

Google SketchUp

Why use SketchUp?

Google SketchUp is a free programme enabling users to quickly and effectively build 3D environments using a number of intuitive tools. Unlike most 3D packages it is very easy to learn and does not require hours of training before decent results are achievable. It is very versatile and with regards to digital painting can prove an invaluable tool in swiftly establishing a correct perspective, as well as offering a moveable camera in order to experiment with alternative viewpoints and compositions.

An object can be made and then duplicated any number of times, so if a structural element is repeated throughout your concept then this package can quickly and accurately create such arrays. It also has a simple-to-use lighting system that enables placement of the sun according to the month and time of day by way of slider bars, thus determining physically correct shadows that can be turned on or off at the click of a button. These functions mean that as an artist wishing to draw detailed or tricky scenes, one can use SketchUp as a valuable starting point to establish a "guide template" on which to paint over.

Installation

In order to install SketchUp, click on the link below and go to Downloads on the left hand menu. Select the free version which is currently

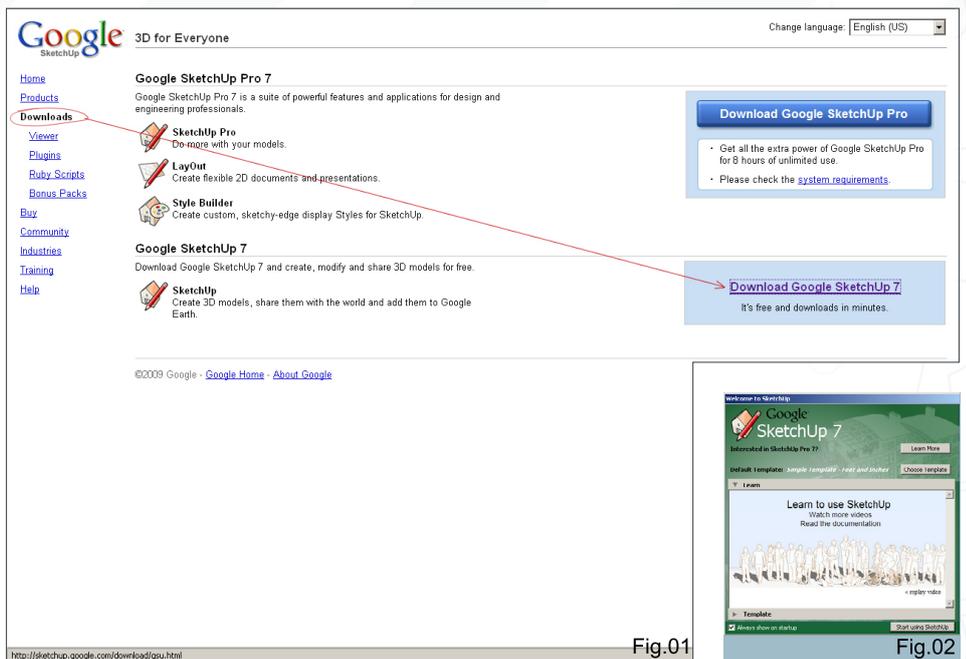


Fig.01



Fig.02

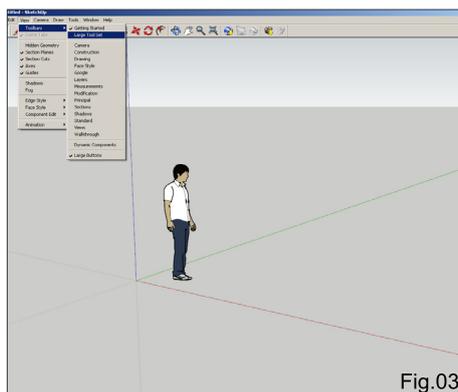


Fig.03

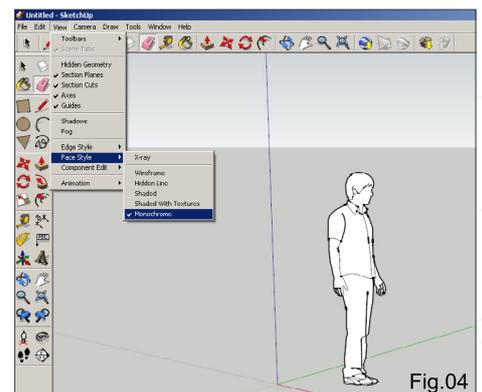


Fig.04

version 7 (Fig.01). Choose your operating system and then follow the instructions.

