lecture 17

Part 1

Shape from texture

What is "texture"?

- pattern on a surface

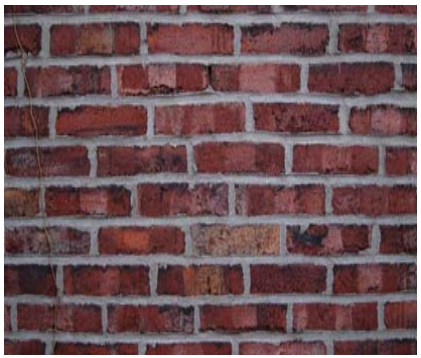
1. 3D geometric (shading & shadows)
2. material (reflectance)
3. both 1 and 2

Texture

- periodic (brick) vs. non-periodic (fallen leaves)
- structural ("texel" = texture element) vs. statistical (intensities – mean, variance etc)

Let's look at some examples ...

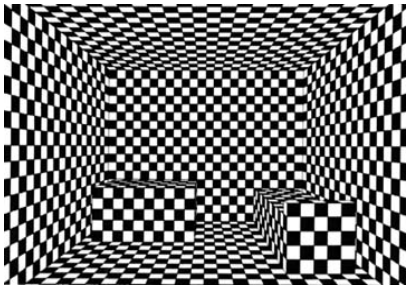
Most structured



less structured

Least structured

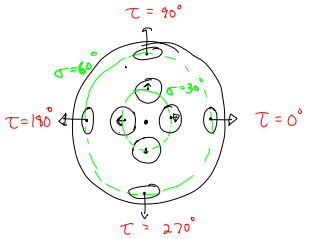
Shape from texture (typically based on 3 "cues")



- size gradient
- density gradient
- foreshortening gradient

RECALL LECTURE 1

foreshortening described by slant and tilt



Most "shape from texture" methods attempt to estimate slant and tilt of a plane, often using foreshortening cues only.

Here are some examples of images. Ask yourself what cues you are using.

size ? density ? foreshortening ?
vanishing points ?

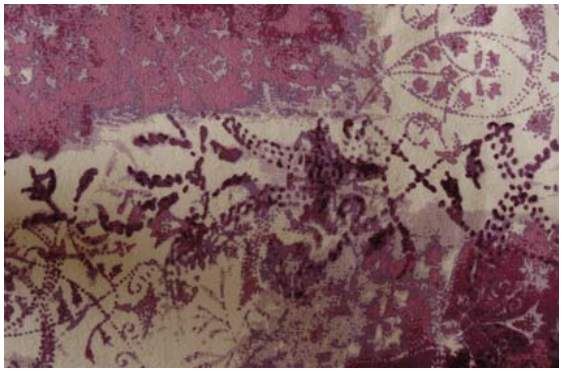
tilted to right or left ?

floor or ceiling ? (People prefer floor.)

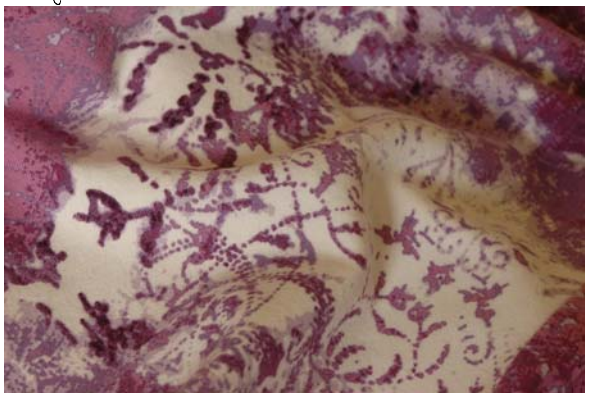
What about non-planar surfaces?

If texture is periodic then there is alot of info about shape in image.

... and if the texture is not periodic?



There may be other cues present eg. shading



Why "shape" from shading/texture?

Why not "depth" from shading/texture?

... because there is no information about absolute depth (3D scale)