

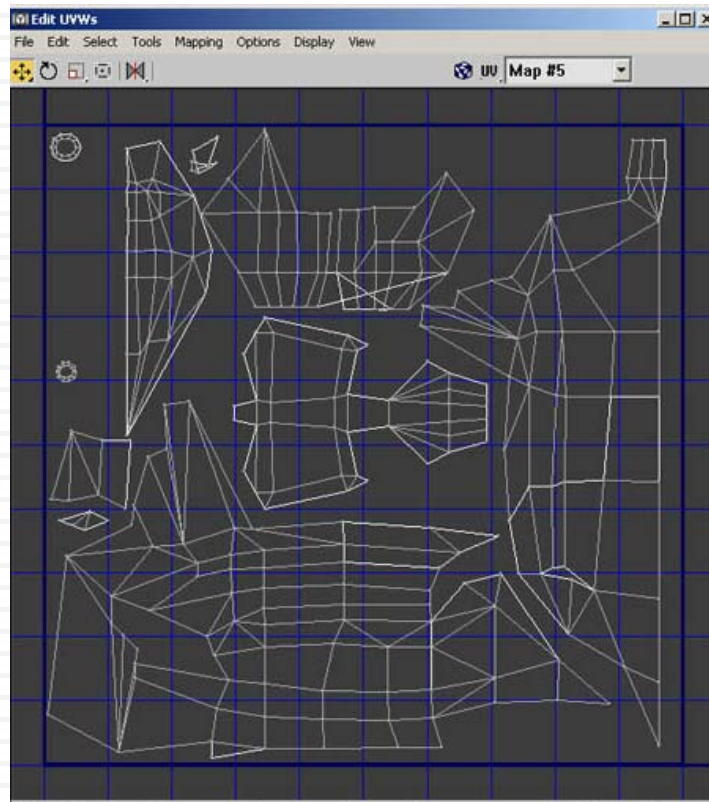
UVW UNWRAPPING – ARCH & DESIGN MATERIALS

Month 2, Lecture 4

Today we are covering:

- When to use UVW Unwrapping
- How to use UVW Unwrapping
- Texture painting in Photoshop
- 2D vs. 3D Materials
- Arch & Design Materials

UVW Unwrapping



Unwrapping UVW Introduction

- What is UVW anyway?
- Difference between UVW Mapping and Unwrapping

UVW UnWrapping – Process

- Why do it?
 - ▣ To create a template from which a texture map can be created in Photoshop.
 - ▣ To get very complex or rich texture maps on 1 object with 1 material
 - ▣ Baking shadows or ambient occlusion maps

UVW UnWrapping – When should it be Used

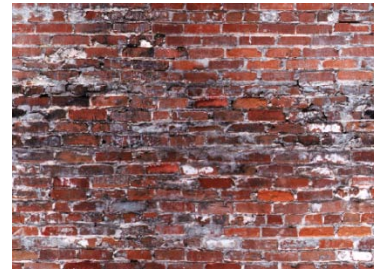
□ UVW Mapping

- ▣ Tiling textures
- ▣ Textures that cover an entire object
- ▣ Single colored objects
- ▣ Simple elements of complex geometry
- ▣ SUB Object mapping will suffice (per polygon)
- ▣ Procedurals

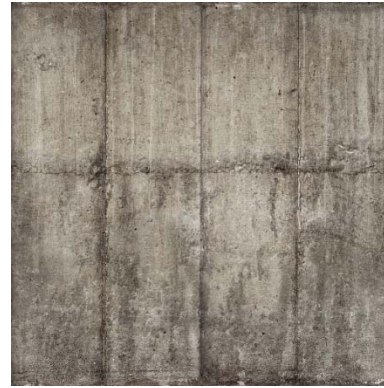
□ UVW Unwrapping

- ▣ Textures that have specific areas for specific geometry
- ▣ Textures that need to be created with a template
- ▣ Detailed bitmaps
- ▣ Complex geometry that is contiguous
- ▣ Real-time / Video game graphics

