Animation process

Texturing

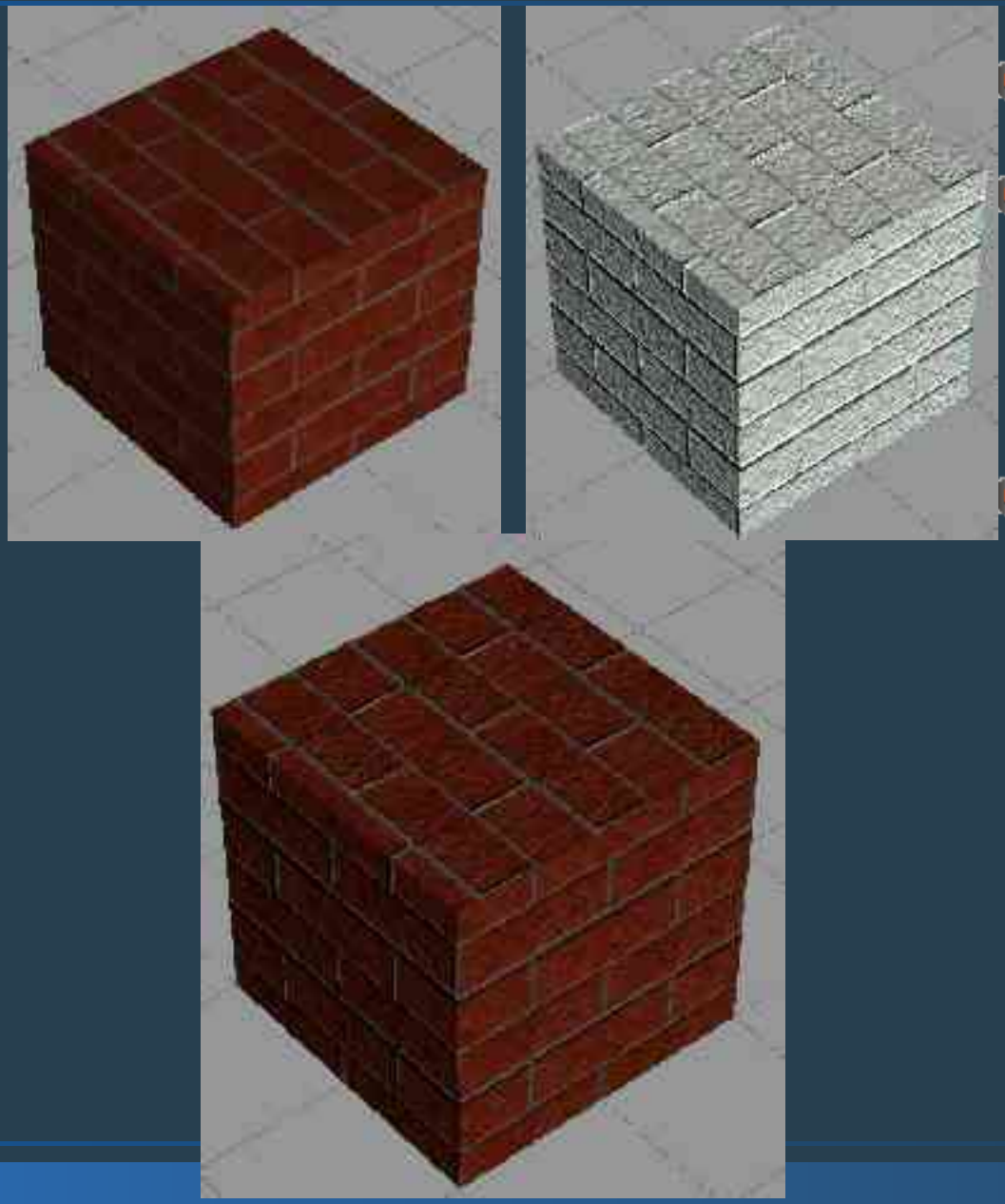
Common types of “maps” (textures)

- Colour (Pigment)
- Bump
- Specularity / Specular size / Specular intensity
- Transparency / Cookie-cut
- Diffuse (Dirt)
- Reflection / Environment
- Ambiant (Glow)
- Displacement

Texture type: Colour (image)

