



## Single View Geometry

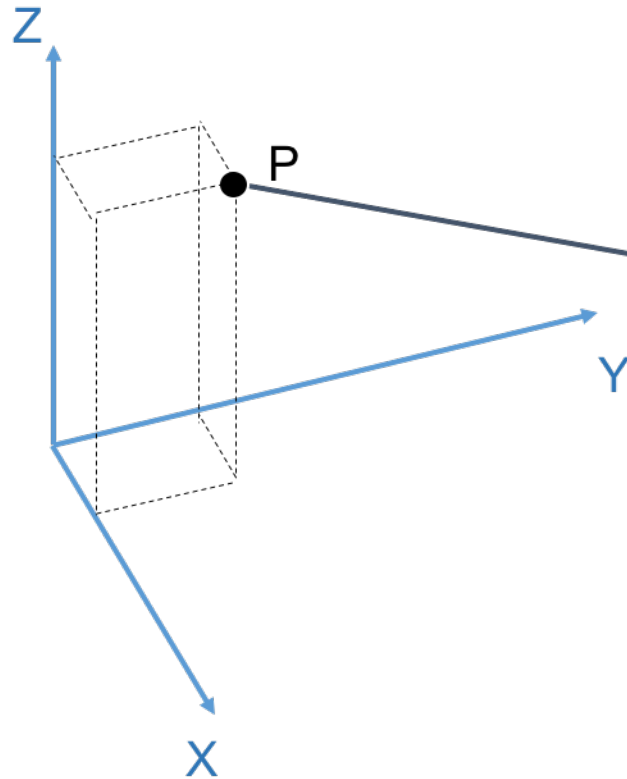




株式会社 松金商事

死に直結する  
横断歩道あり  
速度

World Coordinates



Camera Coordinates

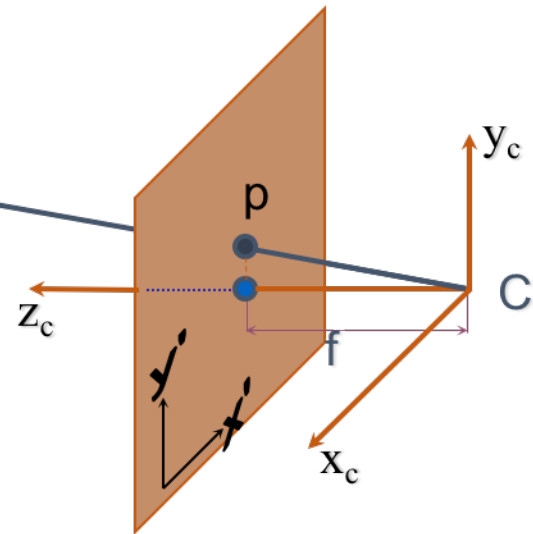


Image Plane

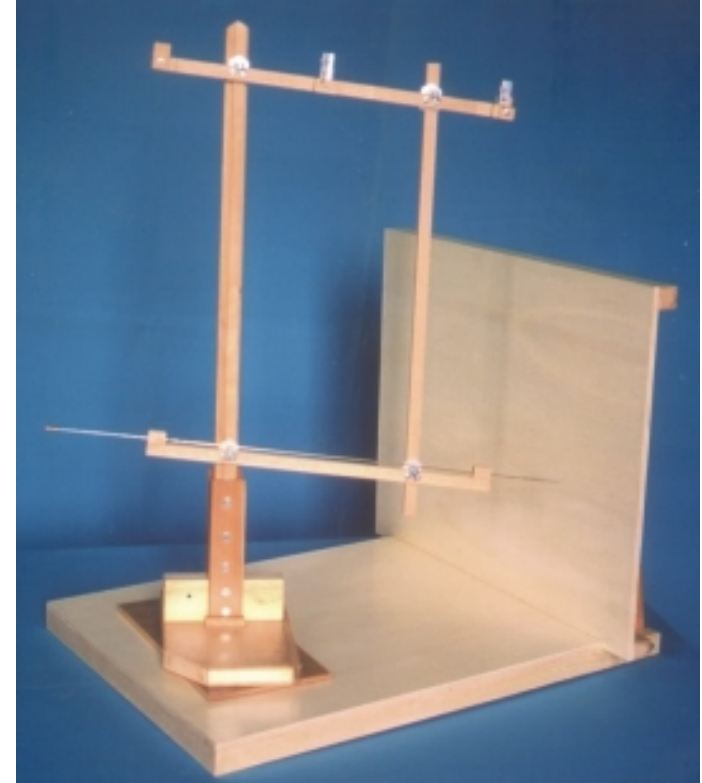
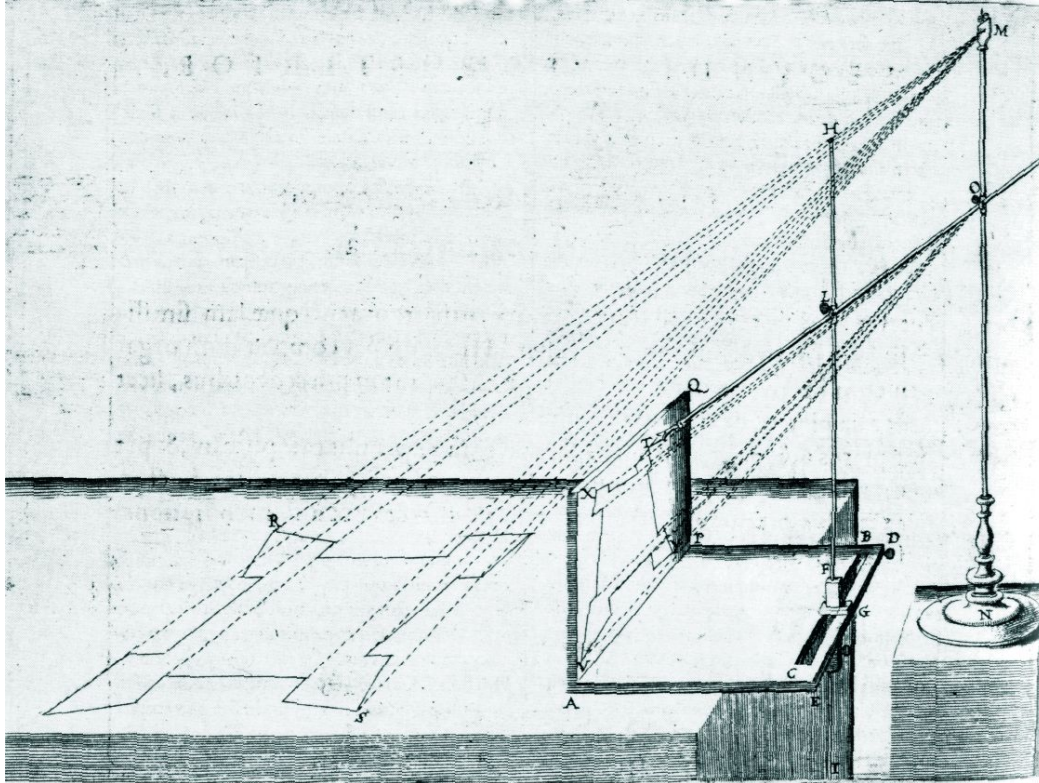