Tiling Textures – UVW Mapping



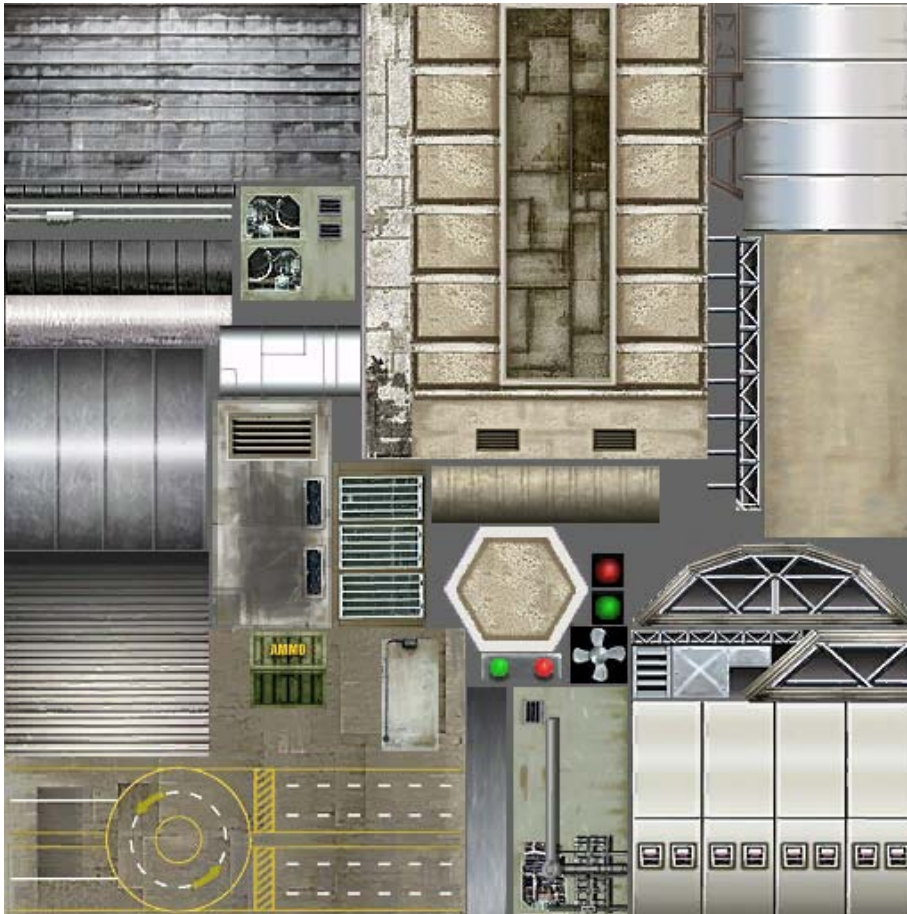
Tiling Textures – UVW Mapping



Textures that are a solid color – UVW Unwrap



Detailed bitmaps – Unwrap UVW



Textures w/ specific areas for specific geometry- Unwrap



Textures that need to be created with a template – UVW Unwrap



Tools Used in UnWrapping

- 3dsMax > UVW UnWrap Modifier
- Photoshop > all tools
- TestMap.jpg



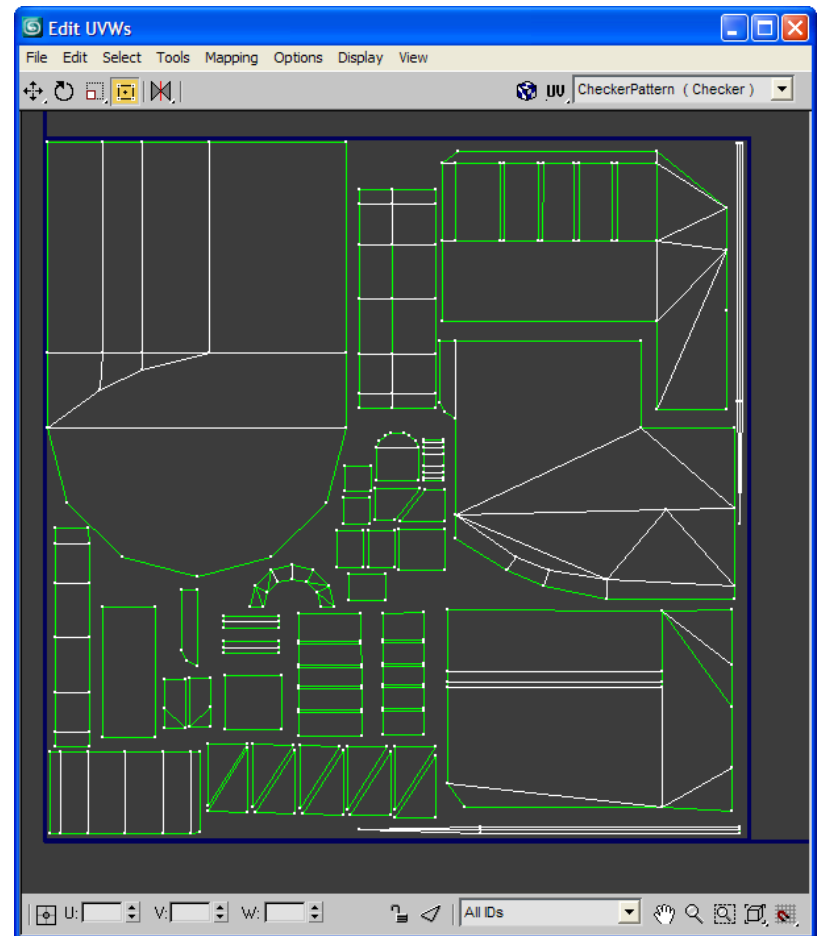
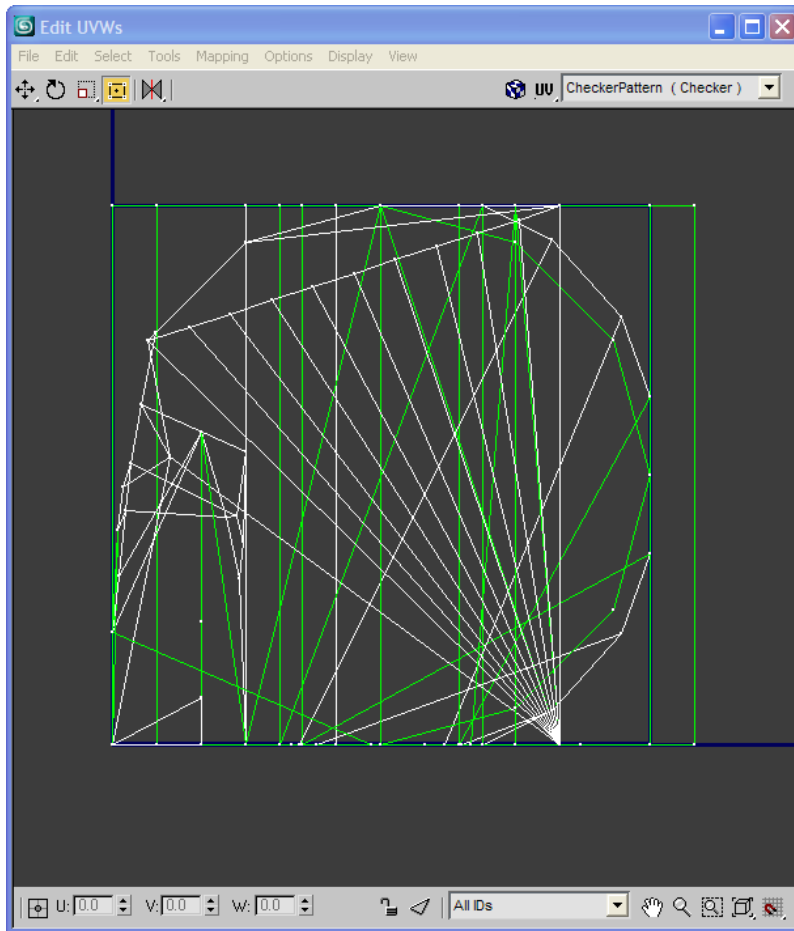
UVW UnWrapping – Process

