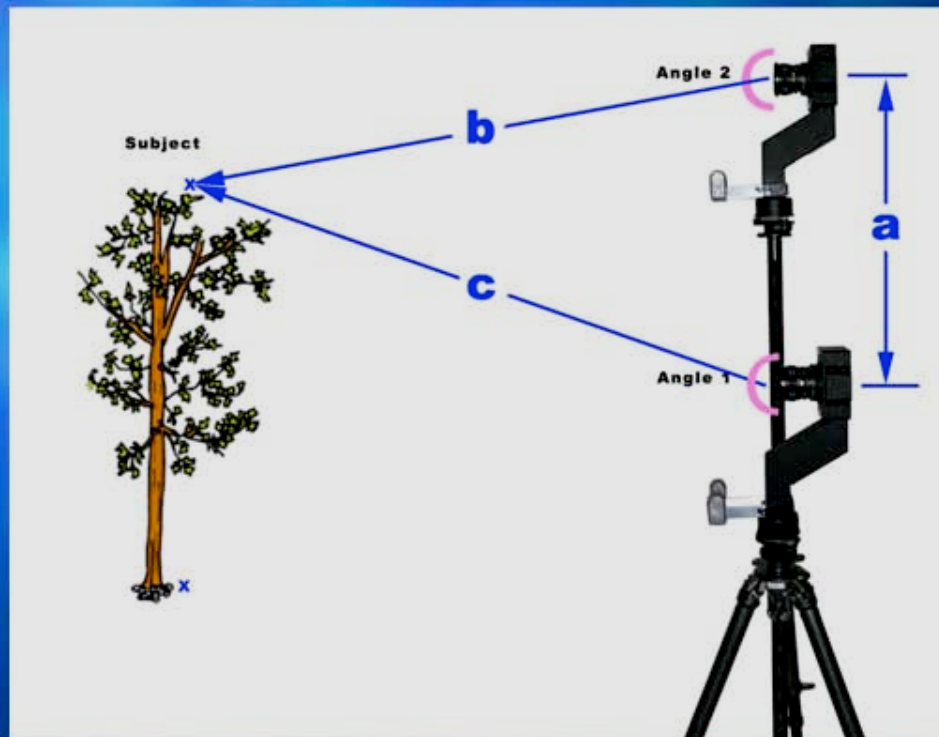


Panoramic Photogrammetry



*pano*scan

What is Photogrammetry?

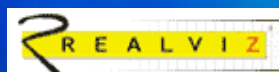
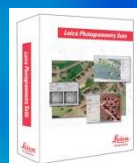
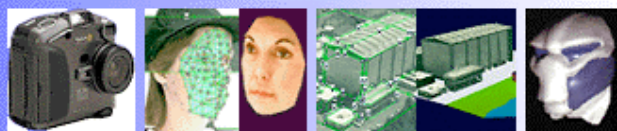
Photogrammetry

From Wikipedia, the free encyclopedia.

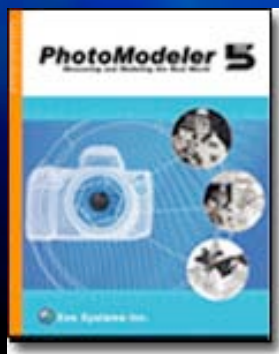
Photogrammetry is a measurement technology in which the three-dimensional coordinates of points on an object are determined by measurements made in two or more photographic images taken from different positions.

Common points are identified on each image. A line of sight (or ray) can be constructed from the camera location to the point on the object. It is the intersection of these rays ([triangulation](#)) that determines the three dimensional location of the point. More sophisticated algorithms can exploit other information about the scene that is known a priori, for example symmetries, in some cases allowing reconstructions of 3D coordinates from only one camera position.