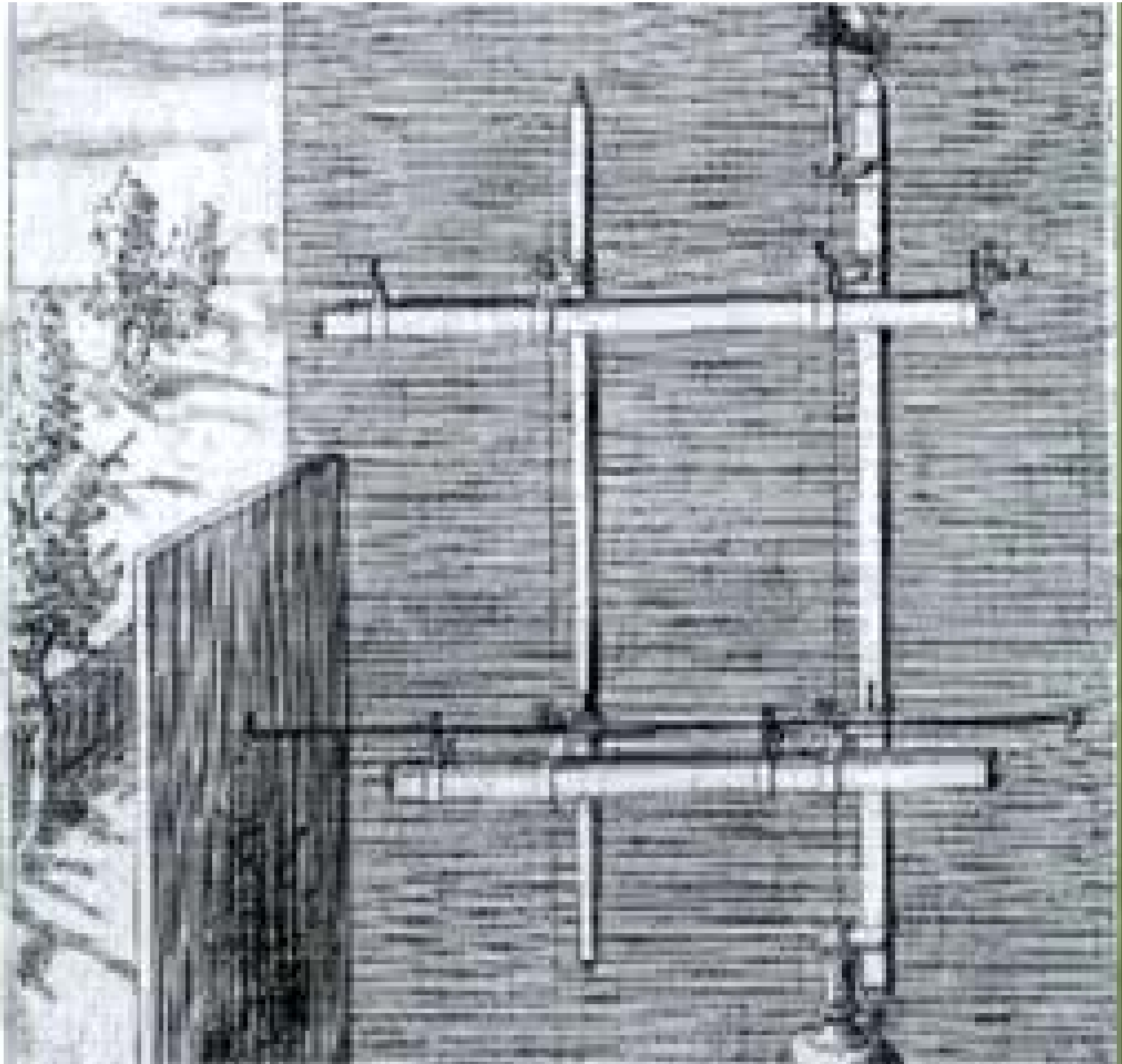
# J. Barozzi's Perspectograph



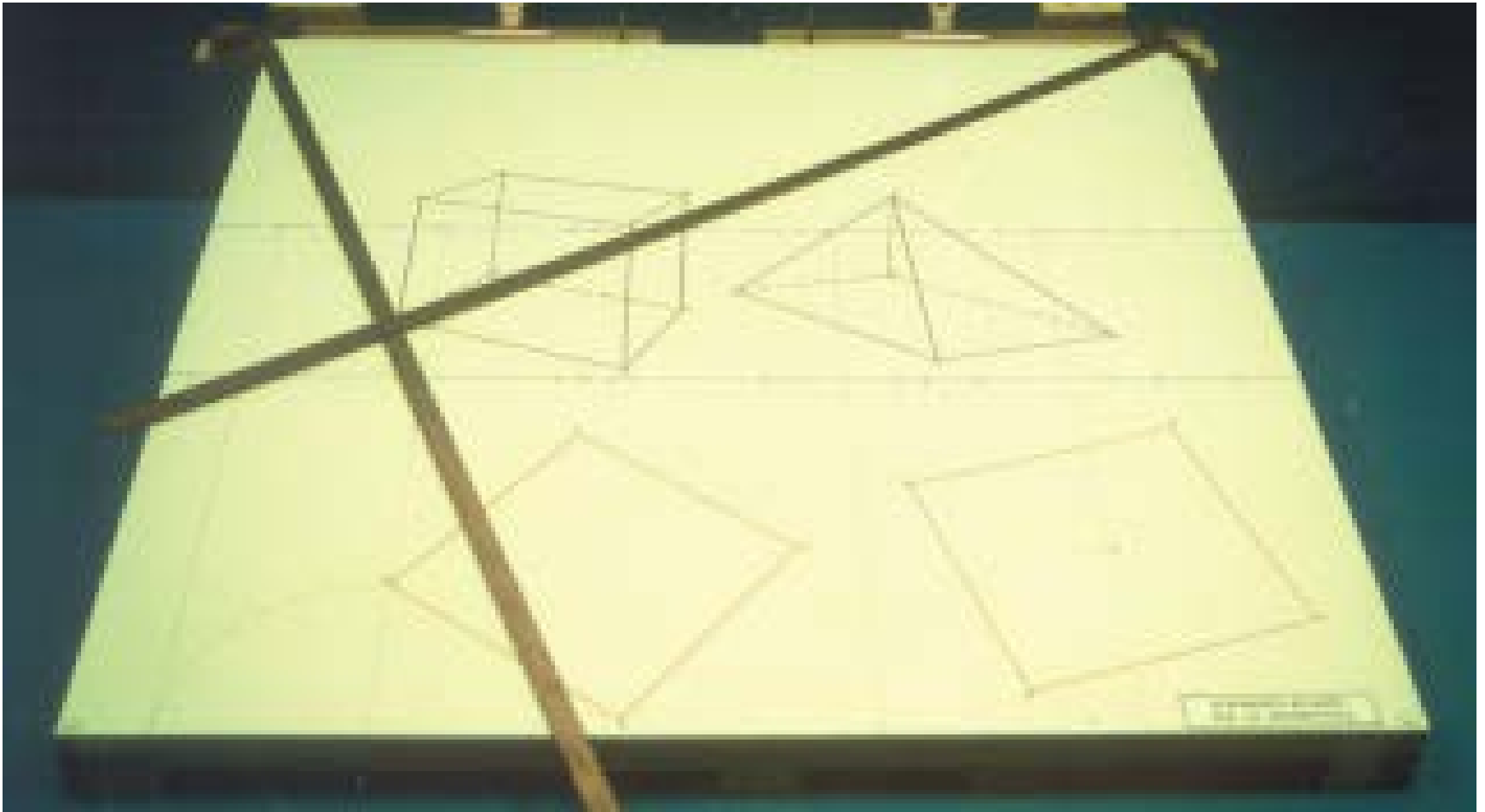


# Bettini





# J. Barozzi's