

Texturing

Applying textures to 3D models

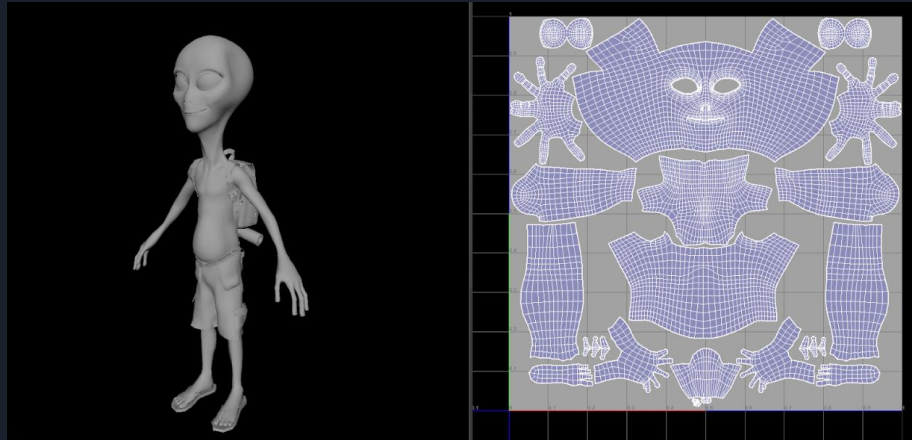
Game Development Foundations

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- Texture Mapping
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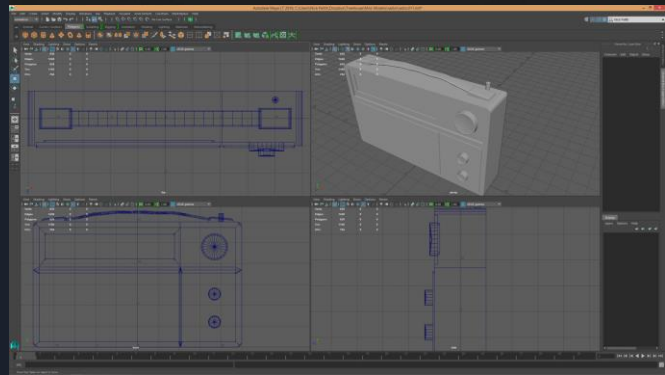
Texture Mapping

- A process that wraps and maps pixels from a texture (image) onto a 3D surface
 - Imagine taking a steamroller and flattening the 3D model



