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## Week 6

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|  |  | 1 Intro to blender interface |  |
|  |  | 3d panel  Time line ( frames not split so much detail but can alter) |  |
|  | n | Tool box |  |
|  |  | 3D cursor – where you add objects –  Select location e.g. 0,0,0 origin |  |
|  | RMB | Selects |  |
|  | LMB | Moves 3D cursor  Click and drag manipulator |  |
|  |  | x delete |  |
|  |  | location Where object is placed |  |
| 7.15 |  | Shift space - Max view port of focused panel |  |
| 11.00 |  | Layers (in brief more later) |  |
| 12 |  | Rotate & Zoom |  |
| 12.40 |  | Select |  |
|  |  | View – e.g. through camera |  |
|  |  | 0-9Navigate around view port |  |
|  |  | 5Orthographic/ perspective view |  |
|  |  | CTRL + number opposite |  |
| 16 |  | Info panel (at the top) At right u get screen maximised |  |
| 17 |  | View camera mode |  |
| 17.20 |  | Lamp – no lamp = darkness |  |
| 17.50 |  | Render (from camera illuminated by light)  View / 3D view to get back |  |
| 18.34 |  | Shortcuts – do not reconfigure!  View/ User preferences |  |
| 23.10 |  | Drag / move object  Lmb to leave it where u want rmb to set it back |  |
| 24 | r | Rotate LMB once ok or RMB |  |
|  |  | Rotate round z axis r z, r y, r x |  |
|  | s | Scale - Scale x/y or z - s y, s z, s x |  |
|  | g | Translate g z, g x, g y |  |
| 25 .40 |  | Info panel |  |
| 25 .40 |  | Info panel  File  Recover last scene |  |
|  |  | Info panel textual info interesting as programming |  |
| 26.37 |  | Move cursor to right of stage until double arrow/ right click  Split – you can split screen into orthographic view / graph editor view etc  Join set them back |  |
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|  | 2 intro to animation |  |
| 0.40 | Keyframe (kf)  Drag box to left of stage (notice properties panel open)  Set x to -6.  See the green scrub  R click on x  Insert keyframes for x,y,z  Insert single (only for axis that has changed 60 frames (3 seconds)  Move box +6 / insert single kf  You see some easing built in  Use short cut keys to play animation |  |
|  |  |  |
|  |  |  |
| 3.25 | Graph editor  Notice only x location shows in graph editor as we did single kf  See curve represents speed  Use **RMB** to click on Bezier curve handles  After moved  Use **LMB** to keep change or RMB not to keep  Change curve so it comes to abrupt halt |  |
| 5.17 | Back to 3D view  Run and view animation with easing |  |
| 6.00 | Rotate  Insert single kf at 0 -  Set another at f300 y rotation to 720 on y (2 rotations)  See an euler (oiler) rotation in graph editor  See view all or selected to see curves in graph editor  It may look like one curve has disappeared but it just not used many units on the x or y axis |  |
|  | Have a go at keyframing scale |  |

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|  | 3 basic modelling tools |  |
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|  | Hide transform box (n)  Max view port (SHIFT + SPACE) |  |
| n.b. | Wheel – IN / Out  wheel + Ctrl– left / right wheel + Shift – UP/down  wheel + Ctrl + alt – rotate round Z  wheel + Ctrl + Shift – rotate round Y |  |
| 2.00 | toggle tab OBJECT /EDIT MODE  CTRL + TAB – MESH SELECT MODE  CHOOSE vertices – points (v)  Edge – line  Face – polygon  **Select** vertices (or other) with RMB  (Select >1 use SHIFT and select more)  ( toggle a – select all / or non)  Last selected is the brighter orange (other white-ish)  snap (like a magnet ) SHIFT + TAB |  |
| 3.39 | Select **faces** |  |
| 4.05 | **Extrude** tool (add more geometry) in tool box  Extrude region -(allows u to extrude 2 polygons together as if they were one)  Extrude individual –  e – shortcut  if move mouse the face is dragged  (hit RMB to put it back) | see surface normal (06.12) |
| 5.03 | **Non manifold geometry**  Geometry created that is sitting on top of other geometry  The black dots tell you that the geometry has a side to it |  |
|  | **Move** geometry stretches what geometry is already there Vs… | **Extrude** builds on top |
| 05.50 | If after hitting ‘e’ you hit ‘y’ you will extrude along the ‘y’ axis |  |