Bi-Dimensional Perspectograph



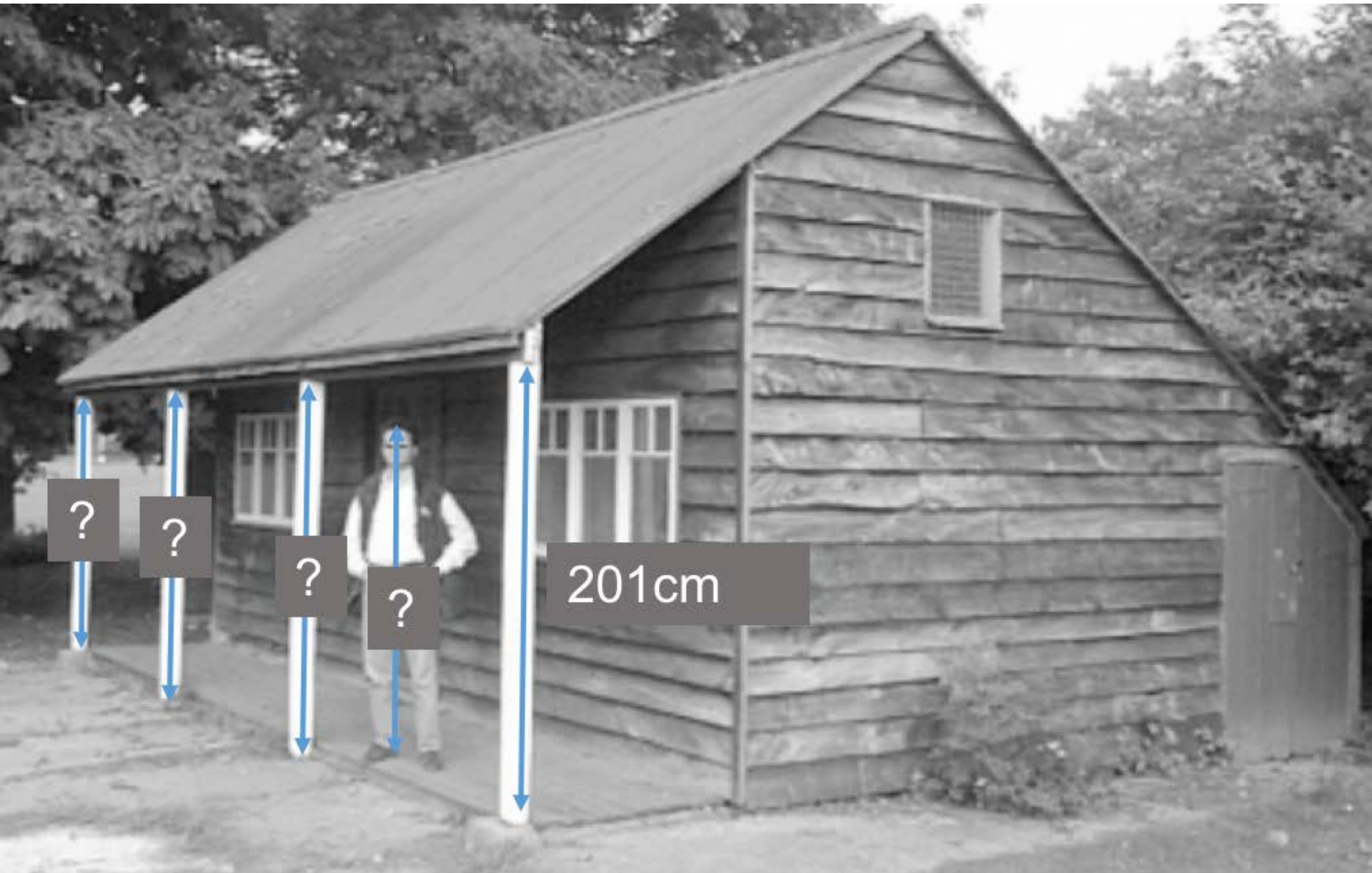




# Single View Geometry



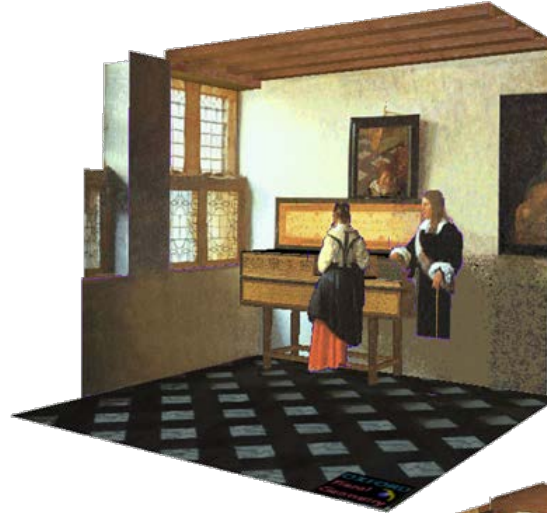
