MOTION

in photography

but what is moving?

What is Motion?

Competition topics vary from month to month.
Usually “Open” is a relief.
A named topic is often a challenge.
The DCC competition topic for October is “***Motion Blur***.”

What does that mean?
What is the definition?
What is motion?
What is moving?
What is still?
What is blurred?
Where is the blur?
What area/portion/subject is sharp?

GOOGLE! GOOGLE!

Are there any examples in my Lightroom library?
In folders on my hard drive?
What/where/when can I capture an image to fit this topic?

The challenge is a good one. The wheels turn. Ideas form.
Where are some examples to motivate my interest?

Jim Walsh

MOVEMENT

in photography can mean:

vagueness

wooliness

fogginess

fuzzographs

smeared

streaked

blurred

The History of Motion in Photography

Let's look at the history of photography. Making images has progressed from long exposures to tiny fractions of time; from "blur is an amateur's mistake" to ICM (Intentional Camera Movement), and from sharp subjects to dizzying multiple-exposures (ME). All have had their moments, sometimes long moments.

From The New Yorker Magazine: An Alluring History of Photographic Blur

"Blur: A Photographic History," an exhibition currently at Photo Elysée, in Lausanne, Switzerland.

Eadweard Muybridge, *Plate Number 188. Dancing (fancy)*, 1887, National Gallery of Art

Harold Eugene Edgerton, *Wes Fesler Kicking a Football*, 1934, gelatin silver print, National Gallery of Art

Roger Mayne, *Goalie, Street Football, Brindley Road*, 1956, gelatin silver print, National Gallery of Art

MOVEMENT examples from the National Gallery of Art, DC

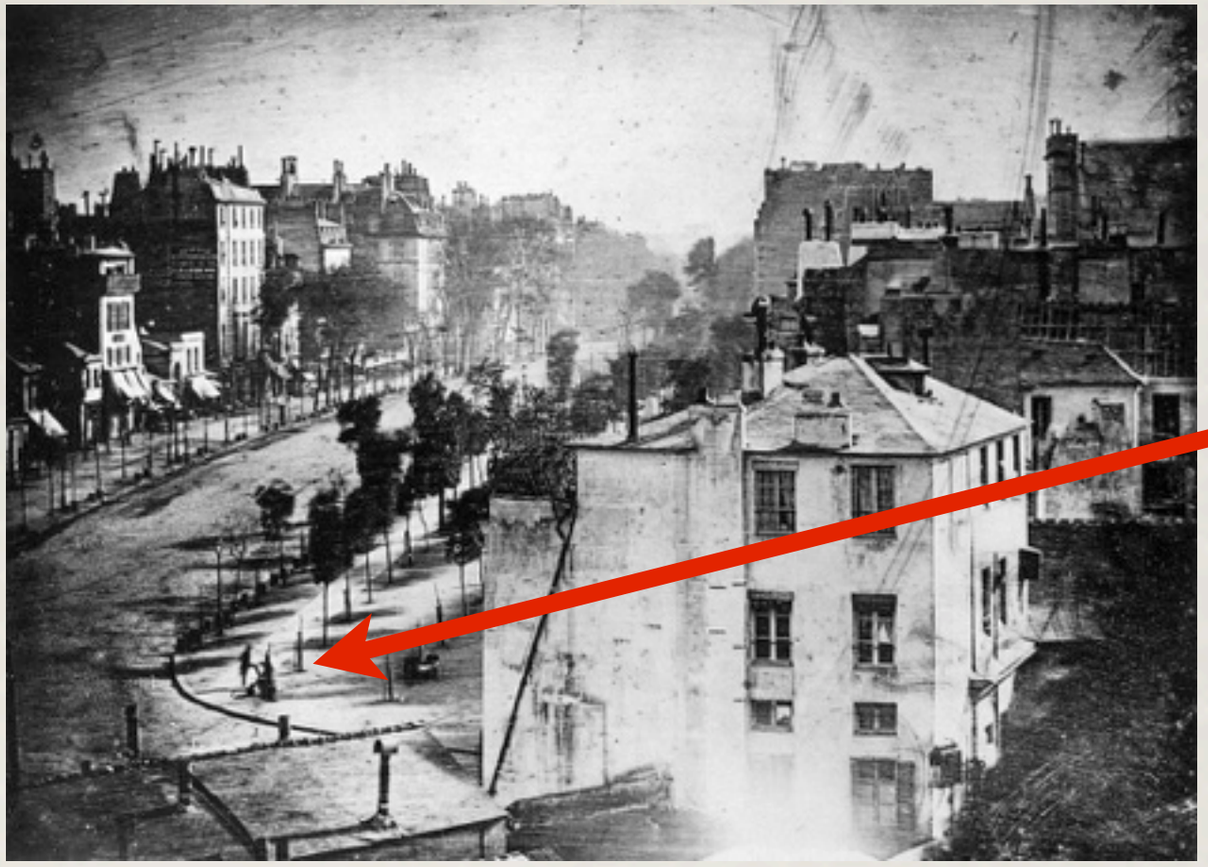
Harry Callahan, *Detroit*, c. 1943, dye imbibition print, printed c. 1980, National Gallery of Art

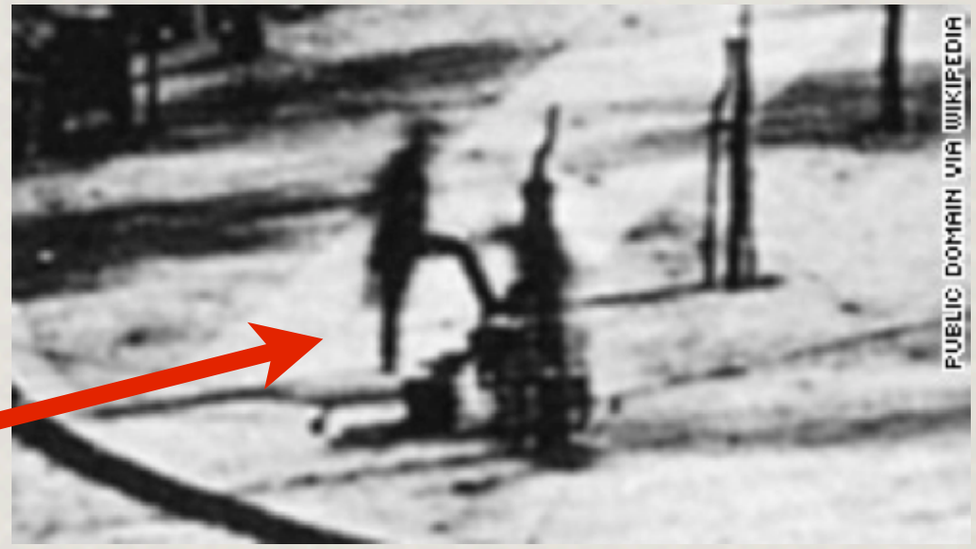
The First Photographs

Blur

Originally, shutter times were so slow, they had never captured portraits or humans in pictures. The first photograph, in 1826, was of a stationary scene. It was not until 1838, when humans were accidentally captured and observed on a photograph.

Historically, Louis Daguerre took this first photograph. It was of the Boulevard du Temple, Paris. Although people were strolling by, none show in the image except for one small figure getting his shoes shined.





This is a busy street with lots of carriages and pedestrians! But where are they? They are invisible because of motion blur! Only the person at the shoeshine stand is standing still and he is in the photograph.

The Invisible Man

Blur

The rest of the photograph doesn't show anything. All the pedestrian traffic and horse carts are motion-blurred because camera exposure (persistence) was a full 7 minutes! At this level, blurring becomes so faint and prolonged that moving objects are rendered imperceptible. The photo film is insensitive to momentary changes.

It apparently took many months (after this photograph) before people figured it out: people had to stay still in order to be photographed! In this early photography era, people such as Samuel Morse (inventor of morse code) apparently thought it was very strange that moving objects were rendered invisible in photography. Magic? Occult?

As exposures shortened to less than a minute, a faint motion blur appeared in moving objects. And exposures became shorter, there was less motion blur, and eventually motion blur was eliminated with ultrafast shutters or ultrafast flash photography. But when image persistence is several minutes, most moving objects becomes invisible to the human eye!

Thomas Annan, *Old Vennel, Off High Street*, 1868–1871, carbon print, National Gallery of Art

Peter Keetman, *Traffic*, 1953, gelatin silver print, National Gallery of Art

Frank Horvat, *Paris—Gare Saint-Lazare*, 1959, gelatin silver print, National Gallery of Art

Shomei Tomatsu, *Rush Hour, Tokyo*, 1981, gelatin silver print, National Gallery of Art

Background History

Blur formulas

As an experiment, take a photograph of a human walking at average speed:

* Motion blur for 0.001s shutter -- clear photograph
* Motion blur for 0.1s shutter -- slightly blurry
* Motion blur for 1s shutter -- super blurry
* Motion blur for 5s shutter -- very blurry and ghostly motion. Clear background shows through.
* Motion blur for 15s shutter -- faint ghostly smear that's mostly see-through to background.
* Motion blur for 1min shutter -- super faint smudge smear, almost no evidence of motion. Background perfect looking.
* Motion blur for 5min+ shutter -- smudge is so imperceptible it completely disappears from human eye.
* Motion rendered invisible by motion blur!

Stock Photo

The silver-covered copper plate photo process that Daguerre used required almost seven minutes of exposure time. Anything moving became a mere shadow or non-existant.

This type of long-exposure is often used today to create visions of busy places or landmarks with no visible people. Using a 10-16 stop ND filter allows the shutter to be open 30 minutes or more to capture a photo like this.

It is interesting that this technique is very similar to Daguerre's photo but "re-invented" in modern times!

Portraits

Man has always been vain and the most well-endowed of the upper classes desired a likeness of themselves.
And for centuries, these sculptures, paintings, drawings and likenesses were very sharp, clear and well-defined.

* **SCULPTURAL BUSTS**

Nefertiti (c. 1370 – c. 1330 BC) queen of Ancient Egypt

Caesar Augustus also known as Octavian, first Roman emperor, 27 BC - AD 14.

Portraits

* Expensive large oil **PAINTINGS** where the subject was costumed or dressed in finery and posed for long periods in one position.

Portrait of Louis XIV by Hyacinthe Rigaud, c. 1701

George Washington, ca. 1804, Gilbert Stuart, Gift of Miss Caroline

Portraits

OR low-cost alternatives:

* **MINIATURES** - miniature painting, also called (16th–17th century) **limning**, small, finely wrought portrait executed on vellum, prepared card, copper, or ivory. The name is derived from the minium, or red lead, used by the medieval illuminators.

small, portable portraits were often invested with great symbolism or significance, both politically and personally – painted to be held and viewed closely, and to be presented as tokens of loyalty, friendship or love.

Victoria & Albert Museum collection of miniatures: https://www.vam.ac.uk/articles/how-was-it-made-portrait-miniatures

Video of how they were made: Video Demonstration

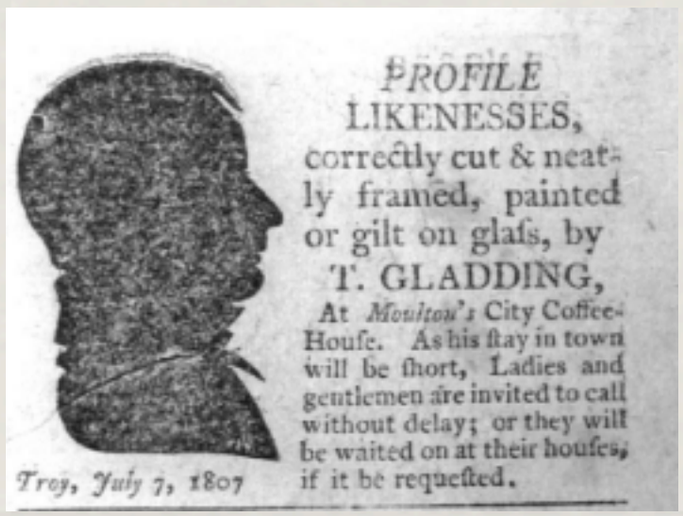
Portraits

* CUT-OUTS, SILHOUETTES, SKIAGRAMS

Silhouette (profile) portraiture was the popular way to recreate an image of oneself or loved one before the invention and common use of photography in the mid 1800's. During the years of 1500 and 1860, professional and amateur artists would either paint or cut profiles – using paints or scissors.

Early designations included "shade," and "profile." Lesser known names were: "miniature cuttings," "black profile," "scissortypes," "skiagrams," "shadowgraphs," "shadow portrait," "shadow picture," "black shade," or simply "likeness." Those who cut silhouettes were sometimes called "profilists".

Auguste Amant Constant Fidèle Edouart, the famous French silhouettist, referred to himself as the "black shade man."



Stock Photos

Silhouette Portraits

Sometimes these portraits were made with a physionotrace apparatus.

Stock Photo

Stock Photo

The French musician Gilles-Louis Chrétien (1754-1811) invented the physiognotrace (physionotrace in French) in 1887. He used the apparatus to trace the silhouette of a sitter and at the same time, create a reduced copy, which could be used to engrave a lifelike image on a copper plate.

* And some had all of them

Abraham Lincoln (1920) is a colossal seated figure of the 16th President of the United States Abraham Lincoln (1809–1865) sculpted by Daniel Chester French (1850–1931) and carved by the Piccirilli Brothers. Located in the Lincoln Memorial (constructed 1914–1922),

Nicholas H. Shepherd was one of the earliest photographers in Springfield. Shepherd was a daguerreian, and he called his studio a Daguerreotype Miniature Gallery. Shepherd most likely took the above daguerreotype of Abraham Lincoln in 1846 or 1847 after Abraham had been elected to the House of Representatives. Lincoln was 37 or 38 at the time of this sitting

https://rogerjnorton.com/Lincoln85.html

Abraham Lincoln, 1887, George Peter Alexander Healy, Oil on canvas, National Portrait Gallery

Abraham Lincoln, Mary Todd Lincoln
Created / Published: Morris & Bendein, Inc., 1st quarter of the 20th century

Photo Portraits

Fast forward a few years and photographers discovered that portrait photography required the subject to remain perfectly still for a very long time. The stiffness of people in old photographs is quite unnerving but was necessary because exposure times could last five minutes to half an hour.

The daguerreotype required 10 or more minutes of statue stillness. VIDEO: Smiles were non-existant. 10-minute smiles? More light was what was needed so that exposure times were faster. Some photographers even set up outside studios to gain more light.

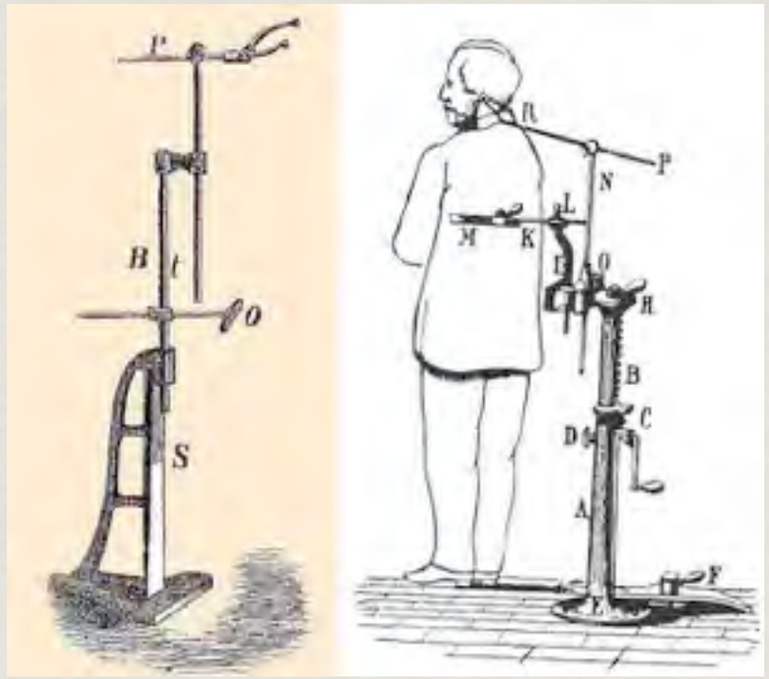
But another reason for such serious faces was because photography was so new and people knew that no one smiled in the famous paintings they saw - great portrait paintings were serious, formal and solemn.

