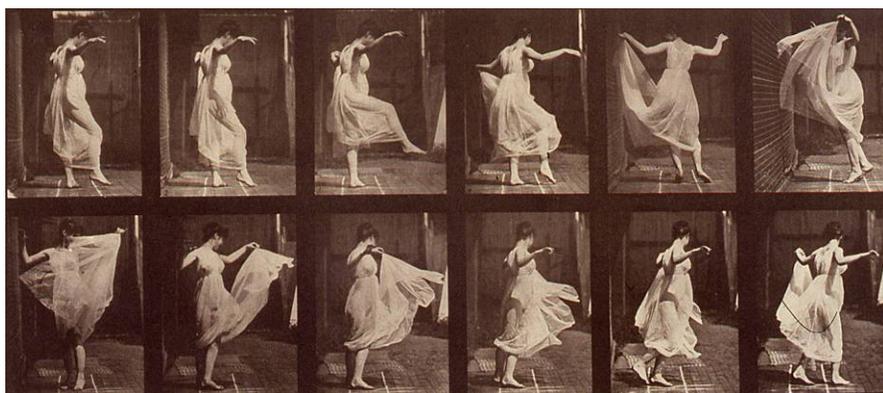


## Eadweard Muybridge, Harold Edgerton, and Beyond:

# *A Study of Motion and Time*



Eadweard J. Muybridge, *Plate 188. Dancing (fancy)*, from *Animal Locomotion*, 1872-1885, collotype on paper, 7 1/4 in. x 16 1/8 in., gift of the Edwin J. Beinecke Trust, Addison Gallery of American Art, Phillips Academy, Andover, MA

## Teacher Guide

### Fall 2008 Workshop Session 2: *Beyond Photography: Where Do We Go From Here?*



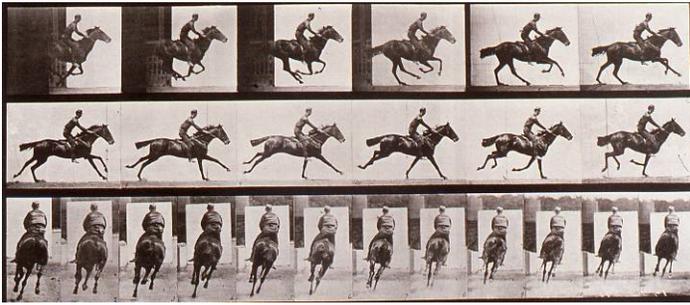
Walt Disney, *Figaro [from Pinocchio]*, 1940, watercolor on applied celluloid on wove paper, 9 1/2 in. x 13 1/16 in., museum purchase, Addison Gallery of American Art, Phillips Academy, Andover, MA

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Eadweard J. Muybridge, *Plate 633. Gallop; Saddle; Thoroughbred Bay Horse Bouquet*, from *Animal Locomotion*, 1885, collotype on paper, 7 1/4 x 16 7/16 in., gift of the Edwin J. Betnecke Trust, Addison Gallery of American Art, Phillips Academy, Andover, MA



**Eadweard Muybridge's (1830-1904)** motion studies from the 1880s required him to be an inventor, a chemist, a stage director, a publisher, a lecturer, an artist, and an entrepreneur in addition to being a photographer. His explorations of motion not only proved that all four of a horse's hooves leave the ground at once when it gallops but

also showed that it was possible to freeze motion into individual frames. Through photography he gave us the capability to witness details of motion that we are unable witness with the naked human eye.

### The Birth of Film

Muybridge's explorations immediately inspired further experimentation in his contemporaries. In 1888, **Le Prince** created what is believed to be the earliest surviving motion picture, in which a sequence of images made with one camera played at twelve frames per second. Other inventors, such as **Thomas Edison** and **Auguste and Louis Lumière**, were also early experimenters of "motion pictures," now more commonly known as films or movies.



Louis Le Prince, 1888, frames from *Roundhay Garden Scene*, 1930 copy, British Film Archive

### The Development of Animation

Even before the invention of photography in the late 1830s, people were experimenting with sequences of drawings that were manually manipulated to create a sense of movement. In order for Muybridge to publicly present his *Motion Studies*, in 1878 he developed the *zoopraxinoscope*, which projected hand-painted reproductions of his sequenced plates to animate them.