# Single View Geometry



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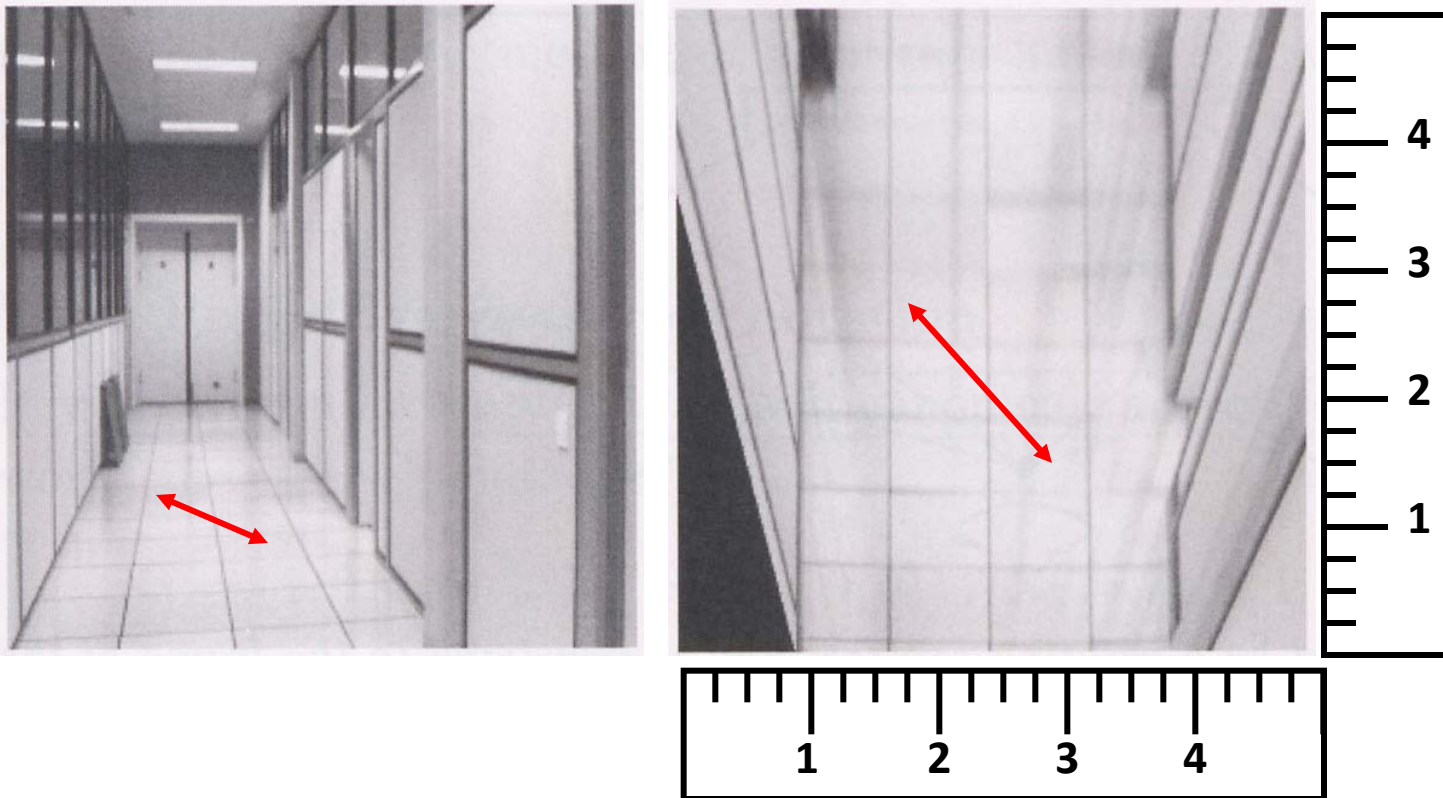
Vermeer's *Music Lesson*



