If you can get past the deceptive interface, Blender is perfect for 3D modelling and rendering. Jono Bacon makes sense of it all.

Blender is a freely available Open Source 3D modeller and rendering environment for Windows, Linux and UNIX. It offers a full suite of modelling, texturing, lighting, rendering and animation facilities, all of which are available free of charge. In this Masterclass we’ll be taking a look at how to use Blender to model and render images.

Blender is a powerful application with a notoriously difficult interface that can be initially off-putting to some users. However, under a complex exterior, its interface is actually quite efficient in its design. The general ethos is that you have one hand on the keyboard and one hand on the mouse, and I suggest you adopt this pose throughout this tutorial series. Sounds fairly simple so far.

**Starting Blender**

Load up Blender after installation and you will be presented with the 3D view and a series of buttons sitting below it. The first line of buttons are the controls for the current view, the ones below that are the general application buttons, and the large set of buttons at the bottom are the currently selected tool group. The middle set of buttons access all the major parts of the application, such as the Edit and Render buttons, and each section’s controls are then shown in the large button area at the bottom of the screen.

When using Blender, you will be adding a number of different shapes and items to your 3D scene. Most actions are applied to the currently selected shape, lamp or other item. It is important to remember to select items before you start making use of these buttons, otherwise your finished models may start to look rather different!

**Adding shapes**

3D modelling largely consists of the manipulation of a number of so-called primitives; basic shapes such as circles, cubes, cylinders and cones. We can add these shapes and other items such as lights (which we will cover later) by pressing the Spacebar when the mouse is hovered over the view. The toolbox will pop up, and you can add shapes by selecting the relevant shapes in the Meshes section. The selected shape will be placed where the red and white circle is, and is better known as the 3D cursor. The toolbox has a variety of different shapes and some of these will require further parameters to be specified, such as the number of sides in a circular shape (so you have the ability to create circles as well as shapes such as hexagons and pentagons). These requirements are usually requested when you create the shape – they pop up in a little window.

**Dealing with shapes**

Blender has two basic modes of operation: Edit and Non-Edit mode. In Edit mode you can move the individual points in a shape (known as vertices) around, and while in Non-Edit mode, you can deal with the entire shape. You can then toggle which mode you are in by pressing the Tab key.

When the shapes in the view are a pink colour, it means that you’re in Non-Edit mode. If you can see the individual vertices in the shape, then you are in Edit mode. As well as being in and out of Edit mode, we have the ability to manipulate shapes using a number of key commands. In
order to use a key command, ensure that you are in Non-Edit mode and press the Right mouse button to select a shape. You can now use a hot key such as X (which will delete a shape) in order to apply the key to the currently selected shape.

### Splitting the views

With any kind of 3D modelling, you need to be able to see your scene from a variety of angles. To do this in Blender you need to split the current view. Put the mouse over the view and then bring it down until it hovers over the divider between that view and main buttons. Right click and a small menu will pop up. Click on Split View and select where the split will occur. The direction of the mouse determines which view is split. Hover the mouse over the right side view and then move it to the divider between the left and right views. Repeat the process and you will be able to see that the right side is now split.

Each view has its own set of buttons and one of them has three small boxes, one of which is yellow and marked with a ‘T’. This button will change the view to a Top, Front or Side view. The other major one is the camera view. This is the lens through which your 3D scene is viewed. Our camera is shown in the views as a small triangle, the wider end being the lens. To see what the camera is viewing, click on the button which has a shaded square on it. When you click on this button it will show three other buttons, the top one being the camera view.

### Playing with shapes

Once we have created shapes with the Toolbox, we can move them by selecting them in Non-Edit mode and pressing the G key, or scale them by pressing the Scale key (S) and moving the mouse. If you go into Edit mode, non-selected vertices are shown in pink. Press the B key to draw a box around some vertices to select, move and stretch them. The crucial key for dealing with vertices is the Extrude key (E). To extrude a shape (which means only stretching a portion of it), ensure that you select some but not all of the vertices. You can then press the E key to extrude these vertices and you will see them still connected to the shape. Remember that these commands can be used together – you can first extrude and then scale up to a fatter topside of the shape. Another important key command is Rotate (R). This will rotate the selected shape or vertices in the current view. You can use the Rotate key to rotate in any view and, as such, use combinations of view to get different effects when bending objects.

Most Blender modelling is done using a combination of these techniques. You could begin with a circle, extrude it into a tube, widen the top of the tube and then create an obscure shape by moving vertices in different views. The key to success is trying out different things.

### GOING FURTHER

There are a variety of resources on the Internet available for furthering your Blender experience, including the full manual, which is now freely available. Most of these resources are at www.blender.org. Another useful resource is the discussion forums at www.elysium.com where a lot of Blenderheads hang out.

### NEXT MONTH

See the new face of open source 3D as we look at bringing light to your scenes.

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**Getting Blender and using it**

Want to go on a Blender? Here’s its history and how to get hold of it

Blender is an Open Source program for Windows, Linux and UNIX and as such, is a truly cross platform 3D modeller. Blender was a closed source application developed as in-house software for 3D modelling company, NaN. When NaN went bust, the author of Blender asked the shareholders how much they would need to buy Blender and Open Source it. £100,000 was the chosen price and soon Blender had become Open Sourced.

An organisation called the Blender Foundation was set up to deal with the issues of first Open Sourcing Blender and then dealing with the many issues with the source code and the impending project. The Blender Foundation set up a website with forums and mailing lists and now a thriving community of users from all areas, such as artists, programmers, documentation writers and more, are involved. This group also ensures that money is raised for dealing with the costs of these resources and that Blender remains available for all platforms. Donations are gathered directly from users and merchandise sales.

Although Blender is cross platform, it is surprisingly easy to install. You can download it for free at: www.blender.org. There are no prerequisites for the program, although the new 2.28 release will require SDL if you want to do some audio editing with the new audio feature in Blender. The application should run fine without this requirement for normal modelling and animation though.

As Blender is now an Open Source application, more and more features will be added to it. Some of the modifications currently planned for the Game Engine, include external render support, better editing facilities and additional modelling tools. Blender is not going to be just a 3D modeller, but an entire multimedia production environment focused around 3D graphics.