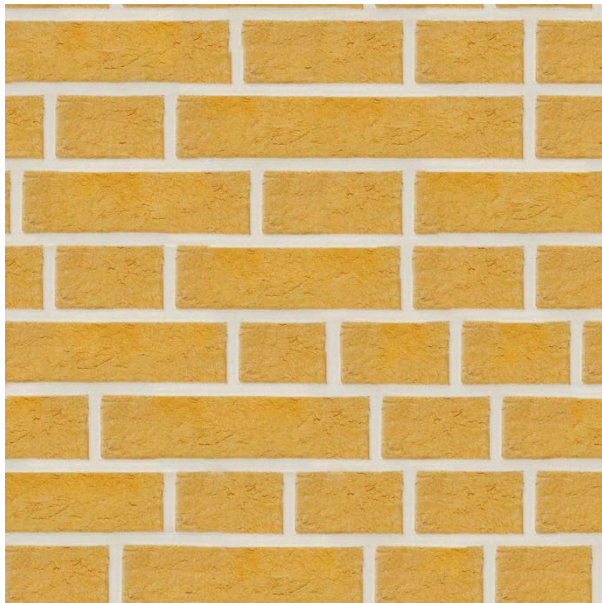# Texture Placement

AR0771 – Week 5

Placing Textures on Geometry

Problem:

A texture is a 2D image

Geometry is 3D (typically)
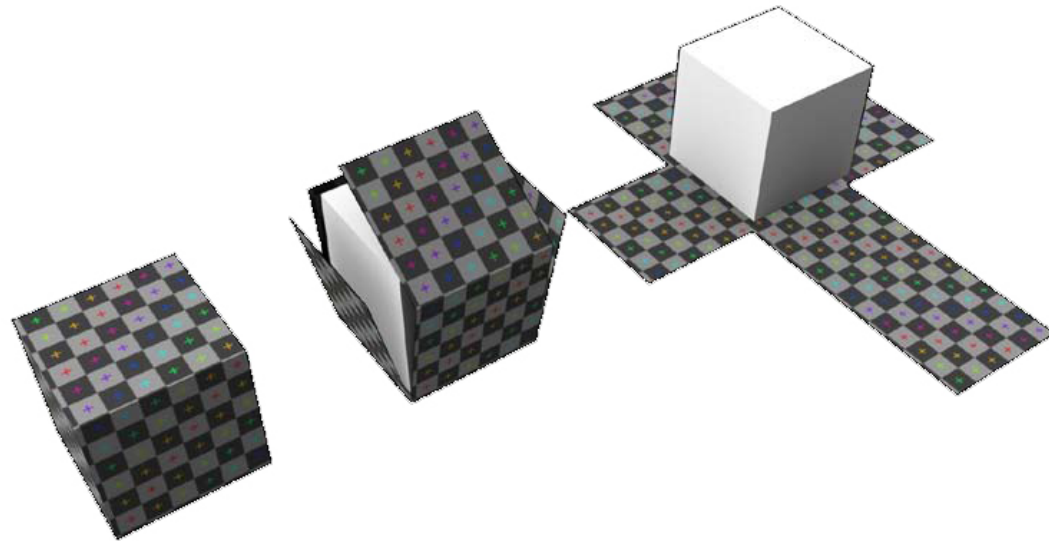

A Texture (2D image)

3D Object with texture

Placing Textures on Geometry

Question:

How is the 2D image displayed on the 3D object?

Texture placement

Two main ways to specify the
relation between textures and geometry:

Per object

- Lots of control
- Takes effort per object
- Can be highly detailed
- Same for all textures
- Independent of object transformation
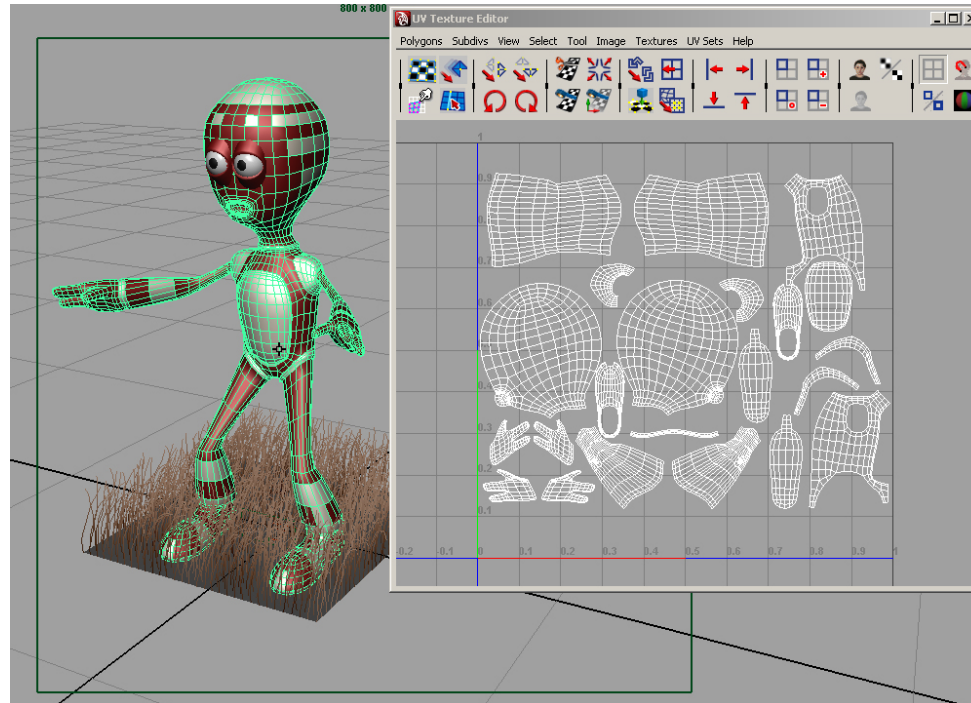(translate, rotation, scale)

