

Blender 3D: Noob to Pro - Miscellaneous Tutorials/Print version

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Miscellaneous Tutorials

Blender 3D: Noob to Pro/Miscellaneous Tutorials

3D Tiling Backgrounds For The Web

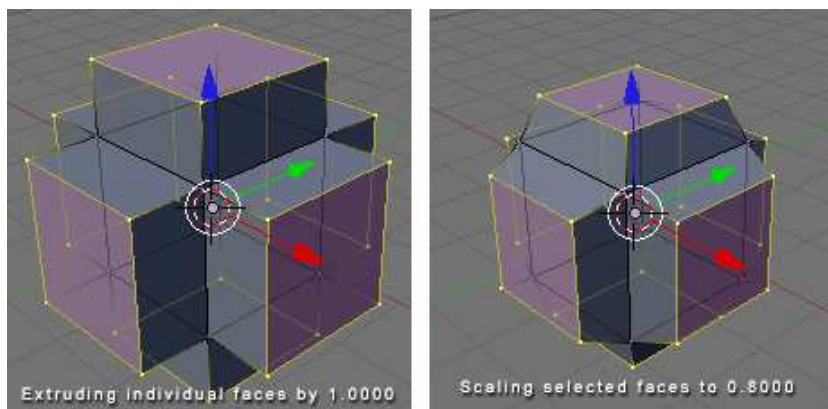
How to Make 3D Tiling Backgrounds For The Web

This tutorial will guide you through the process of making 3D tiling backgrounds for use with web pages, your desktop, or anything else for that matter. We will be using Blender and a graphic editing program such as Adobe Photoshop or GIMP. I will provide detailed explanation to cater to beginners, however more experienced Blenderists can probably get away with just following the picture diagrams provided. You may also find the diagrams useful if English is not your native language, or if you hate reading instructions.

Part 1: Create The Object You Wish To Tile

Start up Blender and look at your lonely cube. We will use this cube as a starting point for the sake of demonstration, but feel free to use any shape you like. Press "**Tab**" to enter **Edit Mode**. Press the "**E**" key on your keyboard and the **Extrude** menu will appear. Select "**Individual Faces**". As you then drag your mouse cursor you will see some numbers move in the bottom left in the window and text saying "Shrink/Fatten". I recommend setting it to 1.0000 to keep it simple. Hold down the "**Ctrl**" key while dragging to do so in set increments.

Next, with the six faces of the cube still selected, press the "**S**" key to scale those faces. I recommend scaling to 0.8000.

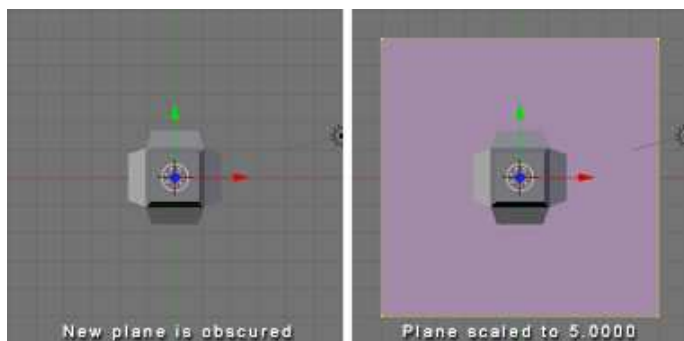


Good. Now that we have created our object we will prepare to tile it.

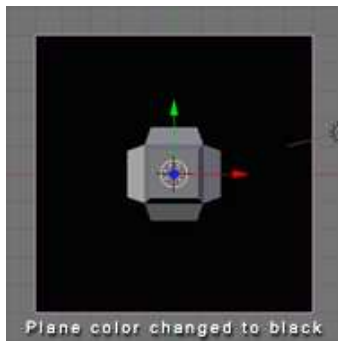
Part 2: Specify Your Tiling Area

"**Tab**" back into **Object Mode** and press "**NumPad 7**" to go to the Top View, or manually click "**View**" at the bottom of the window and select "**Top**".

Press "**spacebar**" and from the menu that appears select "**Add**" > "**Mesh**" > "**Plane**". The plane has appeared, but is obstructed by our cube object, so press "**S**" to scale the plane to 5.0000.



You'll notice that I've colored my plane black. This is only to make it easier for you to see. You need not bother with this as we will be deleting the face of this plane shortly.



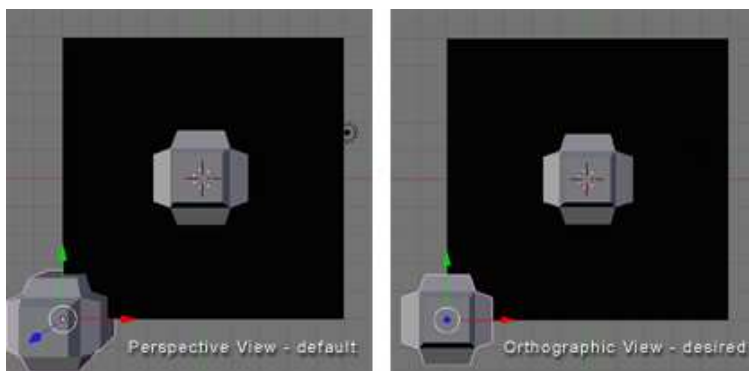
We now have an easily visible boundary representing the area which will be tiled. If at any point we decide we no longer need or want this we can move it to another layer by pressing "**M**" and selecting a layer to move it to.

Part 3: Tile Away!

Now the fun part begins. If you have created 2D tiling backgrounds before, this concept will be very familiar to you.

While in **Object Mode**, select your cube object. At this point you have a couple of options. One is to make duplicates of the cube object. Another is to make **linked** duplicates of the cube object. I recommend making linked duplicates because you can later edit the mesh of one object in order to change the mesh of all the duplicated objects. This can be especially useful if you later plan to animate your tiling background (*careful not to distract from the foreground*). It is also useful if you want to experiment with new designs easily without having to re-place all your objects.

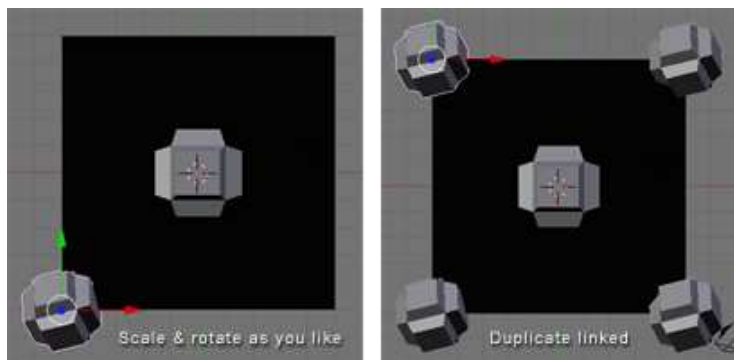
With your cube object still selected, press "**Alt+D**" to make a linked duplicate. (*Non-linked duplication is done with "Shift+D"*) Now hold down "**Ctrl**" to move in set increments and move the object to one of the corners of our plane. Make sure the center of the object (represented by a pink dot) is aligned with the very corner of the plane. At this point you may notice it's somewhat difficult to tell whether the center of the object is exactly on the corner of the plane, and that's why we are going to press "**NumPad 5**" or click "**View**" and select "**Orthographic**". For all practical purposes we can spend the rest of the time we are building the tiling pattern in Orthographic View because this view is essential for tiling.



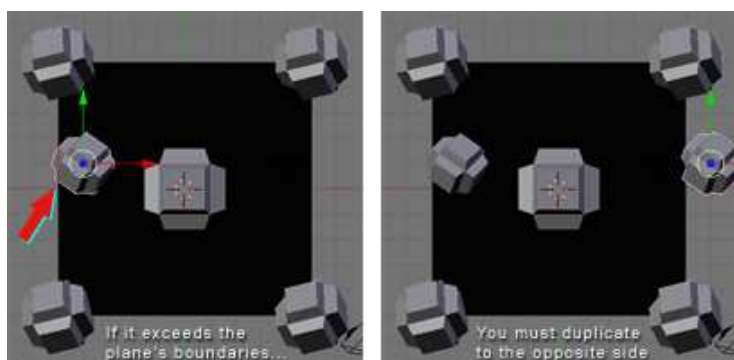
Now with your duplicate object still selected, scale it ("**S**" key) so that is somewhat smaller than the first. Then rotate it using the "**R**" key. While rotating you can constrain to a particular axis by typing "**X**", "**Y**", or "**Z**" respectively.

We will now make linked duplicates (**Alt+D**) of our rotated and scaled cube object and place one in each corner exactly on the grid (remember to hold "**Ctrl**" while dragging). If you place an object in

one corner, you must place it in all four corners because corners touch both the X axis and the Y axis.

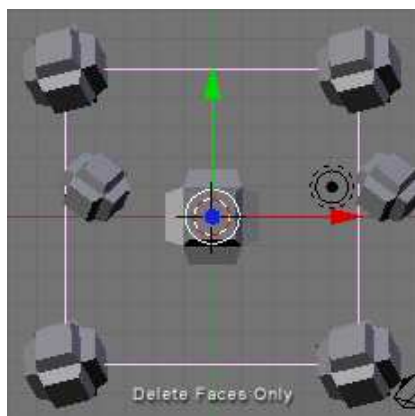


Now as you will notice in the following diagram, I made an object that is crossing over the edge of our plane. This is good. This is how to make natural tiling backgrounds. However! Whenever we do this we must be absolutely certain to do the same on the opposite side, or else our backgrounds will not tile properly.

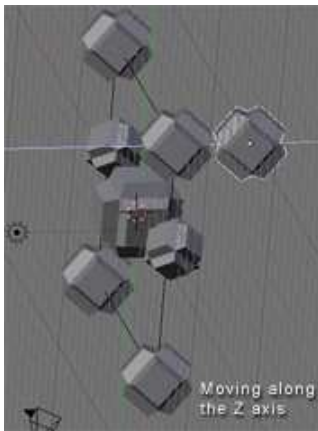


So now we've created a few objects of different sizes and orientations, however they have all been along the same spot on the **Z** axis. So let's give our pattern some depth - after all, that is the joy of working in 3D!

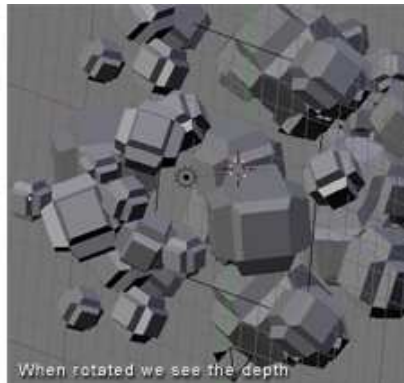
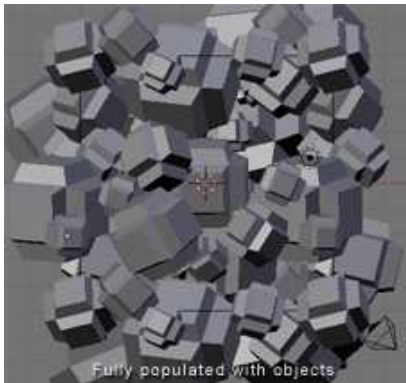
Before we do this, we'll want to get our guide plane out of the way. So **right click** on the plane to select it, then "**Tab**" into **Edit Mode**. Press "**X**" and from the **Erase** menu choose "**Only Faces**". Now "**Tab**" back into **Object Mode**. There! We now have only the segments of the plane as our guide.



Hold down the **middle mouse button** while dragging the mouse to see what our design looks like in three dimensions. Now right click one of the cube objects, duplicate a linked copy (**Alt+D**), and press "**Z**" to constrain movement to the Z axis.



Navigate in this way along the **X** and **Y** axis as well and once you've found a good spot, **scale** and **rotate**. Remember to make a duplicate on the opposite side whenever you cross the outline of the plane guide. You can go on like this and populate your tiling pattern with as many objects as you wish. The grid is your friend during this process, so you should always have your finger on "**Ctrl**" while moving the duplicate of an object that crosses a border of the guide plane. Also, any object that will "tile" across the border must be at the same point on the **Z** axis as its counterpart on the other side of the seam. Press "**NumPad 7**" periodically to see where you are from a 2D standpoint. This is the view from which we will eventually render the image, so this perspective is the one that counts. Beginners, remember that **mouse wheel** zooms in and out, and "**Shift+middle mouse button**" allows you to "drag" your way around.

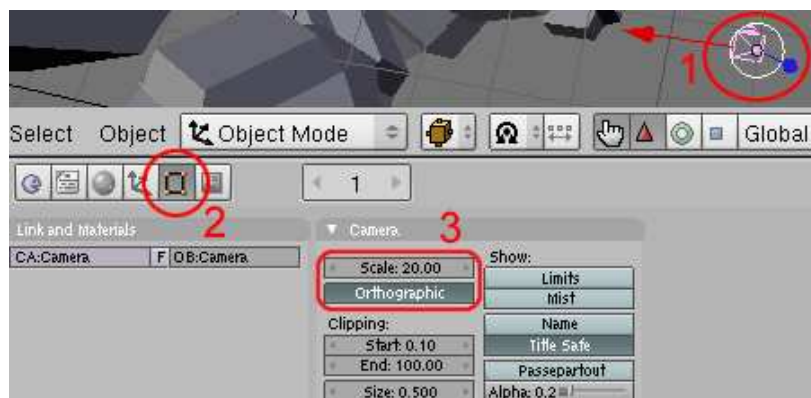


Keep in mind that in **Orthographic View** we do not perceive the depth of objects. Those far away and those near by appear to be at the same distance. This is what allows us to make a tiled image, but it also limits the apparent depth of the scene. We can compensate for this by scaling down the objects we want to appear further away. Or, as in this example, we can just make each object a different size and place some in front of others.

Part 4: Camera Settings

We will now position the camera directly over our cluster of objects. Press "**NumPad 7**", center the view on the cluster using "**Shift+middle mouse button**", and zoom out a couple notches with the **mouse wheel**. From the **3D View Window's** menu, click "**View**" > "**Align View**" > "**Align Active Camera to View**". Now you may be wondering why everything appears to be distorted. This is because when we changed to the camera's perspective, the view automatically reverted to **Perspective View** because by default the camera is set to that view. But just as we changed to **Orthographic View** in the 3D View Window, we can change the view of the camera as well. While in **Object Mode**, swivel the view until you see the camera. It is represented by a pyramidal wireframe with a black triangle atop the opening. **Right click** to select it. Now press "**F9**" or click the **Editing** button (it's icon is four vertices joined in a square). Now in the **Camera** panel you will see a button

labelled "**Orthographic**". Press it. Above the button is a value labelled **Scale**. Set it to around 20. (See figure below)



Part 5: Lighting & Materials

Place some lights in your scene, and add some materials to your objects. **Lighting** and **materials** are subjects which demand their own tutorials, so if you don't know how to do these things yet, please consult the Wiki.

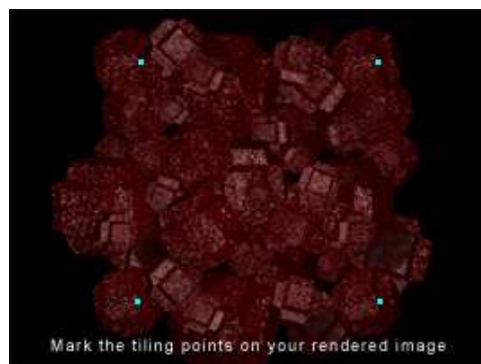
Note: I advise lighting your scene pretty evenly in order to make the tiling seem contiguous.

Part 6: Rendering

Now that you've presumably got your lighting and materials as you want them, it's time to render the scene. Under **User Preferences** click "**Render**" > "**Render Settings**" or just press "**F10**". In the **Format** tab you can choose the dimensions of your rendered image, the file format you prefer, and the quality. I'm going with 800x600 at 100% quality.

Part 7: 'Shopping

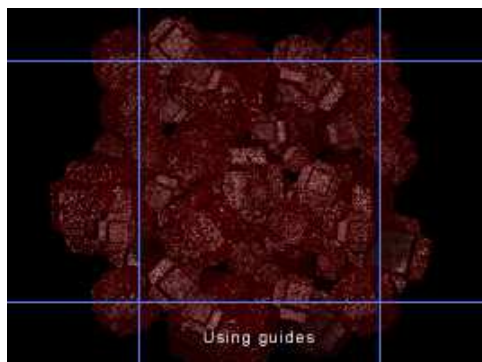
And it's time to begin post-production. Open your rendered image in your preferred image editor. I will be using Photoshop in this example. Now find and mark the four corners of your tile (on a new layer of course). Just eyeball it.



We will use guides to mark the tile boundaries. In Photoshop guides can be inserted by selecting "**View**" > "**New Guide...**". Guides can be positioned with the **Move Tool**. You can zoom in and make sure your guides are accurately positioned by holding "**Ctrl**" while typing "+" or "-". You can

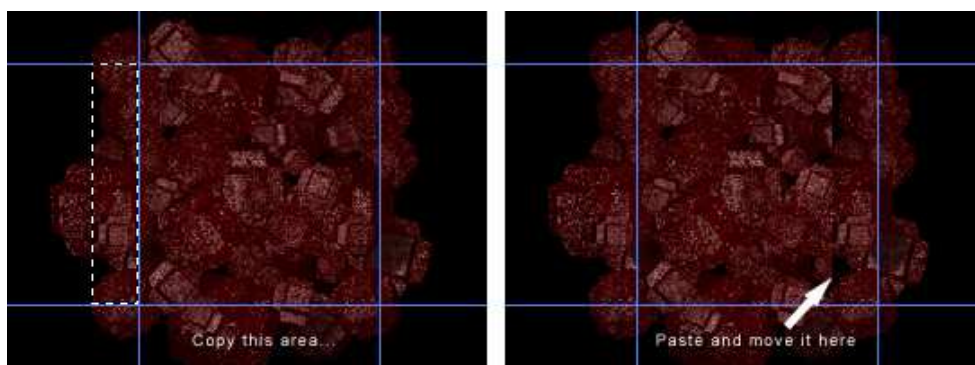
now hide or delete the layer with the markers, as that was only to help us get accurate guides.

Should you decide to make an animated tiling background I recommend layering all your frames on top of one another in your image editor before editing in order to keep the position uniform. You can then animate them using Adobe ImageReady (comes with Photoshop) or find decent low-budget and occasionally free GIF animation programs online.

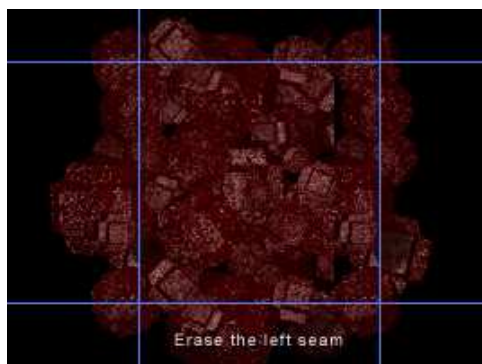


Now select an area just *outside* of the guides with the **Marquee Tool**. Make sure "**Feather**" is set to **0px** and that the marquee is rectangular and **Style** is set to **Normal** (meaning no Fixed Aspect Ratio or Fixed Size). Also, it will help you to have **Snap** enabled, so go to "**View**" and make sure it is enabled for guides.

Once you have selected the area, copy (**Ctrl+C**) and paste (**Ctrl+V**). Then drag to the right using the **Move Tool** and that piece should snap to the inside of the rightmost vertical guide.



Select the Eraser Tool and choose a brush size. I'm going with a diameter of 65. You'll want to use a soft gradient-like brush for this. Now erase the left edge of the newly pasted selection so that it blends into the picture. Don't erase any of the right edge.



Press "**Ctrl+E**" or alternatively, select "**Layer**" > "**Merge Down**".

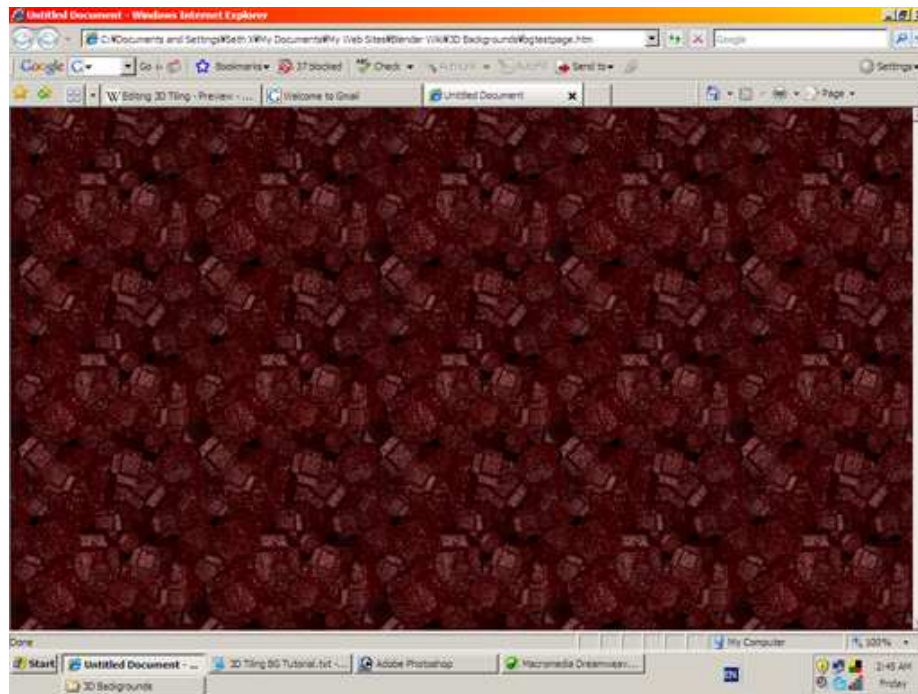
Alright, so that procedure you just performed copying from left to right - now do it bottom to top.

Once again, erase the edge. Do a **Save As**.

Finally, select the square center area that will become your tile and do "**Image**" > "**Crop**".

Now scale your new tiling background to a web-friendly size. **Save As** a JPEG, GIF, or PNG. **You're done!**

Note: If your pattern still isn't tiling quite perfectly, load the version with the guides again and repeat the copy-paste-erase process. Remember to merge down your layers each time or the corners may not tile correctly. If still no joy, try tiling the background in a web browser, taking a screenshot, pasting that into your graphics editor, and touching up from there.



Here is the final result:

I hope this has been informative.

Cheers,

--Quantum Anomaly 11:09, 17 March 2007 (UTC) <http://www.quantumanomaly.com>

All Blender Tutorial Links Back to Blender 3D

Here you can find useful **Blender Tutorial Links** written in English. Feel free to add some cool tutorials, but, on this page, only in English. For tutorials in other languages please read About. A tutorial about editing these pages can be found here. i made my first starting menu New to the 3D world? Read To Those Learning 3D (http://glenmoyes.com/articles/to_those_learning_3d.shtml) .