- Criminisi et al., “Single View Metrology”, ICCV 1999
- Other methods
  - Horry et al., “Tour Into the Picture”, SIGGRAPH 96
  - Shum et al., CVPR 98
  - ...



# Ideas 1: Measurements on planes

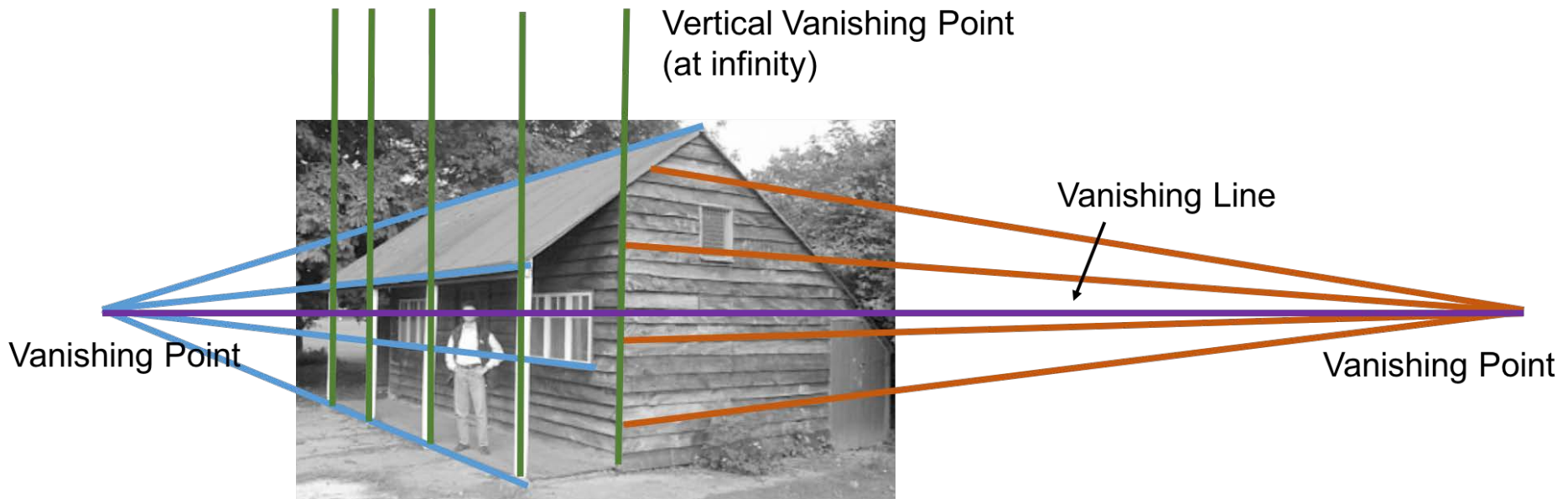


Approach: unwarp then measure

How to unwarp?

