This is the first chapter of the Blender tutorial guide, to be published in December 1999 by Not a Number.

The Tutorial Guide is oriented at new users and will cover all aspects of Blender. You don't need the Blender Manual to work with this guide, although it is recommended to have it as a reference.

The tutorial guide will contain 5 gallery pages and 22 tutorials about modeling, rendering, lighting, animation, post production and plugins programming. The guide is 100 pages full color and printed at magazine format.

Editor: Bart Veldhuizen

Writers: Bart Veldhuizen, Geno Ruffalo, Jason Nairn, Martin Strubel, Willem-Paul van Overbruggen.

Design: Samo Korosec, team|xype

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The interface

window in detail (that is where the Blender manual comes in), but instead let you see the basic idea behind it.

After finishing this chapter you are ready to work with the rest of the book. Like me, you will find out that Blender's user interface really grows on you; it is one of the most efficient and well-thought out interfaces I have worked with.

Here is what I found to be the Golden Rule of Blender:

"Keep one hand on your keyboard and one on your mouse."

Even while Blender's user interface may be a bit daunting at first, I hope that working with this book will teach you that it is actually a very intuitive one. It was written entirely for working efficiently and quickly and this means that a lot of functions are accessible both by using the keyboard and by using the mouse. Working with hotkeys instead of menus is harder to learn, but the rewards are great.

After a while working with Blender becomes a second nature. Often, my girlfriend watches in amazement at the speed with which I can handle objects, change views, navigate your way around your scene in Blender. Blender has really turned my keyboard and mouse into a glove which reaches into 3D space.

But it all starts with the Golden Rule - remember it while you are working your way through this book!
What am I looking at?

When you first start Blender, your screen will look like this. The screen is divided into three parts; at the top you see the Info Window. Among other things, you will see Blender’s version number and some statistics about your current scene.

Next is the 3D Window. This window type is used for all the editing in your 3D world. The pink square in the middle is the standard plane. It is pink because it is currently selected. The black triangle on the bottom is the camera. The gray lines are the grid lines of the 3D world - you can use them to align your objects. The cross hairs with the white and red colored circle is the 3D cursor. You can place it anywhere in 3D space. It is used to determine where new objects are placed, but it can also act as a center for rotation or scaling.

The window on the bottom is called the Buttons Window. In this window, you can edit a variety of information about your scene: materials, lights, animation settings, rendering settings - it is all in here.

Each window has a Header. For the 3D window the header is located at the bottom. You can switch the position of the header by RightClicking on it and confirming the requester that pops up (‘Switch header’).

Pay special attention to the button on the far left - each window has this icon. This is also the one that completely eluded me in the beginning.

In Blender terms, it is called an Icon Slider button. If you LeftClick on it and drag left or right it will change, revealing a number of different icons. Each icon corresponds to a different window type. I will explain the different types later.

You can also click on the left and right half of the Icon Slider to change the window type.

The contents of the Buttons Window can be changed by clicking on one of these buttons. In fact, it is a lot like the Icon Slider button that I discussed, but now all the options are visible. The meaning of the different buttons is explained later in the paragraph ‘the Buttons Window’.

Configuring the screen your way

Blender’s screen can be reconfigured in any way that you like. To start with, you can change the size of the different windows by placing the mouse pointer over one of the lines separating the different windows. The cursor changes shape to indicate you can now change the window size. LeftClick and drag to change the window size.
If you own a mouse with 2 buttons instead of 3, hold down the `Alt` key and `LeftClick` to mimic the `MiddleButton`.

Removing windows is very much like splitting them; with the mousepointer over a window border, `RightClick` Confirm the requester. Like splitting, the direction from which you approached the border (or rather, which window has the focus before joining) determines which window 'survives' the joining.

**The toolbox - adding a sphere**

Almost every Blender function can be accessed by using the keyboard or the mouse. The Toolbox contains most of Blender's functions. You can call up the toolbox either by clicking its icon in the top-right of the Blender screen, or by pressing `Ctrl`.

This is how the toolbox works: The dark gray buttons on the left are function categories; moving your mouse pointer over them will change the button list on the right. Move your mouse pointer to the right and click on a function button to activate that function. Each button also shows the corresponding keyboard shortcut. In the shortcut notation, `c|<button>` means holding down `Ctrl` and pressing the listed button. Similarly, `a|<button>` uses the `Alt` key as a modifier.

Clicking some buttons will reveal a third layer of functions. For example, if you wish to add a sphere to your scene, first select 'Add' from the categories list in the Toolbox. Next, `LeftClick` on the button labeled 'Mesh'.

The button list on the right now changes to offer you a choice between the different primitives that Blender knows. `LeftClick` on 'UVsphere' to add a sphere to your scene.
When adding objects like a sphere, Blender wants to know which resolution you require. A sphere with a high resolution looks smoother than a low-resolution sphere, but it also requires more memory and is slower to manipulate and render.

These buttons work like the Icon slider you saw earlier: LeftClick on the 'Segments' button and drag left or right to increase or decrease the value. Also, you can click on either side of the button to change the value step by step.