Walt Disney, *Doc From Snow White*, 1937, watercolor on applied celluloid mounted over watercolor on paper, 9.5/16 in. x 9.1/4 in., gift of Howard Eric, Addison Gallery of American Art, Phillips Academy, Andover, MA



In the early 1900s, filmmakers drew images on a blackboard, photographed them, and then erased them to draw the next image in the sequence. While today animated films are commonplace, at the time this "stop-motion" effect astonished audiences by making drawings come to life.



Marjane Satrapi, *Persepolis: The Story of a Childhood*, 2003, L'Association, Paris, France

### The Graphic Novel

While each successive image of a film is projected onto the same space, in a comic or graphic novel they are laid out one right after the other. Today, writers such as **Marjane Satrapi** composes hand-drawn sequential images to make graphic novels that use pictorial language to create works of literature.

### How to Use This Packet

This packet contains curriculum connections based on themes of time and motion. Let us help you to use them to:

- Enhance lessons that you are already teaching in your classroom in the areas of science, math, language arts, history, social studies, and/or art
- Plan a class visit to our Photography Study Studio to see selections from the Addison's photography collection
- Develop a photography & writing or other arts-based project for your class(es)

## Photography & Writing Project Themes and Curriculum Connections

### Communicating in Sequences and Series

- In our daily lives how do we communicate motion with singular images? with sequential images?
- What are the visual cues that allow us to understand motion and time in these images?
- How are the types of images we see different from what our parents saw? our grandparents? What does this sequencing tell us about the time between?

Imagine that you have been charged with the task of telling people one hundred years from now what activities make up your daily life. Make a list and describe the most important activities that you would want to show. How would you compose this as a letter? an essay? a story? Then imagine that you will be communicating with those who may not be able to read your language. How would you show these activities in a series of images? in one single image? How would the two differ? Can the single image tell as much as the series? Students can use photography, painting, drawing, video, or animation to communicate their ideas. Explorations can complement the study of cave paintings, hieroglyphics, pictographs, journalism, technology, and more.

*How does Edgerton condense a series of images into one single image? How does this progression of a girl skipping rope tell us more than one isolated frame might?*



Harold Edgerton, *Moving Skip Rope*, neg. 1952, gelatin silver print, 9 in. x 11 in., gift of The Harold and Esther Edgerton Family Foundation, Addison Gallery of American Art, Phillips Academy, Andover, MA



Michael Spano, *Subway*, 1978-1984, Widex gelatin silver print, 49 7/8 in. x 21 1/16 in., museum purchase, Addison Gallery of American Art, Phillips Academy, Andover, MA

### Viewpoints of Motion

- How can we depict different viewpoints of motion?
- How does *point of view* affect the way we view and interpret an image?
- How is point of view in writing similar to point-of-view in art?

What would walking/riding to school look like from the point of view of the sidewalk or street? What would picking a flower look like from the point of view of the flower—or the bee that is eating from it? Select an activity to photograph from at least two different viewpoints. Experiment with series of images to document multiple stages of the motion. Compare and contrast your photographic series and write a narrative or poem from each point of view. What does the sidewalk see as you walk on it? What does the flower see/feel as you pick it?

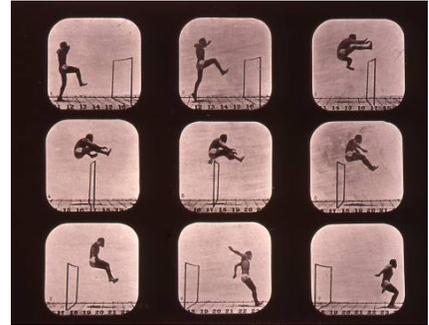
*Michael Spano used a special camera to make this photograph from more than one point of view. How does the change in perspective make you feel? Why do you think he used this technique to photograph this particular scene?*

## Science Curriculum Connections

### Moving Pictures & Flipbooks

- How much time has elapsed between each frame of a Muybridge plate?
- How does this concept relate to film? animation? claymation?
- How does motion progress from start to finish?