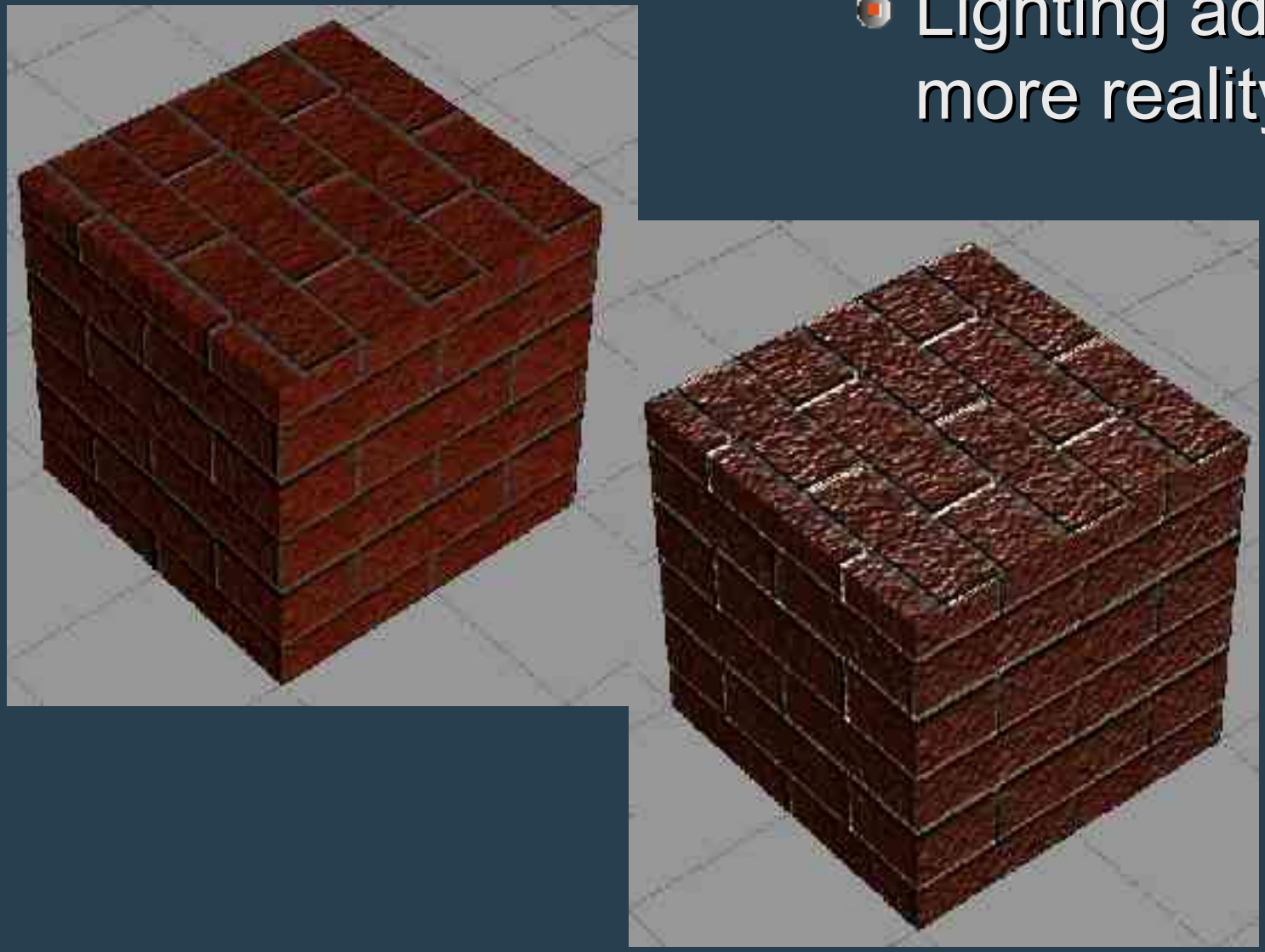
- Paint
- Wallpaper
- Contact

Texture type: Bump



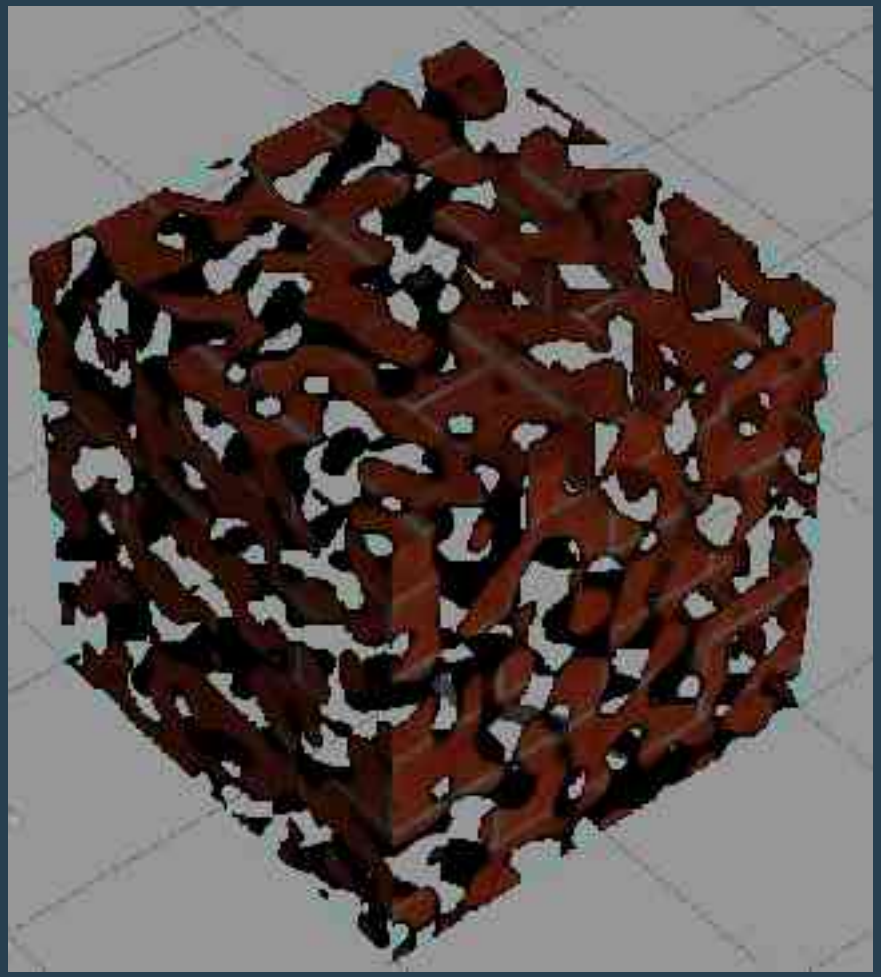
- A shading trick
- Doesn't actually change object geometry
- Works well with colour map

Texture type: Specularity (shiny highlights)



- Lighting adds even more reality

Texture type: Transparency



- Remember, you are usually dealing with surfaces, not real solids

Other texture types:

- Diffuse (dirt and grime)
- Reflectivity and environment maps
- Ambiance/Luminosity maps (fake glow)
- Displacement (actual geometry change)
- Cookie-cut (1-bit variation of transparency)
- Specular size (as well as intensity)