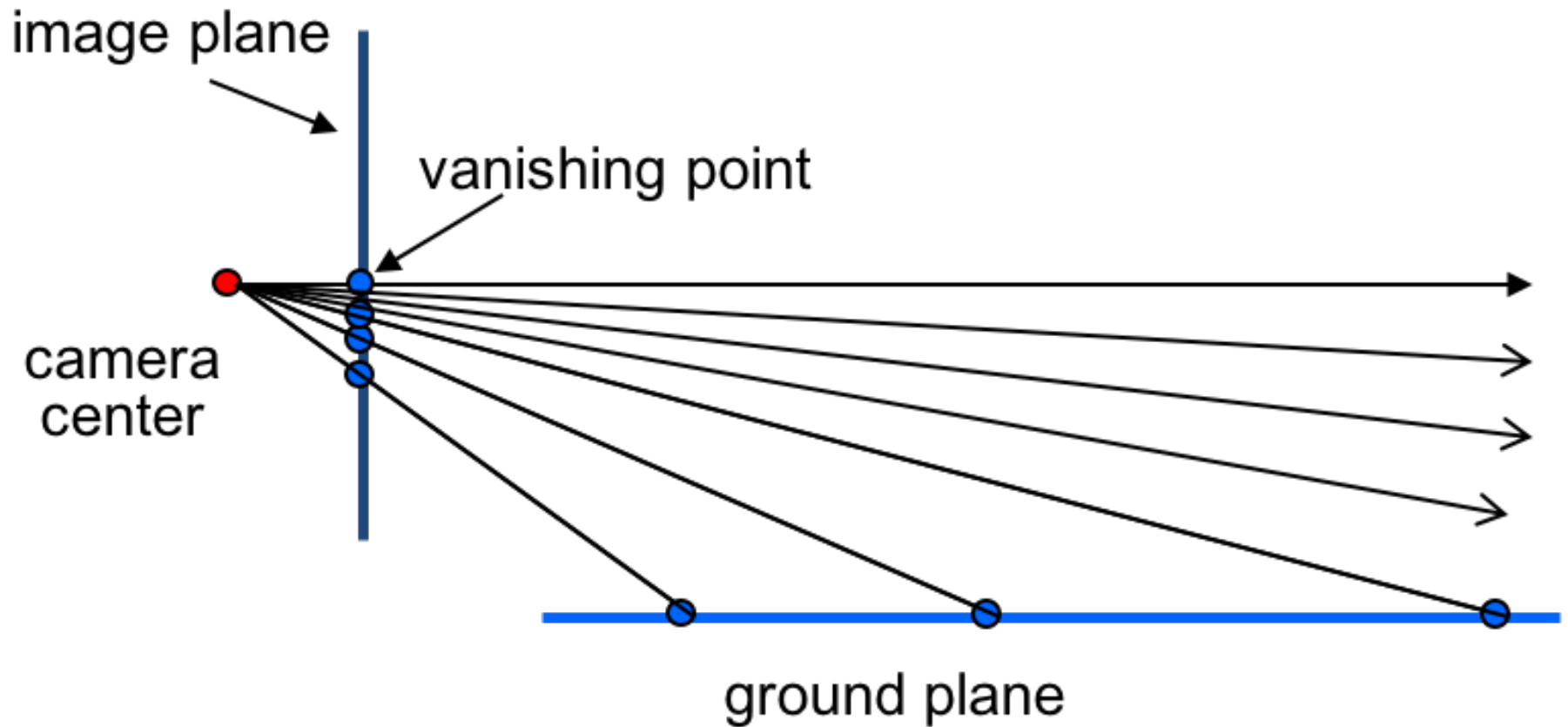
Make parallel lines stay parallel

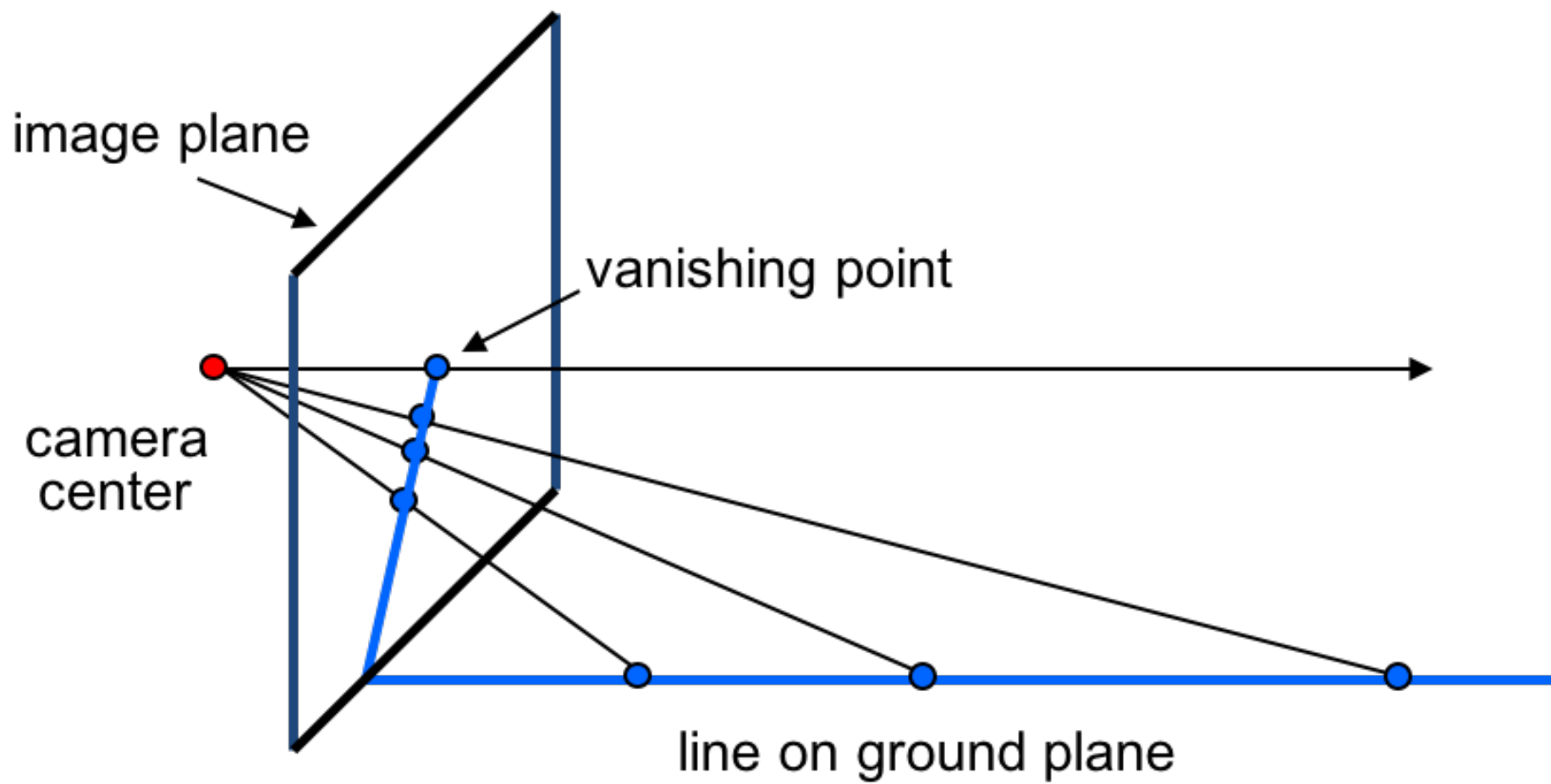
# Ideas of single view measurement



How tall is the photographer comparing to the person in the picture?

