifestation of the artist's obsession with motion and speed. On approaching the work, one is struck by the sensation of movement long before it becomes possible to decipher the limbs of an athlete running full speed. Spirals, arcs, and what seem to be flame-licked shapes swirl around a core of energy and fan outward, leaving traces of them in the surrounding environment. Wedges of sky fall on the figure like so many spotlights, breaking the solids into bits of prismatic color. The soccer player courses, pulsates, hurtles ahead, cutting through space and time as the viewer is visually drawn into the work by lines and shapes that appear to encircle and ensnare.

The work of the Futurists represents an exaggeration, an extreme in the depiction of movement. One must abandon oneself to the sensation, foregoing the details of representation for an abstract rendition of speed and dynamic force. But many artists have used a variety of techniques to illustrate motion and the passage of time less radically. And the introduction of mediums such as cinematography and video have made it possible to present motion and the passage of time in "real time"—or in slow or accelerated motion. In this chapter we consider movement and art, both actual and implied. Movement takes place within time; thus the two are intertwined.

ACTUAL MOTION

Artists work with motion as they would any other element in creating a work of art. From fountains in which the movement of water is intrinsic to the design (Fig. 8.3), to shape-shifting kinetic sculptures whose compositions are transformed by even the slightest breeze, artists have been intrigued by the potential of motion to convert a static image into an active one. It is this conversion that is at the foundation of film and video.

Kinetic Art

Works that are designed to move are referred to as **kinetic art** (from the Greek *kinesis*, meaning "movement"). The **mobiles** of Alexander Calder are among the most popular examples of kinetic art in the twentieth century. His *Little Spider* (see Fig. 11.4) is composed of disks of different sizes and colors that are cantilevered from metal rods in such a way that they can rotate horizontally—in orbits—in the breeze. However, the center of gravity remains stable, so that the entire sculpture is hung from a single point. The composition changes—and keeps changing—with air

kinetic art / Art that moves, such as the mobile.

mobile / A type of kinetic (moving) sculpture that responds to air currents.

8.4 Jean Tinguely. ***Drawing machine*** (1959) Iron tripod, wooden wheels, molded sheet metal, rubber belts, metal rods, all painted black, electric motor (19 3/4" × 27 5/8" × 11 3/4").

currents and the viewer's vantage point. The combinations of movements are, essentially, infinite; the observer never sees the work in quite the same way.

George Rickey's name has become synonymous with contemporary kinetic sculpture. The stainless-steel shapes of his works are weighted and balanced to move silently and effortlessly with the slightest breeze. His compositions take their shape randomly, ceaselessly changing as their components rise, fall, and twirl. You can see videos of two of his pieces in motion—*Two Lines Oblique Gyratory II* and *Three Rectangles Horizontal Jointed Gyratory IV*—on the Marlborough Gallery website (http://www.marlboroughgallery.com, choose "Artists," "The Estate of George Rickey").

Jean Tinguely (Fig. 8.4) also emphasized—and satirized—the utilization of random movement in creating works of art in his series titled *Métamatics*. The series, in which kinetic machines produce drawings "automatically," was created between 1955 and 1959, the era during which Abstract Expressionists like Jackson Pollock (see Fig. 1.17) worked under the influence of *automatism* (see Visual Glossary, Surrealism, p. 288).