- Step 1: Unwrap the object
- Step 2: Prioritize the UV's
- Step 3: Repack the UV Space
- Step 4: Export template and Paint
- Step 5: Put material/texture map back on object

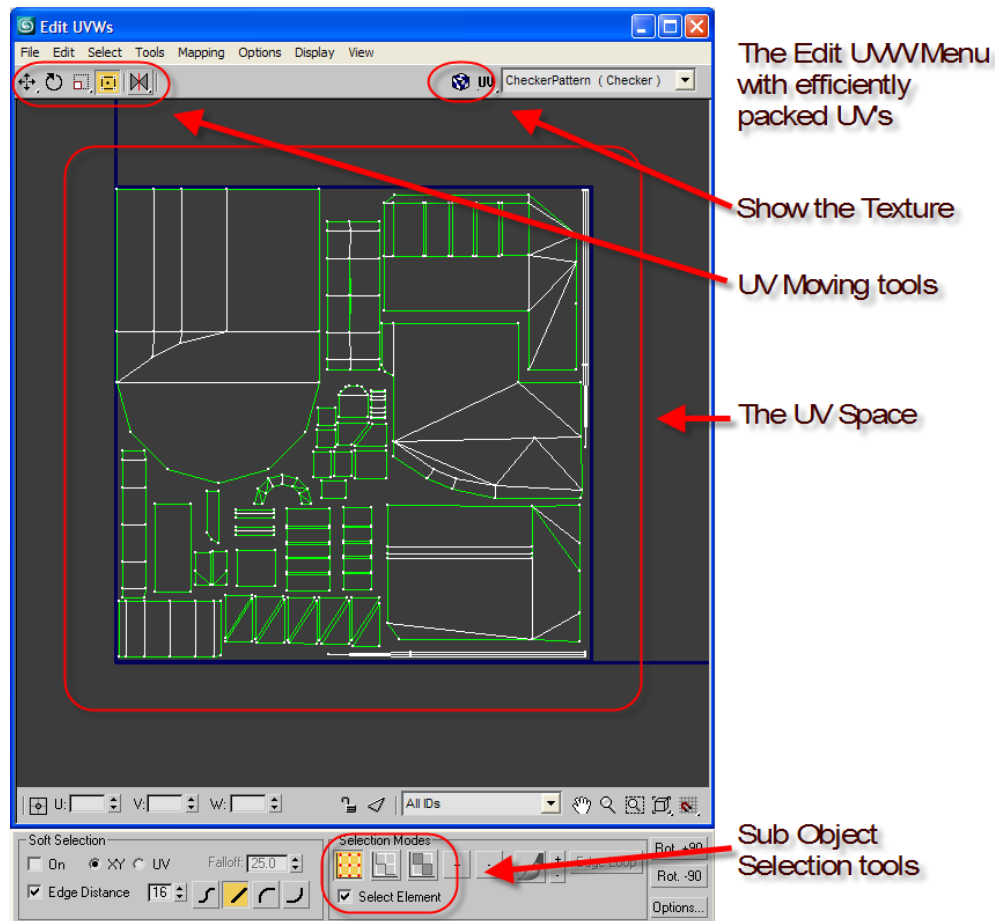
From this...

...to

this



Edit UVW Interface



Step 1: Unwrap the Object

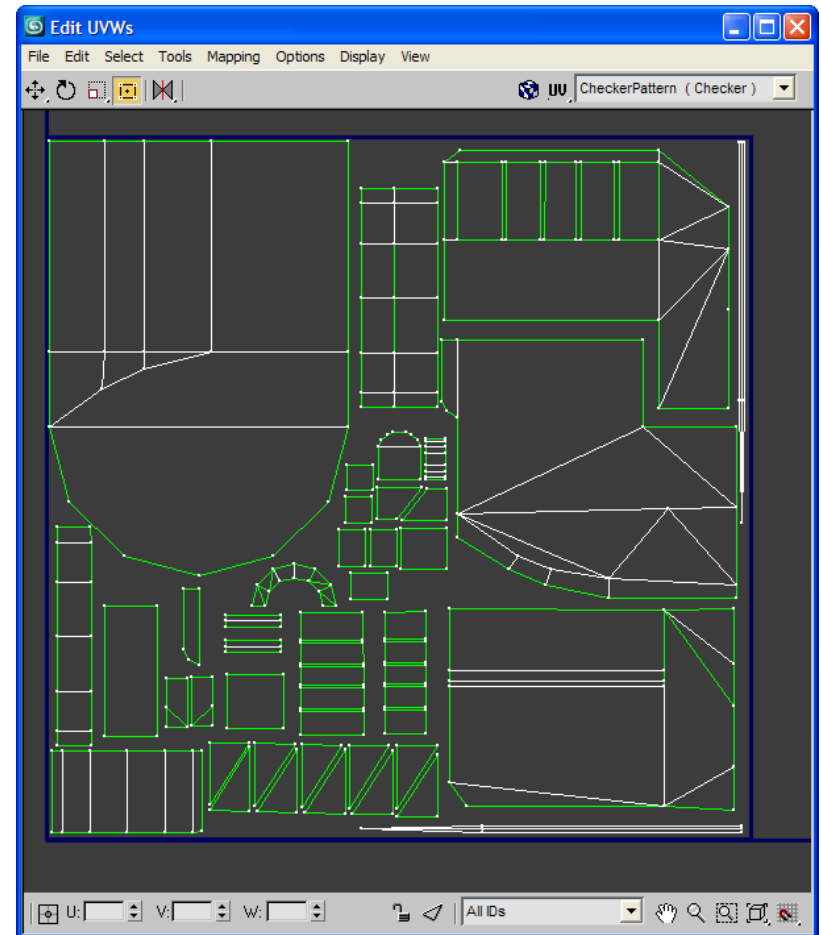
1. Choose the most obviously visible surface area (or the area that will be a specific material)
2. Select faces
3. Peel the UV's off
 - i. Planar Mode
 - ii. Align (XYZ, Best)
 - iii. Exit Planar Mode
 - iv. Set Aside
 - v. Repeat from Step#2