Applying the map = mapping

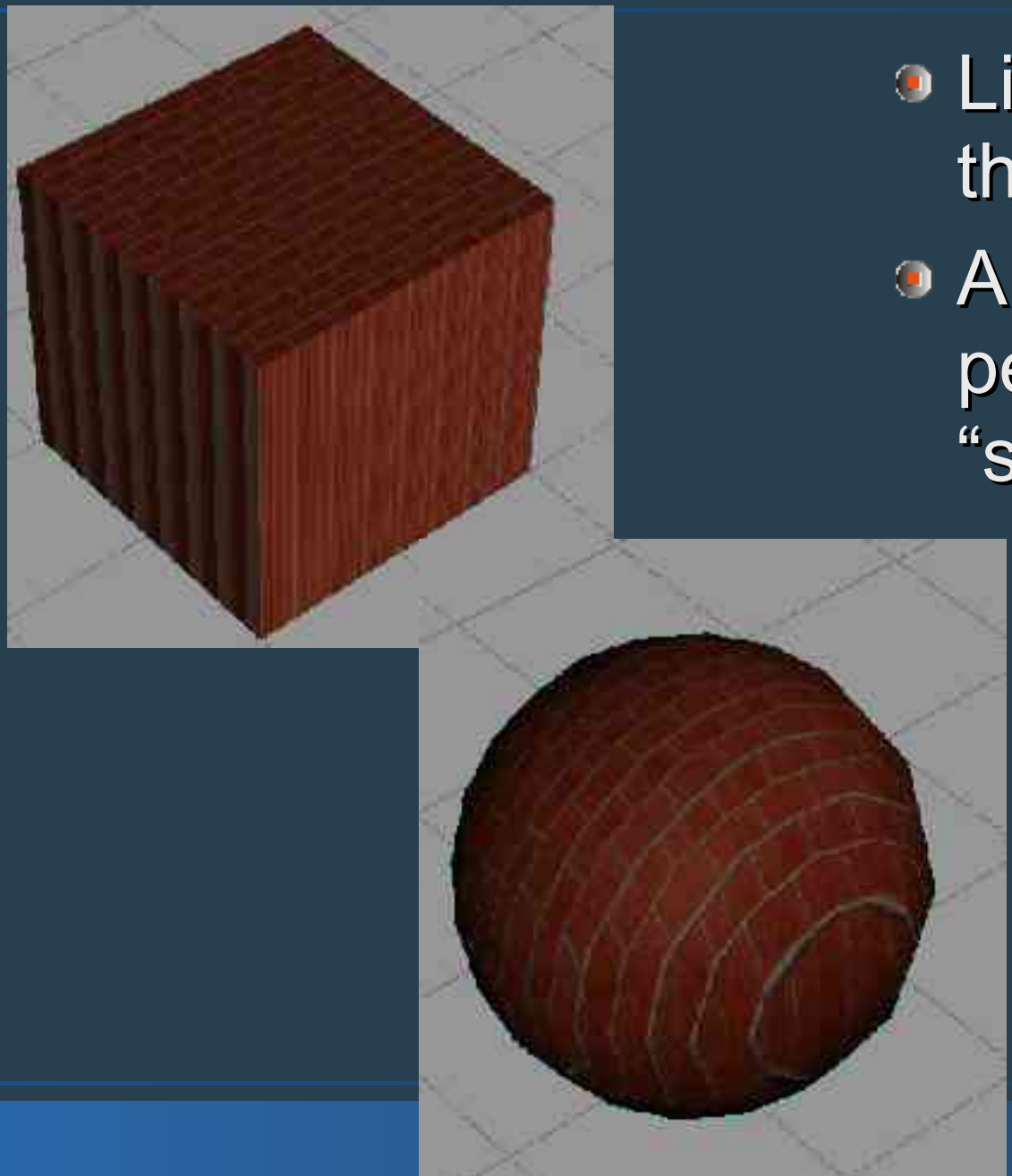
How to stick a map to a surface

- Flat
- Cylindrical
- Spherical
- Cubical

- UV (unwrapping) / decal

- Algorithmic texture

Mapping type: Flat



- Like wood grain through the wood
- Angular stretching, perpendicular “smearing”

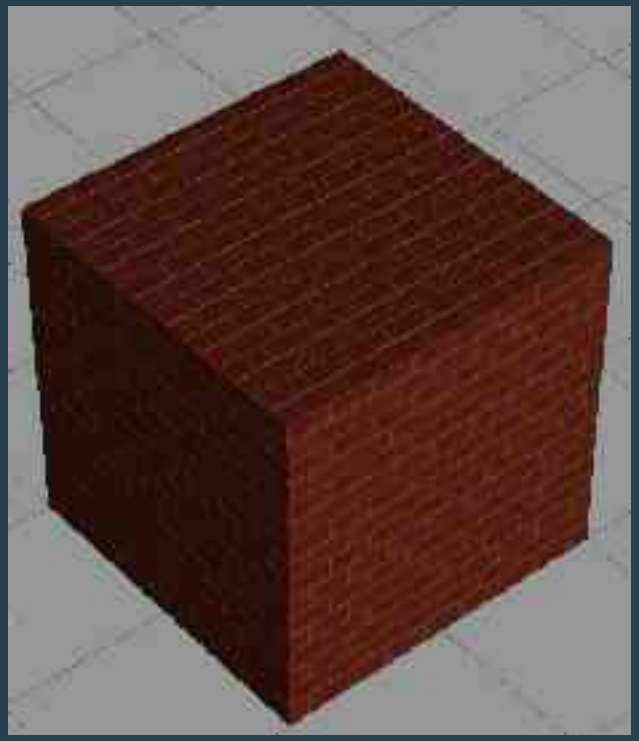
Mapping type: Cylindrical

- Wraps vertically around object like a “leg warmer”
- Top and bottom surfaces derived from texture projecting into center

Mapping type: Spherical

- Variation of cylindrical
- Top and bottom surfaces derived from texture “wrapping” around (pinched in)

Mapping type: Cubical

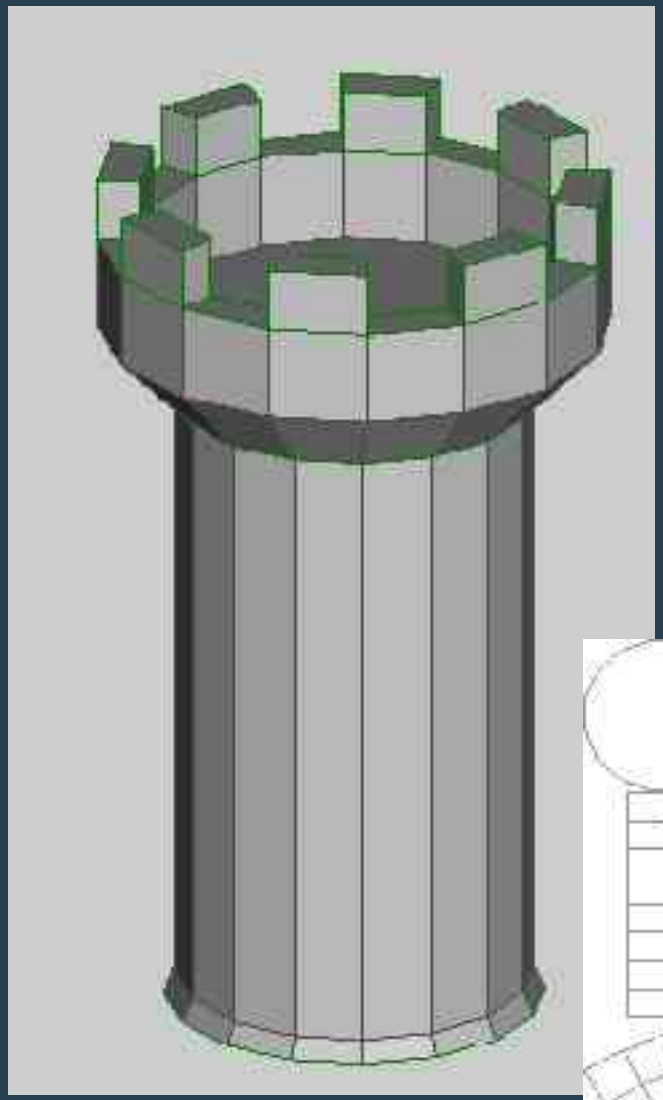


- Texture applied from 6 directions

Mapping type: UV / decal

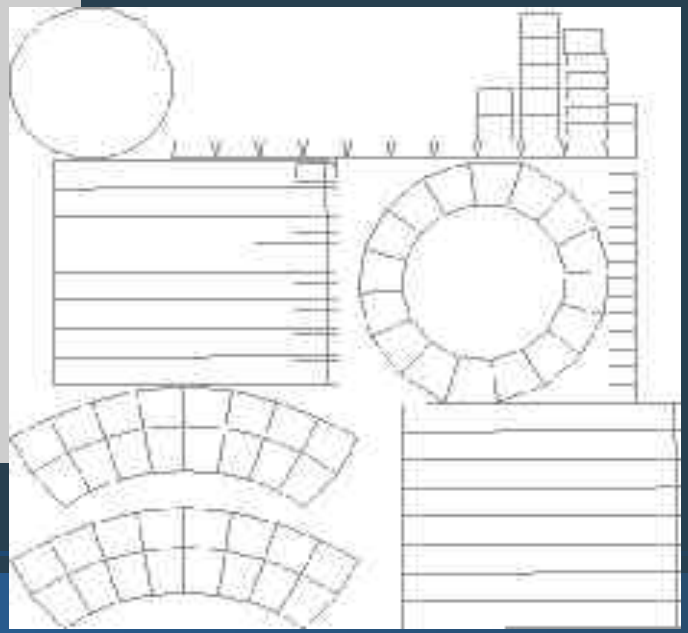
- Stick-on texture, conforming to object shape
- “Rectangles”
- Mapping onto each facet

