Unusual Perspective in 3D

By George Themelis

Notes at: drt3d.com/PERSPECTIVE.PDF

20 Years ago:

STEREO PHOTOGRAPHY TUTORIAL

By George Themelis, © 2000-2001

How to Hold the Stereo Camera

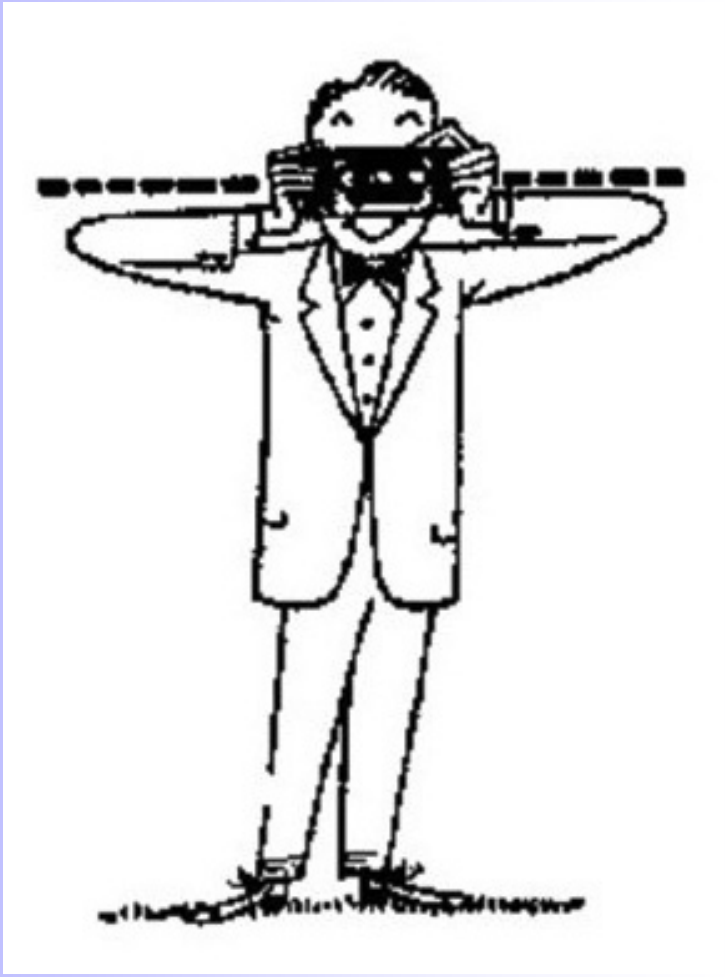
Illustrations from the Stereo Realist Manual book by Morgan and Lester (1954)

Now:

Try something different

Normal Perspective

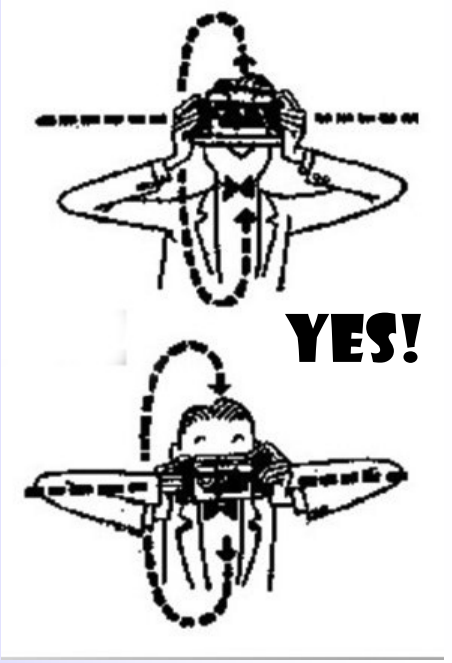
Camera held **leveled** at **eye level** →



Unusual Perspective

1. **Camera at eye level**
   - pointed up
   - pointed down
2. **Camera tilted** *(extreme: 90^{o})*
3. **Camera lower than eye level**
   - looking straight
   - looking up
4. **Camera higher than eye level**
   - looking straight
   - looking down

Unusual Perspective - Looking UP / DOWN



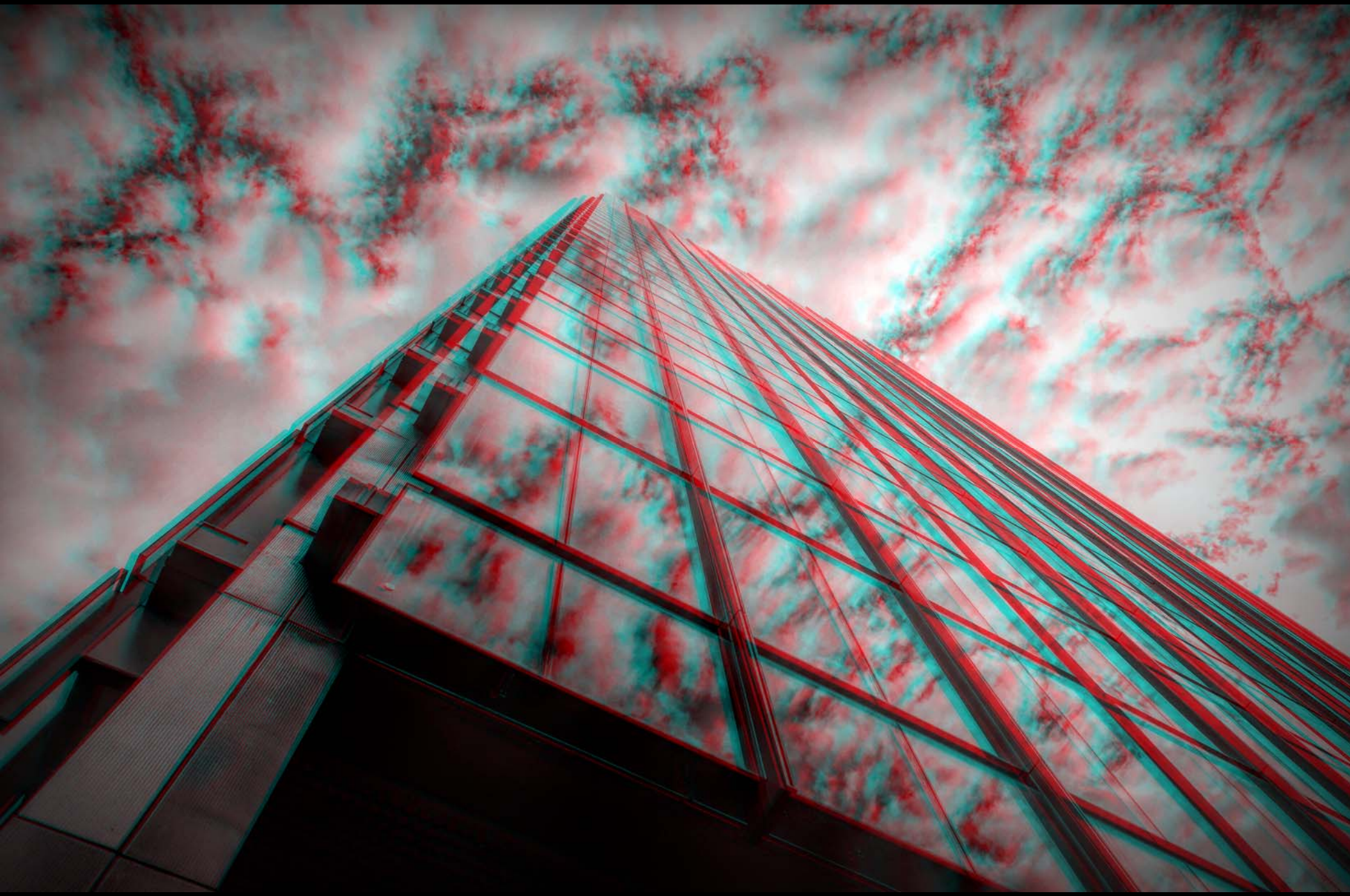
1. Camera at eye level

- **Pointed up**
- **Pointed down**

- Acceptable, and used often, looking up (trees, buildings, etc.) or looking down (staircases, etc.)