Step 2: Prioritize the UV's

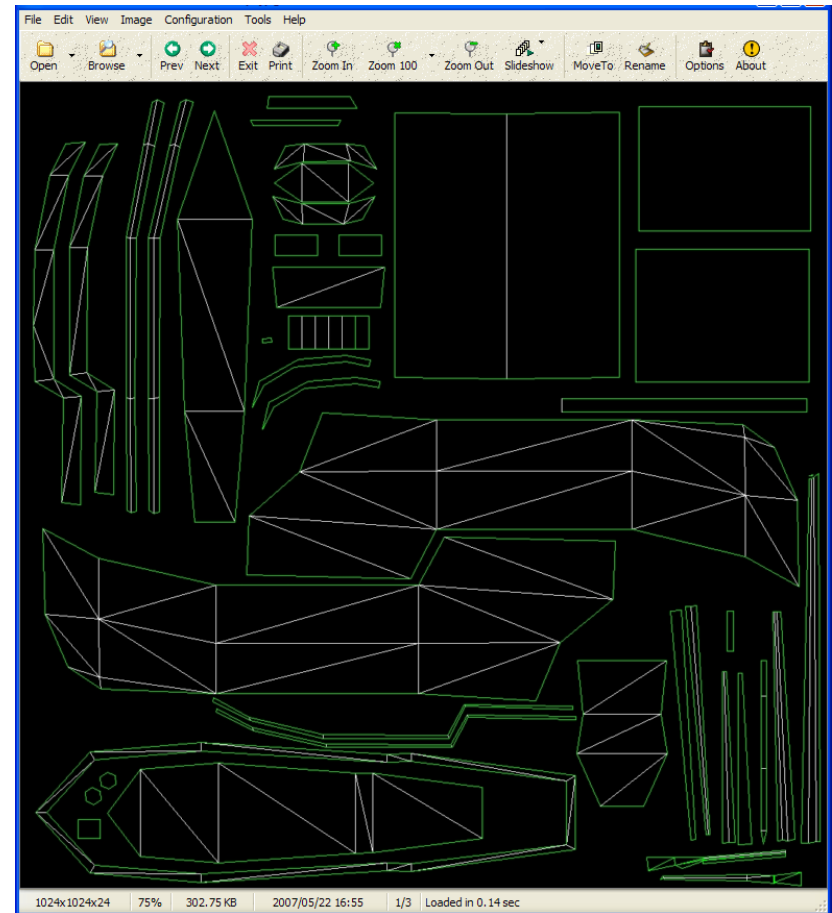
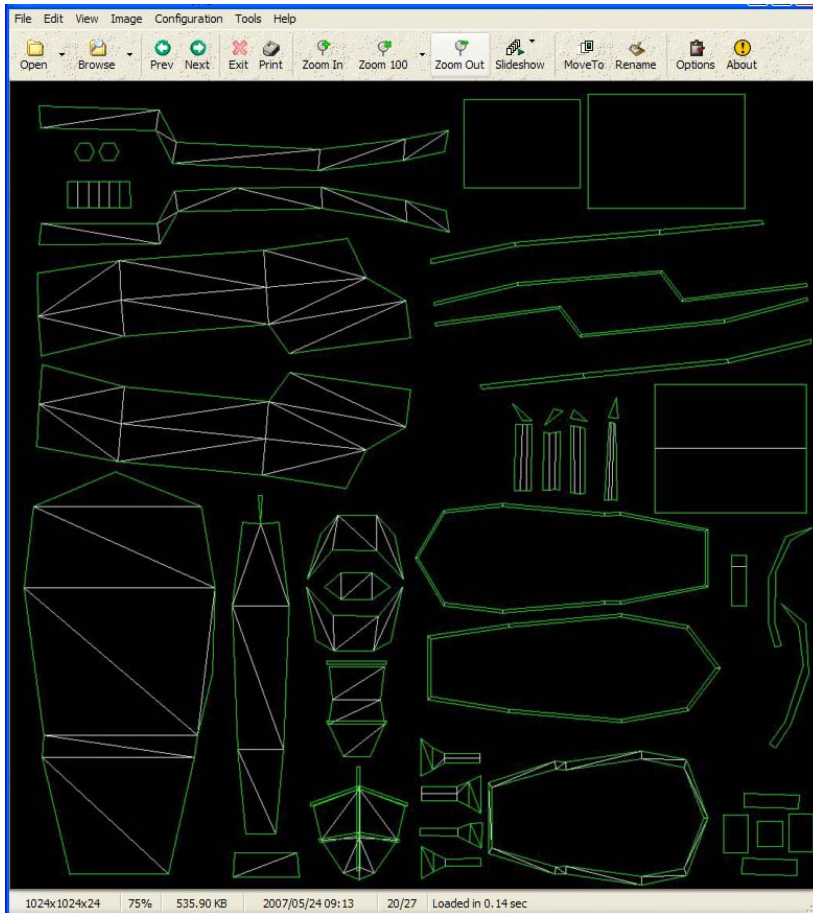
- Prioritize UV's
 - ▣ Give priority to UV's that need the most texture detail
 - ▣ UV's that need detail get “real estate” priority in UV space
 - ▣ Use the TestMap.jpg to judge spacing and clarity