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| 6.49 | **Extrude individual points – to make a face**  Select a point and hit ‘e’ to extrude it  Select a second point and hit ‘e’ to extrude it (image)  **Fill the face in ‘f’** |  |
| **or** | **Extrude edge**  Select 2 points, select ‘e’ and drag the points up – creates edge |  |
| 8.10 **or** | **Extrude points and merge points together**  Select a point drag it up, do the same with a second  Go into edge mode – select one edge – hit ‘t’ – extrude the edge    Now to join the 2 edges using **merge**  CTRL+tab (Vertex mode) – select point of one edge and shift select another point  Alt + m – merge – select merge at last |  |
|  | Merge at centre  Select 2 points/alt m select at centre/ | See it pulls up geometry |
| 10.18 | **Non –planer polygon problem**  **Previous step caused problem – curves aren’t displayed well so**  **Pull shape around** |  |
|  | CTRL+0 – back to non-subdivided version | **(could use subdivision to subdivide and make it smother)**  Ctrl + 3  Leaves underlying geometry |
| 11.29 | Select a Face / ‘e’/ CTRL + Click  Each CTRL + Click adds more and more geometry  until I stop | Be careful not to have geometry cutting through itself |
|  | Add other shapes and pull points/edges etc around |  |

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|  | 4 Modelling a round of ammunition (a**)** |  |
|  | Start default scene  Delete the box (select and delete key) |  |
| 0.50 | Build a bullet |  |
| 2.00 | Hide numeric properties  Full screen (shift+space) |  |
| 2.30 | Put 3d cursor in middle of stage (location 0,0,0  Add / mesh/circle |  |
| 03.15 | Go to edit mode (tab)  Points are already selected |  |
| 4.00 | Build case  Start by ‘e’ – extruding / ‘z’ up the z axis |  |
|  | Go into side view to see its parallel etc |  |
| 5.00 | ‘e’ – extrude / ‘s’ – scale / pull it in a little for the rim |  |
|  | ‘e’ – extrude / ‘z’ up z axis |  |
|  | ‘e’ / ‘z’ up |  |
|  | S (scale ) drag it out again |  |
|  | ‘e’ – extrude / ‘z’ up z axis again |  |
|  | Hit tab to come out of edit mode – look see if it looks ok |  |
|  | select a point and ALT and you should select all points round in circle  note you have to click close to not on |  |
|  | To expand or lessen selection you can use  Ctrl + ‘+’ to expand selection  Ctrl + ‘-’ to lessen the selection |  |
| 07.50 | ‘z’ to wire frame view  Ctrl + ‘+’ to expand selection  Hold SHIFT + CTRL and drag – to select / deselect area |  |
|  |  |  |
| 8.40 |  |  |
| 8.54 | CTRL + tab – select faces |  |
|  | CTRL + SPACE to hide manipulator |  |
|  | Alt + left click – select next face along  note you have to click close to the edge of the faces next to each other |  |
| 9.55 | Keep cursor away to refine scale |  |

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| 10.30 | The underside of ammunition case is ‘missing/empty’ so we need to fill it in  So select a point/ hold alt select next point (to select ring of points) note you have to click close to not on second point – (to extend the selection)  Ctrl +7 = bottom view (7 is top)  E (extrude) / s (scale) to give slight ‘shelf’  Then ‘g’+z to translate it down a little |  |
| 13.00 | Top of case (to give case a thickness |  |
| 14 | Interior (don’t usually have to model interiors  Select the inner edges  Go z wire frame and extrude these edges down inside (15.10)  Scale it in slightly 15.28 |  |
| 15.40 | Continue modelling inside of case (in wireframe so can see it is inside the outer geometry |  |
| 16.45 | Where the ‘primer’ goes in the cartridge ( the bit at the bottom that ignites explosion off) |  |
| 17.50 | Select points at bottom  Extrude it up inside |  |
|  | Make the top and bottom inner circles meet up by scaling them |  |
|  |  |  |
| 2.20 | Merg in points to join the inner bits together  **Alt + m** brings merge tool (at last selected point)  Also ctrl + v brings vertices menu | Points are merged  have to work around and to them all – make sure you select the right point! |
| 23.15 | save |  |