Official Blender Documentation

Almost all **Manuals** can be found in the latest official **Blender Manual Books**. For additional tutorials look below this topic.

- Blender MediaWiki (http://mediawiki.blender.org/index.php/Main_Page) * **exposed**
- Documentation at Blender3D.org (<http://www.blender3d.org/cms/Documentation.628.0.html>)

Interface

- User Interface
(http://www.blender3d.org/_media/education/quickstart/Blender_User_Interface.html)
- Blender Interface Theme Repository (<http://www.frontiernet.net/~krich/themes/>)
- Basic Editing (http://www.ee.oulu.fi/~kapu/cg_course/bigfiles/blender/blendman.html)
- Blender Hotkeys
- Blender Hotkeys II (<http://blender.excellentwhale.com/>)
- Navigating in 3D Space
(http://www.blender3d.org/_media/education/quickstart/Navigating_3D_Space.html)
- Product Presentation
(http://www.blender3d.org/Education/index_old.php?sub=TutorialPresentation) (Broken Link)
- A short overview of functionality
(http://www.blender3d.org/_media/education/quickstart/Blender_Windows.html) (Broken Link)
- Basic Blender (http://www.planetannihilation.com/terragen/tut_basic.shtml)
- Rotation, Scaling and Layers Tutorial
(<http://www.blenderwars.com/tut-path.php?module=rotation>)
- Appending Textures (<http://www.b5-blender.com/tutorial4.html>)
- Basic Blender (<http://www.b5-blender.com/tutorial1.html>) (broken link)
- Basic Interface
(http://www.users.bigpond.net.au/blendage/pages/beginners_tutorials/tut1/basic_interface.htm)
- Blender Multimedia (<http://www.malefico3d.com.ar/tutor/audiovideo-en.html>)
- Changing Views (<http://blender3dfr.free.fr/anglais/tut2/tut2.htm>)
- First Impression (<http://blender3dfr.free.fr/anglais/premiere.htm>)
- Getting Started (<http://blender3dfr.free.fr/anglais/tut1/tut1.htm>)
- Removing Orphan Vertices
(http://membres.lycos.fr/bobois/Tuts/reperer_sommets_orphelins/sommets_orphilins.html)
- Seeing Textures with Alt-Z
(http://membres.lycos.fr/bobois/Tuts/subdiviser_pour_conquerir_la_texture/subdiviser_pour_co)
- The Camera (<http://www.malefico3d.com.ar/tutor/camera.html>) (broken link)
- Stereoscopic camera for editing
(<http://brunetton.tuxfamily.org/index.php?n=En.BlenderStereo>)

Mesh Modeling

- DupliVerts Tutorial (http://dev.newmediaworx.com/johnnyb/bplanet/tut_dupliverts.htm)
- How to solve Blender's smoothing problems
(<http://feeblemind.tuxfamily.org/dotclear/index.php/2007/08/13/88-how-to-solve-blenders-smoothing-problems>)
: discussion about smoothing strategies: Smooth/Solid, Auto Smooth, EdgeSplit modifier...
- Heightmaps (http://members.tripod.com/~funky_munky/tuts/blender/heightmaps.htm)
- Mesh Editing Techniques (<http://vrotvrot.com/xoom/tutorials/Corridor/Corridor.html>)
- Object Extrusion and Procedural Objects
(<http://vrotvrot.com/xoom/tutorials/mineRide/mineride.html>)
- Loops Corkscrews Problem
(http://membres.lycos.fr/bobois/Tuts/Courbes/tire_bouchon/tire-bouchon.html)
- Loopings Problem (<http://membres.lycos.fr/bobois/Tuts/Courbes/Looping/looping.html>)
- Knots in Curves Problem (http://membres.lycos.fr/bobois/Tuts/Courbes/Aplat/a_plat.html)
- ZeTool (<http://membres.lycos.fr/bobois/Tuts/Courbes/ZeTool/zetool.html>)
- DupliFrames Modeling I
(http://membres.lycos.fr/bobois/Tuts/DupliFrames/Modeling/modeling_with_dupliframes_en_1.html)
- DupliFrames Modeling II
(http://membres.lycos.fr/bobois/Tuts/DupliFrames/Modeling/pizza_boxes/stack_of_boxes_en.html)
- Dupliframes (http://membres.lycos.fr/bobois/Tuts/DupliFrames/les_bases/les_bases_en_1.html)

- Spin and Spin Dup
(http://membres.lycos.fr/bobois/Tuts/Spin_et_spin_dup/Spin_and_spin_dup_tutorial.html) - Needs a lot more explanation
- Automated BevOb
(http://membres.lycos.fr/bobois/Tuts/Extrusion_par_bev_ob/Ext1_Ext2/Ext1_Ext2_en.html)
- Extrusion along a Path using BevOb
(http://membres.lycos.fr/bobois/Tuts/Extrusion_par_bev_ob/Alignement_des_axes/Alignement_
- Path Extrusion
(http://membres.lycos.fr/bobois/Tuts/Extrusion_par_bev_ob/Les_bases/Les_bases_en.html)
- DupliVerts (http://membres.lycos.fr/bobois/Tuts/DupliVerts/Dupliverts/dupliverts_en.html)
- Limit DupliVerts
(http://membres.lycos.fr/bobois/Tuts/DupliVerts/limiter_les_dupliverts_en.html)
- Types of Handles for Bezier Curves
(http://membres.lycos.fr/bobois/Tuts/Courbes/Courbes_de_bezier/Types_de_poignees_bezier/T
- Beveled Cube (<http://w1.185.telia.com/~u18510119/tutorials/makeacube.pdf>) (*pdf tutorial*)
- Joining/Separating Parts of a Mesh
(http://membres.lycos.fr/bobois/Tuts/joindre_et_separer/joindre_et_separer_ang.html)
- Extrusion Controlled by IPO
(http://jmsoler.free.fr/didacticiel/blender/tutor/en_modelextipo00.htm)
- Basic objects (<http://blender3dfr.free.fr/anglais/tut3/tut3.htm>)
- Modelling Techniques and Strategies (<http://www.elysiun.com/forum/viewtopic.php?t=21382>)
- Easily Remove Orphan Edges and Vertices
(http://jmsoler.free.fr/didacticiel/blender/tutor/modesel_somparaz_en.htm)
- Non-destructive bevel effect
(<http://blendertips.blogspot.com/2006/03/bevel-modifier-workaround.html>)
- "Cage" Technique Tutorial (<http://www.cyphertxt.com/blendertechniquetut.php>)
- Creating Fire (<http://www.raivestudios.com/tutorials/blender/fire/>)

Nurbs and Subsurface Modeling

- IPOs, Lattices, Nurbs & Stuff (http://dev.newmediaworx.com/johnnyb/bplanet/tut_bottle.htm)
- Cross-Sections (<http://vrotvrot.com/xoom/tutorials/Cave/Cave.html>)
- Curve Resolution
(http://membres.lycos.fr/bobois/Tuts/Extrusion_par_bev_ob/DefResolU/DefResolU_en.html)
- Weight Parameter
(http://membres.lycos.fr/bobois/Tuts/Courbes/Courbes_nurbs/Poids_des_voisins/Poids_des_vo
- OrderU, UniformU and EndpointU
(http://membres.lycos.fr/bobois/Tuts/Courbes/Courbes_nurbs/Influence_de_order/Influence_de
- Curves -n- Bevels (<http://www.ingiebee.com/Blendermania/curves%20and%20Bevels.htm>)
- Subsurf Modeling (<http://www.malefico3d.com.ar/tutor/subsurf-e.html>)
- Making a Hole in Subsurf
(http://membres.lycos.fr/bobois/Tuts/subsurfs/Trouer_une_surface/trouer_une_subsurf_ang.ht
- Subsurf Edge Rolling - Round
(http://membres.lycos.fr/bobois/Tuts/subsurfs/rouler_un_bord/rouler_un_bord_rond_ang.html)
- Subsurf Edge Rolling - Square
(http://membres.lycos.fr/bobois/Tuts/subsurfs/rouler_un_bord/rouler_un_bord_carre_ang.html)
- Modeling with lattices - a fork (<http://www.blender3d.org/documentation/html/x10279.html>)
- Subsurf modeling 2 (<http://blender3dfr.free.fr/anglais/tut5/tut5.htm>)
- Metaballs (<http://blender3dfr.free.fr/anglais/tut6/tut6.htm>)
- Abstract SubSurf modeling I (<http://www.deviantart.com/view/26691152/>)

Specific Object Modeling

- Double-Helix (<http://www.deviantart.com/view/27132715/>)
- Turtle (<http://www.elysiun.com/forum/viewtopic.php?t=44686>)
- Leaf Shader Tutorial (<http://www.elysiun.com/forum/viewtopic.php?t=39810>)
- Sears-Roebuck Dairy Barn (<http://www.harkyman.com/searsbarn01.html>)
- Golf Ball
(<http://www.elysiun.com/forum/viewtopic.php?t=31781&postdays=0&postorder=asc&start=>
- Celtic Knot (http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_celticknot_en.htm)
- Simple Tree (<http://www.elysiun.com/forum/viewtopic.php?t=32306>)
- Making a pedestal (http://web.telia.com/~u91121962/tut1_1.htm)
- Building a Castle (http://www.blender3d.org/_media/education/quickstart/Building_Castle.html)
(broken)
- Ice Cube (<http://caron.yann.free.fr/blender/IceCube.pdf>) (*pdf tutorial*)
- Water I (<http://www.selleri.org/Blender/tuts/Water.pdf>) (*pdf tutorial*)
- Water II (<http://www.selleri.org/Blender/tuts/Water2.pdf>) (*pdf tutorial*)
- Space Pod (http://dev.newmediaworx.com/johnnyb/bplanet/tut_pod.htm)
- Grass (<http://lib.hel.fi/~basse/>) (link moved)
- Bongo Creature (<http://www.enricovalenza.com/makebongo.html>)
- Spiral Stairs (<http://www.blenderwars.com/tut.php?module=stairs>)
- Waste Basket (<http://www.blenderwars.com/tut.php?module=waste>)
- Beveled Cube (<http://www.blenderwars.com/tut.php?module=bevcube>)
- Simple Box (<http://www.blenderwars.com/tut-path.php?module=box1>)
- Fountain with Moving Water
(<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut5/fountain.html>)
- Track Creation (<http://www.geocities.com/swdoughty/blendertute1.html>) (dead link)
- Dolphin (<http://vrotvrot.com/xoom/tutorials/Dolphin/UnderWater.html>)
- Dice (<http://vrotvrot.com/xoom/tutorials/Die/dice.html>)
- Logo (<http://vrotvrot.com/xoom/tutorials/logoTut/logoTut.html>)
- Cutting through steel (<http://vrotvrot.com/xoom/tutorials/Welder/Welder.html>)
- Roller Coaster (http://membres.lycos.fr/bobois/Tuts/Courbes/completeRC/foreword_en.html)
- Roller Coster Cobra (<http://membres.lycos.fr/bobois/Tuts/Courbes/Cobra/cobra.html>)
- Modelling a Glass
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/tp1-index-a
- Ocean View (<http://www.ingiebee.com/Blendermania/create%20ocean%20view.htm>)
- Solar Systems for beginners (<http://www.ingiebee.com/Blendermania/Solar%20System.htm>)
- Chair (http://membres.lycos.fr/bobois/objets_a_partager/a_simple_chair.html)
- Spiral Stair (<http://w1.185.telia.com/~u18510119/tutorials/spiralstair.pdf>) (*pdf tutorial*)
- Lighthouse (<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut1/lighthouse.html>)
- Landscape
(<http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/didacticiel-ang.html>)
- Landscapes Easy
(<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut2/landscape.html>)
- Cloth Tutorial (<http://www.free-webspace.biz/sonix/BlenderTutes/QuickClothTute.html>)
- Cup (<http://kahuna.clayton.edu/~jbrooks/blender/tutorials/cup/>)
- Cola cane (<http://free.hostdepartment.com/B/Blender3D/cantut/>)
- Candle
(http://download.blender.org/documentation/oldsite/oldsite.blender3d.org/93_Blender%20tuto
- Volcano (<http://kahuna.clayton.edu/~jbrooks/blender/tutorials/volcano/>)
- Orbital Logo (<http://kahuna.clayton.edu/~jbrooks/blender/tutorials/universal/>)
- Realistic Planet (<http://www.enricovalenza.com/realplan.html>)

- Landscape Cartoon (<http://www.selleri.org/Blender/tuts/CartoonishLandscape.pdf>) (*pdf tutorial*)
- Text (<http://blender3dfr.free.fr/anglais/tut4/tut4.htm>)
- Text Part 1: Manipulate Text (<http://www.raivestudios.com/tutorials/blender/text/>)

Human

- Head Modeling (<http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/head-subsurf/index-ang.htm>)
- Head Modeling & Texturing Tutorial (<http://kotinetti.suomi.net/fsware/hippie/tutorial1/index.php>)
- Head (<http://www.visiontovision.com/BlenderHead1.html>) (*link broken*)(*Part 1 of 12-part Flash Tutorial*)
- Hand Palm (<http://jlp.nerim.net/tutorials/hands-modelling/hands-tuto-01.html>)
- Make Human: Modeling a New Target (<http://feeblemind.tuxfamily.org/dotclear/index.php/2005/04/11/23-didacticiel-modelisation-dur>)
- Eyes (<http://web.pdx.edu/~wlf/tut.html>)
- Hair Tutorial (<http://www.elysiun.com/forum/viewtopic.php?t=16008>)
- Real Hair with Blender 3D (<http://www.prodigyweb.net.mx/nivel9/hair/realHair.html>) (dead link)
- Female Character (<http://otothegardener.free.fr/tutorials/Femme/femme.htm>) (dead link)
- Texturing Skin using Vertex Painting and Repeating Image Textures (http://pages.zoom.co.uk/nick.towers/tutorials/skin_tutorial/skin_tutorial.html)
- Wikipedia: Human Body Proportions (http://en.wikipedia.org/wiki/Body_proportions)

Cars

- Porsche 550 (<http://perso.wanadoo.fr/speedtiti/tutoriels.htm>) * **exposed**
- Car IV small (<http://otothegardener.free.fr/tutorials/Voiture/voiture.htm>) (dead link)
- Car V F1 (<http://otothegardener.free.fr/tutorials/F1/f1.htm>) (dead link)
- Creating a Toon Car (<http://www.raivestudios.com/tutorials/blender/tooncar/>)

Texture Mapping

- Making a Lightsaber with Halos ([link repaired!](http://blenderartists.org/forum/showthread.php?t=62611)) (<http://blenderartists.org/forum/showthread.php?t=62611>)
- The Unofficial Texturing Tutorial (<http://www.elysiun.com/forum/viewtopic.php?t=11889>)
- Material Indice Tutorial (<http://feeblemind.tuxfamily.org/dotclear/index.php/2004/12/21/5-blender-indices-materiau---m>)
- Raytraced Transparency and Refraction (<http://feeblemind.tuxfamily.org/dotclear/index.php/2004/12/26/7-didacticiel-la-refraction---tut>)
- Chrome and Shiny Metal Surfaces (http://www.ualberta.ca/%7Enwy/blender/blender_tut1.htm)
- Texturing a castle (http://www.blender3d.org/_media/education/quickstart/Texturing_Castle.html) (Broken link)
- Texturing Tutorial (http://www.planetannihilation.com/terragen/tut_buildpics.shtml) (NOTE: For the game Total Annihilation, not really a general tut)
- Textures in OrCo mode (<http://www.enricovalenza.com/textures.html>)
- Textures for Allosaurus (<http://www.enricovalenza.com/textall.html>) (Broken link)
- Texturing Part I (<http://www.geocities.com/woodsmith102000/Tutorials1.html?>) [Broken Link]
- Texturing Part II (<http://www.geocities.com/woodsmith102000/Tutorial2.html?>) [Broken Link]
- Texturing a Ship (<http://www.blenderwars.com/tut.php?module=texture>)
- Material Indices

- (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/tp2-index-ang)
- Textures Channels
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/didac4-ang)
- Textures Mapping
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/didac3-ang)
- Specular Color
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/didac2-ang)
- The Color
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/didac1-ang)
- Materials in Blender
(http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/blender_material/index-ang.l)
- Alpha, Bump, and Specular image textures
(<http://www.ingiebee.com/Blendermania/BumpSpecAlphaTex.htm>)
- Image Textures
(<http://www.ingiebee.com/Blendermania/attach%20image%20file%20to%20object.htm>)
- Decals
(<http://www.ingiebee.com/tutorials/Decal%20Mirror%20Modelling/theeth%20decal.htm>)
- Chrome (<http://www.ingiebee.com/tutorials/Digital-Mark.htm>)
- Alpha Masks (http://membres.lycos.fr/bobois/Tuts/trouer_par_texture/trouer_par_texture.html)
- Skies I (<http://www.malefico3d.com.ar/tutor/skies.html>)
- Skies II (<http://www.malefico3d.com.ar/tutor/skies2.html>)
- Basic Texturing 2 (http://viewhow2.qarbon.com/vf/vkxfjoo/7/basictextures_viewlet.html) (*Java tutorial*) (Broken Link)
- Textures with Alpha (<http://www-users.cs.umn.edu/~mein/blender/tutorials/dust/alpha.html>)
- Textures with Bumpmapping
(<http://www-users.cs.umn.edu/~mein/blender/tutorials/dust/bump.html>)
- Using More Than One Color
(http://www.users.bigpond.net.au/blendage/pages/tutorials/tut9/two_colours.html)
- Adding Color To Your Shapes
(http://www.users.bigpond.net.au/blendage/pages/beginners_tutorials/tut3/adding_colour.html)
- Using Textures and Bumpmapping Them
(http://www.users.bigpond.net.au/blendage/pages/beginners_tutorials/tut4/adding_texture.htm)
- Texture Mapping Tutorial (http://dev.newmediaworx.com/johnnyb/bplanet/tut_mapping.htm)
(pictures ok now 18/03/2006)
- Environment Mapping (http://dev.newmediaworx.com/johnnyb/bplanet/tut_envmap.htm)
(pictures ok now 18/03/2006)
- Mapping Caracater (<http://otothegardener.free.fr/tutorials/LittleOTO/anonce/anonce.htm>)
- Creation and Mapping
(http://membres.lycos.fr/bobois/Tuts/boite_de_projection/boite_de_projection005_en.html)
- Displacement Mapping
(<http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/displacement/index-ang.htm>)
- Game Sprites (<http://www.ingiebee.com/Blendermania/Game%20Sprites.htm>)
- Stencilling Textures (<http://www.ingiebee.com/Blendermania/Stencilling.htm>)
- Using Texture Stencils
(<http://feeblemind.tuxfamily.org/dotclear/index.php/2005/02/27/16-didacticiel-usage-des-masq>)

UV Mapping

- Intermediate and Advanced UV Mapping
(<http://www.elysiun.com/forum/viewtopic.php?t=25918>) * **exposed**
- UV Mapping & Texturing (http://biorust.com/index.php?page=tutorial_detail&tutid=85)

- Sub-Surf and UV-Texturing problem
(http://barney.gonzaga.edu/~amoore1/uv_mapping_project/)
- UV Texture Skinning (<http://otothegardener.free.fr/tutorials/LittleOTO/littleto3/littleto3.htm>)
[Dead Link]
- Character UV Textures (<http://otothegardener.free.fr/tutorials/Armure/anonce/anonce.htm>)
[Dead Link]
- UV Texturing in Blender (http://www.planetannihilation.com/terrigen/tut_texturing.shtml)
- Tuhopuu UV editor mapping (<http://users.pandora.be/blendix/blender/uv/>)
- UV Mapping (<http://membres.lycos.fr/bobois/Tuts/uvmapping/uvmapping01.html>)
- Complex material for a sword
(http://www.3dtotal.com/team/Tutorials/swords&daggers/swords&daggers_01.asp)
- UV Mapping a road and box (<http://www.raivestudios.com/tutorials/blender/uvmapping/>)
- Create a Software Box (involves UV Mapping)
(<http://www.raivestudios.com/tutorials/blender/softwarebox/>)

Animated Textures

- Blender TexMesh Tutorial
(<http://www.telusplanet.net/public/kugyelka/blender/tutorials/texmesh/texmesh.htm>) * exposed
- animating masks for simulating ice freeze
(<http://www.elysiun.com/forum/viewtopic.php?p=455683#455683>)
- Animated Procedural Textures (<http://www.cogfilms.com/tutorials.html>) (*pdf tutorial*)

2D Texture Painting Techniques

This part isn't about using Blender, but about necessary **2D knowledge** for advanced Blender users.

- Steven Stahlberg's Tutorials (<http://www.androidblues.com/howto.html>) * exposed
- Dirty Metal Texture (<http://div.dyndns.org/EK/tutorial/texture/>)
- Gritty Pipelines (<http://div.dyndns.org/EK/tutorial/gritty/>)
- Digital Painting
(http://www.planetquake.com/polycount/resources/general/tutorials/HitmanDaz_Tut01/DigitalF)
- NWN Texturing Tutorials (http://www.btinternet.com/~i.nation/tutorials/tutorial_00.htm)
- Fixing Lighting Irregularities in Self-Tiling Maps
(<http://www.3drender.com/light/EqTutorial/tiling.htm>)
- Texture Map for the Iris of the Eye (<http://www.kandsdesign.com/kim/eyemap-tut.html>)
- Airplane Texture Tutorial
(<http://www.geocities.com/SiliconValley/Haven/2470/txtrtut/txtrtut.html>)
- Game Skinning Tips (<http://www.planetquake.com/pandemonium/html/skintips.htm>)
- Game Lighting Basics I (<http://www.planetquake.com/pandemonium/html/skintut3.htm>)
- Game Lighting Basics II (<http://www.planetquake.com/pandemonium/html/skintut4.htm>)
- Texturing with Gimp (<http://otothegardener.free.fr/tutorials/GimpTexture/gimptexture.htm>)
(broken link?)