Photogrammetry Software



ImageModeler

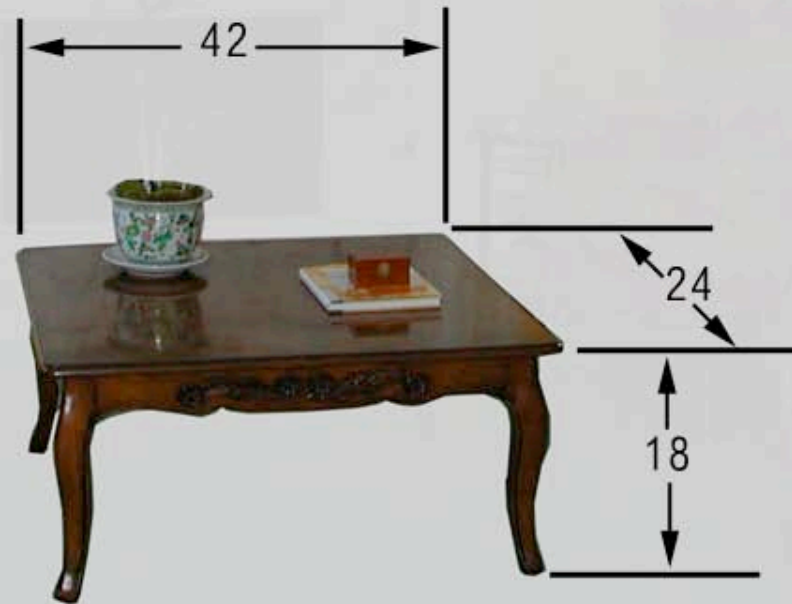


PhotoModeler

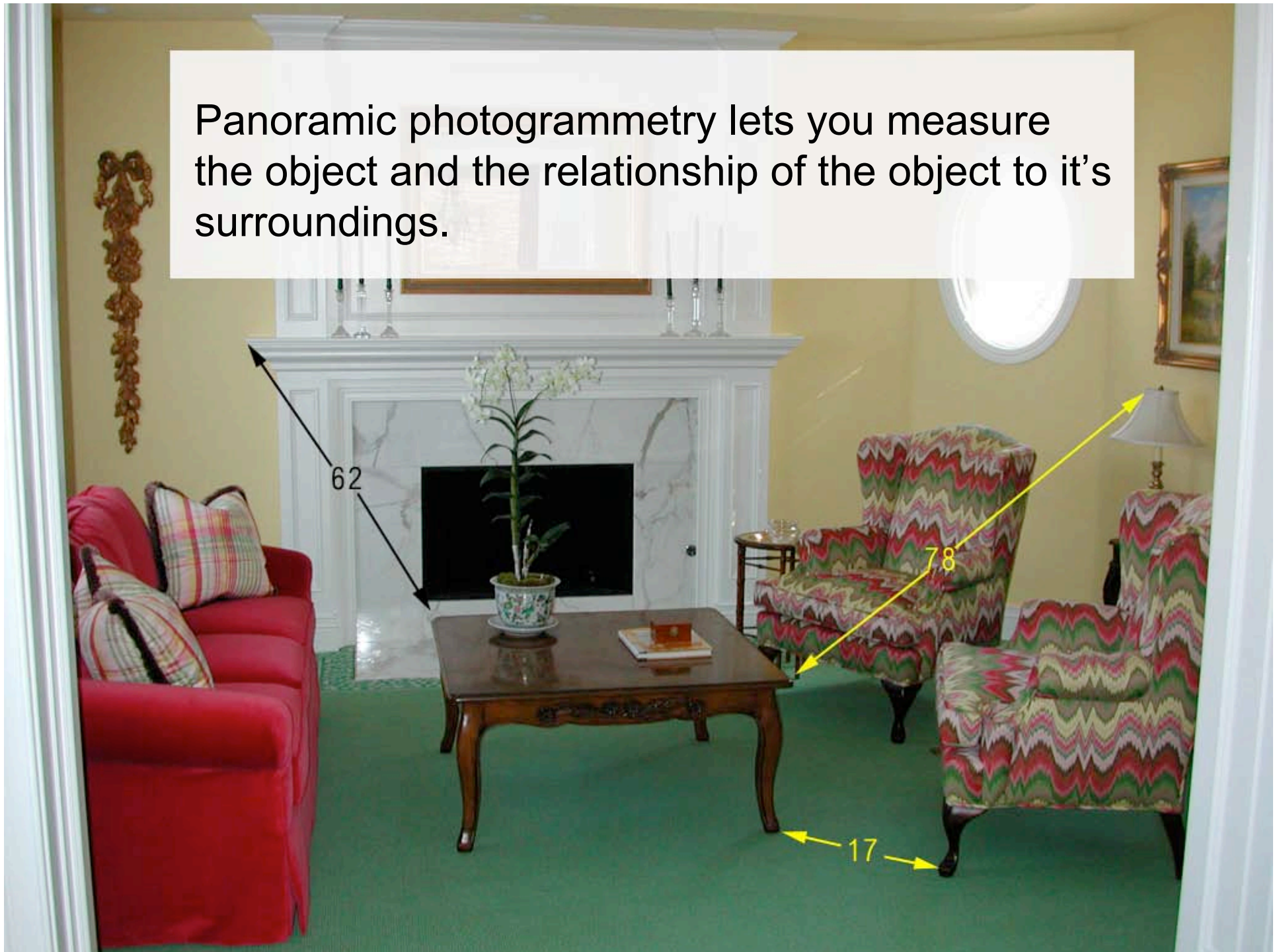


**Institute For
Photogrammetry**

Traditional photogrammetry methods
let you measure objects...