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|  | 5 Modelling a round of ammunition (b) Making the bullet | |  |
|  | To place ball set the 3D cursor location in transform panel ‘n’  **n.b. even if u place the sphere at 0,0,0 remember to move it away from the case!** | |  |
|  | Open case file  With the 3d cursor (to the side of case) Add \mesh\ UV sphere –  **Object mode**  Hit ‘.’ On num pad to zoom in  Press 1 to get front orthographic view  Hit ‘/’ on num pad hide cartridge case  see top left  (don’t need to Put the ball in the case )  (could have built on layers – do this later) | |  |
|  | **In edit mode**  Scale the ball – s/z Stretch the ball into bullet shape  Hit a to deselect all  ‘b’ to select box selection – click and drag – but you see its only selected front (not back)  Go z into wireframe mode – now ‘b’ and select | |  |
| 4.00 | Quick way to flatten something off …  hit ‘**s’scale ‘z’axis** and drag down so it’s a bit convex | |  |
|  | ‘g’ ‘z’ move it up  ‘z’ to come out of wire frame  1 to view | |  |
| 6.15 | Select points at bottom of shape  and then scale them out so the edges at the bottom are parallel (left pic) s and drag out  box select all of bottom of shape then -  And g z to elongate it a little (right pic) | |  |
|  | **Select geometry at the bottom edge**  **Pull it down** e s  **Then the next inner circle of points on bottom and pull them down too** e s | |  |
|  | Hit tab go object mode  / see bullet  Z non wire frame  Move bullet into case | |  |
|  |  | |  |
| 8.46 | **Add the primer**  Add a mesh cylinder  / to zoom to it | |  |
| 9.00 | Hit / on number pad so can see the case also  Move the bullet /projectile up in the case  Tab to edit mode  These are multipoint  Select top face  E extrude /scale – make small rim | |  |
|  | **Extrude down and in …**  **E z z** | |  |
| 11.80 | **The other end**  Select the face extrude/scale it in | |  |
|  |  | |  |
| 12 | While I have this face selected hit ctrl +  It extends the selection | |  |
|  | **Drag it up** | |  |
| 12.35 | **Need to get this primer into position in the cartridge case**  **Tab – object mode**  **N – transform menu**  **Center it on the origin** | |  |
| 13 | **/ to see rest of case & bullet**  **Z wire frame**  **S scale it down to size**  **Hit 1 for side view**  **G z to drag it up**  **(Ctrl+tab will colour select)**  **G z drag down to fit**  **S z if make shorter** | |  |
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|  | 6 Introduction to surfaces | |  |
|  | Bullet is sitting on a plane  With 3dcursor at 0,0,0 – add a mesh plane  In outliner double click on plane object and rename it ground | |  |
|  | Ctrl space – hide manipulator | |  |
| 1 | Give it some colour  With ground selected go into material  Click new | |  |
|  | **Call it groundTxt (ground texture)** | |  |
|  | **Scroll down and set the colour** | |  |
|  |  | |  |
| 2.30 | **Colour bullet case**  **Select the circle**  **Select material / add new – call it brass**  **To create brass colour** |  | Colour not lambert but franel good for shiney  Make it a golden colour |
|  | Similar colour for the specular highlights  Make it a little reflective | |  |
| 5.22 | Select the projectile  Create new surface (this one is nickel alloy)  projectileTxt  specular highlights much the same  mirror – a little | |  |
| 07.20 | Add another mesh cube (this is so we can see reflections later) | |  |
| 8 | the lamp  come out of edit mode  select the lamp  in properties/object data set its energy to 2 | |  |
| 9 | Move the lamp and camera  Camera so it can see everything | |  |
|  | 0 camera view | |  |
| 9.58 | Lets do a quick render | |  |
| 10.40 | Back to 3D view  **Select the lamp** turn energy down to 1  Add ray trace shadows  **Select materials**  **Turn mirror / reflection down - 424** | |  |
|  | Specular 0.5  Diffuse intensity 0.474 | |  |
|  | Render from camera again (press 0 for camera view) then render  Render pre-sets TV PAL 4.3 (a bit smaller)  Turn up anti alias (will take longer) | |  |
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| Week 7 | 1 Scene set up |  |
|  | Start up;  3D Cursor, box, tool box (t), properties, |  |
| 2.22 | Check camera view  Size of view box depends on resolution etc |  |
| 3 | Look at camera info |  |
| 3.35 | Go into render menu  Render presets – set up resolutins aspect ratio frame rate  HDTV standard  See the camera view square change with the different dimensions e.g. TV PAL vs HDTV (wider screen)  See the fps change too |  |
| 5.40 | Custom  Click plus and save it as 640 / ok    Aspect ration 1:1 so pixels not stretched out pixels  1:1 ok on pc monitor |  |
| 740 | Come out of camera view an dmove camer a(if necessary)  Remember you can do XTRL ALT q to see 4 view ports at once (easier when moving the camera) |  |
|  | 1 open GL Render – basic ok  2 Render image      My version bit different |  |
|  |  |  |
| 9.50 | Note its illuminated due to our light  No shadows as nothing to project them on to  So we will add a mesh plane at 0,0,0  Scale it to approx. 10,10,1 |  |
| 13 | In perspective view  Add (SHIFT A) a cone and a sphere  Do a quik render – no shadows yet |  |
| 14  15.30 | Shadows  Check settings  Select the lamp    Object data changes  Default setting  change it to ray trace…  Now you see shadows |  |
| 16.30 | Save and surface characteristics |  |
|  | CTRL U – SAVE SCENE  New material for the plane - green  Lambert difuse shader – highlights not too sharp  Cube diffuse lambert & specular - bluish  Cone give its green colour with specular highlights of pink colour. Mirror reflectivitiy 0.136, greenish, make sure reflection and diffuse <1  Sphere – greyer, , specular blinn, mirror highly reflective .68 – turn down diffuse to .3 – with high reflection you want diffuse lower – should up to less than 1 |  |
| 23 | Render F12 – note they are faceted |  |

