

Human Vision



Hoon Yoo, Ph.D.

Human Vision and Digital Vision

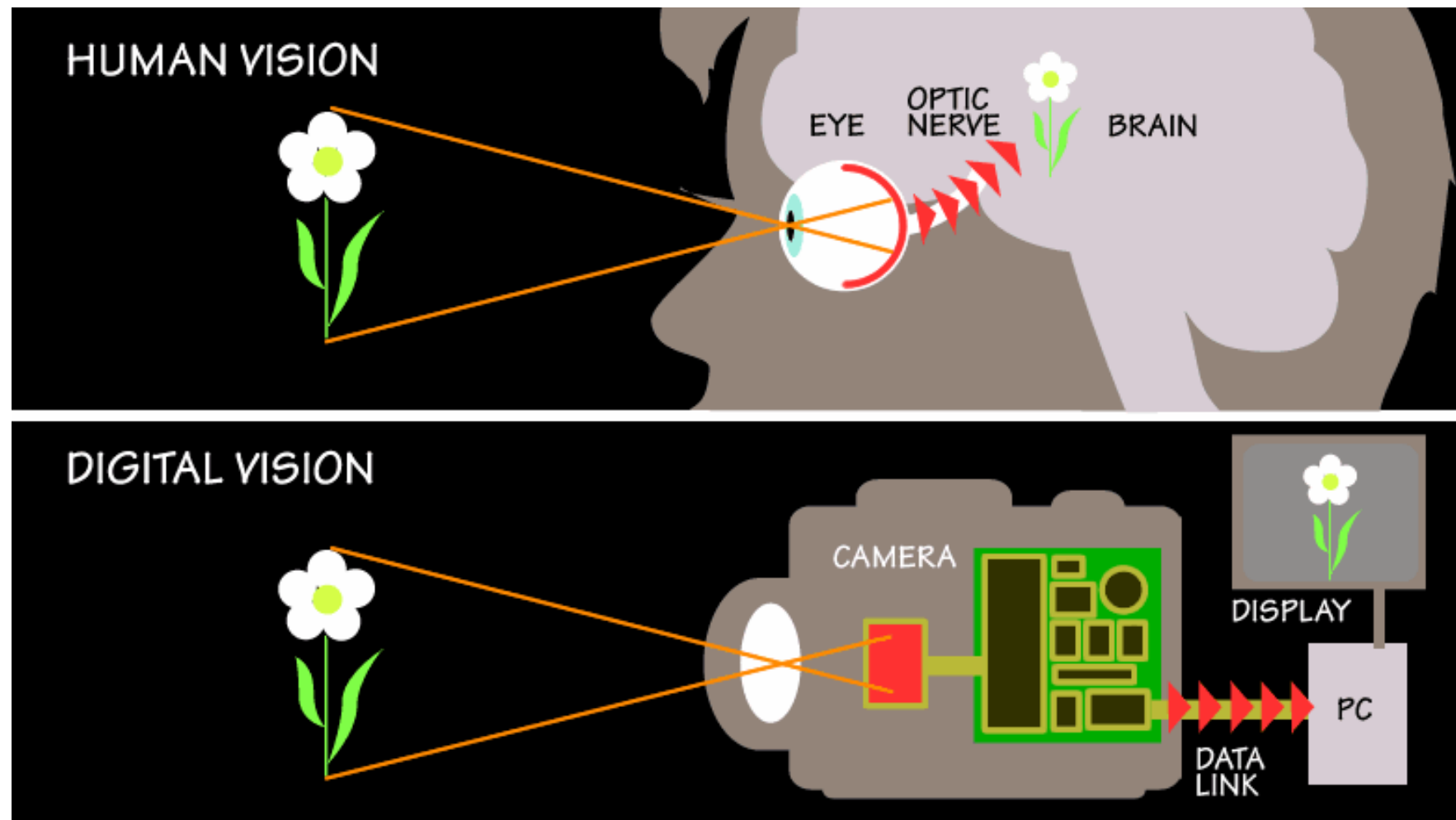
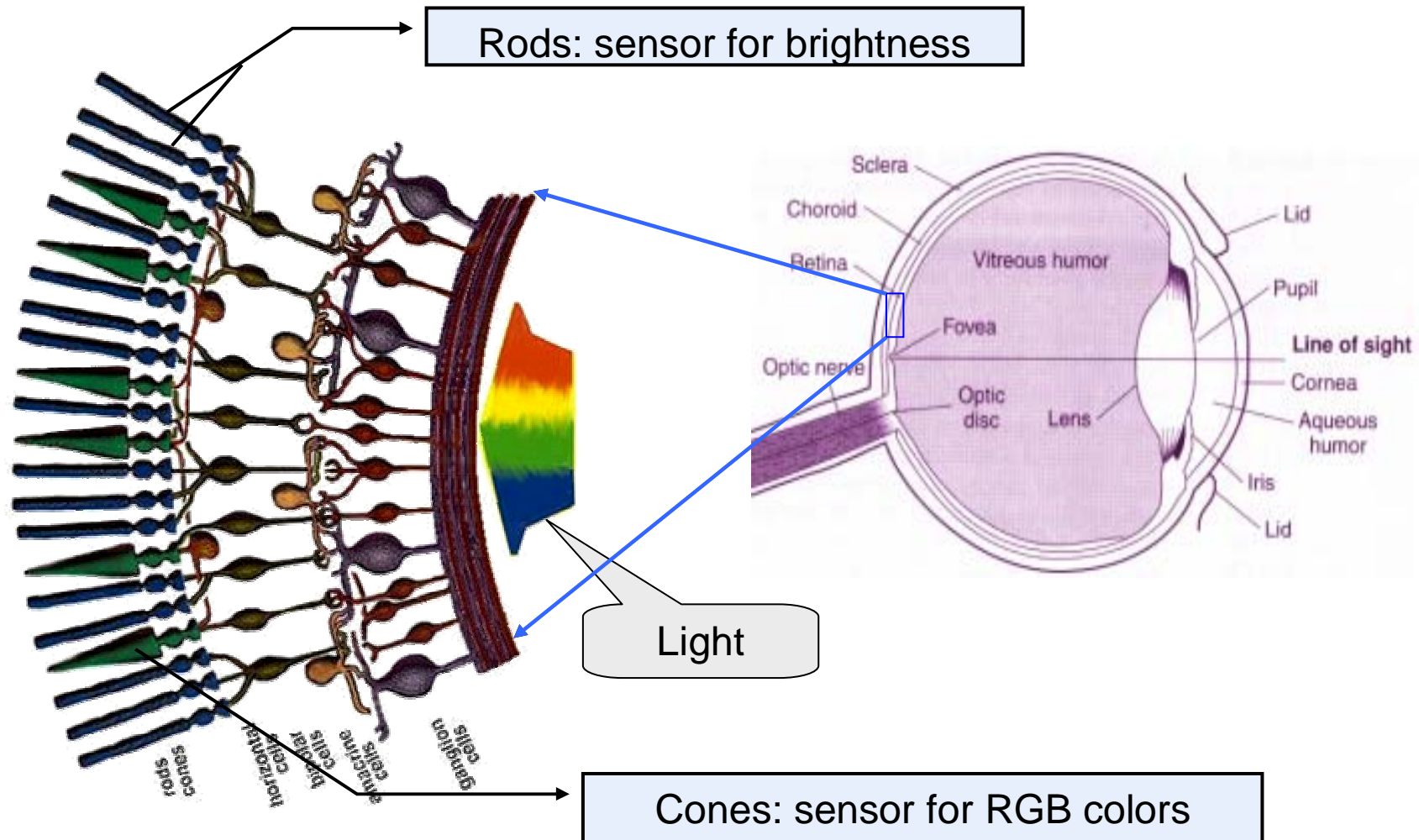