Per shader

- Limited control
- Set once, use often
- Limited details
- Can change per texture
- Dependent of object transformation

Per Object texture placement

Per object texture placement
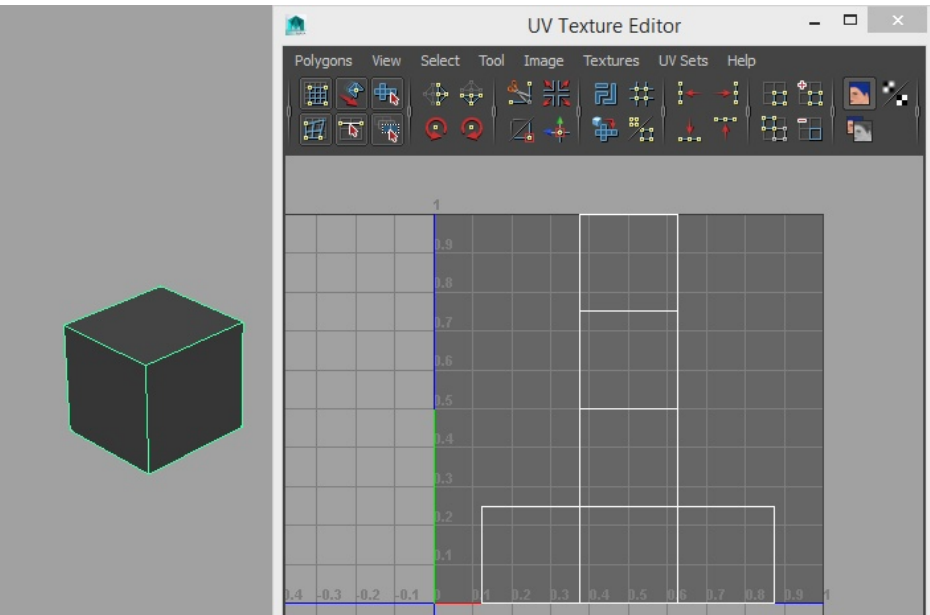is stored in a **UV-Map** for polygons*

» *Window > UV Texture Editor*
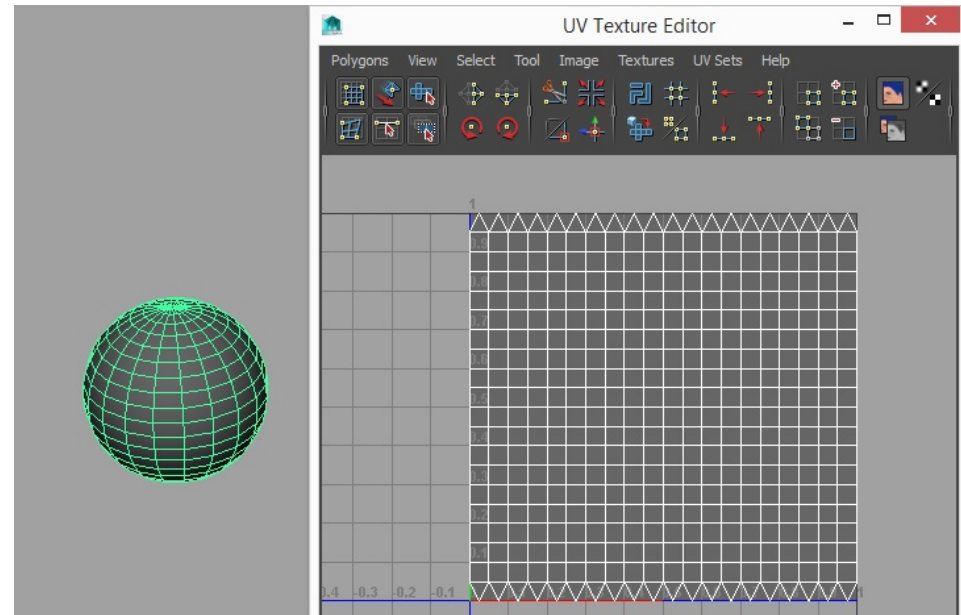

*) NURBS surfaces already have UV coordinates

Default UV-Maps

Polygons have a default UV-Map

Sometimes it's suits your needs by default, but often it does not
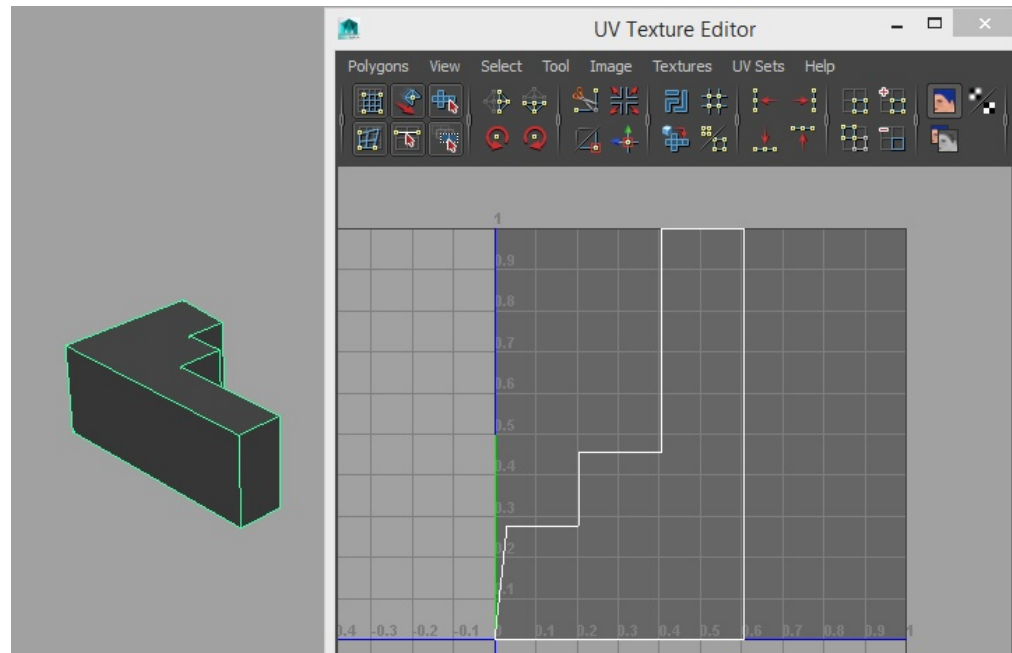