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| 23.25 | Smoothing  With object selected  In tools – select smooth  Beter than faceted  On cube smooth looks strange as not much to smooth – can be odd  Render |  |
|  | Smoothed cube = odd effects – specular on corner!! |  |
|  | **Summary**  **You need to create a surface for floor/walls**  **You need camera & light**  **You add surface characteristics for each obeject**  **You render – different renders give different results and take different times** |  |

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|  | 2 lights video |  |
|  | With point light  Note where the point light is |  |
| 1.20 | Shadows give depth |  |
| 1.51 | Note the shadows are ‘sharp’ (CG result) |  |
| 2.19 | Move light & render again |  |
| 3.30 | Shadow options  In menu with the light selected  No shadow  Colour of shadow  Soften the shadow  Sampling - soft size  If increase soft size 9.3 – see no change  If increase number of samples – 4 – see its bad too reduced  Drop soft size to 3 |  |
| 5.20 | QMC quasar (monte carlo) method of analysis of components in scene  Pick constant  Or with adaptive change threshold up  Or  Increase anti-aliasing – but can get problems rendering – taking too long  Anti-aliasing softens edges  Try soft size 2.9 |  |
| 7.51 | Make it a spot light  In scene see the cone coming from it  Change size of cone (spot shape)  Change blend options soft shadows  Raytrace – on  Samples 4 / soft size 3  Change soft size 10 = much nicer edge == longer render  Soft size 5 – try adaptive QMC (then off)  Smooth objects for better look |  |
| 10.50 | Its quite dark  Energy  Fall off – distance  Inverse square (decays) |  |
|  | better |  |
|  | Energy 20 - Too bright |  |
|  |  |  |
|  | Move & rotate the spot light  Alter spot shape /cone to square |  |
|  | You only see effects of lights not the lights (you would have to model lights if want to see them)  Try different types of lights and their properties |  |