- Creative/unusual effects can result if the camera is pointed directly up or down

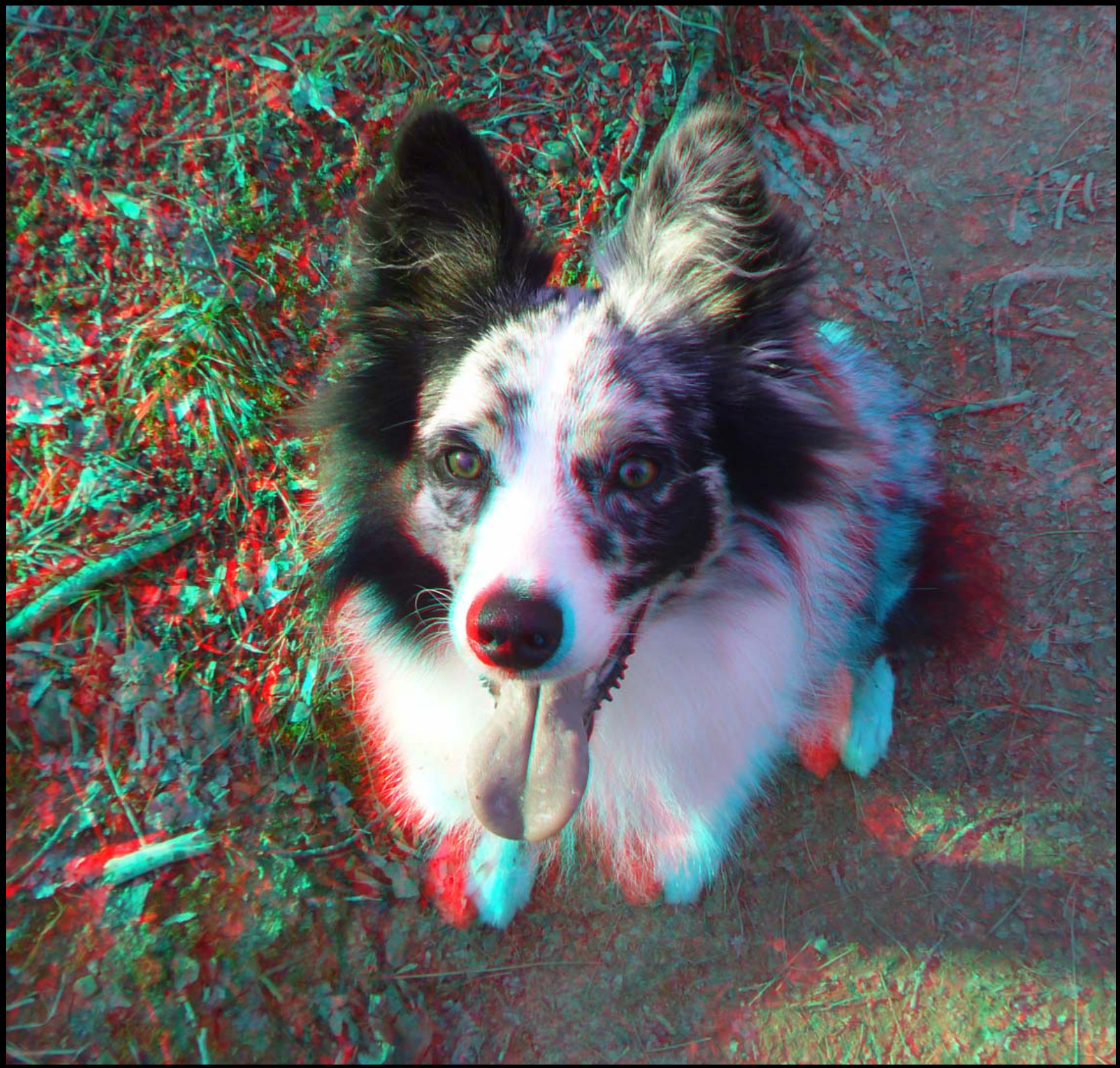
Ursula Drinko - “Celebrezze Reflections” (Samsung NX1000)



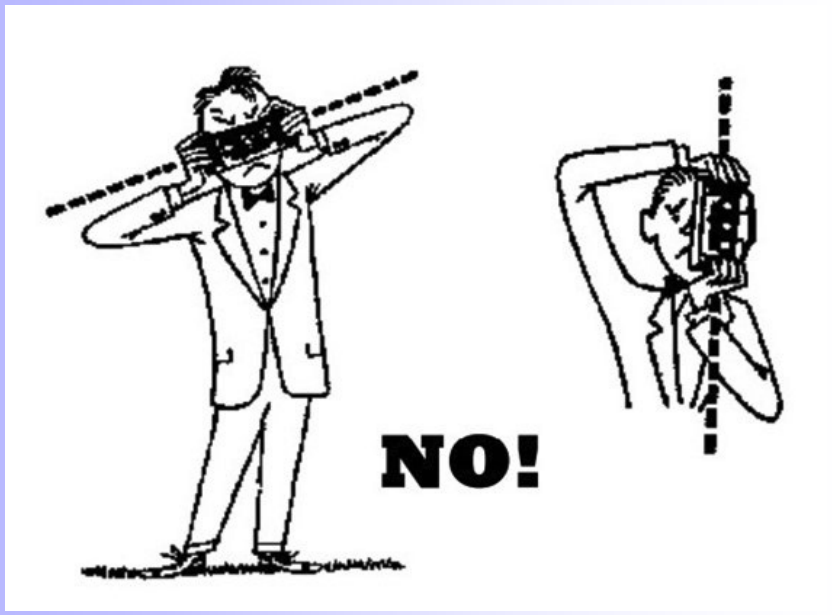
George Themelis - “Birds & Buildings in Chicago” (Twin Sony RX100)

Robert Bloomberg - “Stairwell Pienza Italy”

George Themelis - “Hi, I’m Vinny” (Panasonic 3D1)



Unusual Perspective - Tilt



2. Camera tilted

A big "NO" in 3D photography for physiological (not technical) reasons

Notes:

- There is **no error** when the camera is tilted. The 3D pair is perfectly aligned.
- The issue is **physiological**. Our brain does not like the tilted horizon and this is worse in 3D than 2D.
- To recognize that the camera is tilted, you need a **frame of reference**. This is usually the horizon or an object (person, building or anything that stands straight).

Unusual Perspective - Tilt

Camera tilted

- "**Dutch Angle**" - Camera tilted (often in street photography) to allow straight objects (people, buildings) to fit the frame better.
- Variation: Camera tilted **to make tilted objects appear straight**
- 90 degree tilt: Extreme tilt, used for creative effects

Attribution: Tobias "ToMar" Maier

These are examples of 2D pictures. How well does this work in 3D?

Casey Stoner Photo
Henk Meijer Photography

Vienna Austria The Graben Photo
Carol Japp

petapixel.com/2013/03/04/disorienting-portraits-of-people-walking-about-in-a-tilted-world/

Andrew Hurst - “Alkmaar Cheese Weighing House”

Dennis Green - “Flying”

Susan Pinsky - “Tilted San Francisco Houses”

Ron Fross - “One Eye Below the Other”

Gordon Au - “Poseidon Intermission”

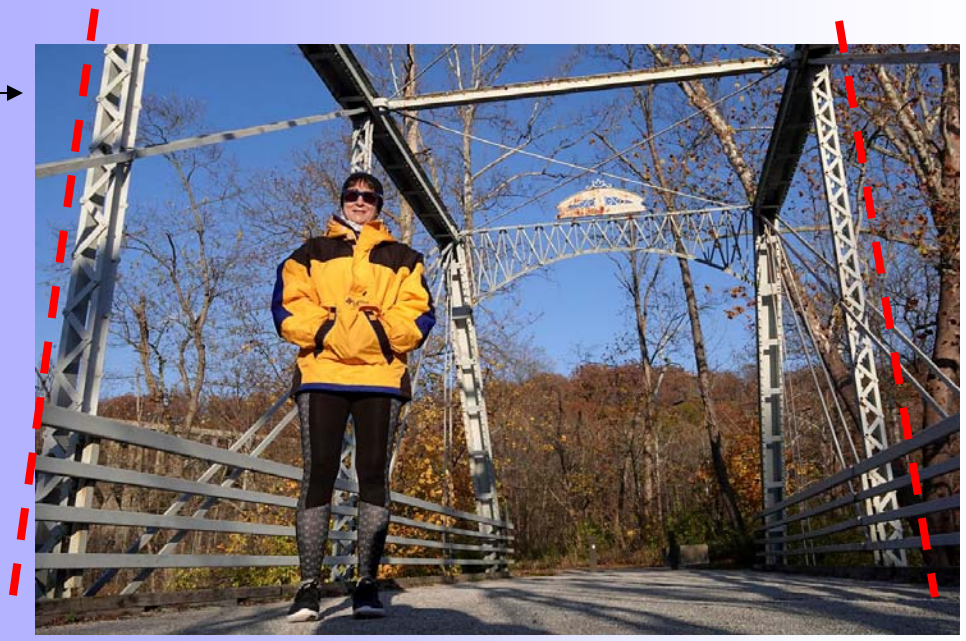
Unusual (LOWER) Perspective

3. Camera lower than eye level

- **Pointed straight**

This is often the right thing to do, when photographing children, animals, etc. (anything that it shorter than us).

