



SNS COLLEGE OF TECHNOLOGY (AN AUTONOMOUS INSTITUTION)



Approved by AICTE & Affiliated to Anna University
Accredited by NBA & Accredited by NAAC with 'A++' Grade,
Recognized by UGC saravanampatti (post), Coimbatore-641035.

Department of Biomedical Engineering

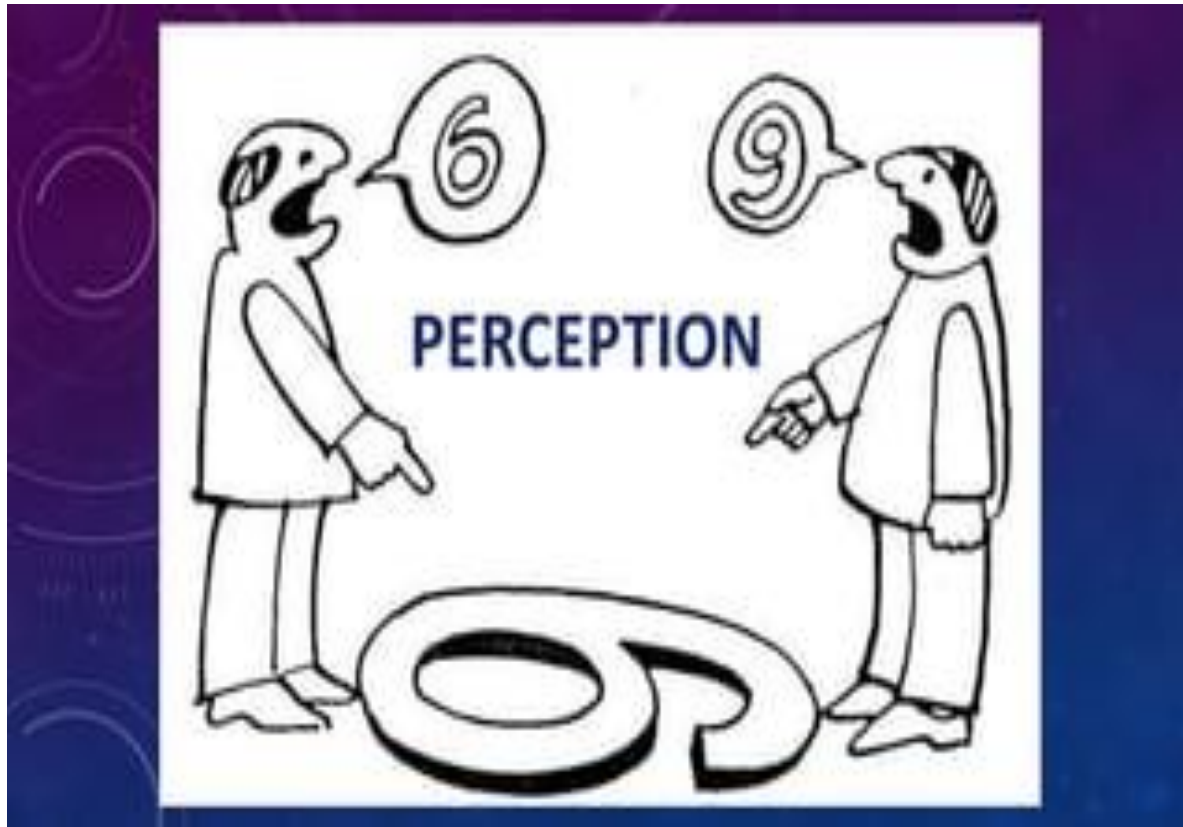
Course Name: 19BMB304 & Biomedical Image Processing