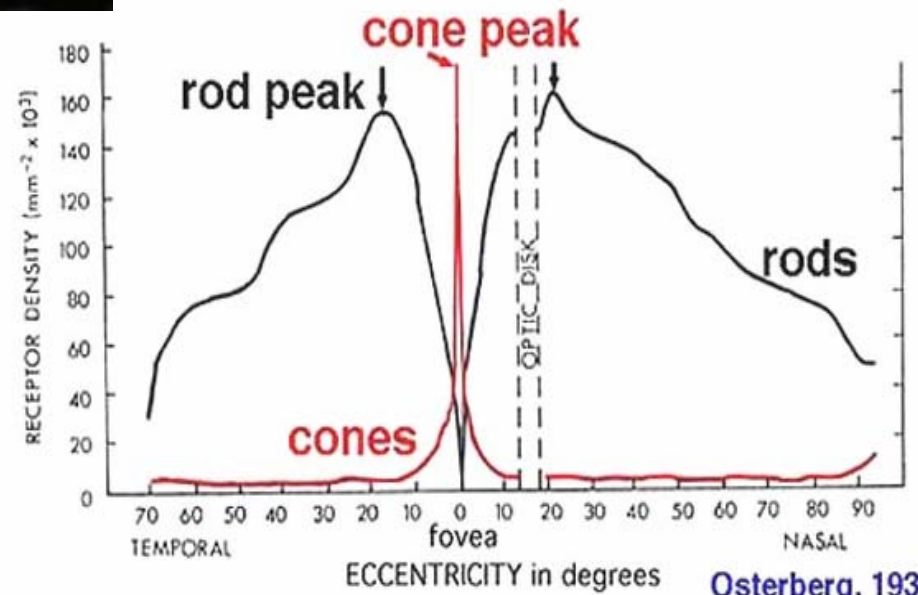
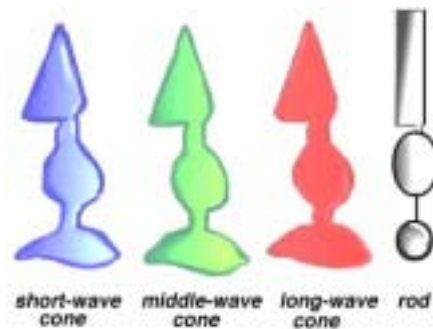
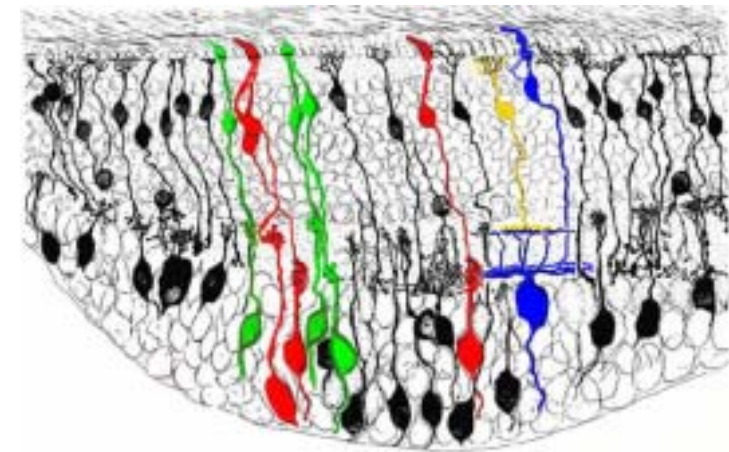
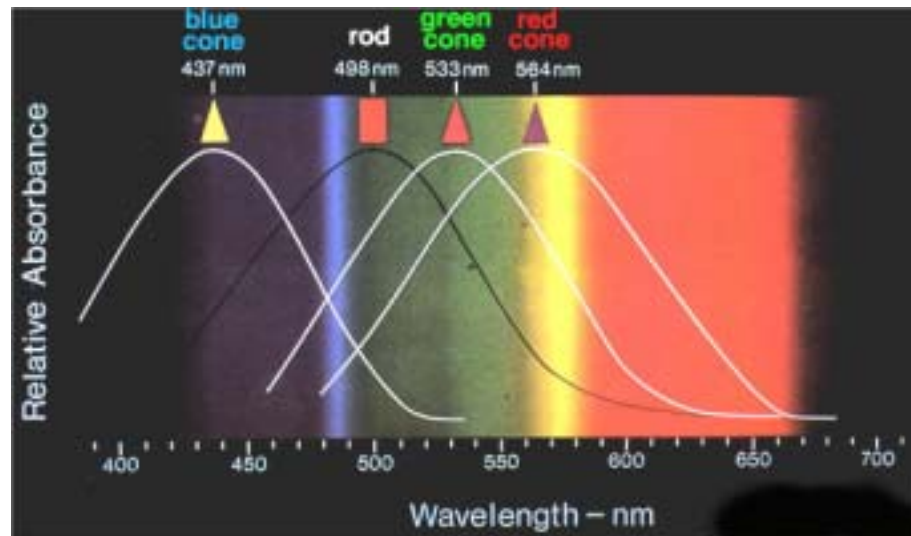
IMAGE CAPTURE ►► PROCESSING ►► TRANSMISSION ►► IMAGE RECONSTRUCTION

