Walk-in Slide: AU 2014 Social Media Feed

1. Click on the link below, this will open your web browser

http://aucache.autodesk.com/social/visualization.html

2. Use “Extended Display” to project the website on screen if you plan to work on your computer. Use “Duplicate” to display same image on screen and computer.

Shading and Texturing A Photoreal Robot

Neil Blevins

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Class summary

In this class, I'll show of my pipeline for shading and texturing A Photoreal Robot. Although most of the techniques can be applied to other models as well, from environments to props to organic creatures. These techniques can also be used to texture any high resolution object, whether for VFX and animated films, videogame cinematics, or even architectural work.

Class summary

The class covers shaders and pattern creation / placement, from procedurals and hand-painted textures to photo manipulation. Focus is on efficiently shading thousands of individual objects without the need to spend a lot of time UV mapping everything.

Class summary

The class will use Autodesk® 3ds Max®, Chaos Group's V-Ray®, and Adobe® Photoshop, but the principles discussed here can be applied to your 3d app, paint application and renderer of choice.

Key learning objectives

At the end of this class, you will:

- Understand a process / workflow by which you can effectively shade / texture almost any Hard Surface object.
- Understand some of the alternate ways to mapping your objects that doesn't involve costly UVs (Blended Box Map and Blended Cubic Projections)
- Understand how to use my SAL asset script and the Dirty Rusty Decaled Painted Worn Metal Shader To Quickly Shade Hard Surface Objects.

3A Bertie Robot: Traditional Texturing


EUC
P08

Robot: Traditional Texture Painting

My Digital Shading Pipeline in many ways is similar to how one would go about Shading / Texture Painting a real world model.


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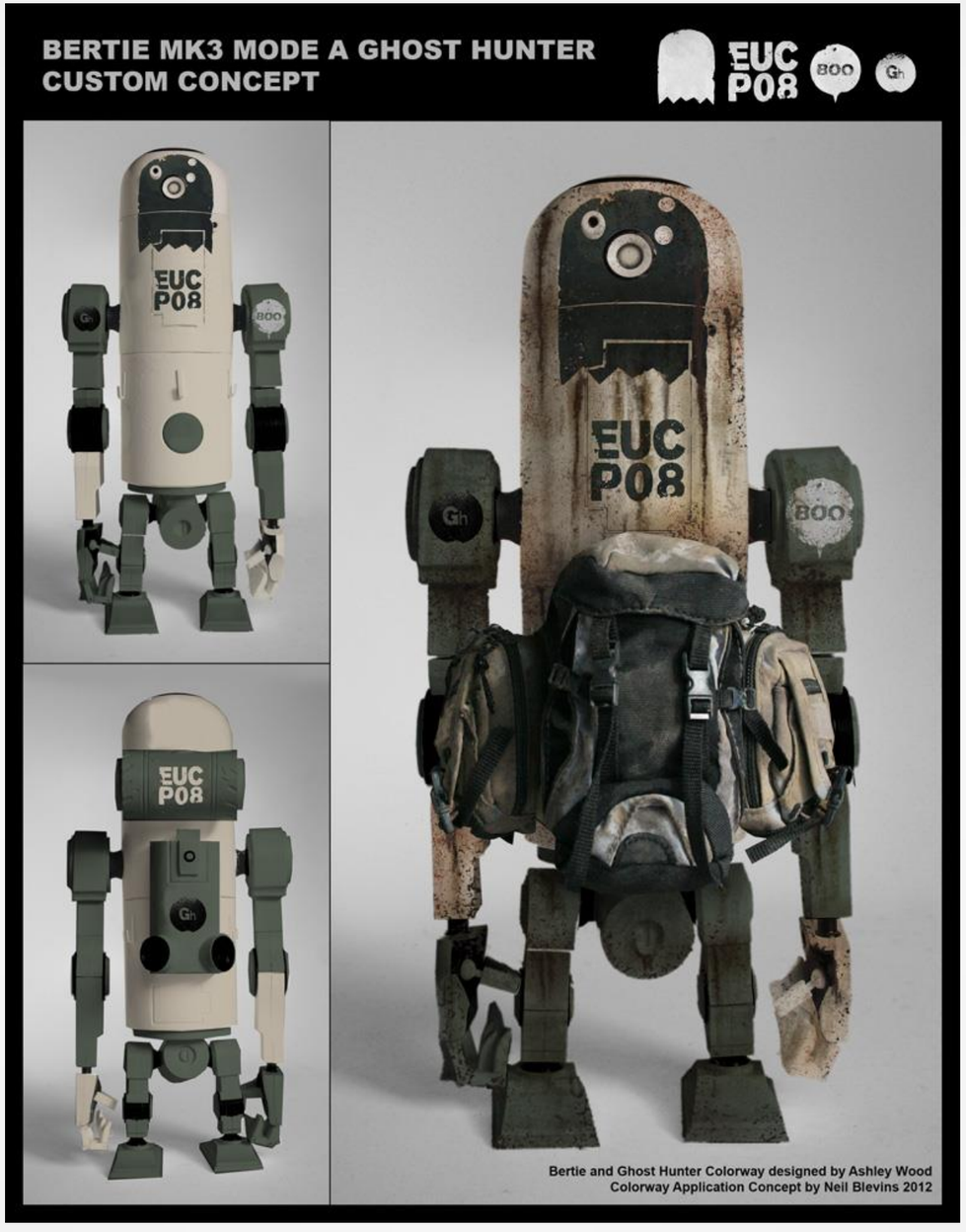
BERTIE MK3 MODE A GHOST HUNTER
CUSTOM CONCEPT
EUC P08
800
Gh
Bertie and Ghost Hunter Colorway designed by Ashley Wood
Colorway Application Concept by Neil Blevins 2012


