

HDR

Eye works in wide range of settings

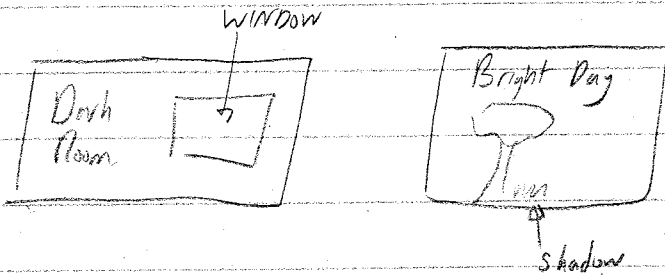
Bright Sunshine	10^5	Candelas / meter ²	} not all at once
Starlight	10^{-3}		

Rods vs. Cones (regeneration)

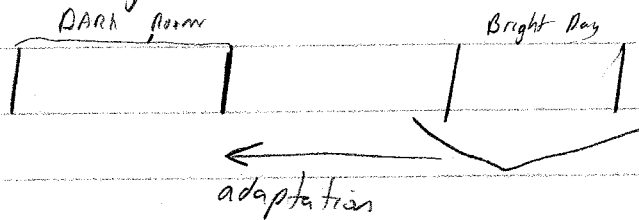
Control Mechanisms:

- Pupil dilation
- Rods "flooding"
- Chemical changes
- Squinting

} any given time $\approx 100:1$



High Dynamic Range



some things get "blown out"
 some things too dark

How to deal w/ HDR

Capture: take multiple pictures

Display? — TONE-Mapping

- want detail in dark & light regions

Idea: Separate things into regions

Treat regions differently

≡ Doesn't this look weird? - not really - mainly see edges, levels aren't so important

How to decide what regions

By hand?

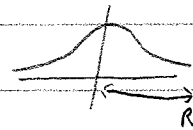
Average over region around pixel = Low Pass Filter
(Divide by region brightness)

Problem ≡ bleeding (LPF doesn't preserve edges)

Bi-LATERAL FILTER ← generally useful

Edge preserving, Low-Pass

Typical LPF = weight by distance



Bi-Lateral = also weight by value difference



$K(\Delta x) K(\Delta v)$