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)



Create UV Tools



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, ...)



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Per Shader texture placement

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

» Hypershade





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

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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.