<http://sketchup.google.com/>

Once installed, click on the application shortcut and you will be prompted with the following dialogue box in which you are asked to choose a template (Fig.02). The scale and type of your scene will determine which you choose, but for the purposes of this tutorial we will select **Architectural Design – Feet and Inches**.

Toolbars & Menus

When SketchUp starts you will see a screen resembling Fig.03. From the main menu click on View > Toolbars > Large Tool Set; this will access more tools which will appear down the left margin. To change the display mode of the

objects in the scene click on View > Face Style; this will show a number of options, as seen in Fig.04.

If you also check Views under View > Toolbars you will see six small house icons appear below your toolbar (Fig.05). These will provide quick access to orthographic views, as well as isometric. You will notice that I have also checked Face Style in the list (highlighted in green), which has added some cube icons to represent the display modes.

This is basically where you can customise your workspace and add toolsets to speed up your workflow. For additional help go to Window > Instructor; this will open a window providing useful information on whichever tool you have currently selected.

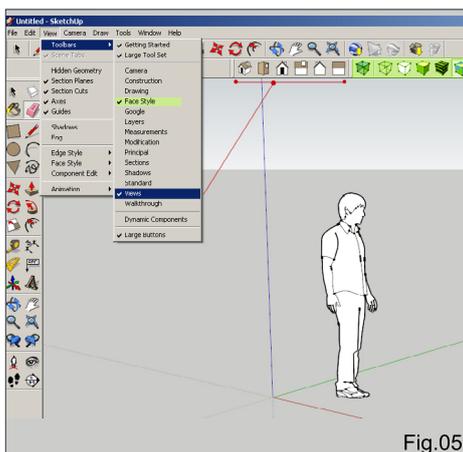


Fig.05



Fig.06

Basic Navigation

The key orientation tools you will use to navigate in your scene are Orbit, Pan and Zoom, which you will find on the top toolbar and whose shortcut keys are represented by O (Orbit), H (Pan) and Z (zoom). These can be seen in Fig.06.

The main tools used to directly manipulate your objects are Move (M), Rotate (Q) and Scale (S). The Scale tool appears on the left hand toolbar which you will see highlighted if you press S on your keyboard.

Drawing Shapes

One way of using SketchUp is to create two-dimensional shapes from which you can extrude three-dimensional objects. Select the top view and then the Line tool (Fig.07) and left-click in the viewport to begin drawing. You will notice that as you do so, the points will snap to the