Mapping type: UV (per facet)

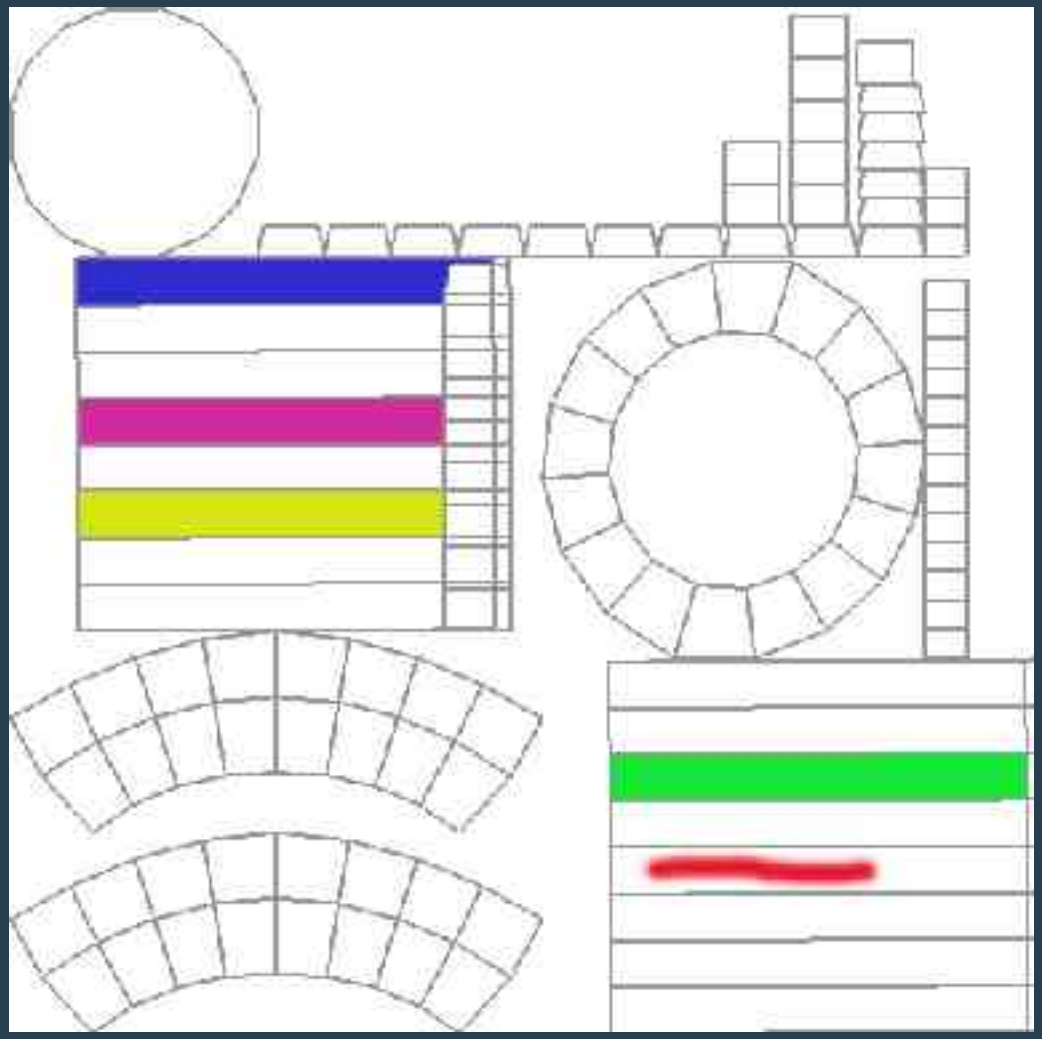


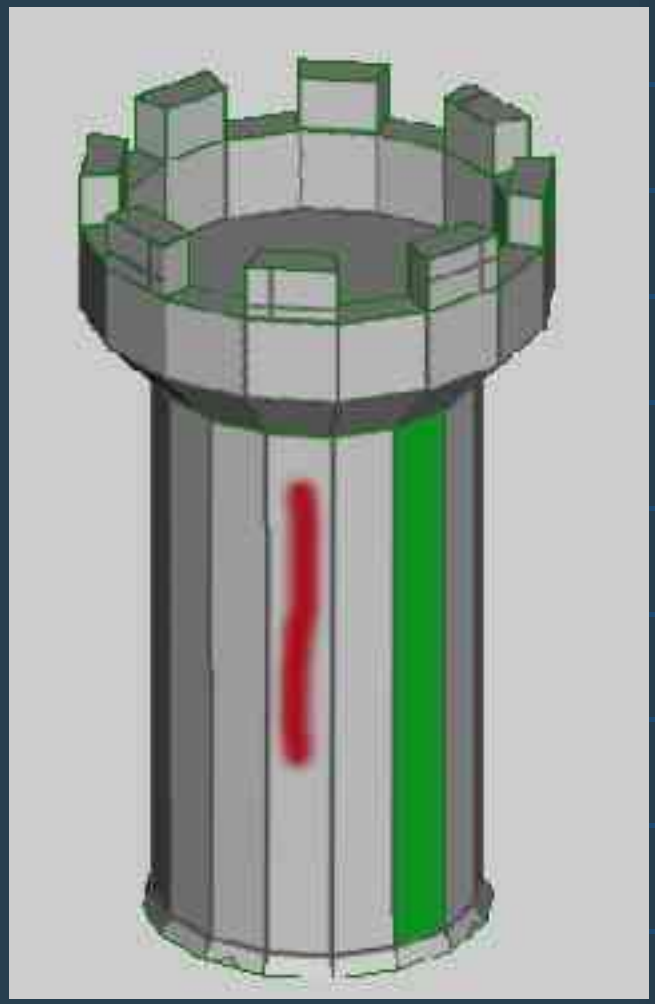
- “Unwrapping” the object = UV mapping

- LithUnwrap
- UVmapper

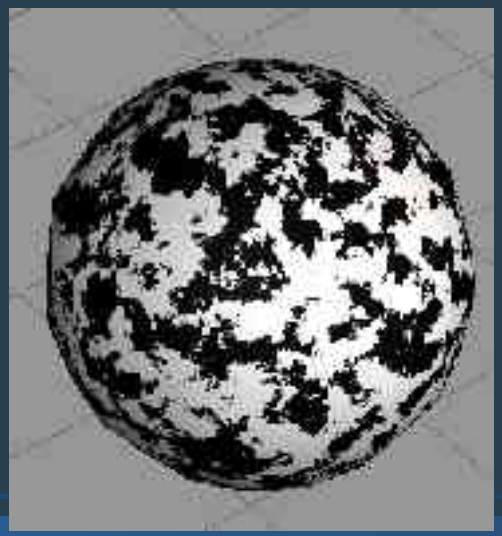


Creating texture maps : painting



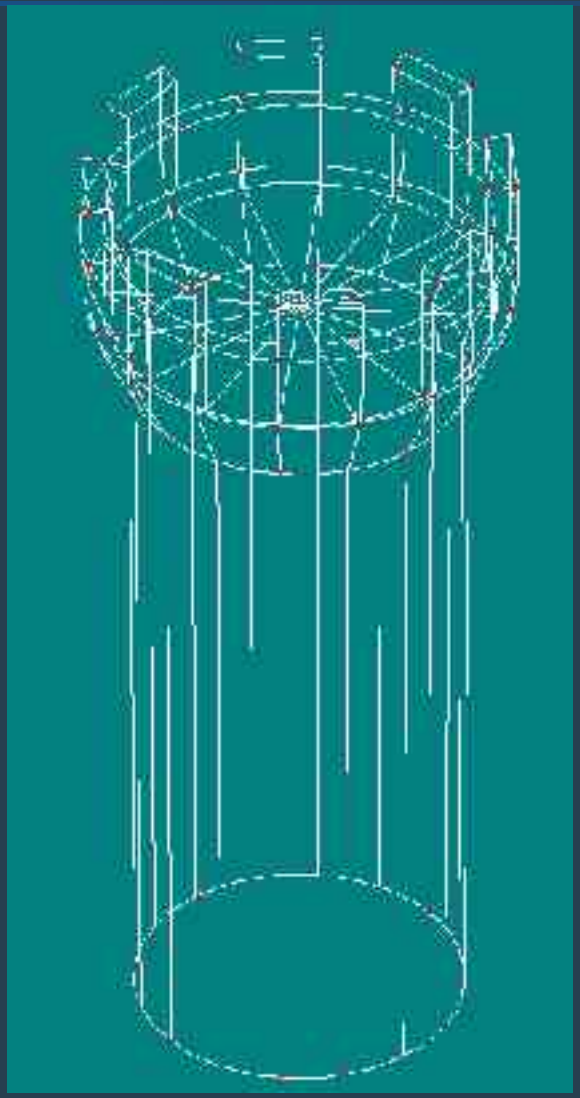


Creating texture maps : algorithmic



- Formula-based “solid” textures
- Alter various aspects e.g. colour, degree of variation, ratio of various elements