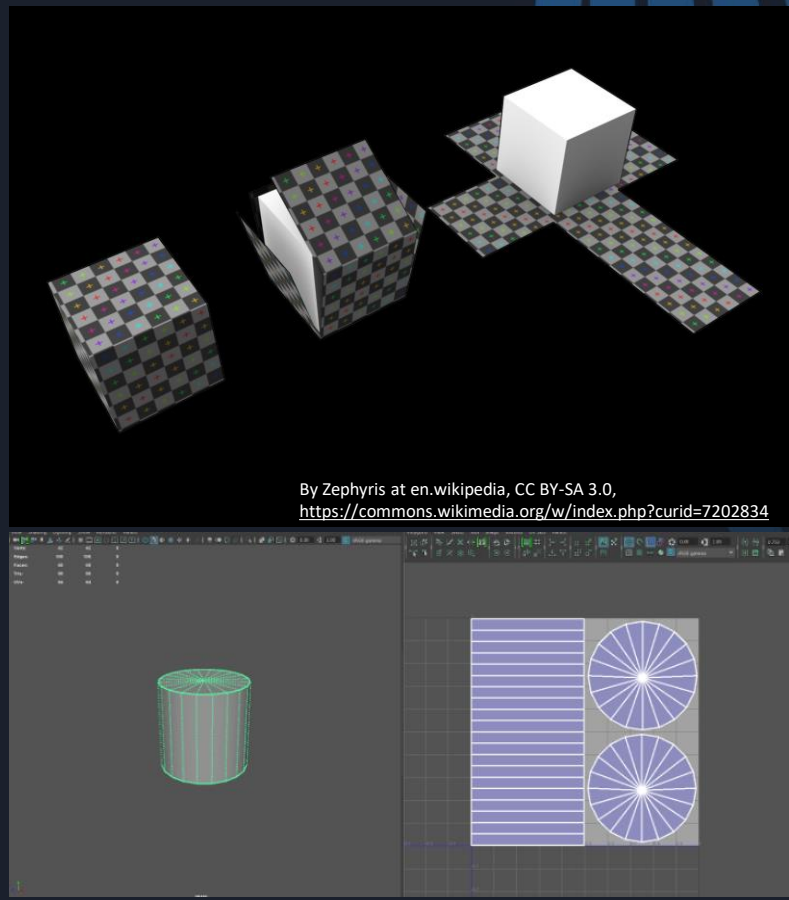
Texture Mapping

- Texture Mapping allows artists to specify detail that isn't in the original 3D mesh
 - The holes for the speaker in this radio are only part of the texture
 - Modelling the holes in the 3D mesh would add a tremendous number of polygons, which could slow the game down



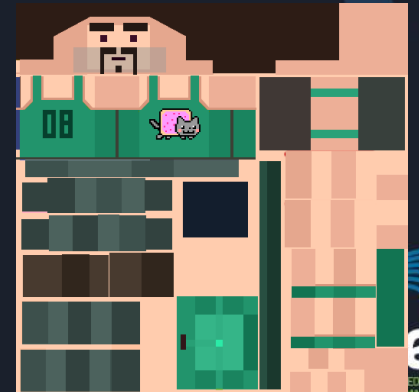
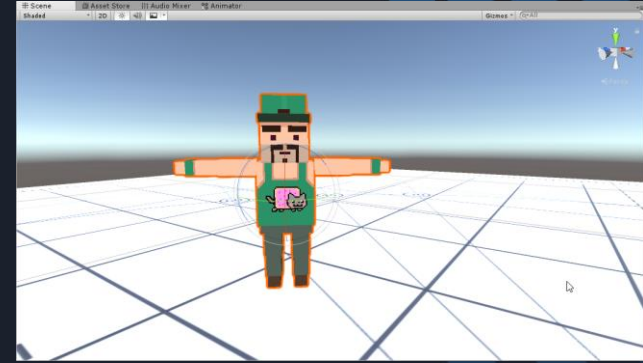
UV Mapping

- UV mapping is the process of projecting a 2D image onto a 3D model's surface
 - i.e., 'unwrapping' your 3D model and laying it out in 2D
- We can create a texture, which is then applied to the 3D model
 - The UV coordinates will specify which part of the texture is drawn where on the model



Creating Textures

- Artists will use 3D modelling programs like Maya or Blender and drawing programs like Photoshop to texture their models
- In Unity, the final texture map is used when drawing the model

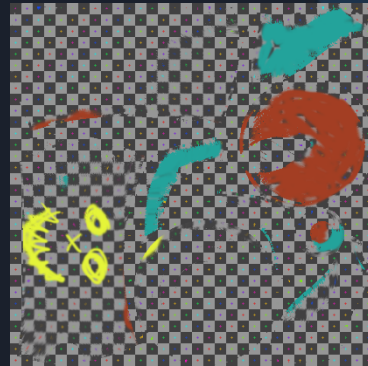
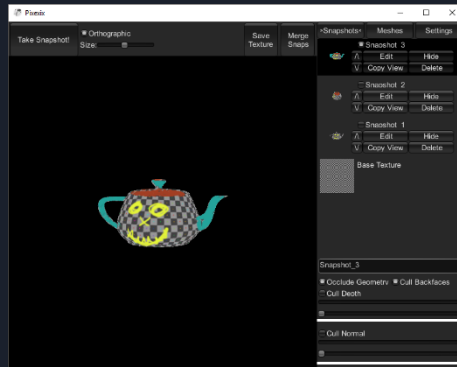
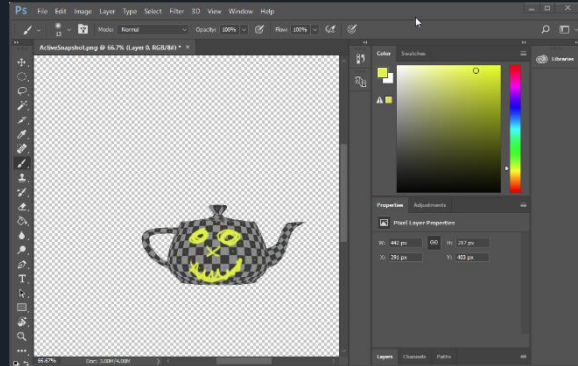
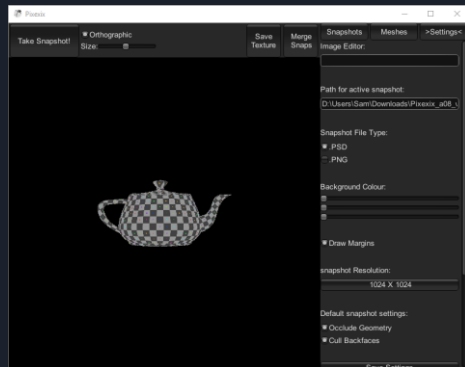