Yet another way to change the value is to hold down j and LeftClick the 'Segments' button. This will change the button into a text input. You can now type a value into the field directly. Press f when you have entered the correct value.

Finally, click on the OK button to set the value of the 'Segments' variable.

In the case of the sphere, you will need to set a second parameter, 'Rings'. After doing this, a sphere will show up at the location of your 3D Cursor. Instead of showing up in pink or black, the sphere is drawn with small yellow dots. This mode is described in the paragraph 'Edit Mode'.

**About Editmode**

When you are working in 3D space, you can basically perform two types of operations: operations that affect an object as a whole and operations that affect the geometry of an object, but do not affect the object's global properties. An example of the former is moving an object to another location. An example of the latter is shaping a nose on a face.

In Blender, you have to indicate which of the two you want to use. This is where editmode comes in.

In contrast, when you select you enter editmode. The object is redrawn and the separate points of which is consists are drawn. (These points are known as vertices, by the way). If you select a vertex by RightClicking on it, you can then translate only this point, while leaving the others unaffected. In this way, you change an object's shape.

If you select more than one vertex, you can also rotate or scale them. In this case, the vertices are rotated or scaled around their median point.

**Loading and saving your work**

By now you have probably created a Blender scene which you might want to save to disk, or you would like to
take a look at the .blend files that we have included on the CD-ROM that comes with this book. Blender has a lot of file loading and saving options - even to the point that you can use Blender as a file manager.

In this part I will briefly describe the basic file loading and saving mechanisms. As always, these functions can be accessed either from the toolbox or by using a hotkey.

Loading a blender file

Call up the File Window by pressing . In this window, files are shown in black and directories in white text. The .blend files are also indicated with a small yellow square in front of them.

The first method to load a file is by LeftClicking on a filename. This will copy the name to the filename box at the top of the window (the second textbox from the top). Pressing will then actually load the file. Alternatively, you can also MiddleClick on a file which will cause it to be loaded immediately.

Navigating to the parent directory is done by clicking on the '..' directory in the list or by clicking on the 'P' button at the top of the window. Sometimes you may want to refresh the filelist; for example when another program has been writing or changing files in the current directory. In that case, click on the '..' directory.

Saving a blender file

Open the File Window by pressing . This window works in the same way as above. Additionally, you can now enter a new filename in the filename box. To do this, LeftClick in the filename box and enter a new name.

Use the keys NumPad + and NumPad - to automatically increase or decrease the versionnumber of a file before loading or saving.

If you try to save over an existing file, Blender will show you this warning. To confirm this request, either press or LeftClick on the filename. To cancel it, you can press or move the mouse away from the requester.

Returning to a directory where you have already been (and saved or loaded a file), or changing the current drive that you are working on is easy; just click/hold on the '..' button at the top of the File window. Select an entry to directly jump to this directory.

Saving an image

To save an image that you have rendered, just press . From now on saving the file is the same as saving a regular .blend file. The only difference is that you can select the file format in the Display Buttons window. This window is discussed in detail below.

The Display Buttons window

Selecting a file format: you can select the file format for saving images. The options are PNM, JPEG, and BMP.
**Saving an animation**

Saving an entire animation is done differently; you first need to enter a filename for your animation in the Display Buttons window and then press the 'Anim' button. From then on, all the animation frames are saved using the filename that you just entered as a base. Read more about this in the Display Buttons section below.

**The 3D Window**

The 3D window is where you will spend most of your time in Blender. In this window, you can rearrange the objects in your scene, edit their individual vertices (vertices are the points that make up an object), define animation, add lights and cameras, ...

The first thing to know about the 3D view is how you can navigate through it. I am not talking about moving objects, but about moving your viewpoint – how can you examine objects? How does an object look from another side? Do the different parts have the correct color? Did I add a little detail correctly?

Blender uses a very simple yet intuitive method for changing the view in 3D. To get started, 

MiddleClick, hold and drag your mouse around. Do you see what happens? Without any modifiers, 

MiddleClick, hold and drag rotates your 3D view.

Now try the same but hold down the Ctrl key before you click the mouse button. The view is now translated instead of rotated.

Finally, the Ctrl key allows you to zoom in and out.

To toggle between perspective and orthogonal view, press NumPad 5.

In the 3D window, you can display your scene in a number of modes. Especially if you don't have 3D hardware this can make a huge performance difference. To toggle between wireframe and solid view, press Z. Solid view can display a scene with some shading even though you have not yet defined a lamp.

Switch to (real) shaded view with Z. If you have not defined a lamp yet, the scene will be completely black.
Aside from navigating around 3D space to look at your objects, you can also use a few hotkeys to quickly switch to standard views. Use NumPad 7, 1, 3 and 0 to switch to top view, front view, side view or camera view.

The display buttons

Once you are ready to render your image or save it to disk, you need the Display Buttons window. In this window you can control all the parameters that have to do with items as rendering quality, rendering size, animation length and animation filenames.

To define the image size you can either select a preset value from the row of buttons on the far right or set an image size yourself by changing the SizeX and SizeY values. For preview rendering, you can also render the image at 25%, 50% or 75% of the final output size.

On some systems you may need to press the numlock key to get the numpad to work.