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|  | 3 cameras |  |
|  | Properties  Perspective view  Clipping defines a region you can render  Camera – leave as is (unless u specifically want to mimic that camera)  Depth of field  Focus  Things out of focus at certain depth  Display composition guide  Useful for laying objects in scene |  |
| 4 | Move camera in quad view port ctrl alt q  R rotate  Note the length of time your frame takes to render  One frame may not seem long at 2 mns but multiply but no of frames!!! |  |
| 6 | Resolution  If render for HDTV use HDTV  If PAL use PAL  Use the custom 640 480 @ 25 fps |  |
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|  | 4 Animation |  |
| 00.23 | Animate the light (get it to orbit around the objects)  i (insert kf) Create a kf @1 locRotScale  CTRL 0 shows what the selected object (the lamp) can see  Move scrub to f50 move lamp – in quad view – need to rotate the lamp to face the objects – r to rotate  Do render f12 at a couple of frames and see shadows change | all go yellow on the kf |
| 7 | Graph editor  Pick the spot light x axis, y axis  Or z axis rotate  See changes alt a will play animation |  |
| 10.35 | Change number of frames in render options |  |
| 11.40 | The outliner  Use meaningful names as you could end up with many objects/lights |  |
|  | Change light settings  Samples 4 – soft size 2  Anti-aliasing 8  Should render faster  You can set it not to render a certain object |  |
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|  | 5 Rendering to video |  |
|  | Ctrl s – save scene!  Render 55 frames at 640 x 480  Frame set – we will render every frame (could do 2)  **To speed up render**  Turn anti aliasing to 5  Sampling - 2 |  |
| 4.20  7 | We will (not yet) render using ‘animation’ not ‘image’  Need to specify where we will store the rendered anim  And what format we will render to  i.e. image / movie  bmp / avi, mpeg  if you choose image – you get an image per frame – serious animation – you would put them in to final cut or premier software to build movie/animation  we will render to video  choose Xvid codec = avi file (quite small)  (if not avi)  Click the animaton button to start render |  |
| 8.11 | Look in folder you created and find the video file  You will get a 2 second animation (@ 25 fps) |  |
|  | Try animating the lights and camera – keeping them pointed at the objects. |  |
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|  | 6 add-ons |  |
|  | Go to user preferences  Note different tabs  You ‘can’ change keyboard shortcuts |  |
| 1.44 | Look at the mesh add-ons  i.e.  landscape primitive  bolt factory  pipe joints  regular solids  select them they should become available  to keep- if you save as default  back in 3d view CTRL u – saves user settings  see the new add-ons in menu – i.e mesh/landscape |
| 4.30 | Choose landscape  In tools see settings for landscape  Change mesh size  Multi fractal – to other algorithm in type – see changes  Perlin/ default blender  Random seed – type integer see changes  Noise drag and see effects (==less repetitive effects)  Lacunarity / dimension /depth/invert/falloff  – try them out |  |
| 9.30 | Deselect then reselect – see it as wireframe – you can of course delete / merge etc |  |
| 11.34 | Look at another addon – joints - t – joint good for tunnels (and pipes of course)  To flatten the floor of the pipe  Edit mode  Box select bottom half of vertices  s z scale on z axis and drag in to center to make it flat  RMC to keep |  |
|  | Add some addons – try them out |  |

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|  | 7 layers |  |
|  | A way of organising things separately  Shown bottom stage or in properties panel |  |
|  | Select an object hit m and choose a different layer to move it to  To see both layers together press shift and select the layers |  |
|  | When a layer has an object you see this… |  |
| 3 | You can move lights and cameras too  To render all layers select all layers (press shift and select) before render |  |
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|  | 8 Rolling ball animation |  |
|  | As the surface is shiney – it wouldn’t look much like it was rolling so changing the surface  Select middle of ball with box select (in wireframe) |  |
| 1.50 | Add a new material – red stripe  Make it red! – need to assign the new surface |  |
|  |  |  |
| 4.15 | Move ball out of camera shot |  |
|  | Delete all the keyframes in a oner – in graph editor  Select them all and hit delete |  |
| 5.30 | Set 120 frames  Kf the ball – location and rotaion  (Move on x – rotate on y)  At 120 another locrot kf |  |
|  | The rotation on final kf to 800 (rotates wrong way) change rotation to -800 (one rotation is 360)  Make sure you get rotation to match distance or looks very odd and wrong – like it is sliding  Measure circumference and distance to travel – then calculate number of rotations |  |
| 10.09 | As Johns animation made the ball roll into the box he animates the box moving as it is hit  He sets a kf at point of being hit and when box comes to rest  He uses the graph editor for easing  He sets camera at an angle to ‘hide bad animation’ |  |