Lighting, Shadows and Rendering

- Light - a detailed tutorial (<http://www.itchy-animation.co.uk/tutorials/light01.htm>)
- Yafray as an Integrated External Renderer
(<http://wiki.yafray.org/bin/view.pl/UserDoc/GauravGuide>)
- Basic 3 Point Lighting (<http://www.andrew-whitehurst.net/3point.html>)

- Radiosity I (<http://blenderman.free.fr/tut/radiosity/uk/>)
- Radiosity II
(http://download.blender.org/documentation/html/chapter_rendering_radiosity.html)
- Ramp Shaders (http://www.blender3d.org/cms/Ramp_Shaders.348.0.html)
- Simulating Radiosity (http://jmsoler.free.fr/didacticiel/blender/tutor/lumiere_radios_en.htm)
- Caustic Sampler Tutorial (<http://www.elysiun.com/forum/viewtopic.php?t=30265>)
- Shadows Control (http://dev.newmediaworx.com/johnnyb/bplanet/tut_shadows.htm)
- Light Types (<http://www.stormpages.com/eeshlo/otherBlender.html>)
- The 'World' buttons within Blender
(<http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/world/index-ang.html>)
- Mastering Shadows
(<http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/shadows/index-ang.html>)
- Ambient Occlusion
(<http://feblemind.tuxfamily.org/dotclear/index.php/2005/01/16/10-didacticiel-locclusion-ambia>)
- Area Lights
(<http://feblemind.tuxfamily.org/dotclear/index.php/2005/01/02/9-didacticiel-les-aires-lumineus>)
- Depth of Field (<http://www.malefico3d.com.ar/tutor/dof-en.html>)
- Soft Lights (<http://www.selleri.org/Blender/tuts/SoftLight.pdf>) (*pdf tutorial*)
- Blender's Mist (<http://www-users.cs.umn.edu/~mein/blender/tutorials/dust/mist.html>)
- Basic Lighting (<http://www.katorlegaz.com/index.php?a=article&display=1075723200.php>)
- Optimizing Renders
(<http://www.katorlegaz.com/index.php?a=article&display=1078185600.php>)
- Flares (<http://www.centraresource.com/blender/flares/>)
- Toon Shading (<http://free.hostdepartment.com/a/aner/TUTORIAL.html>)
- Simple Gold Ring with Caustics (http://www.geocities.com/sound_man_dave/caustics.htm)

Armatures and IK

- Dancing Flor (<http://otothecleaner.free.fr/tutorials/Flor/flor.html>) * **exposed**
- Animation Workshop II (<http://www.elysiun.com/forum/viewtopic.php?p=511798>) * **exposed**
- Using Ipo driven shape keys to correct deformations in joints (<http://kokcito.tk/rvk/ipo.html>) * **exposed**
- Animation recode project (http://www.blender.org/cms/How_Armatures_work.634.0.html)
- Action Constraints tutorial made easy (<http://www.elysiun.com/forum/viewtopic.php?t=49603>)
- Rigged Character (<http://www.elysiun.com/forum/viewtopic.php?t=31839>)
- Driven Hand Rig (<http://www.elysiun.com/forum/viewtopic.php?t=19347>)
- Constrained Mechanics (<http://argoslabs.com/%7Emalefico/tutor/mecano-en.html>)
- Armatures Tutorial (<http://www.anycities.com/turbog/Tutorial1.html>)
- Animation using Armatures
(http://www.users.bigpond.net.au/blendage/pages/tutorials/tut4/animatin_armatures.html)
- Ikas Blender 3D - Introduction
(<http://mmaigrot.free.fr/didac-blender/ikas/ikas-eng/ik-intro.php>)
- Constrained Mechanics (<http://www.malefico3d.com.ar/tutor/mecano-en.html>)
- Using Armatures (<http://www.elysiun.com/tutorials/animation/>)
- Making and Using Armatures
(<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut3/armatures.html>)
- Character Animation tools (<http://www.elysiun.com/tutorials/animation/>) (broken link ?)
- IK Solver Constraint (<http://www.elysiun.com/forum/viewtopic.php?t=42310>)
- Softbody for Rigged Characters (<http://www.enricovalenza.com/softb.html>)
- Rigging limbs that can twist (<http://kokcito.tk/tut/rig3.html>)
- Rigging tricks (<http://kokcito.tk/tut/rig1.html>)

- IKA Tutorial (<http://kahuna.clayton.edu/~jbrooks/blender/tutorials/IKA/>)

Animation

- Simple Animation (<http://feeblemind.tuxfamily.org/dotclear/index.php/2005/03/08/17-didacticiel-animations-simp>)
- Basic Keyframing (http://www.users.bigpond.net.au/blendage/pages/beginners_tutorials/tut2/Keyframeanimation)
- Effects (<http://download.blender.org/documentation/html/c1585.html>)
- Character Animation (http://dev.newmediaworx.com/johnnyb/bplanet/tut_charanim.htm)
- Run Cycle (http://rodri.aniguil.com/tuto_run/run_en.php) (Non Blender specific)
- Lip Sync I (<http://www.meloware.com/blender/lipsync.htm>)
- Lip Sync II (http://dev.newmediaworx.com/johnnyb/bplanet/tut_charanim2.htm)
- Walking Blues (<http://argoslabs.com/~malefico/tutor/walking.html>)
- Non Linear Action Editor - NLA I (<http://mmaigrot.free.fr/didac-blender/nla/eng/index.php>)
- Non Linear Action Editor - NLA II (<http://argoslabs.com/~malefico/tutor/nla-en.html>)
- Wave Effect (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/animation_effects/didac2-an)
- Build Effect (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/animation_effects/didac1-an)
- Animation effects (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/animation_effects/index-ang)
- Seascape (<http://homepages.nildram.co.uk/~raytrace/tutorials.html>) (*pdf tutorial*)(dead link)
- Flag Creation in Blender (<http://homepages.nildram.co.uk/~raytrace/tutorials.html>) (*pdf tutorial*)(dead link)
- Plane Following a Path (<http://www.ingiebee.com/Blendermania/plane%20follow%20path.htm>)
- Object Following a Path (<http://www.ingiebee.com/tutorials/Path/theeth%20paths.htm>)
- Cyclic Animation (http://membres.lycos.fr/bobois/Tuts/animation_cyclique/animation_cyclique_01_ang.html)
- Animating Materials (<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut7/colourchanging.html>)
- Walking Tutorial (<http://www.fortunecity.com/skyscraper/true/947/id13.htm>)
- Tracking Cameras to Paths (http://www.katorlegaz.com/index.php?filename=/articles/blender/Tracking_Cameras_to_Paths)
- Relative Vertex Keys (RVKs) (<http://www.katorlegaz.com/index.php?filename=/articles/blender/RVKs.php>)
- Change Cameras during an Animation (<http://www.elysiun.com/forum/viewtopic.php?t=42840&highlight=change+camera>)
- Camera Tracking With Additional Roll Constraint (<http://www.elysiun.com/forum/viewtopic.php?t=46181>)

Particles

- Particle Interaction (http://blender3d.com/cms/Particle_interaction.349.0.html)
- Static Particles (<http://www.elysiun.com/forum/viewtopic.php?t=41356>)
- Static Particle Effect (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/animation_effects/didac4-an)
- Particles Effect (http://www.linuxgraphic.org/section3d/blender/pages/didacticiels/animation_effects/didac3-an)
- Making a Fireplace (<http://www.geocities.com/blengine/fireplace1.html>) (down 06.08.2006)

- Making a Fountain With Particles
(<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut5/fountain.html>)
- Dust Particles (<http://www-users.cs.umn.edu/~mein/blender/tutorials/dust/particle.html>)
- Flames (<http://www.centraresource.com/blender/flames/>)
- Liquid (<http://www.centraresource.com/blender/liquid/>)
- Explosions (<http://www.centraresource.com/blender/explosions/>)
- Smoke (<http://www.centraresource.com/blender/smoke/>)
- Making a Rain Effect
(<http://feeblemind.tuxfamily.org/dotclear/index.php/2004/12/24/4-blender-faire-pleuvoir---maki>)
- Particle and field basics (<http://www.deviantart.com/view/27104504/>)

Fluid Simulation

- Fluid Simulation Basics (<http://www.deviantart.com/view/27479896/>)
- Fluid Tutorial (<http://www.penguinscore.com/fluidsimtut.htm>) { Broken Link }

Compositing

- Matching Real Lighting (http://www.andrew-whitehurst.net/fx_light.html)
- CGI/Live Action Interaction
(http://st102.startlogic.com/~blenderw/cms/index.php?option=com_content&task=view&id=2)
- Compositing CG and Live Action in Blender (<http://www.weirdhat.com/blender/compositing2/>)

Game Engine

- Game Engine Developing Team
(<http://wiki.blender.org/bin/view.pl/Blenderwiki/GameEngineTeam>) broken link
- New fully integrated game engine?
(<http://www.blender.org/forum/viewtopic.php?t=6409&sid=868ed3b00fd68157b704e87f0cc1>)
- Game Blender Documentation
(<http://web.archive.org/web/20011207173733/http://www.blender.nl/gameBlenderDoc/book1.1>)
(Last modified 13. 07. 2001)
- #GameBlender (<http://www.antihc3.dyndns.org/gameblender/game.php>) (Broken Link)
- Walkthrough Tutorial
(http://www.blender3d.org/Education/index_old.php?sub=TutorialWalkthrough) (Broken Link)
- Overlay Scenes (<http://www.fortunecity.com/skyscraper/true/947/id16.htm>)
- Walking Tutorial (<http://www.fortunecity.com/skyscraper/true/947/id13.htm>)
- Make a Menu (<http://www.fortunecity.com/skyscraper/true/947/id17.htm>)
- Flipper (<http://otothegardener.free.fr/tutorials/Flipper/flipper.htm>) (Broken Link)
- Armatures in the Game Engine
(<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut8/realtimearmatures.html>)
- Multilevel Maze (<http://www.users.bigpond.net.au/blendage/pages/tutorials/tut6/maze.html>)
- Creating Boulders that make the map restart when hit
(http://www.users.bigpond.net.au/blendage/pages/tutorials/tut10/adding_traps.html)

Python and Plugins

- Python Lessons
(http://www.sutabi.tk/timmeh/index.php?option=com_content&task=category§ionid=4&i)
* exposed

- Make Hair (<http://www.dedalo-3d.com/index.php?filename=SXCOL/makehair/abstract.html>) *
exposed
- Povanim Export Script (http://jmsoler.free.fr/util/blenderfile/fr/povanim_en.htm)
- AI Path Importer (http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_import_ai_en.htm)
- 3D-No Plugins; Put your 3D Blender space on web!
(<http://www.thoro.de/portfolio/verschiedenes/3DNP.html>)
- Randomizer Script (<http://www.elysiun.com/forum/viewtopic.php?t=37400>)
- Embedding the 3D web plugin in a web page
(http://www.blender3d.org/Education/index_old.php?sub=TutorialEmbedplugin)
- Different Useful Scripts (<http://www.selleri.org/Blender/scripts/text.html>)
- AfterGlow, Polyline, Hitchcock ZoomEffect, ... (<http://www.hgb-leipzig.de/~daniel/blender/>)
- Dynamica (<http://www.centuralsource.com/blender/dynamica/>)
- BlendSaber (<http://www.blenderwars.com/tut.php?module=blendersaber>)
- Lsystem tree maker (http://marief.soler.free.fr/Monsite/lssystem_en.htm)
- Python Scripting for Procedural Animation
(<http://www.ingiebee.com/Blendermania/Genos%20Spring.htm>)
- Python Scripting Part I (http://www.blenderbuch.de/tutor/python1/python1_eng.html)
- Python Scripting Part II (http://www.blenderbuch.de/tutor/python2/Python2_eng.html)
- Python Scripting Part III (http://www.blenderbuch.de/tutor/python3/Python3_Eng.html)
- Focallblur - A Matter of Depth (<http://www.elysiun.com/tutorials.php?id=2>)
- Python API Introduction
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script00.htm)
- Python API, Making a Square Mesh
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script01.htm)
- Python API, Iterations
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script02.htm)
- Python API, Automating Vertex Creation
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script03.htm)
- Python API, Automating Face Creation
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script04.htm)
- Python API, Making Potatoid
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/python_script05.htm)
- Python Script, To build an Empty for EnvMap
(http://jmsoler.free.fr/didacticiel/blender/tutor/english/eng_scriptmirror.htm)
- Python Script, Bezier Curves Import
(http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_curvesimport_en.htm)
- Python Script, Paths import
(http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_paths_import_en.htm)
- Python Script, Importing Adobe Illustrator Format
(http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_import_ai_en.htm)
- Python Script, Lionhead The Movies .msh import/export
(http://www.dcmoothing.com/main/index.php?option=com_docman&task=cat_view&Itemid=&)
- Python Script, Mesh Explosion
(http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_meshexplosion_en.htm)
- Python Script, Level Of Detail (http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_LOD_en.htm)
- Python Script, Wire Shadows and extrusions
(http://jmsoler.free.fr/didacticiel/blender/tutor/python_wireshadows_en.htm)
- Python Script, Changing the active camera instantly
(http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_changerdecamera_en.htm)
- Subsurface Scattering in Blender
(http://www.dedalo-3d.com/index.php?filename=SXCOL/experiments/ss_scattering_python.htm)

- Using the Superficial Scattering Script (<http://feeblemind.tuxfamily.org/dotclear/index.php/2005/04/25/39-mh-tutorial-using-the-super>)
- City Block Generator (<http://www.elysiun.com/forum/viewtopic.php?t=16217>)
- Blender Camera Calibration with Live Camera (<http://www.elysiun.com/forum/viewtopic.php?t=32715>)
- Import-export different formats, Different Generators, etc... (<http://www.redrival.com/scorpius/blender-plugins.htm>)
- Horn Extrude (<http://www3.sympatico.ca/emilio.aguirre/hornextrude.html>)
- Mesh shaker and tutorial (<http://saltshaker.sourceforge.net/>)
- Batch STL (http://blender.formworks.co.nz/batch_stl.html)
- Vertices to a Curve Converter (<http://www.elysiun.com/forum/viewtopic.php?t=45576>)
- Zutils, Z-Buffer Utilities (<http://www.elysiun.com/forum/viewtopic.php?t=35355>)

Using other Programs with Blender

- YafRay (<http://www.yafray.org>)
- Verse (<http://blender.org/modules/verse/>)
- SPE - Python IDE for Blender (<http://pythonide.stani.be>)
- Wings 3D Subdivision Modeler (<http://www.wings3d.com/>)
- Verse Gimp-Blender Plugin (<http://users.pandora.be/blendix/verse/old/demo.html>)
- Kerkythea Renderer (<http://www.softlab.ece.ntua.gr/~jpanta/Graphics/Kerkythea/>)
- Equinox 3D (<http://www.equinox3d.com>)
- Wings3D, a Quick and Accurate UVmapping Tool for Blender (<http://mywebpages.comcast.net/jmandmc/uvmap/uvmap.html>)
- Povray export (http://jmsoler.free.fr/util/blenderfile/fr/povanim_en.htm)
- Adobe Illustrator Paths import (http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_import_ai_en.htm)
- Inkscape SVG import (http://jmsoler.free.fr/didacticiel/blender/tutor/cpl_import_svg_en.htm)
- Using Blender content in PowerPoint 2000 (http://www.blender3d.org/Education/index_old.php?sub=TutorialPowerpoint)
- Ter2Blend (<http://users.skynet.be/sky33676/ter2blend1.html>)
- Batch Processing Images (http://membres.lycos.fr/bobois/Tuts/traitement_par_lot/traitement_par_lot_ang.html)
- BVH Info (<http://www.centraisource.com/blender/bvh/>)
- Stereogram (<http://www.geocities.com/blenderlab/tutorial1.html>)
- Importing VRML (http://www.blender3d.org/Education/index_old.php?sub=TutorialVrml)
- Creating Quicktime VRs (http://www.katorlegaz.com/index.php?filename=/articles/blender/Quicktime_VR.php)
- Blender, Python and Mac OS X (http://www.katorlegaz.com/index.php?filename=/articles/blender/Python_and_OS_X.php)
- Stylistic Rendering (<http://www.flippyneck.com/temp/NPR.htm>)
- Voodoo Camera Tracker (<http://www.digilab.uni-hannover.de/docs/manual.html>)
- Lionhead The Movies (http://www.dcmoothing.com/main/index.php?option=com_smf&Itemid=79&topic=180.0)

Distributed Computing

- BURP - Big and Ugly Rendering Project (<http://burp.boinc.dk/>)
- Render Planet (<https://renderplanet.com/>)
- Global Rendering-Farm (<http://renderworld.futureware.at/>)
- OS X Distributed Blender Network Rendering with Xgrid

(http://www.katorlegaz.com/index.php?filename=/articles/blender/Using_Blender_with_Xgrid.pl
(Incorrect link?))

- Bfarm Distributed Rendering via Internet (<http://geocities.com/tronovan3d/>)

Maybe someday ...

- LightRay (<http://www.tacc.utexas.edu/~cburns/lightray/lightray.php>)
- Toxic (<http://www.toxicengine.org/>)

Video Tutorials

- BEST: Blender Underground (<http://www.blenderunderground.com>)
- Official Blender Video Tutorials (http://blender3d.org/cms/Video_Tutorials.396.0.html)
- Greybeard's Blender Video Tutorials (<http://www.ibiblio.org/bvidtute/>)
- Head Tutorial (<http://www.visiontovision.com/BlenderHead1.html>) (*Part 1 of 12-part Flash Tutorial*)
- Series of short VTuts that explain basic details (<http://www.blendernation.com/2006/03/01/videotutorials-blender-3d-workshop/>)

Blender WikiBooks

- Blender 3D: Blending Into Python * **exposed**
- Blender 3D: HotKeys
- Blender 3D: Import and Render a SolidWorks Model
- Blender 3D: MemoBook
- Blender 3D: Noob to Pro
- All Blender WikiBooks Modules

FAQ

- Blender FAQ (http://www.museum.state.il.us/ismdepts/library/linuxguides/blender/blender_faq_0.html)
(Generated on September 24, 2001)
- Blender Tips (http://dev.newmediaworx.com/johnnyb/bplanet/tut_blendertips.htm)

Repository

This section is not about tutorials, but you can find here different useful stuff for your Blender.

Blueprints

- <http://cgworld.ru/modules.php?name=Blueprints> *exposed
- <http://blueprints.onnovanbraam.com/>
- <http://smcars.net/>
- <http://www.boatdesign.net/boat-plans-archive/index.htm> boats
- <http://www.mgussin.freeuk.com/00Plans.htm> old cars

- http://www.airwar.ru/other/draw_1w.html War Planes
- <http://www.suurland.com/> All sorts of cars
- <http://jpracing.racerplanet.com/> Cars, Trucks, Buses

Materials

- Sonix' Material Library(esp. Cars)
(<http://www.free-webspace.biz/sonix/Cars/Blender234CarMaterialLibraryR1.html>)

Models

- blendermodels.katorlegaz.com (<http://blendermodels.katorlegaz.com/>)

Photos

- Human Photo References (<http://www.3d.sk>)
- Brain scan (<http://www.med.harvard.edu/AANLIB/cases/caseNA/pb9.htm>)

Textures

- Textures Library (<http://textures.z7server.com/>)
- Mayang's Free Textures Hi-Res (<http://www.mayang.com/textures/index.htm>)
- Jeremy Engleman's Public Textures Hi-Res
(http://www.art.net/~jeremy/photo/public_texture_frameset.html)
- Image*After Free Images Hi-Res (<http://www.imageafter.com/>)
- Free Textures Mid-Res (<http://digitalcraftsman.com/textureBin/textureBin.htm>)
- Sky Maps (<http://www.elysiun.com/forum/viewtopic.php?t=24738>)

Miscellaneous

CG artists *must see or read*:

- How to succeed in Animation (<http://genedeitch.awn.com/>)
- Bitter History of 3D Business (<http://home.nordwest.net/Adger/tips/tip077.html>)
- Blender Art Gallery (<http://centralsource.com/blenderart/index.php>)
- Classical Film and Video Knowledge Base (<http://www.rondexter.com/>)
- Quick Tips in Design&GFX (<http://www.atpm.com/9.07/design.shtml>)

Open Movies

- www.blenderprojects.com (<http://www.blenderprojects.com/>)
- Orange (http://orange.blender.org/cms/The_Movie.555.0.html)
- NaNo - Blender Internet Virtual Movie Studio (<http://nano.prods.free.fr/>)

IRC

- <irc://irc.freenode.net/blender>
- <irc://irc.freenode.net/blenderchat>
- <irc://irc.freenode.net/blenderclasses>
- <irc://irc.freenode.net/blenderqa>

- [irc://irc.freenode.net/blendercoders](http://irc.freenode.net/blendercoders)
- [irc://irc.freenode.net/blenderwiki](http://irc.freenode.net/blenderwiki)
- [irc://irc.freenode.net/gameblenderdev](http://irc.freenode.net/gameblenderdev)
- [irc://irc.freenode.net/gameblender](http://irc.freenode.net/gameblender)
- [irc://irc.freenode.net/verse](http://irc.freenode.net/verse)

Tests

- Blender Benchmarks (<http://www.eofw.org/index.php>)

Other Lists

Please read more about on talk page.

Tutorials

- [blenderartists.org \(http://blenderartists.org/cms/index.php?id=38\)](http://blenderartists.org/cms/index.php?id=38) * **exposed**
- A Monolingual List of Tutorials (<http://www.zoo-logique.org/3D.Blender/index.php3?zoo=dif>)
- A Multilingual List of Tutorials (http://membres.lycos.fr/bobois/Liens_Links/big_list.html)
- Categorized list of Blender 3D Tutorials (<http://nututorials.com/tutorials/Blender3D/>)

Miscellaneous

- Blender 3D Links & Resources
(http://www.katorlegaz.com/index.php?filename=links/blender_3D.php)
- Blender Heads around the Globe(Where live other Blenders?)
(<http://www.frappr.com/blenderheadsaroundtheglobe>)
- Blenderart Magazine
(<http://s12.yousendit.com/d.aspx?id=14ZVYHLTFHOAK2V3YTCWU38RQ3>) Mirror 1
(http://www.apollux-designs.com/BA-Magazine/blenderart_mag-nov-05.pdf.zip) ,M2
(<http://blendertestbuilds.de/index.php?dir=Blenderart/20051115/>) ,M3
(http://www.intellidesign.org/blenderart_mag/)
- Blender Classroom Tutorial (<http://www.statikonline.com/Blender/>)
- Blender Tutorials Search Engine (<http://www.Blender3DTutorials.com>)
- Blender Basics 2nd ed - excellent classroom course
(<http://www.cdschools.org/54223045235521/blank/browse.asp?A=383&BMDRN=2000&BCC>)

About

This links list is language filtered and extended version of personal collection originally provided by **IamInnocent**. So if you looking for tutorials in other languages check this link at www.elysiun.com (<http://www.elysiun.com/forum/viewtopic.php?t=13380>) .

- German Blenders should have a look at
http://de.wikibooks.org/wiki/Blender_3D:_Tutorial_Linkliste

If you want to add Blender tutorial link in some other language you can add it temporary on talk page. We will later made such WikiBooks in other languages too.

Thank you all who contributed to this nice and useful links collection! Feel free to add your name or link if you think you need to be mentioned here.