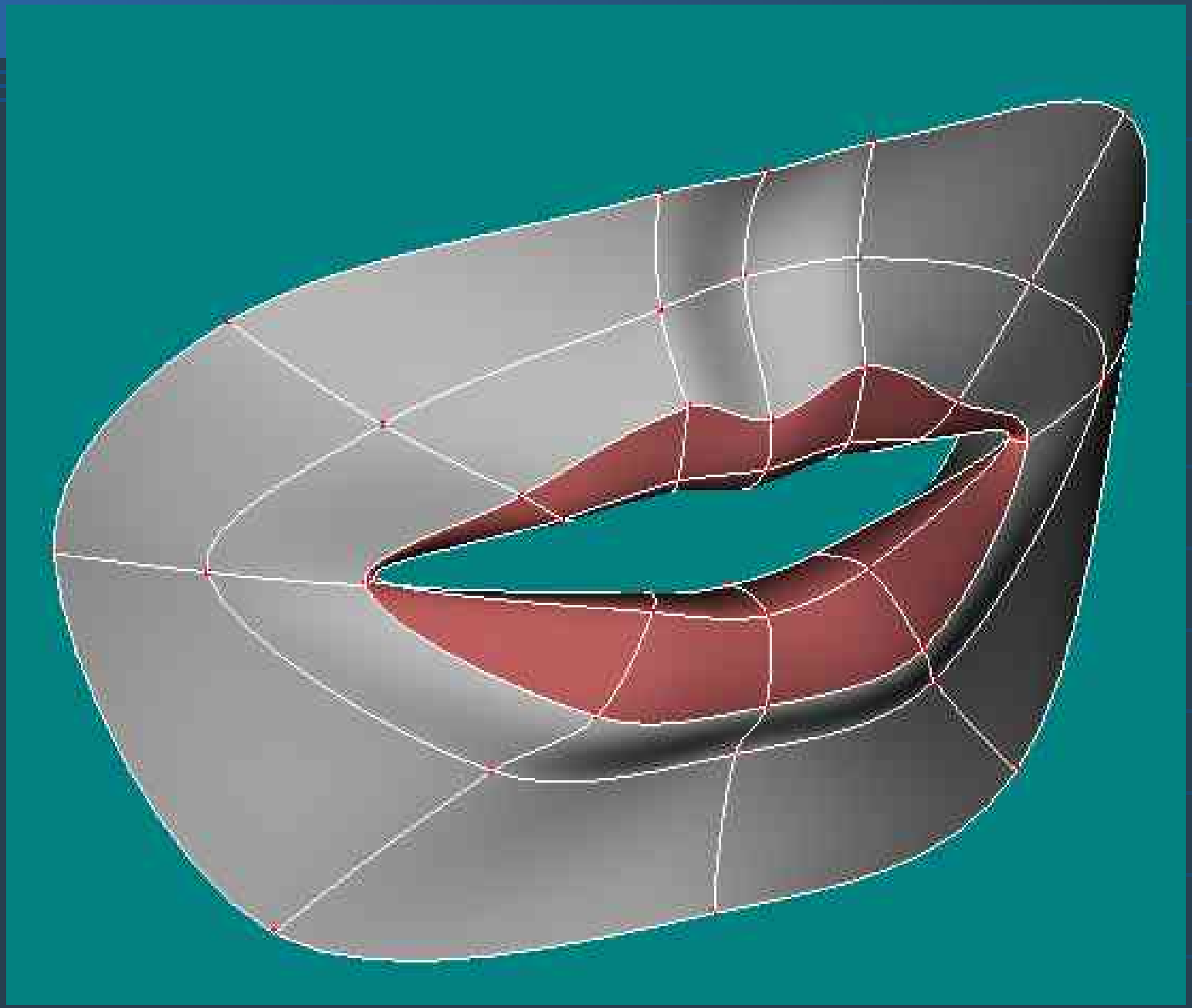
Mapping example : plain model

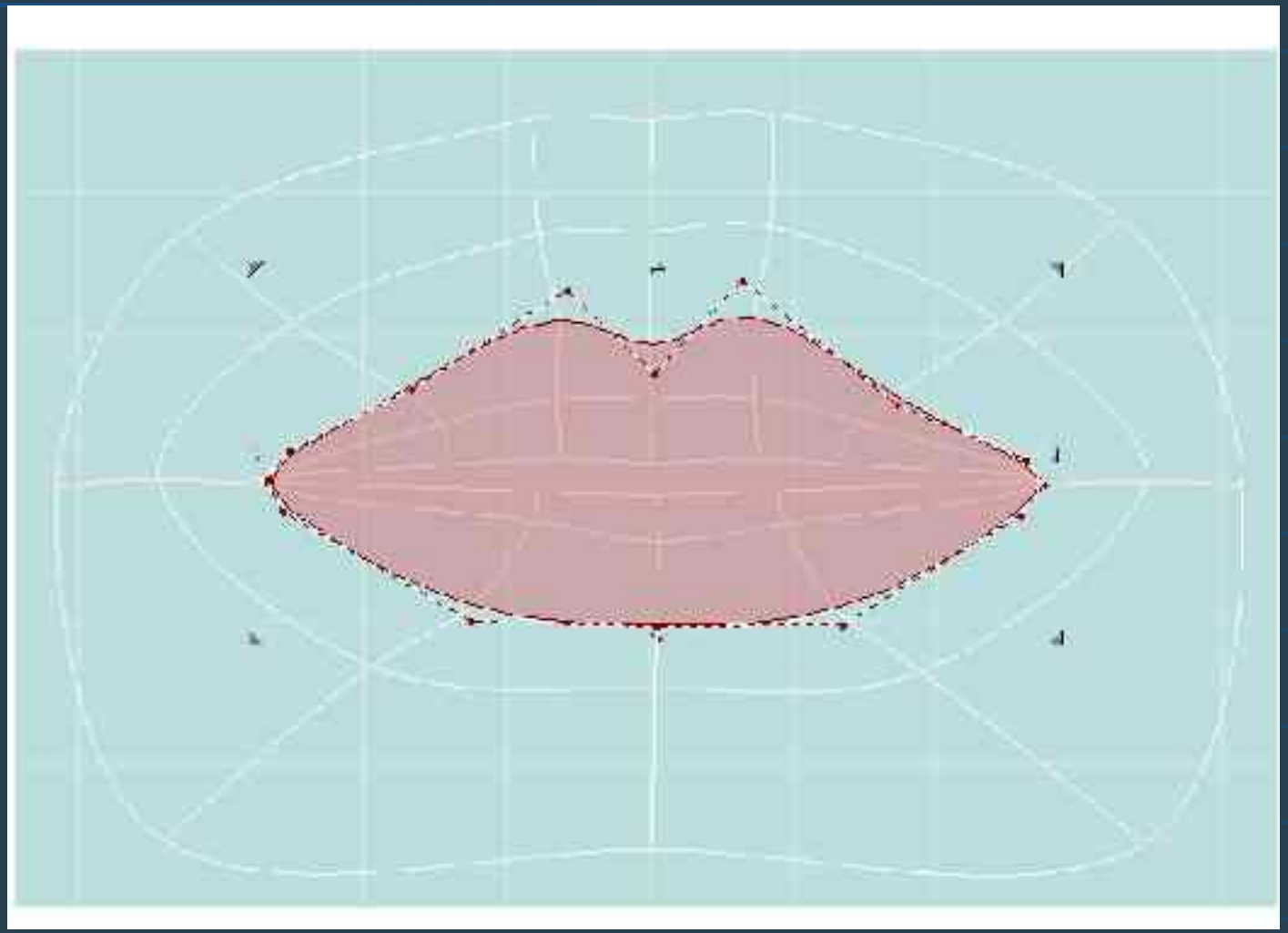