III Year : VI Semester

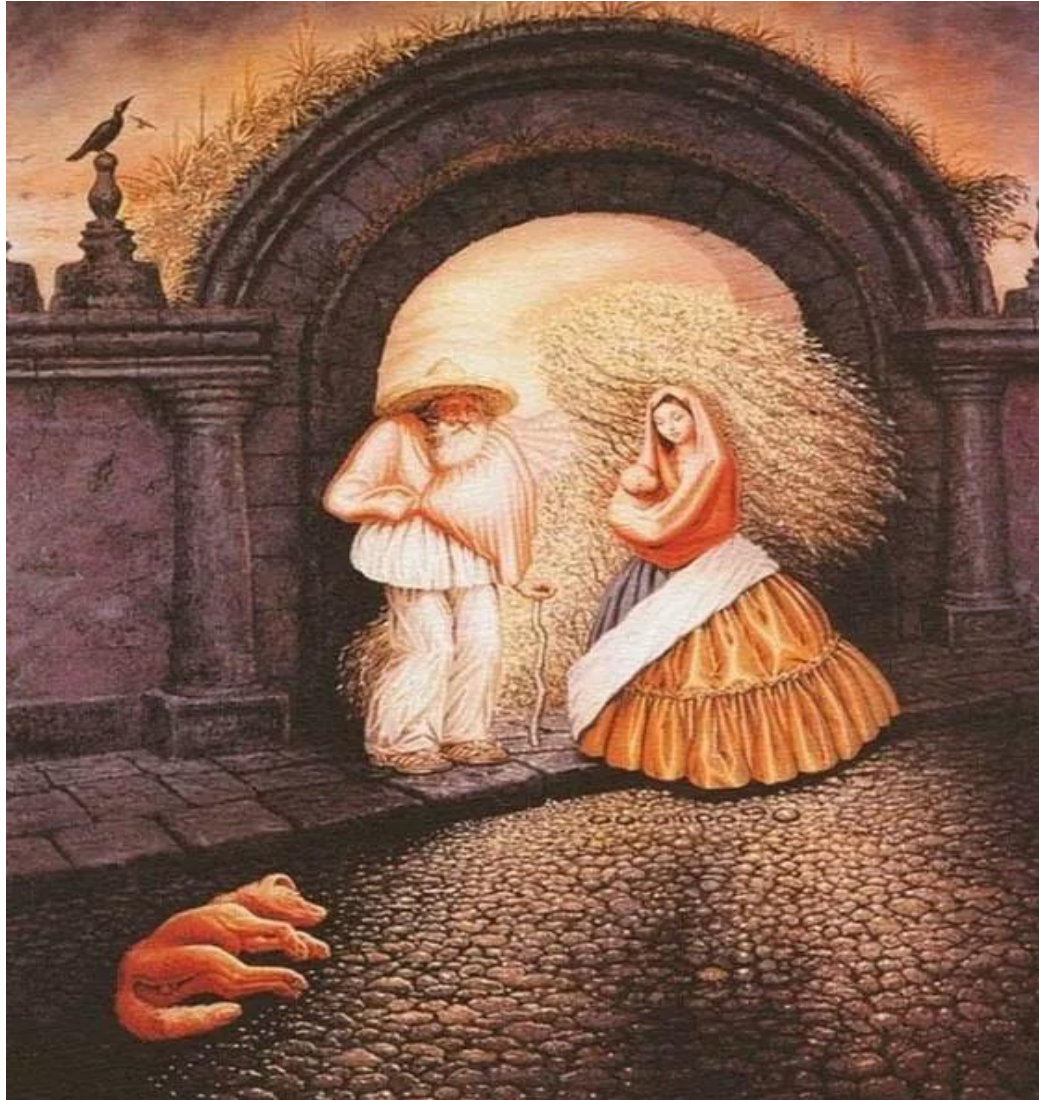
Unit I –DIGITAL IMAGE FUNDAMENTALS

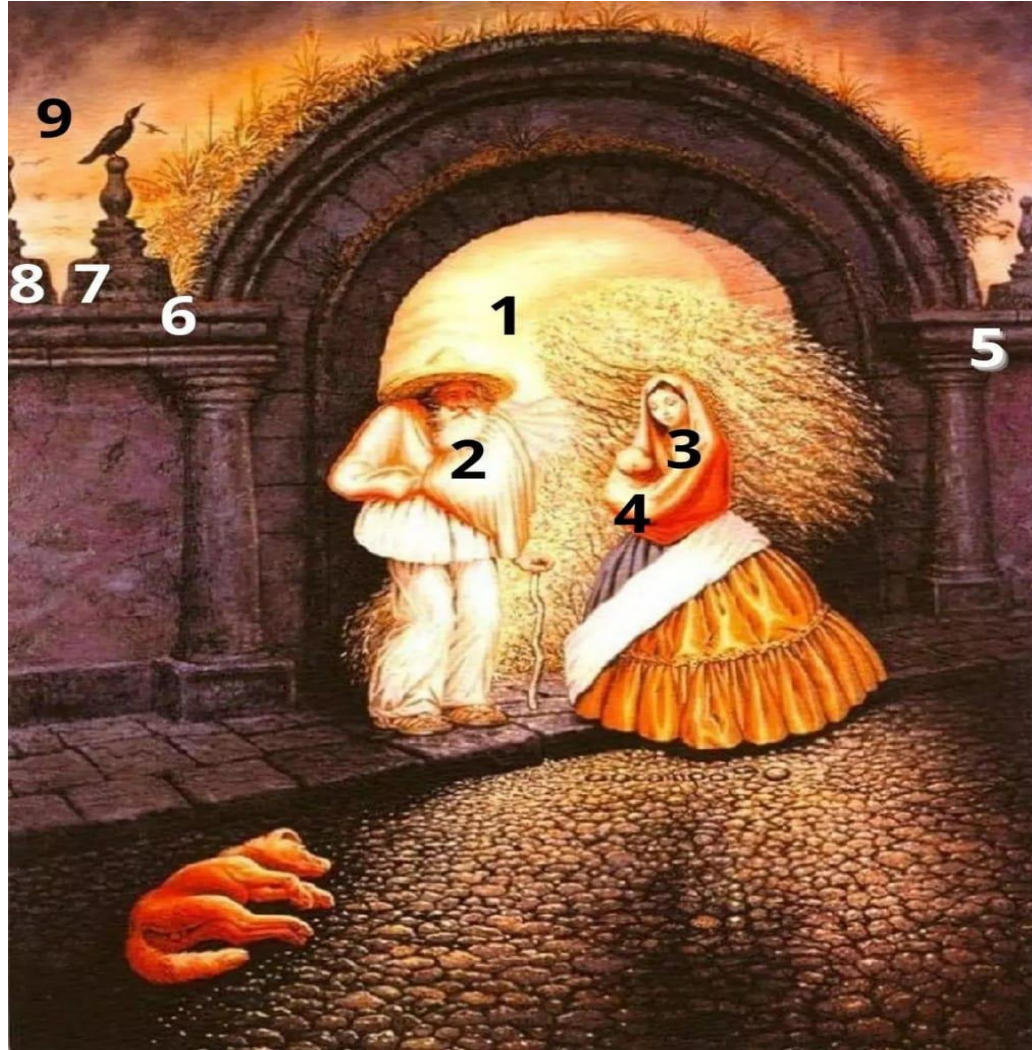
Topic : Elements of Visual Perception





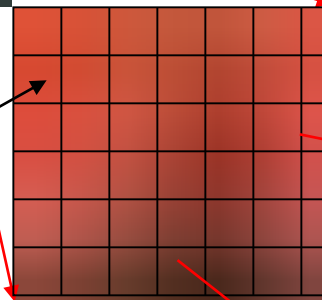






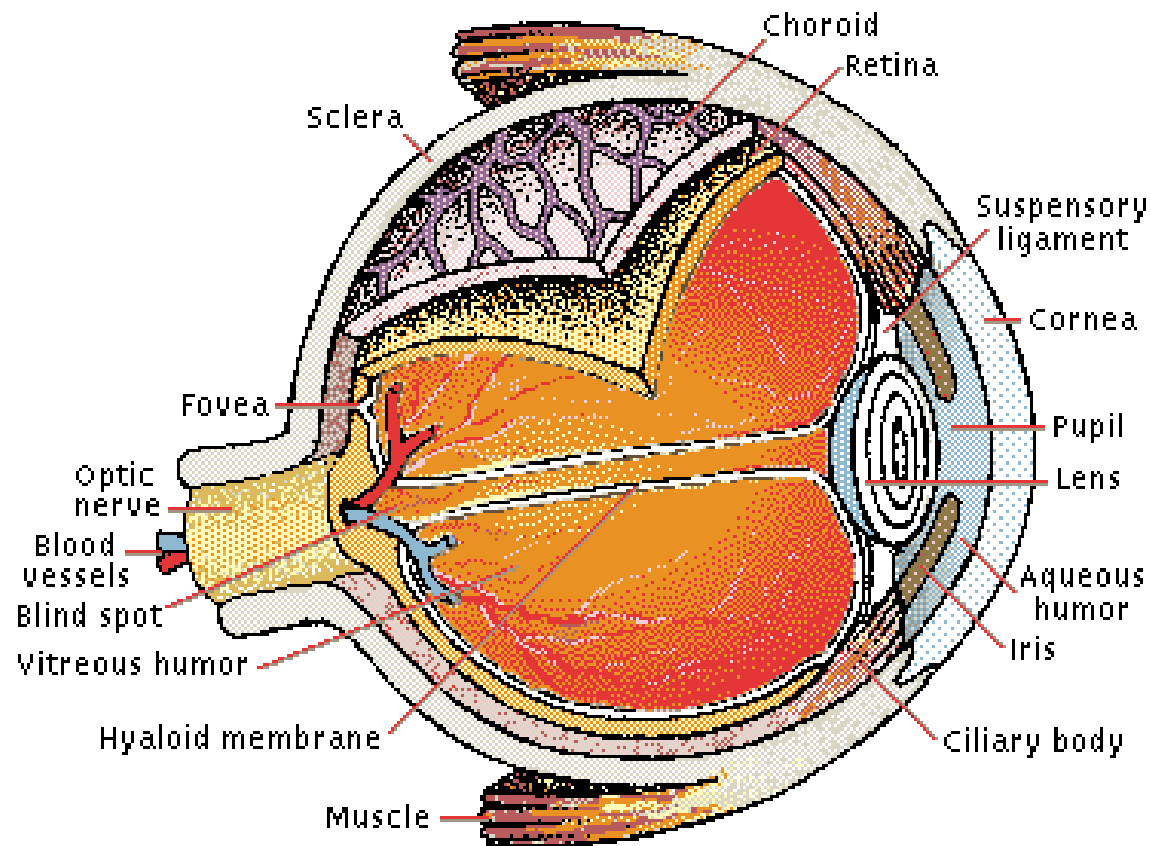


