

DIGITAL MAYHEM

3D LANDSCAPE TECHNIQUES

WHERE INSPIRATION, TECHNIQUES, AND DIGITAL ART MEET

EDITED BY DUNCAN EVANS



DIGITAL MAYHEM: 3D LANDSCAPE TECHNIQUES

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The secrets to creating stunning landscapes are at your fingertips with Digital Mayhem 3D Landscape Techniques. Compiled by Duncan Evans, launch Editor of *3D Artist* magazine, *Digital Mayhem* features a variety of beautiful art from some of the finest digital artists working today.

Inspiration and technique meet here as you learn how to create every type of landscape from harsh desert savannahs to icy tundra. Using a blend of showcase images, step-by-step and long-form tutorials, you will be guided through the featured artist's process so you can incorporate their techniques and workflow into your own projects. Not just another button-pushing manual or coffee table book, *Digital Mayhem* will help develop your critical eye for composition, choice of camera lens, lighting, rendering and post production, allowing you to work more intuitively. With insight from some of the best digital artists in the world, *Digital Mayhem* will have you creating your own masterpiece in no time!

- Unique coverage of a variety of software allows you to hone your skills across different platforms.
- Illustrious and colourful artwork coupled with artist insight will both inspire and inform your creative decisions.
- Comprehensive companion website offers additional resources for you to further expand your skillset.

Duncan Evans is a journalist, author and photographer with a passion for 3D. He is the founder and former editor of *3D Artist* magazine, a leading UK magazine dedicated to the art of 3D and the talented people who make it, from enthusiasts to Hollywood studios. In addition to his work at *3D Artist*, Duncan has had a varied career as the Editor of *The Official PaintShop Pro* and *Digital Photo User* magazines, as well as being the author of over a dozen how-to-do books and developing short-form and digital content for the digital art community.

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EDITED BY DUNCAN EVANS

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DEDICATED TO JOAN HUNTER, EVEN THOUGH SHE ISN'T
HERE TO READ THIS, FOR THE ENCOURAGEMENT, ALL
THOSE YEARS AGO.



RENDER CAMERA LENSES



MOUNTAIN SCENES TUTORIAL



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DOMINIC DAVISON

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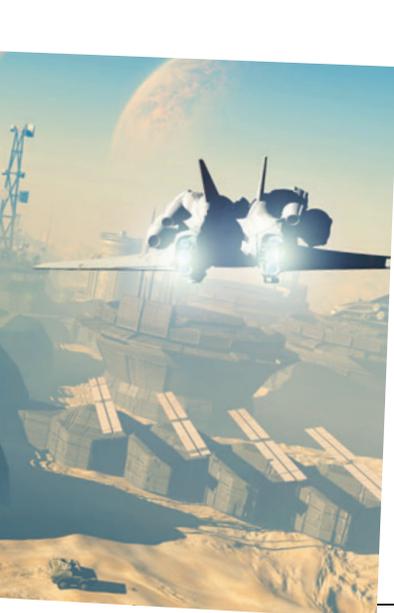
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FANTASY TUTORIAL

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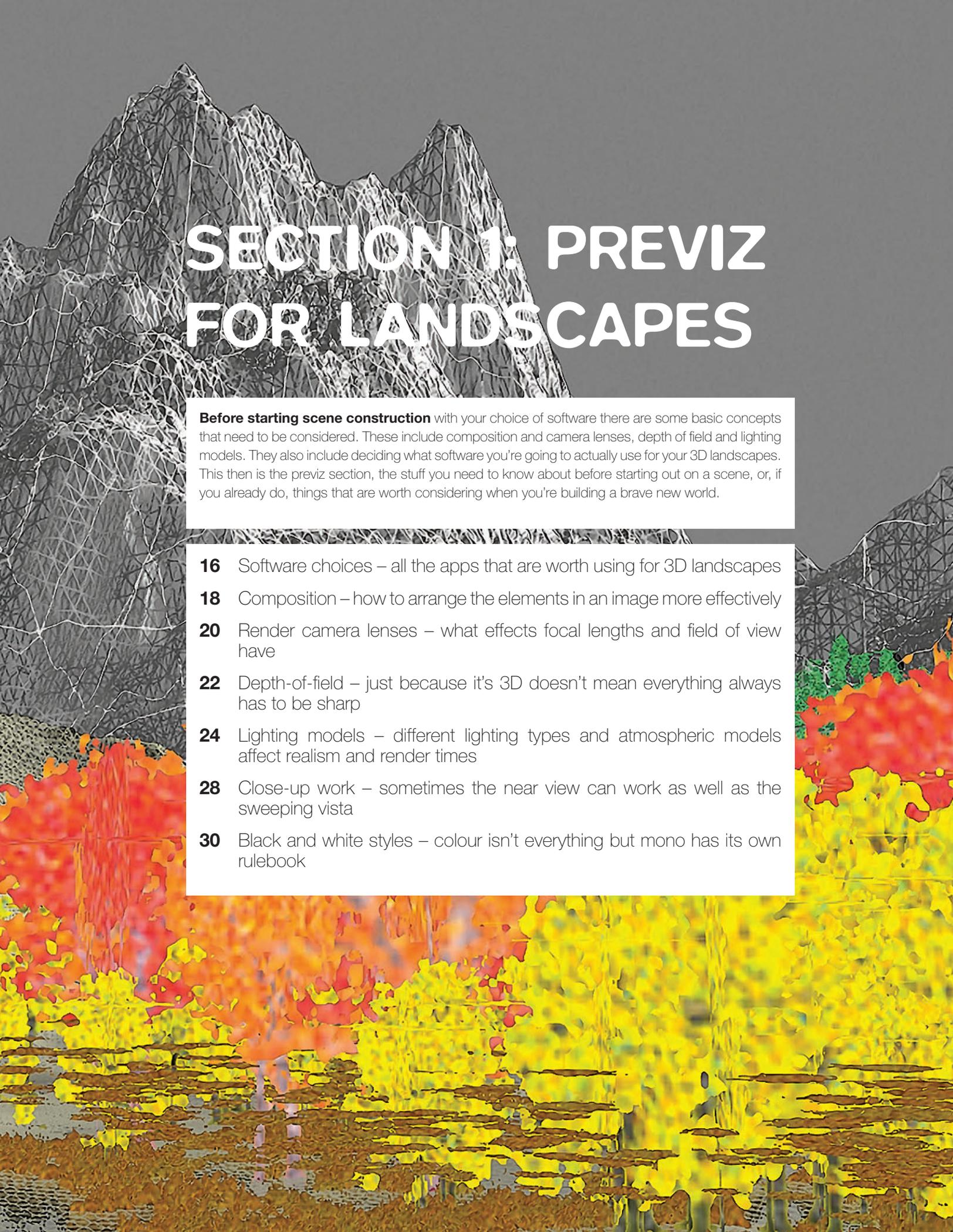
Welcome to *3D Landscapes*, the first in a new range of books from Focal Press in the *Digital Mayhem* range. The format and style of *Digital Mayhem* is a little different from what you've seen in book publishing before. It marries the showcase aesthetic of the coffee-table, CGI book with the practicality of magazine-style tutorials, workflow guides and tips.