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|  | 9 Setting up a scene with some terrain and adding a rocket |  |
|  | Add mesh landscape (an addon)  **Before deselecting or anything**  To get a flat area on the landscape… change  Subdivisions to 100  Sea level .25 |  |
| 2.30 | Set the landscape a little off from the origin, a little under the grid.  Scale and drag it out  Have the origine near hills on flat bit |  |
| 3.40  05.29 | As there is more geometry that we require…  We will remove some  In edit mode/wire frame  Go box select and delete vertices  Until let with    Put it on a different layer  Out of edit mode  M to move it to another layer |  |
| 6  8.30 | On layer 1 Build a ‘crude’ rocket  Put the cursor at 0,0,0  In **object** **mode** - Add a cylinder pull it down a bit  Add a sphere (is going to be cone of rocket)– pull it up  **in edit mode** (so dont have kf info) scale the sphere on z  To Sharpen the nose  (Hit 0 )**proportional editing**  Choose to select by vertex select one at top  Open tools  As soon as you move the vertex a little – proportional editing tools will appear in the tool box  CURRENTLY ON SMOOT – change to ‘root’  Change proportional size to about 5  Click and drag up the vertex at top of rocket nose  Make sure that the magnet is NOT on  Scale it out  Select the cylinder and scale it down z so its longer | scale sphere  more pointed |
| 11.16 | To weld points together  Drop the cylinder a bit  Select faces and delete the top face  Delete the bottom of the nose object too..  5 front orthographic view  Z Wire frame  B box select – area shown--- and delete the faces  Drag the cylinder up to the nose  Select the bottom of the nose and make its diameter match the cylinder, pull it down a bit too. | Drop the cylinder a bit delete the top face |

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|  | The cylinder and sphere have same number of sides so points match up – so we can join them  in object mode |  |
| 13.30 | Object mode  Select one object then  Shift select to select both meshes  To join then CTRL j  Box select all of merged points  In tool box select remove doubles  See new value box for merge distance appears – ok if you want to merge **all** close points - set to approx. 0.120 | Same shade of orange now both merged |
| 15.48 | Start of our ‘rocket’  Now extrude and scale until desired shape  Look at the rocket with the landscape |  |

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| 21.30 | Duplication of objects  Sins/instancing |  |
|  | Put the 3d cursor to the side of rocket – we will add fuel tanks?  Add a cylinder  Size it down  Select the cylinder  If it is part of the mesh – hit p separate by selection |  |
|  | Place it 0 on y  Scale it on z  To create 4 duplicates around the body of rocket  In |  |
| 24.40 | In edit mode, with cylinder selected, in object tools  In tools  Duplicate a copy  Spin number copies around axis  Choose the number of copies  The angle n which to share the copies  The axis on which to duplicate around |  |

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| 27.30 | **Parenting**  In object mode  Select the ’child’ objects first (rockets)  Shift select the parent (rocket body)  CTRL P – parent to Object – now child objects follow  But you can still move child objects seperately |  |
| 29 | CTRL ,‘+’, then p – select one face  Separate by selection |  |
| 30.15 | Can shift select many objects together then  CTRL P – to parent all to parent to Object |  |
| 31.07 | Surface colour white for rocket  Materials  Give it a colour – any colour  Say we want to give it a stripe – can add some extra polygons…  CTRL R- slide and loop tool  loops round polygons – slide it to where you want  CTRL R- again – slide it to where you want  can choose a part of rocket you want  create a pure white stripe assign it  you could do a check pattern – select the faces and add a new material |  |
|  | Get lights and a camera to watch it rise up from launch pad |  |
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|  | 10 Duplicates and copies ( instances) |  |
|  | Start with a cube  Drag it to side  **SHIFT D** – creates a duplicate object – ensure it isn’t in same place  If **ALT D –** create another INSTANCE  Most Changes take place to all instances when change original - but **not** subdivide or subdivided objects  Only works on conventional geometry | Left is a copy – right instance |
| 6.15 | Spin duplication (again) was in last video of rocket  Add a cube  Edit mode – add - Spin  It guesses rotation depending on view port |  |
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| Week 8 | 1 Projection mapping | vs UV & procedural |
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| 1.35 | Start with block  Have to give it material properties  Select object  Add new **material**  New – name it cubeTxt01  Diffuse - Give it a colour - he does green  shader characteristic - lambert  Specular highlights intensity 0.5  Etc. |  |
| 05.09 | Select a channel and new for a new texture  Click new  Type (default is clouds) select image or movie  (you can apply a movie to surface ) |  |
| 6 | Open a texture (that we will use)  NOTE It doesn’t show on the object – but if you select (shown) it kind of shows texture  Look at it through camera  Change render property –  Display from image editor to new window  F12 to render  You should see texture on top not side |  |
| 7.55 | Add new light  Select light , shift d duplicates it  We have rendered down z axis and getting streaking problem |  |
| 9 | Select the square object  Back to texture editing  Select texture and look at how it’s being projected onto our object  Change Projection from flat to cube  Render again  Note its projected on all sides |  |