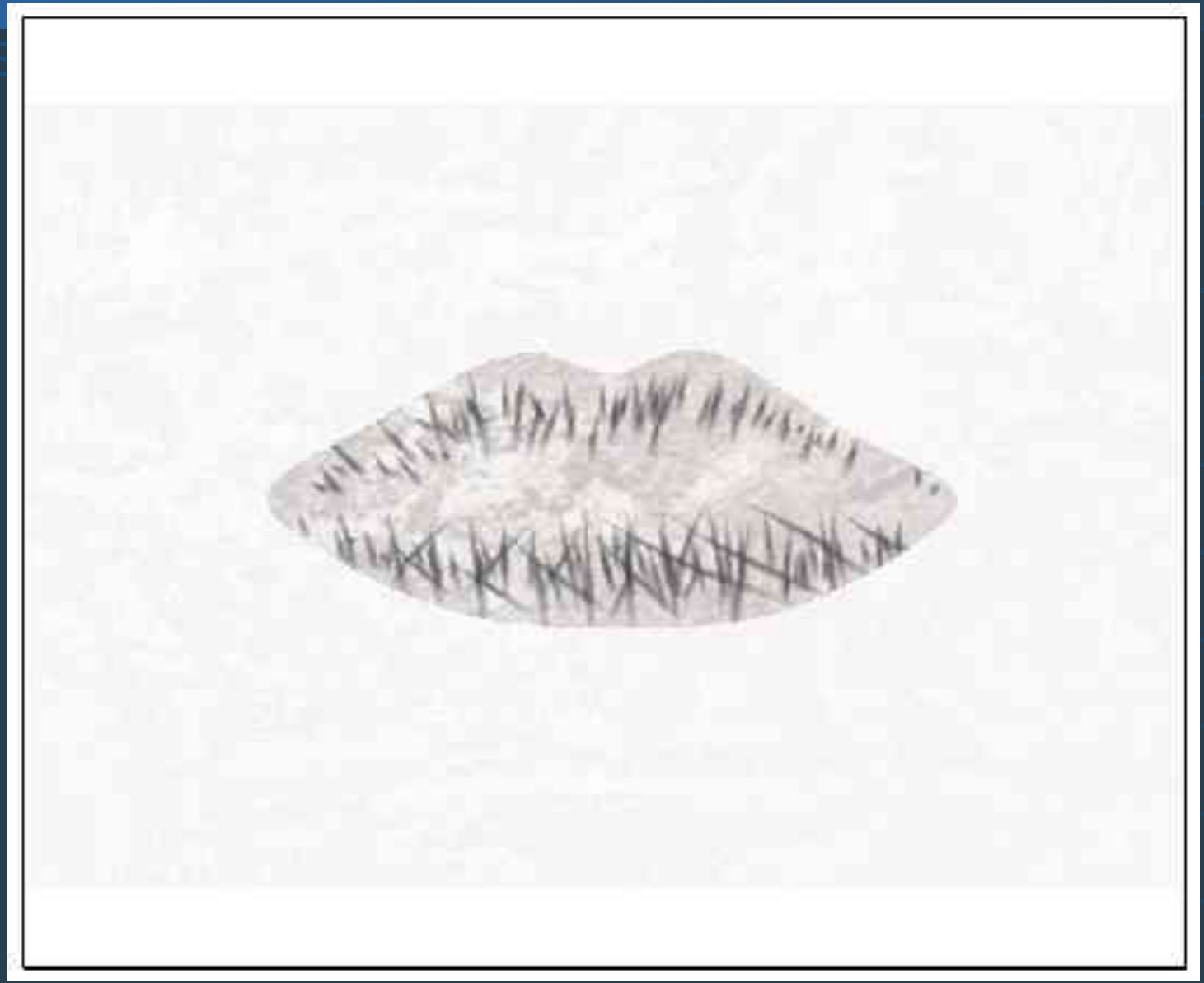
- An alternative tower
- Created using spline-based software