Default UV-Map for a polyCube

Default UV-Map for a polySphere

Default UV-Maps

Polygons have a default UV-Map

Sometimes it's suits your needs by default, but often it does not
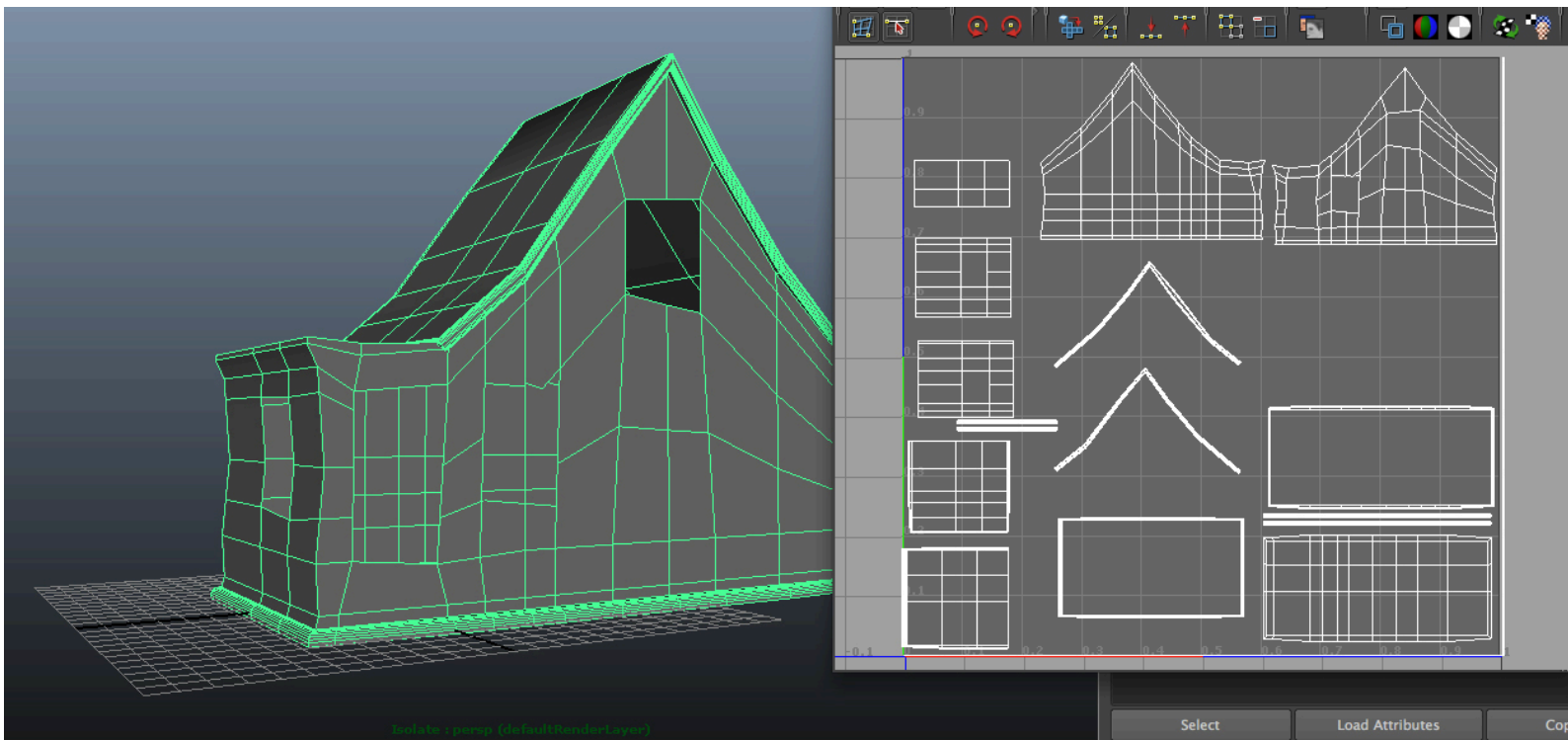

Default UV-Map for an object created with the createPolygon Tool and then extruded