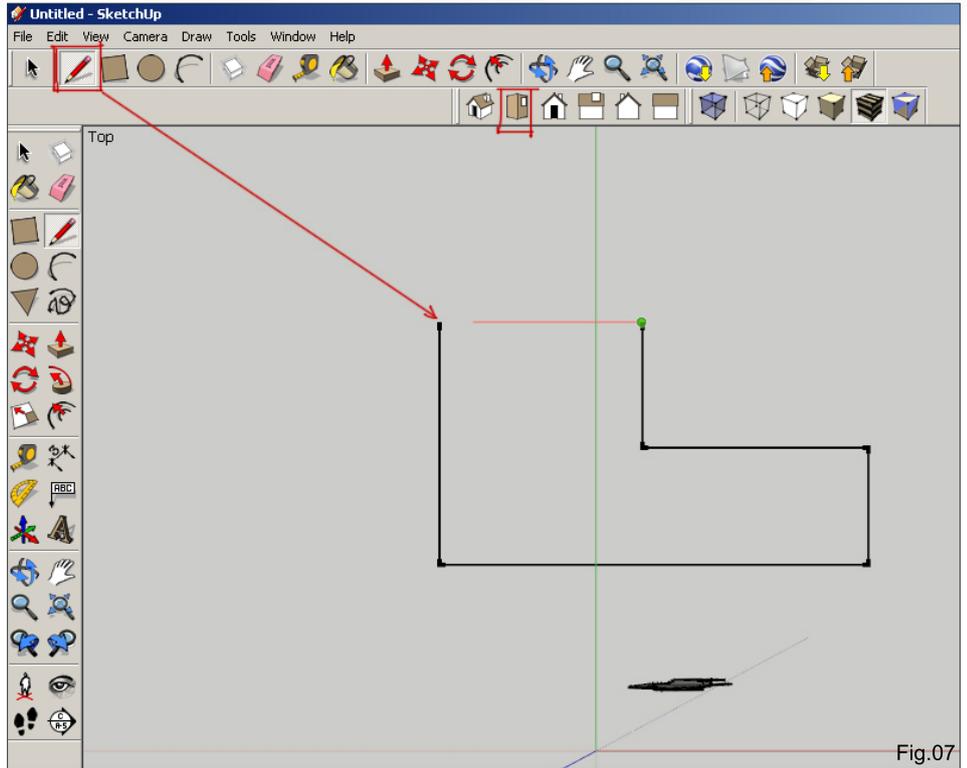


Fig.07

green and red axes, thus easily enabling the creation of right-angled structures.

When you finally close the shape by clicking on the initial point you will notice the shape turns blue, indicating a surface has been made; once a shape has become closed you can still edit

it, however. Using the Line tool, add an internal rectangle (see top diagram in Fig.08). To now make this edge become part of the exterior shape click on the Eraser tool and then on the outside edge shown in red.

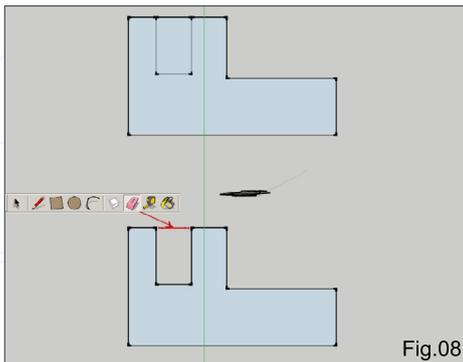


Fig.08

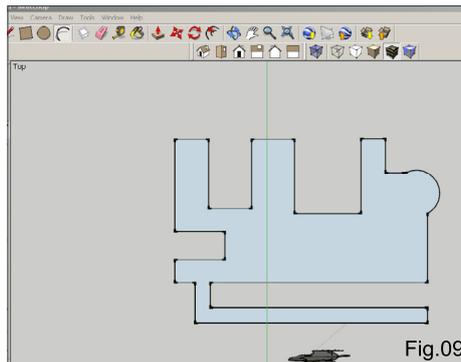


Fig.09

You can continue to cut into your shape or alternatively extend it outwards and then erase the necessary lines by using the Line tool (Fig.09). Here I have added a walkway and also a curved section using the Arc tool. You can also draw more organic shapes using the Freehand tool (Fig.10).

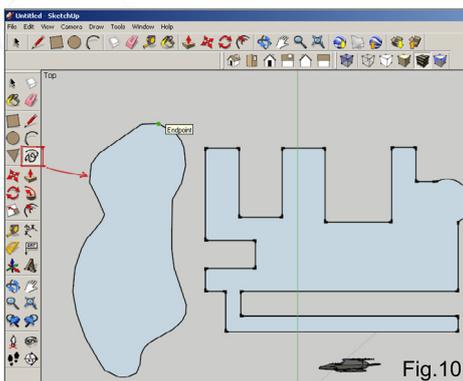


Fig.10

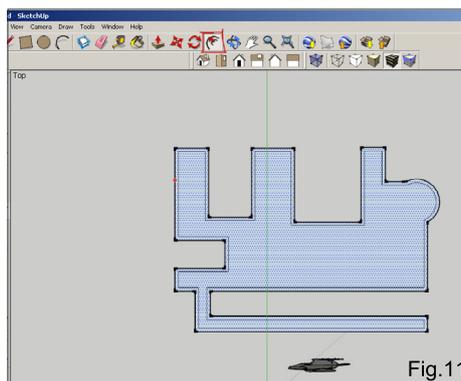


Fig.11

One other useful function, especially for architectural structures, is the Offset tool which is situated next to the Rotate tool. This enables a shape to be duplicated in order to create depth – perfect for drawing walls in a building, for example (Fig.11).

With an exterior wall depth, click on the large internal shape using the Select tool (black arrow on Toolbar) and hit delete. You can then select the Push/Pull tool and then click on the wall and raise it vertically (Fig.12). You will notice I have edited the section where the walkway adjoins

the building using the Line and Eraser tools so that this was not raised along with the outer wall.

