



PART  
2

*Cinema 4D*

## Artist PROFILE

**Adam Benton**

**COUNTRY:** UK

**CLIENTS:** 3D World,  
Scott Foresman,  
Powergen, Coors,  
Britvic, Saatchi & Saatchi



Adam is a  
freelance  
illustrator,  
based in the  
UK. He works

for a broad range of  
clients within the  
publishing, editorial,  
advertising and  
corporate arenas.  
[www.kromekart.com](http://www.kromekart.com)

## DVD Assets



The files you need  
are on the DVD

**FILES:** FinalScene.c4d,  
FossTute\_Final.psd, plus a  
selection of scene saves.

**FOLDERS:** Full screenshots

**SOFTWARE:** Cinema 4D

# EXPLORING 3D MATERIALS

Following on from last month's tutorial on using Cinema 4D to create an image in the style of Chris Foss. By **Adam Benton**

**C**hris Foss was one of the great pioneers of sci-fi art, and his grand visions adorned many book covers and posters of the '70s, and had a huge influence on his artist peers, as well as filmmakers.

For me, one of his most memorable and influential trademark styles, was of vast, organic and brightly coloured ships, covered in various cavernous intakes and protrusions, and speckled with the lights of hundreds of windows.

Last month I demonstrated how one might go about modelling such a ship

using Maxon's Cinema 4D application (demo on the DVD), by introducing the basic necessary tools, and the procedures used to create an organic 3D ship of this kind. This month, I am going to show you how to use Cinema's material/texture functions to bring that ship to life, as well as how to create and set up the sea and sky in the illustration above.

Cinema 4D is a professional 3D package, but its power and sophistication are equally matched by its ease of use, friendly interface, and shallow learning curve compared to other programs in its

class. If you have been wanting to delve a little further into the exciting possibilities of 3D within your sci-fi art endeavours, then this (and last month's) tutorial could be a useful introduction for you. I use this package for 95% of my illustration and multimedia needs, and I know of a few very well-known sci-fi artists who have also added it to their artistic toolset.

Please check the cover disc for related scene files, and additional screen shots, and consult last month's issue for any topics and tools explained previously.





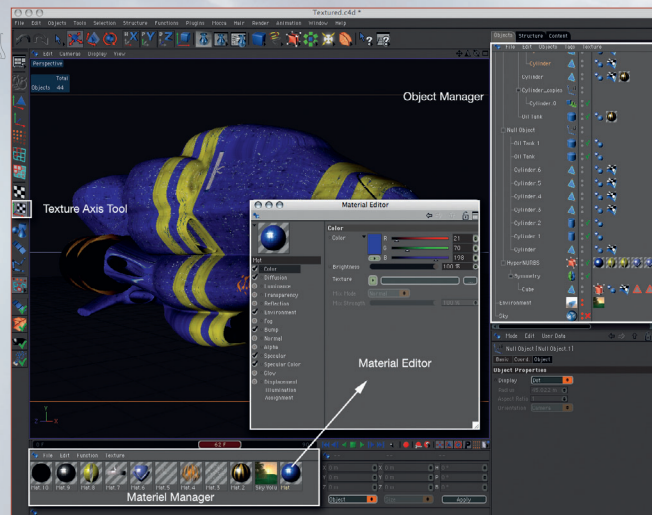
# In depth Exploring 3D materials

## 1 Material tools

If you modelled your own ship last month, then open it up ready for texturing. If not, you'll find a copy of the one I modelled on the DVD. Note that the rear/engine portion of the ship is incomplete as it was not required for the image viewpoint. First of all, let's take a look at the key tools and areas of the interface we shall be using for this task. Materials are created and accessed in the Material Manager area, and by double clicking on a material in this window, the Material Editor is opened as a floating window, and this is where all the settings of any given material are customised. The Object Manager is where your model's hierarchy is accessed, and where you apply the materials you design. The Attributes Manager is situated below the Object Manager, and will also be used for correctly positioning/mapping the textures on the model.