Step 3: Repack the UV Space

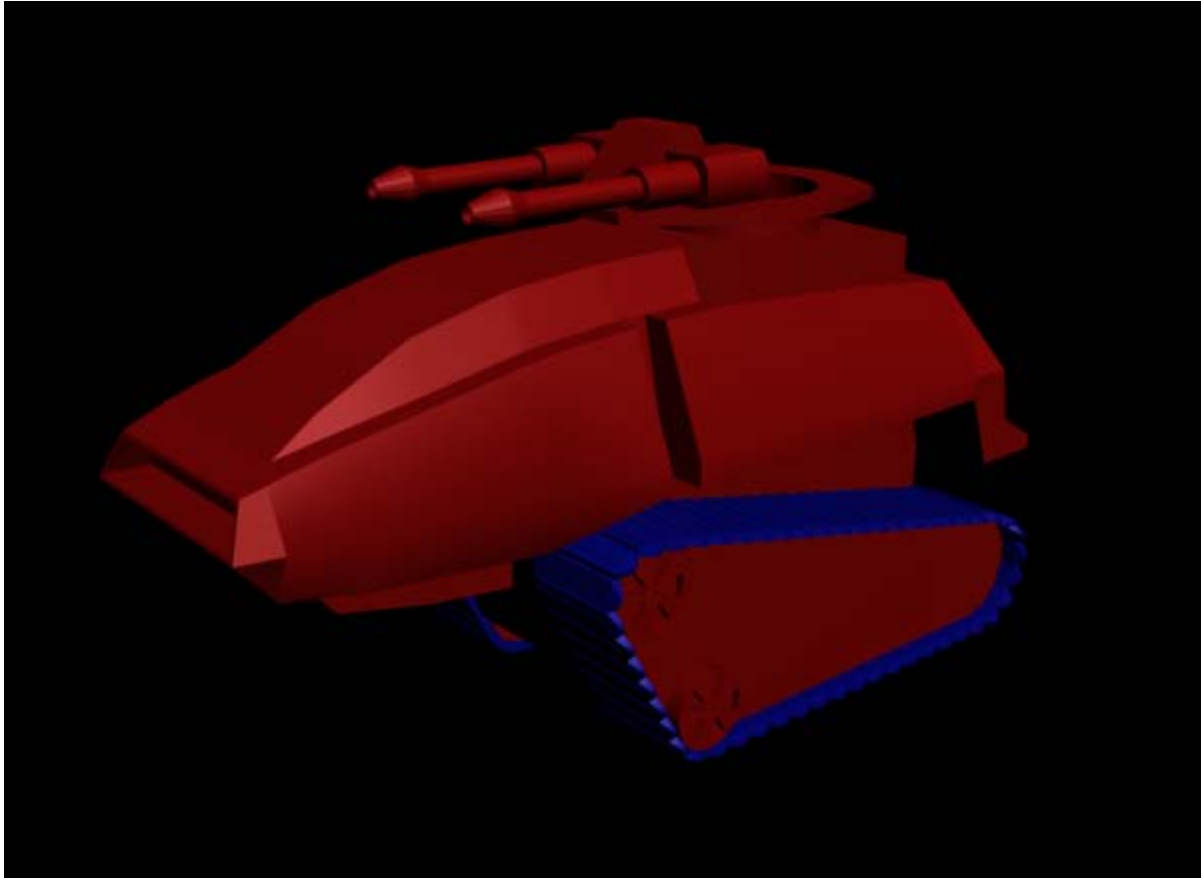
- Pack as tightly as possible to maximize real estate
- Give important areas more space than unimportant areas



Which one is better?



Here's the model...





2D vs. 3D Maps

2D Map Types

- ❑ BMP, JPG, TGA, PNG
- ❑ HDR, PSD
- ❑ RLA, RPF
- ❑ IFL (Image File List)
- ❑ MPG, AVI, MOV
- ❑ Lots More With Plugins

When To Use 2D Maps

- ❑ Man-made Patterns
- ❑ Realtime Applications
- ❑ Specific Objects
- ❑ Know Your Strengths

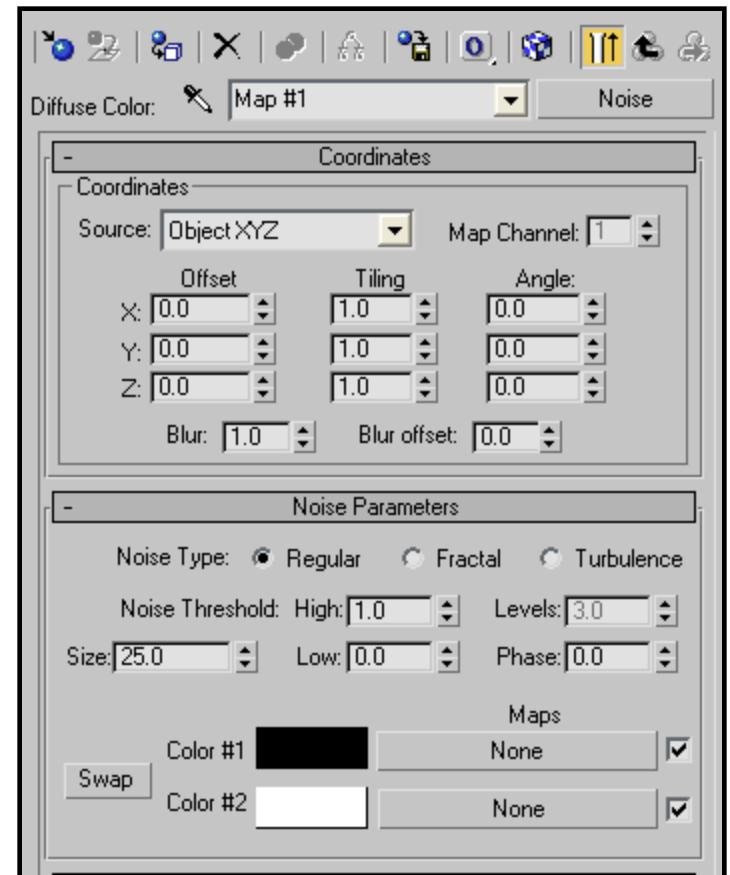


Procedural(3D) Maps

- 3D maps are patterns generated procedurally in three dimensions.
- Random/Chaotic Patterns
- Not specific, but more natural
- Longer Render Times
- Much Higher Detail
- More Combinations
- Don't have to worry about tiling