Draw a grid with ten spaces on a sheet of stiff paper. In the first box, draw the first step in a simple action, such as someone starting to climb up the ladder of a diving board. In the last box, draw the last step in the action, such as the splash of the diver hitting the water. Then draw the in-between steps in the remaining boxes to create a motion sequence. Cut apart the boxes and staple the pages together as a flipbook. You can also use photographs to chart the steps an action, one that happens over a shorter or longer period of time. These explorations can complement the study of phases of the moon, path of the stars, growth of animals and plants, and more.



Eadweard J. Muybridge, *Plate 103. Athletes, Running High Leap*, from *The Attitudes of Animals in Motion*, 1881, albumen print mounted on heavy weight paper, 6 3/8 in. x 8 7/8 in., partial gift of The Beinecke Foundation, Inc., Addison Gallery of American Art, Phillips Academy, Andover, MA



Elyn Zimmerman, *New York View (No. 11)*, 1980-1985, gelatin silver print, 40 in. x 30 in., museum purchase and partial gift of Betsy Senior (PA 1976), Addison Gallery of American Art, Phillips Academy, Andover, MA

### Relative Motion

- If we are standing on the sidewalk, does a woman driving in a car appear to be moving?
- If we are also in the car, does she still appear to be moving?

Depending on our frame of reference, our reference point (where we are located) in relation to something moving (the car), we perceive the motion quite differently. Without a visible reference point, it can appear that an object is moving faster or slower than it is in reality. Have students think about and document frames of reference. What motion can we not detect due to lack of a reference point? Explorations can complement the study of the expansion of the universe, the rotation of the earth, the earth's orbit around the sun, the movement of blood through our bodies, and more.

*What is moving in this Elyn Zimmerman photograph? the building? the ground? the photographer? How can we tell? How and why do you think the photographer made the picture this way?*

### Newton's Law: Objects in Motion

- What happens to your body when you are running and you suddenly stop?
- What does your hair do? What does your body feel like? Why?
- How would you depict that in a drawing so that the viewer sees that your subject was moving?

Observe Eadweard Muybridge's photography and/or slow down a video so students can look at individual frames. Students can photograph each other and experiment using blur to depict motion. How can speed or directionality be conveyed in a photograph?

*How can you tell that the figure in Milton Halberstadt's photograph is moving? In what direction? What visual phenomenon from the photograph are used to depict motion in painting? in illustrations? in graphic novels? in film?*



Milton H. Halberstadt, *Dancer (Intombment)*, n.d., gelatin silver print, 13 1/2 in. x 9 3/4 in., museum purchase, Addison Gallery of American Art, Phillips Academy, Andover, MA

## Language Arts & History/Social Studies Curriculum Connections

### Language Arts Connections

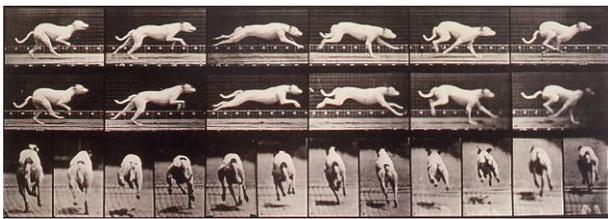
#### Sequential Images

- What mediums use sequential images to tell a story?
- In what situations might the interpretation of an image differ from that of the text?
- How are images used to tell a story in journalism? in advertising? in children's books? in comics? in your textbooks?

Gather sequences of images from any of these sources and cut them out, scan them, or cover them to block out the text. Now write your own story that relates to the images using the visual clues provided in the pictures.



Eric Drooker, *FLOOD!: A Novel in Pictures*, 2002, Dark Horse Comics, Inc.



Eadweard J. Muybridge, *Plate 709. Dog: Galloping; White Racing Hound Maggie*, from *Animal Locomotion*, 1885, collotype on paper, 6 7/16 in. x 18 1/8 in., gift of the Edwin J. Beinecke Trust, Addison Gallery of American Art, Phillips Academy, Andover, MA

#### The Speed of Language

- How can language give momentum to a story?
- How can we use words that make the story move more slowly or give the story forward momentum?
- What words can be added to a story to make time pass faster? slower?

Read a story and circle all the words that indicate how much time is passing. Then replace those words with words that change the pace to see how the story changes.