Digital image = a multidimensional array of numbers (such as intensity image) or vectors (such as color image)



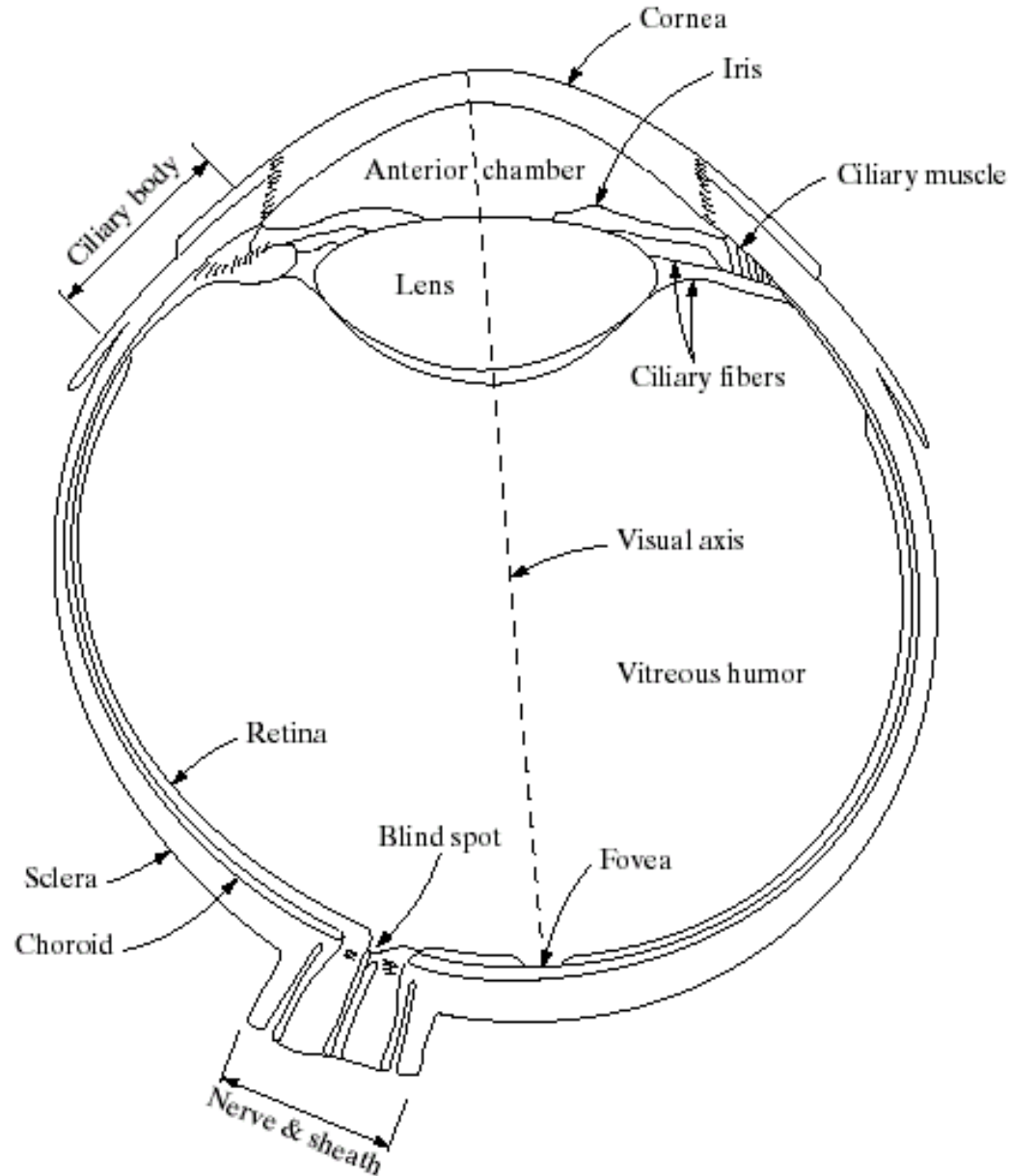
Each component in the image called pixel associates with the pixel value (a single number in the case of intensity images or a vector in the case of color images).