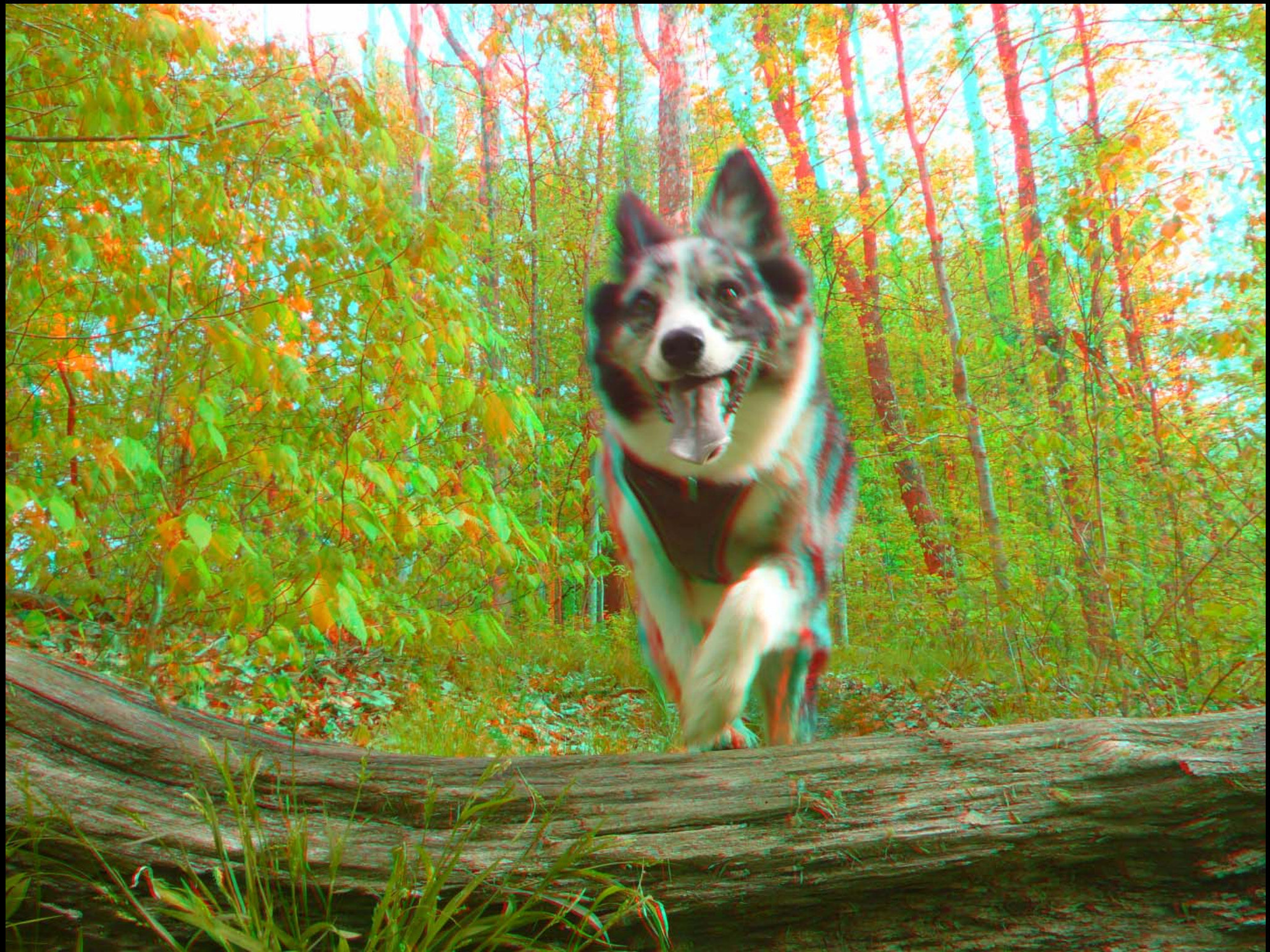
- **Pointed up**



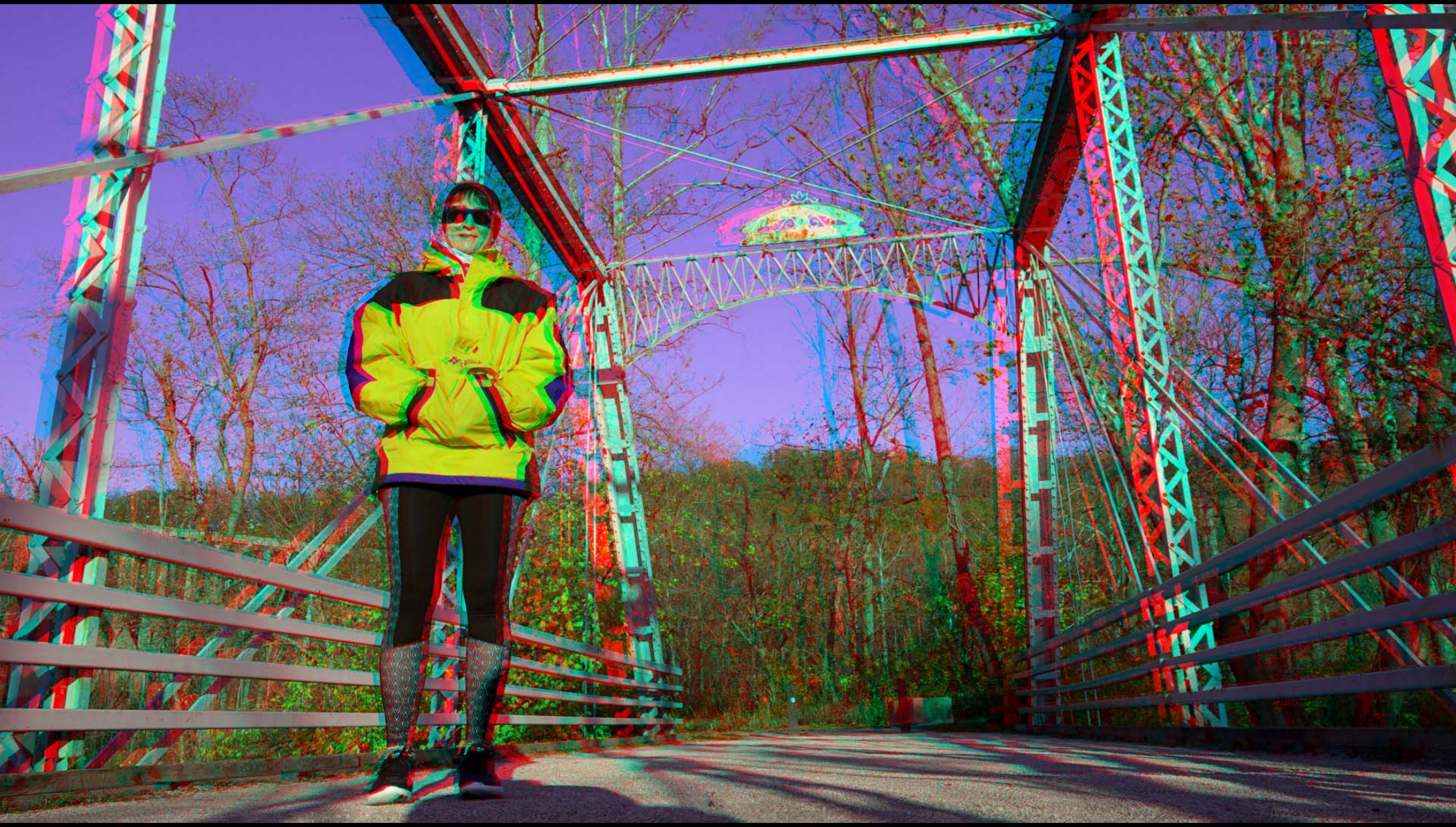
Often results in a stronger or more interesting composition. Perspective is intensified (especially when using wide angle lenses).