Three Dimensions

When a shape has been converted into 3D it can be edited further by using a combination of the Line and Push/Pull tools. If you move the Line tool along an edge it will snap to the midpoint between opposing edges (Fig.13). You can then make equally spaced cuts, as shown.

These new shapes can be pushed inward or pulled outward, or alternatively a new shape can be drawn and this can then be manipulated.

In Fig.14 I have used the Offset tool to create a window shape in the far left rectangle. To create the same proportioned window in the other sections simply select the Offset tool and double-click in each rectangle. To create the arches use the Arc tool and then erase the horizontal join shown by the dotted line.

To create windows use the Push/Pull tool to move the shapes inwards beyond the inner wall surface or until they disappear.

Using a combination of the tools mentioned so far you will have the means through which to create and edit a wide range of forms and design detailed scenes.

Atmospherics & Lighting

You can add atmospheric perspective in the form of fog to your scene. Go to View and check Fog, as seen in Fig.15. You will notice that the edges on my building have also been switched off, which you can control in the menu under Edge Style > Display Edges.

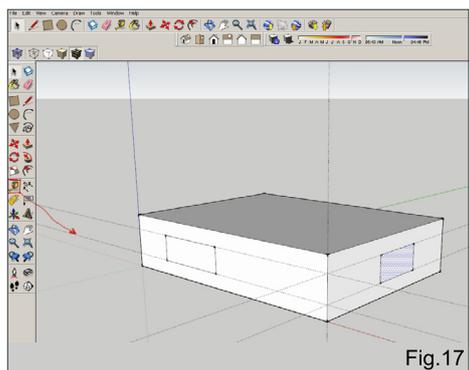


Fig.17

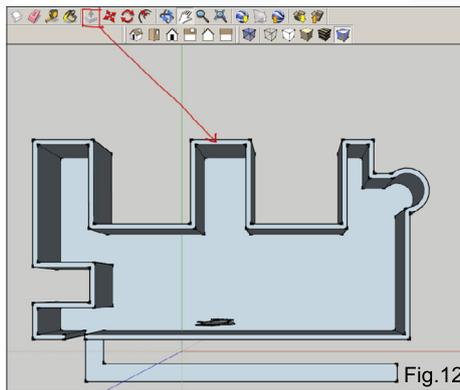


Fig.12

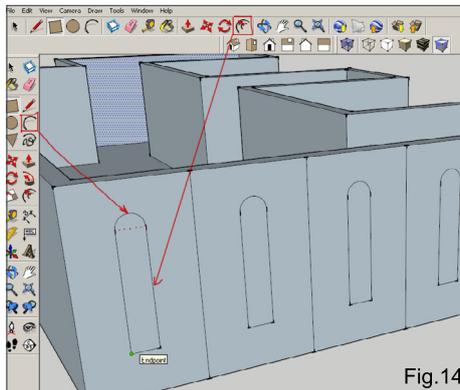


Fig.14

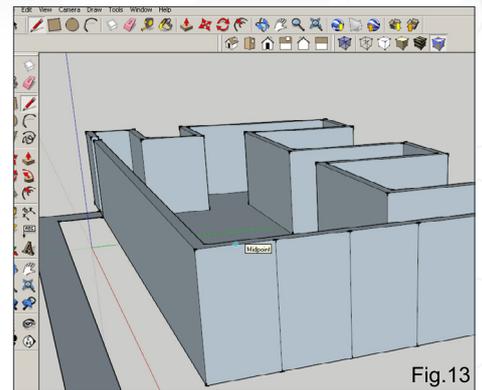


Fig.13

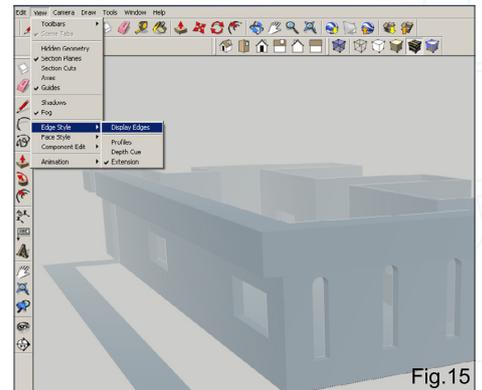


Fig.15

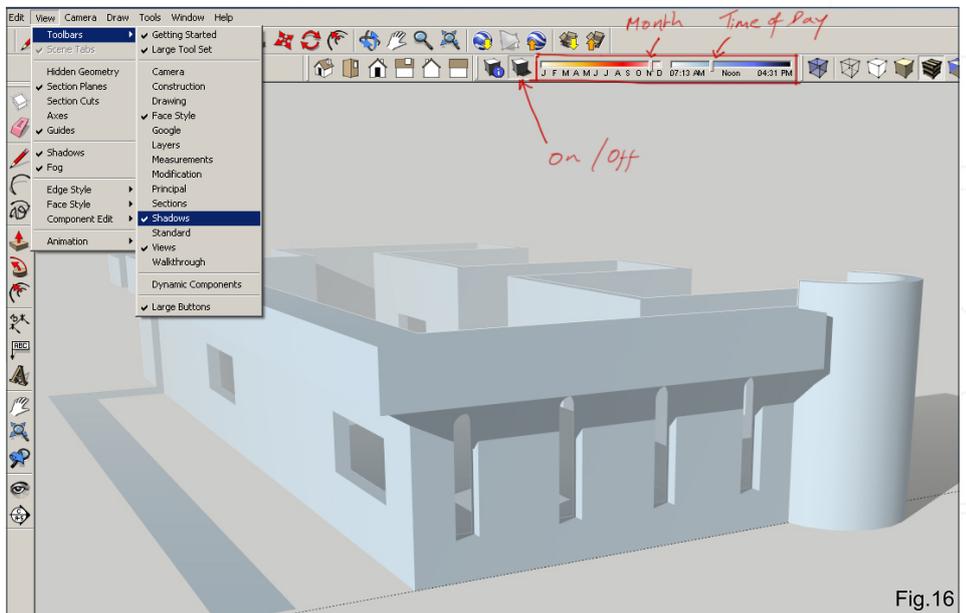


Fig.16