3D Map Coordinates

- ❑ Material Editor Coordinates
- ❑ World Or Object XYZ



3D Maps

- Cellular: Generates a cellular pattern that's useful for a variety of visual effects, including mosaic tiling, pebbled surfaces, and ocean surfaces.
- Dent: Generates three-dimensional bumps over a surface.
- Falloff: Generates a value from white to black based on the angular falloff of the face normals on the surface of the geometry. The Falloff map provides greater flexibility when creating opacity falloff effects. Other effects include Shadow/Light, Distance Blend, and Fresnel.
- Marble: Simulates the grain of marble with two explicit colors and a third intermediate color.
- Noise: Noise is a turbulence pattern in three dimensions. Like Checker in 2D, it is based on two colors, either of which can be mapped.
- Particle Age: Alters the color (or map) of a particle based on the particle's life.
- Particle Mblur: (MBlur is short for Motion Blur.) Alters the opacity of the leading and trailing ends of particles based on their rate of movement.
- Perlin Marble: An alternative, procedural marble map with a turbulence pattern.
- Planet: Simulates the contours of a planet as seen from space.
- Smoke: Generates fractal-based turbulence patterns to simulate the effects of smoke in a beam of light, or other cloudy, flowing mapping effects.
- Speckle: Generates a speckled surface for creating patterned surfaces that can simulate granite and similar materials.
- Splat: Generates a fractal pattern similar to splattered paint.
- Stucco: Generates a fractal pattern similar to stucco.
- Waves: Creates watery or wavy effects by generating a number of spherical wave centers and randomly distributing them.
- Wood: Creates a 3D wood grain pattern.

Arch & Design Materials



Arch & Design Materials In Short

- Stands for Architectural and Design Materials
- Designed to make architectural visualizations look better and be easier to create
- Must be using Mental Ray!!!
- Have special features including: self-illumination, advanced reflectivity and transparency, ambient occlusion settings, and the ability to round off sharp corners during rendering

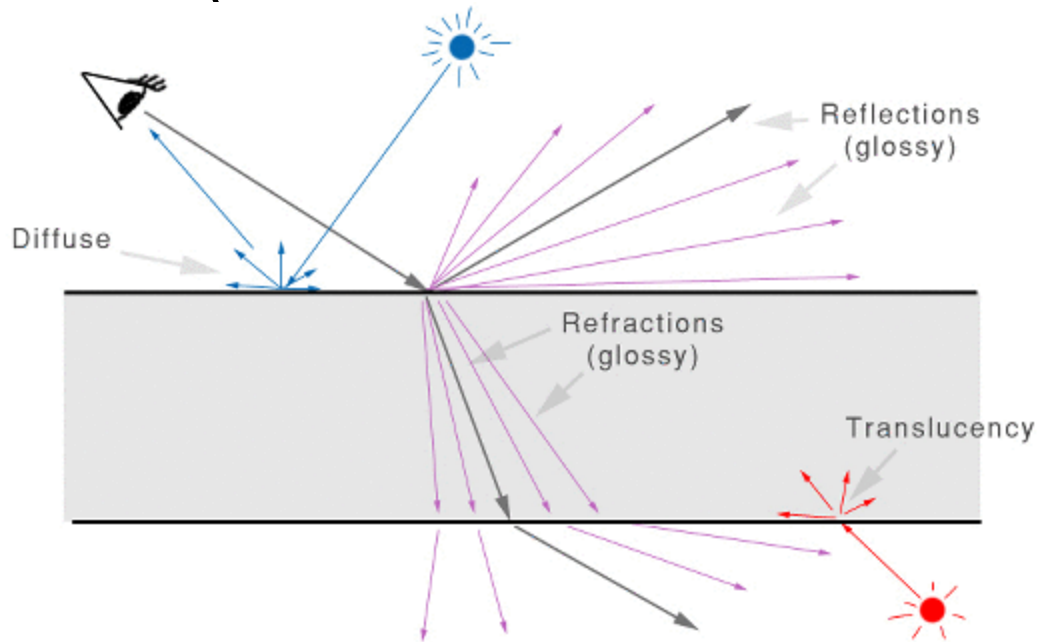
Arch & Design Materials in not-so-short

- *Templates* - allow fast access to settings combinations for common materials.
- *Physically accurate* - impossible to create shaders that break the laws of physics.
- *Tweakable BRDF* (bidirectional reflectance distribution function) – user defined reflectivity depends on angle.
- *Transparency* - “Solid” or “thin” materials: transparent objects such as glass can be treated as either solid (refracting, built out of multiple faces) or thin (nonrefracting, can use single faces).
- *Round corners* - simulate chamfers to allow sharp edges to still catch the light in a realistic fashion.
- *Indirect Illumination control* - set the final gather accuracy or indirect illumination level on a per-material basis.
- *Oren-Nayar diffuse* - allows “powdery” surfaces such as ceramic and clay.
- *Ambient Occlusion* - for contact shadows and enhancing small details.
- *Waxed floors, frosted glass and brushed metals* - all fast and easy to set up

Arch & Design Shader: how it works

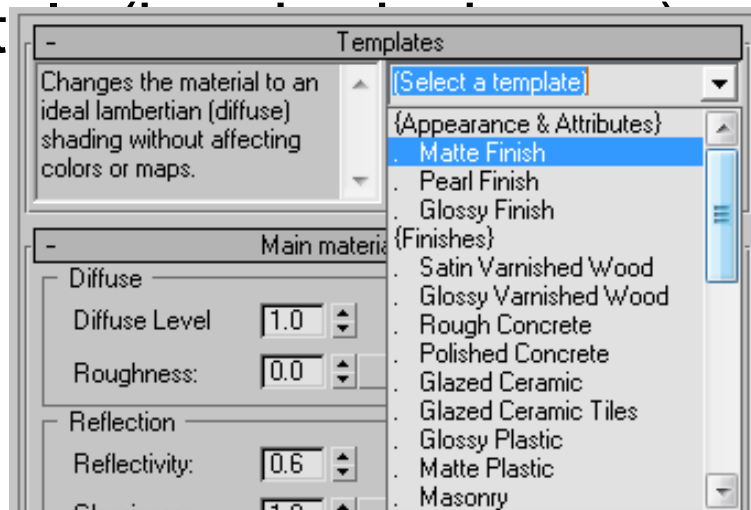
3 Components:

- *Diffuse* - diffuse channel
- *Reflections* – glossy reflections (and highlights).
- *Refraction* – glossy transparency (and translucency)



Templates

- Huge variety of pre-made materials to use or alter
- Includes:
 - ▣ Matte, Pearl or Glossy Finishes
 - ▣ Transparent materials (glass, water, plastic)
 - ▣ Metal



Reflectivity

- Combines specular and reflections
- Glossiness controls to define surface (highest is 1.0)

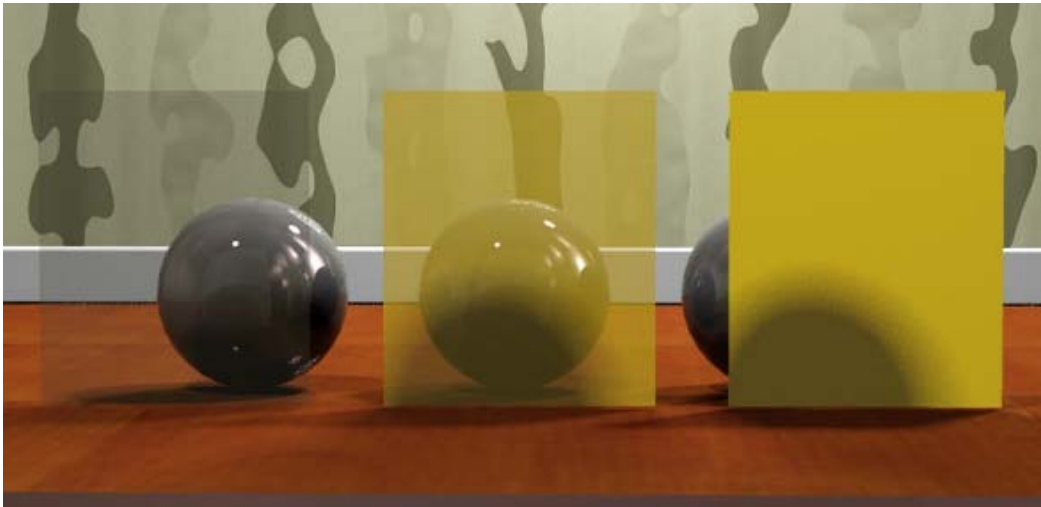


BRDF- Reflectivity and Angle

- In the real world, the reflectivity of a surface is often determined by the angle you are viewing it
- Bidirectional Reflectance Distribution Function: way to define how much a material reflects when seen from various angles

Transparency & Translucency

- Level of refraction (does light pass through object)



Transparency & Thickness

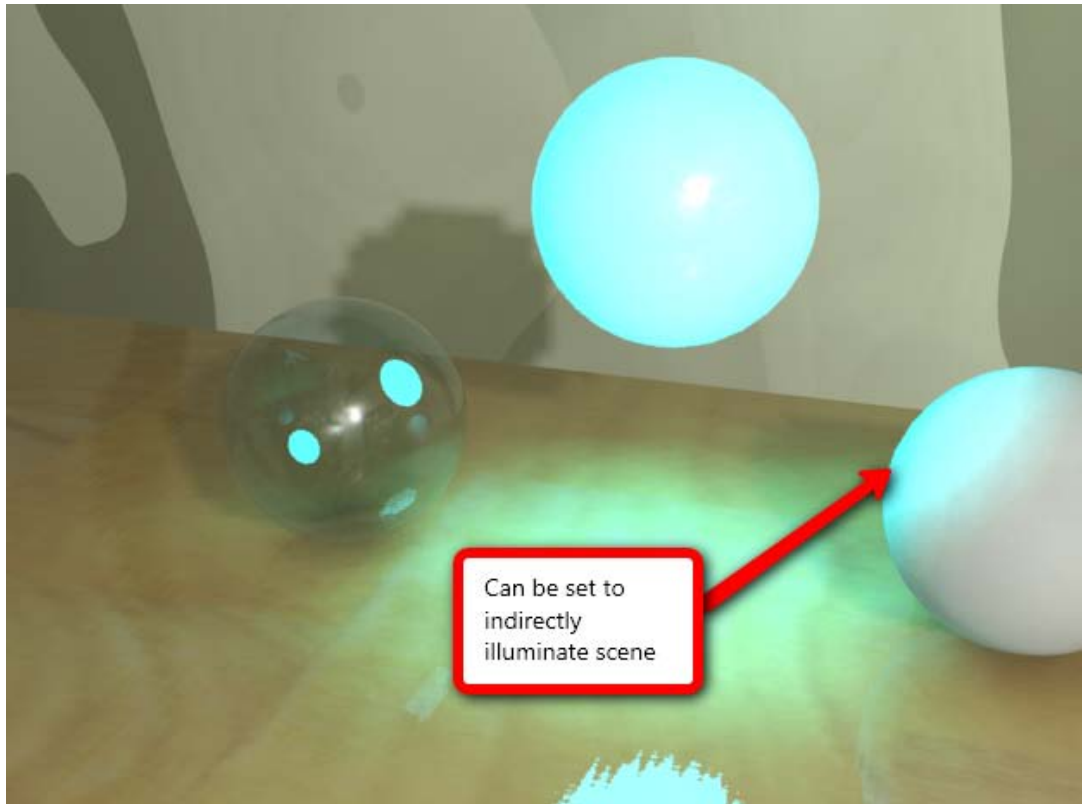


Options
treat objects as...
requires two sides on every object
d (can use single faces)
abled, transparent objects:
nt and generate Caustic effects
parent Shadows

propagates Alpha channel

Self-Illumination

- Create objects that appear to glow
- Can be used to indirectly illuminate a scene