## 2 The finer points

I have slightly customised my interface by docking the Material Editor into the interface under the Attributes Manager (see Pro Secrets, right), and now I have the three main windows for material creation laid out on the right. The best way to get to grips with Cinema's material system is to start making one! I start by selecting New Material in the Material Manager File menu. A default grey material icon is created, and if I click on this, its details become visible in the Attributes Manager. A C4D material can be made up of any number of properties, and the key channels that define the look of the material, are listed down the left of the Material Editor. Clicking on any of these



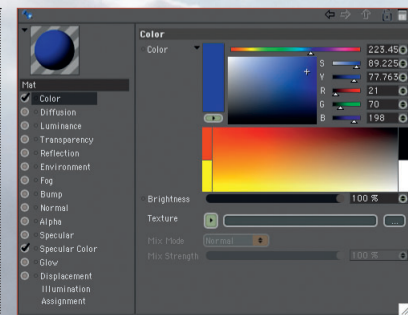
## PRO SECRETS

**Customising Cinema's interface** is completely customisable, from colour themes, to how and what windows are visible at any time. If you want constant access to the Material editor for example, click and drag on the little 'map pin' icon on the top left of the window, and drag it to somewhere in the main layout. A line will appear to show you how and where the palette will be inserted. This is extremely useful for an efficient workflow, and if you have the luxury of multiple displays, you can make the best use of the space by having all your regularly used windows docked and accessible all the time.

channel titles will display its properties to the right, and the small ticks you see there indicate whether that channel is active or not.

## 3 Getting started

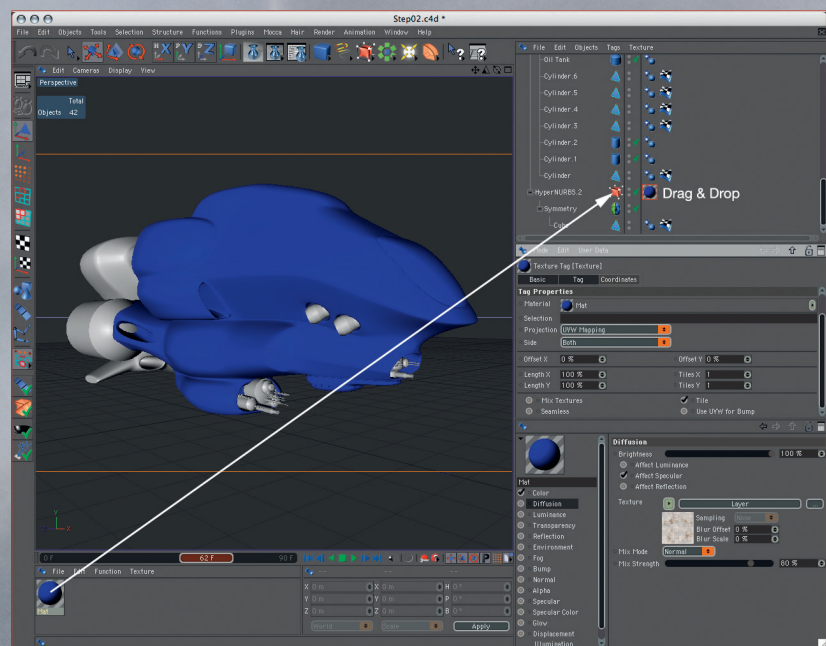
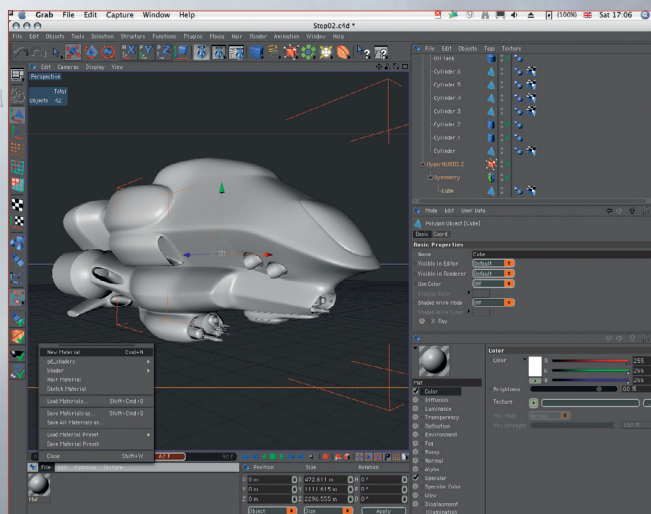
The first material I need is for the overall look and colour of the ship's hull, so by clicking on the Colour channel, the basic colour can be tweaked by adjusting the RGB sliders. By clicking on the little black drop-down arrow below the colour swatch, a number of other colour options become available, allowing you to choose from far more advanced colour selection and mixing methods. I have chosen to use a simple RGB blue colour value for this channel, but if I wanted, I could have equally loaded in a



specific bitmap texture by clicking on the rectangular field next to the Texture title, which I will explore further shortly.