Modifying UV-Maps

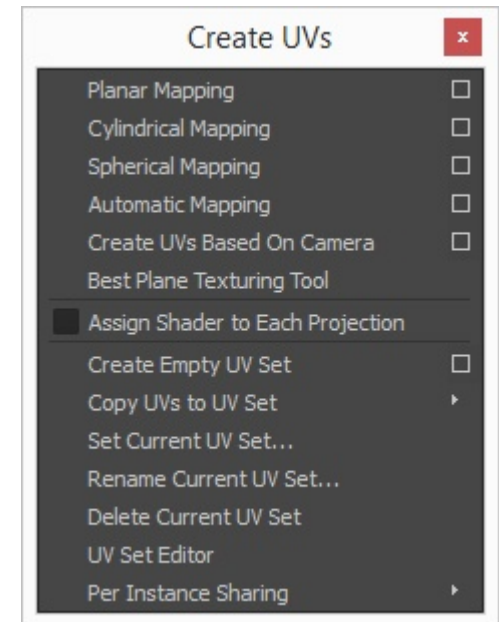You can modify a UV-Map in several ways:
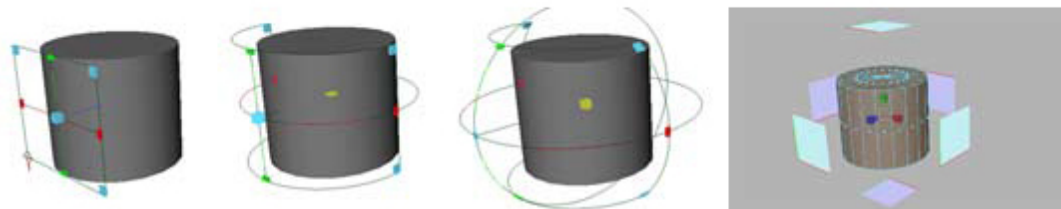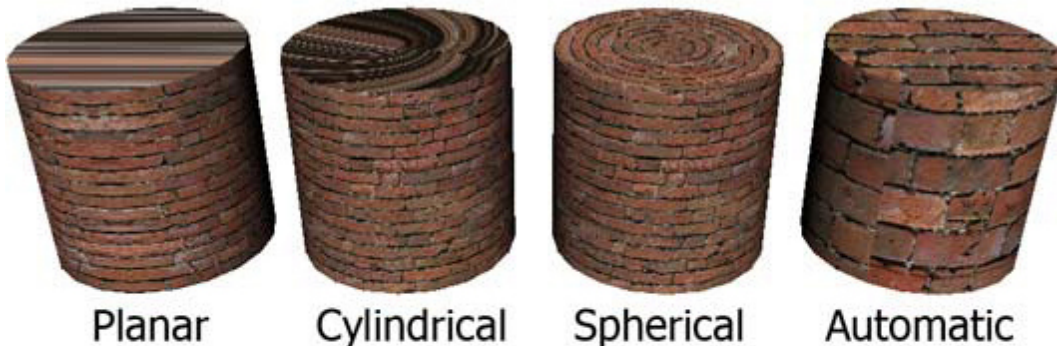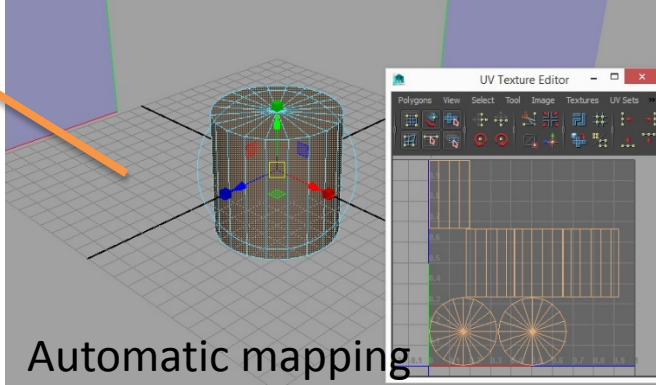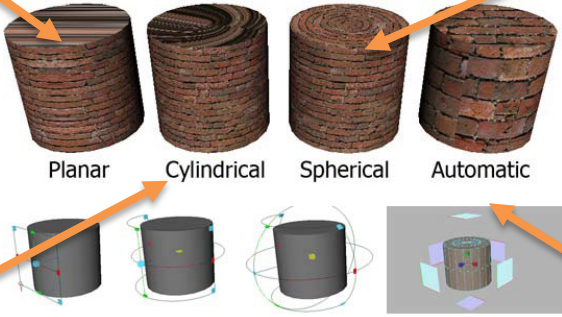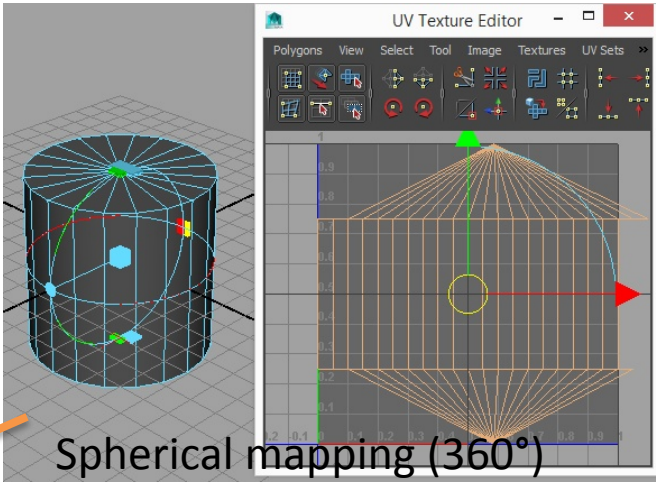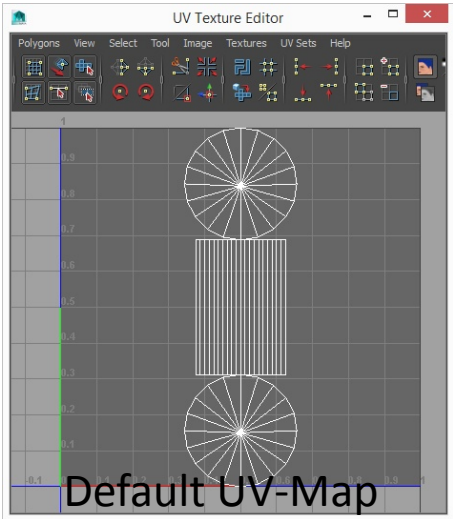
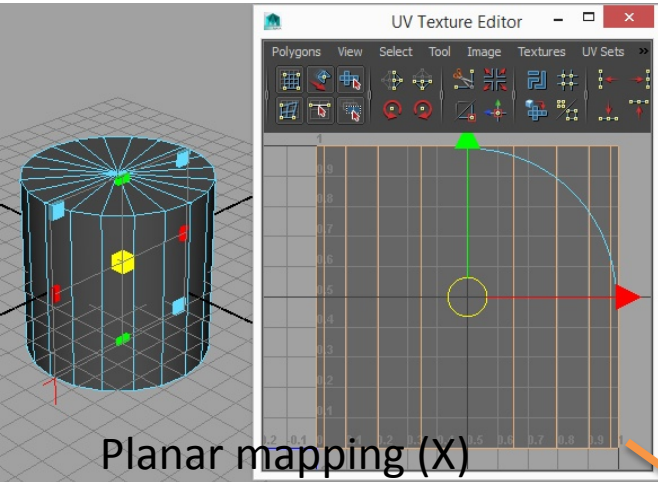- By hand in the UV Texture Editor