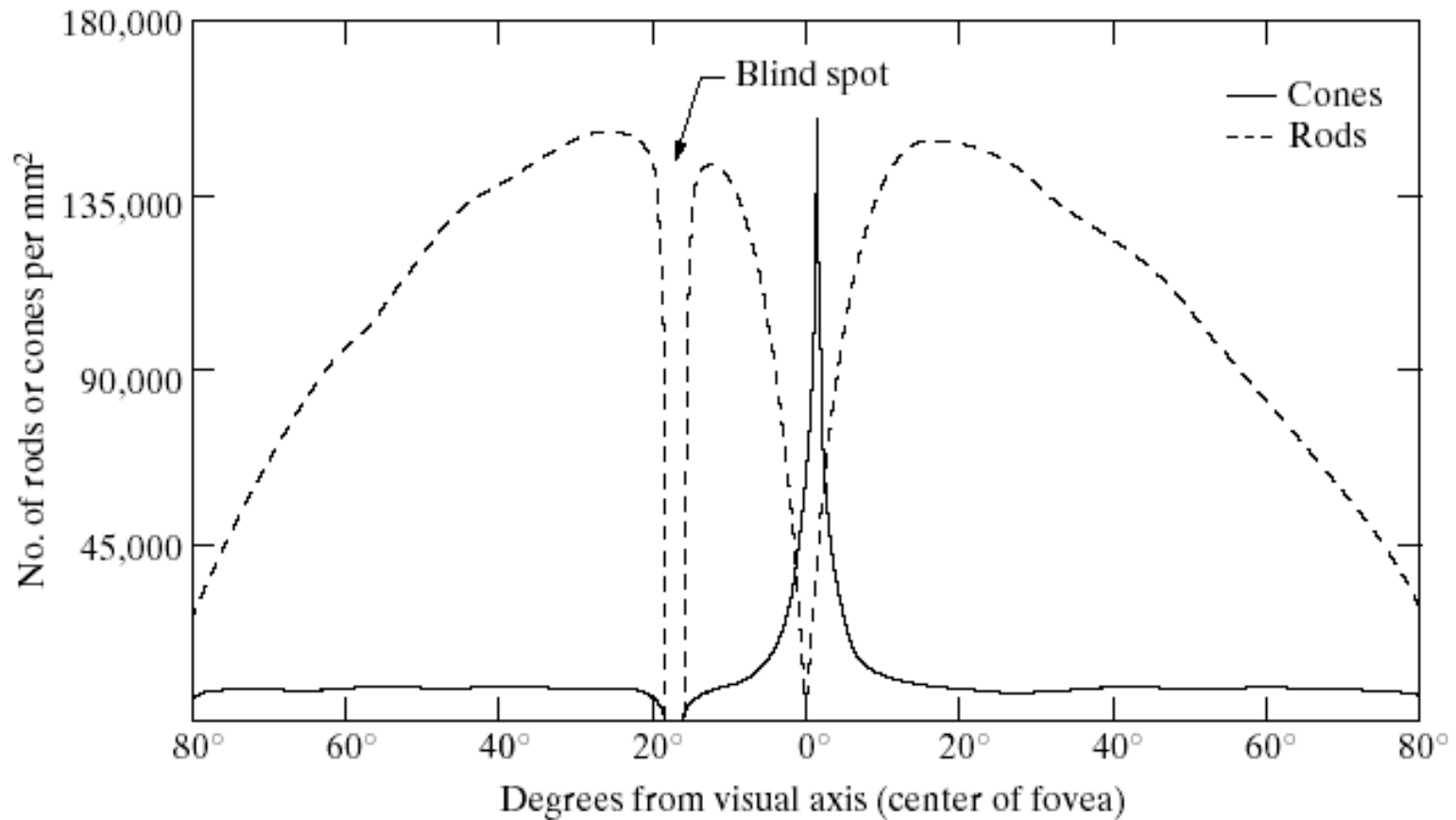
10	10	16	28		
9	65	70	56	43	
15	32	99	70	56	78
32	21	60	90	96	67
	54	85	85	43	92
		32	65	87	99