George Themelis - “Vinny” (Panasonic 3D1)

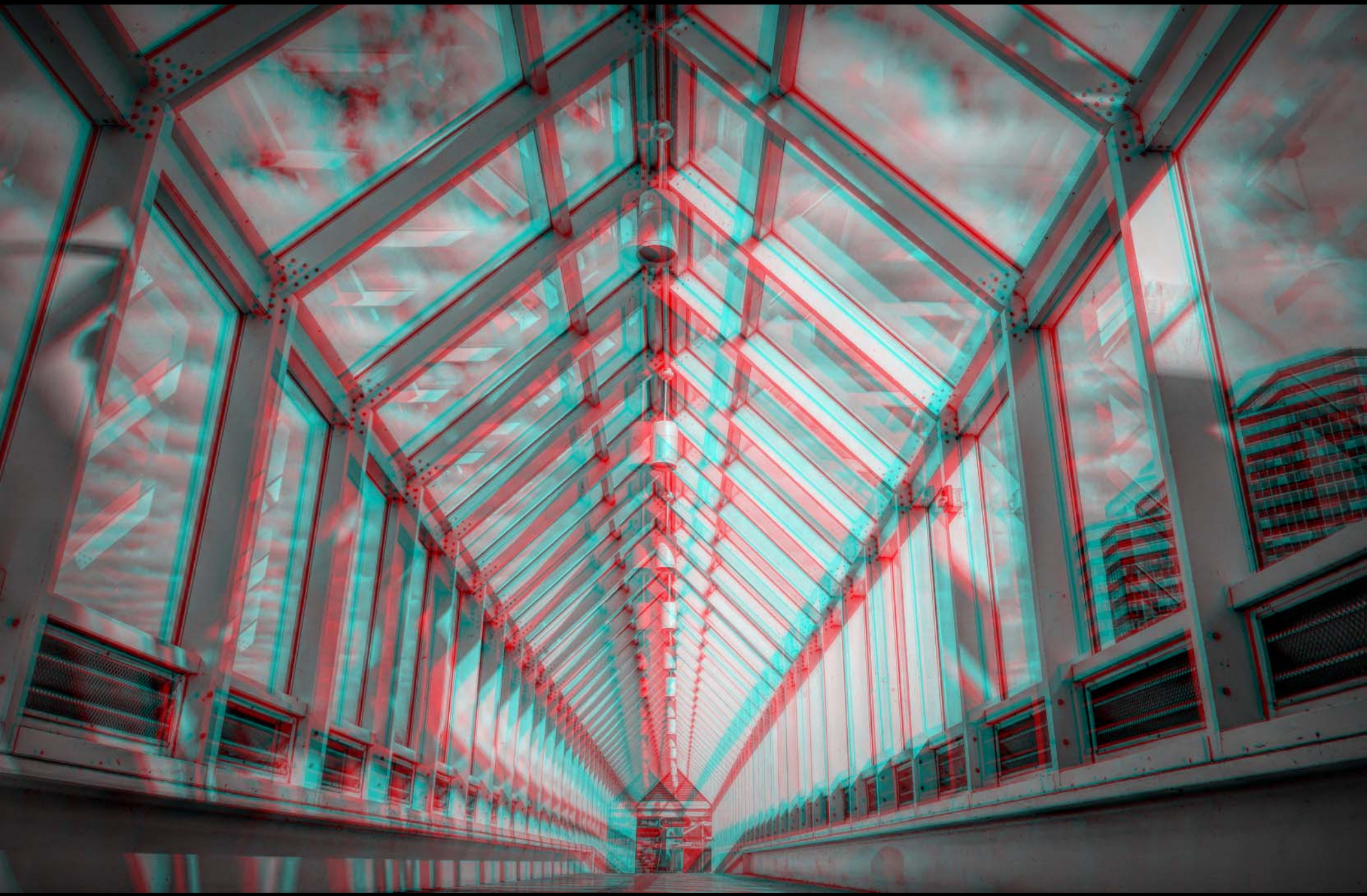
George Themelis - “Vinny in Action”



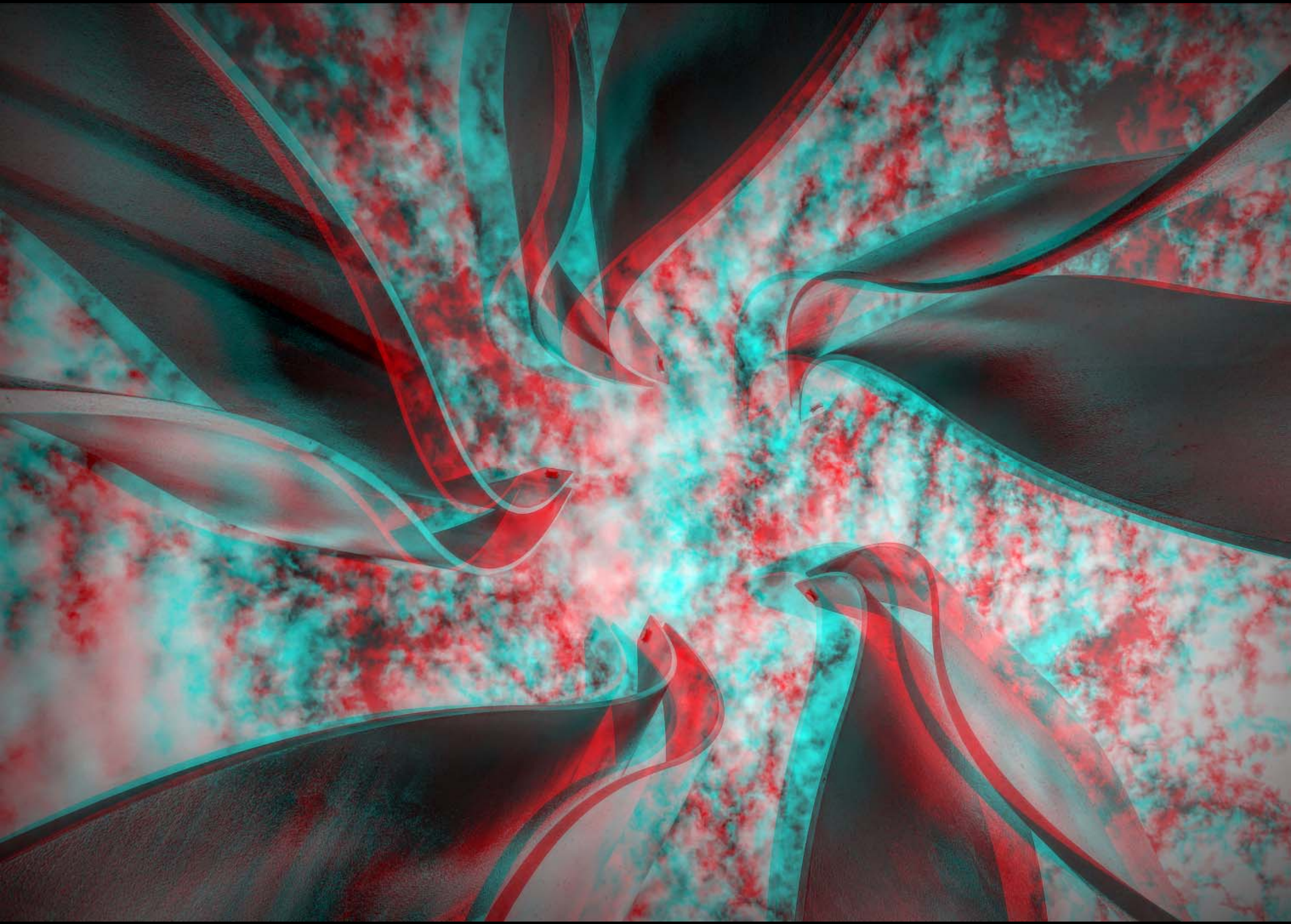
George Themelis - “Liz at Station Road Bridge” (Twin Sony RX0 near ground level)



Ursula Drinko - “Rapid Line” (Samsung NX1000 near ground level)



Ursula Drinko - “Metal Flames Lick the Sky” (twin Samsung NX1000 on the ground)



Low Perspective: Technical Problem / Solutions

1. How to support the camera?

- **Hand held**
- **Short tripod**

JOBY Gorillapod Micro 800 Tripod

2. How to compose (see the screen)?

- **Take your chances**
- **Camera with tilting screen**
- **Use a mirror**

Samsung NX Mini

An interesting accessory is a mirror that attaches to a camera, like the Panasonic 3D1