Stock Photos

The Posing Stand

Minimizing blur!

Stock Photos



The posing stand with clamps at neck and waist level would have been placed behind the photographer's subject to steady the sitter's head and waist; seated subjects would require only the neck clamp.

Motion (or not)

And so back to our original topic: ***MOTION***

Here we meet the fork in the road and go off on another tangent...

Wealthy patrons who wanted to be immortalized still had their likeness painted.
Sculpture busts and statues were still created, mostly for monumental purposes.

Miniatures and silhouettes were out of fashion.
And artists were no longer trained in these techniques.

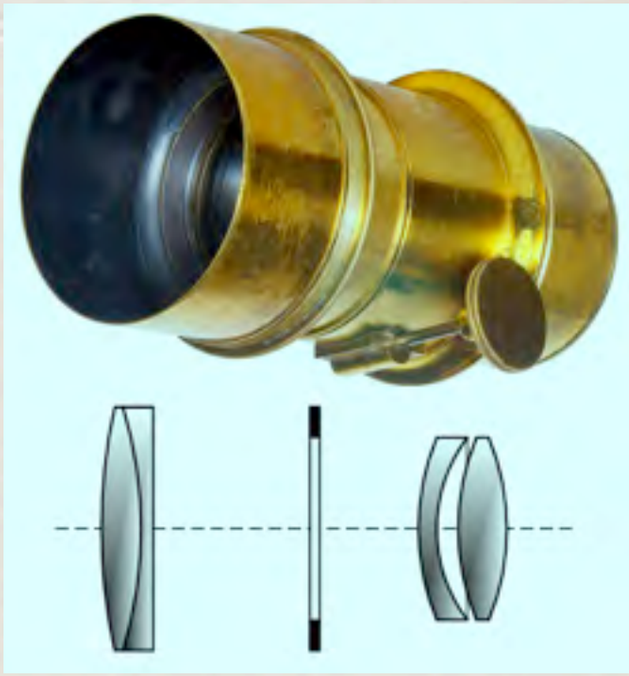
Statue of Liberty
New York Harbor, 1886

Madame X (Madame Pierre Gautreau)
John Singer Sargent 1883–84

Now everyone wanted to be photographed

Joseph Petzval invented his "portrait" lens in about 1840. It had a maximum aperture of (105-80mm) f3/6 – f3.7 and reduced the exposure time from 20 minutes to a minute.

Less blur!



With the invention of photography, painters existed side by side, not one upping the other. There were still serious questions: could something so fast be considered a real portrait? like a painting captured a soul?

"The photograph takes the law into its own hands. Psychological insight is not reserved for painter alone and they know it". Nadar /1856

Photography progressed by leaps and bounds. **AND IT WAS SHARP!** The image was sharp and that was the critical factor for many years to come. **NO MORE BLURS! NO MORE LONG EXPOSURES!**

Stock Photos

Photographers & Painters

NO blurs!

There were smirks. Painting is dead. Long live photography.

> On first seeing a photograph around 1840, the influential French painter **Paul Delaroche** proclaimed, “From today, painting is dead!” The story sounds far-fetched, but it captures the anxieties that surrounded the technology when it first emerged in the mid-19th century.

Stock Photos

IMPRESSIONISM

Reinventing Blur

Around the time photography was invented, Impressionism was becoming the foremost art movement, even if it was shunned, panned by critics, and very controversial. It was the artist's desire to capture an "impression", movement, and what was fleeting, to formally interpret what his senses perceived. Most of the impressionists worked outside. Brushstrokes were faster. They worked quickly since light change within a 20-minute window.

Impression, Sunrise by Claude Monet

Claude Monet, Water Lilies (3), 1897-1899

PHOTOGRAPHY & IMRESSIONISM

These two movements were parallel. Photography was shunned as “science”, not art.

“Impressionism” was laughed at. It was not art. It was messy and unfinished.

Many photographers were trained as painters and saw photography as ”a means of translating impressions, of imitating the poetry, the richness, the beauty of nature”.

Like photography, the Impressionists were concerned with the “here and now,” reducing scenes to a very short interval of time forcing them to look and paint more quickly”. The “decisive moment.”

The Impressionist painters learned from photographers:

- an instantaneous approach to subject
- asymmetric compositions
- effect of light filtering through the trees
- that it was impossible to depict the forest in its entirety and that it needed to be captured in fragments.

[Impressionism and Photography: Museo Nacional Thyssen-Bornemisza, Madrid 2019 - 2020]

Role Change

Mauice Minoret Rowing, Martial Caillebotte,
Gelatin silver print

Photographers achieved the sharpness they desired - it is as if the world held its breath now -

Painters, particularly the Impressionsists, reveled in atmospheric movement and capturing only the essence of a scene

Jour d'été *Summer's Day*, 1879, National Gallery, London

Landscape

*** PHOTOGRAPH**

Bois de Boulogne, Charles Marville, 1858-60, albumen silver print from glass negativae

*** PAINTING**

Resting by a Stream at the Edge of the Wood, 1878, Musée d'Orsay

Portraits

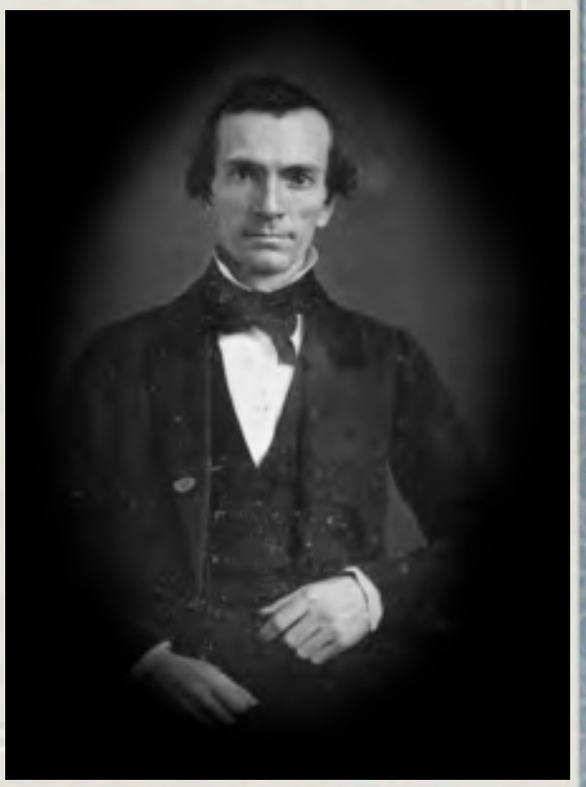
The Impressionists excelled with color. Portraits were vibrant, alive, stunning.

The one thing that photographers could not achieve - yet - were color photographs. Portraits were still in black and white. It took almost 70 years before color photography was developed.

Stock Photos

Portraits

However, portrait photographs had their own value. They reflected, recorded, documented, and also captured the soul of the sitter.



Stock Photos

Reinventions

PORTRAIT POSSIBILITIES

Despite the fact that expensive miniatures, and tiny silhouettes had gone out of style, a new artform had been made possible by photography: the ***Carte de visite*** was now popular.

The roots of social media reach back to 1859, when the craze for collecting portraits first gripped fashionable Europe. Ownership of a celebrity likeness granted acquaintance by proxy, while exchanging portrait cards with friends reinforced status and social ties.

Photographer Disderi patented a system of making 10 prints at a time in 1854. Others followed. But how to market them? These were small cards, the size of a formal visiting card about 4 1/2 x 2 1/2 inches. Napoleon posed for a card and distributed them. Queen Victoria posed and they became popular. Common people collected them and pasted them into albums. Weathy and fashionable personages used them as calling cards. Now, instead of leaving a card while visiting, a card WITH their likeness could be left.

Tennysen


Charles Dickens

Abraham Lincoln


Queen Victoria


Napoleon


Nansen

Reinventions

PORTRAIT POSSIBILITIES

The ***cabinet card*** was a style of photograph which was widely used for photographic portraiture after 1870. It consisted of a thin photograph mounted on a card typically measuring 4+1/4 by 6+1/2 inches.

The carte de visite was displaced by the larger cabinet card in the 1880s. Both were most often albumen prints, the primary difference being the cabinet card was larger and usually included extensive logos and information on the reverse side of the card to advertise the photographer's services. Some are black/white and other have a sepia tone - all because of the photographic process used.

This larger card could be placed on a cabinet - hence the name - for viewing in a room. These replaced the carte de visite albums. They were a way to display family photos or important photos. The Kodak Box Brownie and snapshops replaced the Cabinet Cards. Must as the cell phone "selfie" and cell phone photos function in today's society.

More than one Exposure

Multiple Exposures (a little blur)

The invention of photography also coincided with the increasing popularity of hauntings, seances, and mediums during the rise of the spiritualist movement. Photography was a perfect way to connect with the spirit realm…or so it seemed. Photographers such as William Mumler and William Hope ran thriving businesses taking photos of people with their supposed dead relatives.

Mumler's first ghostly image taken in March of 1861 was a total accident. He took a self-portrait in a friend's studio using a plate that already was exposed. This image was circulated as a gag, and then fell into the hands of somebody at The Herald of Progress, a spiritualist journal. And from there his popularity exploded and his story began to change. The **New Yorker has an interesting article** describing the movement and the fraud. Mumler's most famous photo was of Mary Todd Lincoln and Abraham behind her.

As cameras became available to the general public, ghost photographs became common due to natural camera artifacts such as flash reflecting off dust particles, a camera strap or hair close to the lens, lens flare or in modern times, deceptions using smart phone applications that add ghosts images to existing photographs.

Stock Photos

Reality or Painterly?

Composites predate Multiple Exposures (ME)
Composites in the darkroom

In our world of multiple exposures (ME), and composite photography, not to mention AI-assisted photography, it is hard to know what is real and what has been invented. Composite photography was much more difficult in the 19th century, but it was explored!

> "Photography ws a disreuptive technology - it challened the settled order of art. Early photographers were used to painting, so it was natural to turn to them for inspiration".

Composites and multiple exposures will be explored later in this presentation, but in the 1850s Henry Peach Robinson created five individual scenes and created one very painterly image in the darkroom by exposing five different negatives to create one composition.

Reality or Painterly?

Composites predate Multiple Exposures (ME)
Composites in the darkroom

Oscar Gustav Rejlander, a Swede based in London, was the master of 19th century composites and collage. He was influenced by allegory and morality and 17th century paintings of such. He produced "Two Ways of Life" - a photograph composited of 32 individually-photographed sections. All models, props and scenery were photographed individually. It took six weeks to put together and was printed at 31 x 16 inches - an unheard of size at the time.

Two Ways of Life, Oscar Gustav Rejlander, 1857

Reality or Painterly?

Composites in front of the camera

Roger Fenton's approach to photography was through still life. He honed his skills in photography, but used the painterly subject matter of fruit for his finished images. They were composites in a way, but entirely set up in front of the camera, based on the still life compositions of painters. Many painters were influenced by 17th century Dutch painters and created in that manner. Fenton was influenced by these 19th century painters and often copied their compositions.

Fenton's Still Life of Fruit was the first instance of "Pictoralism" - photography that resembled paintings.

Still Life of Fruit, William Henry Hunt, (1790 - 1864

Still Life of Fruit, Roger Fenton, 1860

Julia Margaret Cameron

1815 -1879

a little Blur

Alfred, Lord Tennyson, photographed by Cameron in 1865, and her niece Julia Jackson, photographed in 1867. Photograph from LEFT: Getty; RIGHT: Courtesy Metropolitan Museum of Art

Cameron was mocked and lauded for the fogginess of her photos. Looming portraits, dreamy allegories, mythic beauties seem like camera shake, a printing error or a lack of focus.

And yet her portraits are considered historically important - she was not interested in technical perfection, but artistic intent.

Cameron

Pictorialism

about 1885 to 1920

A little Blur is back

Pictorialist photographers approached the camera as a tool that, like the paintbrush or chisel, could be used to make an artistic statement. First and foremost, their photographs placed beauty of subject matter, tonality and composition above creating an accurate visual record.

The Hand of Man, 1902 by Alfred Stieglitz

The Old Order And The New, 1885 by Peter Henry Emerson

Pictorialism

Pictorialism was an approach to photography that emphasized beauty of subject matter and composition rather than the documentation of reality.

Some of the photographers were: Alvin Langdon Coburn, F. Holland Day, Gertrude Käsebier, Edward Steichen, Alfred Stieglitz, and Clarence H. White.

Morning 1908 by Clarence H White

Implied Motion

Movement in Art

Movement is one of the principles of art. It provides energy and vibrancy to an artwork. It guides the eye around the composition. It can create a visual effect or suggest what is happening. Movement can be implied or it can be an object that we association with movement.

[*Seeing History*: Motion and Photographic Artefact]

The Starry Night (1889) by Vincent van Gogh

A Gust of Wind (c. 1860s) by Jean-Baptiste Camille Corot

El Jaleo (1882) by John Singer Sargent; *John Singer Sargent*

The Great Wave off Kanagawa (1820-1831) by Katsushika Hokusai;

Dynamism of a Dog on a Leash (1912) Giacomo Balla

Nude Descending a Staircase, No. 2
Marcel Duchamp, 1912

Other examples of movement in art

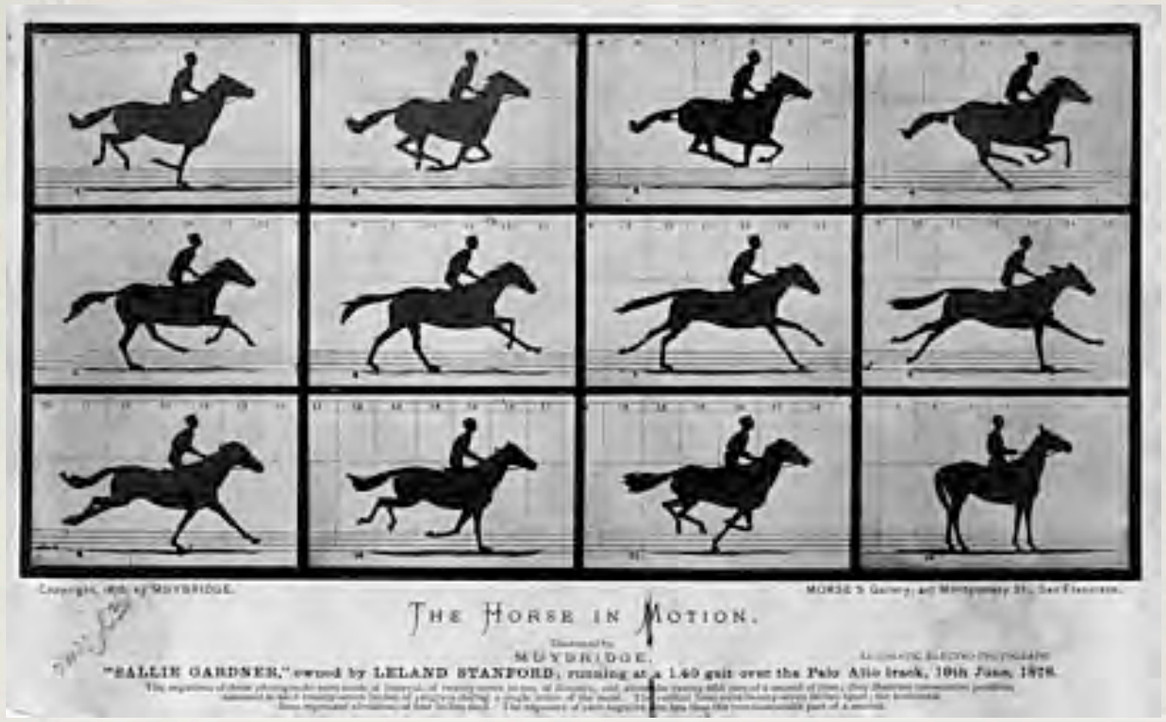
Moving Parts

Stop Motion

As photographic materials improved and techniques became easier thanks to developments in technology, reliable visual records were available. True life documentation was the goal. A photograph recorded results, events, history. And no sooner than cameras and their photographs were accepted as reliable, the very acto of ***MOTION*** came into question.