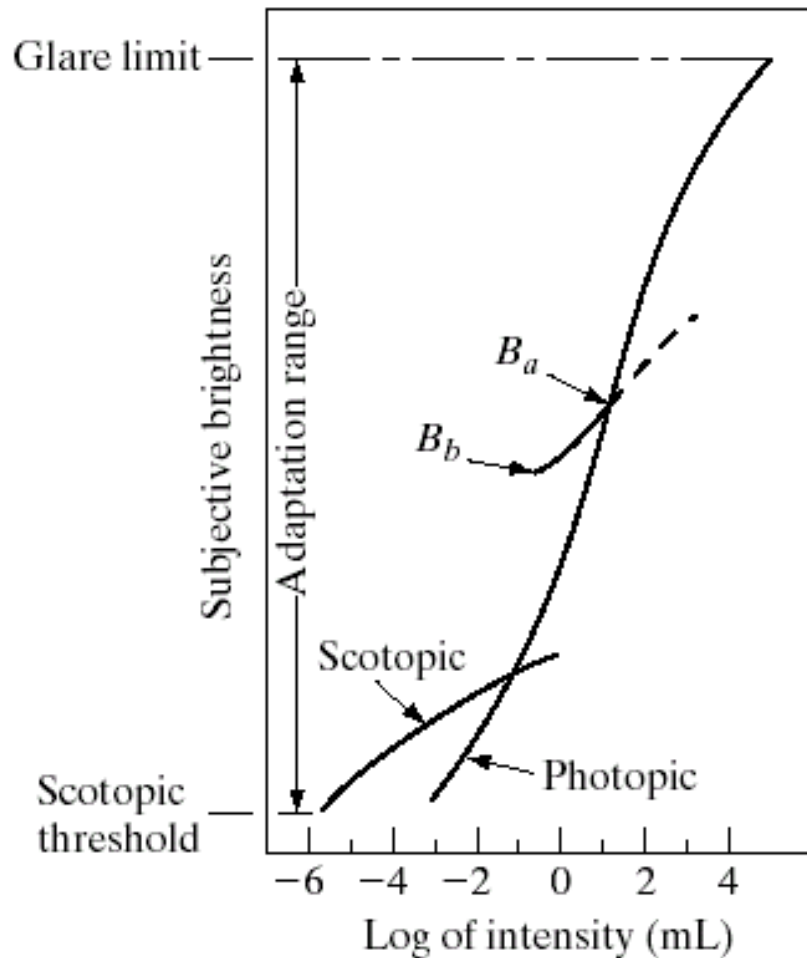




Cross Section of the Human Eye







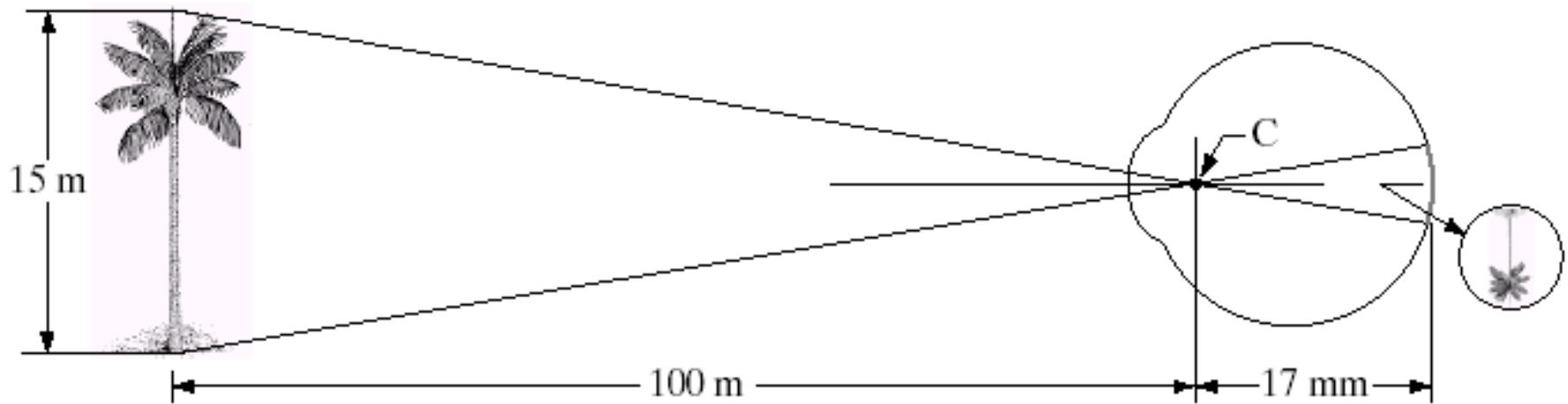
Simultaneous range is smaller than
Total adaptation range