Human Vision

- Human sensors



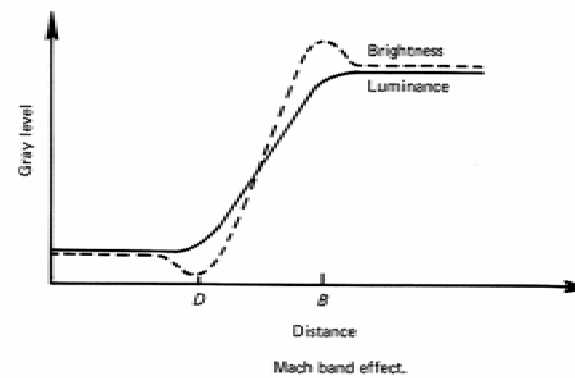
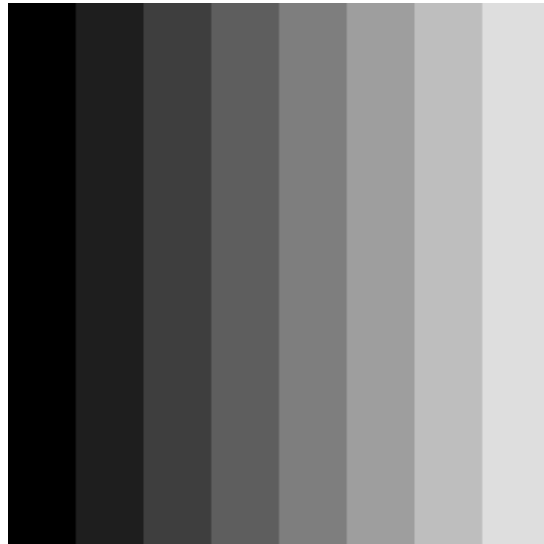
Human Vision