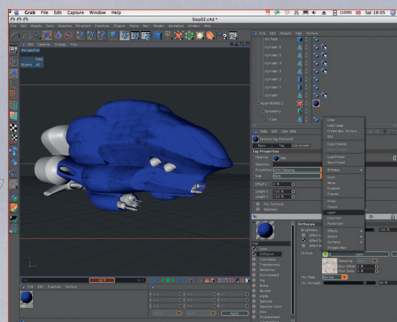
## 4 Application

Now, before elaborating further on the material details, I generally apply the basic material to the ship model, by dragging the material icon from the Material Manager, on to the actual model in the object manager. My ship mesh is contained within a HyperNURB modifier and a Symmetry object, and although it doesn't really matter where you apply the material in this case, I have chosen to stick mine on the top (HyperNURB) object. Back to the Material Editor, and to the Diffusion channel. This property is used to create irregularities in surface colour by lightening and darkening the colour channel. Subsequently I am going to use this channel to add a surface texture, simulating metal panels and irregular dirt patches. Click on its title and activate the channel by ticking it. ➔





# Workshops

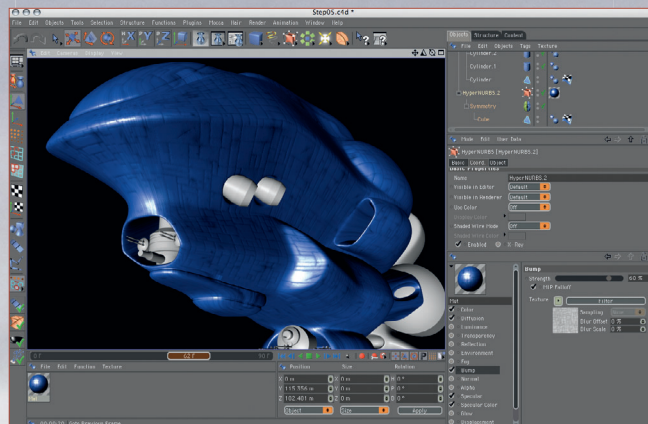
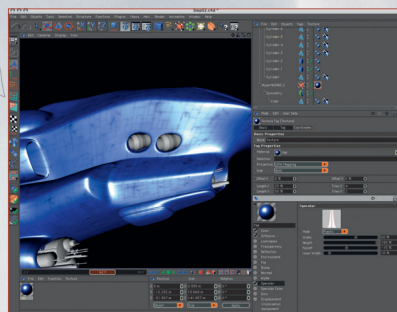


## 5 Layered tiles

For the surface, I am going to use a couple of bitmap textures. I am going to make use of C4D's Layer shader to combine multiple texture elements to create the right look. I click on the drop-down menu next to the Texture title, and select Layer. Now click on the Layer title field to enter its shader properties. Since I am going to combine two bitmap textures, I click on the Image button, and use the dialog that opens to browse to the texture, repeating this procedure to add further layers. These layers can be combined in the same way as with Photoshop, enabling the upper ones to be added, multiplied or overlaid, offering very complex effects. The textures I used are seamless tiles, so as they look too large for the ship, I can increase the number of times they repeat by adjusting Tiles X and Y in the attributes manager.