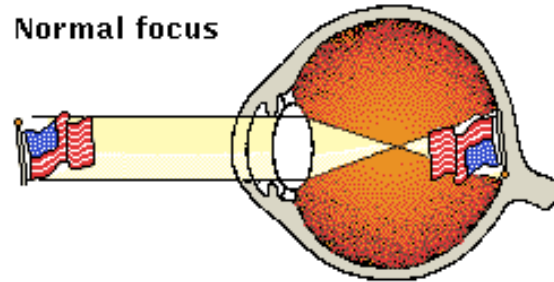
Activity



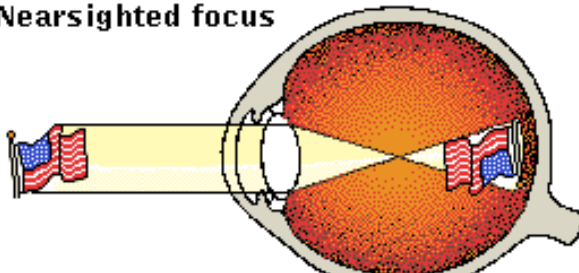
Image Formation in the Human Eye



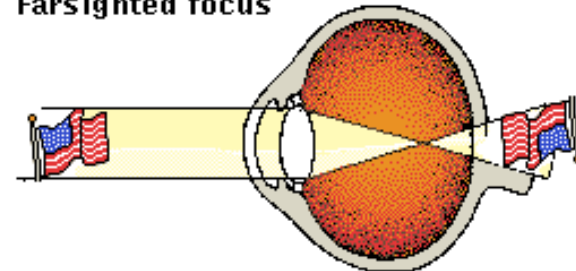
Normal focus



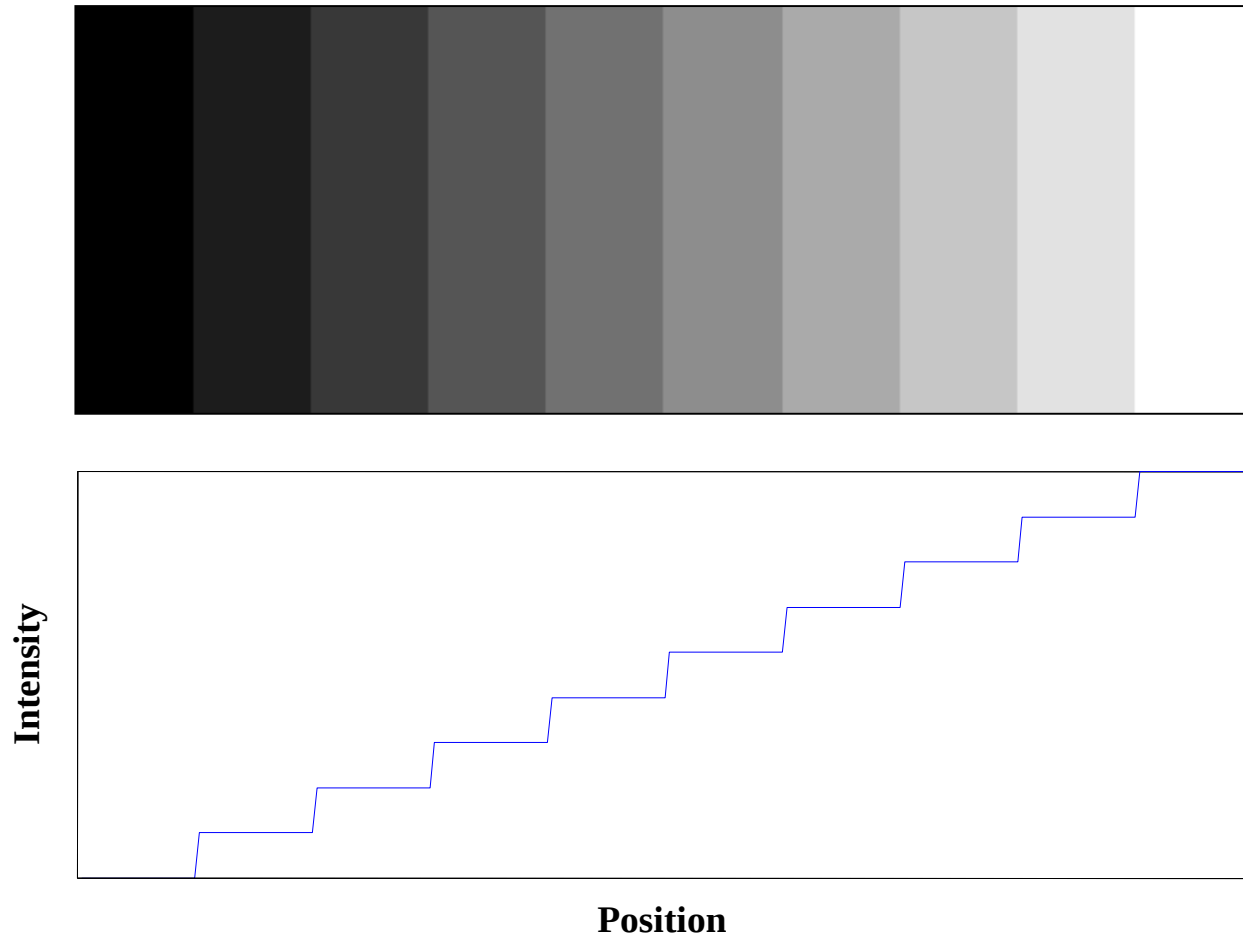
Nearsighted focus

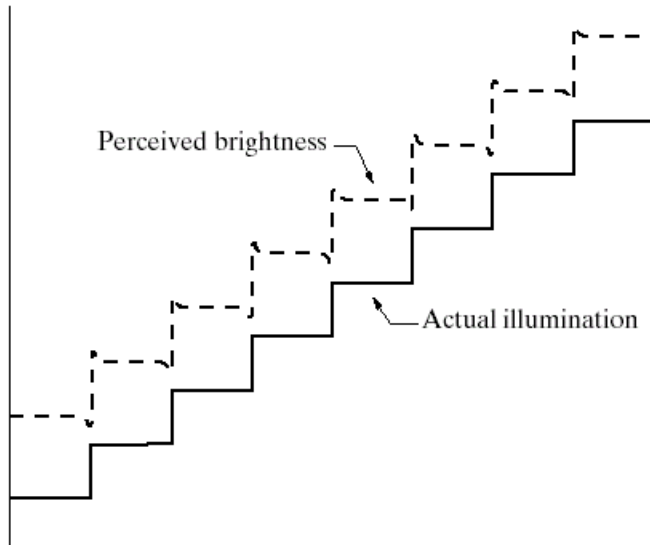
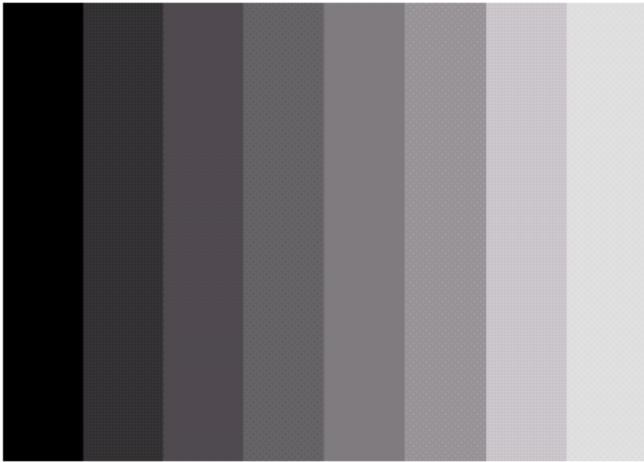


Farsighted focus



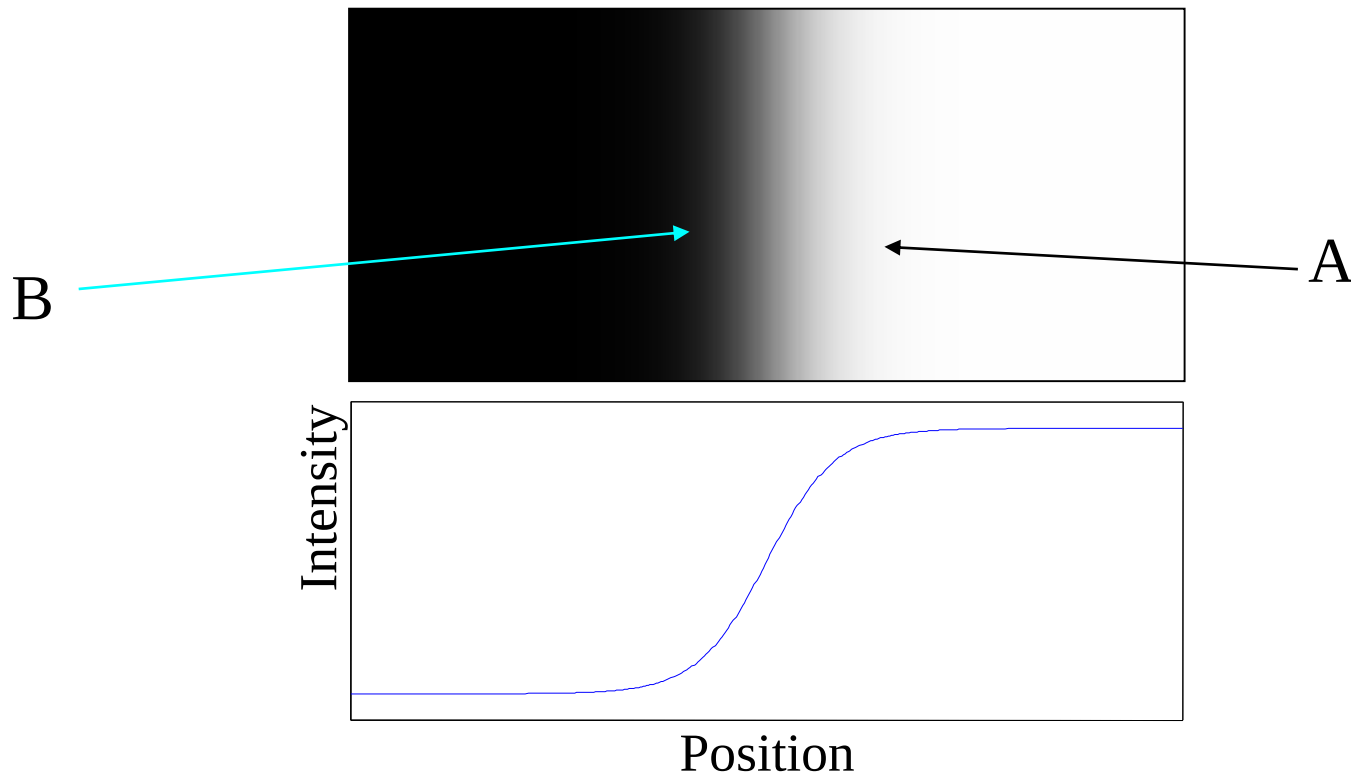
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Intensities of surrounding points effect perceived brightness at each point.