-- Popski, Mar 2005 link title (<http://www.example.com>)

All Blueprints Links

- <http://www.shipschematics.net/> Starship Schematics Database
- http://www.suurland.com/blueprints_archive.php
- <http://www.the-blueprints.com/>
- <http://www.modeling.net/> **NOT** 3D modeling, but human models of the fashion type

Cool things that aren't that obvious

Introduction

Cool things in blender that aren't that obvious. Useful tips and tricks in Blender.

Attribution

Many of The Following Tips and Tricks have been contributed by members of the CGsociety.org (<http://www.cgsociety.org/>) , a Public Society for Digital Artists. The tips have been extracted from a CGsociety thread (<http://forums.cgsociety.org/showthread.php?t=52560&page=1&pp=15>) . They have been roughly edited to improve readability.

Navigation / Camera /Layers

Fly mode

enter camera mode (**NumPad 0**) and press **Shift+F** move the mouse slowly

click **LMB** speed up

Click **MMB** to slow down

press **Alt** to move up

press **Ctrl** to move down

Space to keep the orientation

escape to cancel fly mode

Hiding Meshes or Objects

In edit mode press **Alt+b** and select the area you want to be displayed with **LMB**. Rest of mesh will be hidden, until you press **Alt+b**.

You can also hide all but the currently selected objects by selecting at least one object and pressing **Divide** on the Numpad.

Opposite Views

NumPad 1, 7 and 3 puts you on front, top and left view, but **Ctrl+1, Ctrl+7 and Ctrl+3** puts you on back, down and right view (the opposite views).

Insert key frames for settings such as light intensity and horizon color

Once you have added a lamp or a world, by placing the cursor over the corresponding icon at the bar (the bar for switching what type of button you see on the buttons window) and pressing the I (i) key you can insert key frames for settings such as light intensity and horizon color.

"Truck" the camera in camera mode

- 1) Select the camera by right-clicking on it
- 2) Go into cam mode with NumPad 0
- 3) Press G to move the camera
- 4) Press the middle mouse button to lock the movement to the direction the camera is facing!

Make individual objects the camera and Change them back

If you select certain objects and press **Ctrl+NumPad0(zero)** it will make them the camera. I use it all the time to align spotlights.

Select your camera and hit **Ctrl+NumPad0** to make it the active camera again

Zoom the Floating Panel

you can zoom the floating panel in 3dview (ie Transform Properties [N]) by having the mouse cursor over one of the and pressing **NumPad(-)** or **NumPad(+)**. I always keep some floating windows in the 3d view while modeling, but some time they are taking too much space and I can hide it, as i need to see the adresse of the vertex.

Pan or Tilt the view

Ctrl+Alt+Scroll wheel and **Ctrl+Shift+Scroll wheel**, pans or tilts the view respectively

2.37a++

[user comment: **Shift+Scroll wheel** pans up/down, **Ctrl+Scroll wheel** pans left/right, **Ctrl+Alt+Scroll wheel** tilts left/right, **Shift+Alt+Scroll wheel** tilts up/down (Blender 2.42a)]

Move to the next screen

Pressing **Ctrl+Left Arrow** moves to the next screen selection. **Ctrl+Right Arrow** moves to the previous...

Horizontal Scroll for the Script Window

In the text window (where you load and write Python scripts), if you have a line that extends off the end of the screen, you can middle-click-drag the screen left and right, as there is no left<->right scroll bar. Been using Blender for years and just learned this the other day!

Make Blender always open in full screen

On windows, blender usually starts in windowed mode. You can make it open in full screen by :

1. pressing **Alt+UP_ARROW_KEY** or
2. clicking an icon (kind of like inverted ^) located at extreme right of the User Preferences window.

then press **Ctrl+U** to save user preferences.

NOTE:to come back to windowed mode press **Alt+DOWN_ARROW_KEY**

Emulating camera target feature of 3D Max

If you place the cursor in the object target, you choose rotate on pivot and rotate camera you emulate camera target of Max

Alternatively, add an empty, set the camera to track the empty with **Ctrl+T**. Fix the axis tracking in animations window. Now the camera will look at the empty where-ever it moves. So move it to a target.

Adjusting Slider values in controlled increments

In the material editor, hold down the **Ctrl-Key** while moving the sliders. This will make it jump +/- 100. Then, when using **Shift**, you it will do a +/-1, instead of jumping some values over, like in standard mode (without pressing anything). Of course, you can also just change the value by pressing the number.

Make All Layers Visible

In a case where you have layers 1, 4 and 5 selected. If you press ~ (tilde), then all layers are visible. But if you press **Shift** ~, then only the previous layers that you had selected will be visible. You can use **Shift** ~ to activate all, or show what used to be selected

Note for french keyboard (AZERTY) : use % (percent) key instead of ~ (tilde) key

File Browser Functions

Delete, Move, Rename, and Make Directory

When you are inside a file browser for loading or saving something and you want to create a new directory, just add the name to the path on top of the window and confirm 'Makedir'.

you can also delete(x), move(m), or rename(n) a file. you can do action on multiple files by seling with right click

Preview images when loading them as a texture

Whenever you are loading images as a texture, you can hold down **Ctrl** while clicking on the 'load' or 'open' button and the original preview window will appear. But be careful. The preview does not like certain file types and may crash. That is the reason why it is hidden .

Trick for Creating Quick File Revisions

After you have saved a blend file or an image you can then save it in progression that is:

car .blend. or car .JPG

Next time do "Save As" then press the + (plus) key which will advance the blend file by 1 every time it's pressed. example: car .blend becomes car 1.blend. press again car 2.blend and so on.

The - (minus) key will subtract one. I've gotten into the habit of saving frequently. Yea I know there is now the undo feature but I like this better because it gives you a history in case you need to back a few levels of a build. You get a saved version at the level you choose.

Note: Blender automatically detects the number... meaning it does not need to be in any position. For instance: If you have a file named 001starport.png or .blend or whatever, pressing the + (plus) key will automatically name it 002starport.png. If you want to name it starport1.png, it will change it to starport2.png.

Two rules: The filename has to have a number. It can be 0, or 1, or 3.141569.

If the file number is a negative, pressing + (plus) key will increase the "magnitude" of the negative number. I may have used magnitude wrong, if so, I mean pressing the + (plus) key will make -0.04 drop to -0.05. The - (minus) key will bring you only to 0, and then it will start to eat itself up.

Open Recent

Control O

Object/Vertex Manipulation

Constrain Movement to one Axis or to a plane

when moving objects/vertices or set of objects/vertices (**[G]** key) if you move in the direction of the global X axis (Up/Down) and then press the **MMB**, movement will be constrained to only move in the X axis, or if you move the vertices in the direction of the Y axis and then press **MMB** it will be constrained to move only in the Y axis. The same is true of the Z axis.

You can achieve the same effect by using the X, Y or Z keys while in grab mode. You simply have to press X key, Y or Z, once to lock to X Y or Z global axis,*

To Constrain the Movement to two axes (a plane): Press **Ctrl+X** to move in the Z-Y-Plane.

Ctrl+Z=XY, Ctrl+Y=XZ.*

Alternatively, Select scaling mode and select the axis not to scale with the selecting button at the same time as you hit **Shift**.

- in every case You can hit the X,Y or Z button again to constrain movement to a different set of axes. Normally this different set of axes is local. However you can change the identity of this set to global, local, normal, or view by pressing **Alt+Space**. which cycles through the different identities.

Note: All of these shortcuts work with scaling and Rotating as well

Shrink/fatten mesh in direction of vertex normals

When you're mesh-editing, **Alt+S** will shrink/fatten the mesh selection in the direction of the vertex

normals.

Vertex Parenting

You can parent object to a Mesh, in that case you are parenting to the center of the mesh.. BUT if the mesh is translated somehow (let's say by an armature **[S]** pose) the center remains in the same spot, and thus the child object doesn't receive any transformation at all.

To solve this, you can parent the child object to a vertex (or a face) within the mesh, and any transformation that the vertex receives is passed to the child.

There are only 2 options, to parent to any 3 vertex within the mesh or to parent to just one vertex. If you parent to 1 vertex then only location information is passed, with 3 vertex all transformations (rotation, location and size) are passed to the child.

How to do it? Starting out of edit mode select the child(ren), hold **Shift** and select the parent, enter edit mode, select one or tree vertex, press **Ctrl+P**. That's it!

Work around to welding Verts

For Edge loop (Verts) position both loops together as close as possible then hit W then 4 (not on numkey pad). You can adjust how far the effect of collapse can go in the Edit window (a button on the right labeled Limit: **, where * is a number).

As for individual Verts, eg. Two vertices welded to become one, select both Verts, scale until they are very close then hit W then 4.

you can also do this with the snap combo

select the vertex you want to weld together **Ctrl+S**, Cur -> Sel **Ctrl+S**, Sel -> Cur **[W]**, Remove Doubles

Also, whenever Blender pop up a menu with different options, you can just type in a number to choose one of the options (use the numbers not on the **NumPad**)

Make individual objects the camera and Change them back

If you select certain objects and press **Ctrl+0(zero)** it will make them the camera. I use it all the time to align spotlights.

Select your camera and hit **Ctrl NumPad 0** to make it the active camera again

Ordering Meshes in Vertex Groups

If you are preparing to skin your meshes and you are ready to create the vertex groups, you should pay attention to the order in which you create them, because once they are created there is no way to re-arrange them on the vertex-group list.

That means that if you are a ultra-by-the-book person and you would like the vertex group alphabetically ordered on the list them you must create them in alphabetical order.

.. Or, if you would like them to be ordered according to their function (shoulders, then arms, then forearms, then palms, etc. you must create them in that order.

This may all sound like a stupid thing to care about, but If you have a character with 39 vertex

groups you may quickly find that when one of them needs fixing it is a little difficult since they were randomly created.

Position and scale along face normal,

-**Shift V**: Position camera along face normal, **Alt S**: scale selected vertices along face normal

Using Fake Users

pressing **Shift+F4** will turn the window into a "Data Select Window" where you can assign and unassign fake users to almost everything by selecting the name and pressing the F key

Creating a fake user allows you to keep useful data blocks (materials, textures, base meshes) at hand even if they are not linked to an object. You can use it to set a default material that would have the shader you like best.

Align a selection of vertices on a plane

If you want to perfectly align a selection of vertices on a plane, you just have to follow these little steps:

- 1.) Before you are selecting the vertices you want to align, position your 3D cursor in the plane that you want to align to (you could select the 4 vertices of a big plane and hit **Shift+S** / Cursor->Selection for example, but you can position it anywhere)
- 2.) Now select those vertices you want to align
- 3.) Choose "3D Cursor" under "Rotation/Scaling Pivot"
- 4.) Now with the **[S]**-key start scaling mode, hit the key of the axis you want to move the vertices on (X,Y,Z)
- 5.) Holding down the **Ctrl-Key**, you can now move the vertices in one line towards the cursor, until the value for the chosen axis is 0.000. Alternatively, just enter, using the keyboard, the scale factor you want (0 in this case) .
- 6.) Hit LMB. The vertices are perfectly aligned along a plane through the 3D cursor.

This even works very well while in perspective view mode, so you can align on the fly and don't have to switch to front/side/top view all the time.

Welding Vertices

You can weld vertices by selecting them in edit mode and pressing **Alt+M**.

View wireframe of hidden Verts

to view the wireframe of hidden Verts, make sure you are in WIREFRAME MODE and then turn SubSurf on and change the level to 0 If you already knew about this then

Select a true loop

shortcut is **Shift + Alt + right Button** of the mouse, serves to select true loop, in vertices as in edges like in faces.

Selecting one object from a single mesh comprised of multiple objects

If you have more than in Edit Mode, you can place your mouse cursor next to one of the Verts in the desired object, then press the "L" key to select all of the Verts linked to that one. "Alt+L" reselects in the same manner.

Precise Zoom and Select/Deselect

Selecting: If you Hold down the **Ctrl+LMB** (left mouse button) and drag the mouse, it will allow you draw a selection as opposed to using the B button which gives you a square.

Deselecting: To draw an area to deselect, Hold down the **Ctrl+ Shift+ LMB**(left mouse button) and drag the mouse,

Zooming: Hold down the **Ctrl+MMB**. Move your mouse vertically to can get a more controlled zoom versus scrolling the Mouse wheel.

This feature may not be present in 2.37 or earlier versions.

Mouse Gestures

Left click and draw:

- a straight line - moves the selected object.
- a circle - rotates the selected object (note: this must be drawn fairly circle-like).
- a V - scales the selected object.

Selecting Obscured or Hidden Objects

Say you are in front or side view and you want to select an object, but it is obscured or hidden behind other objects. If you press **Alt RMB** over a group of objects, a menu will be displayed in the 3D window allowing you to pick the object you wish to select.

Select or Deselect Multiple Vertices

In Edit mode, when you click the **RMB** near a vertex that vertex (face or edge) will be selected, **RMB** again will reselect. By holding the **Shift** key this will allow you to add each selected vertex (face or edge) in that highlighted group.

Pressing the U key (Undo in Edit mode) will also remove the last selection you made.

Alternatively, you can Press B and then draw a box with **MMB**. Anything caught in the box will be deselected. Also works with BB and the draw selection. Draw with **MMB** and you reselect.

Selecting multiple items

You can use right mouse button to select multiple items to append. Doesn't seem to work with files.

Measuring, length, distance on an object.

Hit "F9" (editing), you should have split (2) windows. One "3d" the other "buttons" go to the Mesh Tools 1 panel and press the Edge Length, Edge Angles and the dimensions will appear on your selections in the 3d view.

Adding Connected Vertices

In Edit Mode, if only one vertex is selected, pressing "E" will add a vertex, on a freely defined place, connected to the selected one. As will holding **CTRL** and left clicking the mouse where you want the new vertex to be positioned.

Note: It must be an Image texture and in wireframe mode to be visible.

(2.37a)

Recalculate Normals

Ctrl + N = Recalculate normals outside (you might have to select faces before doing so) **Shift + Ctrl + N** = Recalculate normals inside

These two hotkeys are useful when you extrude some edges and see a kind of seam in between (due to normals pointing in different directions).

Then, after selecting an edge, **Ctrl + NumPad(+)** selects the face associated with this edge. **Ctrl + NumPad(-)** deselect the face.

Create a Quad from two Tris

Alt + J when having two Tris selected makes a Quad.

Remove Doubles

To Remove Doubles use hotKey: W. You can adjust the "limit" option so that "Remove Doubles" has more or less tolerance. This option is located in editing window under the mesh tools panel, (i.e. weld vertices that are further?)

Combine edit levels on a mesh.

When in Edit mode for a mesh (TAB key) you can choose the level that you wish to edit at. At the bottom of the 3D window, there are four buttons. Vertex, edge, face & back-face cull.

By default the vertex level is selected, if you hold **Shift** and press the edge button, you can use both at once.

Change Select Mode

to change select mode (vertex, edge or face) you can press **Ctrl+Tab**. But this way you can't use the Ctrl+Key to ADD the select modes.. Still could be useful, if you don't have a header for the window you're working in..

Working with Meshes

Turning Sub-Surfed Mesh into Normal Mesh

If you have a sub-surfed mesh you can turn THAT sub-surf mesh into a normal mesh. Just select the sub-surfed mesh and press **Alt+C** (Conversion).

How to remove (numb) black spots on a Mesh

If a Sub-Surfed mesh becomes (numb) black on some places, that's because of the normals. Select all and press **Ctrl+n** and then confirm. now it should look prettier!

if the above solution does not work , save your Blend file, Quit Blender then restart. Use **Ctrl O** to open the last file and your mesh will have returned to correct shaded state.

Select all holes in a mesh and fill them

Shift+M* selects all Non-manifold edges/vertices (holes) in a mesh **. Then all you have to do is hit **Ctrl+F** to auto-fill those holes with "beauty fill".

Shift+M is an alternative shortcut for 'Select Non-manifold'. You'll find this in the select menu when in mesh edit mode. The listed short cut there is **Ctrl+Alt+Shift+M**. **Shift M** is obviously a lot more comfortable on the fingers though!

Although 'Non-manifold' usually refers to holes in your mesh, it is not necessarily only holes eg, an edge with three faces coming out of it is also a non-manifold edge!

Fill in four or fewer vertices

select the vertexes and press **[F]**, this will fill in the empty space around them

to clean up a filled in space, select all the vertexes for the area, and press **[F]**. choose OK to make FCon For example: add a plane in wireframe mode, extrude it several times, select all vertexes, then hit **[F]**.

Animation

Animation Preview in all windows at the same time

It is well known that **Alt+ a** is for previewing an animation on the 3D window. But that's not all of it. Divide your screen into multiple 3D Windows, each from a different point of view.

Press **Alt + Shift + a**

Enjoy!!!

If you have an Action/Ipo Window and 3D windows open, and you issue the **Alt + Shift + a** command from the Action (or the Ipo) window, it will animate both (the action and the 3D) in sync!! Great for visualization of Ipo's effect on your model.

Choose animation mode, Convert mouse movements to IPO

-T in IPO window: Choose animation mode, ie., linear, bezier, constant -[R] in IPO window: Record mouse movements, and convert to IPO

Animate procedural textures

To animate procedural textures, press 'i' with the mouse pointer in the materials window, and select the type of Key-Frame you wish to set in the pop up menu. advance a few frames, tweak your materials, and set another key frame.

UV Mapping, Particles and Texturing

Blender color picker

Blender has a PhotoShop-esque color picker. Simply click on the color preview next to the sliders to use it. Hit enter when you have the color you want.

Saving your face groups selections

Regarding UV mapping and Face Groups Selections there seems to be the general misconception that you can't save your face groups selections on Blender.

Most people already know that from within the Face Select Mode (Potato Mode) you can switch into Edit Mode and whatever selection you do while in Edit Mode is passed back to Face Select Mode when you exit the Edit Mode.

Well, Did you ever wonder why Material Index Groups (that are nothing more than face groups with a common material on them) have those little 'Select' and 'Deselect' buttons there? Sure they come handy for later modification of the material index but that is not all about them.

Do this: Before starting the UV unwrapping job, cut your mesh by creating as many material indexes as you need, you can even assign each one a different color so you can be sure that there is no face orphan. Once you have the mesh all cut and sliced (so to speak) you enter in Face Select Mode, then switch into Edit Mode, select the index containing the faces you want to unwrap, press 'Select', leave Edit Mode and Voile! You now have an entirely useful face group waiting for you to unwrap. No more manual (and imprecise) face selection is needed.

If you later need to change the mapping of those faces, don't fear. Just make sure there isn't any face selected on Potato Mode, do as you did first (enter edit mode, select the index, exit edit mode) and there are your very same faces selected again with the UV mapping you already assigned to them.

Note: Another benefit of have precise face selection groups is that, initially, you don't have to worry about UV coordinates overlapping, since you know have the way to select ONLY the faces you want to. For example, you unwrap all your faces by groups and when you are done you can start thinking about scale and position withing the texture map, not like before when you have to solve those things as you go.

Bulk Texture Change

Consider a scenario in which you have a scene with a 100 mesh objects, and 50 of them have one texture and 50 of them have another.

If you want to change the texture of the first 50, but don't want to change each individually, do the following. Add a Plane out of the view of the camera. Add your new texture (Material) to the plane. Then use the "Copy to material Buffer" button in the header of the Material buttons. Select one mesh object of the same sort that you want to change, open Material buttons and Paste from Material Buffer.

All the mesh objects with the same texture will now have the new texture.

Alternatively, If you have a material that you want to apply to a lot of objects at once:

1. Select all the objects you want to apply the material to. 2. Apply a material. (this only applies to the last selected object) 3. press **Ctrl+L** > Materials. (this links the material of the last selected object to all the other objects)

Negative Meta-Balls

Add>Metaball as usual. Exit EDIT mode and Add>Metaball. This time before you exit EDIT mode, hit the Negative button in the EDIT buttons window. Then leave edit mode.

If you move the negative Metaball around, you can see the effect it has on the positive metaball.

Be careful though, as negative metaballs are not displayed in the same manner as positive metaballs, you will only see the Pivot point not a meta-mesh.

This is a little test you can try to see the amazing effects negative metaballs can produce.

Make 1 Metaball, make it big. Place three spheres (UV) inside, make them emit particles, one 100, one 200, one 300 particles. Parent three negative metaballs, one to each sphere, and use dupli-vert on each sphere. Make the 100 duplicate metaball quite big, the 200 medium and the 300 small. Hit **Alt A** to run animation in 3D window.

Click here for his negative metaball thread
(<http://www.elysiun.com/forum/viewtopic.php?t=14058&highlight=metaball>)

Maintain the UV layout when moving/scaling/rotating UV co-ords.

When you have the UV image/editor window open and have loaded an image you want to UV map to a mesh, click on the UV tab in the header bar and turn off 'Snap UV to pixels'.

This will help to maintain the UV layout when moving/scaling/rotating UV co-ords.

Rendering

Tricks, related to the view ports and the render buffers

First. Switching among screens

So you have your screen made off the 3D window, the buttons window and the info window... but you are doing some fine tuning to the mesh in two places simultaneously, and they both need to zoom in the 3D window. You could scroll or zoom out, translate the view and zoom in again. None of them an elegant solution.

Another situation. You are working on a model and are using an image for reference. You are not tracing over the photo, just take a look at it often to make sure you don't deviate too much from the concept. So you open the photo in a 2D program and keep switching back and forth from Blender.. or you have the photo open in an image window and keep maximizing and minimizing the window... another hassle

Worry no more!!! Blender can handle multiple virtual screens (ala Linux) and you can come and go from them with just one key stroke.

Just press **Ctrl+Left Arrow** or **Ctrl+Right Arrow** and you are switching screens. Go ahead! By default EVERY .blend file comes with 3 screens ... and of course you can add/delete as many as you see fit.

the magic button to add or delete screens is right beside the Tools menu, up there in the info window.

Using the render buffers

Ok, so you set your scene and press RENDER, a nice window comes up and you see your hard work coming to existence (that's the default behavior, if you change it on the display buttons then this may not work for you).

Do you realize that the window containing your render image is also a render buffer? Actually they are 2 buffers for you to play with. Whenever the render window is open (and you can re-open it by pressing F11 without having to wait again for the render) if you press the J key you can switch from Buffer A and B. (the last active one is what you save when you press F3). You can even switch buffers in the middle of a rendering (but I advise against that when rendering very complex scenes, you have been warned!)

The cool thing about having two separate render buffers is that you can have instant before-and-after images for things that you change in the scene. For example you are searching the perfect position for a light source in a scene, you place it and do a render, place the light in another position, switch to the second buffer and do a new render. Now, with the render window open, just press J to see how the change on the light's position influence your scene and that makes your decision easier.

