

High Dynamic Range Imaging (HDRI)

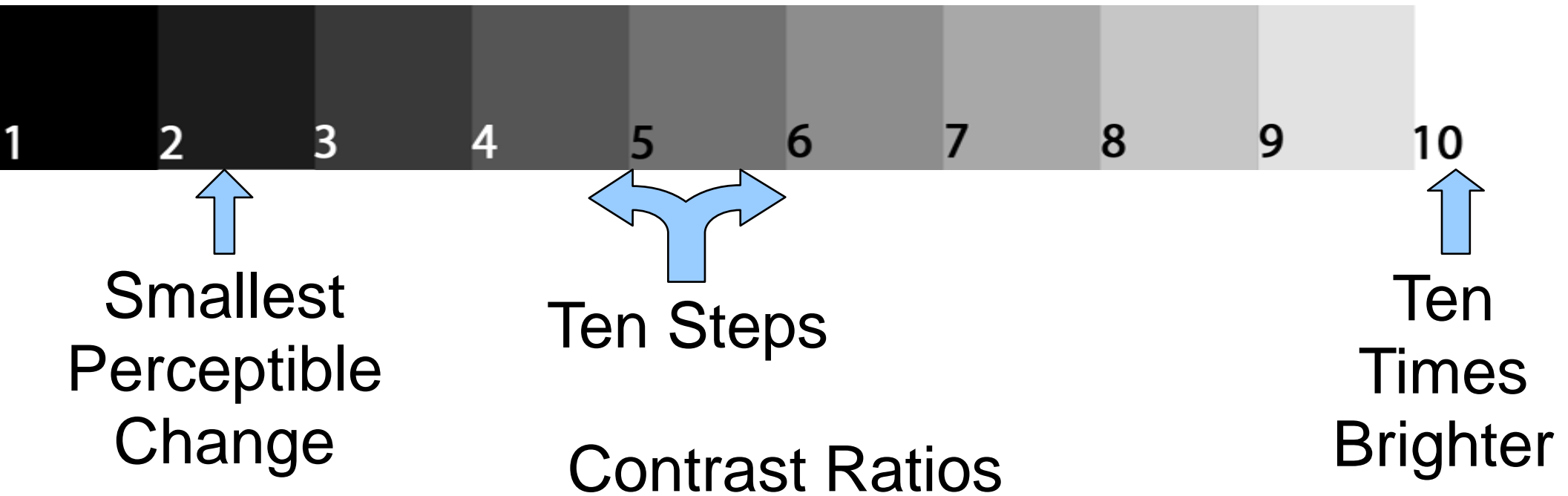






Why?

Some Background



Contrast Ratio is 1:10

Two numbers, e.g.: 1:1000

Digital Camera Contrast Ratio

1:256

LCD Monitor Contrast Ratio

1:1000

Our eyes are logarithmic

Film is logarithmic

Cameras Use EVs

EVs are a logarithmic measure of light levels

1 EV = 1 Stop

Digital Cameras are Linear

Digital Camera Dynamic Range

~8 EV

Photo Paper: 6EV

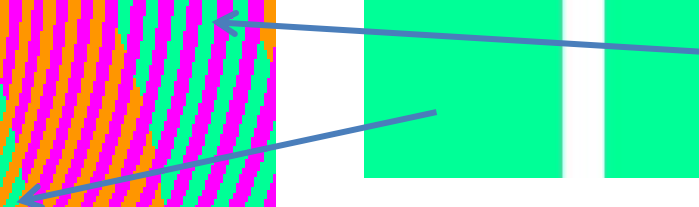
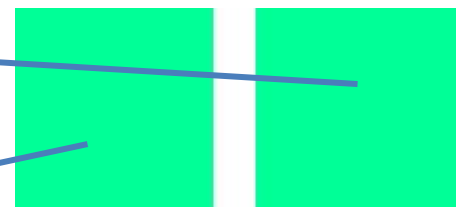
The eye: 14EV!

How do we print what we can see?

HDRI

Adaptation





8 bits per colour

Pixels

Gamma Curve

256 light levels

Linear



With Gamma Curve



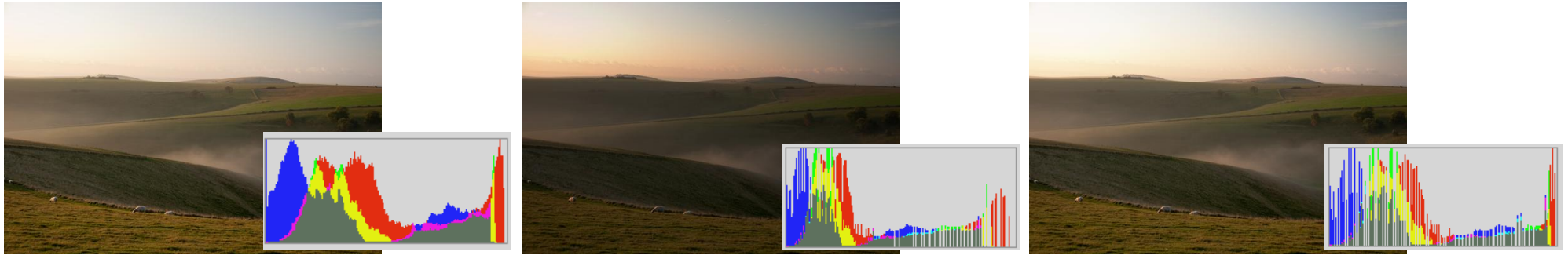
32 bits per colour

Floating point

HDRI

+/- $8.43 \cdot 10^{-37}$ to $3.40 \cdot 10^{38}$

What does this mean?



No more lost data



Image stored linearly



Can't print the image as is!





Demo