How does a horse run? How does man walk? Eadweard Muybridge photographed a horse and rider using cameras with shutters set to a speed of 1/500 sec, which were released by tripwires triggered by the horse or by clockwork. He showed the moment in the four-time gait when all four hoves are in the air at the same time.

He also photographed many variations of men walking and engaged in sports activities.



A man walking. Photogravure after Eadweard Muybridge, 1887

Some Motion Blur

A little Blur in overlapping images

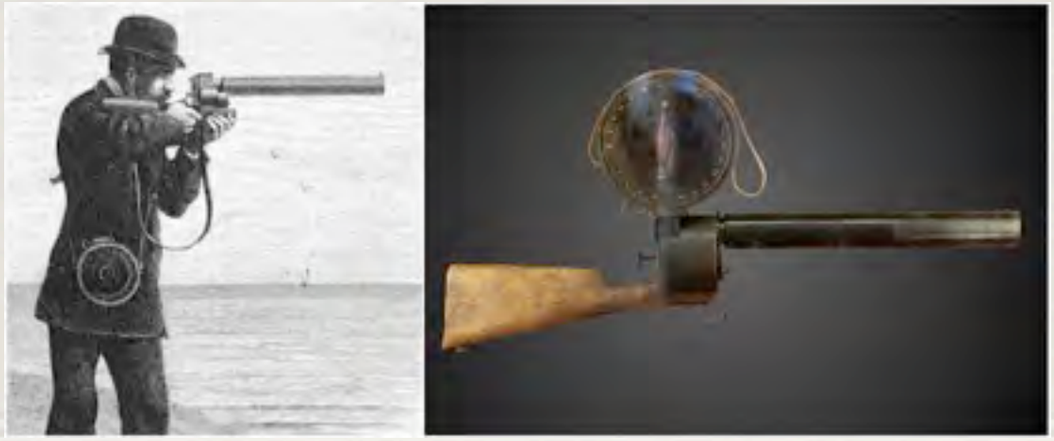
Etienne-Jules Marey began recording a series of exposures on a single image - capturing sequential stages of movement. A camera entitled a “photographic gun” enabled him to capture a moving subject in twelve poses. He pointed to the action he was interested to investigate and he only shot once and got 12 images per second. they all printed on the same photography.

Marey and Chronophotography

Étienne-Jules Marey, Cheval blanc monté, 1886

Composite photo of a pelican in flight by Étienne-Jules Marey, c. 1880s.

Fencing Pose, Etienne Jules Marey



The chronophotographic gun invented by Étienne-Jules Marey.

Jacques-Henri Lartigue

1894 - 1986

It is said that Jacques-Henri Lartigue photographed with a painter's eye.

Cousin Bichonnade, 40 rue Cortambert, Paris, c.1905

Jacques Henri Lartigue
My Brother Zissou Jumping, Biarritz, 1910

Jacques-Henri Lartigue

1894 - 1986

The distortions come from two simultaneous actions during exposure. He panned the car, pulling the wheels in one direction. At the same time, the open slit of the shutter made its relatively leisurely way across the film, dragging the static part of the images at angles across the film in the opposite direction.

He clicked the shutter while slightly moving himself along the car's path and the image that emerged was astonishing for that time. With the tilting trees and spectators combined with the surreal shape of the wheel he managed to capture speed and movement itself. One can almost hear the engine roar and the wind blow as the car takes the corner. One can see the clear details of the driver and his hand gripping the steering wheel trying to manage this powerful beast while the rest of the photo is blurred showing the power and sensation of speed.

The spectators in the background are leaning to the left, as if they wanted to remain still at that point. The car is instead projected to the right, with the wheel that looks like an ellipse, emphasizing its pace. The deformation is actually a technical phenomenon known as the rolling shutter, accentuated by its large format camera.

Jacques Henri Lartigue
Grand Prix of the A.C.F. - a Delage , created: 1912

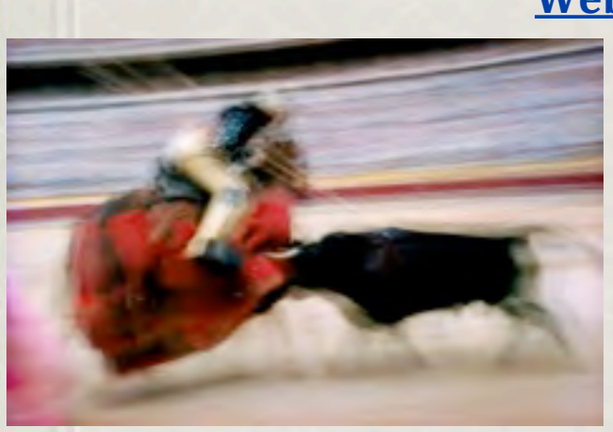
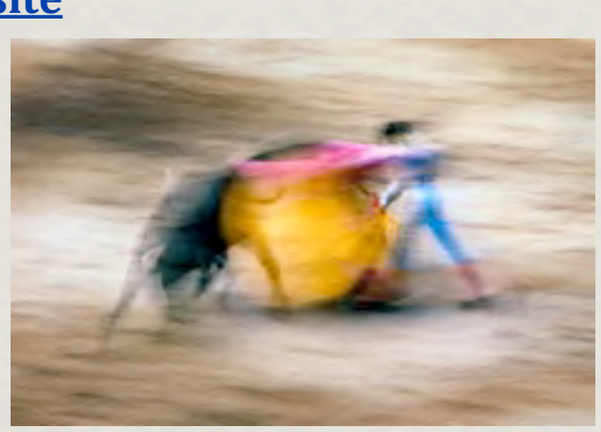
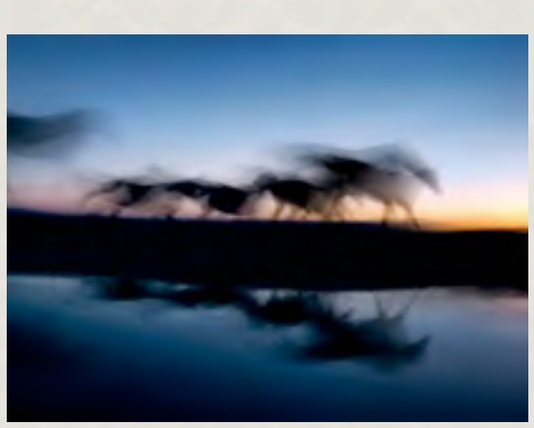
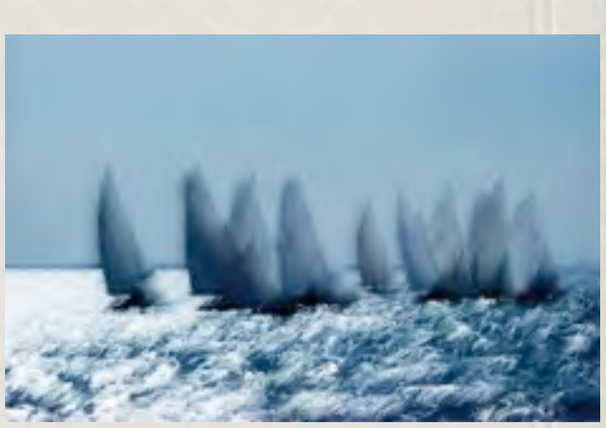
Lartigue improvises the technique that is still used today to express the sense of movement in a photograph. It is called "***panning***" and consists of the use of a rather long exposure time and in following with the camera the movement of a subject during its run: if the photographer's hand is sufficiently steady and its movement well synchronized, it will define the car's movement.

Ernst Hass 1921 - 1986

Blur

One of the pioneers of MOTION in photography was Ernst Haas. He was painting with the camera.
"He was not interested in photographing new things. He was interested in seeing things in a new way."

He frequently employed techniques like shallow depth of field, selective focus, and blurred motion to create evocative, metaphorical works...He became interested in, as he put it, "transforming an object from what it is to what you want it to be." Beyond the physical place, person, or object he depicted, Haas hoped to reflect the joy of looking and of human experience.
Website

Michael Wesely 1963 -

Blur

The Longest Exposure

The picture below documents the construction of The Museum of Modern Art in New York. The picture was taken using 4 cameras set up in 4 different corners from 2001 till 2004. The shutter was open on all cameras for a little over 34 months.

He has also done a series of long exposure still life images seen on the right.

9.8.2001 - 2.5.2003 The Museum of Modern Art, New York

Motion Capture

some Blur

Stephen Wilkes uses a technique to capture everything that happens in a 24-hour period, creating his [“Day to Night” images](). He takes photos at intervals for 24 hours and then creates a composite. The images often show both sharp and blurred objects at the same time.

Stephen Wilkes Technique

Motion Blur

Having gone through an exhaustive array of motion, movement, blur, fuzzy and smeared examples,

MOTION BLUR

may have a very specific meaning to a competition judge.

Camera blur is used to describe the blurring of a photograph caused by movement,
or sometimes the blurring of an object that's in motion during a photo shoot.

Motion blur refers to the purposeful streaking or blurring of movement itself.
You BLUR something that is already in motion.

It happens because objects move during the time it takes to expose the photo or the frame, and the movement gets recorded as a blur.

***And so, as you select a photo for this competition, beware!

Varieties of Motion

Larry Petterborg

Dennis Fritsche

Nancy Mack

Anita Oakley

Varieties of Motion

Motion Capture Techniques

Motion includes any areas of the photo that are moving.
Motion creates energy, dynamism, intensity.
Motion can be blurry, sharp or implied.

There are many ways to capture ***MOTION*** in photography:

* early photographers knew that a ***blur*** was caused by the subject or camera inadvertently moving

* motion can be ***stopped*** or ***frozen*** by using a short exposure time

* long exposures can create ***movement over time*** - silky water, smooth clouds, serene scenes

* motion can be created by moving the camera in a variety of directions ***ICM*** (Intentional Camera Movement)

* motion can be created by moving the camera with a moving object - ***panning***

* motion is the result of the camera moving, an object moving or both moving at the same time

* a ***series*** of exposures can be made sequentially on one negative or, with digital, in the same capture or taken independently and later composited - ***ME*** (Multiple Exposure)

* motion can be implied in ***post processing*** to create intentional blur

Varieties of Motion

Motion Capture Techniques

Freezing Motion

Motion Series

Long Exposure

Subject and/or object moves

Camera Moves

Panning

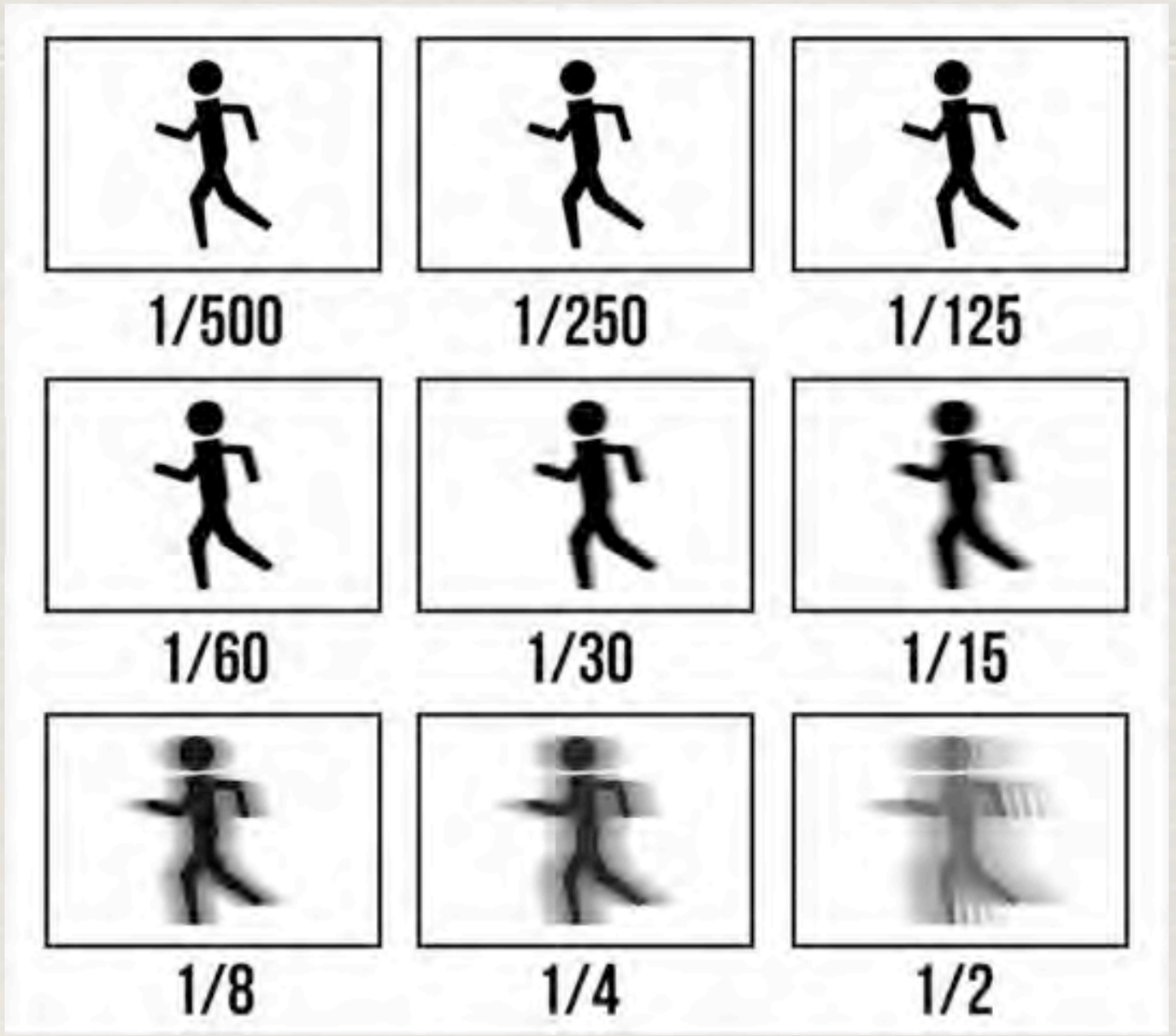
Intentional Camera Movement (ICM)

Multiple Exposure (ME)

Post-processing Manipulation

Anita Oakley

Sharp to Blur



Suggested shutter speeds for motion

Freeze Motion

Motion can be ***stopped***, ***suspended*** or ***frozen*** by using a short exposure time.

