

# Size & Scale



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# Making it Big (or Small)

What makes these machines seem monstrously big?



What makes these dragons seem curiously small?

# Relative Size

Using objects of known size is the most common way to show scale.



How big is this dragon?



The humans give the scale for the size of the dragon.

# Visual Contrast

Relative size needs visual contrast



Football players appear as normal size on playing field



... but are giants in contrast with an average person.

# *Jack the Giant Slayer (2013)*

This scene has few visual cues to indicate that the warriors are actually huge giants.



# Ambiguous Relative Size

Relative size cannot create scale when visual cues are ambiguous, as in fantasy worlds.



Giant elephant  
or tiny soldier?



Is Alice a giant or  
is it a tiny door?

# Size and Distance

This image uses distance cues, such as linear perspective and atmospheric perspective, plus known size (GG bridge), to establish scale.



# Renaissance Paintings

The use of perspective in painting was introduced during the Italian Renaissance around 1425.



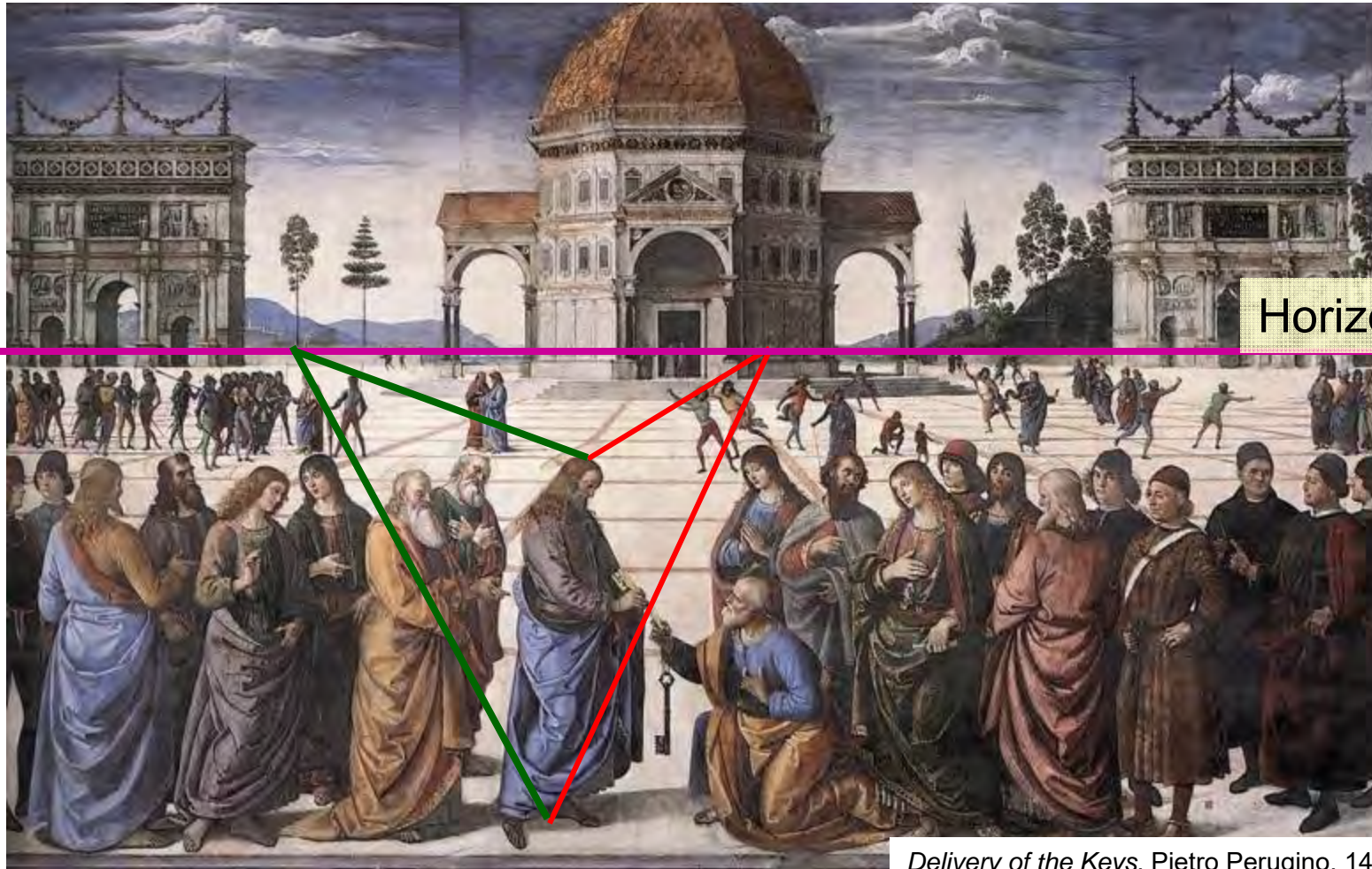
*Road to Calvary,*  
Martini, 1315



*Marriage  
of the  
Virgin,*  
Raphael,  
1504



# Geometric Perspective



*Delivery of the Keys*, Pietro Perugino, 1481

We can check that the persons in the foreground and background are the same height by drawing lines back to the horizon.

# Conflicting Visual Cues

Relative size and perceived distance are easily confused by conflicting visual cues, as in forced perspective.



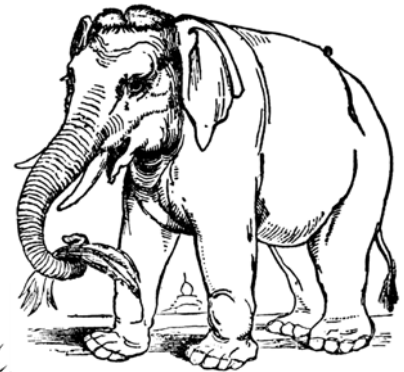
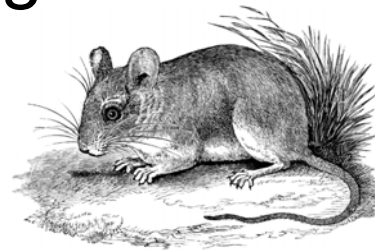
# Physical Cues for Size

There are many physical “cues” indicating the size of an object or a character.