3/4 in x 60 yds
1.9 cm x 55 m
ART
ARTIST TAPE
RUBAN POUR ARTISTES
CINTA PARA ARTISTAS
AA20134
TAMIYA COLOR
FOR PLASTICS
Tamiya Spray Paint
WARNING: EXTREMELY FLAMMABLE LIQUID AND VAPORS
100 ml NET VOLUME
X-ACTO


BOO
BOO
BOO


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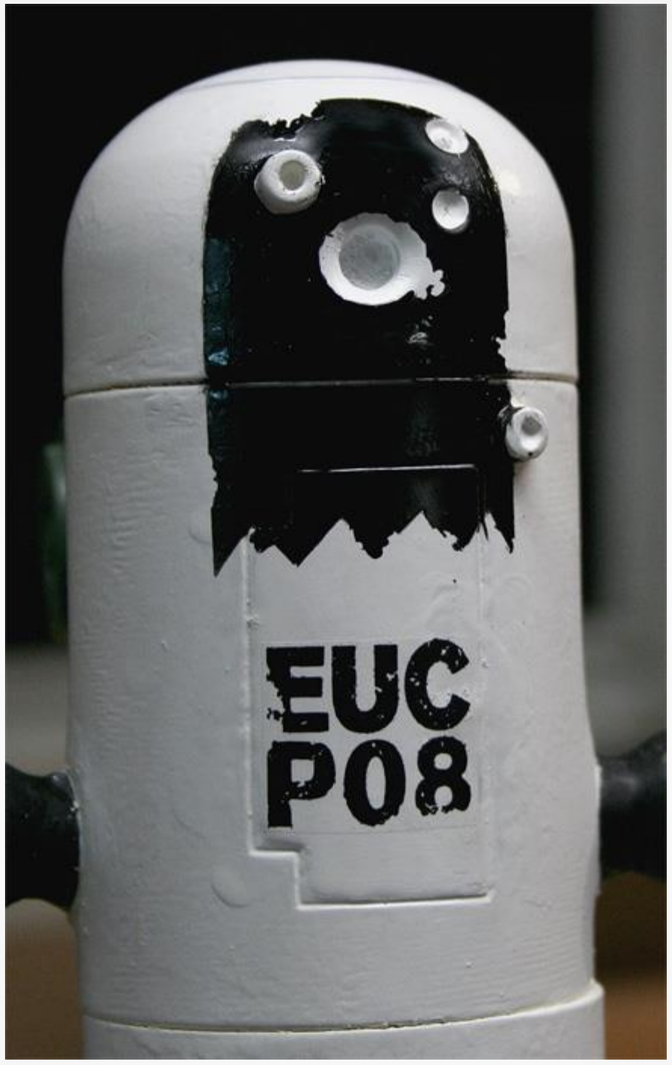
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