Modifying UV-Maps

You can modify a UV-Map in several ways:

- Using the automated Create UVs tools
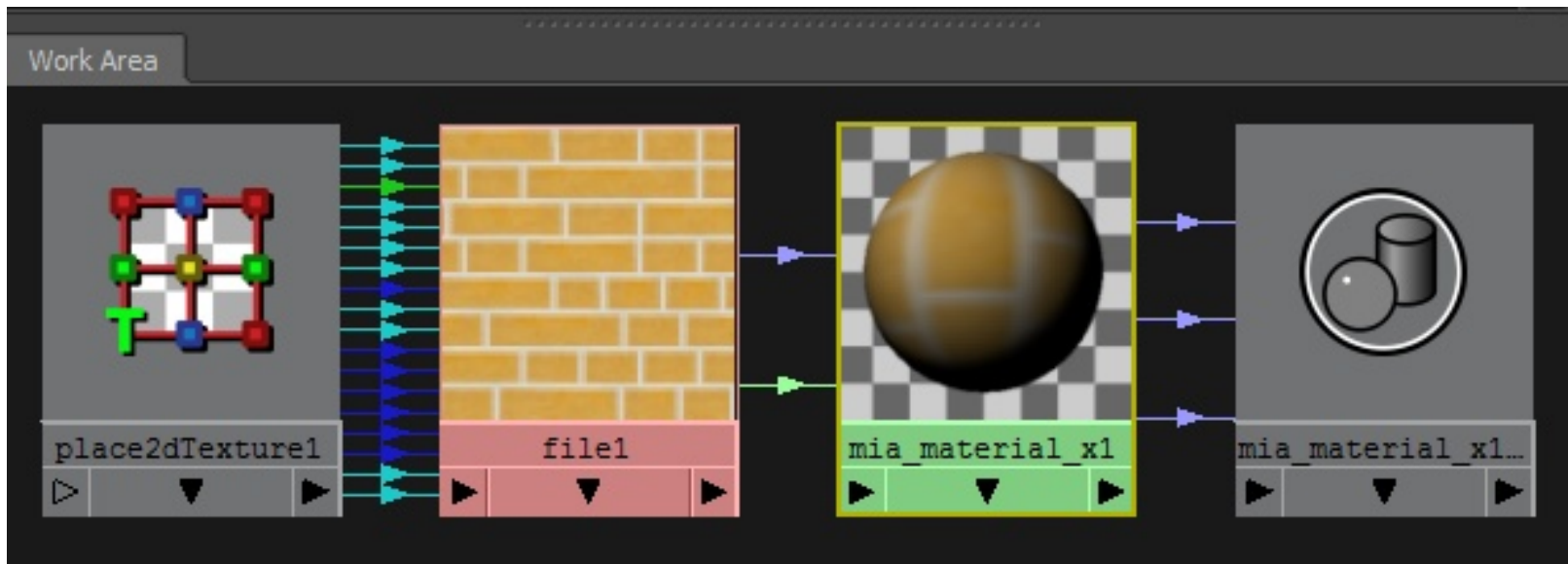 - For the entire object at once
  - Per selected face(s)

Planar   Cylindrical   Spherical   Automatic

Create UV Tools

Default UV-Map

Planar mapping (X)

Spherical mapping (360°)

Cylindrical mapping (360°)