Panoramic photogrammetry lets you measure the object and the relationship of the object to its surroundings.

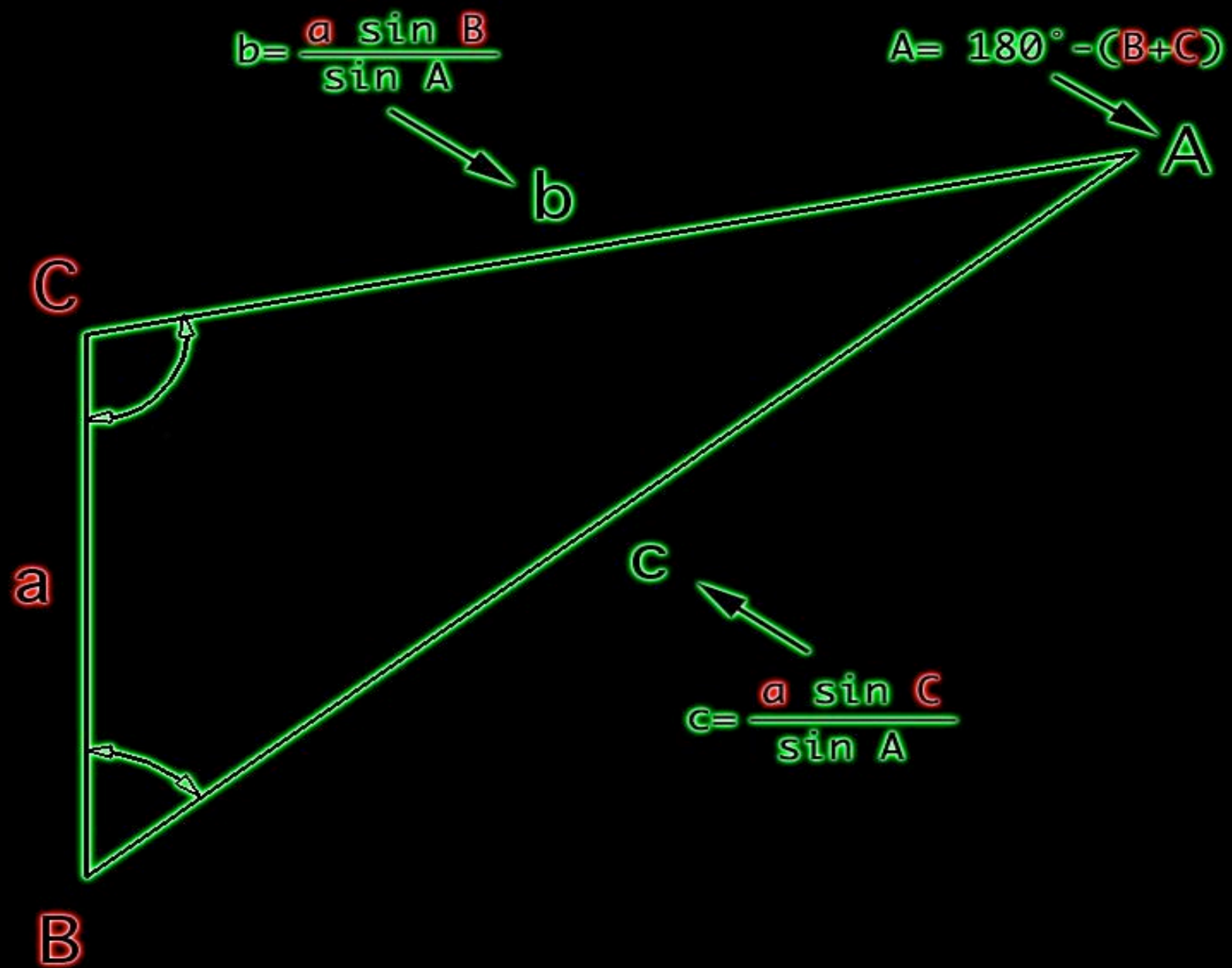


How Photogrammetry Works...