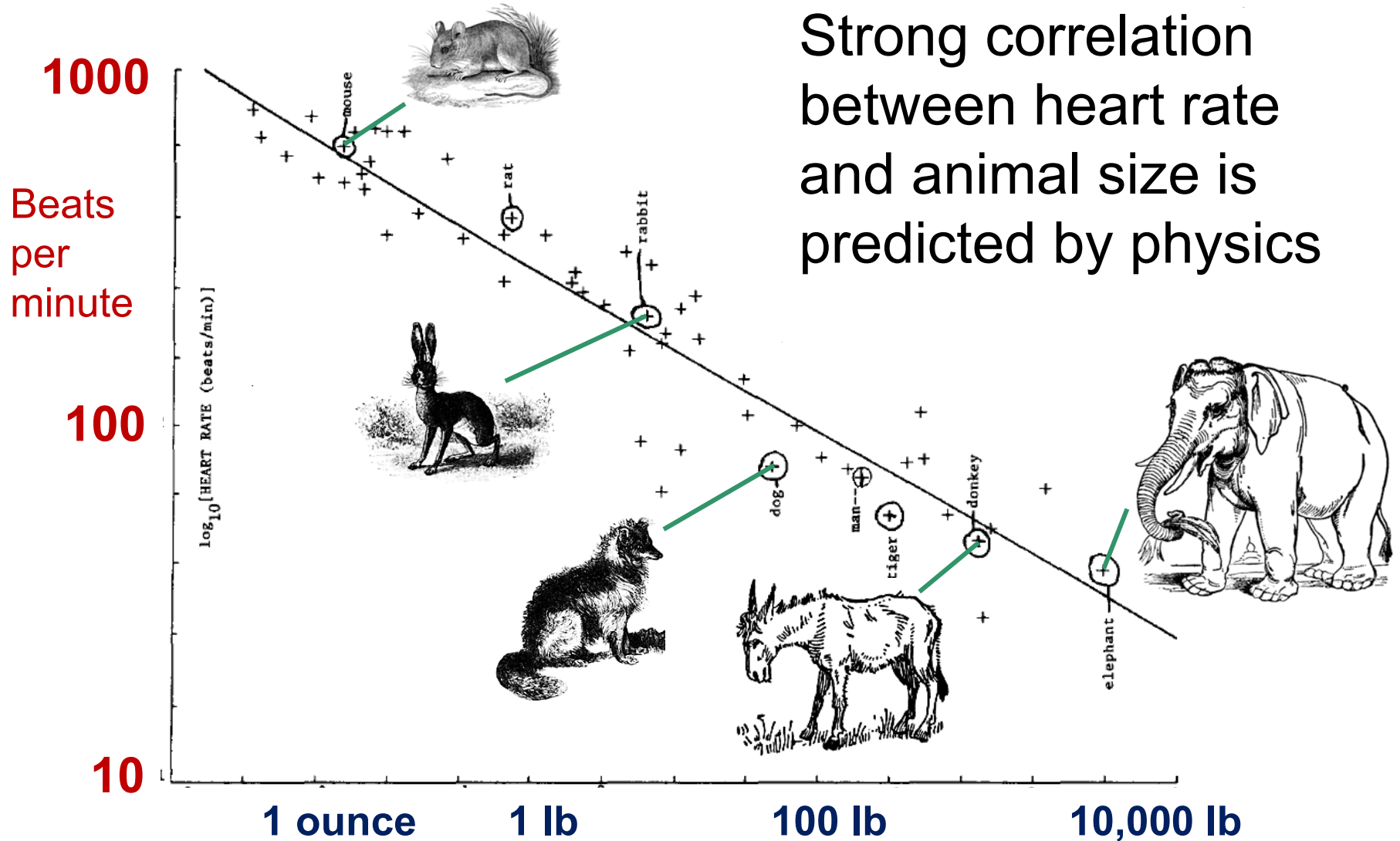


Some physical cues are simple, such as a short pendulum swings faster than a long one.

Some physical cues are subtle, such as small animals having a faster heart rate.

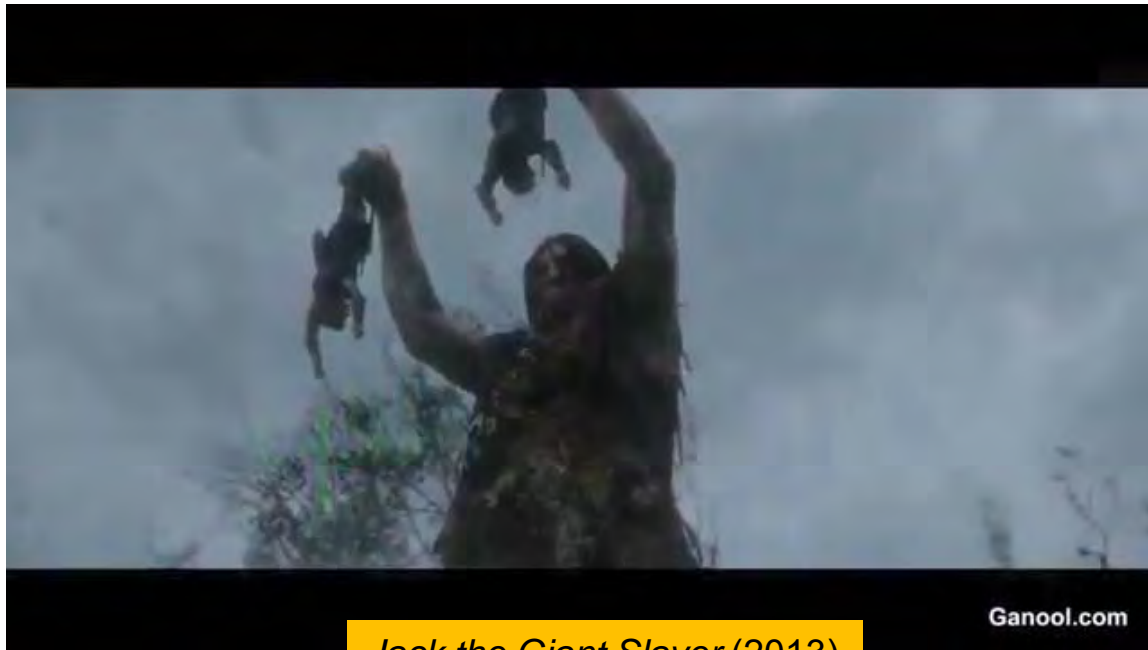


# Heart Rate versus Size



# Scale & Motion Capture

Motion capture used for character animation often retains the original scale in the character's motion.



*Jack the Giant Slayer (2013)*

Ganool.com



Ganool.com

# Summary

- There are various visual cues for scale, such as relative size compared to known objects.
- Linear perspective also establishes scale by relating visual size with distance to the viewer.
- Visual cues are not always sufficient due to lack of visual contrast, ambiguous sizes (as in fantasy worlds), distorted perspective, etc.
- Physical cues, such as the timing of motion, also establish size and scale.