

# Wild Dreams for Cameras

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## Definitions

**Visual Appearance:** What we think we see.

(Consciously-available estimates of our surroundings,  
 made from the light reaching our eyes)

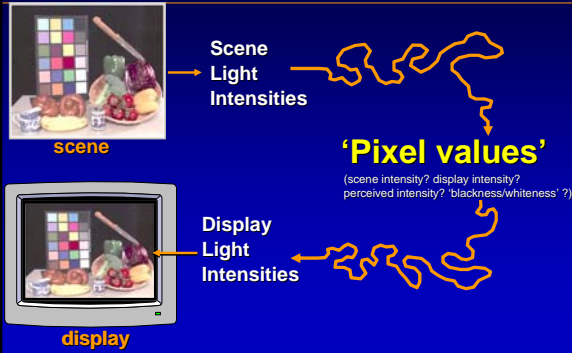
**Picture:** A 'container' for visual appearance.

(something we make to hold what we see,  
 or what would like to see)

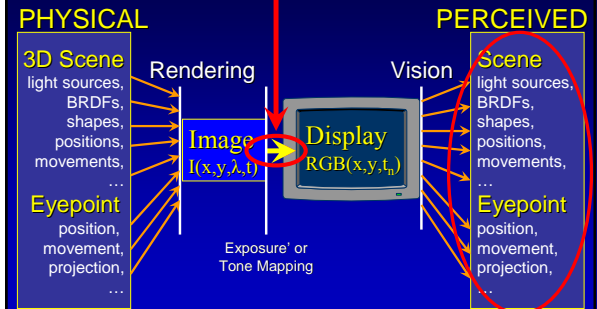
**Image:** A copy of light intensities.

(Just *one kind* of picture, made by copying a scaled map of  
 scene light intensities as a lens might)

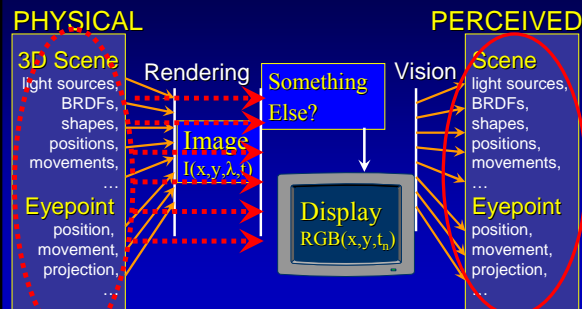
## ≈ "Machine-Readable" Images?



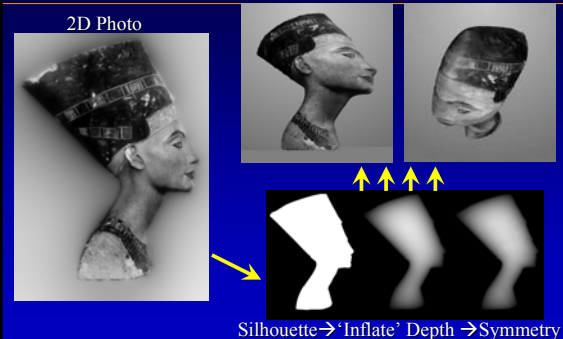
## Digital Images



## 'Digital Pictures?'



## Williams 1998: 'Inflated Silhouettes'



<http://graphics.stanford.edu/workshops/br208/#Schedule%20of%20sessions>

### Williams`98: 'Inflated Silhouettes'

Not bad! How can we do better?

- <http://graphics.stanford.edu/workshops/ibr/98/#Schedule%20of%20%20sessions>

### Polynomial Texture Maps

Store just **6** coefficients at each pixel, get Interactive re-lighting...

A *Mostly* 2-D Method

Malzbender, HP Labs 2001

### 3D: Try image + other dimensions

- Halle: Multiple Viewpoint Rendering (SIGG98)  
<http://web.media.mit.edu/~halasz/pubs/halasz98/brtsch.pdf>

spatio-perspective volume      epipolar plane image

### Oh et. al, 2001: 2D→3D

- Manually Guided—7 Hours!
- ? Would a more varied set for camera pose help?  
[http://graphics.fcs.mit.edu/oh/oh01\\_s2001\\_cameraReady.pdf](http://graphics.fcs.mit.edu/oh/oh01_s2001_cameraReady.pdf)

### Bixels: Picture Samples With Embedded Sharp Boundaries

Bixels (bilinear)

Pixels (bilinear)

Jack Tumblin and Prasun Choudhury Northwestern University, Evanston IL, USA

### Results: boundary=depth discontinuity

(Source data courtesy Ramesh Raskar, MERL)

Source (1100x800)

Boundaries (50x65)

## Results: boundary=depth discontinuity

(Source data courtesy Ramesh Raskar, MERL)