Mirror w/Panasonic 3D1

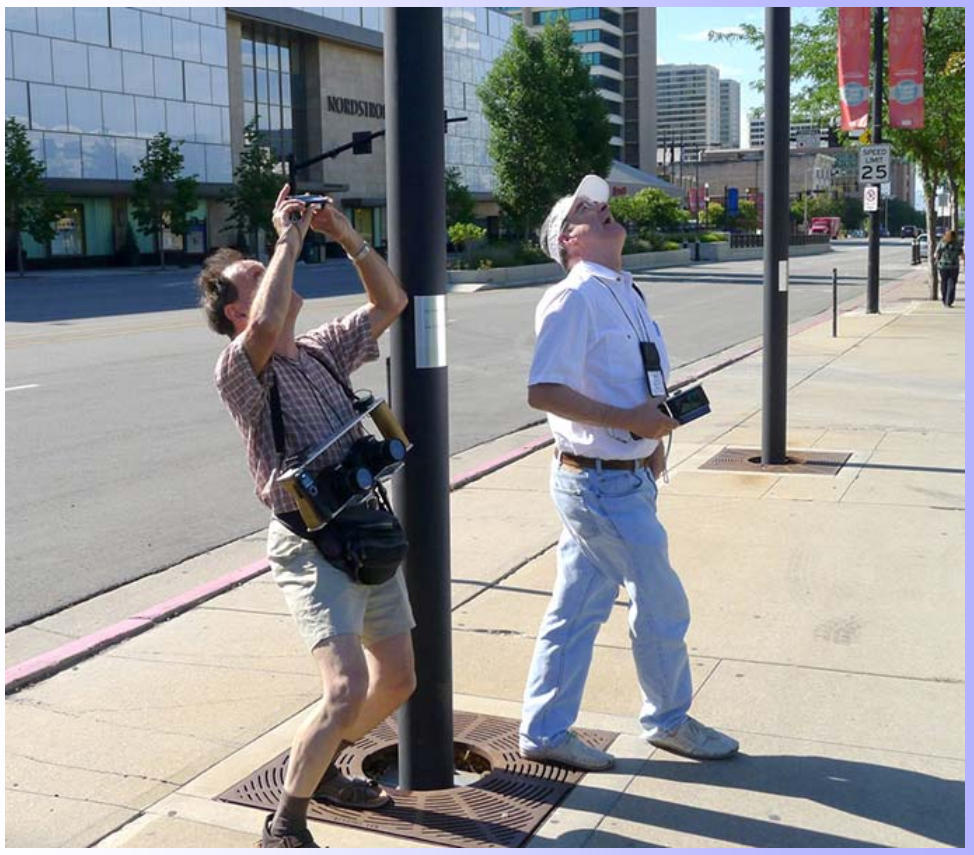
3. How do you fire the camera?

- **Use the camera's self timer**

That's the easiest thing to do if there are no remote ports and you cannot reach the shutter button

George Themelis - “Jane Scott” (Panasonic 3D1 + mirror)

Low Perspective / Looking Up Gymnastics



Peter Weiler and Ron Fross

Diego Ruiz

2015 NSA Convention

Salt Lake City, Utah

Directly Up / Down Shots

1950s fun/party shot (anonymous)

My version during Covid

Note: There is no frame of reference. The picture can be turned upside down and it still makes perfect sense.

George Themelis - “Masks but no Distancing” (Fuji W3 on the ground fired w/ timer)

George Themelis - “Masks but no Distancing” (upside down?)

Unusual (HIGH) Perspective

4. Camera higher than eye level

- More pleasing composition (**continuous depth**)
- Avoid near objects (**no excessive deviation**)
- **Impact** (especially when looking directly down)

Examples:

- **Crowds** (parades, weddings, public events)
- City /Nature **Overview**
- Buildings / **Architecture**

Note: High perspective 3D photography favors **hyperstereos** because the near point is usually far away

George Themelis - “The Train is Coming” (Sony RX100 & short stick)

High Perspective

Technical Problems / Solutions

1. How to raise the camera high

2. How to compose

3. How to trigger the shutter

Cleveland Air Show - 2012

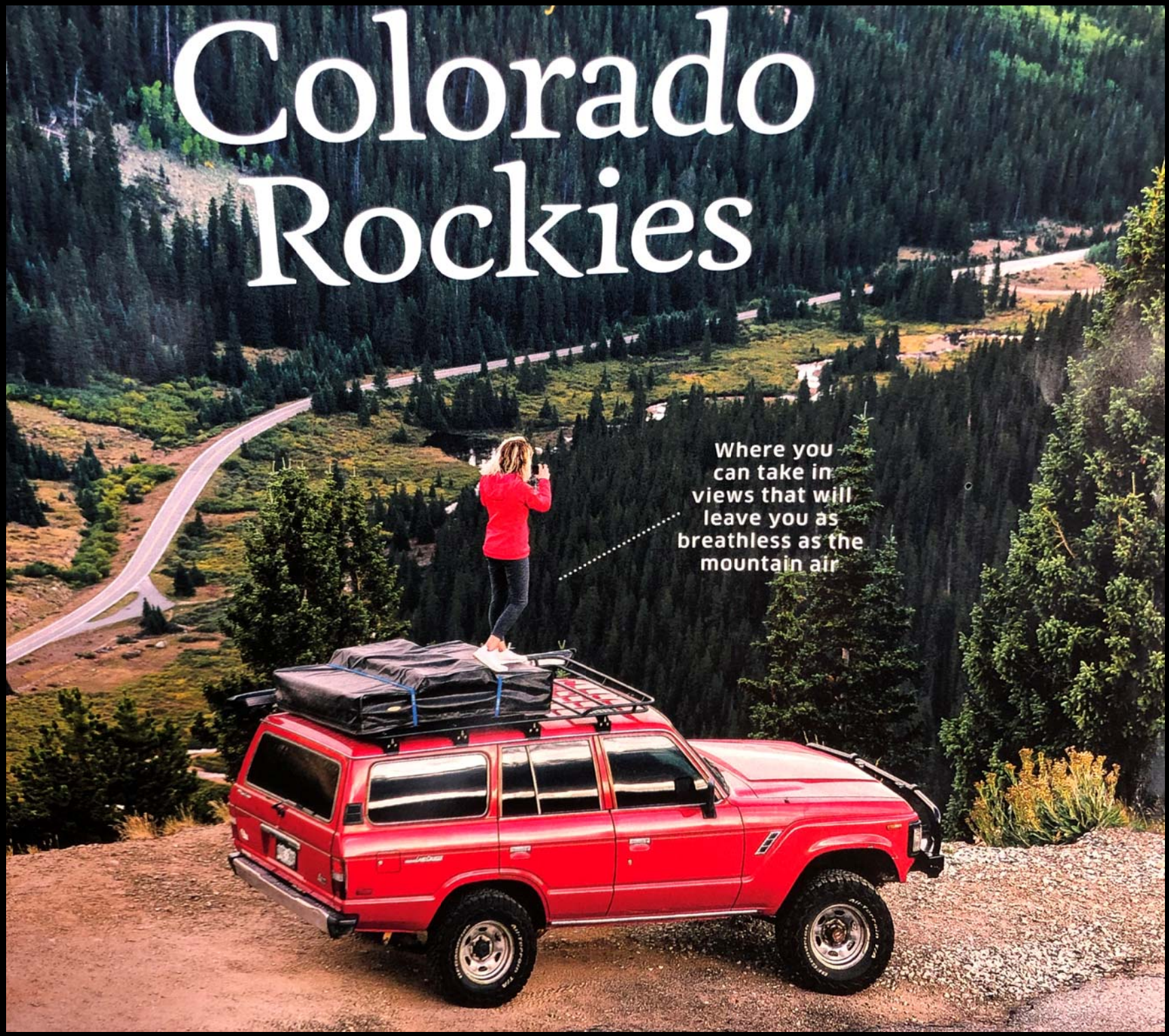
Cleveland Air Show - 2021

George Themelis - “Air Show 2012” (Panasonic LX5 rig & Long Pole)