To add lighting effects check Shadows which is above the Fog label, and to get more control over this function go to View > Toolbars > Shadows. This will place two slider bars on your toolbar which denote the month and time of day. By adjusting these you can control the position of the sun and direction of the shadows (Fig.16). There is a little icon to switch the lighting on or off, and besides this there is also another icon which opens up some extra parameters that

alter the tonal range of the shading. You can also control whether this affects just the object itself or the ground along with it and vice versa.

Additional Tools

A few other useful tools worth mentioning are the Tape Measure, Protractor and Dimension. The Tape Measure is used to draw guidelines which can then be traced over with the Line tool. In Fig.17 you can see that the tape measure

has created the dotted lines which can be used as a guide to draw the windows an equal distance from the top and bottom of the block. To delete the lines simply use the Eraser tool. The Protractor is used to create accurate angles. Move the tool to the point at which you wish to start the angle and you will see how it snaps to the three axes. Click to establish the correct plane and then click to begin the angle along the appropriate edge. Now you can set the angle using the guideline. In **Fig.18** I have used the near corner as the starting point, which I will mirror on the opposite corner.

Once the guidelines are drawn, trace them using the Line tool, as with the Tape Measure. In **Fig.19** you can see that the two angles have been drawn and then the Push/Pull tool was used to extrude a roof shape across the base block.