Osterberg, 1935

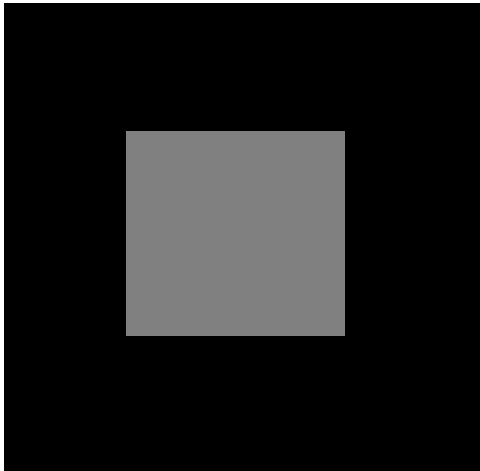
Visual Perception

- Mach bands



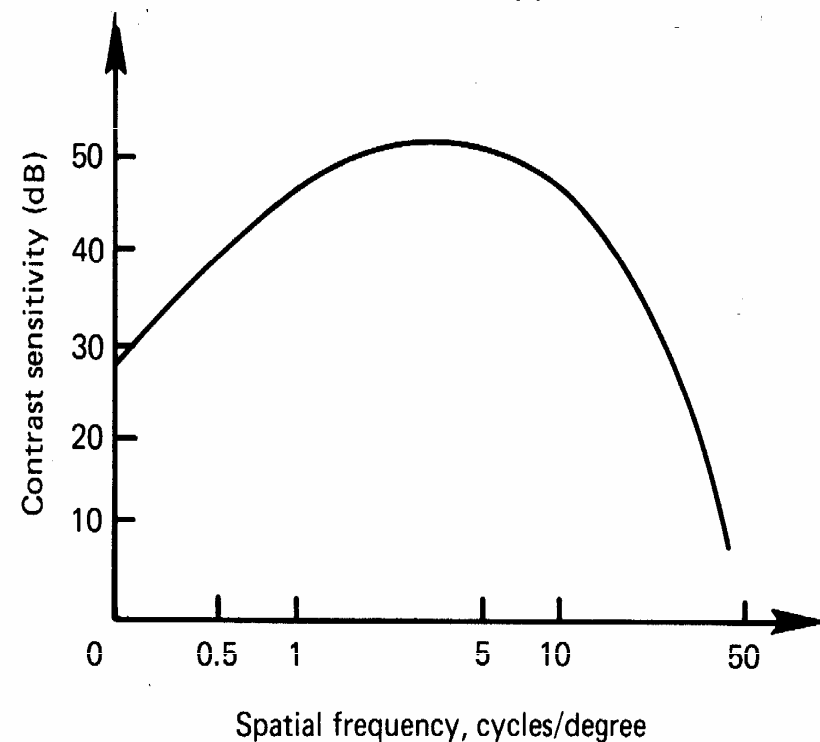
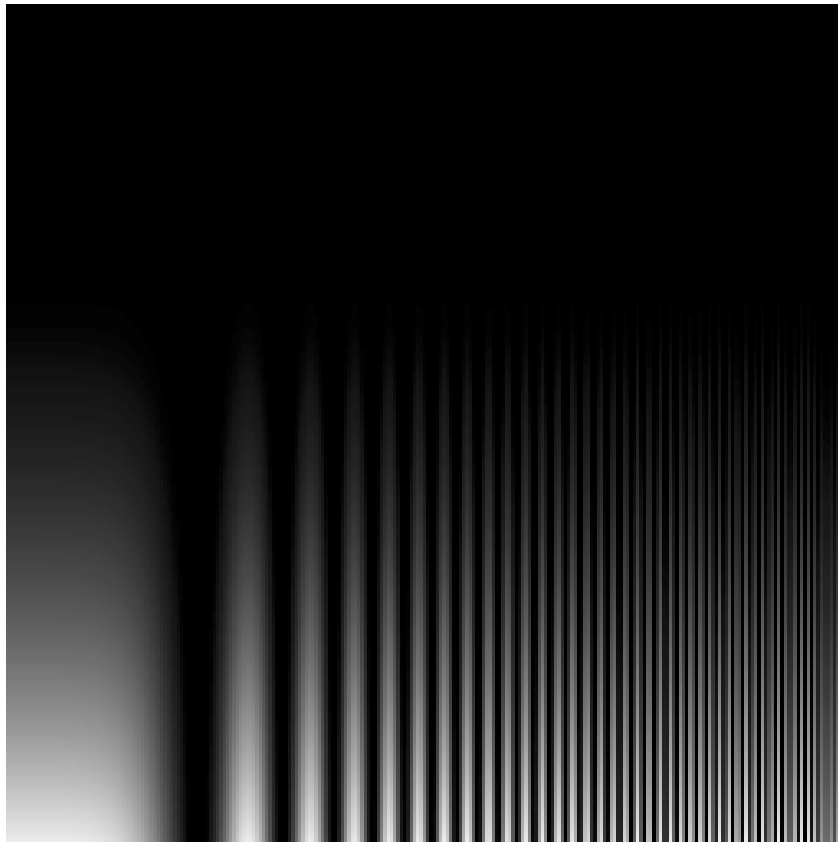
Visual Perception