Automatic mapping

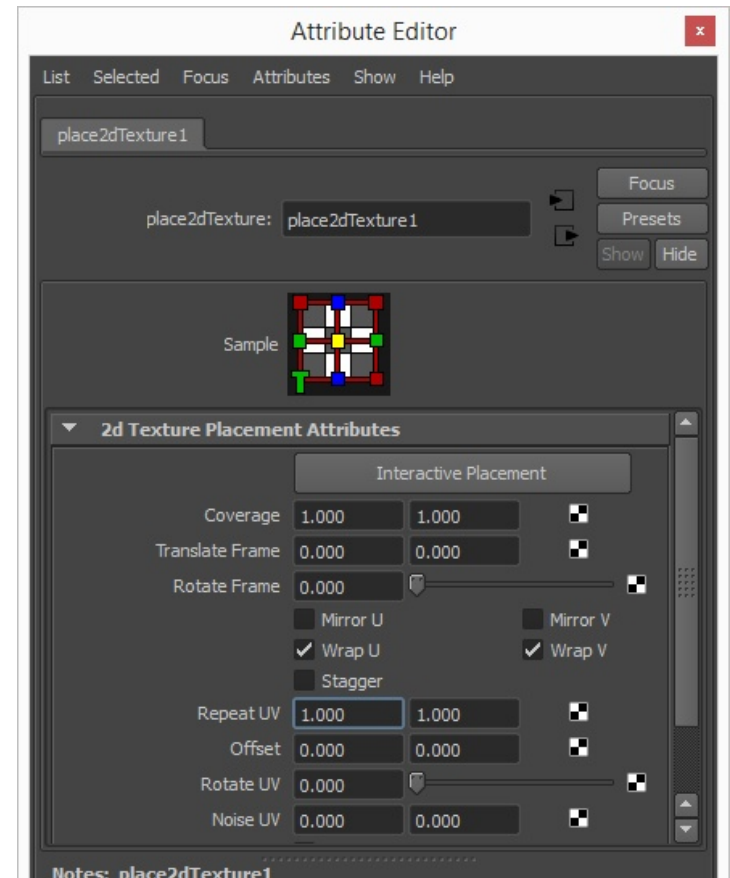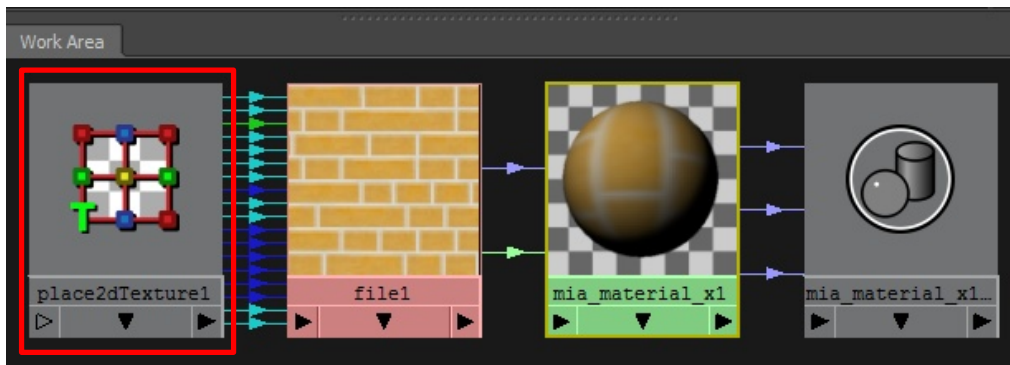Planar   Cylindrical   Spherical   Automatic
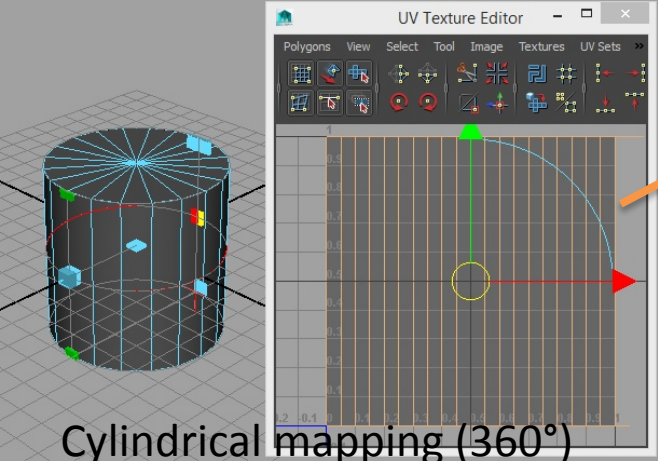
Hypershade

When using the per Object UV-Map,
stuff in the Hypershade is straightforward

Hypershade

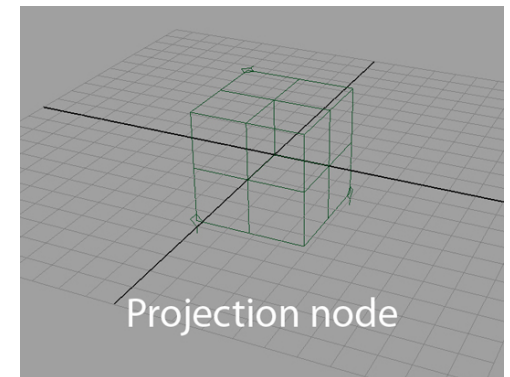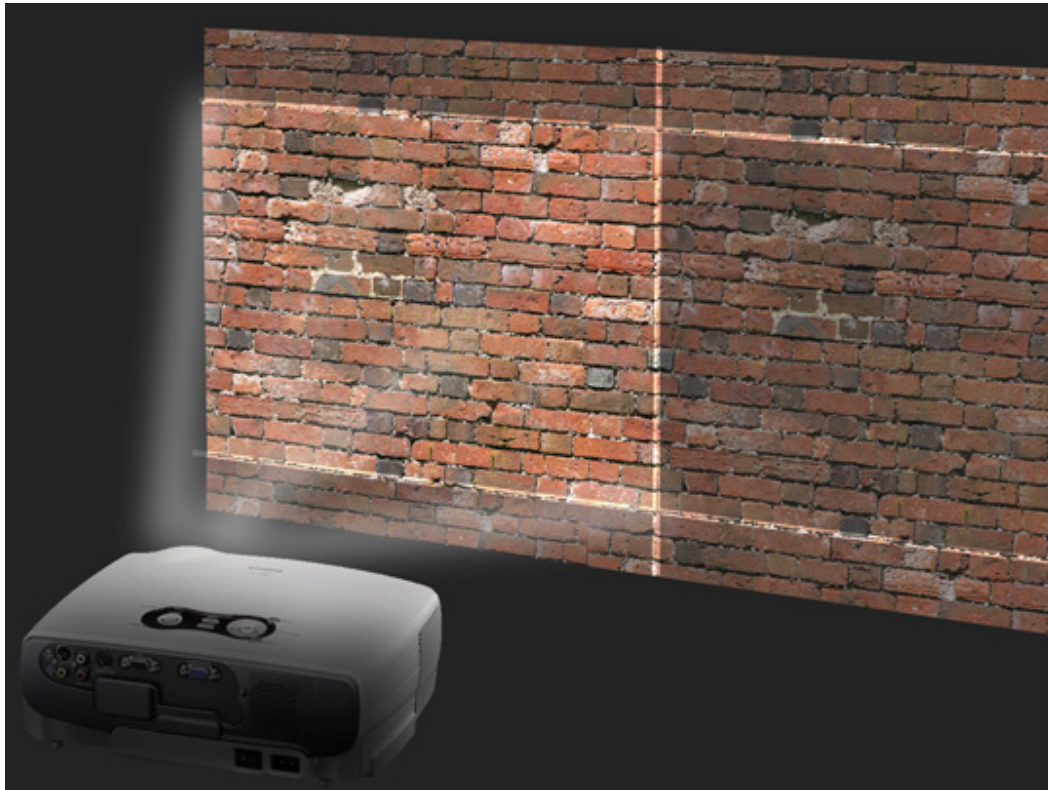You can influence the texture before it's used in the UV-Map through the **place2dTexture** node:

- Repeat
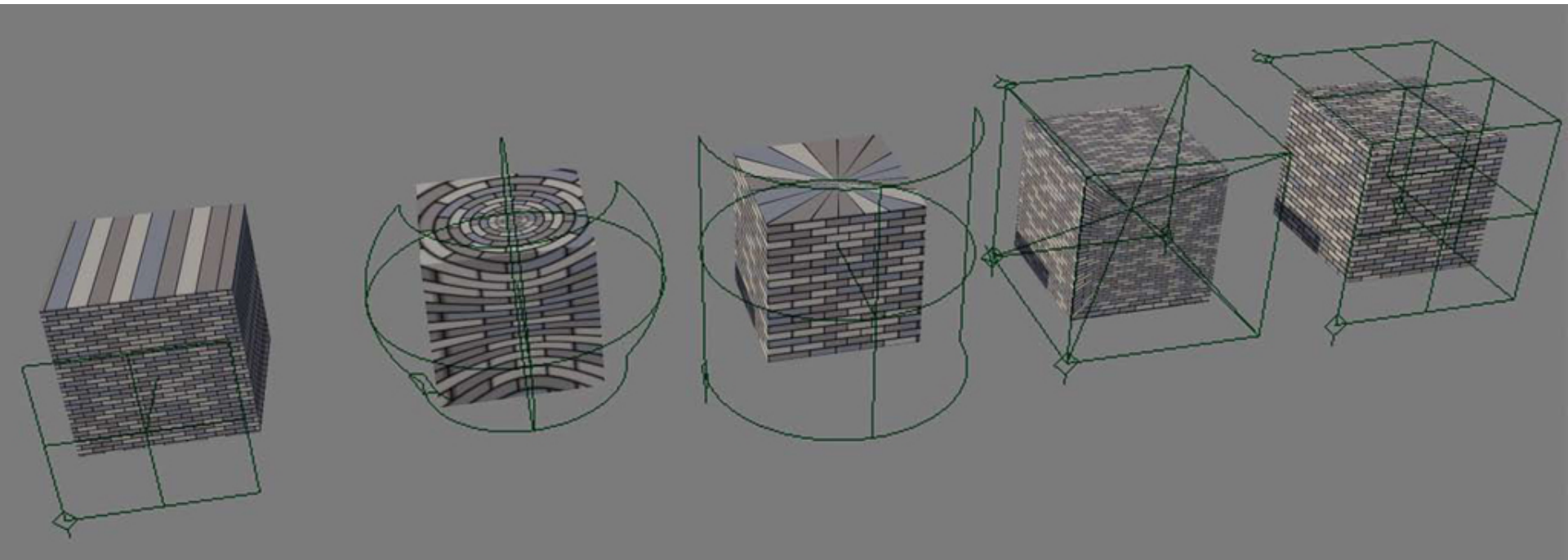- Rotation
- (Offset, noise, …)

Per Shader texture placement

Per object texture placement
is stored in a **projection + placement node**
» *Hypershade*

Projection node

Projection Types

- Similar to the UV Mapping tools, there are several types of projections
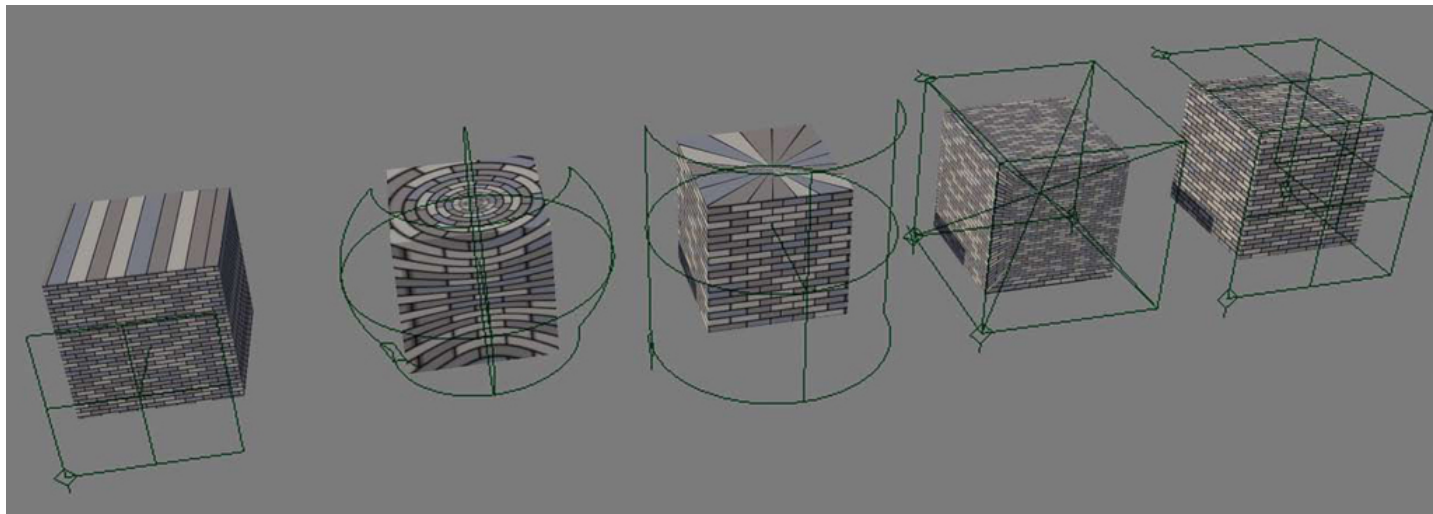