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| 10.43 | Select 1 face  To see some more surface showing on stage you can select display mode and choose texture or solid etc.  Select solid for now  To give THIS face a new surface hit + in materials  Call it cubetxt02  **ASSIGN it (**you have to do this with new materials)  Render it |  |
| 12.10 | With this new material selected go back to textures tab  Hit new – set as image or movie  Add a different texture  Project it as flat and try others |  |
|  | Try this with own textures – keep objects simple until get used to it |  |

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| 2 | 2 Introduction to UV mapping |  |
|  | High degree of control of the application of texture on a 3d object  Start with cube  He splits the screen Right click on line between 2 panels (see the red **‘x’** in image right->) and select split as shown right.  Also set right panel as a UV image editor (see right) |  |
|  | To look at left screen object ‘unwrapped’  Go into edit mode, select all, **hit u to unwrap** select unwrap  If you see a rendered image on right click the x next to render result (right screen) |  |
| 1.45 | Right object is every single face (of the objet) stacked on top of each other  If you try moving the UV’s you see it doesn’t affect the polygons on object – they are just to effect texture |  |
| 3  3.30 | Create seems - to tell how to unwrap in a particular way  So we deselect object (left)  First he selects top edges and 2 side edges |  |
| 4 | CTRL e / mark seam - convert the edges to seams  Select all of object again  ‘u’ to unwrap again  Note it looks a little distorted so now select the edges at ‘other end of box’ mark as seems and select all again and hit u to unwrap again so its like an open box | Note seams show as red unwrapped UV |

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| 5.30 | Save this so we can take it in a drawing program to use a guide to draw create a surface  On UV screen go to UV’s / export UV layout  Save it somewhere with a meaningful name  i.e. diceUV01  export UV layout  look for your file – open it in image software such as  GIMP/photoshop etc  It should be 1024 px by 1024  Note UV maps are always square |  |
|  | In photoshop he opens program  He makes another square - 1024 px by 1024 to use as his bg image  Places it over the layer of uv guide  The back layer is the UV guide  So he makes top layers transparent so can see through to the guide layer |  |
|  | Export it once finished |  |

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| 13 | Back in blender  Open the image |  |
|  | To see it a bit on the object  Choose how to display as texture |  |
|  | You see the effect on the cube object (It may not all show depending on lights)  F12 render – you don’t see the texture! Because we haven’t added it as a material  So select it all add material/new/name it uvDiceMat.01 |  |
| 15.12 | Experiment with different shaders lambert etc.  More lights etc. |  |
| 15.30 | Create new **texture** change from clouds to image or movie / choose the file |  |
|  | Scroll to mapping / set **coordinates** to UV |  |
|  | Select **map** |  |

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|  | Note the preview may not give accurate image  Below the preview showed the map on each side but once rendered it was spread out over the 6 sides |  |
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| 17.30 | He adds more lights  Looks through camera  Rotates it – checks the render on object |  |
| 17.23  20.19 | In drawing he adds some more to image  Exports it  back in blender – image / open image |  |

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|  | Back in textures – select the new image  Render it and see how some seams don’t match so well  i.e. the line off the edge of 6 just stops but doesn’t match to another stripe |  |
| 22.30 | Save your blend files and textures in the **same folder**  **Name folders sensibly so wont lose materials** |  |