Harold Edgerton, *Milk-Drop Coronet Splash*, 1936, gelatin silver print. 17-15/16 x 14-5/16 inches (SFMOMA)

Harold Eugene Edgerton, *Milk Drop Coronet*, 1957, dye transfer print, 50.5 cm x 40.64 cm (SFMOMA)

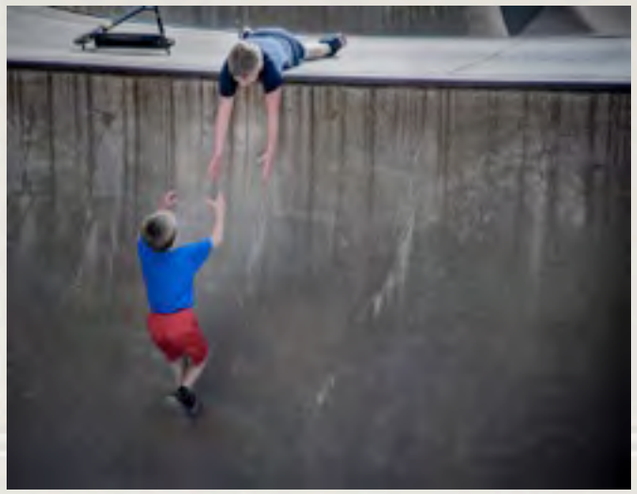
Edgerton photographed milk drops for more than two decades. But perhaps his most famous version, made in 1957, features a reaching crown springing from its collision with the surface of a bright red table. This image was selected by Time magazine as one of the 100 most important photographs of all time.

Edgerton discerned that a 1/1,000th-of-a-second exposure was sufficient to still a falling drop and a rising splash. It took even more trial and error to trigger the flash to capture the right 1,000th of a second that revealed—in Milk-Drop Coronet Splash—tiny round droplets crowning a dramatic splash.

Edgerton photographs became so popular that he was invited to have a kiosk at the 1939 World's Fair in New York City, where visitors could take stroboscopic photographs after pushing a button to shoot a baseball from a cannon through a sheet of glass.

Reference

Freeze Motion



Freezing motion is all about shutter speed. You need a shutter speed that's fast enough to render movement motionless.

That generally requires a shutter speed of at least 1/250s for slow moving subjects, 1/500s for faster moving subjects, and a shutter speed of 1/1500s and above for ultra-fast subjects, such as birds in flight.

Sometimes, shooting in burst mode will yield one of the photos that is sharp.

Freeze Motion

Freeze Motion

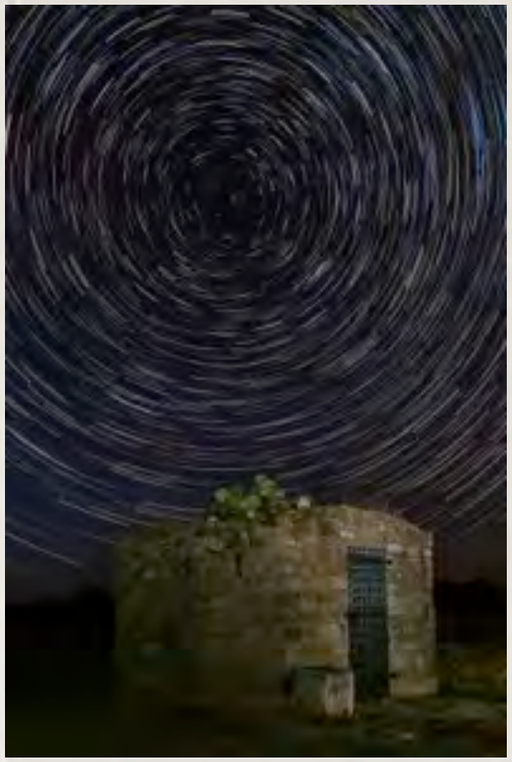
Long Exposure or Motion Series

***Note here that these examples of "sequence" photography have everything to do with "motion" but usually nothing to do with "blur".

Subject Moves, Static Camera

A star trail is a long exposure photograph that shows the movement of stars in the night sky. The stars appear to move in the sky but it is actually the ***rotation of the Earth*** that causes the perceived movement.

The stars are stationary. The camera is stationary. The ***earth moves***! This is not actually a blur. It is a track in time. If you are far from the subject, you see a track rather than a blur. Astronomy is a good example.



Anita Oakley

Anita Oakley

This can be achieved by very long exposures or exposures taken at intervals and composited.

Anita Oakley

Long Exposure or Motion Series

***Note here that these examples of "sequence" photography have everything to do with "motion" but usually nothing to do with "blur".

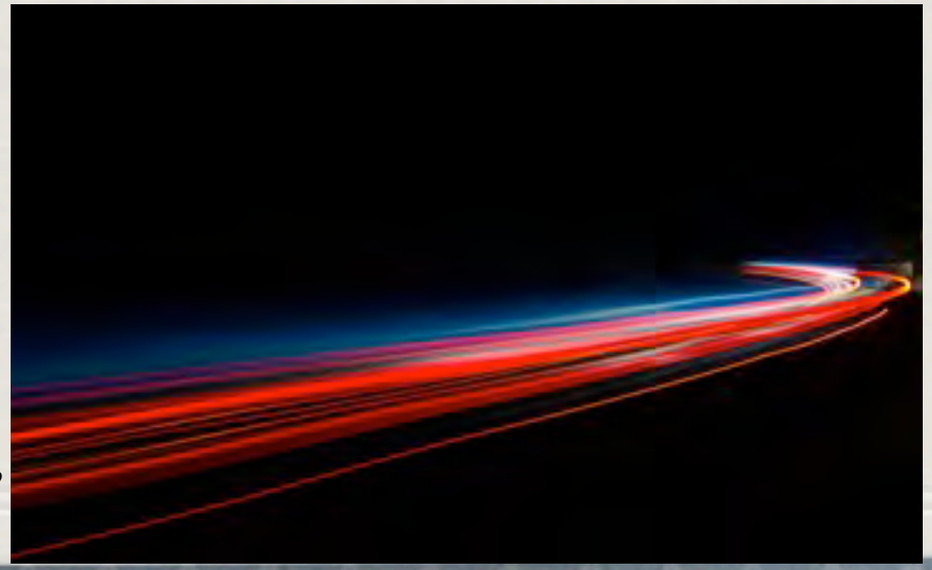
Subject Moves, Static Camera

Another popular example would be traffic light trails. Usually there is no motion blur involved, but in some instances blur can be skillyfully introduced.

Nancy Mack

Stock Photo

Stock Photo



Stock Photo

Long Exposure or Motion Series

***Here long exposure or burst exposures have everything to do with “motion” and nothing to do with “blur”.

Fireworks are considered long exposure photography. The method requires a tripod, low ISO, a wide aperture, a telephoto zoom if shooting from a distance, shutter speed of 3 seconds or more, a remote for longer times. Try capturing multiple bursts on one frame.

© Janice Goetz

© Michael Farnham


© Anita Oakley

[How to Photograph Fireworks]

Motion Series

***Note here that “sequence” photography has everything to do with “implied motion” but usually nothing to do with “blur”.

Subject Moves, Static Camera

Pictures of an eclipse fall into the ***motion sequence*** or ***time lapse*** category. The moon is moving between the earth and the sun in this example. So it appears that the moon is moving across the face of the sun. There is no blur involved - unless it is operator error!

There will be an **annular eclipse** in October 2023: **from Oregon to Texas** in the US.

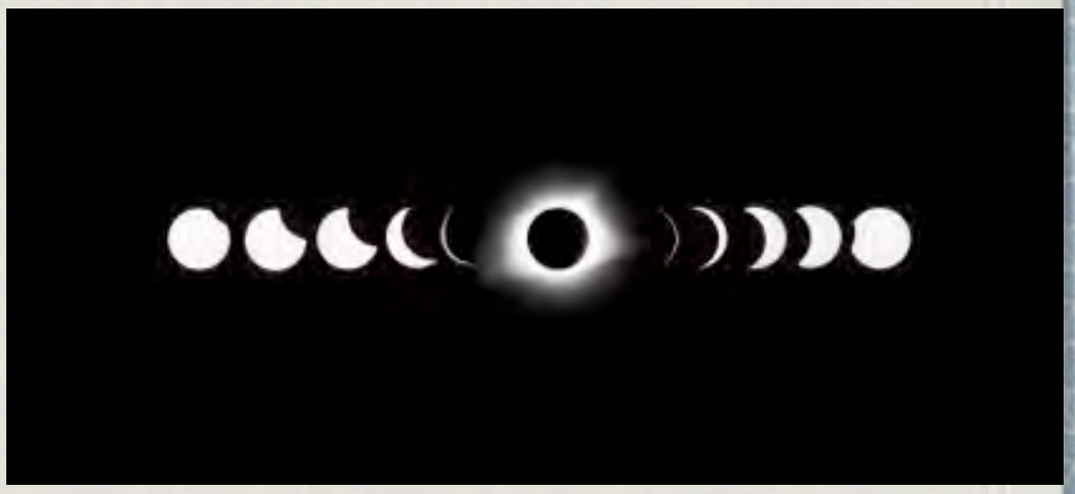
There will be a total eclipse on April 8, 2024: from **Texas to Maine** in the US.

In motion series, the camera is usually set to Continuous Shooting Mode or Burst Mode. Individual captures can be composited in software.

How to Photograph the Eclipse

Clinton Kemp

Clinton Kemp



Nancy Mack

Long Exposure

Subject Moves, Static Camera *Blur*

Auroras occur when charged particles (electrons and protons) collide with gases in Earth's upper atmosphere.

Those collisions produce tiny flashes that fill the sky with colourful light. As billions of flashes occur in sequence, the auroras appear to move or ""“dance”"" in the sky. **Science behind the auroras.**

How to Photograph the Aurora

Nancy Mack

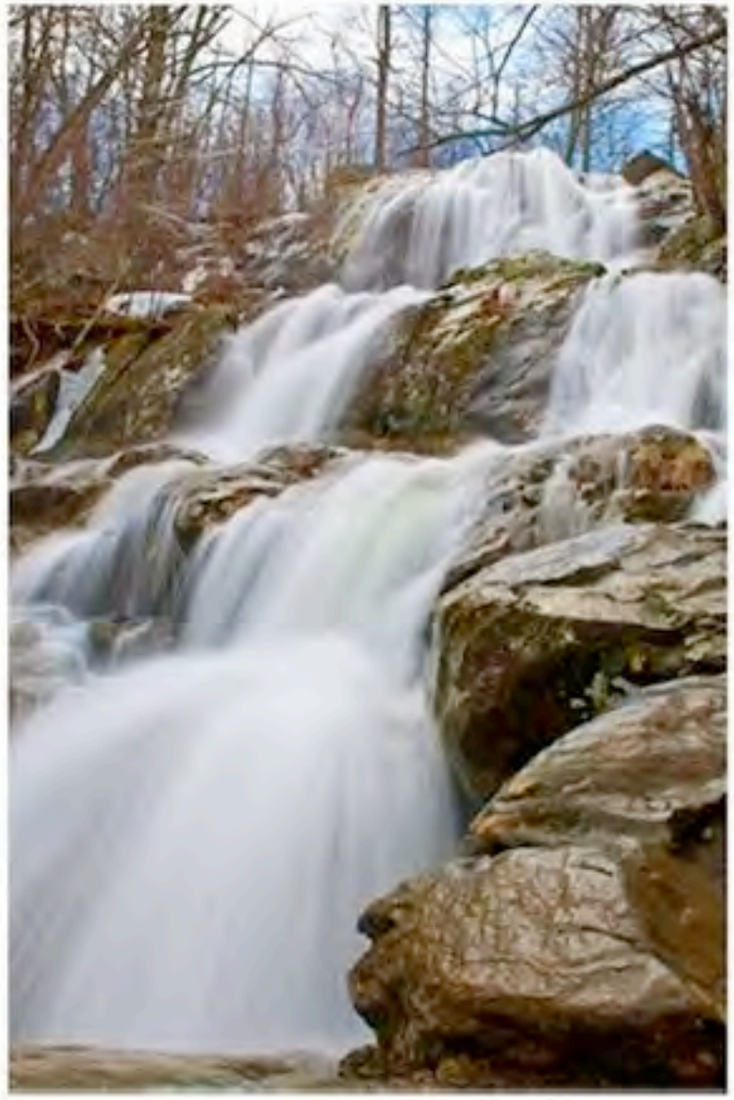
Anita Oakley

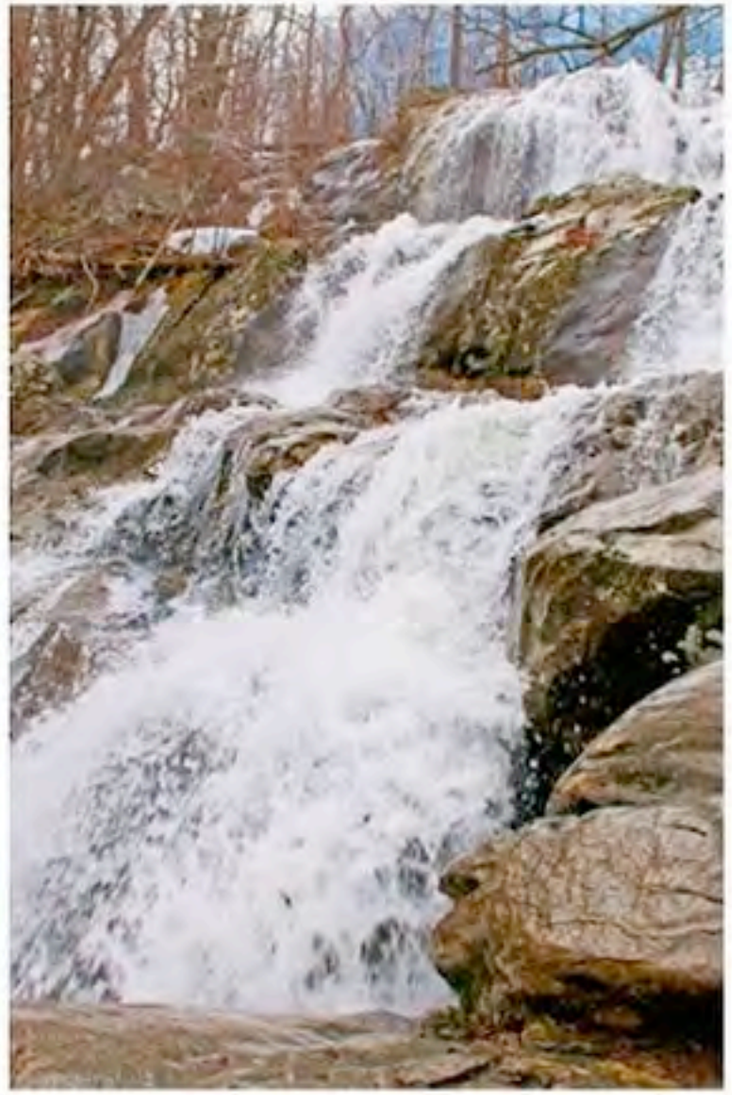
Long Exposure

Subject Moves, Static Camera *Blur*

Water, waterfalls, ocean waves are all examples of long exposure. This creates the silky look that is often preferred over the “freeze motion” image.

Long Exposure





Freeze Motion

Long Exposure

Subject Moves, Static Camera *Blur*

Water, waterfalls, ocean waves are all examples of long exposure. This creates the silky look that is often preferred over the “freeze motion” image.

Dennis Fritsche

Dennis Fritsche

Dennis Fritsche

Frank Richards

Long Exposure

Subject Moves, Static Camera *Blur*

Water, waterfalls, ocean waves are all examples of long exposure. This creates the silky look that is often preferred over the “freeze motion” image.