## 6 Metallicity

There are a number of ways to make a material look metallic in C4D, either by its reflective properties, or the way it catches and disperses light over its surface. I use Specularity, which catches light and creates specular highlights. Altering settings for this channel can help define how a material appears, and time should be taken to adjust it throughout the material creation, as the various properties are added. A quick screen render shows how the material is shaping up, and it has a nice metallic shine, and is dirtied somewhat by the



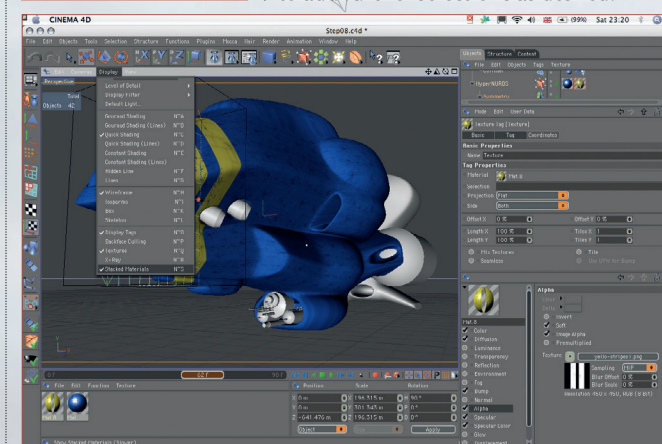
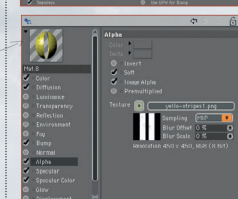
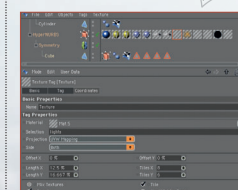
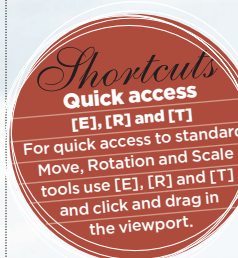
diffusion channels tiles, but the effect can be made more realistic by adding more textures to the Specular Colour channel. I am using this channel as well as the diffusion channel, since it breaks up the material highlights, but it can equally be used instead of it for a slightly different look. I have used the same textures as in the diffusion channel, but I have placed them inside a Filter shader to alter their contrast and brightness.

## 7 Bump

The next step to add surface irregularity, is with the Bump channel. This works like any other 3D software, and uses greyscale information to define highs and lows in the surface. I use the filtered bitmap tiles in the specular colour channel again, and the simplest way to do this is to copy them from one property to another. I render regularly to check how the material is looking.

## 8 Quick and dirty

The texturing method I am using is a bit quick and dirty, since it's possible to unwrap and map a specific painted texture on the ship, but you don't need to. So we have the option to alter individual facets of the ship later, while leaving others intact. The key surface texture is complete, and I want to add some areas of bold markings over the blue base. In Cinema it's possible to stack materials on top of each other. In the Material Manager, I create a new material, and make it yellow, but I need to create a mask defining where it will appear. I have created stripy shapes and symbols in Photoshop for this (on the DVD), and to use these, I need to use the Alpha property of the new material. By loading a black and white bitmap into this channel, these areas can be defined – white will be yellow, black will be



invisible. For consistency, I give the bump, diffusion and specular channels the same settings as the blue base.

## 9 Stacked up

Drag the new material to the ship, and make sure that it is placed after the blue base material. Click on the Display menu in the viewport window, and tick Stacked Materials. To scale and position the yellow stripes, the texture's projection method, and the axis need to be adjusted. In the Attributes Manager I have chosen flat projection, and by selecting the Texture Axis Tool, a grid of the texture's size, proportions and orientation appears. By using the Move, Rotate and Scale tools, the texture can be manipulated to the right size. This can be used to apply other shapes as well.