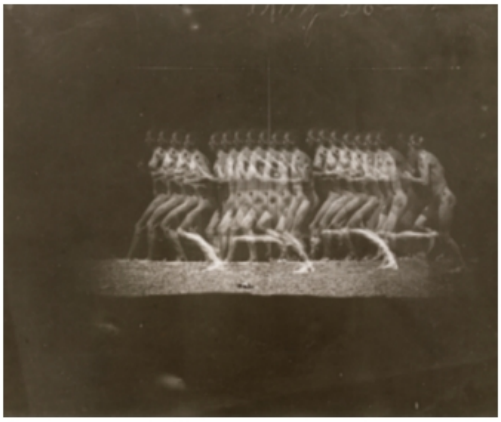
Recording Actual Motion

Photographs of kinetic works of art do nothing to describe their actual character and thus these works cannot be experienced or appreciated unless the motion that is integral to their aesthetic is recorded—captured on film or video or in time-lapse photography. Evolving technology has made it possible for photographers to achieve dazzling images such as the one captured by Harold Edgerton as a .30-caliber bullet pierced through an apple. In a moment not visible to the naked eye, the apple disintegrates completely (Fig. 8.5). Edgerton, called the "father" of high-speed and stop-action photography, was an electrical engineer at MIT who pioneered the use of the stroboscope—a device that emits brief and brilliant flashes of light that seem to slow or stop the action of things in motion. He synchronized the flashes with the movements of objects and captured them with an open shutter at many flashes per second. Edgerton applied the technology to capture ordinary and extraordinary events—water flowing from a faucet, a simple drop of milk splashing into a pool of liquid, bullets penetrating helium balloons, and athletes moving with strength and grace. His work was featured at the Museum of Modern Art's first exhibition of photography in 1937.

Lincoln Seligman's *Deconstructed Sphere* (Fig. 8.6) is a riff on Edgerton's

8.5 Harold Edgerton. ***Bullet through apple*** (1987) Digital photograph. MIT Museum, Cambridge, MA. HEE-NC-78128. MIT Museum, Edgerton Digital Collections. Accessed: 1 December, 2013. http://edgerton-digital-collections.org

8.6 Lincoln Seligman. ***Deconstructed Sphere*** (2005) Acrylic (46 7/8" × 46 7/8").
© Lincoln Seligman.



8.7 Thomas Eakins. *Jesse Godley* (1884) Gelatin silver print (3 3/4" × 4 3/4").

8.9 Giacomo Balla. *Girl Running on the Balcony* (1912) Oil on canvas (49 1/8" × 49 1/8").

concept. The cluster of shards, rendered in perspective, forms a loose configuration that mimics that actual motion of exploding debris. The play of lights and shadow over the eerie suspended shapes adds to the illusion of movement.

ILLUSION OF MOTION

Seligman's portrayal of exploding shards is an illusion of actual motion; it appears to hang in space like a frozen memory of a blast that sent things flying. When artists use techniques successfully to suggest that motion is *in the process of occurring*, what they manage to achieve is the illusion of motion. These techniques include multiple exposures and multiplication of images or fragments; blurred lines; visual and narrative continuity; and optical sensations.

8.8a and 8.8b Anna Blume and Bernhard Blume. *Kitchen Tantrums* (1986–1987) Photo-piece (51 1/8" × 35 7/8").

Courtesy of the artist and Buchmann Galerie, Berlin.

Multiple Exposures and Blurred Lines

Early experiments with photography showed the figure in motion through rapid multiple exposures on a single photographic plate. In his motion study of Jesse Godley running (Fig. 8.7), Thomas Eakins—better known for his paintings—used photo sequences to capture the movement of the human body. In the wake of these experiments, a number of artists created the illusion of motion by applying the visual results of multiple-exposure photography to their paintings.

With rapid movement, the discrete boundaries of figures or objects can be difficult to perceive; they can be "lost in a blur." Blurring outlines is therefore another way to create the illusion of motion. Photographers sometimes purposefully elongate exposure times to

create this effect. Rather than stopping motion, as Edgerton did, with extremely rapid exposures that produced clear, singular images, photographers Anna and Bernhard Blume used very slow shutter speeds, resulting in blurriness that creates the illusion of motion. This is how it works: Imagine throwing a baseball into the air and watching it come down. If the baseball is photographed with a very short exposure time, the camera will capture the ball at one specific hair of a moment; if the exposure time is longer, the camera will capture the ball at *several* moments in its trajectory in the same image. In *Kitchen Tantrums* (Fig. 8.8a and 8.8b), the photographers "mechanically" caused the outlines of the potatoes to blur as they moved through the air.