Special Effects: Rounded Corners



es

on

e used to

Advanced Rendering Options

□ R



a color

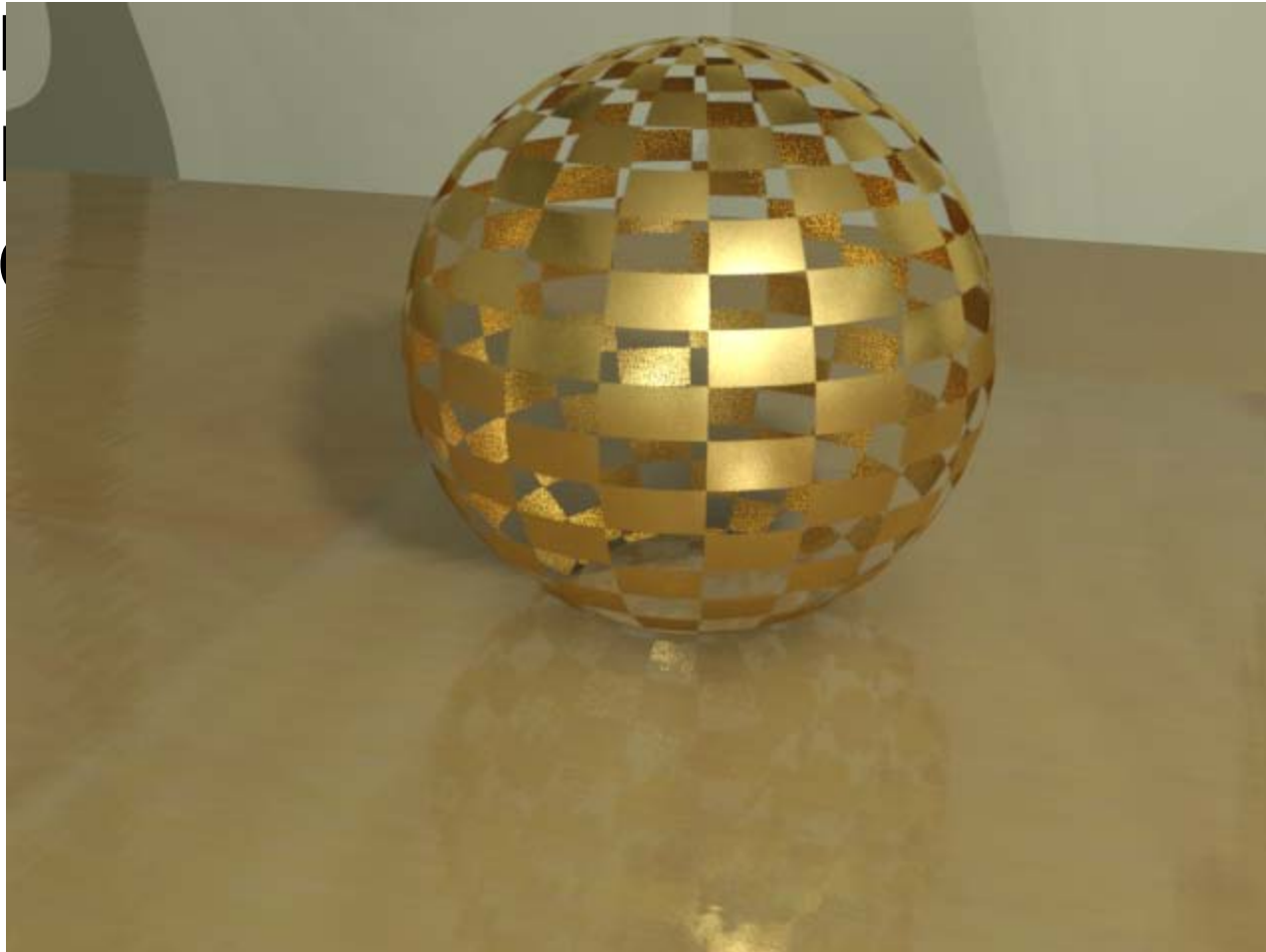
□ R



Max Trace Depth:

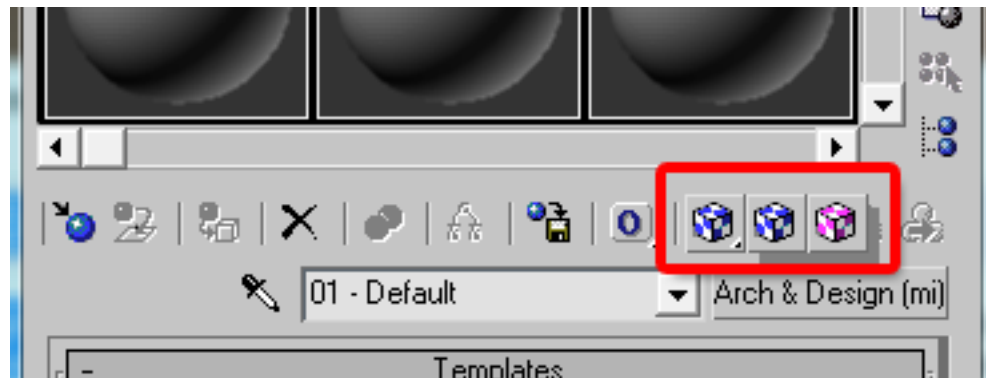
Cutoff Threshold:

Special Purpose Maps



Seeing the Arch Design Material in the Viewport

- ❑ Must switch to hardware rendering to see results of Arch Design Material in the viewport
- ❑ This is VERY processor intensive so NEVER leave it in hardware mode
- ❑ Part of “Show Map in Viewport” button



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- 2D vs. 3D Materials
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For more info on:

- UVW Unwrap
 - ▣ 3D Game Textures Book
 - ▣ How-to guides
 - ▣ Lynda.com
 - The Unwrap UVW modifier 10:58
- Arch & Design Materials
 - ▣ Max Help File
 - ▣ How-to guides