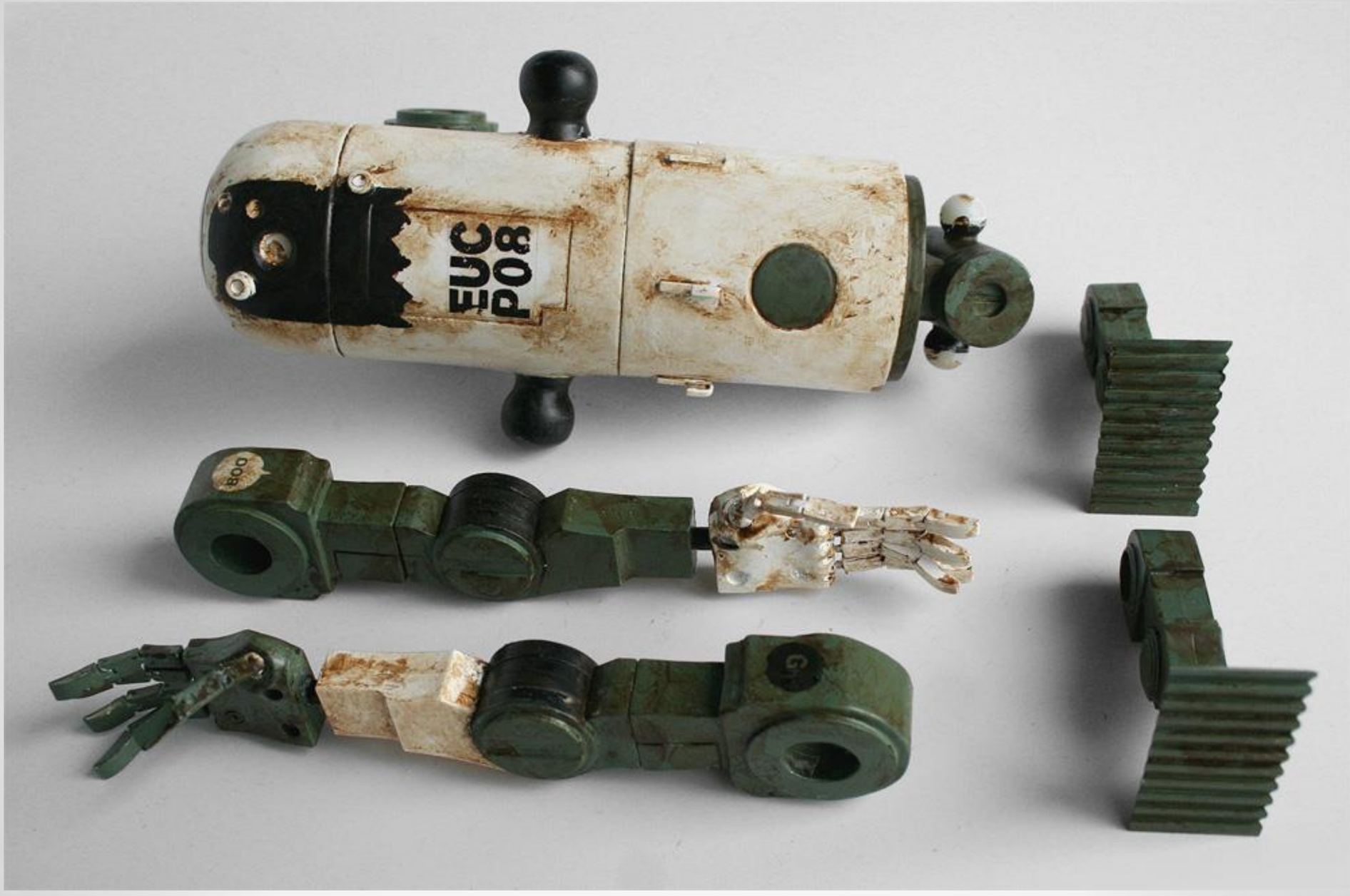
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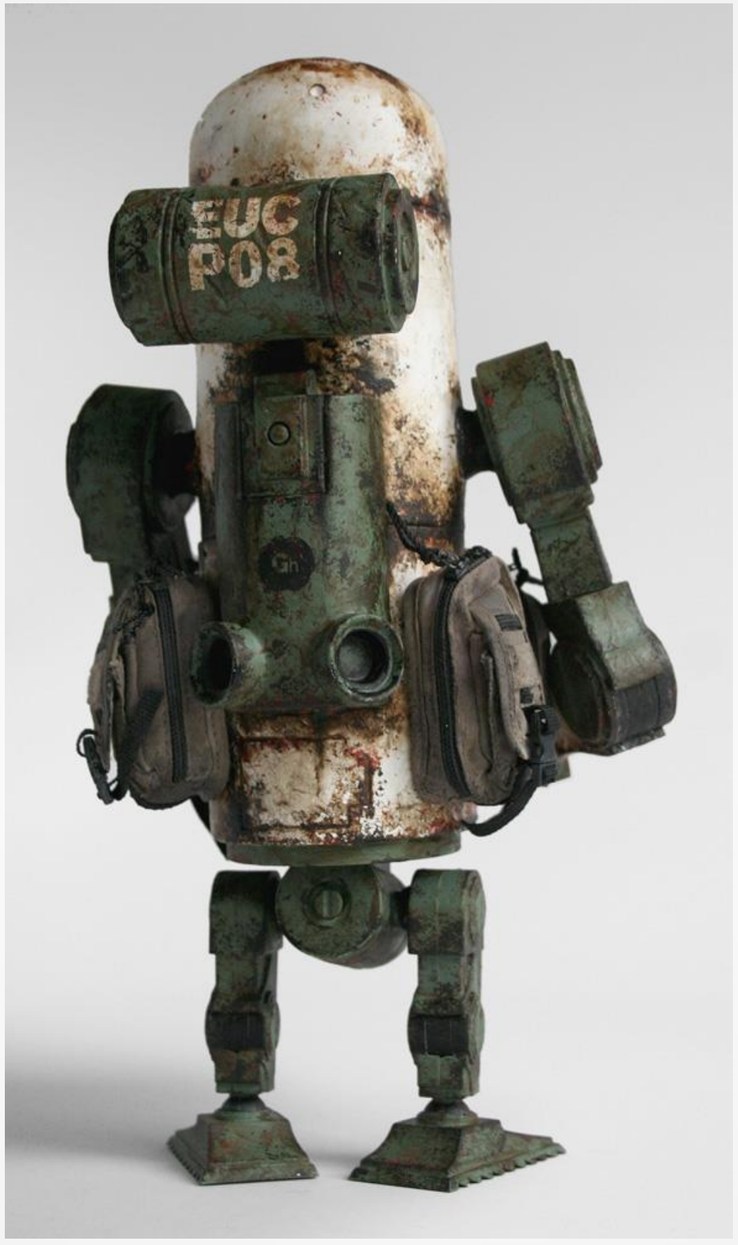
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