By the way, the render window can be zoomed (by the normal ways or by pressing Z) to do a closer inspection of the image.

Render window Tricks

To zoom into the render window, use the Z key.

To find out what the (Red, Green, Blue, Alpha) values of rendered image are, left click and hold the button of your mouse. This will reveal the RGBA values of the pixel below the mouse cursor. ie R 127, G 255, B 13, A40. The values will appear in the bottom left corner of the render window. You can also hold the button and drag the mouse around. This will display the values of the pixels your mouse pointer passes over.

With the render window open, you can press the A key to view an alpha version of the image.

After rendering, you can use hotkey J to use a spare render. After the second render, you can use it again (hotkey J) to jump back to the first render, and then back to the second, thus making it easier to compare slight changes.

Working while you Render

If you use a X/X11 based window manager, you do not need to watch blender while it renders, go to a different virtual desktop. Blender doesn't have to keep X informed of what's going on and rendering speed may increase.

Border Rendering

In the rendering buttons find the buttons marked "Border" and "Crop". If you depress "Border", you can get a rendering of any part of what the camera sees. Just do the following :

Go into a camera view using **NumPad 0**, press **Shift+B**. Then, mark the limits of the rendering as you want them using LMB. Next, render the usual way and the section you marked will be rendered first, then it will be integrated to the complete rendering. If you wish that **only** the chosen section would be rendered then click on the button marked "Crop" also.

Creating a cluster of particles which takes little time to render

Render some particles, and make the picture into an alpha mapped tga in GIMP or whatever graphics editing application you use.

Load the image onto a plane. Adjust the alpha settings accordingly. Parent the plane to the emitter. Press dupli-verts.

You now have a cluster of particles which takes relatively little time to render. Of course it doesn't have to be an alpha map of particles. That's entirely up to you.

Alpha from render view

When cut & pasting stuff from render window to {insert your favorite image editor here} using **Alt+ PrtScr**, cut and paste the render first, come back to render window and press "A". It changes the view to alpha and you get black & white mask to cut the background nicely in the {again, favorite image editor}. Nice when you do testing in low res.

View alpha texture as wire.

Ctrl+d in 3d very usefully for preview without rendering.

Also, if you have an object (works best on a mesh plane) with an image texture, you can use **Alt+V** key outside edit mode. This will adjust the object's size values so that the image won't be stretched when projected.

Miscellaneous

Restoring your "lost" work.

If you go to the temp folder where you have Blender save it's temp .Blend files, reload the most recent one and this will save you losing the whole of your work. You don't even need to save a .Blend file for this to work. You can change the settings for this in the tool window at the top of the Blender screen.

Built in Hot-Key List

Since the few last versions (since 2.28 I think) blender has a built-in all inclusive hot-key list. Just open a text-editor window, and right besides the option to create a new text-buffer there is a menu

option called "KEYLIST.intrr". Select that option and the full list is loaded in memory

--Edit: There may be many hot-keys missing, especially the newest ones, like M to mirror a mesh, K for the Knife tool, **Alt+Z** for textured view... but the list is a good start at least.

Un-compiled PlugIns

Blender can load plug-ins for texturing, sequence editor, etc. . However, Blender comes with a few of such PlugIns un-compiled.

In Linux they are located on the plug-ins sub-directory of the default Blender install, and all that you need is a Make command to compile them. I don't know how to compile them in Windows, but there they are, just waiting for you to awake them!!!

Blender "Easter Eggs" (Weird things included in blender)

All Publisher versions of Blender have been shipping with a Monkey mesh called Suzanne. Just open the main tool box (**Space Bar**) -> Add -> Mesh -> and right below the other primitives you'll see the Monkey.

Why/What it is for? Only NaN programmers know*. It is supposed to be a private joke among the blender developing team. However, it is incredibly useful as a quick complex object for testing textures, shaders, etc..

By the Way, Suzanne isn't the only joke included... but I won't spoil the surprise. You will bump with them on your daily work, that is for sure.

- NaN was the company that originally developed Blender

Weird Error Message

Sometimes, when trying to use a boolean on a tri-based mesh, Blender gives the prompt: "Wanna Crash?" >Yes Please!

but clicking it doesn't crash. This is because Blender is a lot more stable now compared to when that 'crash' request was coded. It also used to appear when using beauty fill after face fill. (**Ctrl+F** in edit mode)

Blender 2.37 now has a 'widget', which replicates the red/blue/green axis symbol in 3DSMax in the 3d windows. Rotation scaling and movement of objects/Verts/faces etc, can be manipulated using the widget, or in the usual manner of earlier versions of Blender.

Turn your blender animation into a screen-saver (Windows)

to turn your blender animation Windows binary file into a Windows screen saver, rename the EXE file into SCR and right click it and install !

Discover the FPS rate of a Window

If you hit **Ctrl+Alt+T** key in a window, Blender will tell you how much time it takes to render a single frame of that window, in milliseconds. Valuable Benchmark

???

using construction widget press **Shift** to get precision mode for fine tuning. Release left mouse button (LMB) and holding **Shift** down press it again, then you'll get moving along another axis.

Sculpt Mode Hotkeys

F: an interactive brush resize Shift F: an interactive brush strength adjuster Ctrl F: in interactive texture angle adjuster for your brush. Shift B: a rectangular zoom selection for close-up work Alt B: hides all but selected rectangle A: toggles airbrush S: smooth D: draw G: grab L: layer I: inflate P: pinch Use X, Y and Z to toggle axis mirroring.

Ways to create "fluffy" effect (materials and lights) The ways to create "fluffy" (brightened) edges.

based on this Elysiun thread

(<http://www.elysiun.com/forum/viewtopic.php?t=42662&postdays=0&postorder=asc&start=0>)

- Spherical Blend texture method

Add a Blend texture set to "sphere" (circular pattern in preview). map it to empty|empty|Z coordinates and coordinates source to "Nor" instead of "Orco" , set method to Add and channel to Emit.

- Backlight (aka "@ndy's top secret material" :))

Just add a sufficiently, but not overly bright, colored Hemi light behind the object (relative to camera). You may need set it to be "layer only" light if it interferes with rest of a lighting rig. Like ramp, this method can make edge not just brighter but of different color.

- Color ramp (http://www.blender3d.org/cms/Ramp_Shaders.348.0.html) with input set to normal.

Pretty straightforward, but many advise against it.

- Minnaert shader

Available in 2.37, "Darkness"<1 actually brightens edge. A cool shader, but not very useful for this purpose.

Compiled by : Trident

Troubleshooting

ATI Radeon Slowdown Problems

Go to the ATI site driver downloads section and select the appropriate OS/graphic card. This will (most likely) link you to the d/l for the current Catalyst 4.4 drivers.

At the bottom of that page is a link to "Previous driver versions".

D/L the Catalyst 3.7 driver package. Run the EXE and it will extract the driver install package to:

C:\ATI\SUPPORT\

In this directory will be a directory named (for XP/Win2K users:
 \wxp-w2k-7-93-030812a1-010735c-efg\

This is where the driver install package is located. DO NOT RUN THE SETUP. You don't need to install the old driver.

Navigate down thru the dir structure to the following dir:
 C:\ATI\SUPPORT\wxp-w2k-7-93-030812a1-010735c-efg\2KXP_INF\B_10679

In this dir you'll find a file called: atioglxx.dl_ This is a "packed" version of the ATI OGL driver.

The next step specifies how you can extract these files to your hard disk using the 'expand.exe' utility included on the cd.

The 'I386' folder on the Windows XP CD contains a utility 'expand.exe' that can be used to uncompress all compressed dll files. It is a commandline utility, so you have will have to run it from either the command prompt or the Run dialog. Some examples of its usage are:

```
-----
expand X:\I386\ADROT.DL_ C:\ADROT.DLL
The above command decompresses the compressed DLL
-----
```

ADROT.DL_ on the WinXP CD, copies it to C:, and changes the extension to .DLL .

Just extract that file (atioglxx.dll) to your Blender install directory. Usually C:\Program Files\Blender Foundation\Blender\

Launch Blender... no more slowdown.

Addendum: I found this solved a problem of crashing on start up after updating my Catalyst driver from 7.2 to 7.8, that is expanding the old 7.2 atioglxx.dl_ to atioglxx.dll and copying it to the Blender directory.

For people who the above solution leads to Blender crash at start up

Thanks to Xenobius at Blenderartists Forum

This solution is tested on ATI radeon express 200 (x200) integrated video card. However it should work on other ATI card.

Download the Nvidia 53.03 Driver [HERE](http://www.megagames.com/news/redir.cgi?http://download.nvidia.com/Windows/53.03/53.03_win)
 (http://www.megagames.com/news/redir.cgi?http://download.nvidia.com/Windows/53.03/53.03_win:

Extract the driver to C:\NVIDIA

Copy the nvoglnt.dll from the C:\NVIDIA folder to your blender program folder (ie. C:\Programs Files\Blender 2.40\)

Rename nvoglnt.dll (the one in the blender program folder) to atioglxx.dll

Run blender...Viola! Blender runs like it should!

[this also works by renaming **any** .dll to "atioglxx.dll". Try it by copying and renaming any of the .dlls in the blender folder to it, then launching blender. Worked for me!]

General Advice on Modeling Realistically

Modeling Realistically - Tips and Techniques

Everyone who starts a new career or hobby in 3D Modeling also seems to look around their immediate environment for things to model. Things like your computer monitor, your keyboard, and even the desktop which they are resting are all common "first models." Developing an eye for geometry takes time and this is a great chance to practice.

For this tips and techniques discussion, I'll start with the concepts of furniture and walls, but the ideas really extend to anything and everything you can model in Blender, from spaceships to fantasy demon-women, from your barbecue deck blueprints to biologically accurate squids.

Assemble Things, Don't Chisel Them

Let's start with the furniture around you.

You may think it's easy to model your desk using a couple of boolean operations on cubes. But it rarely comes out looking quite right. It seems like such a good idea at first. Then you find that the drawers won't open realistically. The corners are all amazingly sharp and crisp. The writing surface seems to be at the wrong scale for thickness. The woodgrain goes in the same direction everywhere. You then realize it will be hard to bevel just the few edges that need beveling. The more you look at it, even with good render settings, the more it looks like dollhouse furniture instead of a real life, full size desk.

Real furniture is not chiseled out of a half-ton cube of mahogany, because trees don't grow that thick, and it's a real waste to chip out the spaces for drawers. Instead, cabinetmakers tend to assemble a piece of furniture from many component parts. Think of those "self-assembly" kits from the local superstore, or even the showroom examples from a nearby unfinished knotty pine store.

Model several kinds of boards and fittings, then copy and assemble them appropriately. You don't need to model every nail and dowel, and you don't even need to know what a *dovetail joint* is. But you can make realistic furniture when you build things from their natural components.

- Cut lumber in a variety of sizes and thicknesses.
- Measure real example furniture and take note of the construction details.
- Choose varying woodgrains by duplicating materials and adjusting them to be more individual.
- Align those woodgrains or other materials in an appropriate direction and scale for the model.
- Bevel just the parts or edges which are naturally worn or intentionally beveled.
- Any cloth, glass or metal fittings are separate components using their own materials.
- Create an "Empty" type object, give it a descriptive name, and parent all of the pieces to it.

There are a couple more benefits to this form of component modeling:

- Working with things made from multiple real materials is easier: one object, one material.
- The model is more flexible, because they can be reconfigured to other styles more easily.
- Components come in handy for other models: adapt a desk's drawers in kitchen cabinets and bedroom furniture.

Separate Objects for each Material

A common question for new modelers is how to make one mesh that uses more than one material. For example, a skateboard with metal trucks, rubber tires, and a wooden deck. While Blender does provide an interface to allow such a combination, it is not usually the best approach for modeling realistically.

If you model the skateboard as separate parts, based on the way different real parts are assembled, then you have a lot more control over the final model. You can replace the wheels or use trucks of different styles later. You can adjust the mesh that defines the shape of the deck, without having to re-assign the areas that should be one material or the other. And lastly, you can choose to use subsurface tricks on the various parts, while avoiding them on other parts. Even if the whole model needs subsurfaces, it becomes a bit hard to control where one material starts, and another material ends.



skateboards, modeled in parts

Removing the Fourth Wall

Just as with furniture, you may model your first building interior as a hollowed-out cube. It seems straightforward to make a big cube, turn it inside out, and call it a living room. There are a lot of drawbacks to working with a room that was carved out of a single chunk of solid rock.

Buildings and rooms are assembled from parts. Just like the furniture modeling tip, design your rooms as a collection of separate pieces.

- You don't need to measure out the internal beams and joists, but remember they're there.
- Each interior or exterior wall should be its own object or assembly.
- Take care to note the correct dimensions and placement of doorways, windows, ceiling.

The benefits of a component-modeled interior include:

- Easier to see inside, just hide some walls on a different layer.
- Walls are much easier to move around to reconfigure the room layout.
- The same modeling work on one area can be copied to other rooms more easily.
- A more realistic architecture with consistent scaling is achieved quickly.

Proportions and Measurements

For realism, it's vitally important to get the right proportions for familiar objects. If your audience sees a bookshelf with 5" thick shelves, or a human hand which has a 5" long thumb, their brain is going to tell them that something is wrong. They might not be able to decide why, but they'll tell you it looks fake.

Even when you're animating fantasy characters, you should develop an understanding for proportion. Many cartoon characters have very large heads when compared to their bodies; this allows room for greater expression and makes the characters seem younger. Deciding how many "heads high" each character should appear will ensure that your figures all maintain proper proportions to each other and to their environment.

To get good proportions, you need to think about measurements.

- Grab a ruler or find some existing blueprints.
- Think in terms of those measurements for the duration of the project.
- Choose a base scale that will let you work comfortably within a 500x500x500 unit volume.
- Blender limits cameras to 1000 unit distances, for better numerical accuracy.

You can mix and match base units, by using Empty objects as parents. For example, you can model your furniture in inches or centimeters, and model your house in feet or meters. Then when you append your bed.blend's objects, just parent that bed to a new Empty object, and scale the Empty. This will conveniently scale all of the separate component pieces of the object together.



There's only one big wrinkle with working with multiple scales: materials should be designed with a certain base scale in mind. Many material surface properties are scaled according to the units you choose for a given object, or the world units. Just consider this as you design, and check your work critically.

Halley 20:18, 21 January 2007 (UTC)

Using Blender Libraries You can append libraries in two ways. You can make a local copy of **data blocks** (like objects, meshes, ...) of the content of a .blend file in your .blend file (**appending**) or you can use data blocks from another .blend file (**dynamic linking**).

You can **Append** with the command in the 3d view File -> Append or **SHIFT+F1**. When you give this command a file browser window opens. There are two buttons **Append** and **Link** at the bottom of the window. The default action is *appending*. But you can use *dynamic linking* selecting the link button.

At this point select the .blend file to append. You can select one of the following data blocks type to append:

- **Group**
- **Mesh**
- **Object**
- **Scene**
- **Text**
- **World**
- (not complete yet)

Note that this is a complete list, when you append only block types present in the file will appear. Select the desired type. Now you can select the particular data block to append by selecting its id.

Indirect linking

When you give an append or link command almost all relations between **data blocks** in Blender get expanded. For example, when you link (or append) a specific Group, all its objects, the meshes associated with the objects, the materials and the animations will be linked (or appended) too. That is

called "indirect linking". When you use *dynamic linking* such indirect linked data is not stored when you save a .blend file, when you load the file again blender will look for the indirect linked data blocks in the library file.

Groups

When you *append* a Group, blender will also create links in the current *Scene* to the objects that are part of the group. The Objects then become visible. However, when you decide to *dynamic link* a Group, it won't do that. To use the objects in your blender project you can use the group as a **duplicator** "**SHIFT+A**KEY -> Group menu -> group id to duplicate".

See also

- http://www.blender.org/cms/Library_Linking.769.0.html
- http://www.blender.org/cms/Blender_Architecture.336.0.html

Creating Blender Libraries

Creating Blender Libraries

You've finally made that perfect object, armature or material: a gamepiece, a robot, a fully rigged vampire character, or a millimeter-accurate model of the Empire State Building. Besides using this work in your own artistic project, you have made the courageous decision to share that creation with the world.

Sharing your creative work is a great way to "give back to the community," even if you don't write Blender code and you can't translate the Blender documentation to Swahili.

How to Make a Library

So how do you make a library? In Blender, you don't need to export to a special format. In fact, you don't need to do anything special beyond saving your regular .blend file. Every .blend is a library file. Users can Append what they like from your .blend file, and ignore parts which they don't need for their own project.

This scheme has some benefits and some drawbacks.

The benefit of using .blend files as a library format is that it's super easy to include extra stuff to help the user see the objects. If the user loads the .blend file directly, it works like the pretty packaging for foods, including a quick and easy way to get a pretty "serving suggestion" rendering of the library contents. What you save in your .blend is what the user will see when they load it, including all your user interface settings, lighting types, and camera positions.

The drawback of using .blend files as a library format is that it's super easy to include *unintended* things, such as extra meshes, unused material and texture channels, and other things which the user will not find helpful. Blender doesn't save things which are no longer referenced anywhere, but it cannot read your mind if you leave a spare mesh on layer 13 which uses some abandoned Material.034.

Also, some people are not accustomed to the way that Blender saves all of the user interface settings along with the .blend file. When they load your mesh, they see your way of working. This can be instructive, but unless that's your intention, it's best to try to stick to a simple and clean user interface setup for your library files.

For best results, you need to apply some discipline to publish a clean and useful library.

Library Usefulness Checklist

After having used several library .blend files from various sources, I propose that anyone making libraries follow a few suggestions:

- keep to a certain object, theme or area of focus for each library file
- all the test cameras and lights prefixed with a dash; e.g., **-Camera**, **-HemiLight.001**, etc.
- any other components not intended for Appending prefixed with a dash; e.g., **-ground**
- all the test cameras and lights on the last one or two layers (**lower right layer button**)
- any composite object intended for Appending organized in a **group** to hold it together
- any groups, objects, materials, textures intended for Appending given **meaningful names**
- document your unit scheme; e.g., **1 blender unit == 1 imperial foot**, etc.
- any other layer contains test-render-ready objects or scenes
- choose rendering and world **settings which will not take an hour** to make a simple test render
- make visible upon loading the layers required for a camera, a good lighting angle, and a shared object
- make visible upon loading one small text file which lists layers and objects
- make visible upon loading any python script, **with instructions on how to start it** in a big comment
- make your licensing expectations clear: **artistic license**, **creative commons**, etc.
- pack the texture files and other data before saving that final .blend for publishing
- sign your work, stable email address or website url if possible

The dash prefixes for test-rendering cameras, boxes, floors and lights will help the user know at a glance what to Append and what not to Append from your library.

Here's a quick way to throw out all the stuff you really don't need, including extra meshes, materials and user interface complexity.

- save your current .blend (and make a nice backup file too)
- shut down Blender entirely
- open up Blender again, which will load the default settings
- delete the cube and cameras from the default settings
- Append all the useful parts of your library .blend file (including the *useful* test-rendering items)
- select the proper test-rendering camera for users to try out your model quickly (select, then Ctrl+KEYPAD0)
- adjust the views to ensure important things are visible and ready to render
- save the new library .blend, ready to publish

Blender saves the default settings in a file called **.b.blend** on your disk. If your own preferred default settings are still too complicated for newcomers to understand, you can move that file away temporarily to get the "factory" built-in default settings which the Blender team produces as a part of each new version of the software. Move the file back again when you want to go back to your individual way of working.

Publishing Your Library

It's helpful to include the .txt file and/or post it separately so that people can read a summary before loading the blend file. This should include any credits, usage notes, layer explanations, and licensing

information. For you Unix folks, remember to run it through **unix2dos** to enforce \r\n CRLF newlines, readable by people with less flexible tools such as Windows Notepad.

It's also of immense benefit to put up small test-renders of your library objects or materials. They don't need to be large but they should give an honest view of the work you're sharing before a potential user takes the time to download library files that will not be useful to them.

So, where do you publish your work of artistic genius?

- Blender 3D Model Repository (<http://www.e2-productions.com/bmr>)
- <http://blenderartists.org/> forums
- <http://www.deviantart.com/>
- your own website

If you post things on your own website, try not to rely on a free site that will over-run your bandwidth limits and disappear two months later. Search engine links will sometimes live on for years, just frustrating those who were hoping to find a millimeter-accurate model of the Empire State Building.

Beyond Libraries

If you have even more time to spare, consider writing up a tutorial on how you achieved any tricky results!

Thank You

For every artist who chooses to share their creative works with the community, there are a dozen artists, or even hundreds, who thank you immensely.

Displacement Mapping Blender 3D: Noob to Pro/Displacement Mapping

Human Body This tutorial should cover the modelling, skinning and animation of human body, plus facial expressions.