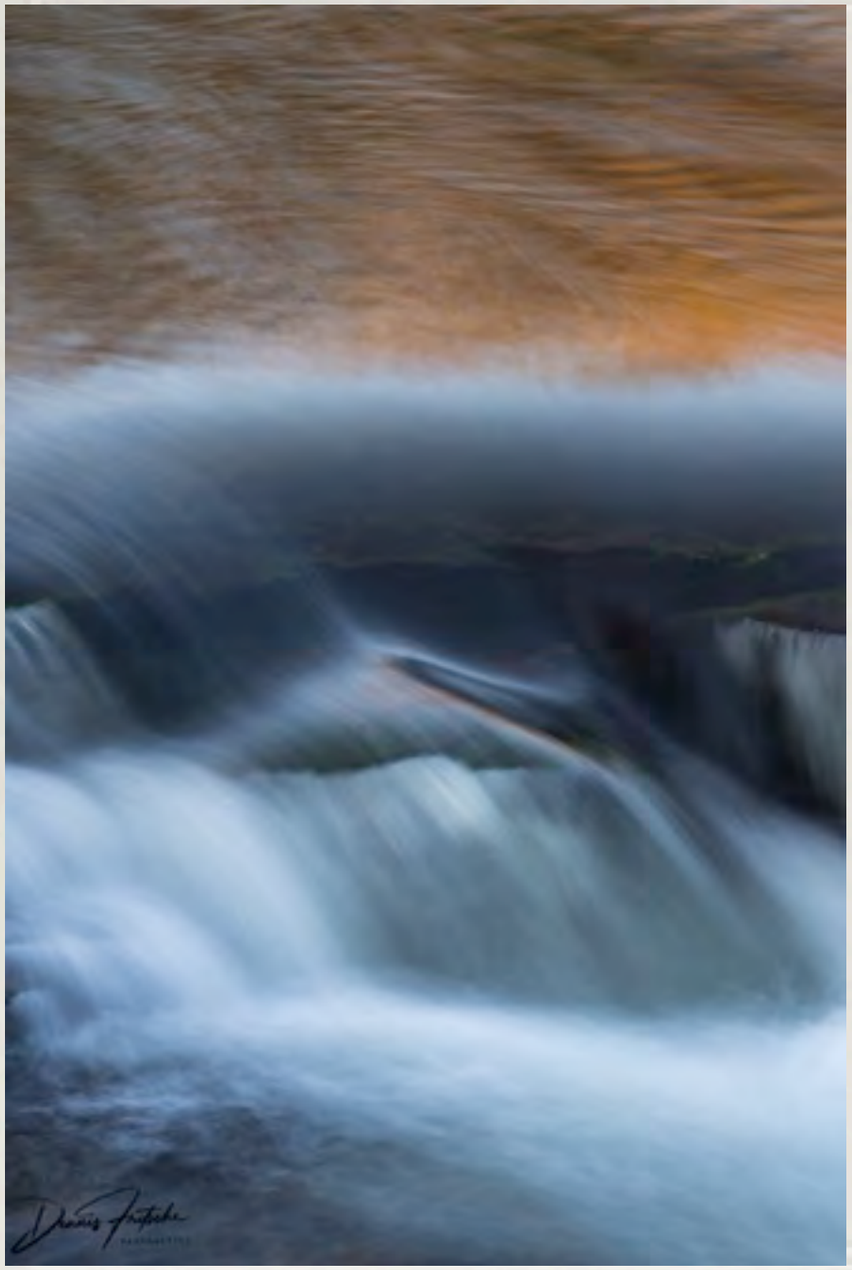
Frank Richards

Frank Richards

Anita Oakley

Long Exposure

Subject Moves, Static Camera



Frank Richards

Blur

Frank Richards

[How to Shoot Long Exposure Daytime Photography]

Long Exposure

Subject Moves, Static Camera *Blur*

Water reflections, skies at sunset and sunrise and clouds are perfect subject matter for long exposure blurs.

Dennis Fritsche

Nancy Mack

Anita Oakley

[Ultimate Guide to Long Exposure Photography]

[45 Astonishing Examples of Long Exposure Photography]

Long Exposure

Subject Moves, Static Camera

Anita Oakley

For exposure setting, in general a shutter speed of 3s – 8s or more is long enough to capture a lightning from start to finish. If you use a longer exposure time, multiple strikes of lightning can be captured on the same image – a result similar to multiple exposures.

https://www.nikonusa.com/en/learn-and-explore/a/tips-and-techniques/how-to-photograph-lightning.html

https://digital-photography-school.com/how-to-photograph-lightning-the-ultimate-guide/

Sky Blur

Storms are another excellent subject for long exposure. Safety is probably the biggest concern and t is difficult to know exactly when there will be a strike.

Lightning requires a tripod, usually a medium lens, small aperture for day-time and a medium aperture for night-time, a low ISO, and fire the shutter continuously or set from 5-20 seconds. Time-lapse is also possible.

Anita Oakley

Long Exposure w Intentional Camera Blur

Subject Moves, Static Camera + wide-open f-stop

Bokeh Blur

Stephen D'Agostino: To a great extent I think this approach works because of the bokeh. At night the images become dream like. Colours that formerly defined background elements move to the forefront. Often they seem to dance.

Soho Soft Focus take on busy Mercer St. Soho New York. © Stephen D'Agostino

View of West Broadway at night. Photo impressionistic take on busy Mercer St. Soho New York. © Stephen D'Agostino

View of the World Trade Centre from Soho. Photo impressionistic take on busy Mercer St. Soho New York. © Stephen D'Agostino

Motion Blur

Blurry photos are no longer associated with a lack of photography experience. Since the dawn of autofocus mode and image stabilization, sharpness has become a boring quality when it comes to photographs. At the same time, the intentional blur effect has become a sign of artistic skill and courage.

Motion blur is the visual streaking or smearing captured on camera as a result of movement of the camera, the subject, or a combination of the two. Many of the best photographs are not static: instead, they use motion techniques to communicate a sense of speed, activity, and the passage of time.

Stock Photo

Subject Matter

NATURE
birds
animals
horses

LANDSCAPE
trees
waterfalls
sea waves
clouds
star trails
night sky
aurora borealis
lightning

SPORTS
races
competitions
games

STATIONARY OBJECTS

SMALL MOVING OBJECTS

LARGE MOVING OBJECTS
bicycles
cars
trains
buses

PEOPLE
dancing
walking
running
marching

EVENTS
fairs
carnivals
hot air balloons
fireworks

Clinton Kemp

Blur Techniques

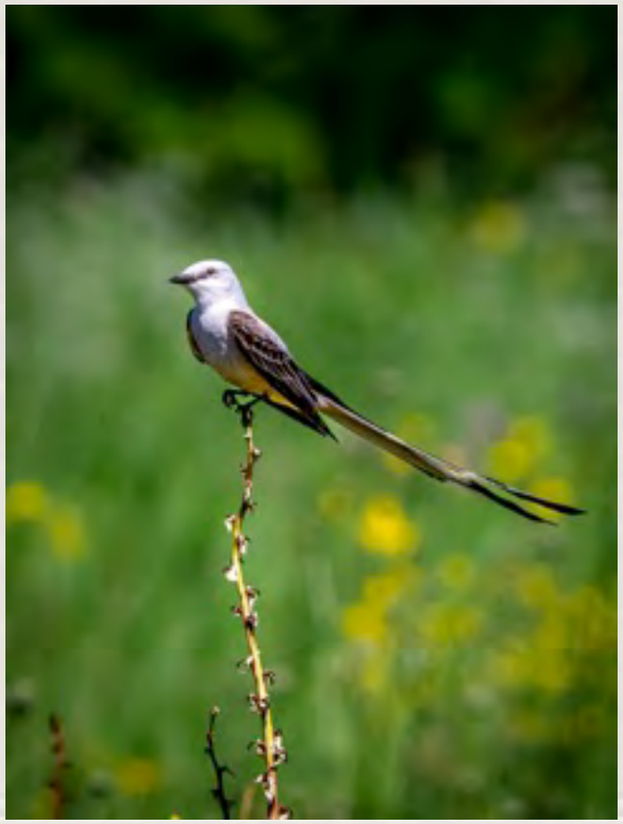
Sharp Subject/Blurred Background

Most photographers aim for a sharp subject and a less sharp, less distracting background.
This technique requires a wide aperture, longer focal length, and increased subject to background distance.

The examples below were achieved “in camera” by using a wide aperature, a long focal length and the background was quite a distance from the subject. This kind of background blur is termed “bokeh”.

A background can be blurred in Photoshop or Lightroom. In Photoshop a layer mask and Gaussian Blur will achieve the effect. In Lightroom, select the subject and invert and reduce clarity and sharpness.

Larry Golden



Larry Golden

Janice Goetz

Blur Techniques

Subject Moves, Static Camera *Blur*

An important distinction between the types of blur in a photo has to do with what is moving: the subject or the camera. With a camera secured to a tripod, it's the subject's movement that will create the blur streaks.

Shripal Daphtary

Dennis Fritsche

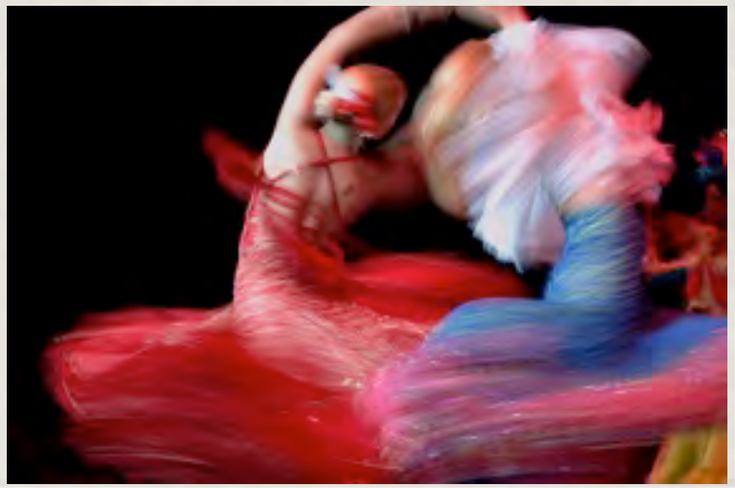


Photo by Chris Sawtelle; ISO 100, f/11.0, 2-second exposure.

Blur Techniques

Subject Moves, Static Camera

Blur

Stock Photos

Panning

Subject moves, Camera moves

Here the subject is in focus and the background is blurred. This technique is known as “tracking the subject” or “***panning***”.

Panning requires moving the camera with the subject. Match the subject’s rate of movement and the direction in which it is traveling.
Follow the motion with the camera while using a moderately slow shutter speed (i.e., one that’s in the area of 1/20s to 1/60s).

Jim Walsh

Frank Richards

Clinton Kemp

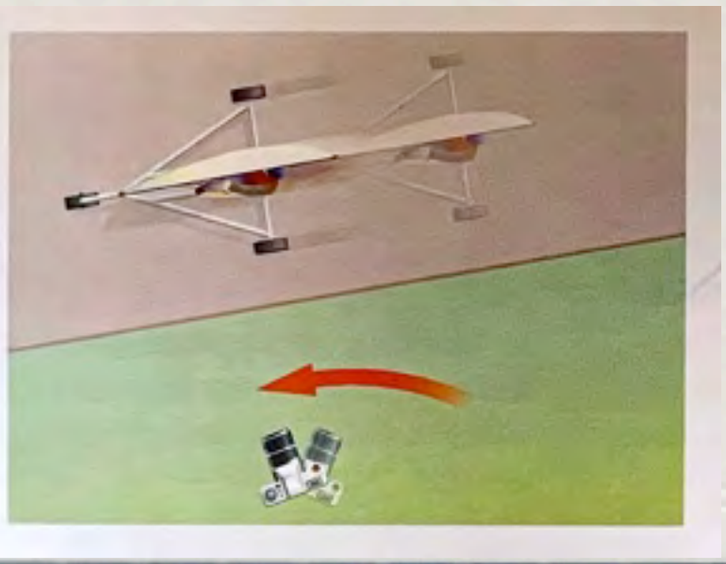
Panning

Subject moves, Camera moves

Blur

Stock Photo

Stock Photo



These are a classic panning shots. By tracking the subject as it passes the camera, the central part of the subject looks reasonably sharp, while the blurred background suggests that the subject is moving fast.

Panning

Subject moves, Camera moves

Blur

Clinton Kemp

Anita Oakley

Photographying Motion Blur with Camera Panning

Panning

Subject moves, Camera moves

Blur

Panning requires the “rule of space” - give the moving element space to move *towards* in the composition

Stock Photo

Stock Photo

Blur Techniques

Static Subject, Camera Moves *Blur*

If you move the camera while set to a slow shutter speed, everything will be blurry. The slower the shutter speed and the more movement of the camera, the blurrier the image will be.

Here the photographer was a passenger in a moving car.

Nancy Mack

Nancy Mack

Blur Techniques

Static Subject, Camera Moves

Blur

Here the photographer was also a passenger in a moving car, but was able to capture a sharp subject in the distance while the foreground trees were blurred.

[nature-track.com has an interesting article for anyone wanting to shoot from a moving vehicle.]

The image below shows the “Larry Petterborg device” (a piece of pool noodle) for steady capture of images from a moving car. Be sure the camera strap is secured!

Be the passenger - not the driver!

Motion Blur

Julianne Kost, Passenger Seat

Static Subject, Camera Moves

One of the first photographers to use this technique in a significant way was Julianne Kost who produced Passenger Seat in 2016. Driving with a friend throughout New England, she captured photos from the window. When looking at her collection, she realized the images with blurred motion were her favorites. Later she deliberately added to this group by using this technique to create a complete portfolio.

Julianne Kost, Passenger Seat

Julianne Kost, Passenger Seat

Motion Blur

Static Subject, Camera Moves

Trees from a Train

Cole Thompson had a feature in the April 2020 Issue of LensWork, No. 147.

He describes his photo story as a 12-hour train trip from Fairbanks to Anchorage. Bored, he stood in the open-air passages between the cars and took photos in a matter of a few seconds. He panned, experimented with exposures between 1/4 and 1/2 second and spent the whole trip making images.