# Vanishing point







# Imaging Vanishing Point

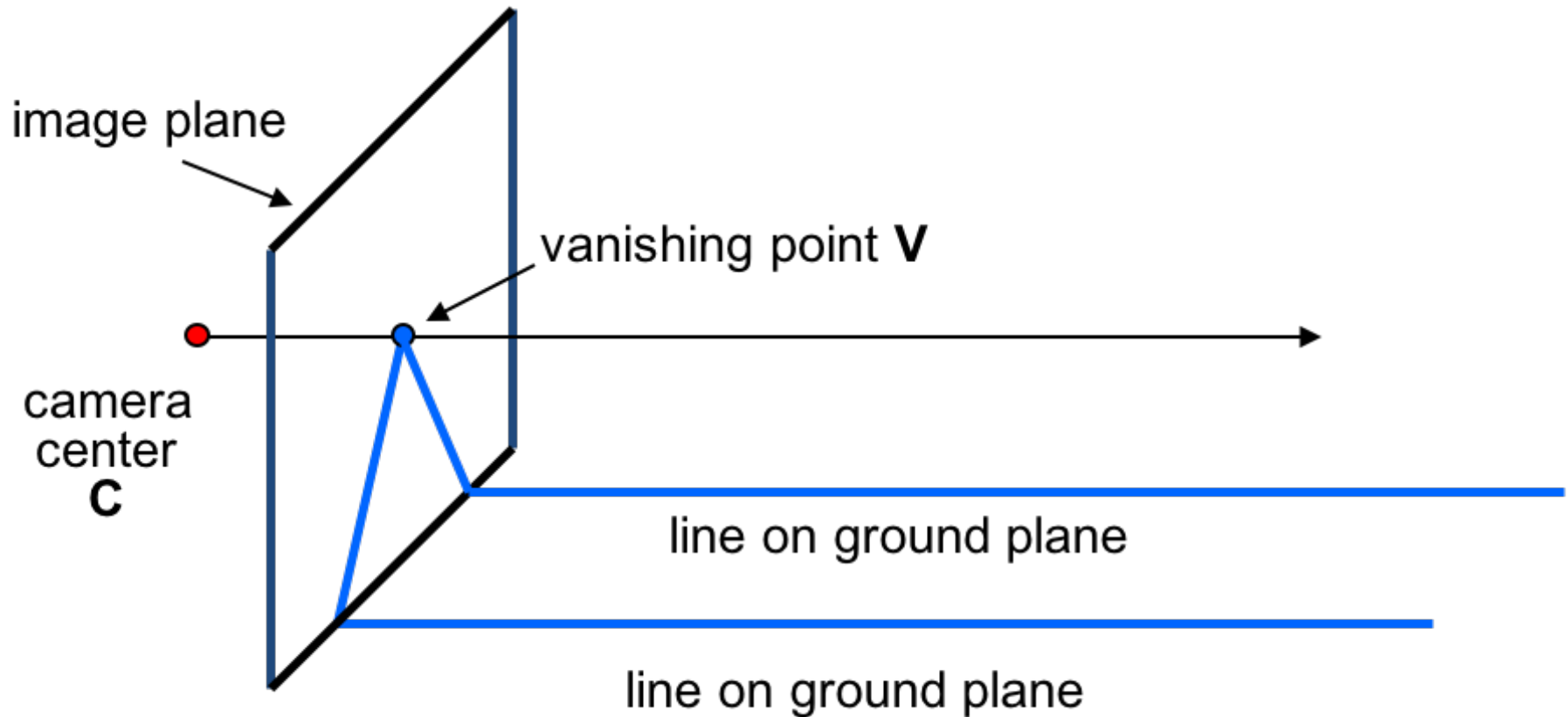
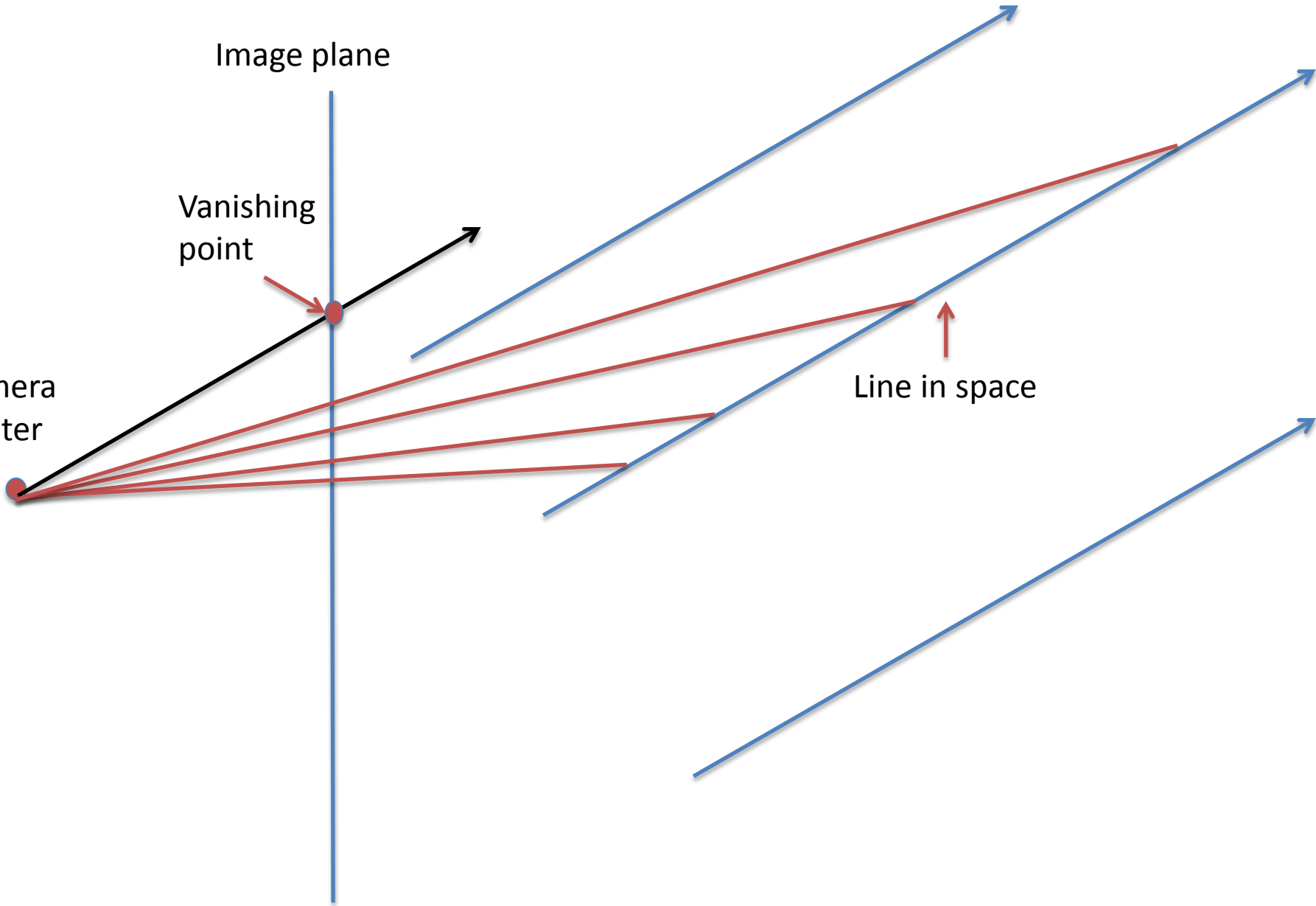