Creating Textures

- If we don't have a 3D modelling program, we can still modify the textures of our models
 - Directly modify the texture using a drawing program
 - Can be very hard to identify which part of the texture maps to which part of the 3D model
 - Use a program like Pixexix to paint renders of the model, then apply the painting back onto the model
 - Use a program like Sculptris to paint directly on the model

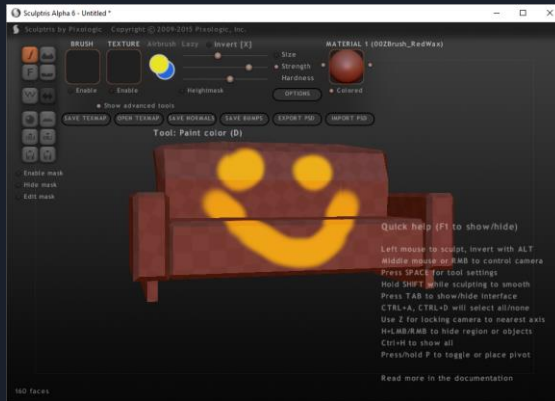
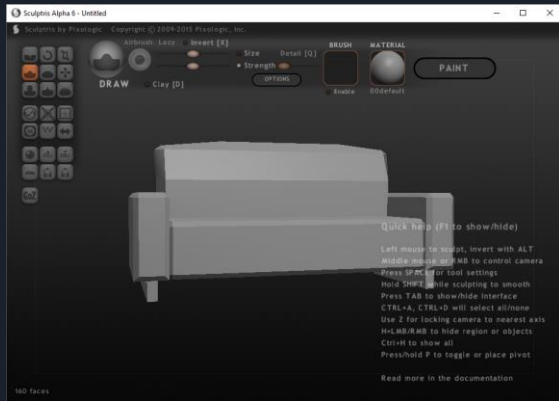
Pixexix

- Load your model
- Save a snapshot
- Paint the texture using your favourite paint program
 - The model's texture in Pixexix will be updated
- Rotate the model, save snapshot, paint, repeat
- When finished, export the final texture map



Sculptris

- Load the model .obj file
 - Your Unity models will typically be in .obj format
 - Not all models will work (the model must be set to 'triangles' when saved)
- Paint directly to the model, then resave the .obj
- Export the generated texture map and apply in Unity



Summary

- Texture mapping takes a flat texture and 'wraps' it around your 3D model
- UV mapping is used to specify which part of the texture will be applied to each area of the model
- Typically artists create the texture when creating the 3D model
 - There are programs that allow us to edit the textures of our 3D models

References

- Wikipedia. 2018. *Texture mapping*. [ONLINE]
Available
at: [https://en.wikipedia.org/wiki/Texture mapping](https://en.wikipedia.org/wiki/Texture_mapping)
g. [Accessed 07 May 2018].