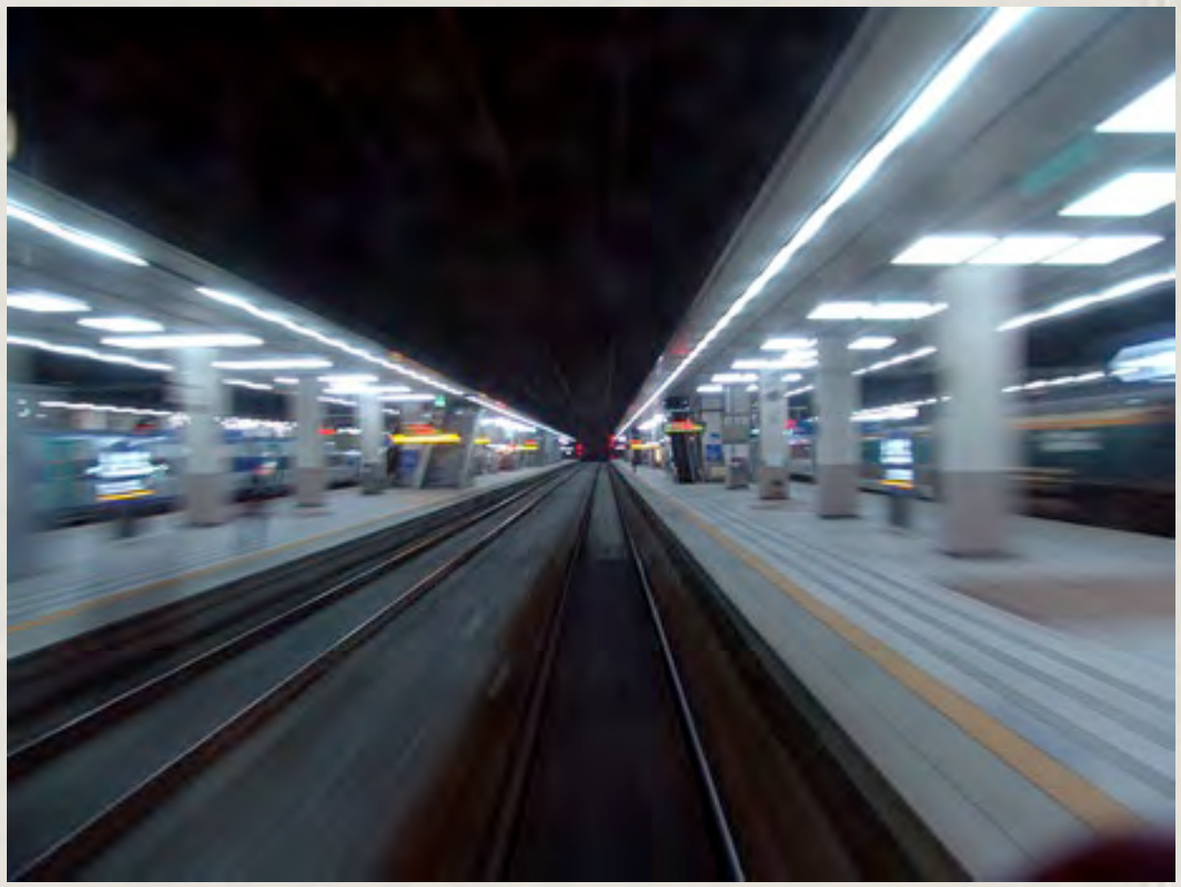
https://colethompsonphotography.com/

Motion Blur

Camera moves along a pre-determined path *Blur*

Unlike the examples of taking images from the SIDE of a car, bus or train, here the passenger/camera are either looking directly FORWARDS or BACKWARDS.

Stock Photo



Stock Photo

Motion Blur

Subject Moves, Camera Moves: Moving with the Subject

In these examples, both the subject and the photographer are moving together.

Gijs Coolen

Nancy Mack

Gijs Coolen

3 Tips for Capturing Motion Photography

You can't capture motion blur if all you do is point your camera and click. There are three essential elements to using motion blur successfully: shutter speed, lighting, and camera stability.

1. **Use a Slower Shutter Speed**. Motion blur requires a longer exposure time. The best way to get this long exposure by slowing your shutter speed.

2. **Be Aware of Lighting**. Because a slower shutter speed allows more light into your camera, you run the risk of overexposing or blowing out a photo. As a result, many photographers choose to capture motion this way in low light situations, such as at dawn or at dusk.

3. **Stabilize your camera**. When capturing motion blur, use a tripod or rest your camera on another stable object. Otherwise, that long shutter speed is going to result in everything looking blurry. In most motion photography situations, you'll still want some elements of your image to be crisp and in focus—and there's no way to do that if your camera is moving, particularly with a long exposure. While many digital cameras offer optical image stabilization, this feature is only effective in standard point and shoot scenarios.

Go out and try this:

Experimenting with Motion Blur Street Photography

Multiple Exposures (ME)

Multiple Exposure technique involves taking two or more photos, in sequential captures, to create one final image either in-camera or composited in software.

We saw earlier that that Marey invented the gun for recording 12 images on one plate. The term is: **Chronophotography**. **VIDEO**. It is a perfect vehicle for storytelling. Beginning to end. And what's in between.

* time, space, motion

* sequence photography

* often long-sequence duration

* multiples of same subject, overlapping and/or offset

* multiples of different subjects, overlapping and/or offset

* two or more different subjects blended into one composition

* photographer has compositional control

Adobe: Double and Multiple Exposure Photography

Multiple Exposures (ME)

double-exposure examples

No Blur

Occasionally, film photographers forgot to advance the film and shot two exposures by accident.

In the 1860's photographers often used a double exposure to capture two different poses of the same person.

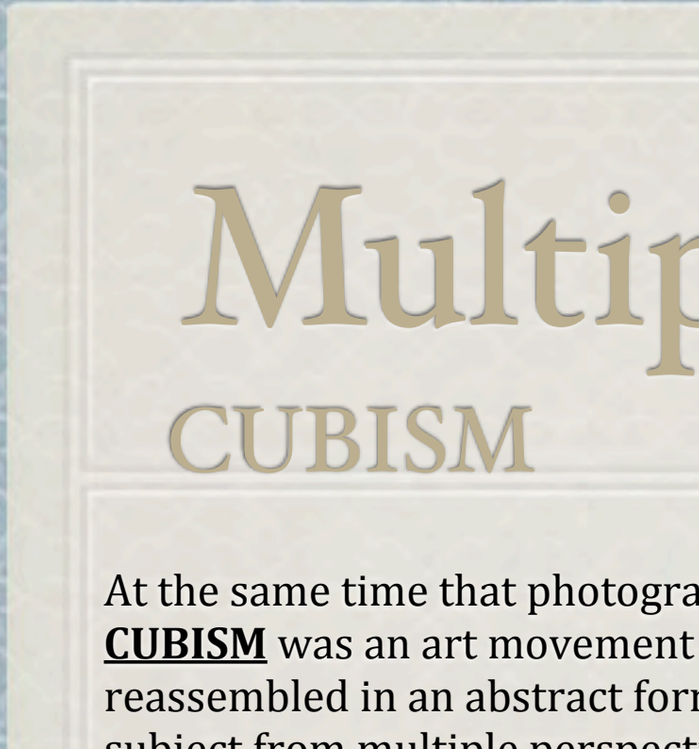
Below, the photographic paper was exposed twice to light. To make this double portrait the subject was positioned once on the left side of the frame and once on the right side. The shutter was opened twice for the same amount of time.

[History of Multiple Exposure Photography]

Multiple Exposures (ME)

CUBISM

At the same time that photographers were experimenting with multiple images, painters were doing the same. **CUBISM** was an art movement in the early 1900s. In Cubist works of art, the subjects are analysed, broken up, and reassembled in an abstract form—instead of depicting objects from a single perspective, the artist depicts the subject from multiple perspectives to represent the subject in a greater context.



Picasso

Albert Gleizes

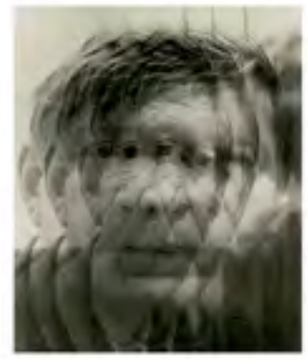
Picasso

Picasso

Multiple Exposures (ME)

Blur or no Blur

CECIL BEATON



JOHN DEAKIN

Cecil Beaton and John Deakin were both British photographers who worked in the 1930s. Both briefly experimented with multiple exposures.

Multiple Exposures (ME)

double-exposure composites

No Blur

Photographers in the late 1990s often superimposed a portrait over a landscape, probably with the introduction of Photoshop.

[Double Exposure Photography 1]

[Double Exposure Photography 2]

[Double Exposure Photography 3]

Multiple Exposures (ME)

Blur or no Blur

Architectural Multiple Exposures

Landscape Multiple Exposures

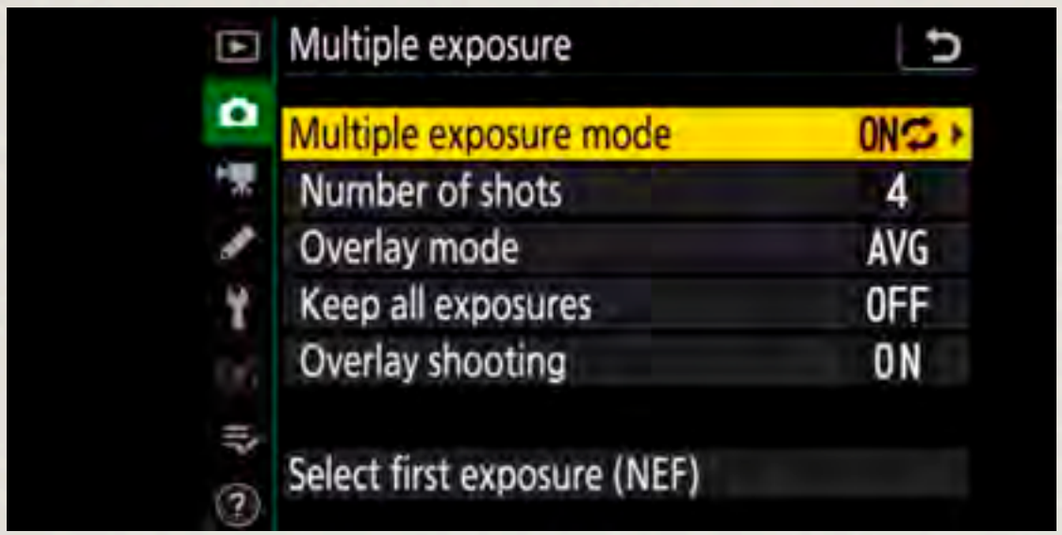
Mike Kelley

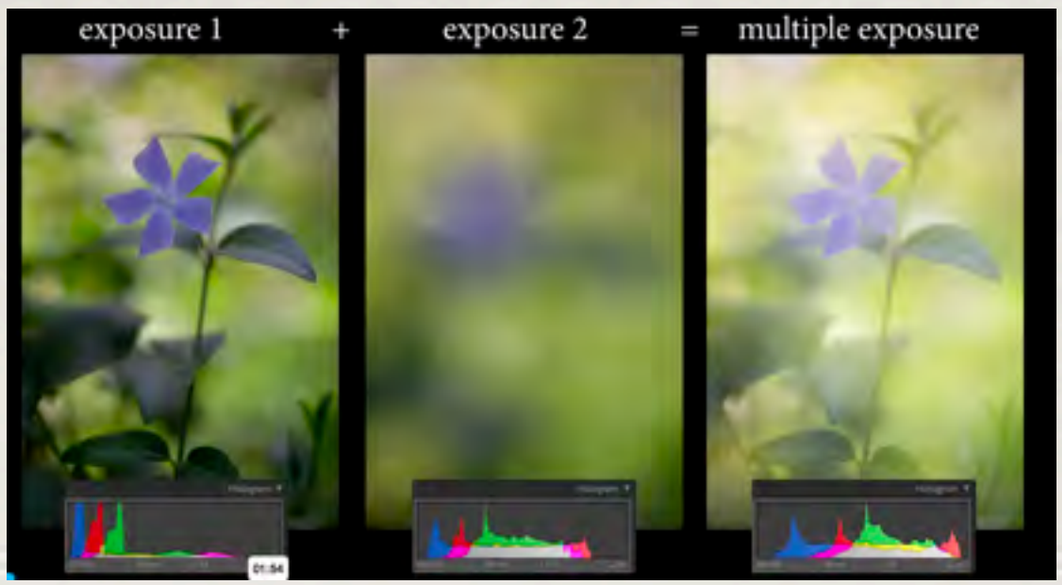
Multiple Exposures (ME)

Blur or no Blur

Contemporary photographers experiment with double and multiple exposures because digital cameras usually have the capability to do this in-camera.

Canon





Both Canon and Nikon have built-in Multiple Exposure controls. Other manufacturers most likely have similar features.

[Dirk Erken]

Nikon

Multiple Exposures (ME)

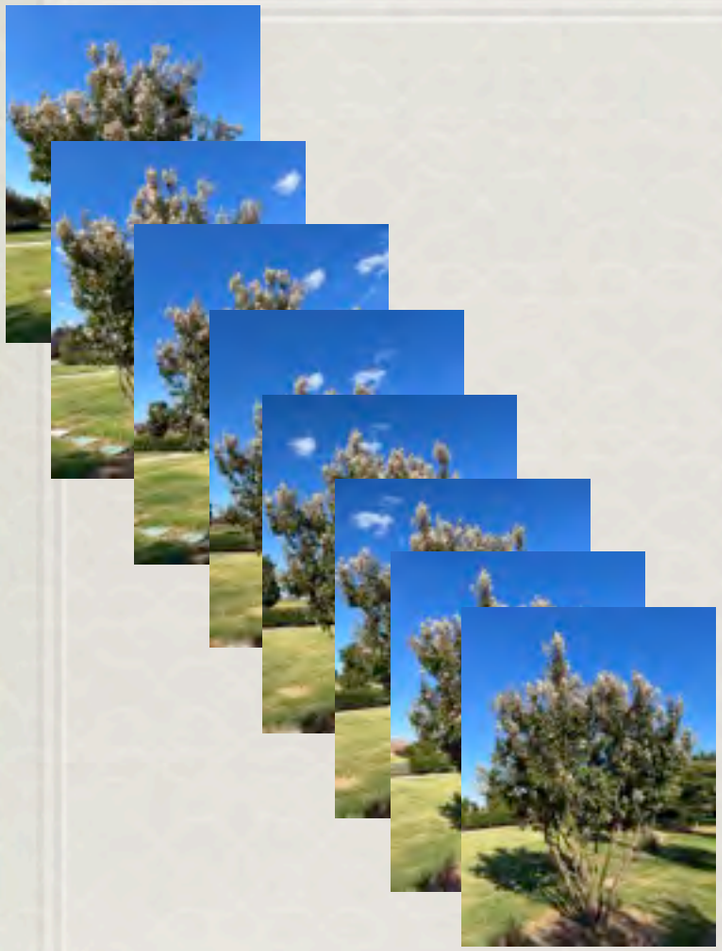
Blur

Macro flower photography is a good subject for multiple exposures with lots of blur. Neither the subject or the camera is moving. The blur is created by the layering of exposures in-camera using the multiple exposure function.

Dirk Ercken has a Master Class on this topic, but also has some free videos introducing the technique.

Multiple Exposures (ME)

Tree in the round - from 10 frames



In this example, I shot 10 frames while walking around this tree.

The frames were imported into Photoshop as layers. Each layer was set at a different opacity to work with the overall composition. Blending Modes were also used.

The layers were flattened and the final composite edited.

With new Multiple-Exposure camera functions, a number of exposures could be taken and finished in camera. Minimal additional editing could be done.

Motion is implied. Blur is minimal.

Multiple Exposures (ME)

Pep Ventosa is best known for his Multiple Exposure images.

Some Blur

Pep Ventosa

Pep Ventosa

Sharon Tenenbaum

Ventosa takes multiple images and edits in Photoshop. With more modern camera controls, it is possible to capture multiple exposures in camera with minor editing.

Editing a Pep Ventosa style image

Editing in Photoshop a Pep Ventosa style image

Multiple Exposures (ME)

Some Blur

Subject matter is endless for multiple exposure.

Multiple exposure creates rhythm through repetition and the unexpected details that appear in the frame.