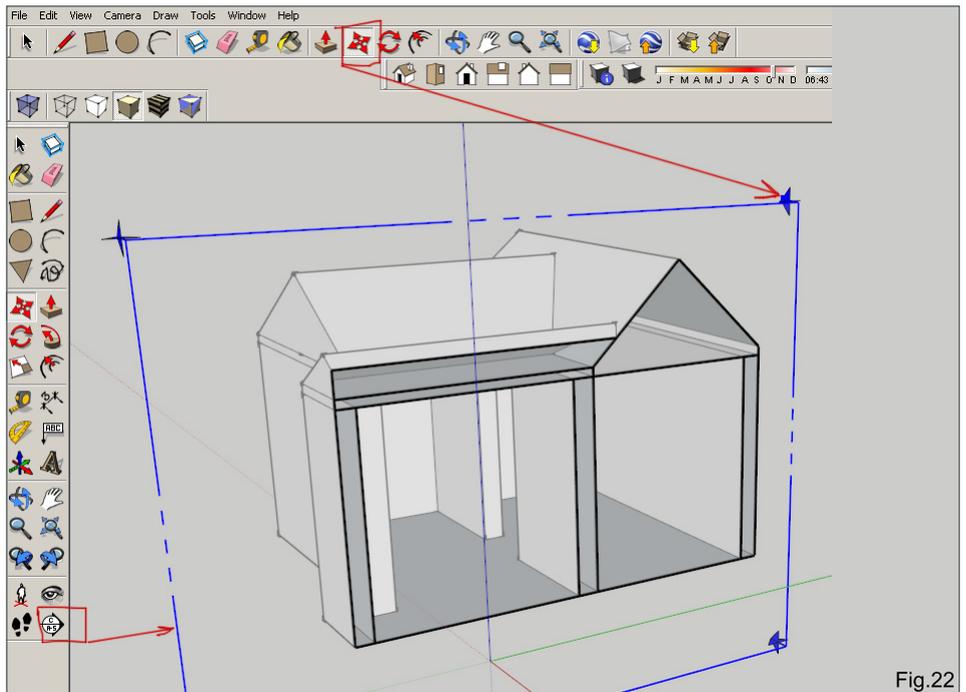
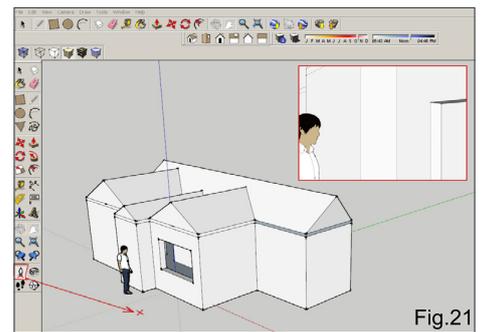
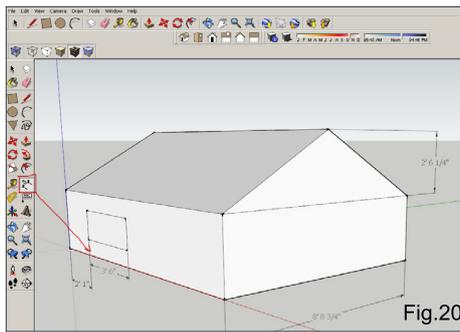
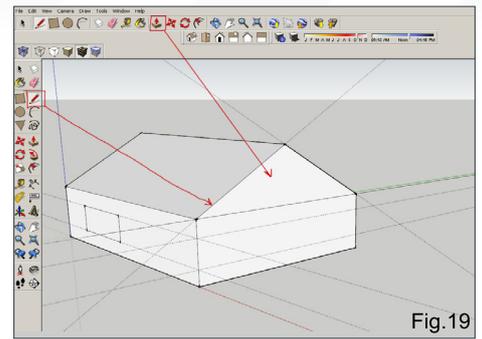
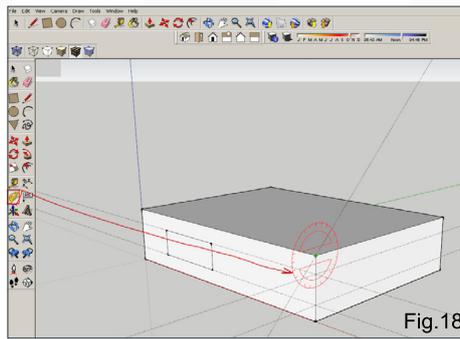
The Dimension tool simply adds a label to your scene, showing the distance between two points. Click and drag from A to B and then drag up or down to set your dimensions, once again using the Eraser tool to delete when necessary (**Fig.20**).

Cameras

The camera in SketchUp is initially placed at an average eye level height, so for example when you click on the Position Camera tool it will zoom in and appear around head height from the ground. In this sense scale is an important factor in your scene.

In **Fig.21** you can see a cross where I intend to position the camera, after which the viewpoint will resemble the inset image. The character has been placed in the scene to demonstrate the relationship between the scale of a character and the initial camera height. To adjust your camera, use the Look Around tool represented by the eye icon.

One final tool which may prove useful is the Section Plane tool which allows a view of a



cross-section of your object. To use this click on the tool and then align the green icon to the corresponding plane or angle you wish to view. Then select the Move tool and click on one of the corner arrows and drag in the relevant direction (**Fig.22**).

This concludes our overview which I hope has at least introduced the main tools and their functions. There are of course further lessons to learn along with other tools and techniques,

such as applying materials, but the main aim here is to introduce the interface and value of the software in terms of building a simple 3D environment which can then be used in digital painting.

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