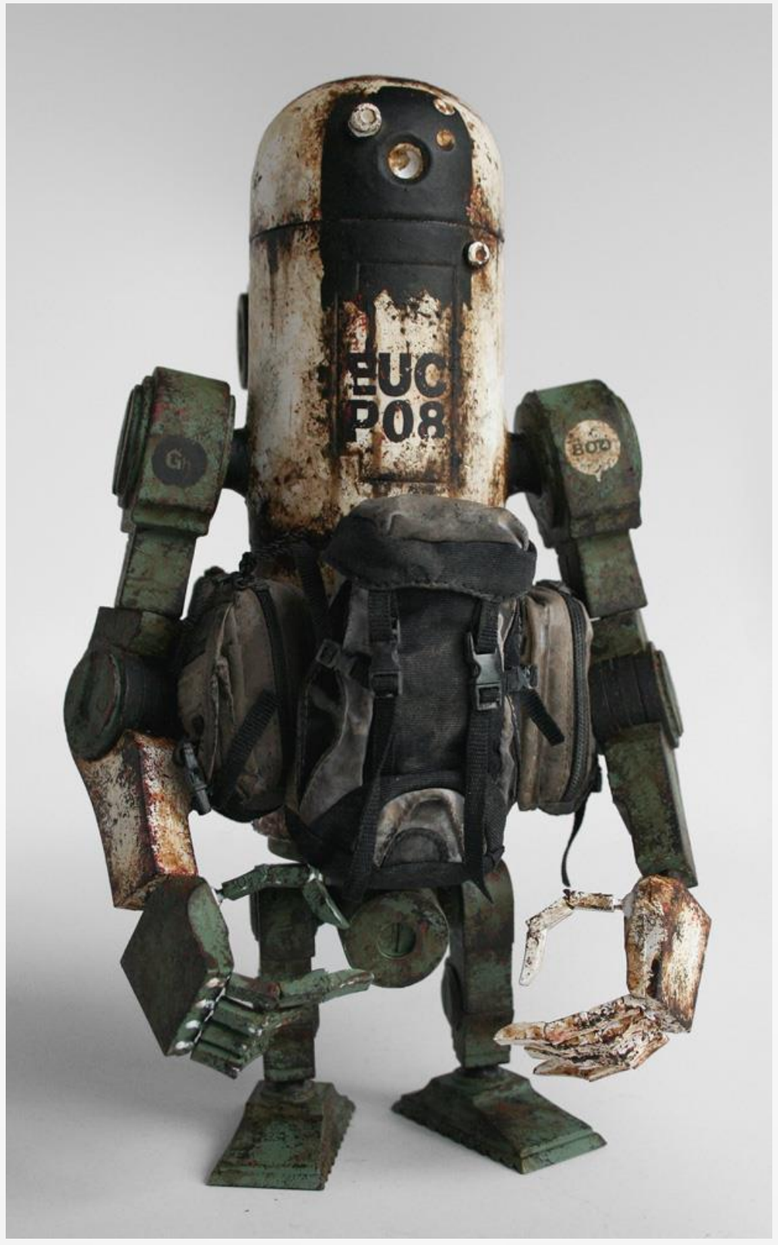
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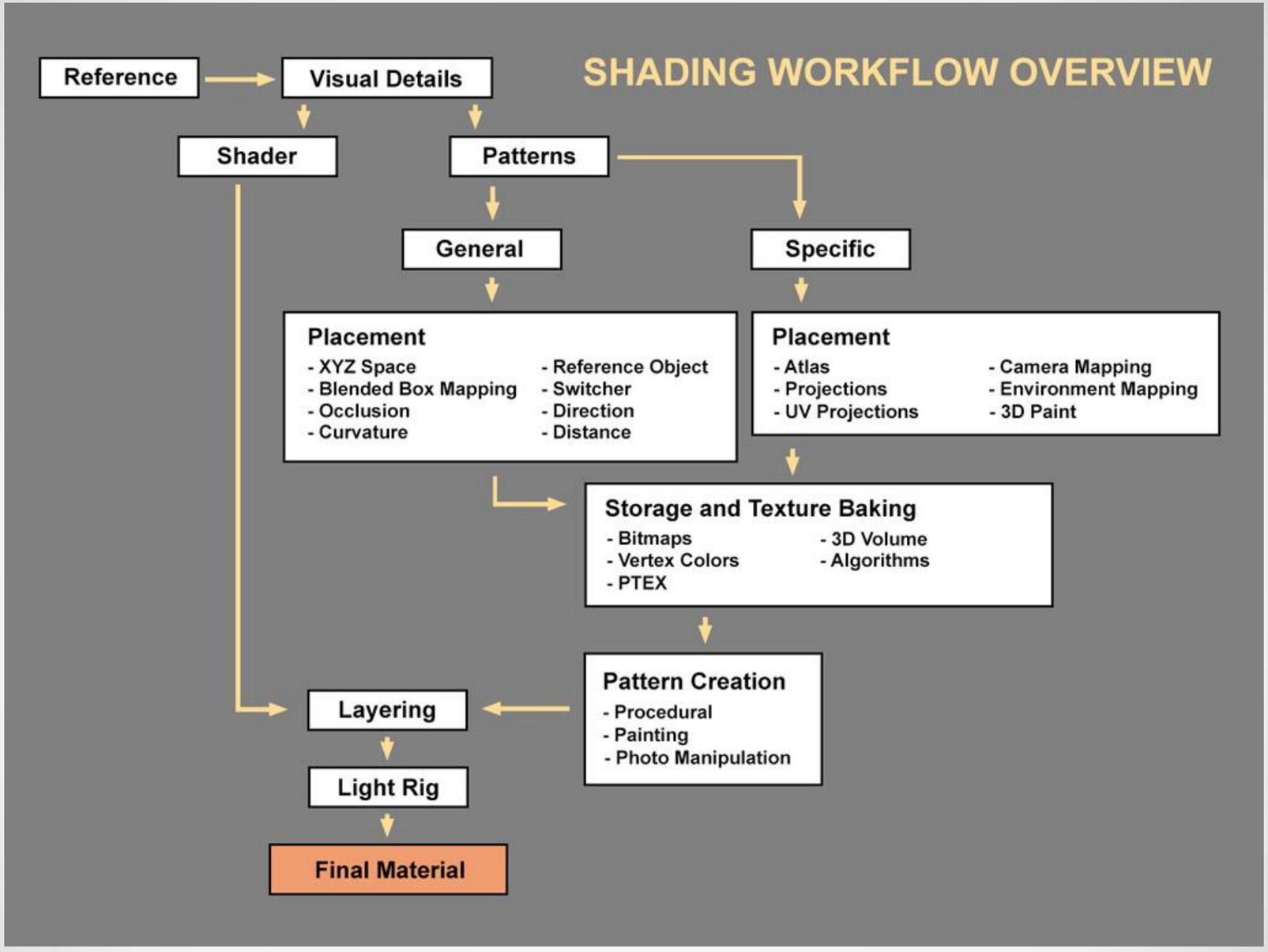
Shading Pipeline Overview