Mapping example : algorithmic

- Algorithmic texture used for colour and bumpmap
- Cylindrical mapping part of the algorithmic texture





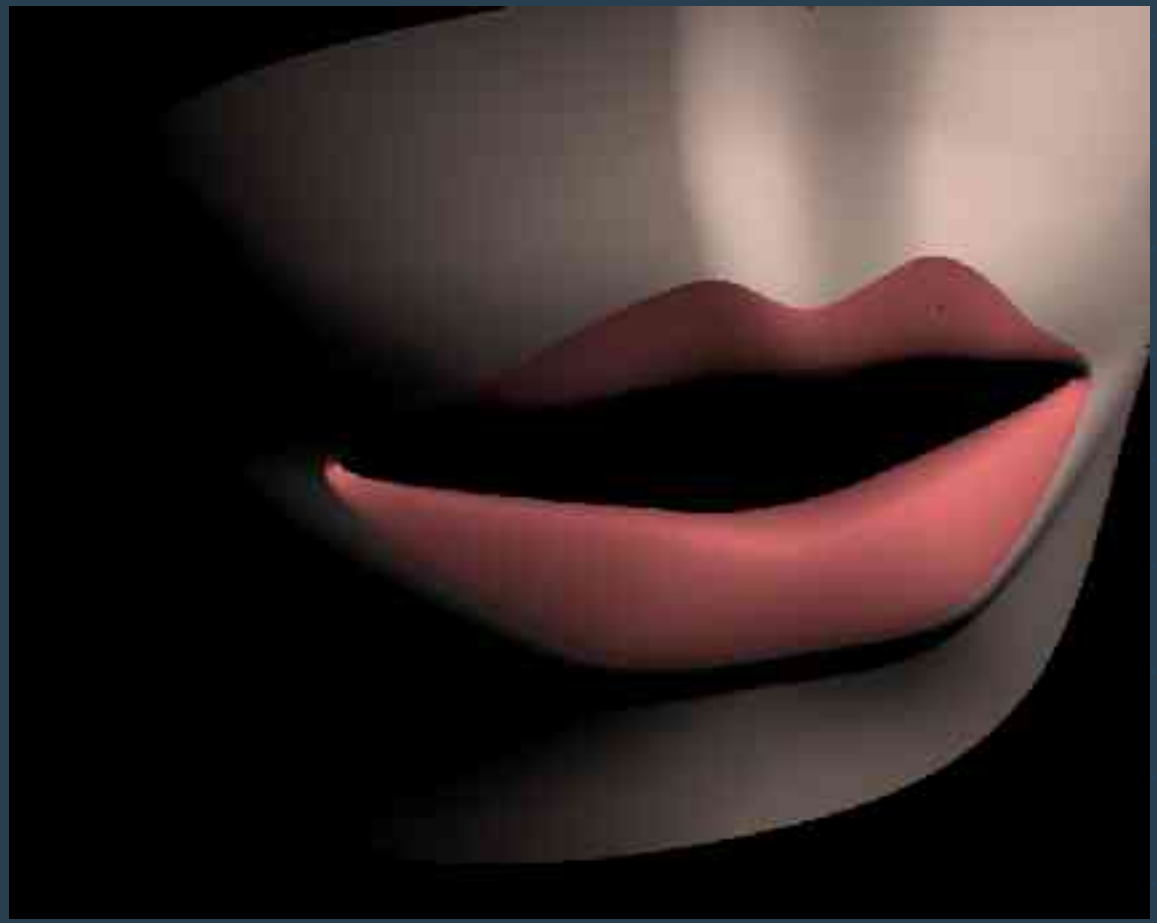


Mapping example: plain model

- Lips created in spline-based software

Mapping example: plain colours

- Assigning colours directly to “patches” (the curved non-linear spline equivalent of polygonal facets)



Mapping example: add colour map

- Colour map added

Mapping example: add bump map

- Bumpmap added

Mapping example: add specularity

- Specularity map added

Texturing

2D Texturing

The problem with 2D

- Difficult to make texture “stick” to animated 2D shape (in vector software)
- Ink&Paint programs require re-painting the text for each new frame