*How could you make the dog in this Muybridge Motion Study appear to be moving faster or slower using words to accompany the images? In addition to words that describe speed, what other words describe the dog's motion?*

### History and Social Studies Connections

#### History of Motion Picture

By 1880, inventors all over the world knew that the art of moving pictures was right around the corner. Muybridge's *zoopraxiscope* projected hand-drawn versions of his *Motion Studies* to create a moving image. At the Chicago World's Fair in 1893, Thomas Edison presented his *kinetograph*, the first practical moving picture camera, and *kinetoscope*, a cabinet in which a loop of film was powered by a motor and backlit to be viewed through a magnifying glass.



*Zoopraxiscope*, courtesy of Kingston Museum, UK

- How has our world been affected by these inventions and developments in technology?
- What technologies do we use today to capture and view motion?
- How has motion-viewing technology evolved to respond to contemporary needs and events?

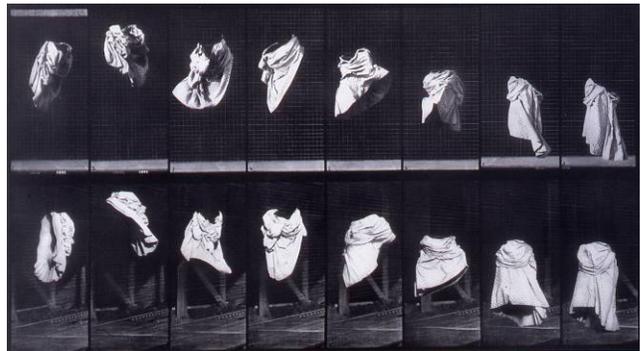
Select something that you use to view images in your daily life and research how it works. When were moving billboards invented? Where did computer flash technology come from? What needs of contemporary society did digital photography meet? What are the differences among broadcast, digital, and high definition television?

## References

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Addison Gallery of American Art's collection online:  
<http://accessaddison.andover.edu/>  
Browse or search to find images of your favorite Addison artworks anytime—or check out our community portfolios for themes and ideas around which we can base a class visit to the Photography Study Studio.

The Addison Gallery can lend a DVD of animated sequences of Muybridge's *Motion Studies* or provide PowerPoint presentations with the images in this packet or others from the Addison's collection.



Kathy Grove, *The Other Series: After Muybridge*, 1990, gelatin silver print, museum purchase, Addison Gallery of American Art, Phillips Academy, Andover, MA

### Eadweard Muybridge

[http://www.kingston.gov.uk/browse/leisure/museum/museum\\_exhibitions/muybridge.htm](http://www.kingston.gov.uk/browse/leisure/museum/museum_exhibitions/muybridge.htm)

Upon his death, Eadweard Muybridge bequeathed his equipment and copies of his prints to the museum in the city of his birth, Kingston upon Thames, whose website contains biographical information, photographs, and images of and information about his machinery and equipment.

### The Media

<http://www.nationalmediamuseum.org.uk/home.asp>

The website of the National Media Museum has an extensive list of online resources relating to photography, film, and new media.

## Additional References

### Early Films (Available on youtube.com)

Louis Le Prince - *Roundhay Garden Scene* - 1888

Auguste Lumière & Louis Lumière - *L'Arrivée d'un Train en Gare à La Ciotat* - 1895

George Méliès - *The Conjuror* - 1899

### Graphic Novels

Drooker, Eric. *Flood!: A Novel in Pictures*. Dark Horse Comics, Milwaukee, 2002.

McCloud, Scott. *Understanding Comics: The Invisible Art*. Harper Collins, New York, 1993.

Porcellino, John. *Thoreau at Walden*. Hyperion Books, New York, 2008.

Satrapi, Marjane. *Persepolis: The Story of a Childhood*. Pantheon Books, New York, 2003.

Spiegelman, Art. *The Complete Maus: A Survivors Tale*. Pantheon Books, New York, 1996.

### Contemporary Film with Accompanying Flipbook:

Eames, Charles and Ray Eames. *Powers of Ten*. Produced by Eames Demitrios and Shelly Mills, 1968

### *Note to Teachers:*

In pursuit of his mission to accurately illustrate all aspects of human movement, Eadweard Muybridge frequently used models who were nude, semi-nude, or draped in a gauzy fabric. This is in keeping with centuries-old artistic tradition and the scientific aspect of Muybridge's work. We can work with you to select the images with which you are most comfortable working with your students.