SHADING WORKFLOW OVERVIEW
Reference
Visual Details
Shader
Patterns
General
Specific
Placement
- XYZ Space
- Blended Box Mapping
- Occlusion
- Curvature
- Reference Object
- Switcher
- Direction
- Distance
Placement
- Atlas
- Projections
- UV Projections
- Camera Mapping
- Environment Mapping
- 3D Paint
Storage and Texture Baking
- Bitmaps
- Vertex Colors
- PTEX
- 3D Volume
- Algorithms
Pattern Creation
- Procedural
- Painting
- Photo Manipulation
Layering
Light Rig
Final Material

Inc The Robot:
Digital Texturing

Imagery Of Inc

Inc The Robot: Digital Texturing

How a model like this is textured depends on the sort of job you need to do. If you're doing 3d concept design, the most common method these days is transferring your model to keyshot, applying some simple materials and lights, then bringing it into photoshop to paint the dirt and grime and details. Which is fine, but if you need to change angles or render out further angles, you now have to repaint that dirt.

Inc The Robot: Digital Texturing

If you're now on the production side producing the final asset, the most common workflow is to uv all of your objects, then bring them into a 3d paint program and manually paint all the pieces. Plenty of difficulties with this technique, first, if you want to change a major thing like the texture you're using for your metal, this is more complex because you have a different texture on every piece of your model.

Inc The Robot: Digital Texturing

Second, you have to UV every single piece, and that takes a lot of time. Despite the fact we all hate UVing stuff, we have in fact become so addicted to UVs that we have convinced ourselves that there must be no other way. I have friends in the visual effects industry who are texturing robots, and they are frequently given 2-3 months for the task. Now there's lots of reasons it takes so long, including client approvals, revisions, etc. But I believe another reason is because of UVing.

Inc The Robot: Digital Texturing

And as the complexity of these robots grow, its taking longer and longer, and that's partly because the more objects you have, the more uving you have to do. My techniques, since they're uv independent, require almost no extra time, so whether your object has 500 objects or 50,000, it's the surface size, and how close you're going to get to the model that increases texturing time, not number of objects.