There are some tools to generate human body from parameters like:

- [makehuman (<http://www.dedalo-3d.com/index.php>)] free software program (gpl). The models generated are under MIT license. The models generated can be easily imported in blender.
- [facegen (<http://www.facegen.com/>)] commercial program. Used for [wikipedia:The_Elder_Scrolls_IV:_Oblivion](#).

links to anatomy sites (**warning: nudity**):

- [fineart (<http://www.fineart.sk/>)]
- [[1] (<http://www.3d.sk/>)]

tutorials: [Blender_3D:_Tutorial_Links_List#Human](#)

Rendering Informations Only some links to wikipedia articles for now

- [wikipedia:Rendering \(computer graphics\)](#)

- [wikipedia:Specular reflection](#)
- [wikipedia:Diffuse reflection](#)

- [wikipedia:Flat shading](#)
- [wikipedia:Gouraud shading](#)
- [wikipedia:Phong shading](#)

- [wikipedia:Lambertian diffuse lighting model](#)
- [wikipedia:Phong reflection model](#)

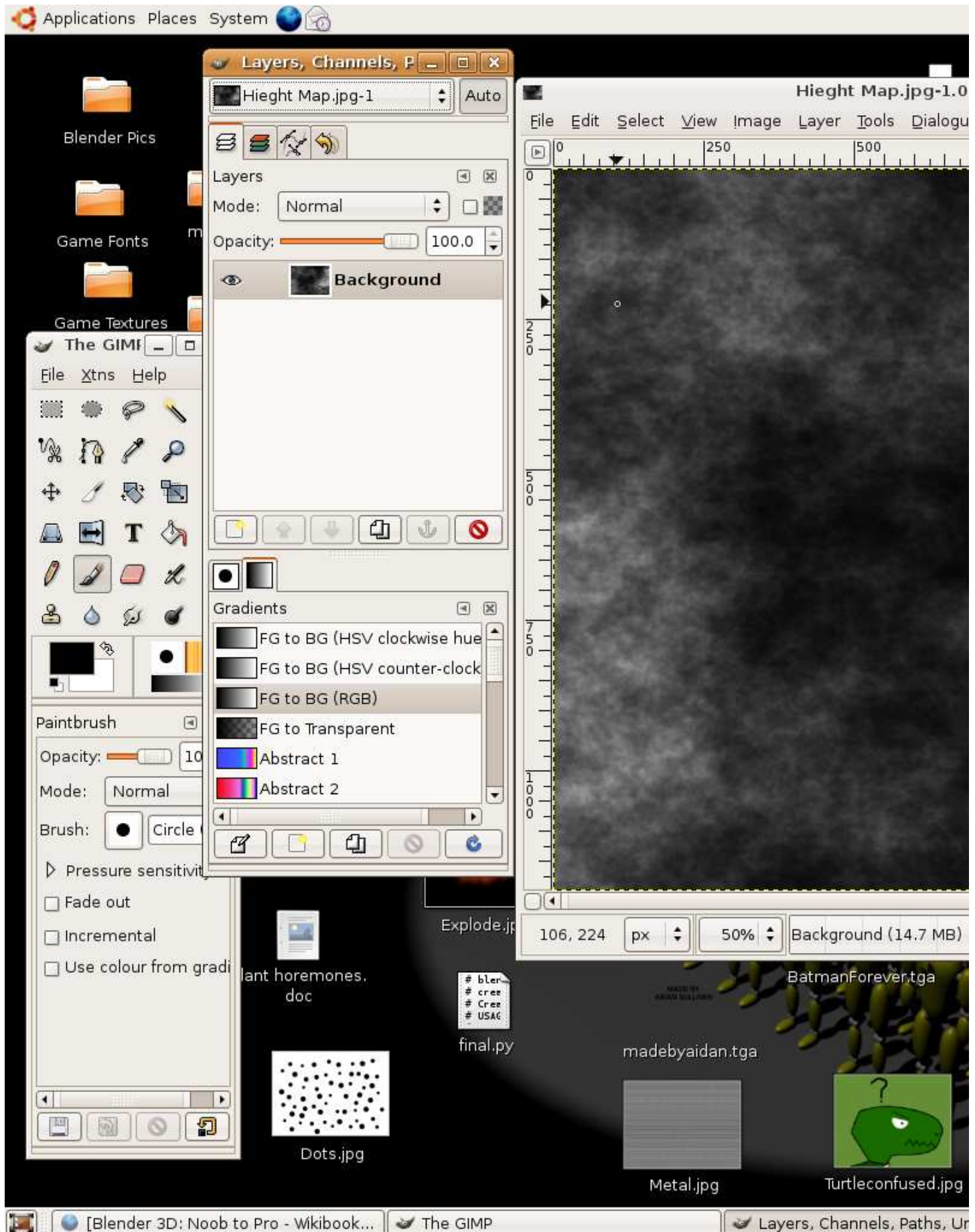
Making Landscapes with heightmaps This tutorial will show you how to make advanced terrain such as mountains using Blender and gimp or any other image editing software. Blender has the ability to use height maps to create meshes. Height maps are black and white images with white representing the highest point and black the lowest.

To begin with, open your image editing software. This part applies to Gimp only, if you use another program you will have to do it another way. Go to

->Filters->Render->clouds->plasma. For this example just use the default settings, it doesn't really matter. Click OK. You should now have a nice

colorful image. We don't want that, we want it in black and white. Make sure your Gradient is set to "FG to BG(RGB)"(this is the default anyway) and that your foreground color is black and the background color is white. Go to ->Filters->Colors->Map->Gradient Map. This will convert it to black and white for you. Save your image.

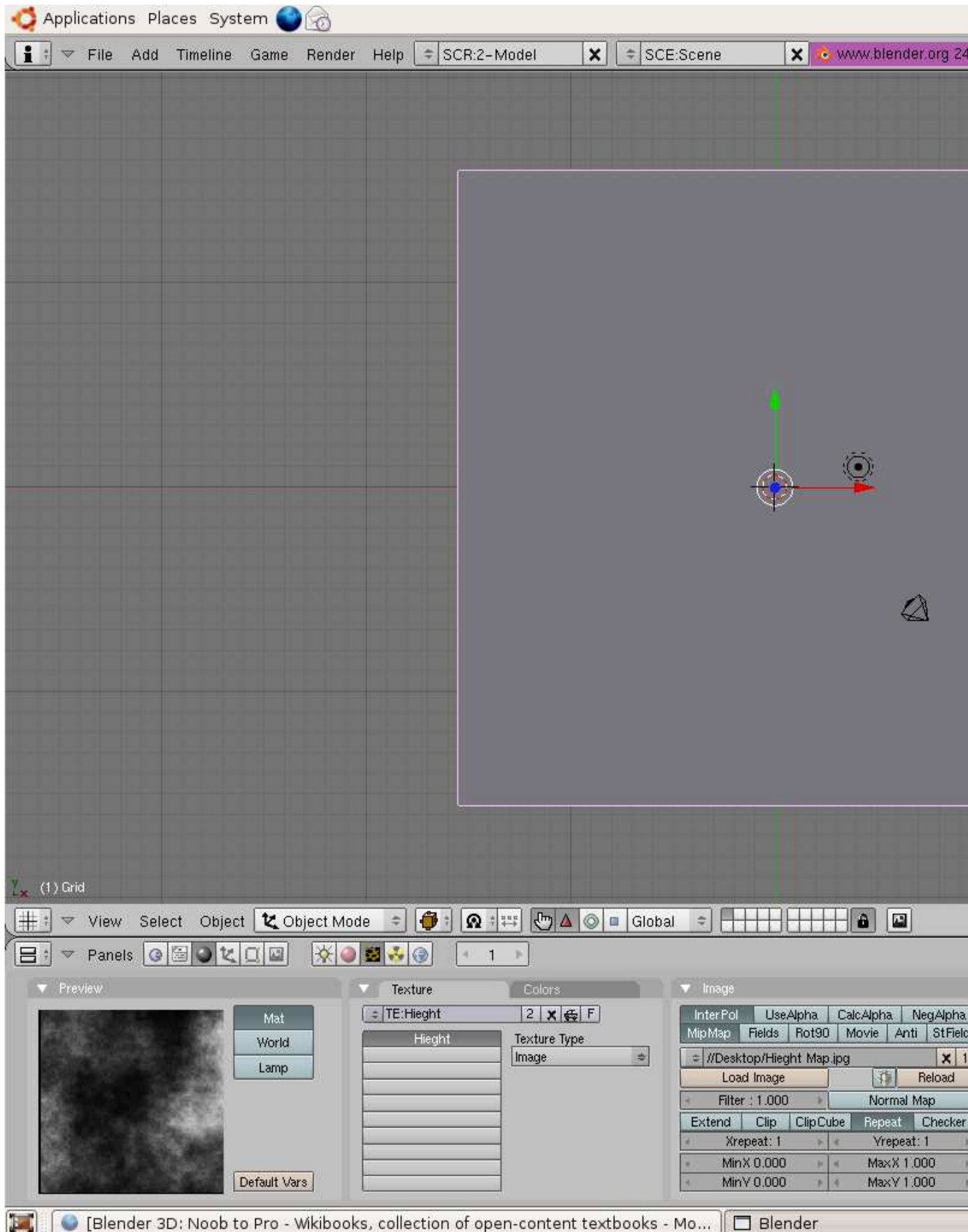
It should look something like this



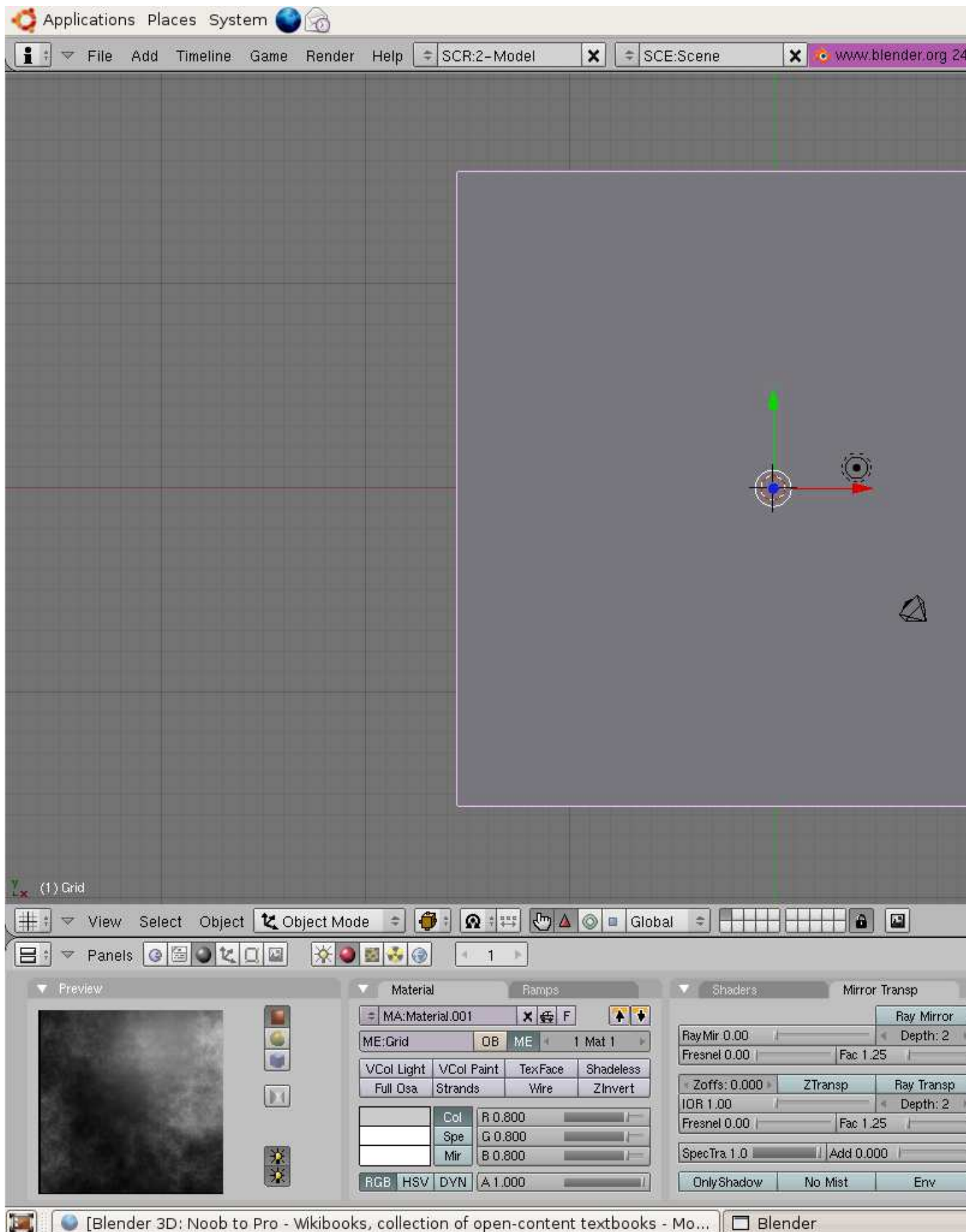
Open Blender and delete the default cube. Now add a grid with resolutions 32 and 32 from top view.

Scale the grid to however big you want your area to be (If this is large you may want to subdivide the grid some more). Go to the material window (F5) and push the cheese looking button. Add a new texture

and name it Height. Set the texture type to image and load the image you made earlier.



Go back to the main material window and look at the texture window.

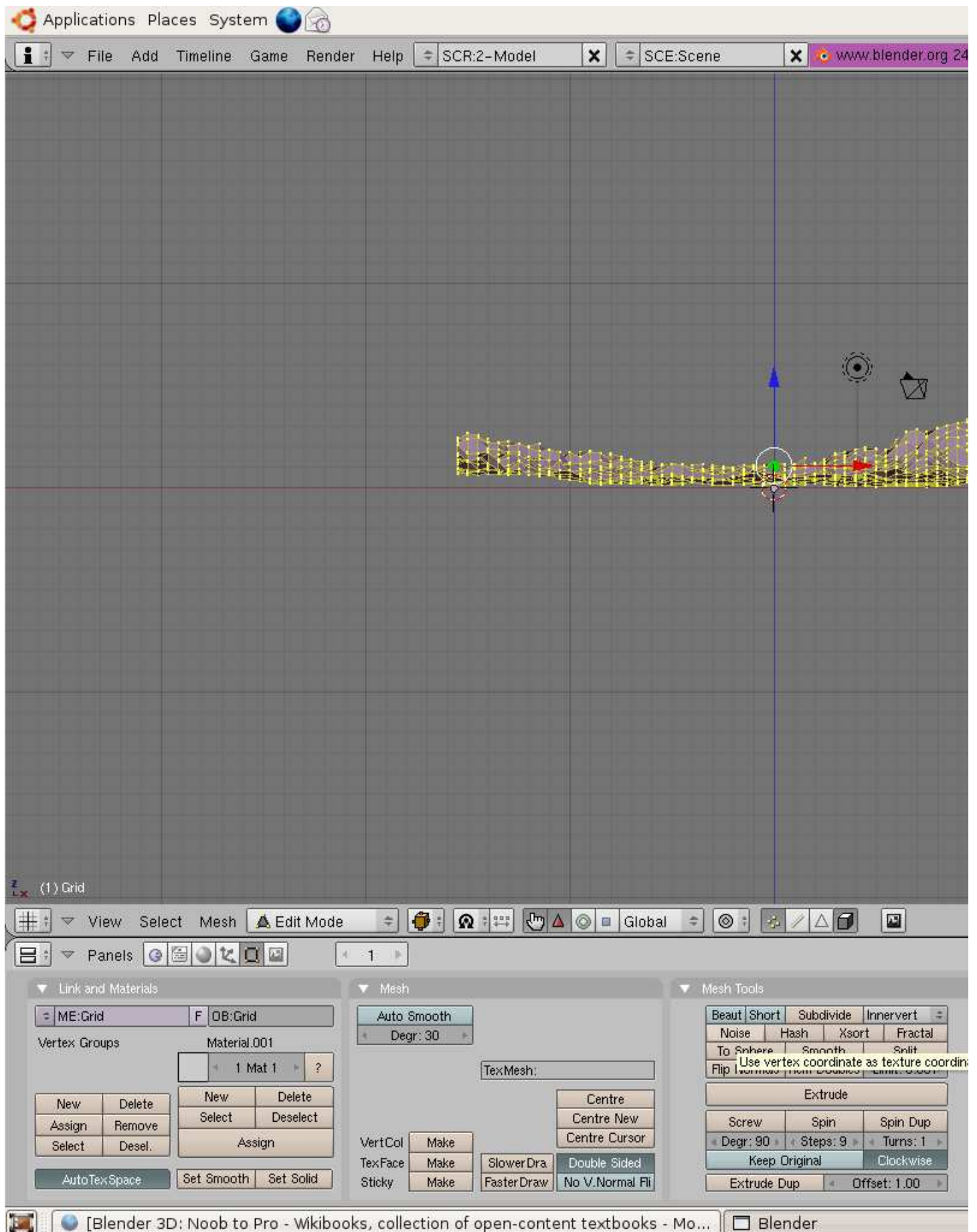


This should have Height written in it with a tick next to it. If not click "add new" and select "height".

Now click the "Map To" tab and deselect "Col".

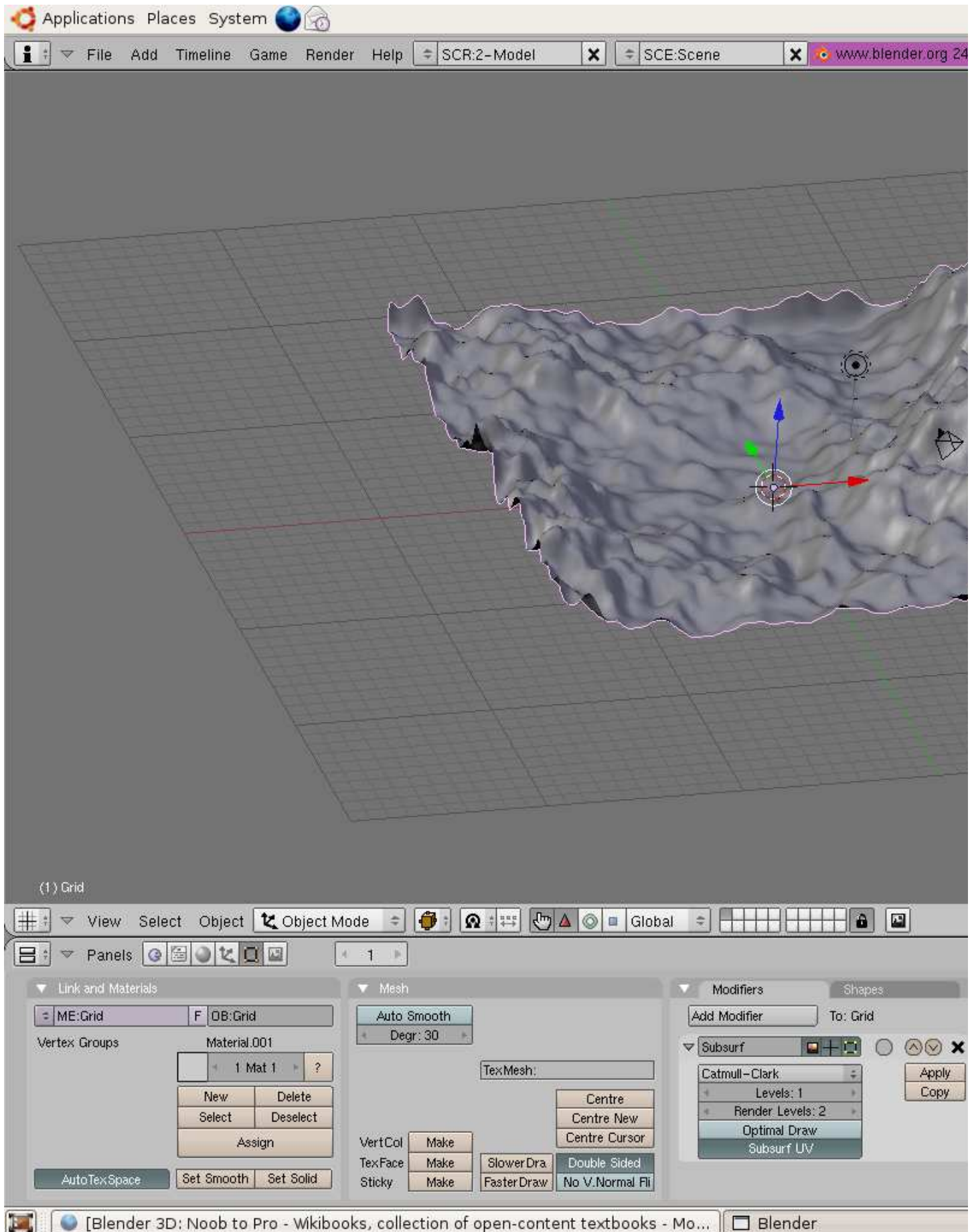
This will stop the image from changing the color of the grid. Go to the mesh window (F9) and enter edit mode (TAB). Go to either front or side view so you can

see what you are doing. Click the "noise" button and your grid should start to change shape.



Continue clicking the button until the terrain has reached the height you want and voilà, you have

just made terrain using heightmaps. You may want to subsurf the shape to get a smoother effect.



Tips:

- 1.If you want a more jagged landscape then adjust the contrast on the image editing software
- 2.To texture your landscape you can use your height map by putting whatever you want at the highest point over the white spots and whatever you want at the lowest points over the black spots. Then save as a different image.
- 3.Height maps can also be used to make city terrain. Draw white squares on a black background. If you do this make sure you make the squares perfectly parallel to the sides of the image. This prevents jagged edges to buildings. You can also use gray squares to adjust the buildings different heights.

Modeling a Mug using Spinning and Extrusion Start by deleting the default cube. In front view, Add a circle. Move the verticies around to form a backwards "L" shape. Select the verticie on the bottom left and go to Mesh-snap-cursor to selection. Then, in top view, select all the verticies and spin it 360 degrees. Then, select all verticies, hit wkey, and click remove doubles. Then, on one of the sides, select the middle face. extrude it 0.7, and make an fgon with the three triangles on the side of the main part. select the two squares on the top of the extrusion and extrude them to 1.82. then subdivide the inner part of the handle. Select the middle egdes and move them up. extrude the faces above into the base. position the camera and add a level three light source. Render the model. You can add color, texture, or anything else.

Add some depth with stereo This tutorial contains some tips for how to work with stereo images. I'm writing this to help others, to have my notes easily available, and to let others improve my ideas.

Stereo viewing is to see the same thing from two slightly different angles. This is what humans normally do with our two eyes. There are many ways to view a stereo image. A perfect method is to use a stereo monitor. But they are quite expensive, and many has very low quality. In the other end of the price-scale you can use crossviewing. Put the two images next to each other, and look at one with one eye, and the other with the other eye. Needs a bit of practice though. A popular solution is red/blue anaglyph glasses, but they give very bad colors.

The stereo camera

I wanted a stereo camera rig that was easy to work with. It should have three cameras (center, left right), have an easy way to set separation (should be 1/30 of the distance) and I would only need to work with the center cam (position etc.), to others should just follow.

Create it

Manually

1. Reset the cameras position, rotation and size (you can use **ALT+GKEY**, **ALT+RKEY** and **ALT+SKEY**). You may want to note these values first, so you can change them back later. I just make sure there's an IPO-curve for them, for example by making a keyframe (**IKEY**).
2. Create two new cameras. Reset their position, rotation and size too.
3. Name them *Camera.Right* and *Camera.Left* or similar. Set LocX to 1 for *Camera.Right* and -1 for *Camera.Left*. (Press **NKEY** to see data for selected object, in this window you can change name and values.) (Select a camera by clicking **RMB** several times on the cameras, until the right one is selected.)
4. Create a new cube (remember to press **TAB** to exit edit mode). Reset position, rotation and size. Name it *Distance Cube* and set these values: LocZ: -30. SizeX: 0.1. SizeY: 0.1. SizeZ: 30.
5. Switch to front view. (**NUM1**)
6. Select *Camera.Left*. Then select *Camera* while holding down **SHIFT** so both are selected. Press **CTRL+PKEY** and press **ENTER** to register *Camera* as parent. Then press **CTRL+LKEY** and

select *Camera Data*. Repeat with right *Camera.Right* and *Distance Cube*.

