WHY POV-RAY

It's free (3DS MAX costs $3.5k+)

It is a pure renderer with complex Scene Description Language—

- 3rd party modelling s/w can easily make use of the render
- e.g. http://www.sfmuc.com/money/
- Internal representation of primitives is based on continuous mathematical functions
- More accurate than most apps, based on discrete polygon / patch / triangle models

PROCEDURAL MODELS

But it would be difficult to do this in POV-Ray:
What is 3D Studio Max?

- Highly customisable and scalable 3D animation, modelling and rendering solution for creative professionals and large-scale pipelines.
- One of the most widely used off-the-shelf computer animation programs
- It has flexible plug-in capabilities

What is it used for?

- Mostly Game Development e.g. EA, Rockstar Games
- Film and TV Effects
- Design Visualisation

GAMES: FALLOUT 3
© 2008, BETHESDA GAME STUDIOS

GAMES: DEUS EX - MANKIND DIVIDED
© 2016, SQUARE ENIX AND EIDOS MONTRÉAL
13 ADVERTISING: BSkyB

14 ANIMATION: BROWN BAG FILMS


16 FILM: BLADE 3 - TRINITY

17 ARCHITECTURAL DESIGN VISUALISATION

18 ARCHITECTURAL DESIGN (3DS MAX AND V-RAY)
COMMON 3D MODELLING TASKS

- Create Basic Shapes
- Assemble Objects
- Layout Scene
- Choose Materials
- Design Lighting
- Set-up Camera

ADDITIONAL FEATURES

- General keyframing
- Constrained animation
- MassFX: Physics of Particles, Rigid Body, Cloth
- Skeletons and Inverse Kinematics
- Character Animation Toolkit: Rigging, Motion Capture Processing
- Character Studio: Biped, Physique, Crowds
- MAXScript
- Various Rendering Options/Modes/Plug-ins

ASIDE MAXSCRIPT

MAXScript is the built-in scripting language for 3ds max® and related products, such as Autodesk® VIZ, character studio®, plasma™ and gmax™.

- Script most aspects of the program’s use, such as modeling, animation, materials, rendering, and so on.
- Extend or replace the user interface for objects, modifiers, materials, textures, render effects, and atmospheric effects.
- Build scripted plug-ins for custom mesh editors, modifiers, render effects, and more.
- Build custom import/export tools using ASCII and binary file I/O.
- And so on!

NOT COVERED IN THIS MODULE
**MAIN TOOLBAR OVERVIEW**

- Link / Unlink Objects
- Object Selection
- Transform: Translate / Rotate / Scale
- Snap
- Mirror / Align
- Layer Explorer
- Graphite Tools (advanced polygon modelling)
- Curve Editor (for animation)
- Schematic View
- Material Editor
- Render
- Undo / Redo

**TRANSFORMS**

- Right-click on transform button on the toolbar to bring up the transform dialog for manually entering transform values.
- You can also enter values in the Type-In box over the status bar at the bottom.

**SNAPPING**

- Can be very useful when modelling, particularly when assembling multiple objects.
- Objects can be snapped to pivot points, grid points, vertices, faces, edges, etc.
- Note: Right-click on the buttons to bring up the snap settings.

**MATERIALS**

Press M or click on the material editor icon to bring up the material editor window.

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**BASIC MATERIALS**

- The material editor shows a preview of your current material.
- For now just look at the Shader Basic Parameters.
- "Blinn" the default shader is a better version of the Phong Illumination Model.
- Phong variables can be adjusted in real-time by dragging or typing in specific values.
- Ambient and Diffuse are as before in POVRay.
- Specular Level relates to Phong value in POVRay.
- Glossiness relates to Phong Size.
Press F10 or click on the Render Setup icon to bring up the render dialogue.

For now, just use default parameters, choose a viewport and click on "Render" at the bottom.

Other render options (on main toolbar)

Display Previously Rendered Window

Rendering options will be discussed in more detail at a later stage.

MAIN TOOLBAR: OTHER USEFUL STUFF

- Layer Manager:
  - Allows you to organize and manage objects as layers

- Graphite Modelling Tools
  - Toolset for editing polygon objects

- Curve Editor
  - Allows you to work with motion expressed as function curves on a graph

- Schematic View
  - Node-based scene graph that gives you access to object properties

ANIMATION AND TIME CONTROLS

This will be the topic of a later lecture.

VIEWPORTS AND VIEWPORT CONTROL

- By Default you will see 4 viewports.
  - 3 Orthographic views for design
  - 1 Perspective view for visualizing something closer to the end product.

- You can change the nature and number of these viewport's arrangements.

VIEWPORT CONTROLS

- Zoom Extents / All: Fits on optimal view that just encompasses the scene
- Maximize active viewport (space)
- Zoom / Zoom All
- Pan View
- Rotate View
- Zoom Region: zoom in on selected rectangle
- Field of View (in perspective/camera view)

Mouse Shortcuts

- Middle Mouse: PAN
- Mouse Scroll: ZOOM

The view cube gives you an indication of the orientation of each viewport. You can move it by dragging or clicking on one of the small arrows to turn it.
COMMAND PANEL: CREATING OBJECTS

- a. Geometry
- b. Shapes
- c. Lights
- d. Cameras
- e. Helpers
- f. Space Warps
- g. Systems

CREATING OBJECTS

Each Object is created slightly differently – because each has different parameters.

Click on the specific object and then work in one of the viewports:
- Usually the most important geometrical object parameters are set by clicking and dragging.
- You can fine tune parameters through the context sensitive* menu that opens in the command panel at creation time.

Use the Modify panel to access these settings if you want to change the object later.

* Context sensitive means that the menu changes depending on what is selected.