- All photogrammetry is based on triangulation of points within two or more views.
- You must have a minimum of two images for accurate depth measurements.

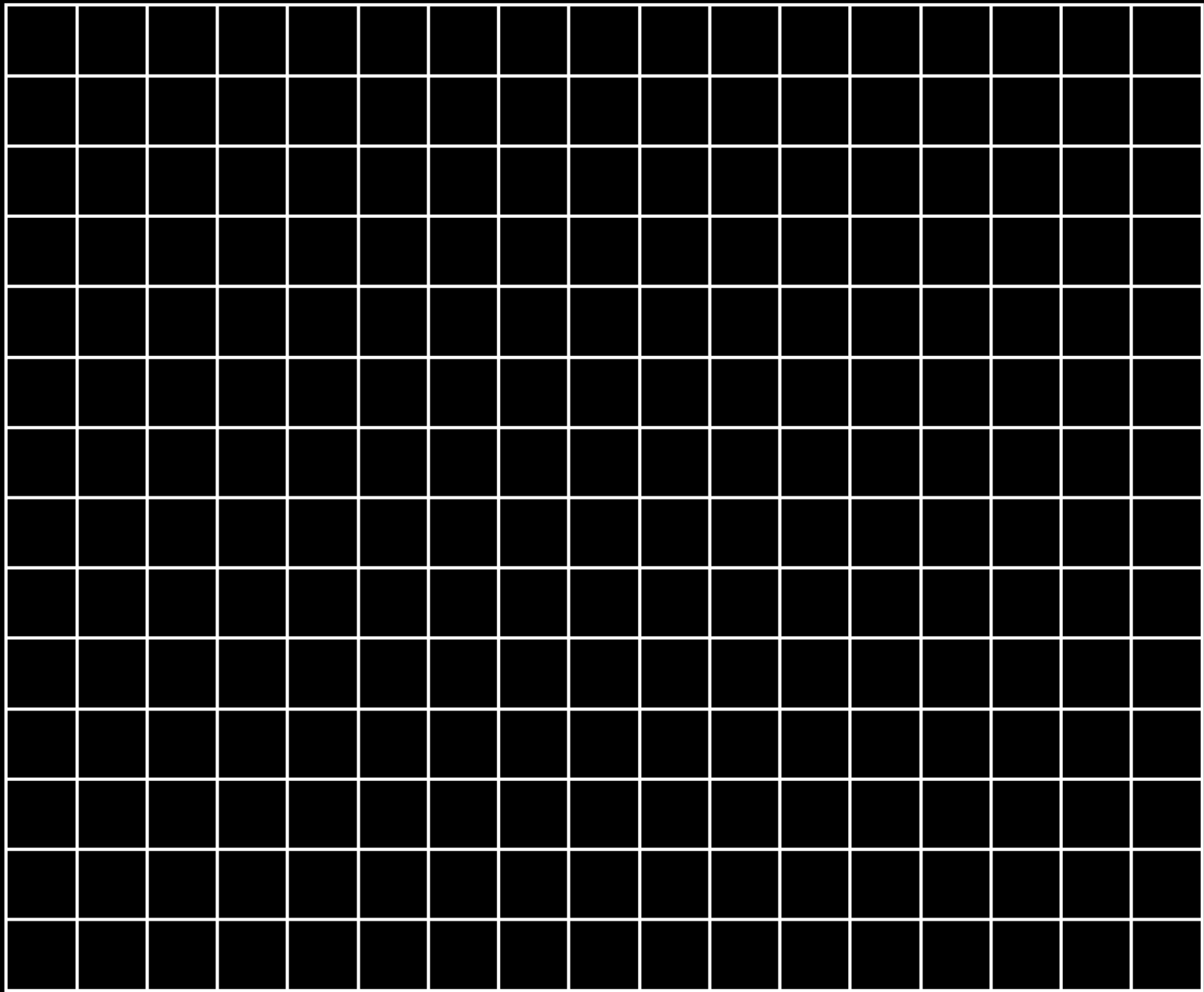
Two panoramic images are captured at known vertical separation.