- Contrast



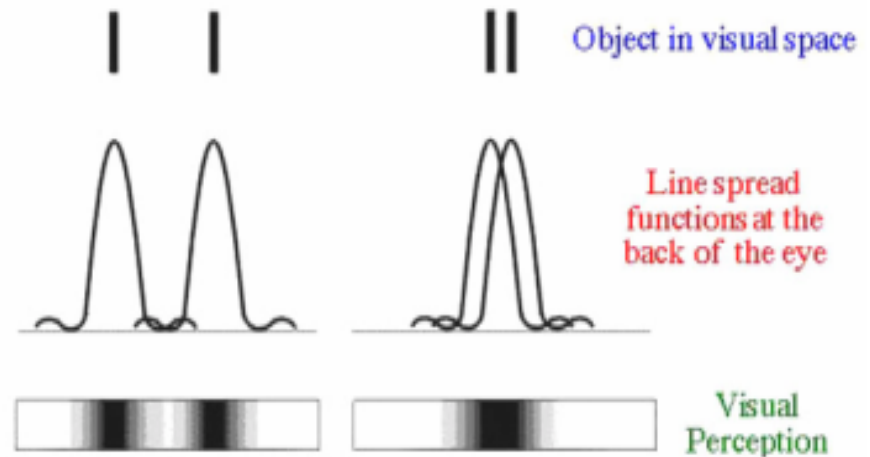
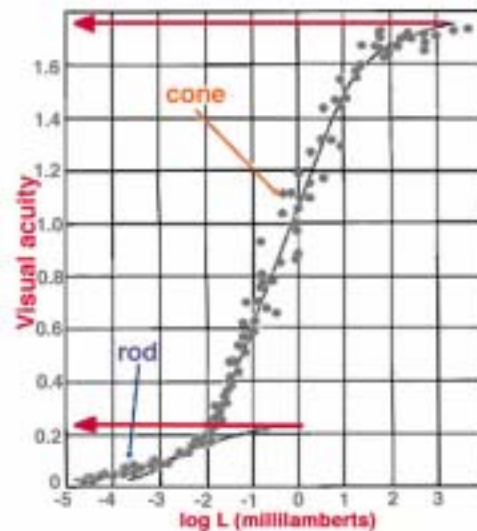
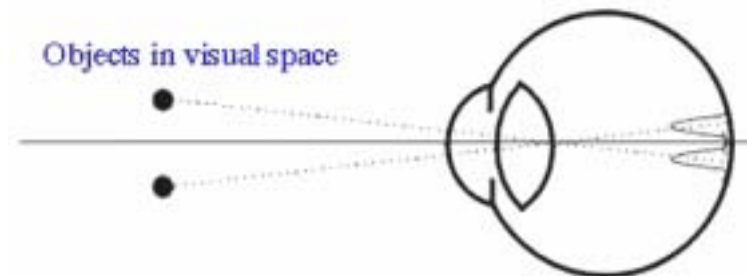
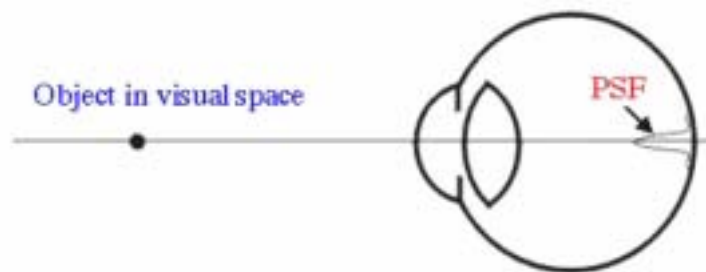
Visual Perception