Planar projection   Spherical projection   Cylindrical projection   Concentric & TriPlanar projection
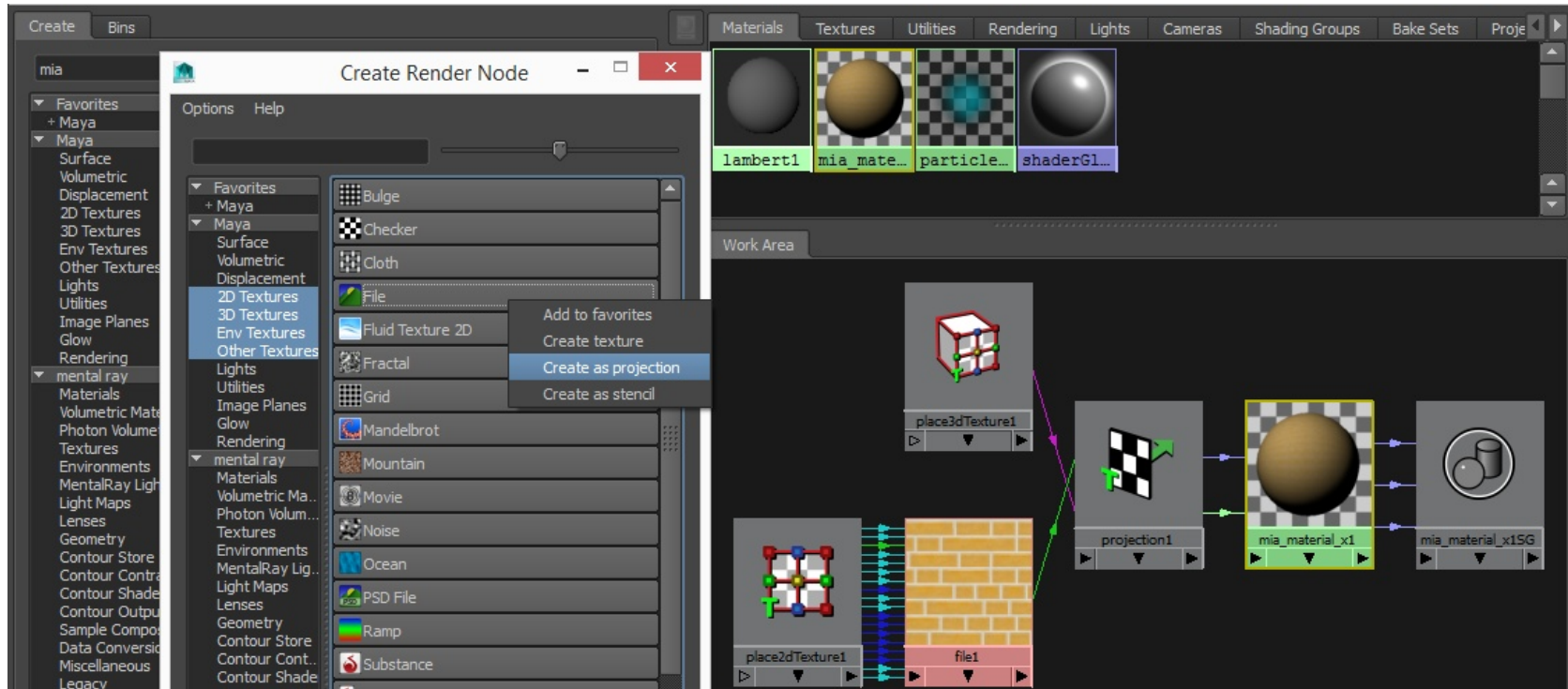
Projection Placement

Each projection node has a 3dPlacement node that determines:
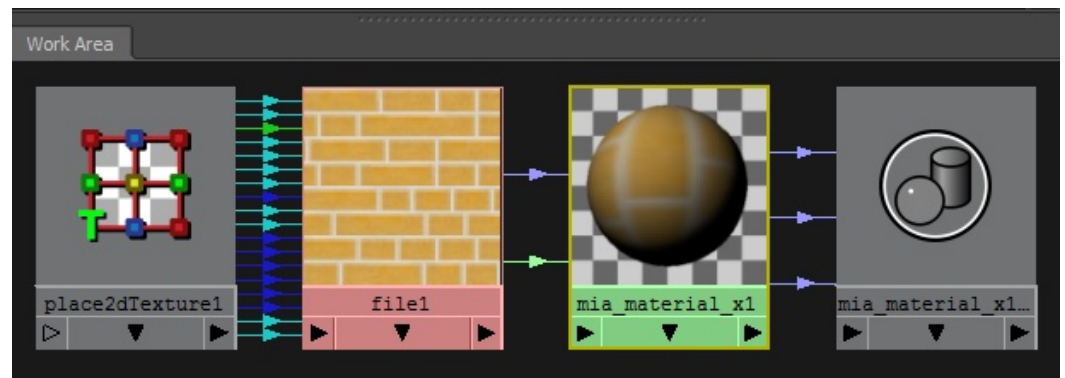
- Position
- Rotation
- Scale

Nodes in Hypershade

For comparison:
Using the per object UV-Map

Conclusion

Texture placement can be determined by

- The object (UV-Map)
- The shader (Projection + Placement node)

As soon as a texture is linked to the shader through a projection node, the object's UV-Map is ignored for that texture.