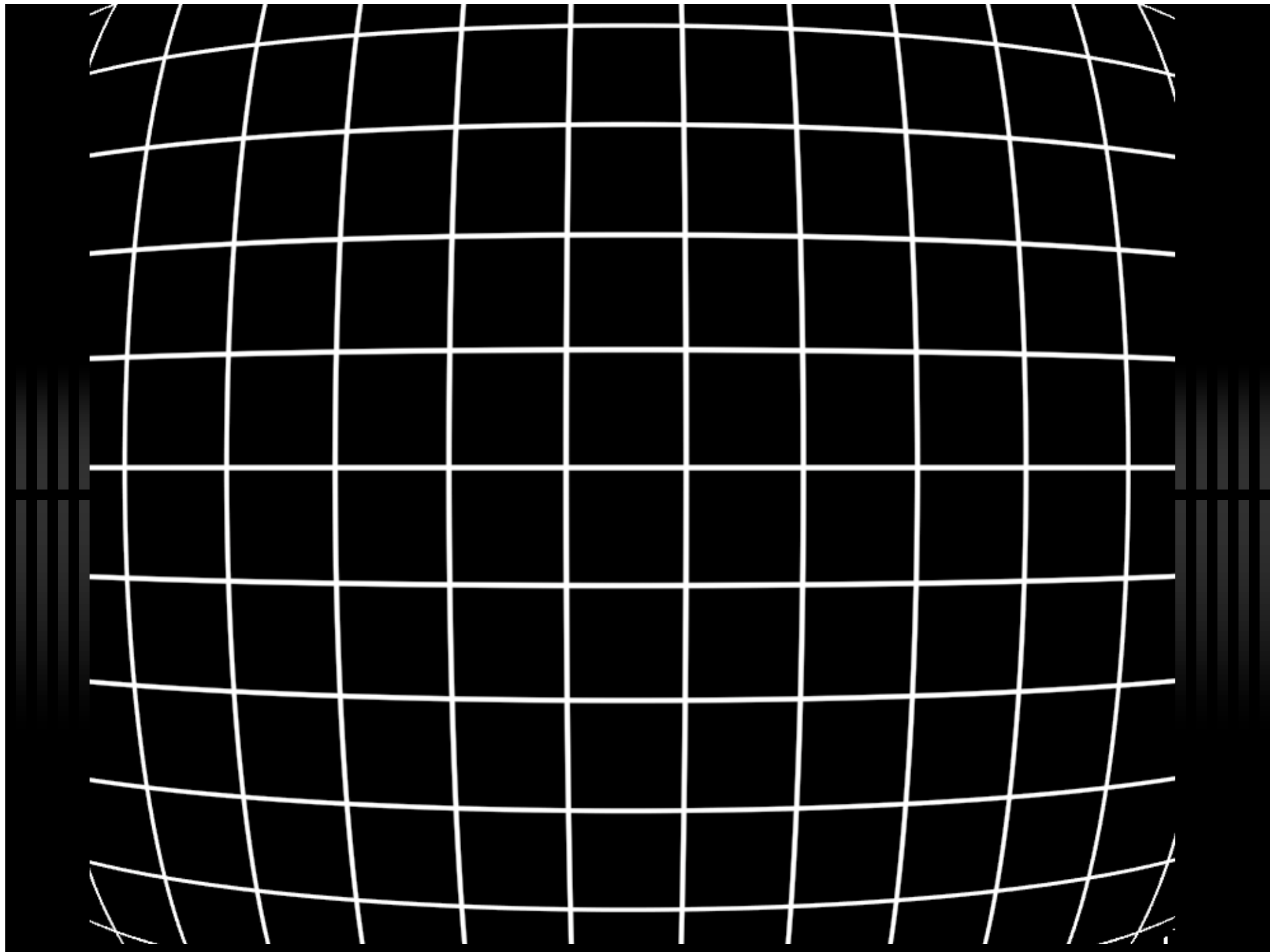




Unfortunately it's not so simple...

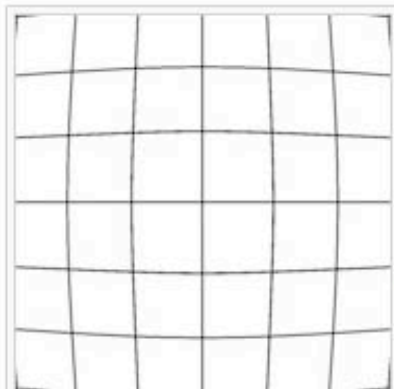
- Lens Distortion
- Mechanical Position Shift
- Contrast & Sharpness Issues





Barrel distortion

From Wikipedia, the free encyclopedia.



Barrel Simulation




Barrel distortion is a divergence from the [rectilinear projection](#) in [geometric optics](#) where image magnification decreases with increasing distance from the [optical axis](#).