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| Week 9 | 1 Subdivision surface modelling |  |
|  | Now more organic models This way more for sculpting rather than primitives as basis – by using subdivision |  |
| 1.05 | Start with start-up file |  |
| 1.50  2.40  3.00 | Edit mode  Scale the model out on y (s/y) – don’t worry if its not exactly the same as in tutorial  Only 6 sides will add more points and polys…  Loop cut and slide - **CTRL R**  Note the purple line where the loop will be added  LMB will allow you to drag it back forward  Right click to put it back in the middle  (after CRTL + R, to left then right click to set it  **CTRL R two more times on this axis**  **Keep doing until you have more geometry** |  |
| 5.30 | **CTRL with 1,2,3,4 or 5** (top row numbers) (level 6 is in properties in mesh tab) 0 for off again  Gives different level of subdivision  We will do 3 |  |
| 6.40 | CTRL 0 on top row of numbers  Takes us out of subdivision surface view |  |
| 7 | Going to make wings  By modelling two faces on each side (this will be mirrored as same on both side)  So in face mode  Select 2 faces where wings are ON EACH side  If we extrude them on x it pulls both sides same way – we want them to go in opposite direction… |  |
| 9 | **Extrude (e) then (esc)**  Note the small black dots on the geometry – it means the extrude has taken place though we haven’t moved anything – so points are on points  We want to extrude out on the normal to pull the faces out on opposite directions  Use scale tool to scale opposite sides  **Alt s , on x axis x**  But only do it a little  Then extrude another section as shown |  |
| 10.50 | With same faces selected you can pull them back wings swept back look (g on y) |  |
| 11.25 | The nose  In vertex mode select the point at the nose  With proportional editing choose smooth see below |  |

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| 12.22 | Change the proportional size   1. Enable proportional editing tools on bottom bar 2. in tool box see the fall off set it to smooth 3. change the proportional size   you probably won’t see the proportional size until you move the poly  then select faces and do some more |  |
|  | Round of the body  With proportional editing off  Go into fron ortho wire frame  Using box select - select top right point,  Using box select again – select top left point (this will add to the initial selection) do same for bottom corners |  |
| 16.00 | Scale on x |  |
| 16.30 | Scale on z |  |

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|  | 18.00  Change the wings  Scale for doing mirror  Select points of wings (in wireframe mode)  S, z to pull them in a bit  And down a bit but be careful |  |
|  | Select 4 points at from edge of two wings and scale z and move up |  |
| 20.25 | See how it’s getting on …  Hit CTRL + 3 to see subdivided  Ctrl + 0 out of subdivide mode |  |
| 20.50 | Top view select points and pull wings in if like |  |
| 21.25 | Wing curve is cute round as not much geometry in-between  If you wanted less of a curve need to add more geometry – use CTRL + r to add a curve  Do it to both sides  n.b. You can slide along an angle |  |
| 24 | The cone at the back of aircraft  Select faces  Extrude them y in a little  Extrude them y in a bit more  Extrude / scale it in a bit  Extrude out a bit  Then out a long way  Scale from out  Extrude a flat front  Extrude in a bit scale in a bit and extrude back inside ( in wireframe check its not overlapping |  |
| 26.45 | Can round it off  Select vertices at back corners |  |
| 23.50 | Tail fin  Extrude the faces at the back of the plane |  |
| 35 | Cockpit |  |
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|  | Cockpit top |  |

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|  | 2 UV mapping | More cutting seams for a UV map and application of a basic UV map. On a more complex model of a plane |
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|  | 3 Animating a camera and parenting - animating a camera and a light around a scene. | Do not parent camera to the object you may be following = problems |
|  | To fly the camera over some terrain then add a spot light to it |  |
|  | First generate some terrain  Add a Mesh landscape  Scale it to a large size  Make sure camera and light are above it  Look at it in 4 views (CTRL alt q)  Can check camera is pointing at right place |  |
| 3.33 | Put the 3D cursor close to the camera and  Add a spot lamp  Have it pointing to same place as camera is pointing |  |
| 05.36 | Parent lamp to camera  Child first – light  Then parent – camera  CTRL p  Set parent to object  Light should now follow camera |  |
| 6.37 | The time line  Number of frames strag end to 300  Start 0 end 300 |  |
| 7.34 | Insert a Keyframe i  We will set it for locRocScale  ( or you could right click in location rotation scale properties box and add or replace a kf) |  |
| 8.40 | In render settings check fps is 25 |  |
| 9 | In f25 drag the camera to distance you want it to travel in 1 second – careful not to drag into geometry  Add another kf I / locRocScale  F50 drag camera again change rotation /etc so if follows the landscape |  |
|  | F 75,  Keep moving the camera and setting kf’s |  |

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| 12.53 | **Look at graph editor**  You can hide scale as we aren’t scale  If not rotated on x and y you can hide too |  |
| 17 | changing spline handles |  |
| 19.30 | Sorting the lights  Increase the energy  Change the cone of the spot  Blend (feathered region around spot)  You CAN Show cone to see where light is falling |  |
| 21.14 | Render  Xvid codec  Set end frame to end of your anim  640 \* 480 |  |

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