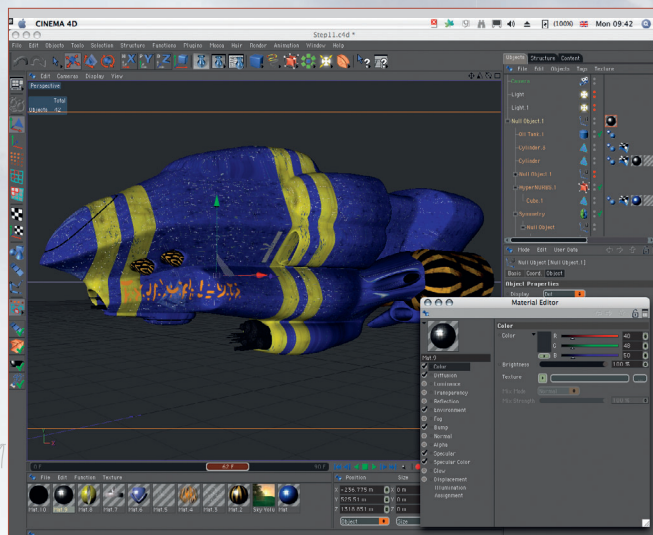
## 10 Let there be lights

The next stage is to create hundreds of tiny lights. This material is created by placing a bitmap of small white rectangles on a black background in the Luminance channel, and then also in the Alpha channel. This is then applied in the same way as the layers, but to prevent the lights from covering every part of the ship, I use Selection tags. Selection tags are used to define where a texture will appear. Using the Selection tool in Polygon Tool mode, I select all the polygons where I want the lights to appear, and from the menu: Selection > Set Selection. A grey triangle with a red border is created on the base object, and it can be named in the Attributes Manager to Lights. Now, click on the Lights material you created and added to your model, and drag the Lights selection tag into the Selection field, thus constraining this material to that selection only. This step can be repeated to add further selections as desired.





# In depth Exploring 3D materials



## 11 Final textures

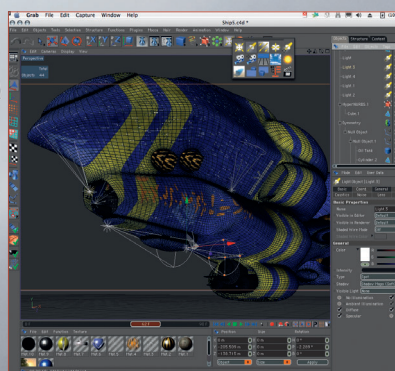
I have created some more base textures for the other model elements using the same methods as before. I have also added the Lights material to the main cylindrical objects in the front inlet area, using cylindrical mapping to apply them around the surface.

## 12 Let there be light again

Now that all the texturing is done, I am going to add another effect to enhance the suggestion of scale – spotlights – to cast small, localised pools of light on a ship. The lights are added by selecting them in the Light Icon palette, and are moved into position and scaled using tools in Model Tool mode. It's clear how well the illusion of scale is working, since the window lights are now clearly visible alongside the spotlights!

## 13 The sky is the limit

Since Cinema 4D R9.5, and the Advanced Render Module, there has been a plugin/toolset for creating complex procedural skies, which includes some great presets. These can be



**Shortcuts**  
**Screen render**  
**Ctrl+R (PC)**  
**Command+R (Mac)**  
Simply press these buttons to perform a quick screen render.

## PRO SECRETS

### Part rendering

It's wise to render often as adjustments are made to textures and lighting, but it's not always necessary to render the whole scene, since this can slow you down. From the Render menu, it's possible to select: Render Active Objects and Render Region. The first, as the name suggests, will allow you to render only the object you've selected in the Object Manager, and the second, once selected, allows you to draw a marquee to identify the single scene area you wish to render.



accessed via the 'Content' tab next to the Object Manager. Once a sky has been selected, the Sky properties can be edited by double clicking on the new Sky object in the Object Manager window. I have adjusted the fog settings, to make the lower portion of the ship appear more distant. The sunlight is also supplied and controlled by the Sky object, and this can be edited into a suitable position, using the Date & Time option.

## 14 Wind deformer

I used a simple wind deformer object on an enlarged plane. The wind deformer creates undulations across the surface, akin to waves. This looks okay, but to bring it to life, a suitable material must be created. The key to good water simulation is to use various scales of procedural noise, which help randomise the surface, especially in the Bump and Displacement channels. As with the



loading of bitmaps, the noise shaders are accessed via the drop-down menu, inside the Texture channels. This step will require some experimentation on your part, as the lighting and angle of view will all effect how the water looks.

## 15 Final scene

After some experimenting, I decide to add a lighthouse to the foreground. I chose this setting to create a sense of isolation – a huge alien craft hovering menacingly over a lonely outpost. The lighthouse is a simple model made from a cylinder, and the rocks are a landscape object with a texture that uses an enhanced type of displacement – sub poly displacement. This deforms the surface of the mesh at render time in fine detail, allowing the use of low polygon objects, to make detailed surfaces. The final scene file is on the DVD for you to dissect – enjoy! ●