Blurring and simulating the result of multiple exposures in photography will create the illusion of motion in paintings and drawings. Giacomo Balla's *Girl Running on the Balcony* (Fig. 8.9), for example, is a painting that mimics the camera technique that Eakins experimented with. Repetition, overlap, and the blurring of boundaries between the loosely constructed shapes create an illusion of a figure in a blue dress and blue stockings running along an iron railing. The painting evokes the descriptions of movement from the Futurist "Manifesto": "the persistency of an image upon the retina (causes) moving objects (to) constantly multiply themselves." Similarly, in *Reclining Nude Seen from the Back* (Fig. 8.10), Henri Matisse suggests a figure that twists and turns and shifts position through a combination of fixed outlines and their smudged and blurred echoes. The fuzzy charcoal lines soften the figure and contribute to the impression of movement.

Optical Sensations

In the 1960s and 1970s, Op Art introduced the illusion of movement to two-dimensional, nonobjective works of art. By creating optical sensations with the repetition of line and shape and the manipulation of high-contrast values and complementary colors, movement truly was in the eye of the beholder. Bridget Riley's *Gala* (Fig. 8.11) seems to vibrate. The painting is composed of a simple series of curved lines that change in thickness and proximity to one another,

(Continued on page 164)

8.10 Henri Matisse. *Reclining Nude Seen from the Back* (July 1938) Charcoal on paper (25 5/8" × 31 7/8").
Art © 2014 Succession H. Matisse/Artists Rights Society (ARS), New York.

8.11 Bridget Riley. *Gala* (1974) Acrylic on canvas (5' 2 3/4" square).
© Bridget Riley 2013. Courtesy Karsten Schubert Gallery, London.

THEORY & PRACTICE

Chasing the Fourth Dimension: Loïe Fuller

At the turn of the century in Paris, when the famous cabaret and music hall, the Folies Bergère, was in its heyday, an American dancer named Loïe Fuller captivated her French audiences with her signature "Serpentine Dance." Nicknamed the "Butterfly Girl," Fuller spun in circles, dipping and twirling copious yards of silken fabric around her body as she moved her arms up, down, and around (Fig. 8.12). It was a multimedia spectacle, pushed to the limits with colored stage lights pointed at costumes that were tinted with luminescent gels (https://archive.org/details/LoieFuller). Fuller's performance style was all about fluid, continuous movement and it is interesting to see the ways in which the artists of her day attempted to capture its essence and dynamism—the illusion of the fourth dimension (duration) on a static, two-dimensional surface (Figs. 8.13, 8.14, and 8.15). Serpentine lines and curvilinear shapes mimic the contours of her costume captured, as it were, as a snapshot in time. Other strategies for creating the illusion of motion these artists used—such as blurred lines and optical sensations—are discussed in this chapter.

▲ **8.12** **Isaiah West Taber.** ***Loïe Fuller Dancing*** (1897) Photograph (8 7/8" × 7 1/4").

▲ **8.13** **Pal (Jean de Paleologou).** ***La Loïe Fuller, Folies-Bergère*** (1897) Poster, color lithograph.

Go to CourseMate to brainstorm ideas about how your own work might take inspiration from motion in the natural world with the chapter's Possibilities for Thinking and Making.

8.14 Raoul Francois Larche. ***Dancer Loïe Fuller*** (1900) Bronze sculpture (18 1/8" × 10 1/8" × 9 1/8").

8.15 Henri de Toulouse-Lautrec. ***Study for Loïe Fuller at the Folies Bergère*** (1893) Oil on cardboard (24 7/8" × 17 7/8").

(Continued from page 161)

creating a powerful illusion of rippling movement. The close juxtaposition of complementary colors red and green also contributes to the illusion of vibration or pulsation. As we read in the chapter on color, when the eyes stare for an extended period of time at, say, red, they will perceive its complementary (green) afterimage if the gaze is diverted to a solid white plane. Riley judiciously alternates her red and green stripes with white ones so that afterimages of the red and green stripes create lines that appear and disappear.

a. Holding the ball in the mitt.

b. Catching the ball.

8.16 Hideki Yoshihara. Baseball Catcher (2008).

IMPLIED MOTION

Let's go back to baseball to explain the definition of **implied motion.** Two photographs show a baseball catcher squatting in position. The first (Fig. 8.16a) records his gesture just as the ball hits the pocket of his mitt. In the second (Fig. 8.16b), we see him poised and ready to catch the ball as it approaches. We assume that a ball will land in his mitt based on everything we know already about baseballs and catchers and odds—even though the action is not complete. The photographer has captured a specific moment in the event (what photographer Henri Cartier-Bresson termed "the decisive moment") when the viewer experiences the most anticipation and when the tension of pent-up (implied) energy and motion is even more effective than closure. In works of art, implied motion in a figure may be suggested by the tensing of muscles.