If you want to get a specific object into view and not the entire scene, first select the object by RightClick on it (the object will turn pink to indicate it is selected). Next, press NumPad 4.

Sometimes you may get lost inside 3D space a bit. To restore the view, either click on the Home icon at the bottom of the 3D window, or press g . Blender will resize the view to include every object in your scene.

Selecting the output image size

restoring the view of the whole scene;

centering the selected object and hiding others, NumPad 4

centering the selected object, NumPad 4

the display buttons
To set the animation start and end frame, change the 'Sta' and 'End' values. Pressing \( \text{Supr} \) and \( \text{Supr} \) will automatically jump to the start and end frame.

The Blender windows: a summary

This section gives a summary of the most important windows in Blender. It does not try to be complete nor to explain each window in detail. Most of the windows contain pointers to other chapters where it is discussed in more detail.

The file window

- for loading,
- for saving.

Select a file format with the buttons labeled 'Targa', 'TgaRaw', 'Iris', ... For animations, you can also choose 'AVI raw' and 'AVI jpg' and define the number of frames per second for these files.

The Windows Mediaplayer has problems playing back Blender’s AVI raw and jpg files, but the Quicktime4 player plays them back correctly.

Entering a new directory name in the directory box (the one on the top) will create the new directory for you after asking confirmation.
The image select window

This window type works exactly like the file load window, but all recognized image files are shown as thumbnails. An example of where this window is used is in the Texture Buttons window; for loading image texture maps.

The 3D window

This window allows you to manipulate the objects in your scene directly by dragging (g), rotating (r) or scaling them (s).

You can navigate through 3D space by dragging with the MiddleButton: this will rotate your view. Dragging with the MiddleButton and holding the Shift key will translate the view, and holding down Ctrl will allow you to zoom.

The IPO window

In this window you can edit the timelines that are associated to different object properties, like their position and rotation, but also their color or layer. The different object properties or ‘channels’ that are available are shown on the right. You can select channels by leftClicking on them - Shift will extend the selection.

Enter editmode by pressing Enter. You can now edit the individual vertices of the curves or change their curvature.

You can read more about the IPO window in the chapter 14

Text edit window

The Text Edit Window is mainly used for writing Python scripts, but also if you do not have a C key this window can be extremely valuable. It is often a good idea to keep notes of your animation projects. Information that I always forget (especially after a couple of weeks!) are the maps that I have used, the scenes that I have defined, important frame numbers, well, you get the picture.

A big advantage of using the Text Edit Window is that the notes are stored inside the .blend files - this way you can never loose your notes again!

When creating a new Text Edit Window, you have the choice of creating a new text object, or to import an existing text file. In that case, a File Window will be opened
and you can select a file as usual. Of course, you can have more than one text object in your Blender file.

The info window

The Info Window does not have a hotkey. Instead, it is 'hidden' at the top of your screen. To reveal it, drag down the top window border on your screen as indicated in the picture.

The Info Window shows you the settings of Blender. Among other things, you can tell Blender where to store autosave files, when to save them (use the 'Time' value) and how many versions to keep on disk.

Here, you can also activate Blender’s tooltips function. Tooltips will appear in the right corner of the header of the Info Window, right next to the Blender URL and version number.

You can make your settings permanent by pressing \key{Alt} and confirming the requester that pops up. (Please note, that this entire book assumes that you have not changed the default Blender settings file!)

If you have purchased a C-key, your user name will show up here.

Important note for owners of a two-button mouse: activating the 2-mouse option will cause Blender to simulate a \key{Ctrl+LeftClick} when you hold down \key{Alt} and \key{LeftClick}.

Lamp buttons

The Lamp Buttons will only show when a lamp has been selected. With these buttons, you can change all the parameters of lamps, like their color, energy, type (regular lamp, spotlight or sun). You can also control the quality of shadows by manipulating the clipping values and shadow buffer sizes.

You can read more about lamps in the chapter 6.

Material buttons

Material Buttons are only shown when an object has been selected. This window allows control over properties as object color, shininess, transparency, textures, texture types, texture projection methods.

You can read more about assigning materials in chapter 2. More information about texture maps is available in chapter 3.

Animation buttons

In the left part of the Animation Buttons window you can set properties for things like curve following, automatic object duplication and object tracking.

The middle part of the window contains the interface to object effects like particle systems and the wave effect. Pressing the 'New Effect' button and selecting an effect from the effects list on the right will attach a new effect to the currently selected object and display the list of options for this effect.

The standard effects are: particle system (read more about that in chapter 10), wave and build.
World buttons

With the World Buttons window you can set up horizon colors, ambient lighting, fog effects and starfields. It is used in the chapter 10.

Edit buttons

The buttons that are shown in the Edit Buttons window depend on the kind of object that you have currently selected.

Display buttons

Using the Display Buttons, you can control the way Blender will render your images. Set the image size with the SizeX and SizeY buttons and control the image quality by setting an OSA (Over Sampling) value. Higher values result in better image quality, but a longer rendering time.

Select the 'Render' button to render a still image, or the 'Anim' button to render a range of images. (For animations, the 'Sta' and 'End' values determine the length of the animation).