Image plane

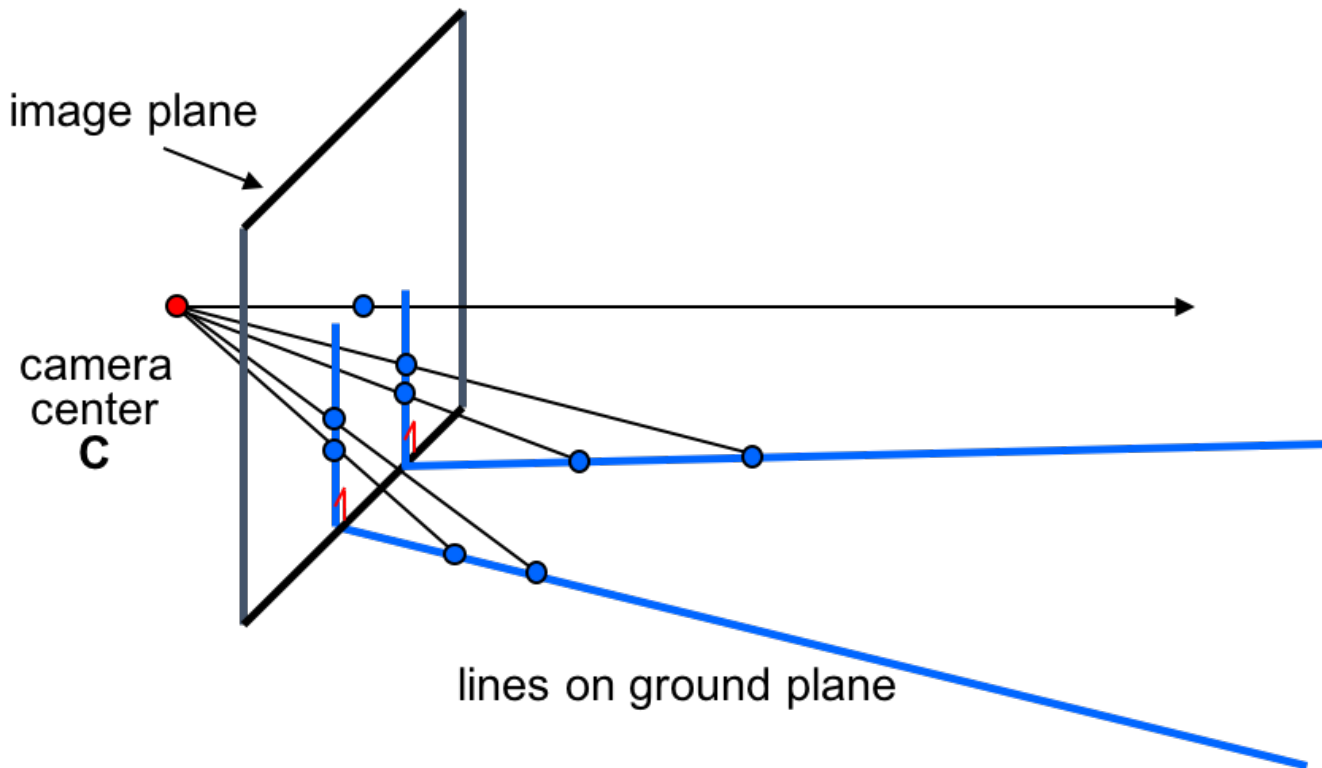
Vanishing  
point

Camera  
Center

Line in space



# Locating Center of Projection



# Locating Center of Projection