[Dirk Erken]

[Sharon Tenenbaum]

Multiple Exposures (ME)

Some Blur

Sharon Tenenbaum

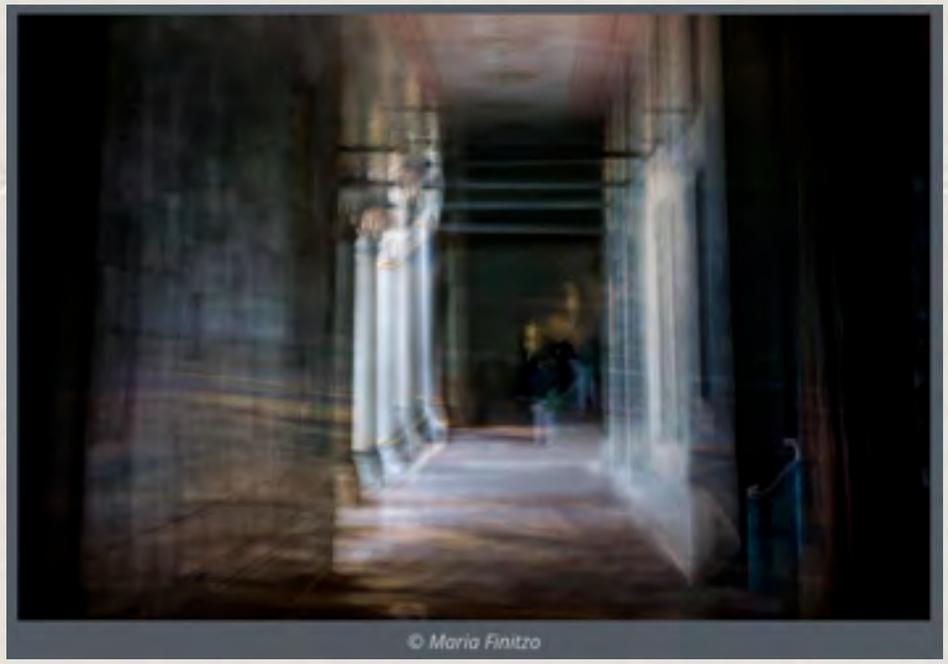
Dirk Erken

Sharon Tenenbaum

Multiple Exposures (ME)

Some Blur

[Stephen Wilkes]



[Maria Finitzo]

[Pep Ventosa]

[Maria Finitzo]

Multiple Exposures + Long Exposure

Some Blur

Dragon Boats, [Stephen D'Agostino]

Canadian National Exhibition.
Fast action... slow shutter 1/2 a sec.
[Stephen D'Agostino]

[Editing multiple exposures in Lightroom & Photoshop]

How do you create your images?
Stephen D'Agostino:

I use 3 techniques which effectively compress a moment in time into a single image. I started using in camera multiple exposures which is an old school technique. Recently I have been merging high speed bursts of 20 or more images. These techniques really emphasize movement and power. As well I love the graceful results you see in long exposures; often in the range of 0.6 to 1.5 seconds.

In Front of Mona Lisa, [Stephen D'Agostino], Paris 2005

Intentional Camera Movement (ICM)

The main principle to keep in mind in intentional camera movement (**ICM**) is that the longer the exposure, the more abstract the image and the less clear the subject.

Control

Perhaps the main difference between multiple exposure **ME** and **ICM** is that you have greater control over composition and details within the final image in **ME**.

With **ICM** you create your composition relative to your subject matter and then your shutter speed and movement dictate the final outcome.

Both do have their plus and minus points and both can be combined to create your image. You could for example use your in-camera multiple exposure setting and shoot any of the sequential shots as an **ICM**, in manual settings, and then shoot the remaining shot(s) as a focussed composition. Resulting in a mix of both **ICM** and multiple exposures.

In both techniques, compositional guidelines are still required to control the viewer's eye, bu the coloring, tonality, and all other elements of editing are derived from your choices.

Larry Petterborg

Intentional Camera Movement (ICM)

Intentional Camera Movement or **ICM** is a creative way of working with long exposure photography and it implies intentionally and deliberately moving the camera during an exposure.

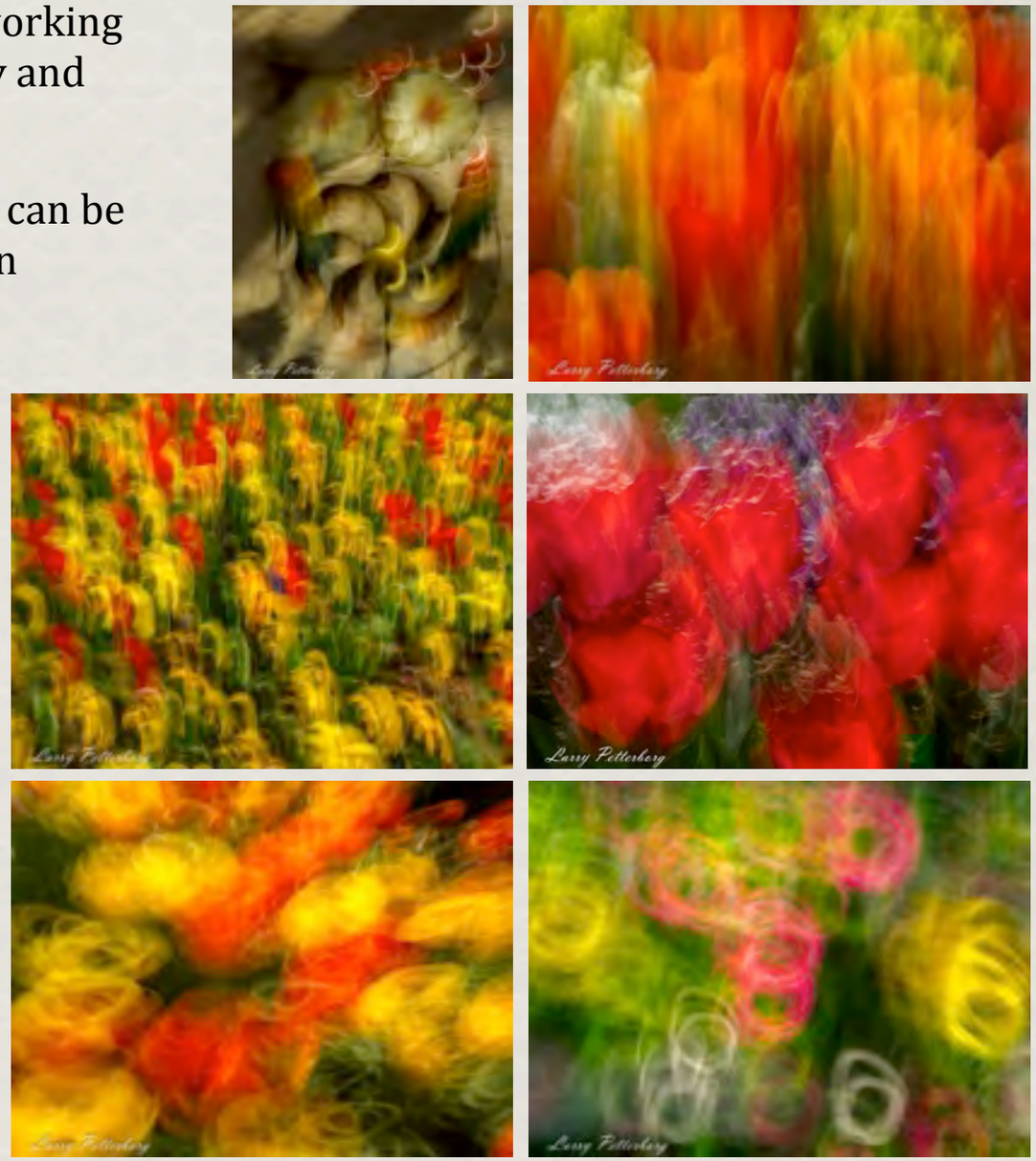
ICM is both a technique and an artistic way of expression. It can be used as a tool to modify reality, with the intent of creating an emotional response in the viewer.

For example, set to f/11 and around 0.5 sec, and start with a shaking motion and then a longer, whipping motion. Slowly work up to longer exposures, trying to follow lines within the scene. It's very much like painting… with a very expensive brush.

If there are people around, note this: you are going to look like an absolute idiot.

To the right are some examples by Larry Petterborg, taken of flowers at the Arboretum. He has moved his camera up and down, sideways and in a circular fashion.

In selecting subject matter, it is important to beware of highlights, which could render as pure white and not a desirable compositional feature.



Larry Petterborg

Intentional Camera Movement (ICM)

As with most photography, subject matter can be varied: landscapes, moving subjects, flowers and street photography. Images can be combined. The one at left was architecture overlayed with flowers.

Below, the wave highlights have enough detail to not completely blow out.

An ICM photo of the Sydney Opera House. Another ICM image of poppies from the Botanic Gardens has been used as a second exposure layered over the first.

Intentional Camera Movement (ICM)

Some suggested settings would be:

- Shutter Priority mode
- 1/2s shutter speed
- ISO 100
- Manual focus
- Image stabilization off

1 Choose a subject. Low light, blue hour, golden hour are ideal.

2 Select settings and compose.

3 Move the camera while pressing the shutter. There are no rules! Move the camera in a smooth and deliberate manner.

Or experiment with circles, straight lines, zigzags, or even rotating the camera for a spiral effect. Play around with changing the focal length on your lens during the exposure to create a zoom effect.

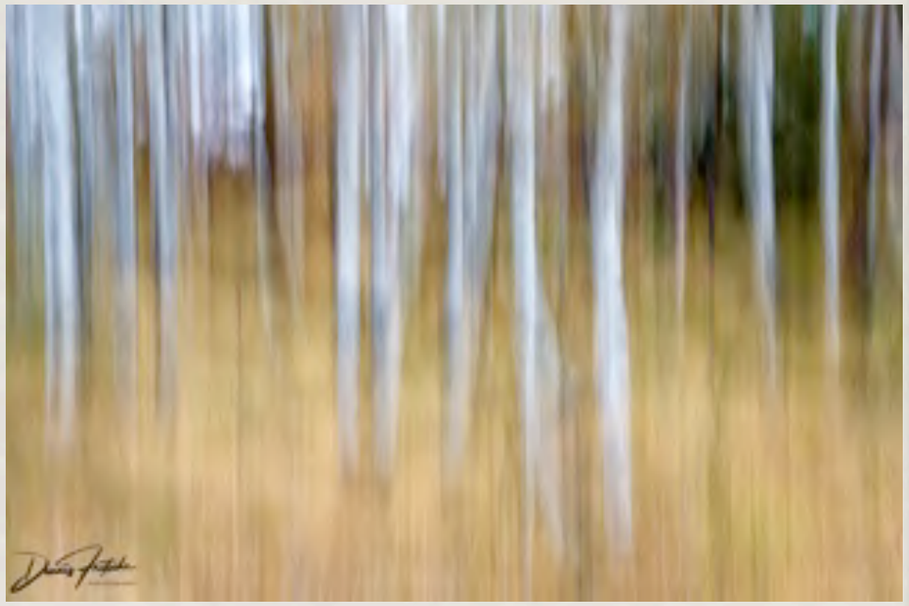
4 Take LOTS of pictures!

ICM Photography: A Guide to Intentional Camera Movement

B&H Explora Guides to ICM, Part 1

B&H Explora Guides to ICM, Part 2

Embrace the Blur



Dennis Fritsche

Intentional Camera Movement (ICM)

Bill Ward

Robert Polillo

In the Artic: Icebreaking Project

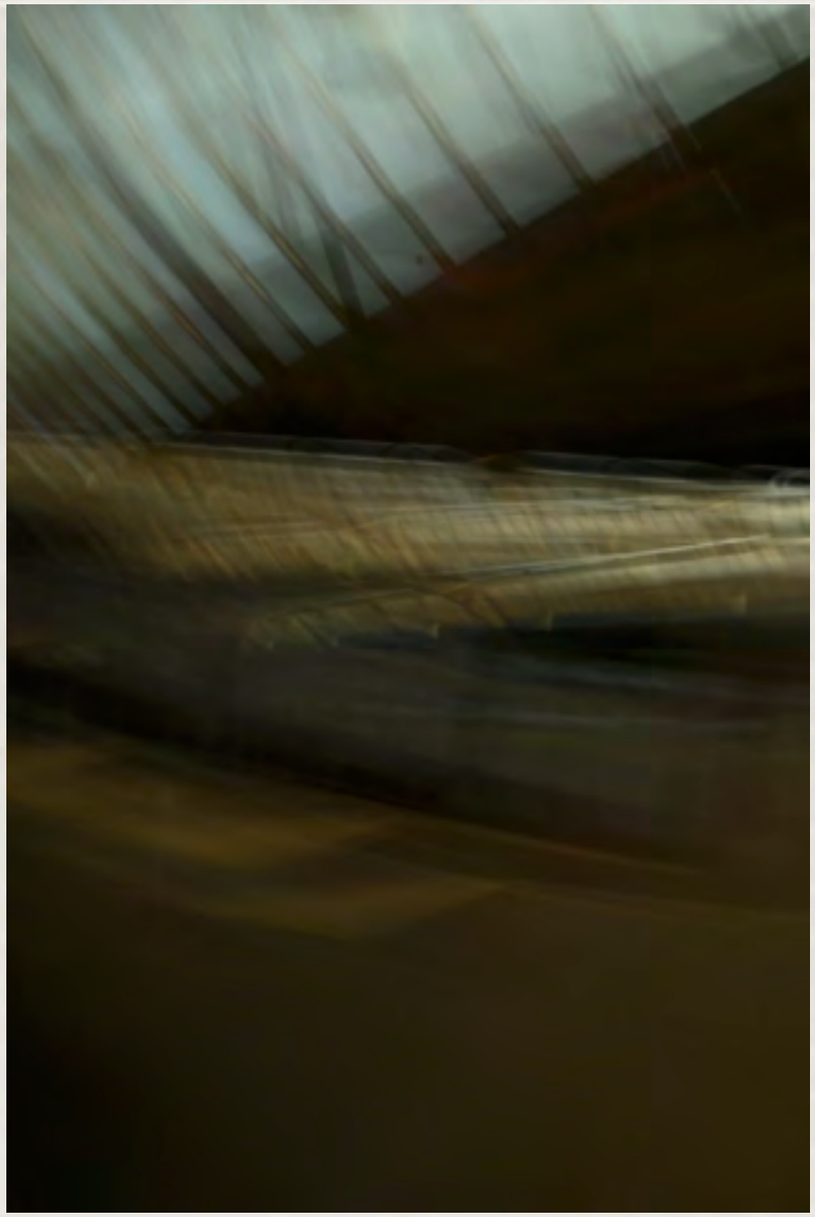
Intentional Camera Movement (ICM)

Erik Malm

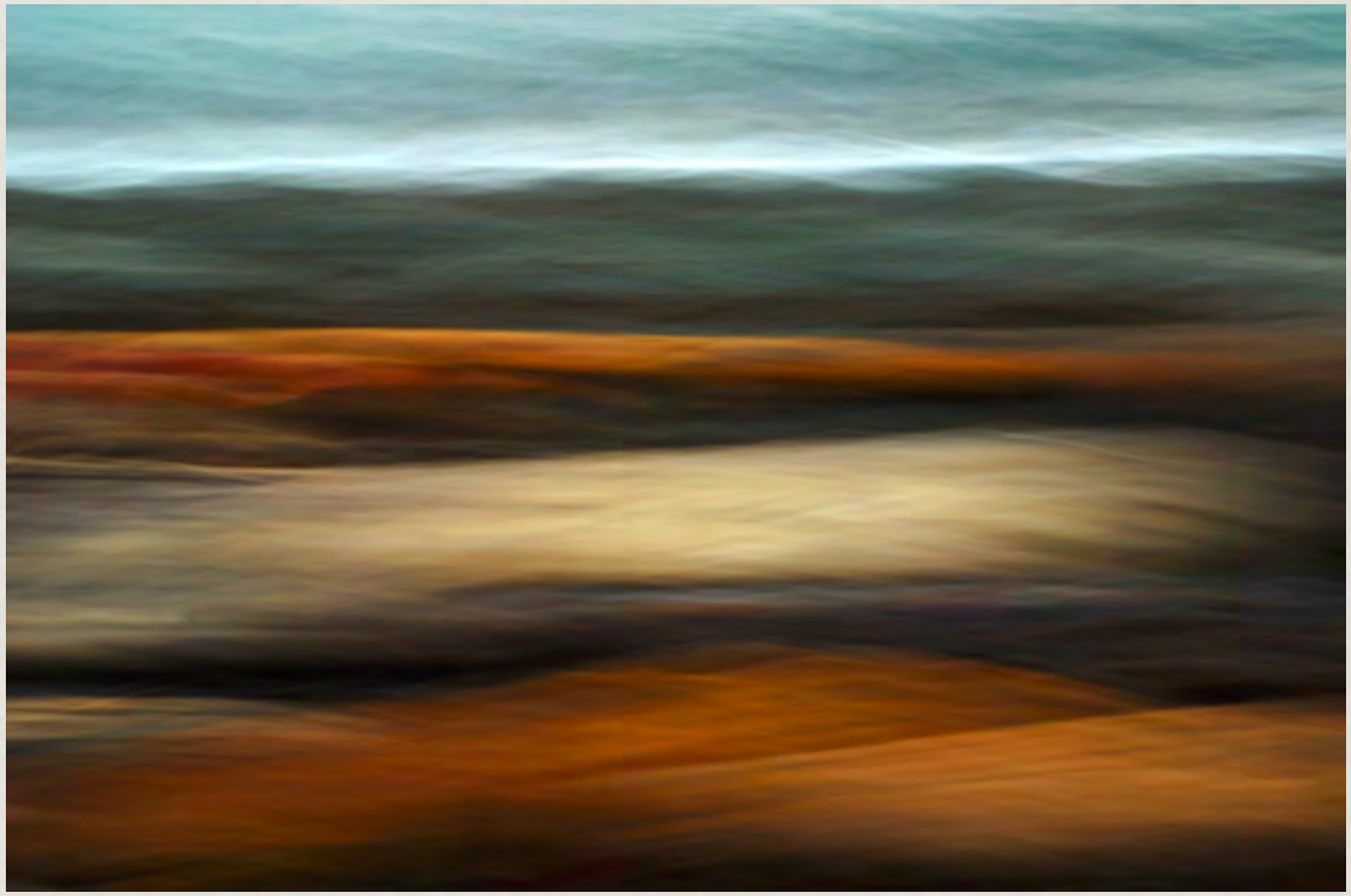
Stephanie Johnson is the founder and creator of the **ICM Photography Magazine**.