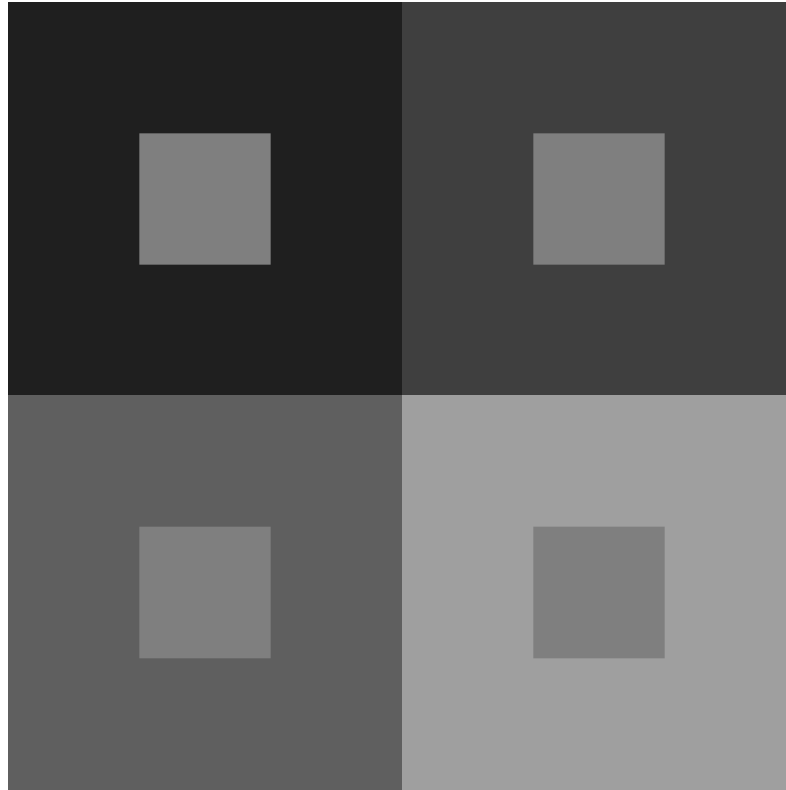
In this image, edges between bars appear brighter on the right side and darker on the left side.



In area A, brightness perceived is darker while in area B is brighter. This phenomenon is called **Mach Band Effect**.



Brightness Adaptation of Human Eye : Simultaneous Contrast

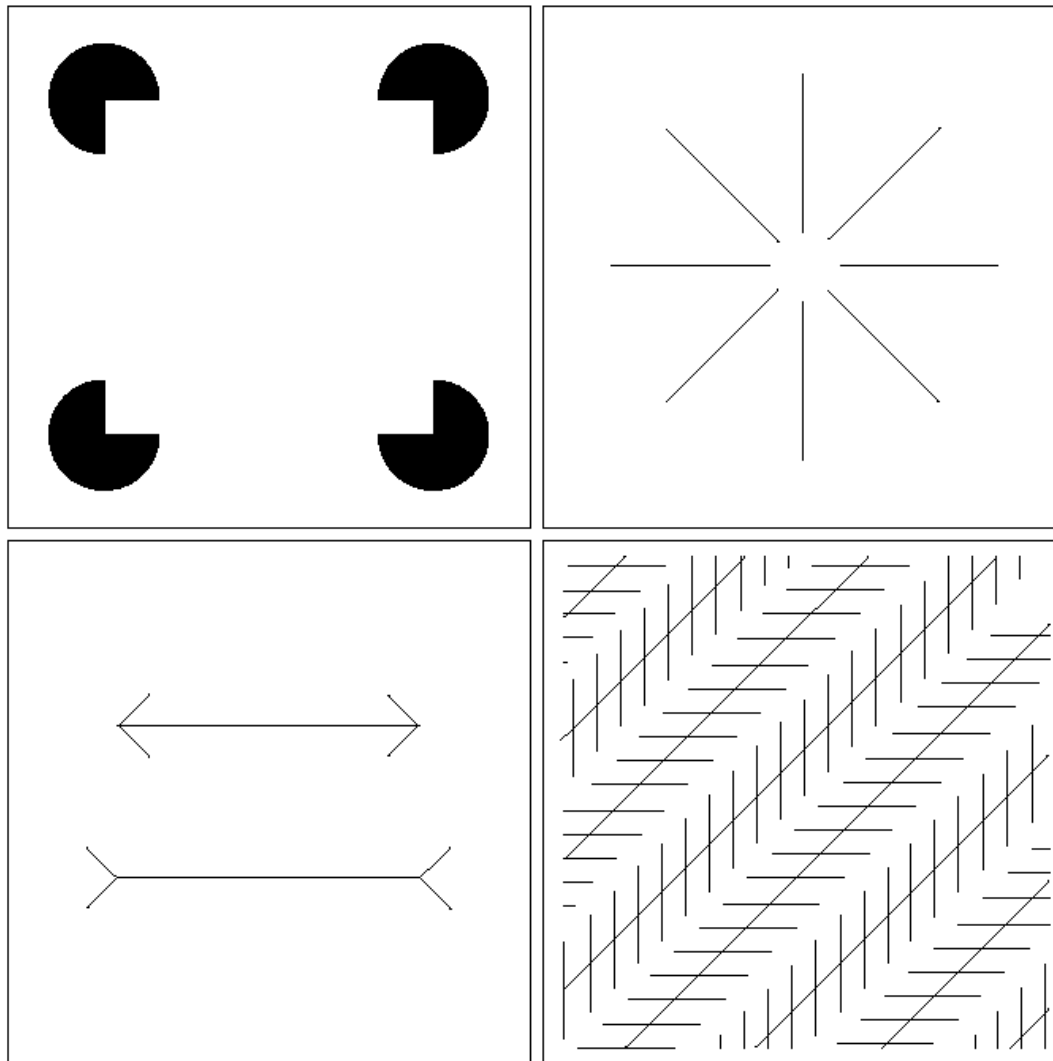


Simultaneous contrast. All small squares have exactly the same intensity but they appear progressively darker as background becomes lighter.