Inc The Robot: Digital Texturing

And it involves painting and texturing in 3d, so if you're doing 3d concept art, you can move your model around without repainting, and its really fast to do which is necessary when doing concept work.

Inc The Robot: Digital Texturing

Robot Stats:

- 1617 Objects
- Faces: 15 million smoothed, 926,000 unsmoothed

Shading / Texturing The Hand

Shading / Texturing The Hand

Preparing Your Mesh:

- **Turn On Turbosmooth:** Using SubdivAutomator

Shading / Texturing The Hand

Preparing Your Mesh:

- **Reset Xform**: Select your objects and use the Reset Xform utility to reset their xform. Remember, if you have objects linked to other objects, Reset Xform won't do its job properly. So make sure you Reset Xform before linking any objects together. And also check to make sure the normals of the objects don 't get inversed when you reset their xform. You can xView in the viewport to check the direction of the face normals.
- **Convert To Editable Poly:** This step isn't necessary, but is helpful to clean up your mesh before texturing. Also guarantees better results from the Bake Curvature step.

Shading / Texturing The Hand

Preparing Your Mesh:

- **Blended Box Map:** Run the Soulburn Script blendedBoxMapMaker, uncheck "Create Map?", make sure "3 Sided UVW Mapping Method" is selected, and hit Do.
- **Blended Cube Projection:** Run SoulburnScript blendedCubeProjectionMaker, uncheck "Create Map?", make sure "6 Sided CameraMapGemini Method" is selected, and hit Do. Also remember to render templates to paint on, turn off any lights in your scene so that the camera lights turn on, then with your objects selected, in the modifier stack, choose the CameraMapGemini Modifier, then run the SoulburnScript cameraMapGeminiRenderer, choose an output directory, and hit apply. It will now render out templates to paint on top of.

Shading / Texturing The Hand

Preparing Your Mesh:

- **Bake Curvature:** Run the Soulburn Script cornerEdgeToVertexMap, use the default settings and hit Do, this will bake a vertex map to your meshes where the flat areas are white and the edges are black. If your mesh looks too white after running the script, try increasing the High Angles and decreasing the Low Angles in the script so that a larger area of the mesh becomes black (this will be necessary for very detailed smooth meshes).
- **Material Modifier:** Apply a Material modifier to your objects with a value of 1.

Shading / Texturing The Hand

Preparing Your Mesh:

- **Apply Material**: Apply Your Material Using SAL.


Base mtl:
UberMetalBlend
VRayBlendMtl
- Parameters
V-Ray PowerShader
optimized for V-Ray
Base material:
Metal (VRayMtl)
Coat materials:
Blend amount:
1: Worn WornMask 100.0
2: Paint PaintMask 100.0
3: Decal DecalAlphaBCP 100.0
4: Rust RustMaskBCP 100.0
5: Dirt DirtAlphaBCP 100.0
6: None None 100.0
7: None None 100.0
8: None None 100.0
9: None None 100.0

Shading / Texturing The Hand

Using The Material:

- remove decal and worn steel 2
- change paint color
- adjust edge of paint (Using texmap Preview)
- paint front wear (Using BlendedCubeProjection)
- apply rust to metal
- paint rust map (Using BlendedCubeProjection)
- paint dirt map (Using BlendedCubeProjection)
- turn on dust


INC
Neil Blevins 2014

Shading / Texturing The Hand

And here is the final hand for the robot for the "Inc" visual development book project, and you can see it's very similar to the example I just did for you guys. While the hand is about 200 pieces, the entire robot was about 1700, and it took only a few nights to do all the texturing to hold up at this level of detail.

Shading / Texturing The Hand

Obviously it could have been faster if I didn't need to get this close to it, the technique really is the same regardless of whether you're painting a final production model or painting a fast concept, the only difference
Is how much time you spend massaging the details.

Future Tools

While this technique is already fast, it can be made faster with new tools, a curvature shader, triplanar mapping, grouping nodes, etc so please help me put pressure on the 3d and rendering application developers to shift more dev time to improving this workflow, so that we can all have kickass texturing in way less time and can go home at night to our families.


Neil Blevins 2008


M-176
M-176
Neil Blevins 2009

Shading And Texturing A Photoreal Robot

Thanks!

Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time

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