Erik Malm

Intentional Camera Movement (ICM)



Martin Gries



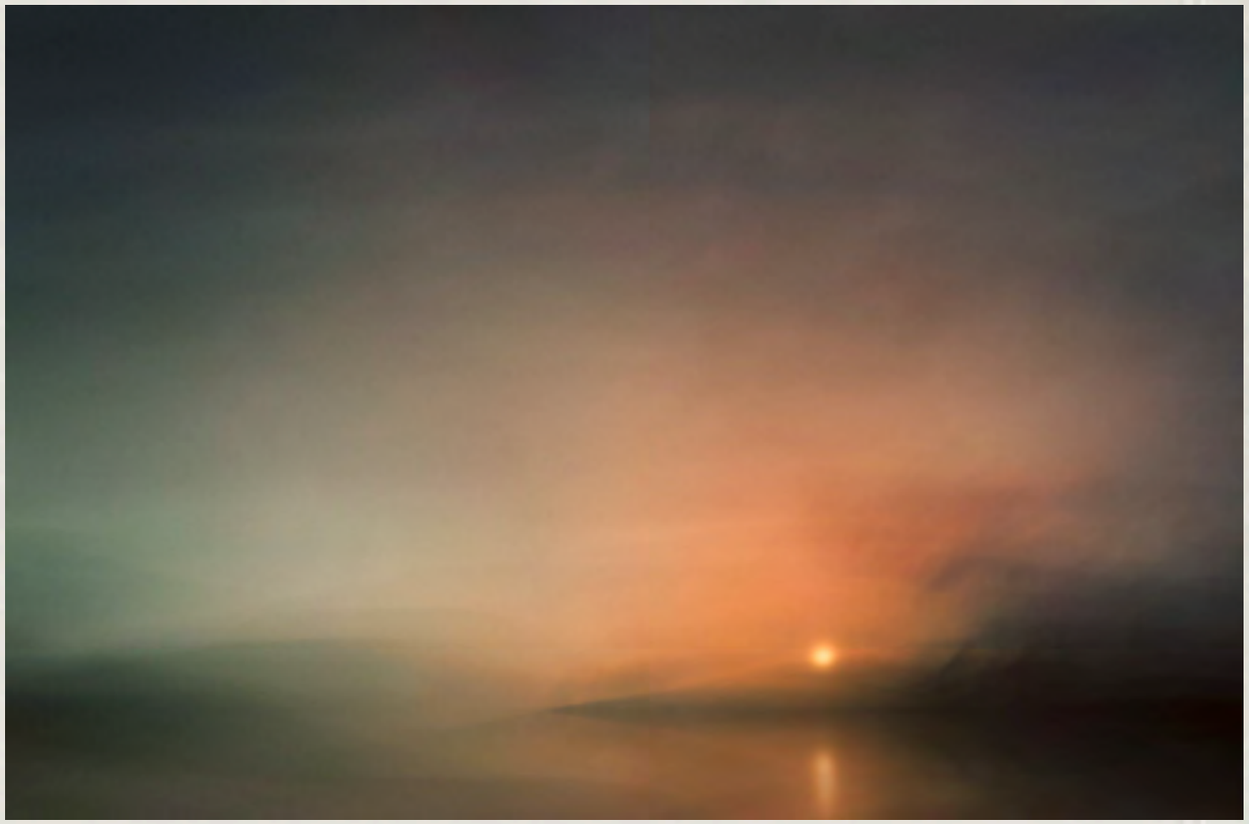
Michael Orton

Intentional Camera Movement (ICM)

Unknown

Movement:

circles
straight lines
zigzags
rotate the camera
change the focal length: zoom
pan
tilt
diagonals
horizontals
verticals
smooth and jerky
push and pull



Andrew Gray

Andy Gray: My ICM Workflow

Intentional Camera Movement (ICM)

Stock Photo

Manipulating a Zoom lens while taking the photo

Eva Polak

Shooting Through

Blur

prism

glass orb

drinking glass

bottle

glass pane

frosted glass

plastic wrap

leaves / foliage / bushes / trees

piece of chandelier

branches

ornaments

fence

barb wire

copper pipe

netting, tulle (think bridal veil)

surfaces in your environment

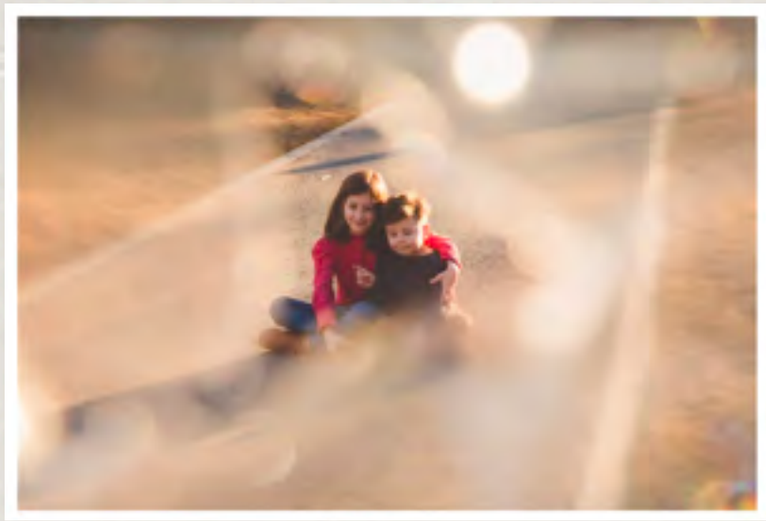
plastic toys

If you shoot through something that's transparent or semi-transparent, you create interesting reflections, blurs or patterns on your subject. And if you shoot through something that's opaque, you create dimension by having an out of focus foreground element.

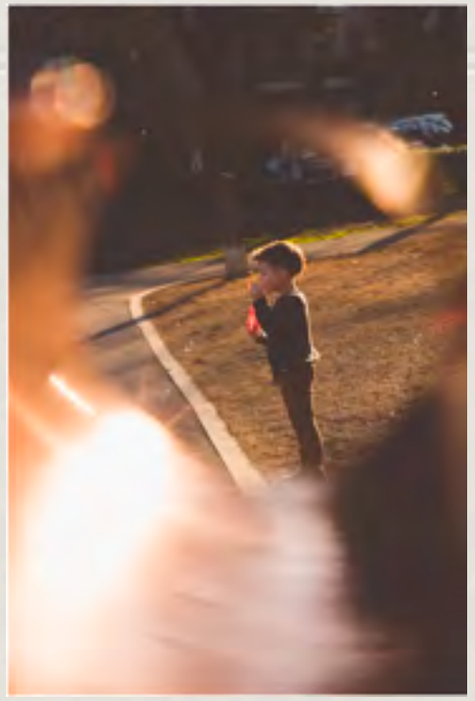
This may create blur, but may not always create "motion" blur.

Shooting Through

Blur



plastic wrap



copper pipe

netting, tulle (think bridal veil)

[Dirk Ercken has a Master Class on this topic, but also has some free videos introducing the technique.]

Shooting Through

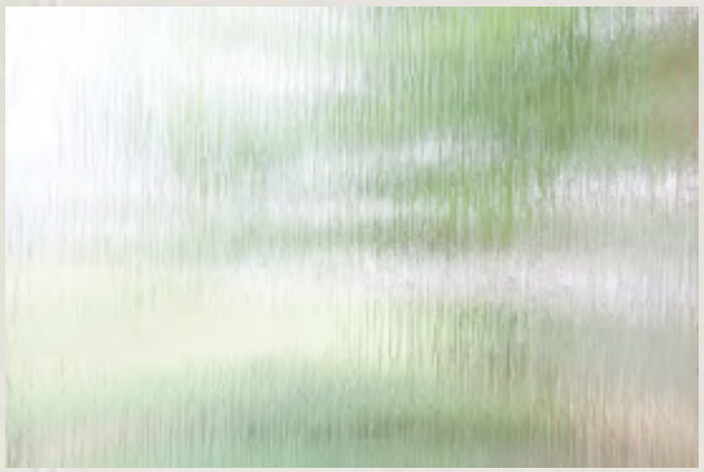
Digital Photography School
https://digital-photography-school.com/
https://digital-photography-school.com/how-use-foggy-surfaces-abstract-photography/

14 Objects To Shoot Through for Creative Photographic Effects

https://giggster.com/guide/photography/shoot-through-ideas/

from EXPERT PHOTOGRAPHY
Rain Photography

https://expertphotography.com/rain-photography-tips/

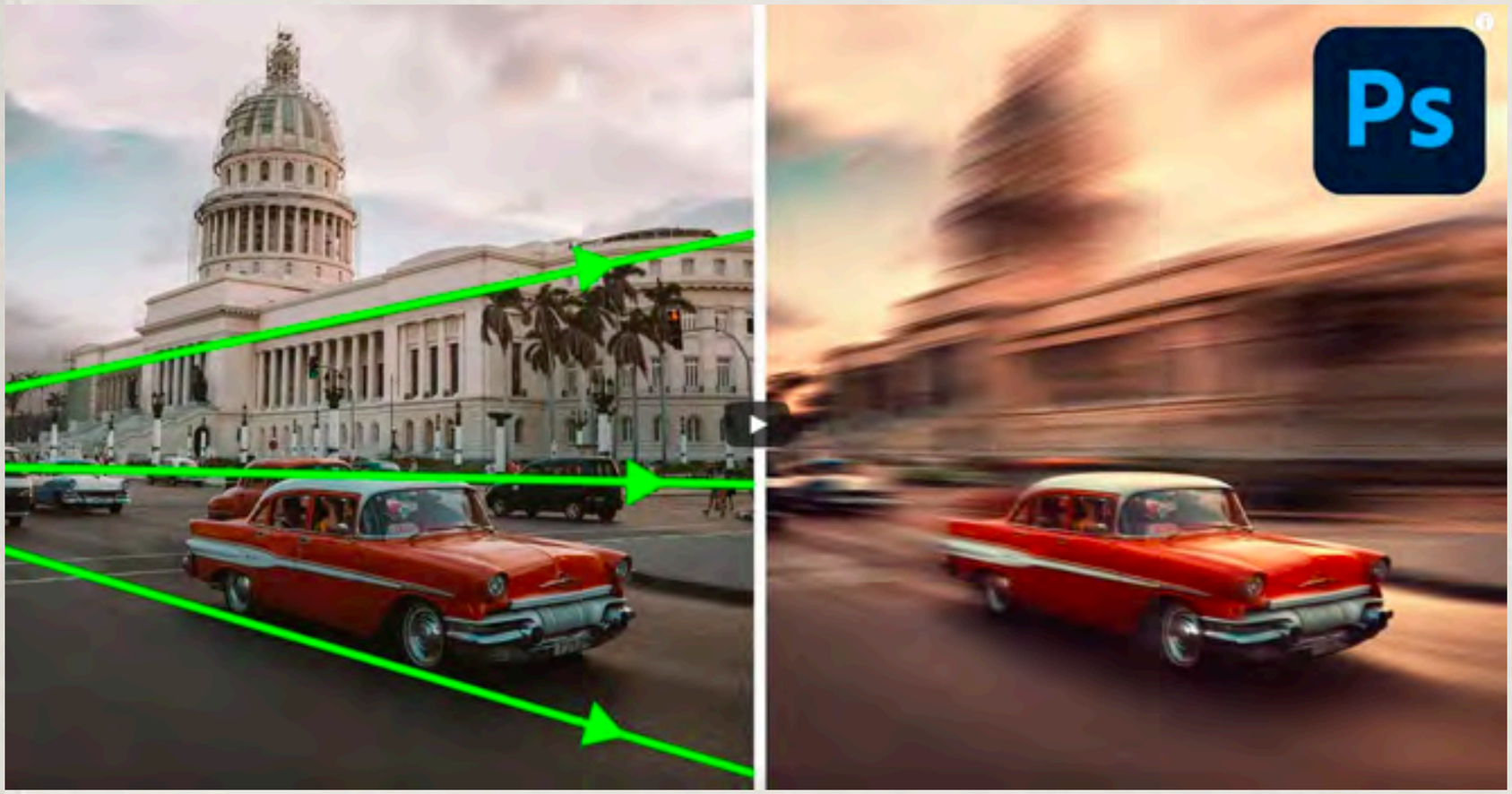


Photographing fogged surfaces rely on the light coming through the glass. Different times of the day can render completely different results.

https://fstoppers.com/education/7-ways-capture-blur-or-illusion-blur-photo-624038

https://www.thisiscolossal.com/2021/02/lernert-sander-foggy-flowers/

Post Processing Techniques



[Car Speed Effect]

[Generate Perspective Motion with Photoshop]

[How to FAKE MOTION Using Photoshop]

[How to Combine Images and Blend Layers in Photoshop]

Post Processing Techniques

[Coloring Outside the Lines in Street and City Photography in Photoshop]

[Editing Intentional Camera Movement Images]

References

Most techniques throughout the presentation have links to tutorials and further information on those slides. Below are additional links.

Movement in Photography

Tips for Capturing Motion Blur

How to Capture Motion Blur in Photography

Three Tips for Capturing Motion Blur

Motion Blur Defined & Tutorials

Capturing Motion Blur

Multiple Exposure Photography in Camera - A Step by Step Guide - Nikon Settings

How to Use Continuous or Burst Shooting Mode

How to Photograph a Fast-Moving Subject: Getting the Shot

A Beginner's Guide to Capturing Motion in Your Photography

Blurry Photography: A Featured Image Collection

Slow Shutter Speeds to Blur Movement

Capturing the Beauty of Architecture Through Multiple Exposure Photography

ICM Editing Trick - Make your images pop

Thanks to…

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