1. How to raise the camera high

3D Weekend 2009

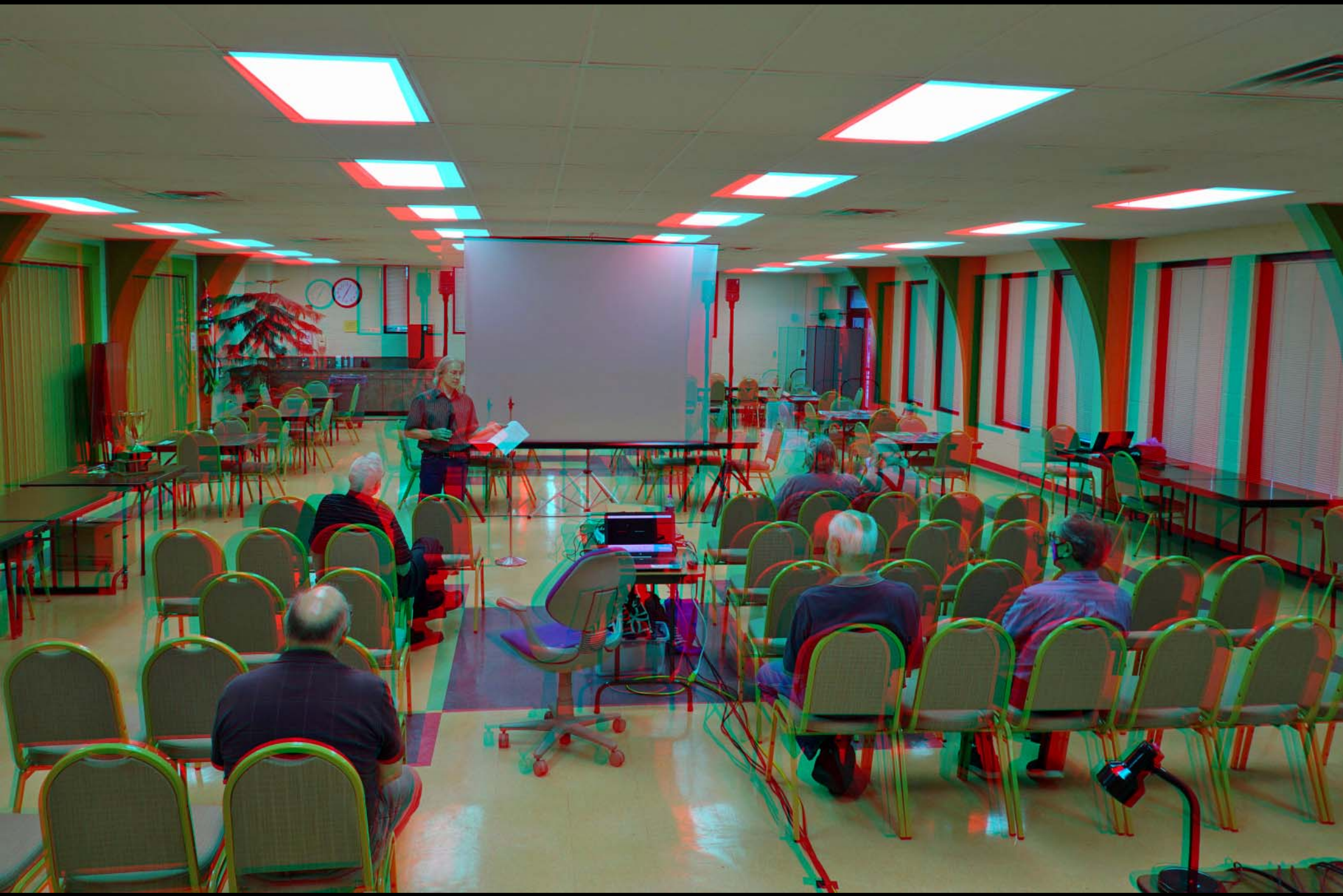
- Use a **step stool / ladder**
- **Hand-hold** camera overhead
- Use a **short stick**
- Use a **long pole**


Colorado Rockies
Where you can take in views that will leave you as breathless as the mountain air

George Themelis - “Train from Bridge”

George Themelis - “At the Race Start” (Panasonic 3D1 hand-held overhead)

George Themelis - “Detroit 3D Club Meeting” (Sony RX100 rig & short stick)



George Themelis - “Family Portrait” (Twin Samsung NX Mini & selfie-stick - screens tilted, remote firing)

How high can you raise the camera?

Long Pole

Selfie Stick

Hands Raised

Eye Level

18’
5.5m

or more if held high off the ground

10’-12’
3-3.5m

7’
2.1m

5’4”
1.6m

George Themelis - “Our House” (Panasonic LX5 twin rig & long pole)

Monopod vs. Pole

What is a pole?

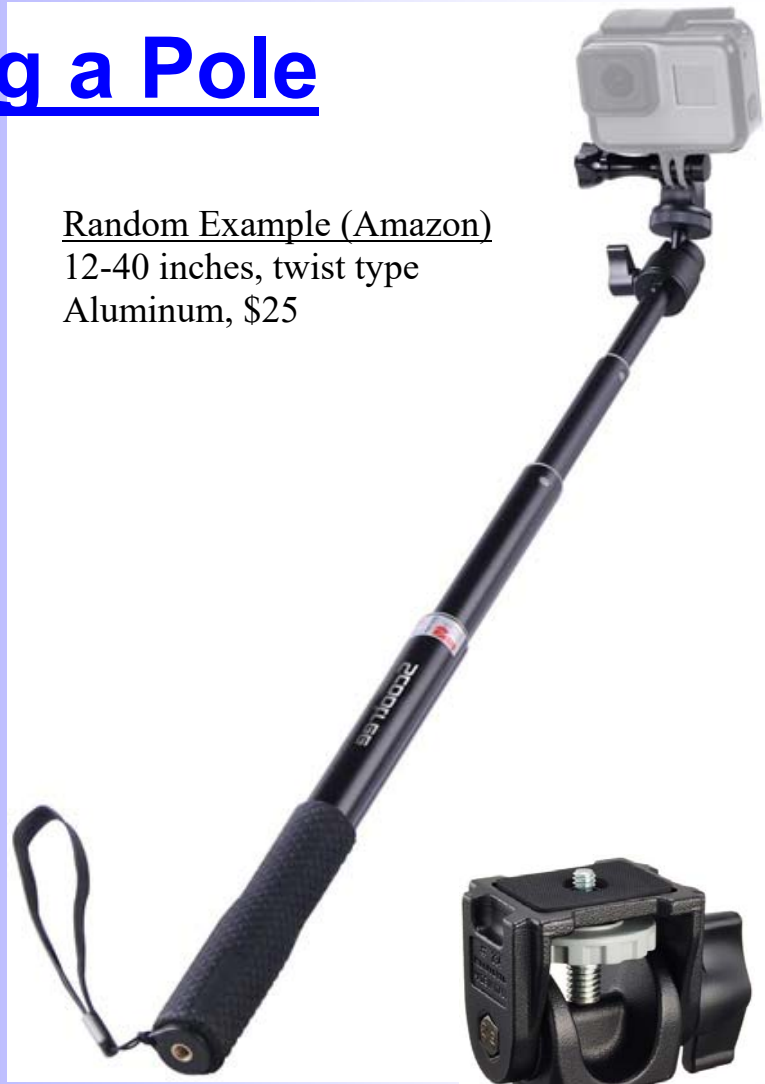
(and where can I get one?)

- A pole is a **inverted monopod** (thick at the bottom not top)
- Short pole: Selfie Stick
- Longer poles are used to hold microphones, etc. (boom pole)

Considerations for buying/using a Pole

Search the web for "selfie-stick" "photographic pole" "boom pole" etc.

Random Example (Amazon)
12-40 inches, twist type
Aluminum, $25



Considerations:

- Weight
- Material / Construction
- Length collapsed
- Length fully extended
- Weight it can support
- Features (handle, tripod socket, etc.)

Note: Many selfie sticks are made to hold light-weight cameras (GoPro, or phone, for example) and fully extended will not handle a heavy twin rig

Accessories:

- Swivel / Tilt Head or Ball Head →

Caution: **Be careful** when using long poles. Cameras can fall, you can touch wires, can injure people, wind is a problem, etc.

2. How to Compose

- **Look at screen**
  - Tilting screens
  - Use a mirror →

- **Obtain direct feed from the (digital) camera**
- **Use a separate video camera** →
- **Take your chances**

  The combination of digital photography and wide angle lenses makes it possible to shoot in the general direction of the subject and fine-tune the composition later

Scott in a 2006 Air Show. He is using a Stereo Realist attached to a custom pole and an air bubble release to fire the camera. He is using a TV camera for framing (he is wearing a head-mounted TV set) and he is carrying the system in a two wheel cart.