With a script

I tried making a script that creates the rig, it almost works. Any help finishing it?

```
import Blender
from Blender import *

# Prepare
scene = Scene.getCurrent()
camera = Object.Get("Camera") # TODO validate that it is a camera
oldLocation = camera.loc
oldRotation = camera.rot
oldSize = camera.size

# Create stuff
c = Camera.New("ortho")
cameraLeft = Object.New("Camera", "Camera.Left")
cameraLeft.link(c)
scene.link(cameraLeft)

c = Camera.New("ortho")
cameraRight = Object.New("Camera", "Camera.Right")
cameraRight.link(c)
scene.link(cameraRight)

dEmpty = Object.New("Empty", "Distance")
scene.link(dEmpty)

# Configure
camera.loc = (0,0,0)
camera.rot = (0,0,0)
camera.size = (1,1,1)

cameraLeft.loc = (-1,0,0)
cameraLeft.rot = (0,0,0)
cameraLeft.size = (1,1,1)

cameraRight.loc = (1,0,0)
cameraRight.rot = (0,0,0)
cameraRight.size = (1,1,1)

dEmpty.loc = (0,0,-60)
dEmpty.rot = (0,0,0)
dEmpty.size = (1,1,1)

scene.update(1)

# Connect
camera.makeParent([cameraLeft, cameraRight, dEmpty], 0, 0)
# do that CTRL+LKEY thing
cameraLeft.link(Camera.Get("Camera"))
cameraRight.link(Camera.Get("Camera"))

# Reset original values
camera.loc = oldLocation
camera.rot = oldRotation
camera.size = oldSize

# Finish
Blender.Redraw()
```


How to use it

- Never change the cube or the two side-cameras. Only change the center camera. Use that one for positioning, rotation etc.
- To set the separation: As always, select the center camera. Resize it (with **SKEY**) so you can see the end of the cube if needed. Point at the end of the cube with the mouse pointer, and press **SKEY**. Move the mouse pointer to the point of the main motive, that is closes to the camera. The end of the cube may not end exactly there, but that doesn't matter.
- To render (or preview) with one of the side cameras, select it and press **CTRL+NUM0**.

What needs improvement

The cube is visible

In stead of using a cube, I'd rather use something that doesn't render. It could be an "ampty", but see below.

The cube is hard to see

It can be hard to see where the cube ends, even in a simple scene. You can select the center camera AND the cube, then it is clearly visible. But you must remember to only select the camera, before you insert a keyframe, so your changes to the cube doesn't get saved.

Distance plane is at infinity

The distance plane is where "zero depth is". When viewing a stereo image, the distance plane is where the medium is. In this rig the distance plane is at infinity, meaning *everything* is in front of it. While stuff popping out in front of the screen is cooler than stuff being "inside" the screen, it's a lot harder to make it look nice. Specially because with everything in front of the screen, it's easy to get stuff that is just way to close to the viewer. It can get so hard to see that the 3d-effect is completely gone.

An easy **but wrong** solution is to make the side cameras point at the end of the cube, or add a plane to the rig, and point at that. But then the cameras are no longer parallel, and that creates very ugly distortions.

The right solution is to (conceptually) render the images too wide, and then crop the excess from the left side of the left image, and the right side of the right image. The it will look like it points just like in the wrong solution, but without the distortion.

But this give a lot of problems. First, I'd like to do this a smarter way, in stead of just following the path describe above. But I don't think that's possible in Blender. (I think povray can actually do this.) So I need to render the image too wide. But if I increase width in output, it actually renders the same width of the motive, but decreases height. Then I need to do some weird math to get the right FOV, and I don't know half the formulas. Cropping must be done outside Blender, and the rest of "the production line" is hard to get back into Blender if wanted.

I guess a couple of planes in the rig close to the cameras could simulate the cropping, but that is of limited value. To make an adjustable distance plane with them seems quite hard to me, it would need some scripting I guess.

Stereo viewing with the rig

This is where it gets exciting, now you are actually getting something to look at.

1. Create a new screen, you could call it *Stereo View*.
2. The screen should have one big area from side to side.
3. Set the area to *3D View*
4. Unlock it (The *Locks layers and used Camera to Scene*-lock)
5. Select *Camera.Right* and press **CTRL+NUM0**
6. Split the area in half so there is two parts next to each other
7. In the *right* area, select *Camera.Left* and press **CTRL+NUM0**
8. Adjust zoom in both areas so the frame that shows what is rendered is completely visible, but fill as much as possible. If you can't make them same size, the two areas are not same size.
9. Use cross-view method to see the 3d-effect. Look at the left area with the right eye and right area with the left eye. (It's a skill you need to learn and practice.)
10. Press **SHIFT+ALT+AKEY** to see your scene animated in stereo.

Stereo rendering

Creating animated GIFs using Blender and Gimp This tutorial will guide you through how to make a simple animated Gif Using Blender and Gimp. This is useful for creating Avatars for MSN etc. This tutorial assumes basic knowledge of blender and Gimp, see the basic animation tutorial [2] (http://en.wikibooks.org/wiki/Blender_3D:_Noob_to_Pro/Basic_Animation) To start off you will need an animation, this usually should be no longer than 25 frames long.

1. Open Blender. and delete the default cube and add a UV sphere, the default settings for the sphere work fine.
2. Now set the camera size in the scene buttons (F10) to 50 by 50 (I am creating an avatar for deviant art where the required size is 50 by 50 pixels, you may change this if you want)
3. set the frames to start at frame 1 and end at frame 20.
4. select the sphere and insert a LOC keyframe at frame 1 and 21, then go to frame 11, move the sphere and insert another LOC keyframe. this will create a looping animation.
5. Set the image type to png or jpg (it doesn't matter) and render the animation.

Now to combine the images into an animated Gif using Gimp.

6. Open the first image with gimp.
7. Now click File-> open as Layer or press "Ctrl-Alt-O". Select the next frame and it will be added as a new layer. Repeat this for all of the images, or select all of the images by pressing "Ctrl-A".
8. If you press Filters->Animation->Playback it should play the animation. It will probably have a low frame rate making it "clicky". this will be fixed later.
9. Choose file->Save as-> "Name".gif, then choose save as animation. The change the frame rate to 40 ms(25 frames per second) and voila, you are done.

you should end up with something like this



Note: with my computer when I change to frame rate to 40 ms it sets it to 100 anyway. To fix this re-open the gif in Gimp and in the layers Dialog box change the (100ms) to

(40ms) and then save. (NOTE: use this technique to change the frame rate to whatever you want)

Creating Ogg-Theora movies using Blender Wikimedia Commons requires that movies be uploaded as Ogg-Theora (OGG) files. As of Blender 2.42a, this is not a builtin feature of Blender. To get OGG files from your finished animation isn't difficult, though. However, you'll need additional software.

There are basically two ways to generate OGG files: you can use one of the many fine video editors or you can use special conversion programs. Video editors like LiVES or Cinerella allow you to load your AVI or your rendered frames, manipulate them, and create the OGG file from it. Please refer to the editor's documentation on how to achieve this.

A disadvantage of a video editor is they are huge pieces of software, duplicating functionality that you already used when you created your animation file/s with blender. It's actually not necessary to install a video editor just for converting your animation to OGG Theora format.

Converting AVIs directly to Ogg Theora

To convert AVI to OGG, you can use the `ffmpeg2theora` software package (<http://www.v2v.cc/~j/ffmpeg2theora/>) which is available in source or binary for all relevant systems. Usage example:

```
ffmpeg2theora --optimize my.avi
```

Converting saved frame picture files to Ogg Theora

It's actually possible to convert frame pictures that you saved before to OGG format movies. All you need to do is create a movie format that the abovementioned `ffmpeg2theora` tool understands, and then use that. On Linux, this is readily achieved by using the `mjpegtools` software package (<http://mjpeg.sourceforge.net/>). For example, if your frames were saved as PNG, you could convert them to a soundless OGG file with:

```
png2yuv -I p -f 25 /tmp/*.png >my.yuv
ffmpeg2theora --optimize my.yuv
```

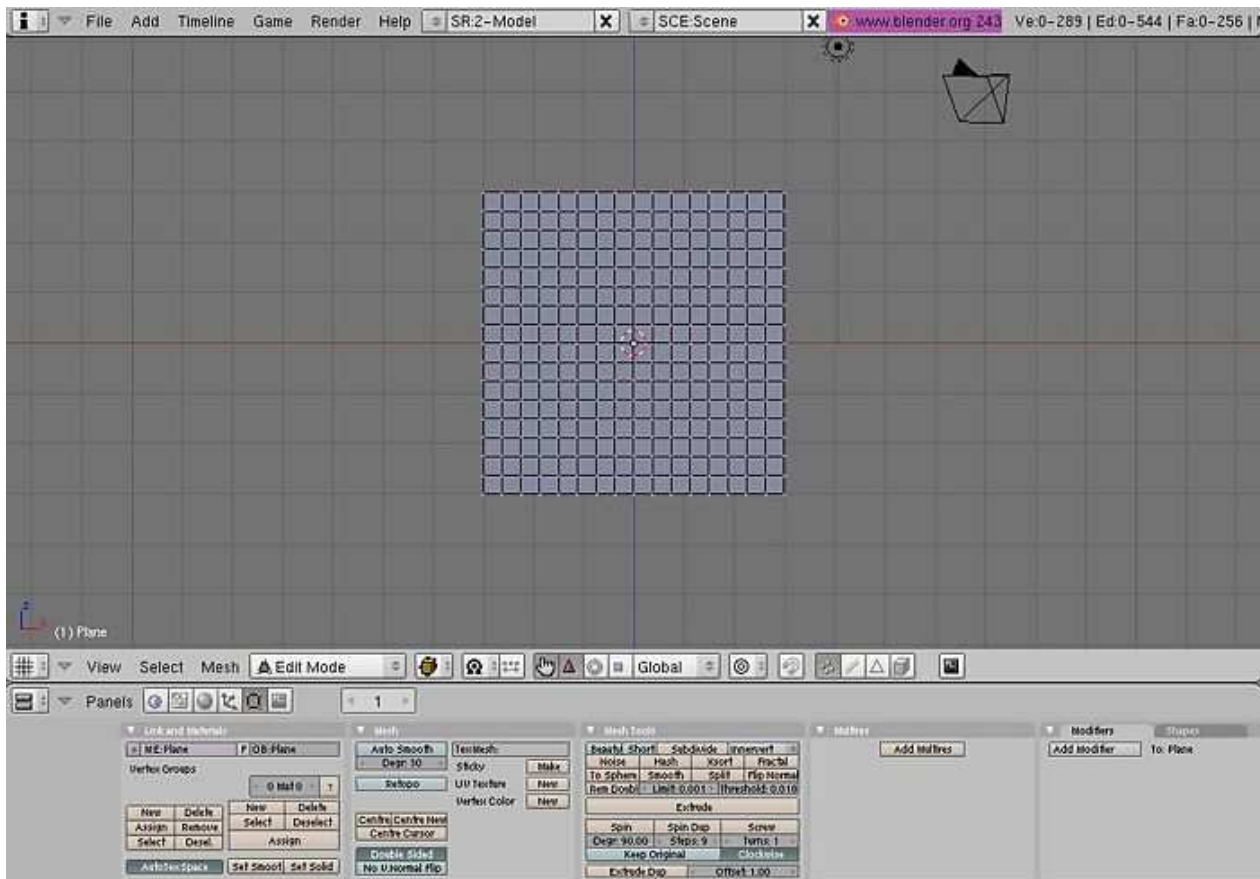
Sound is possible too. Please refer to the *mjpegtools* documentation.

Soft Body with wind This is the **Blender wind and soft body tutorial**. This tutorial will try and help your knowledge of using Soft Body and the Fields and Deflection panels in Blender 3D. (For best results, I recommend you use Blender version 2.43 or higher). Don't forget to save your work at various points throughout the tutorial.

Setting up scene

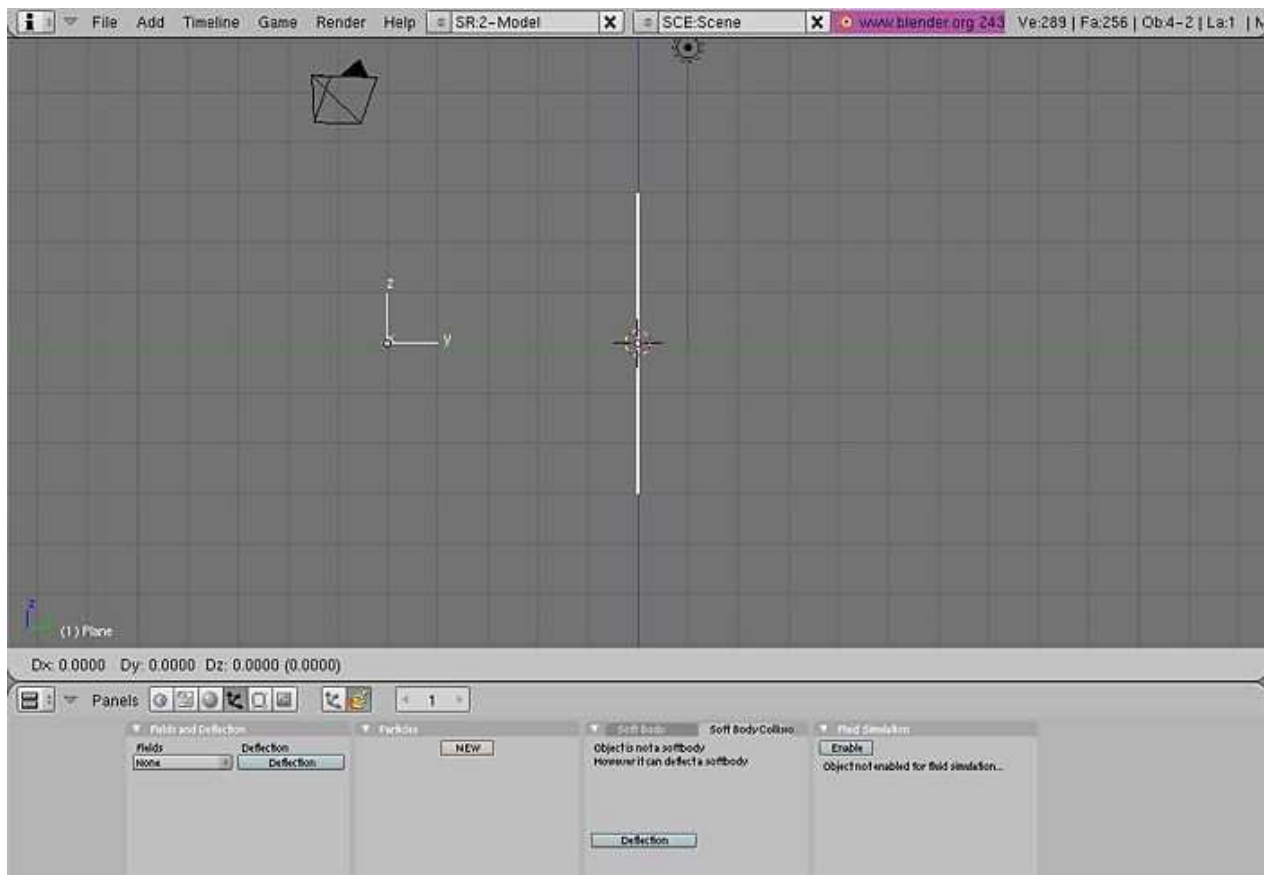
The plane

Delete the default cube [Delete key, yes] and enter Front view mode [Num. Pad 1]. Add a plane, scale 3 times [S key, 3, Enter] and sub-divide 4 times until you get something like the shape below. If your computer can handle more, and you want more, sub-divide as many times as you like, but if your PC is struggling with this, undo once or twice.

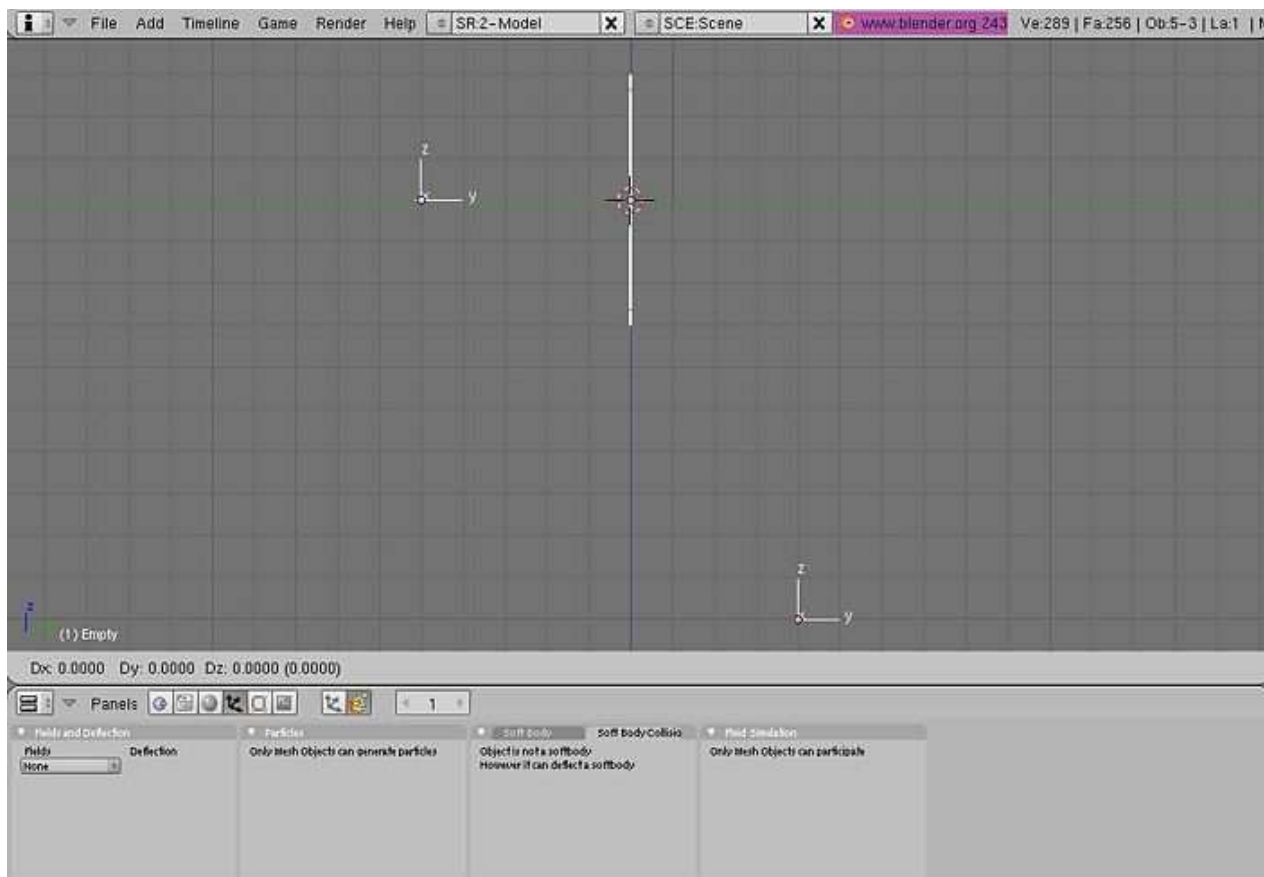


The wind items

TAB out of edit mode (if you haven't done so already), enter side view [Num Pad 3] and add an empty. Clear the rotation [ALT + R] and rotate it 90° [R, 90]. Place it about -5 from the centre [G, y, -5] and make sure its still in the middle of the X axis. Your scene should look like the picture below:



For the second wind item, add an empty like before and clear its rotation, but DON'T rotate it any more. Move it along the Y axis by 4 places [G, Y, 4] and -10 by the Z [G, Z, -10]. And now your scene should look something like this (with all items selected).



And that's all your items you'll need for this. Onto the harder part.

Designating each objects job

The plane

Now, the plane will become a soft body, so enter the Object Panel [F7], click on the Physics Button (beside the three arrows, see second picture below) and click on the soft body button. You will get a load of boxes, but we only need to look at the Grav, Goal, and the bottom parts:



Change the values of these as shown above. Change the Aero part to 732 (if you go up to 1000, it changes the final output by a bit).

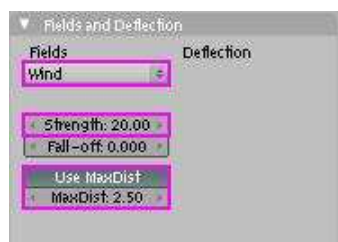
Now, click on the Soft Body Collision tab and click on the Self Collision and Deflection buttons. You don't need to change any of the numbers here. The buttons window should look something like this:



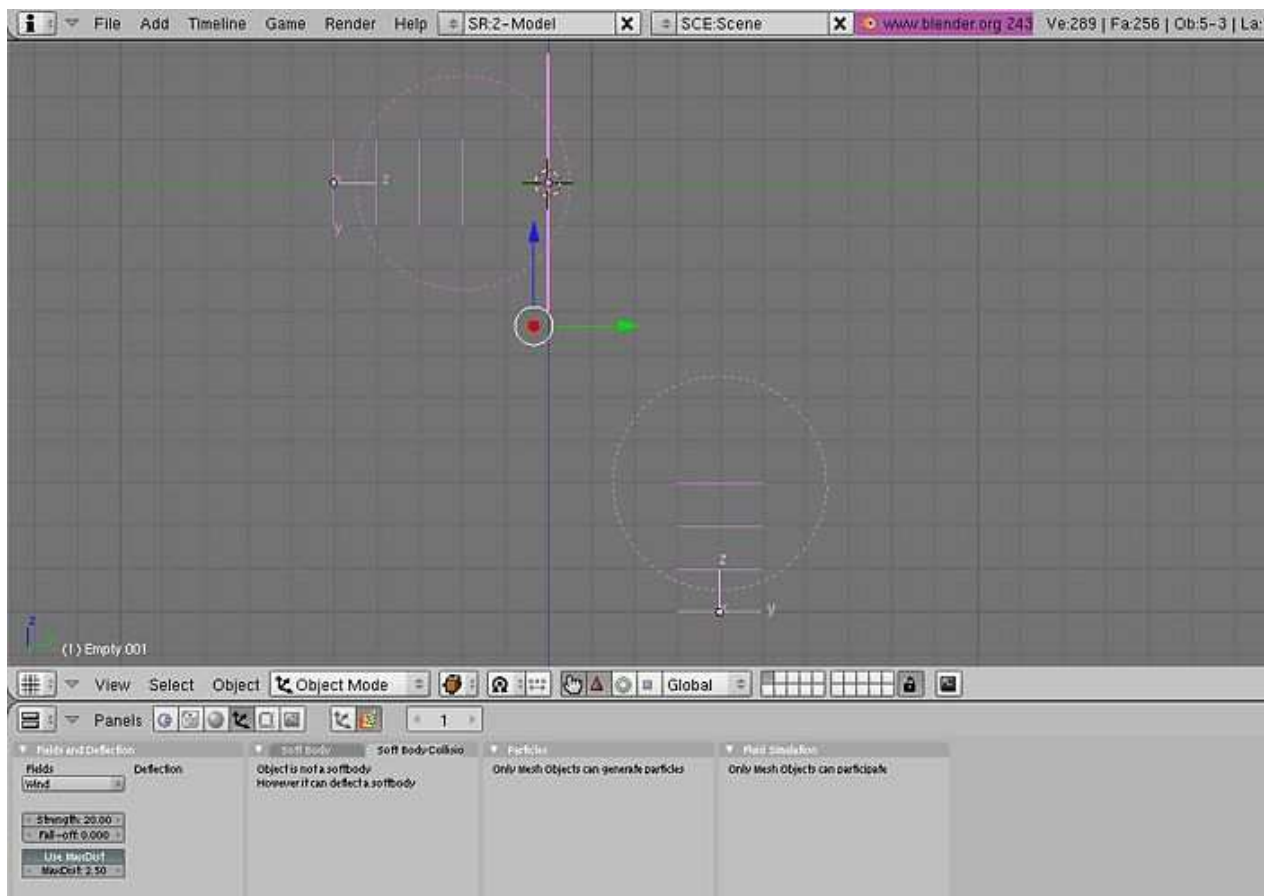
Now we will move on to the Empty items which will be the wind.