- Measurement of visual system in frequency domain



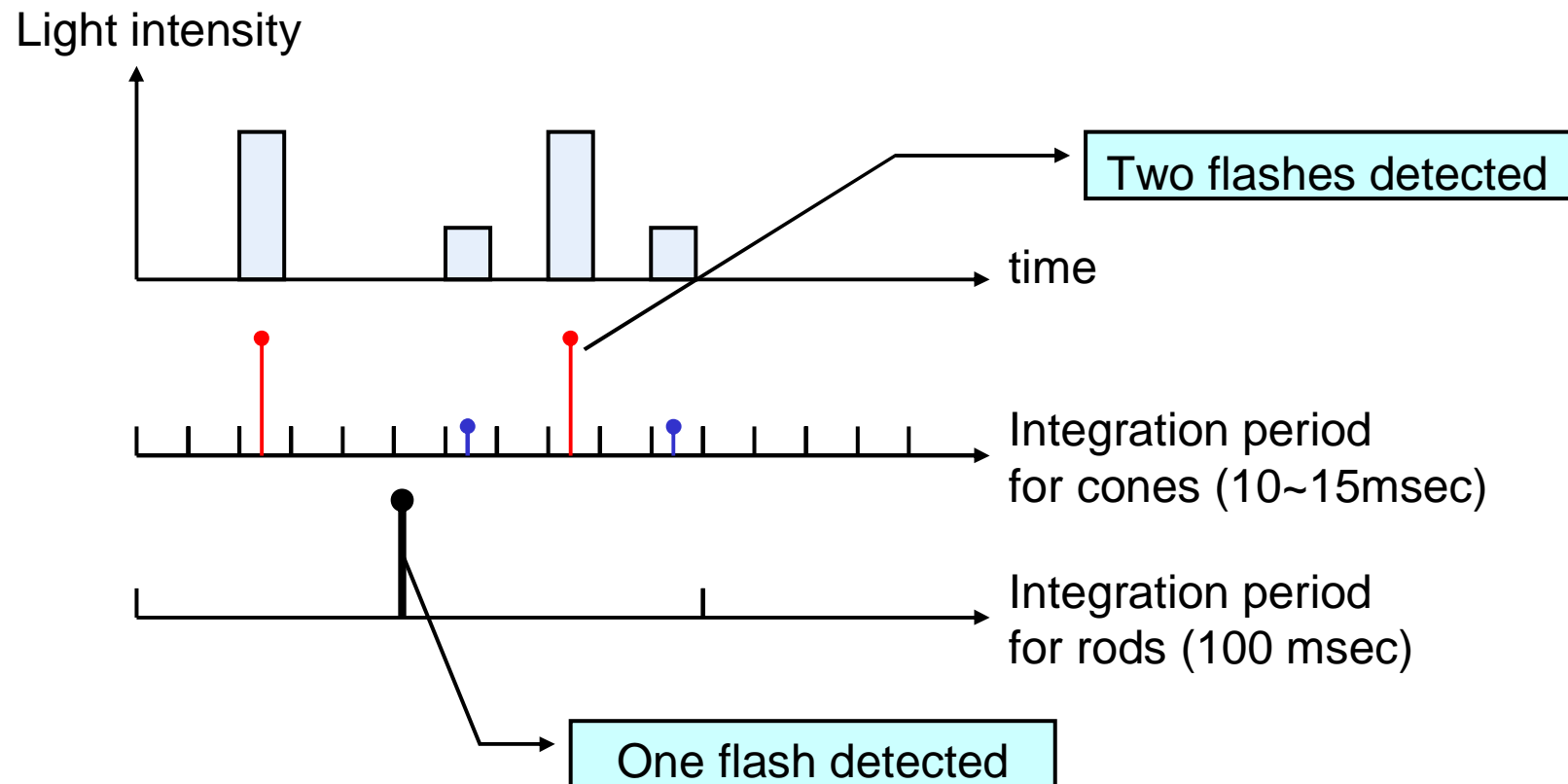
Visual Perception

- Visual acuity
 - the spatial resolving capacity of the visual system



Visual Perception

- Critical duration



Visual Perception

- Critical flicker frequency (CFF)
 - Applications : TV camera, CRT, Computer Monitor