George Themelis - “Inside the Steam Train” (Sony RX100 & self-stick)

3. How to Trigger the Shutter

- **Mechanical Triggering**
- **Wired Triggering** (camera must have a remote port for shutter release, then attach a shutter release cable)
- **Wireless / Remote Triggering** (if the camera has a remote port, then you can use a wireless shutter release)
- **Self Timer**

Note: Cyclopital3D (no longer in business) has modified Fuji W1/W3 cameras by adding a shutter release plug

George Themelis - “Having Fun with the Pole” (Sony RX100 fired with wireless remote)

Something to remember:

Higher / Lower Perspective is not a panacea

For a specific shot you might find that you prefer a normal or lower or higher perspective so EXPERIMENT !!

George Themelis - “Plane - Normal Perspective”

George Themelis - “Plane - High Perspective”

George Themelis - “Building - Lower Perspective” w/ Wide Angle Lenses + Looking Up

George Themelis - “Building - Higher Perspective” w/ Wide Angle Lenses + Looking Straight

Issue in Unusual Perspective Shots

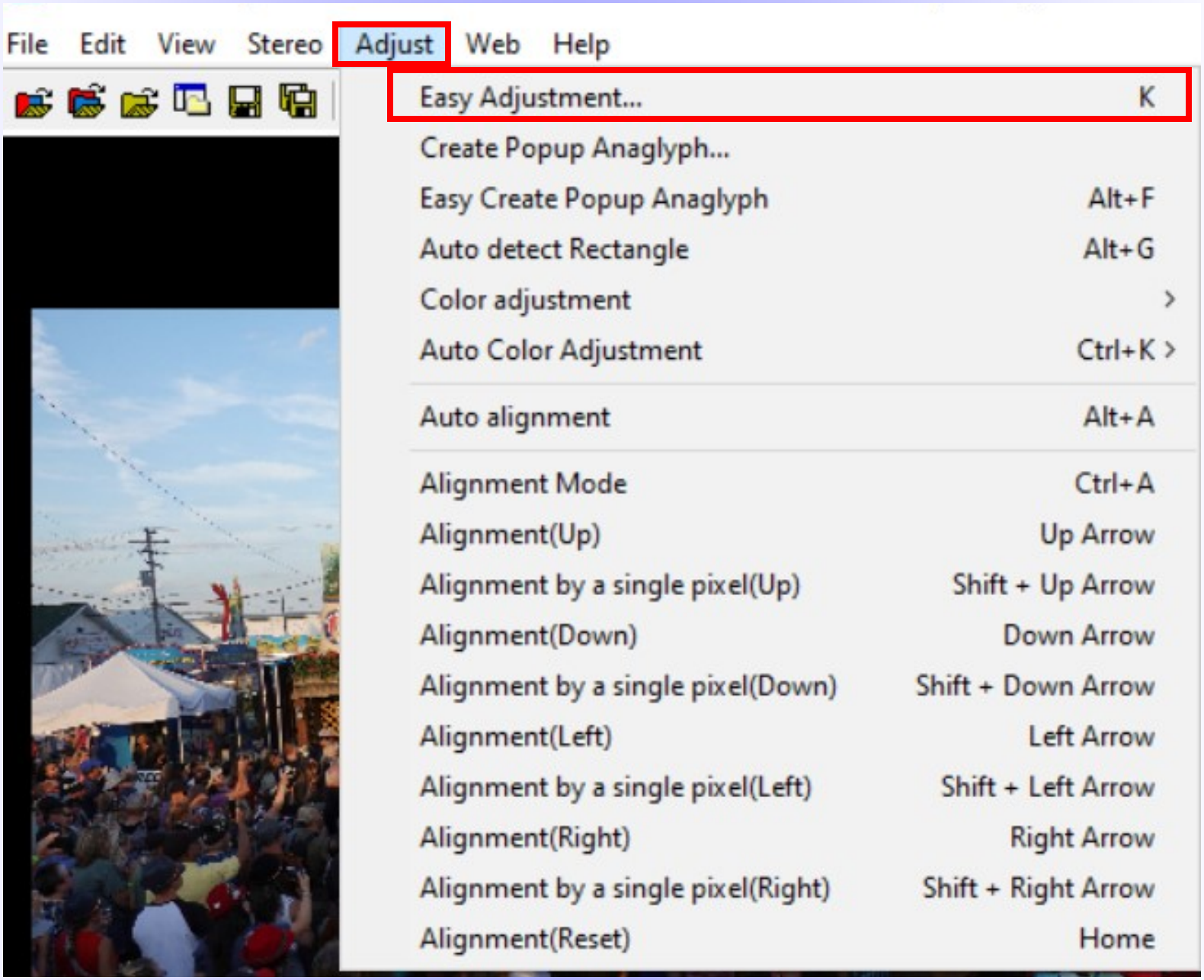
Keeping the camera leveled

This is an issue any time I use the camera away from my eyes

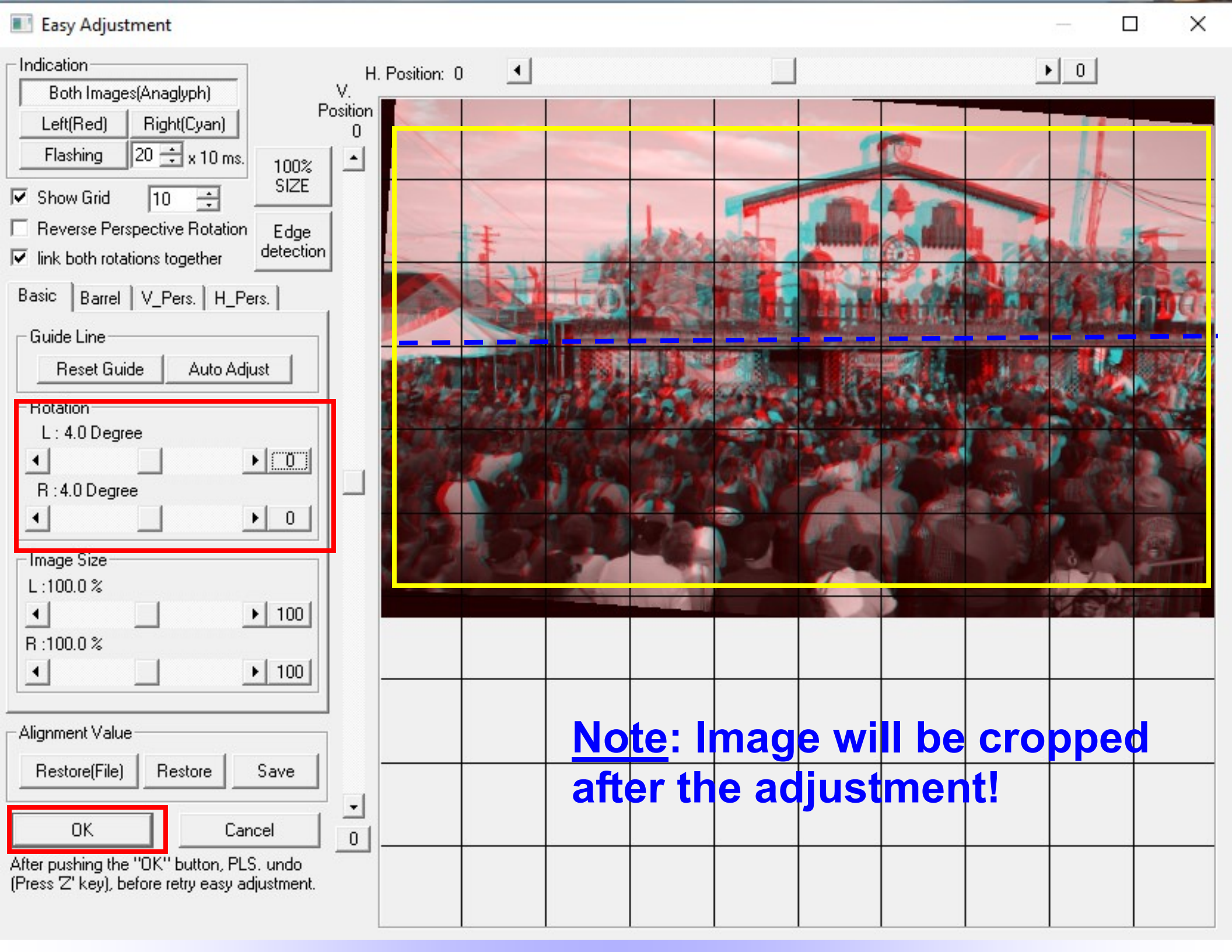
George Themelis - “Oktoberfest 2021 - As recorded”

How to “correct” tilted 3D Pictures

Use SPM’s East Adjustment function (“K” is your friend!)