The visible effect is that lines that do not go through the centre of the image are bowed outwards, towards the edge of the image.

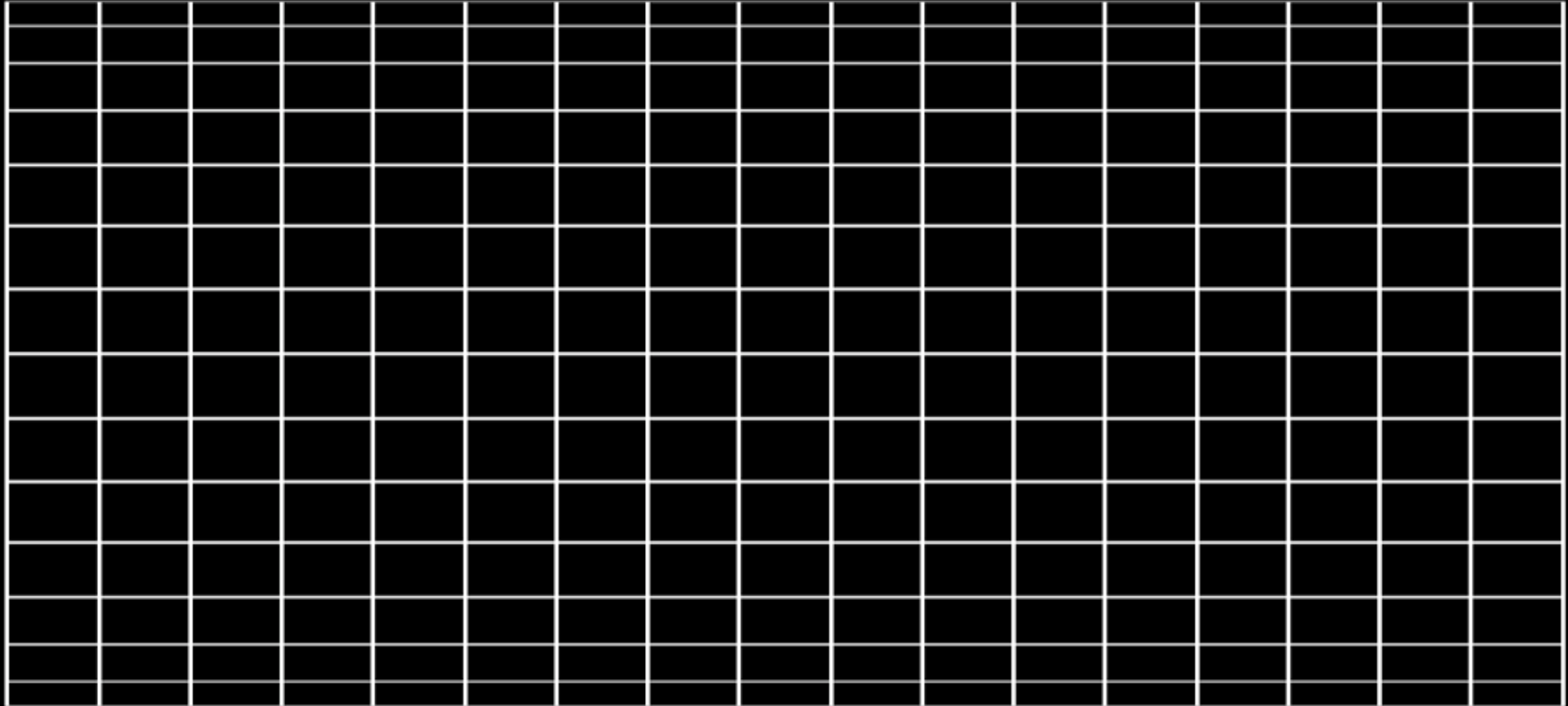
See also

- [pincushion distortion](#)

External References

- [Detailed analysis](#) 

Panoscan distortion is in the vertical axis only.



0.0% horizontal distortion.

You can attempt to use a camera with 00.0% lens distortion... Or you can digitally correct distortion using software...



Rollei 6008 with Metric Lens

Calibration is accomplished by shooting a precision grid target and using the resulting images to generate a geometry profile for the specific camera & lens combination.

This unique geometry profile is then used to process out the residual distortion from each subsequent image.



- Exact vertical shift must be known.
- Roll & Tilt must be eliminated.
- A simple counter weight can help with mechanical stability on unstable surfaces.



High resolution is required to pick points accurately.