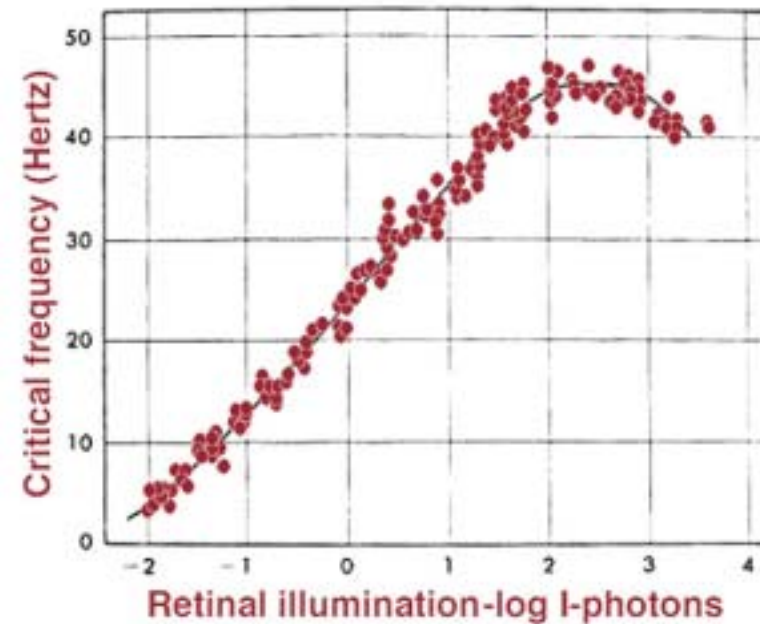
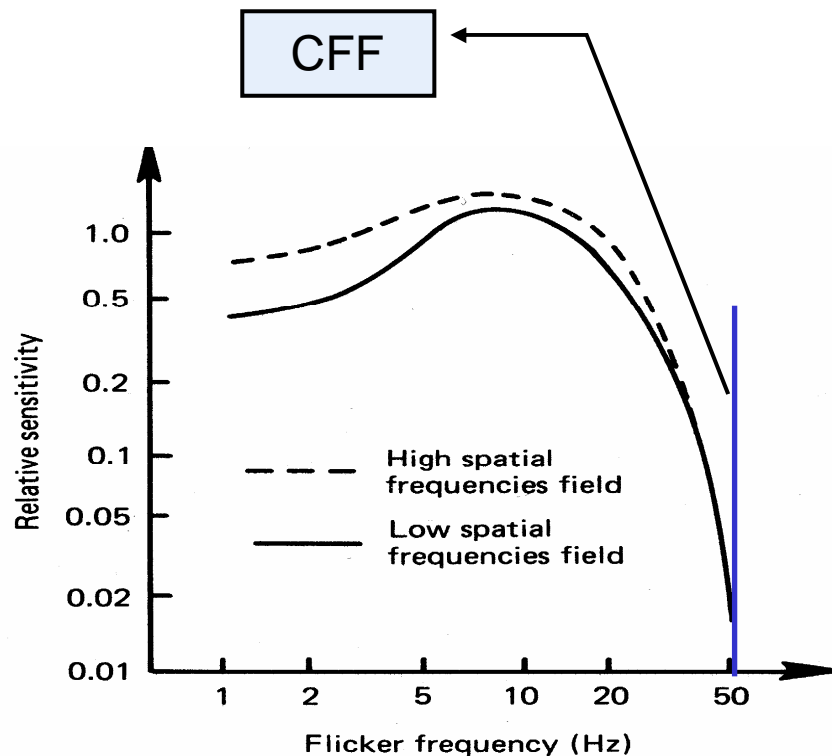
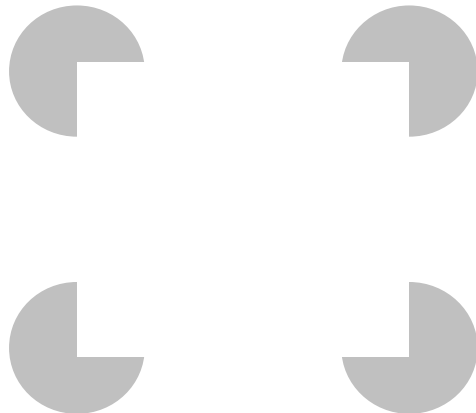
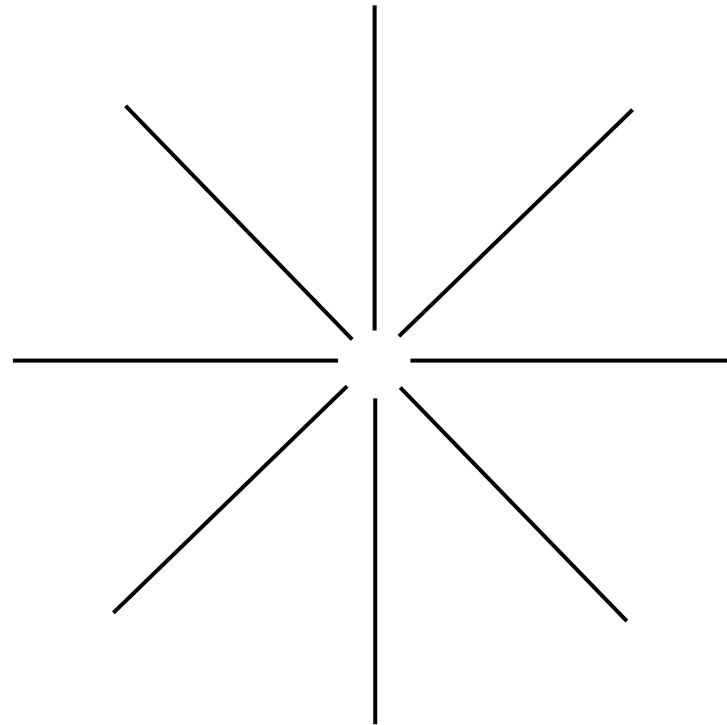
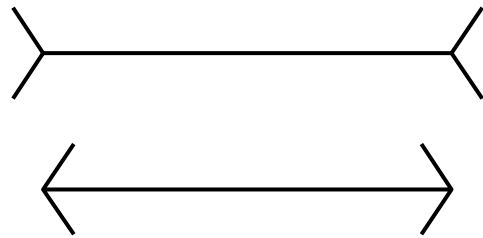


Fig. 7. CFF at the fovea over a range of retinal illuminance (photons = troland) of the test field, showing conformity of the Ferry-Porter Law over four logarithmic units. Hecht and Verrijp's data from Hart Jr, W. M., *The temporal responsiveness of vision*. In: Moses, R. A. and Hart, W. M. (ed) *Adler's Physiology of the eye, Clinical Application*. St. Louis: The C. V. Mosby Company, 1987.

Visual Perception

- Optical illusions



Summary

- Human vision
 - Cones and rods
- Visual perception
- Visual acuity
- Critical duration
- Critical flicker frequency