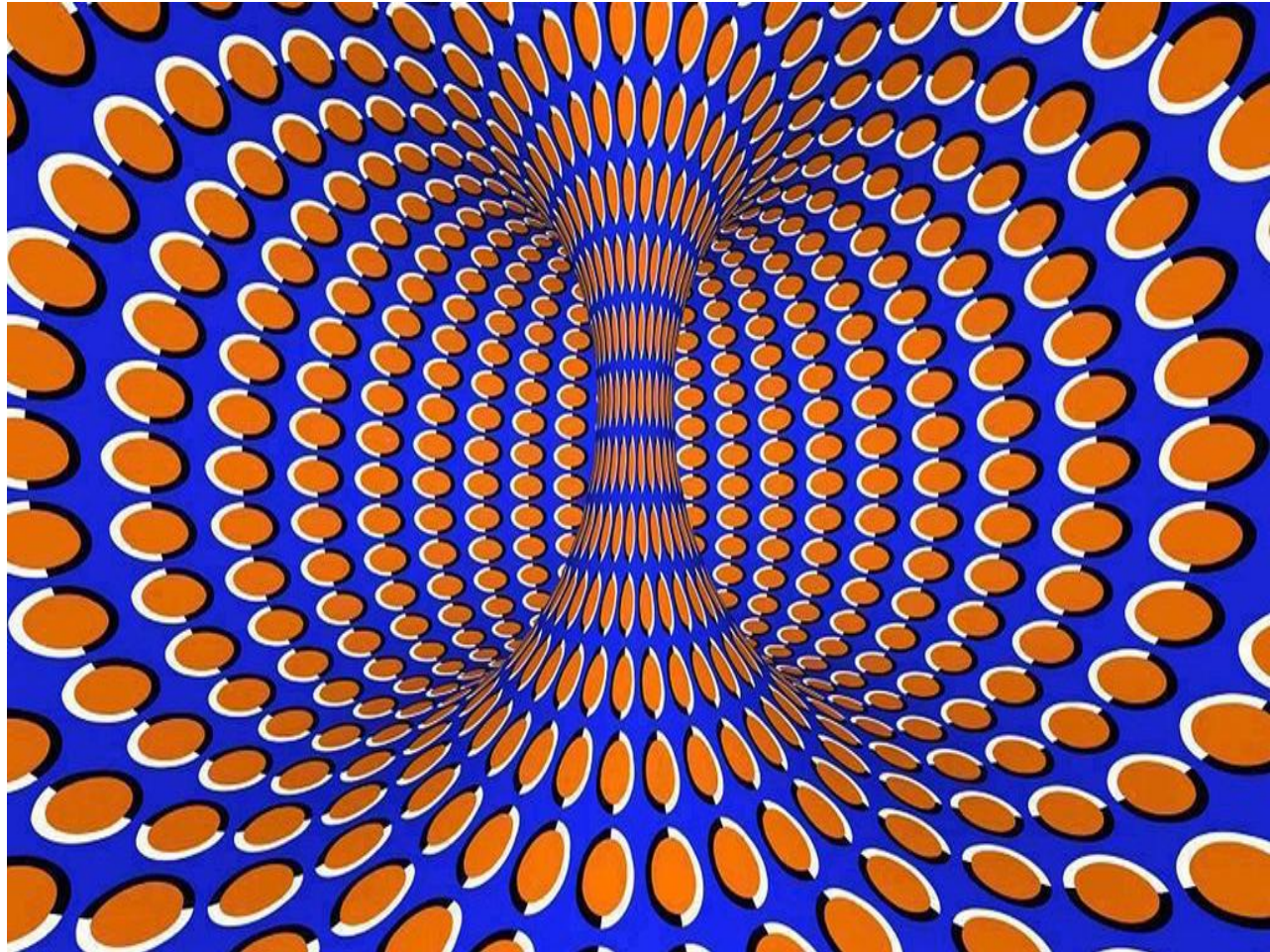


a b c

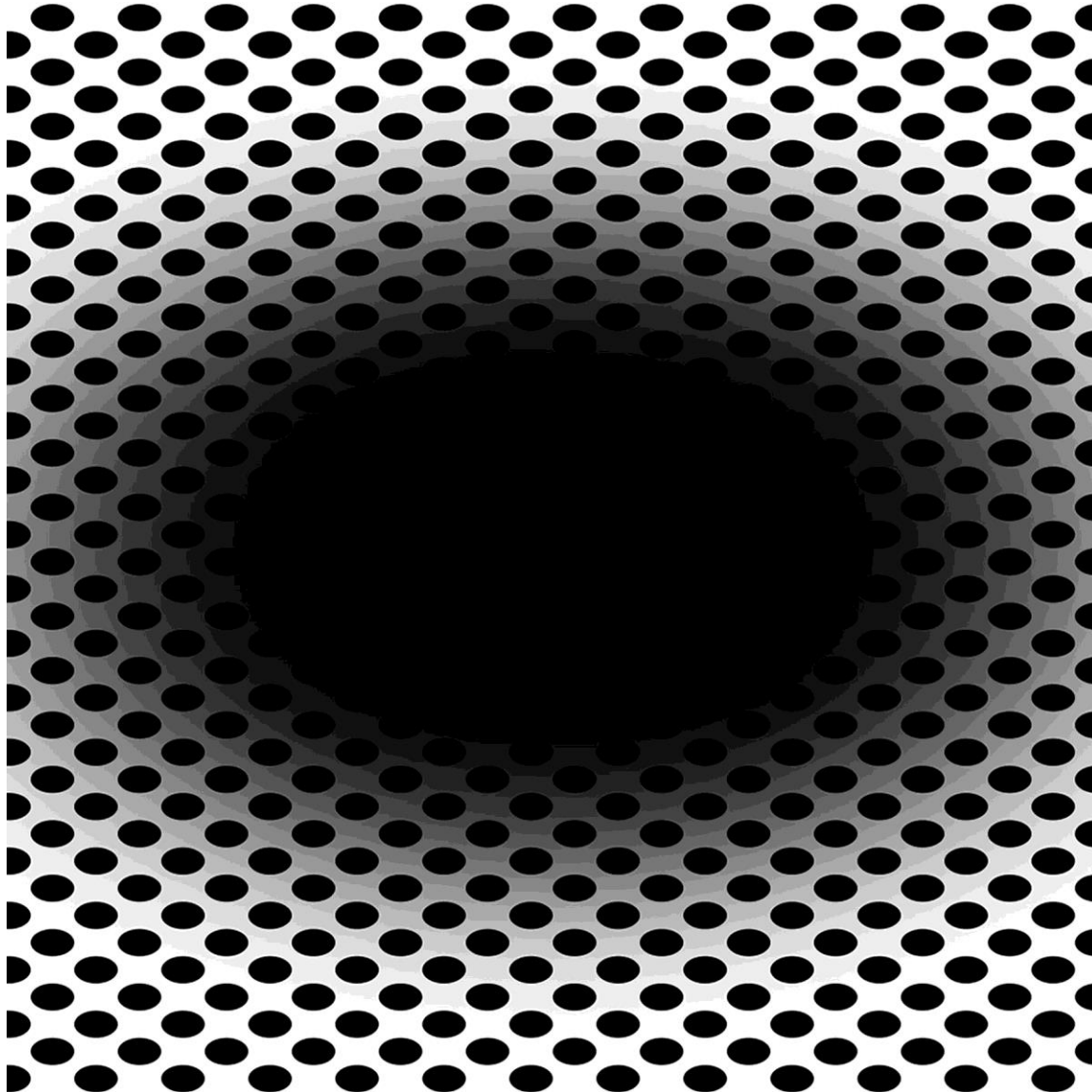
FIGURE 2.8 Examples of simultaneous contrast. All the inner squares have the same intensity, but they appear progressively darker as the background becomes lighter.













ASSESSMENT



Thank You