Implied motion may also suggest that a change in the position or location of

implied motion / Motion that is suggested by the artist rather than actual, as by tightened muscles in statues of human figures or by the use of diagonal lines.

8.17 Gianlorenzo Bernini. *Apollo and Daphne* (1622–1625) Marble, full relief.

8.18 Edgar Degas. *Frieze of Dancers* (c. 1895) Oil on fabric (27 5/8" × 78 7/8").

elements is occurring. This effect can be achieved by using lines of movement or by the repetition of shape, often with variation.

Movement—running—in Gianlorenzo Bernini's *Apollo and Daphne* (Fig. 8.17) is implied by the sweeping diagonal lines that cut through the sculpture from the tip of Apollo's toe to Daphne's fingertips and are echoed in the positioning of the arms and flow of drapery. The forward movement of the girl in Balla's painting (see Fig. 8.9), by virtue of the progression of imagery from left to right, also implies movement. Balla also uses repetition to enhance the feeling of motion that is occurring in a specific direction.

Simple multiplication of images with variations can imply progressions or subtleties of movement, as in Edgar Degas's *Frieze of Dancers* (Fig. 8.18). In Degas's painting, the rhythmic placement of the dancers, slight variations on a theme, so to speak, implies a common ritual (tying the ribbons of pointe shoes) but can also be read as different views of one individual compressed into a single frame.

Jennifer Bartlett has created some of the most complex and intriguing examples of implied motion by using the multiplication of shapes and by creating permeable boundaries between two and three dimensions—between illusion and reality. Her installation *Spiral: An Ordinary Evening in New Haven* (Fig. 8.19) depicts a virtual maelstrom of objects alternately engulfed by and spewed from—quite literally, it seems—a turbulent blaze. Shape repetition and

8.19 Jennifer Bartlett. *Spiral: An Ordinary Evening in New Haven* (1989) Oil on canvas (108" × 192"); painted wood table (30 1/2" × 32" × 35") and painted wood table with steel base (39 1/2" × 41" × 35"); welded steel cones (20" × 30 1/4" × 21").

the visual connection between the illusionistically rendered objects within—and actual objects outside—the painting imply motion; that is, the ejection of objects from the painting into the gallery space.

THE FOURTH DIMENSION

We live in the fourth dimension, meaning one that has length, width, height, and time. In the performing arts, works unfold in actual time at a specific location: operas, symphonies, choreographed ballets, or performance art pieces—such as Dennis Oppenheim's *Reading Position for a Second Degree Burn* (Fig. 8.20)—have a beginning, an end, and are of certain duration. The details describing the process and the result in Oppenheim's work are in a caption that separates the "before and after" photographs of the artist: "Stage 1 and Stage 2. Book, skin, solar energy, exposure time 5 hours. Jones Beach, 1970."

Implied time is the portrayal or suggestion of the passage or duration of time. In an illustration from the medieval Moutier-Grandval Bible (Fig. 8.21), the story of Adam and Eve, from their creation by God through their bitter struggles after expulsion from the Garden of Eden, is told in four, friezelike bands using figure repetition. The details of the setting are kept to a minimum, focusing our attention on the principal characters and the progression of the narrative.

TIME AND MOTION

In earlier chapters we have seen how artists use the elements of art in works that are two- or three-dimensional. We have seen strategies for creating the illusion of three dimensions (length, width, height, and depth) on a two-

implied time / The portrayal or suggestion of the passage or duration of time.

8.20 Dennis Oppenheim. *Reading Position for a Second Degree Burn* (1970) Color photography and collage (85" × 59 7/8"). Stage 1 and Stage 2. Book, skin, solar energy, exposure time 5 hours. Jones Beach, 1970.
© Dennis Oppenheim. Courtesy of Dennis Oppenheim Estate.

8.21 Scenes from Genesis (c. 840) Illustration in the Moutier-Grandval Bible (20" × 14 3/4").