

Image formation



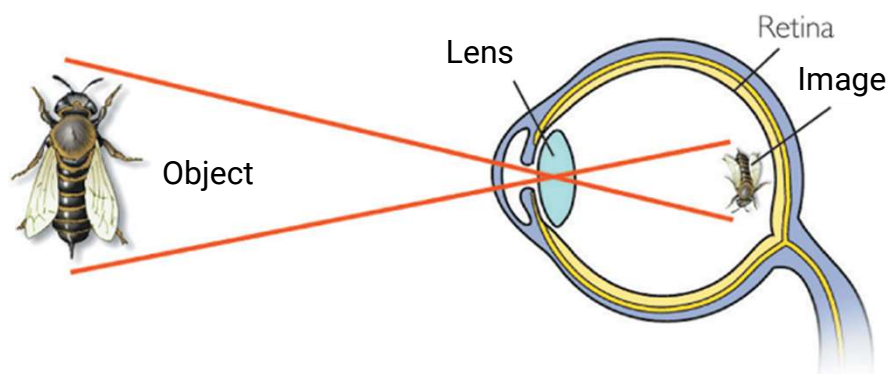
Manuel J. Marín-Jiménez (*Univ. of Córdoba*)

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2

Human eye and images

Our brain understands the inverted image



Source: <https://lacienciaysusdemonios.com/2010/09/28/el-disenador-poco-inteligente-ii-tragaluces/>



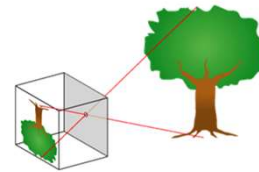
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Camera obscura

Light enters through a tiny hole
→ inverted image

- Alhacen (10th c.): Muslim physicist and mathematician
 - Introduces the concept of the *camera*
- Kepler (17th c.): German astronomer and mathematician
 - Coined the name *camera obscura*



Source: https://es.wikipedia.org/wiki/C%C3%A1mara_obscura

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Camera obscura

Used in 15th century



Portrait of the couple Arnolfini



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5

Camera obscura

Tower Tavira (Cádiz)



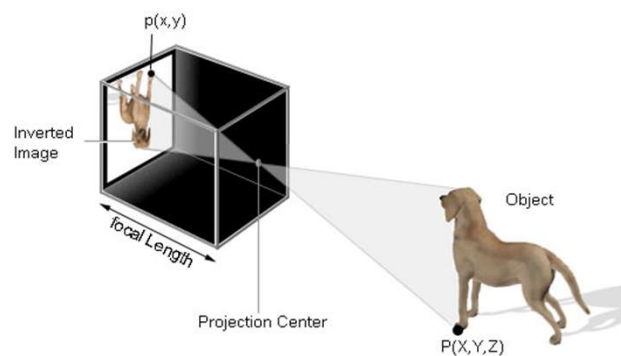
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6

The pinhole model

Simple model of image generation



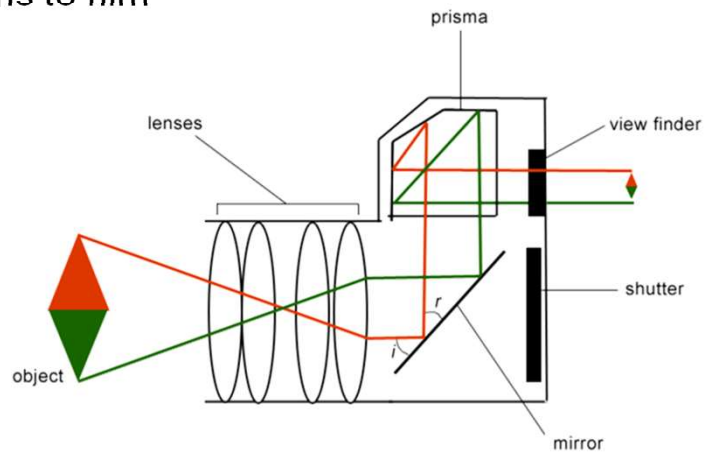
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7

Anatomy of a classic camera

From lens to film



<https://es.slideshare.net/JeffFernandez/elementos-de-la-camara-fotografica-1>



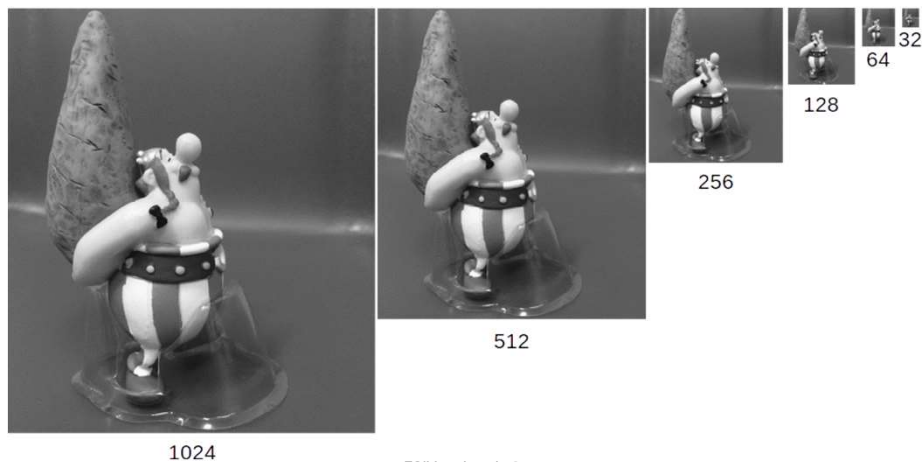
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8

Image resolution

Sampling: how many pixels?

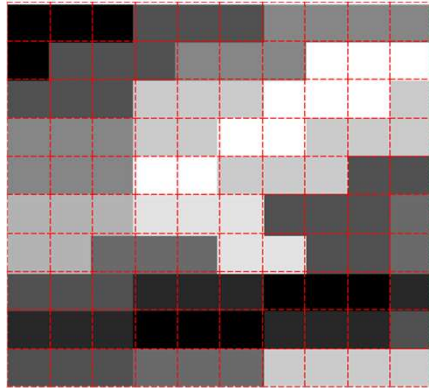


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Quantization

Range of values for each pixel (bpp)



0	0	0	75	75	75	128	128	128	128
0	75	75	75	128	128	128	255	255	255
75	75	75	200	200	200	255	255	255	200
128	128	128	200	200	255	255	200	200	200
128	128	128	255	255	200	200	200	75	75
175	175	175	225	225	225	75	75	75	100
175	175	100	100	100	225	225	75	75	100
75	75	75	35	35	35	0	0	0	35
35	35	35	0	0	0	35	35	35	75
75	75	75	100	100	100	200	200	200	200



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