Easy Adjustment
Indication
Both Images(Anaglyph)
Left(Red)
Right(Cyan)
Flashing
20
x 10 ms.
Show Grid
10
Reverse Perspective Rotation
link both rotations together
100% SIZE
Edge detection
H. Position: 0
0
V. Position 0
Basic
Barrel
V_Pers.
H_Pers.
Guide Line
Reset Guide
Auto Adjust
Rotation
L : 0.0 Degree
R :0.0 Degree
0
Image Size
L :100.0 %
100
R :100.0 %
100
Alignment Value
Restore(File)
Restore
Save
OK
Cancel
After pushing the "OK" button, PLS. undo
(Press 'Z' key), before retry easy adjustment.
0


Easy Adjustment
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V_Pers.
H_Pers.
Guide Line
Reset Guide
Auto Adjust
Rotation
L : 4.0 Degree
0
R :4.0 Degree
0
Image Size
L :100.0 %
100
R :100.0 %
100
Alignment Value
Restore(File)
Restore
Save
OK
Cancel
0
After pushing the "OK" button, PLS. undo
(Press 'Z' key), before retry easy adjustment.
Note: Image will be cropped after the adjustment!

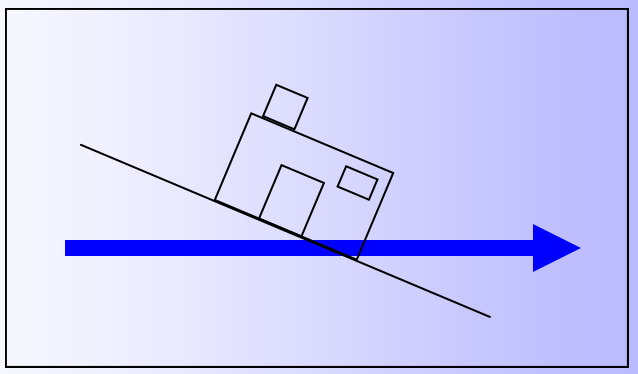
George Themelis - “Oktoberfest 2021 - As recorded”

George Themelis - “Oktoberfest 2021 - Tilt Corrected”

Something to remember:

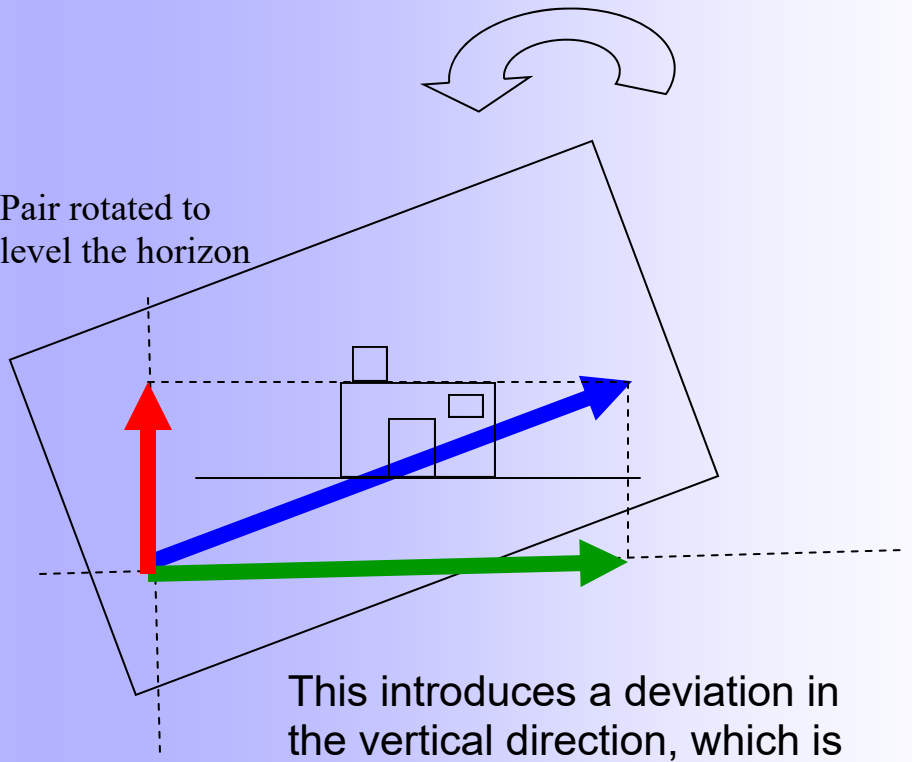
Rotating the pair to level the horizon introduces an error

Pair as recorded



The **stereoscopic deviation** is on the horizontal direction. This is technically correct.

Pair rotated to level the horizon



This introduces a deviation in the vertical direction, which is an **error**

Unusual Perspective - 2D vs 3D

Casey Stoner Photo
Henk Meijer Photography

Attribution: Tobias "ToMar" Maier

petapixel.com/2013/03/04/disorienting-portraits-of-people-walking-about-in-a-tilted-world/

George Themelis - “Fun House”

Art Wolfe

Maasai women and men in a circle, Masai Mara, Kenya

To create this image I climbed onto the roof of an unthatched manyatta in a Maasai village. I love the circles within a circle--the intricately beaded necklaces, headbands, and the ostrich headdress.

Model release: No
Property release: No

Dimensions: 6708x4472
File size: 85.9MB

Summary

Interesting pictures result when you deviate from the "normal perspective" (camera held at eye level)

1. Camera pointed up or down
2. Camera rotated
3. Low Perspective
4. High Perspective

Challenge: **Recognize when it makes sense to do so**

Technical challenges:

- How to raise / lower the camera
- How to view the screen (compose)
- How to fire the shutter
- How to "correct" out of level pictures

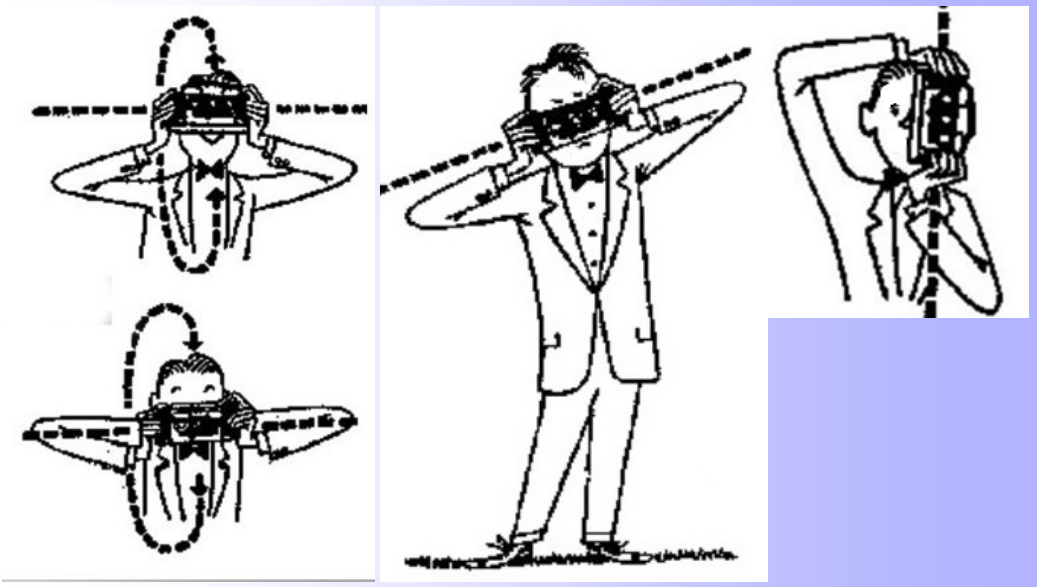
Normal Perspective

Camera held **leveled** at **eye level**

Unusual Perspective I

(angle of view)

1. **Camera at eye level up/down**
2. **Camera tilted**
3. **Camera lower than eye level**
4. **Camera higher than eye level**



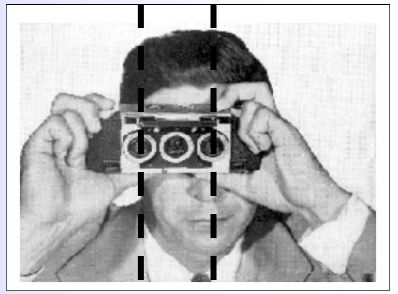
Correct Perspective

Spacing of lenses = Spacing of eyes
Viewing distance = recording distance

Unusual Perspective II

(perception of size & depth)

5. **Stereo base ≠ eye distance**
   - Hypostereo
   - Hyperstereo



6. **Viewing distance ≠ recording distance**