Creating the wind

The two empty's we created earlier will be the items that will act like wind, and when you render at the end, they will be invisible, just like the wind. Anyway, select one of the empty's and enter the Physics panel. Click on the box under the Fields and select "Wind". Change the Strength to 20, click on Use MaxDist and change MaxDist to 2.5.



Do the same for the other empty. Your scene should look something like this:

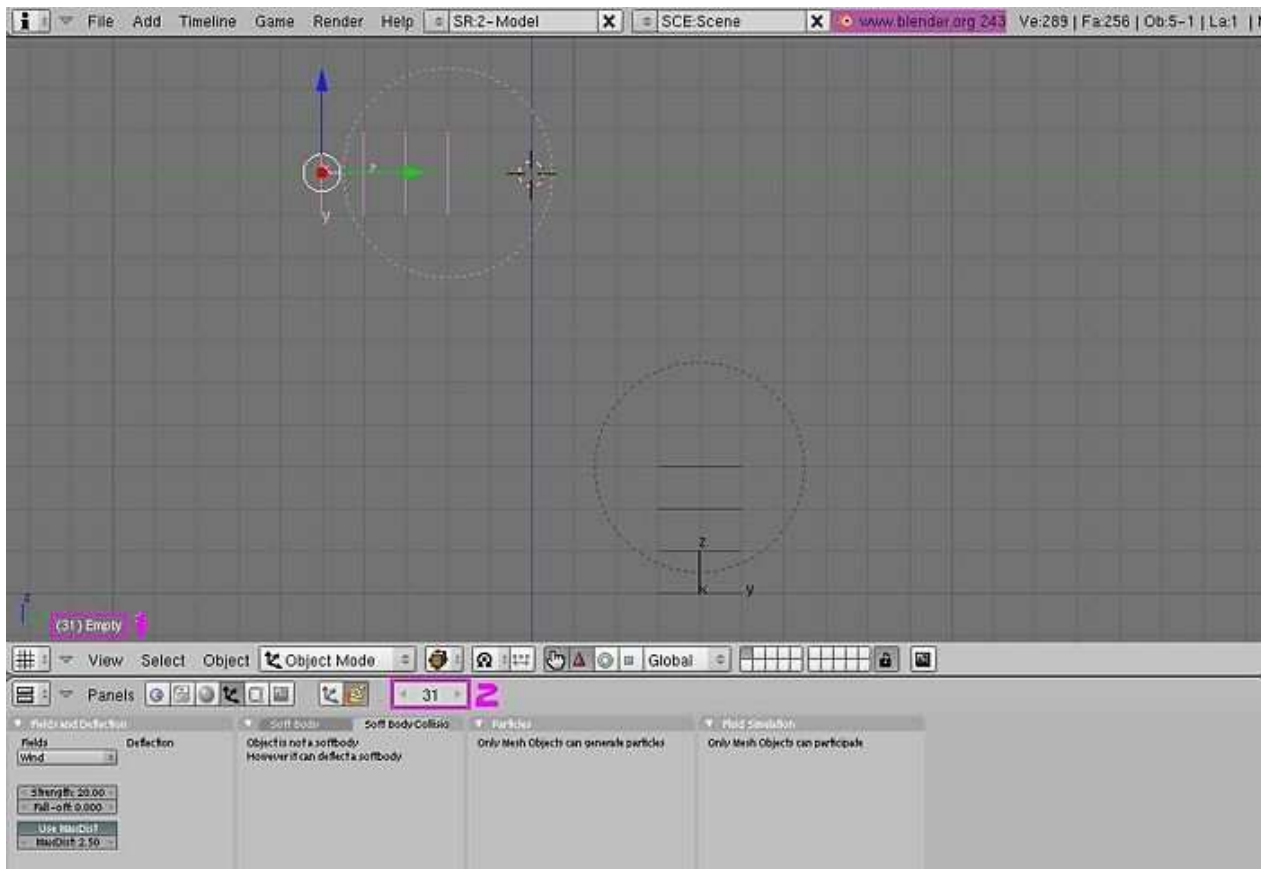


The movement

This is probably the most complicated part, but shouldn't take long.

The Empty on the left

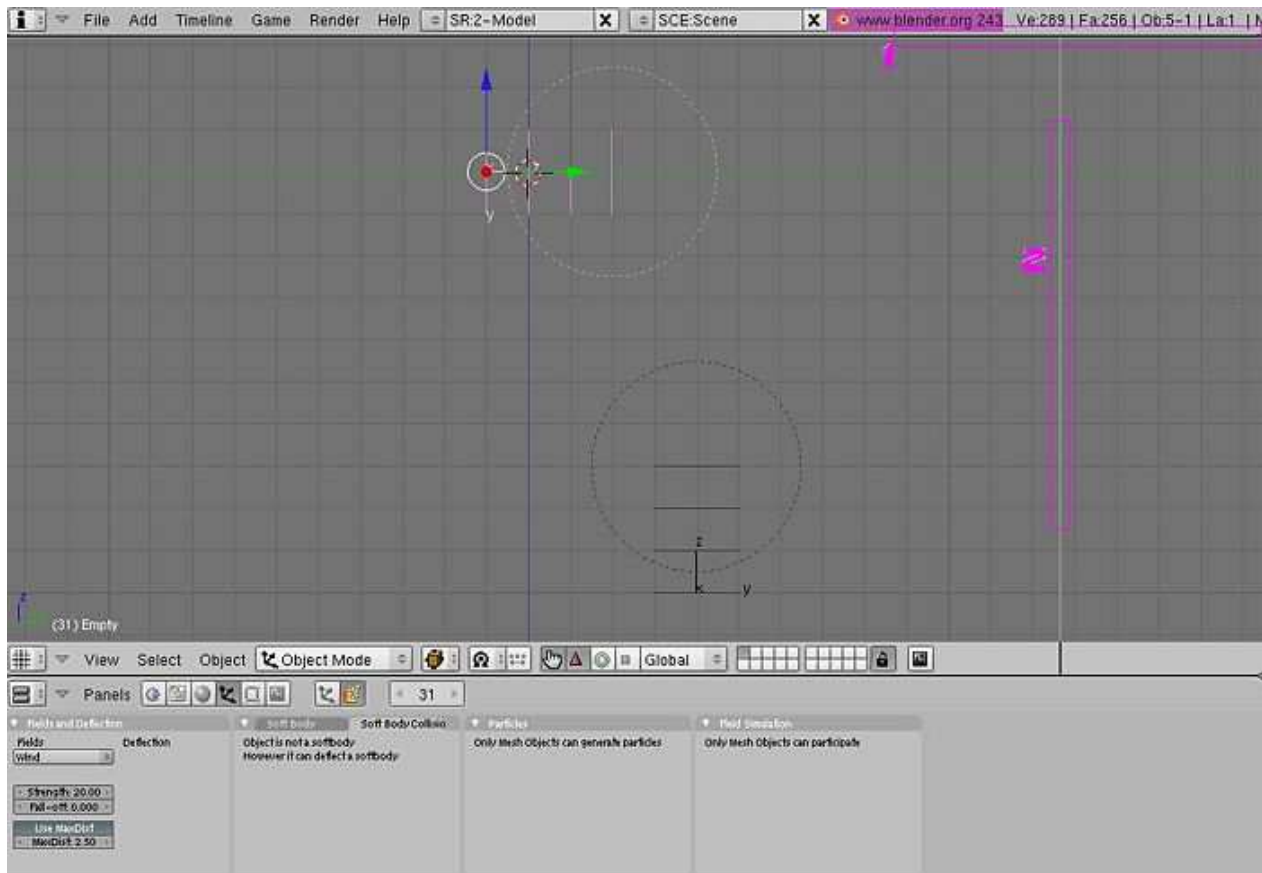
In side view [Num pad 3], select the empty on the left and do the following: 1. Press [I key] and then select LocRotScale from the list it gives you. This inserts a key frame, saying that on this frame, keep the Location, Rotation and scale the same throughout the rest of the movie, unless it comes across another key frame, which might tell it to move or stay the same. Now, press the Up Arrow Key until you get to frame 31 (about 3 times). If you don't know where the box is that tells you what frame your on, check the following picture:



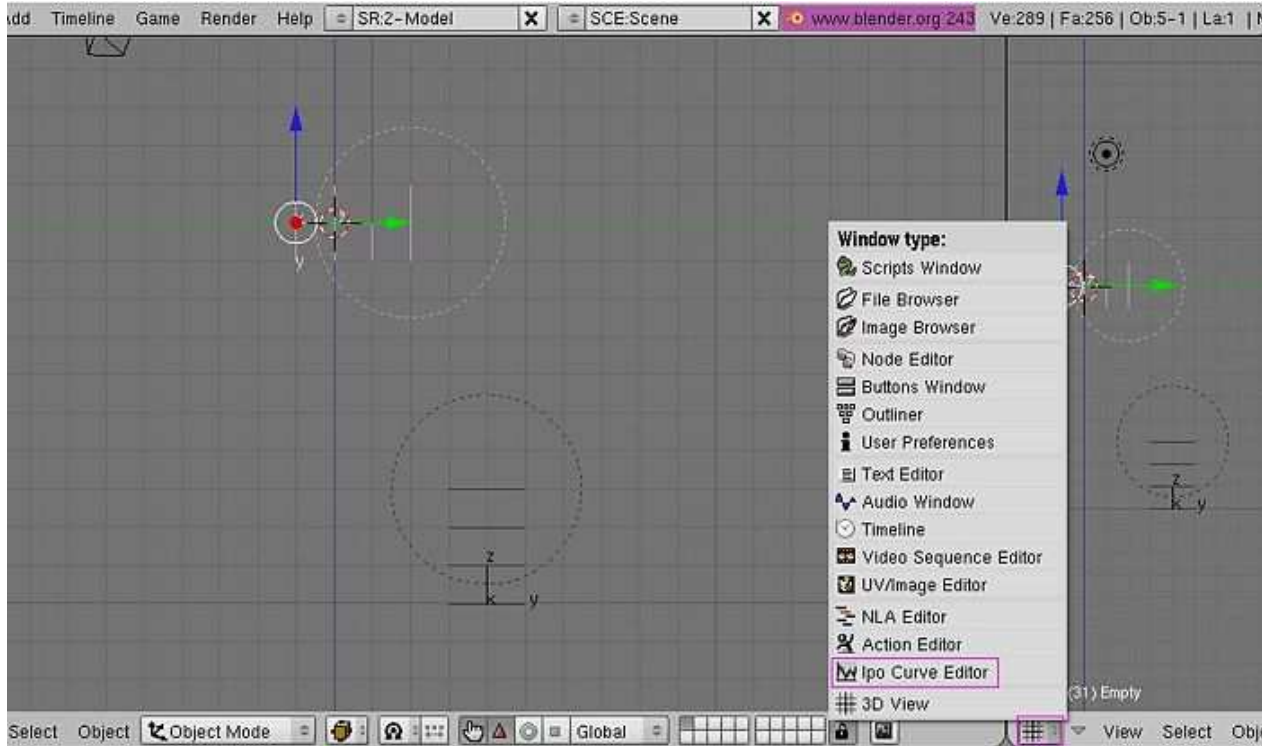
Number 1 shows the current frame number and the name of the selected object while number 2 shows the current frame and allows you to change the frame with the arrows on either side.

Back to the movement

On frame 31, select the empty on the left (the one selected in the picture above) and press [G key]. Now press [Y key] and press "4", then [Enter key]. Now press [I key] and select LocRotScale again. Now, if you press and hold the Left Arrow Key, you should see the Empty move back to its starting place. Now, to check the curve guide (called the "IPO Curve Editor"), right-click on the top panel (number 1 in picture below), then select "Split Area" and click when the line is a bit out from the side (number 2 in picture below).



Now, click on the box (shown below) and select "IPO Curve Editor" from the menu.



This window just shows where the key frames you entered are, and how much the shape changes, moves or rotates. Now, go back to frame 1 and press [ALT]+[A], which plays the animation. You should see the "wind" hit the sheet and the sheet will blow away. Pretty nice, huh? Now, it would be fine like that (I'll show you how to get rid of the blockyness in the last part), but say you want to hit the sheet again and send it upwards? We will use the second empty for this.

Select the second empty (the one on the bottom). Insert a key frame ([I key], LocRotScale) on frame 1 and frame 50. Go to frame 60, grab the empty and move it up 8 places ([G key], [Z key], 8). Insert a key frame ([I key], LocRotScale) and then go back to frame 1. You have completed the basics, and the most of this tutorial. Now, press [ALT]+[A key] and watch your animation.

Finishing touches

Blockiness

Now, to sort out the blockiness, go to the Editing buttons panel [F9] and select the "Set Smooth" button.



Now if you preview again ([ALT]+[A]) you should see the plane is smoother, but might be a bit unrealistic (i.e. not acting like real cloth). Now, that can't be helped, the only way to get rid of it is to subdivide the plane several more times, but that will put a LOT of strain on your computer, so I wouldn't recommend doing it unless your computer can handle it.

Background

First of all, got to the Scene panel [F10] and over at the Format panel, change SizeX to 400 and SizeY to 300. Now, to change the background colour when you render, go to the shading panel [F5] and select the World buttons. Now, in the World panel change HoR to 0, HoG to 0.80 and HoB to 1.0.



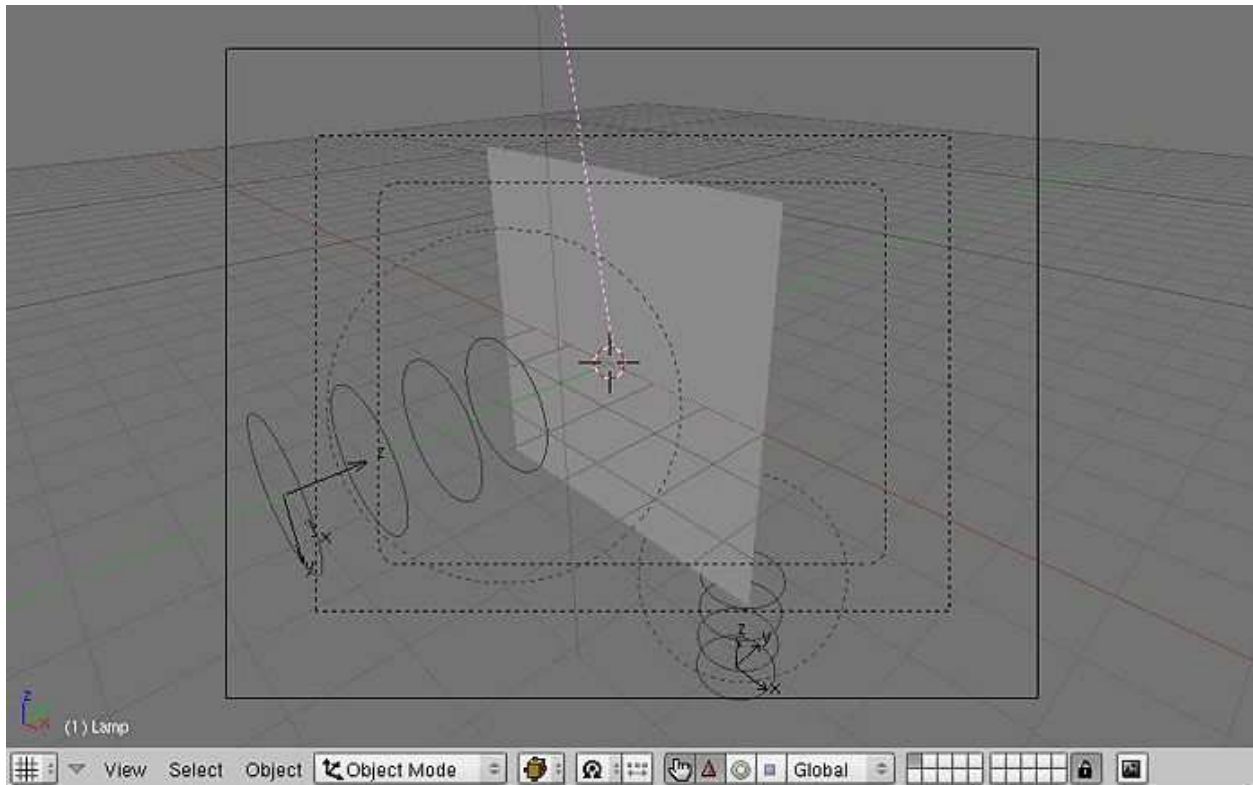
All that does is just changes the background colour to a brighter, nicer shade of blue. Now, I'm just getting a bit lazy, so I'll just explain this part with a picture: (don't forget to select the plane).



Change the values and press the buttons shown in the picture. This will change the colour of the

plane to white.

The only problem now is the light. Press [F12] and you should see what I mean. There's no light shining on the plane where the camera is, so its just shaded dark. To fix that, select the light and go to the shading panel [F5]. You now have options for the light. Click on the "Sun" button and press [ALT]+[R] to clear rotation. Now, in side view [Num pad 3] press [R] and then type -45. Enter top view [Num pad 7] and press [R] and then -45. This now shines the light in the direction of the plane, but, if like mine, the light is above the plane in top-view, press [G], [Y] and then -5. The line coming out of the light source should be roughly pointing at the centre of the plane. Here's what your window should look like:



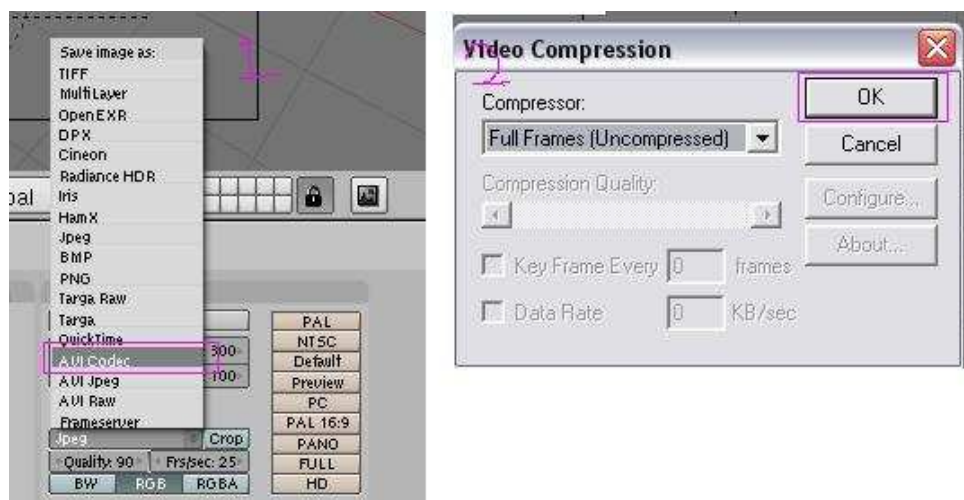
The pink line is the light. This was taken in camera view [Num pad 0]. Render the frame and you should see what the final product looks like. Move to any frame you want and press [F12] and it will show the rendered image for that frame. Now, rendering the entire animation might, in fact, will take a long time unless you have a completely new PC, are using a big server like DreamWorks (one of the big PC's, used for rendering images faster) or have a quicker renderer, I don't use any external renderers, and am stuck using a PC that is about 2 years old (in other words, full of junk). It took my PC less than 5 minutes to render 100 frames, and the last 25 were just blank (as the plane just flew above the camera). To change the amount of frames to render, and to render the full animation, here's what you press:



The box that says End:100 lets you select what frame you finish rendering the animation on (NOTE: the Sta:1 button lets you select what frame to start rendering the animation). When you press the ANIM button, it starts rendering the animation. The Box covered in blue, that says Jpeg, lets you

change the format of the image in the end.

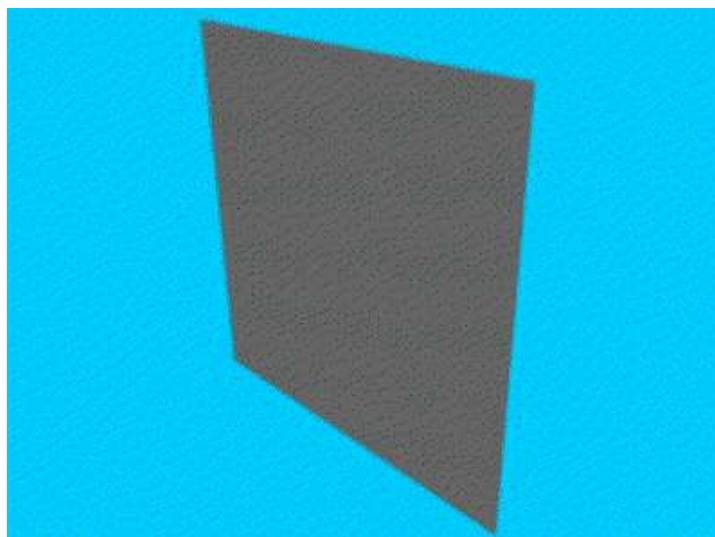
To export the animation as an AVI format, select the AVI button shown below, then press OK. Now, you need to Animate the sequence again, so press the ANIM button again.



The finished .AVI will be saved in a folder with the rest of your rendered images. It should be saved in a folder called tmp, which (on a Microsoft computer) is in My Computer/tmp. The name of the file will be whatever your start and end frames are, so in this movie, mine is called 0001_0100.avi. You can now do whatever you want with your movie now, and hopefully you have learned a trick or two that will be helpful later on in your Blender career.

Final result

Here is an animated .gif of my final result: (imported into Macromedia Flash and exported as an animated .gif)



--Eb264 /

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