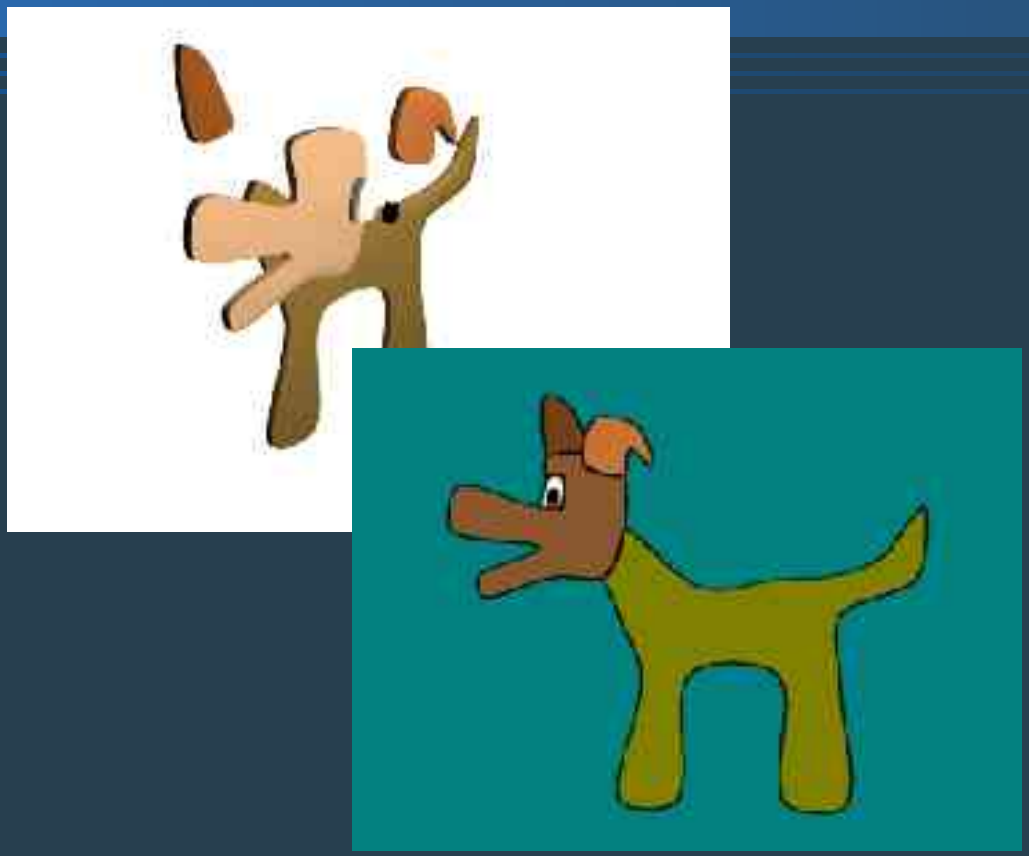
Workaround 1: just don't care

- Allow texture to “show through”
- Okay for some stylised cartoons

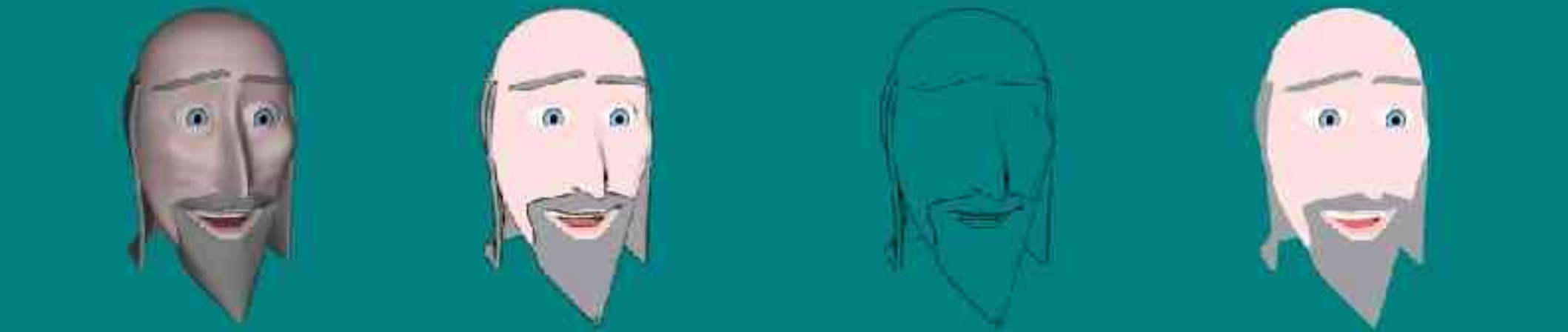
Workaround 2: shapes as texture

- Create the texture as part of the 2D shapes
- Only for limited textures

Workaround 3: 3D software for 2D



- Use your 3D software, but limit the shapes and animation to 2D
- An increasing number of 3D packages have “toon rendering”



Workaround 4: paper puppets

- Move entire pieces of 2D texture

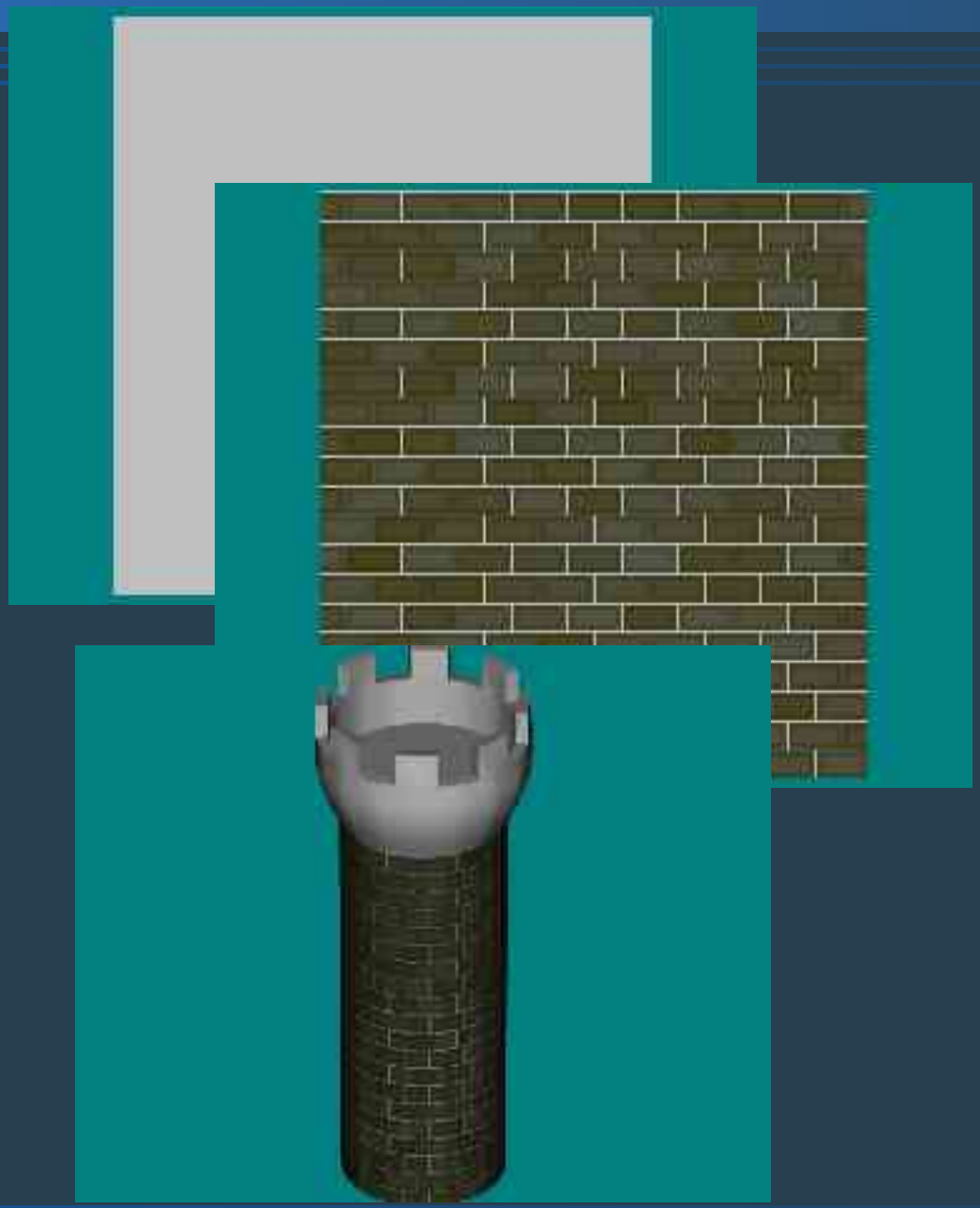
Workaround 5: image warping

- Similar technique to morphing, but without the “cross-fade”

The best solution is often a mix

- Using limited image warping on separate 2D pieces
- Mix of
  - Separate pieces
  - Image warping on each piece

Note to remember:



- An algorithmic texture can be rendered to a bitmap and then used as an image map (for both 3D and 2D)
- Computer animation: if you can't fix it by cheating, you're not cheating enough