There are three main sections to *3D Landscapes* – pre-visualization considerations for planning and designing your images in the first place, post-production editing for enhancing or creating completely different variations at the end of the process, and then the landscape images themselves. This is the meat of the sandwich, the jam between the bread. Over the course of 13 chapters *3D Landscapes* brings you the best in 3D landscape art, showcasing the talents of enthusiasts and professionals alike. There's everything from traditional mountains, rivers and lakes, to using characters in the landscape, water features, the use of seasons, as well as urban and post-industrial landscapes. At the end of each chapter is a tutorial, either as a workflow guide or a step-by-step, that explains the concepts and processes used to create it. The entire book has self-contained sections: you can read it in any order, just drop in and out of the parts that interest.

Over the course of the 300 pages we hope you'll feel inspired and encouraged to create your own amazing 3D landscapes and if you liked this first book in the Digital Mayhem series, keep an eye out for the next one – *Machines*.

Duncan Evans
Series Editor



The background of the page is a 3D wireframe landscape. In the upper half, there are several jagged mountain peaks rendered in a grey wireframe mesh. Below the mountains, the terrain transitions into a field of colorful autumn leaves, with vibrant reds, oranges, and yellows. The bottom of the image shows a body of water reflecting the colors of the leaves and the sky. The overall scene is a blend of digital wireframe art and naturalistic autumn colors.

SECTION 1: PREVIZ FOR LANDSCAPES

Before starting scene construction with your choice of software there are some basic concepts that need to be considered. These include composition and camera lenses, depth of field and lighting models. They also include deciding what software you're going to actually use for your 3D landscapes. This then is the previz section, the stuff you need to know about before starting out on a scene, or, if you already do, things that are worth considering when you're building a brave new world.

- 16** Software choices – all the apps that are worth using for 3D landscapes
- 18** Composition – how to arrange the elements in an image more effectively
- 20** Render camera lenses – what effects focal lengths and field of view have
- 22** Depth-of-field – just because it's 3D doesn't mean everything always has to be sharp
- 24** Lighting models – different lighting types and atmospheric models affect realism and render times
- 28** Close-up work – sometimes the near view can work as well as the sweeping vista
- 30** Black and white styles – colour isn't everything but mono has its own rulebook

SOFTWARE CHOICES

There's a handsome selection of 3D packages you can use for landscape creation, each with their own strengths and weaknesses.

There are two types of landscape creation package and which one you use really depends on what you are creating landscapes for: as a hobby, as art or for commercial use. There's the standard system where, although you can buy in plenty of models, you are expected to model most of the scene yourself. Needless to say this is the more painstaking and longer route. One advantage is precision and complete control and for this reason it tends to suit arch-viz projects or one-off scenes. One of the other advantages is because the software package itself is so configurable that it can easily fit into an existing studio pipeline. For the newcomer to the genre though, the disadvantages are numerous, not least the time required. This is where the specialist landscape creation program comes in. With this it's much easier to sculpt or design the landscape and populate it with thousands of trees. There's also some cross-over where packages can use instancing, or ecosystems. Here a type of flora is assigned to the system, and the instances are spread over the terrain. It's down to the software to position and render them where the instances are. It's a much faster system for creating dense forests or acres of grass, but not all systems support this.

Autodesk 3ds Max

While you will see some landscapes created with 3ds Max, it's usually as a student project, involves other features like houses or, and more commonly, is in fact an arch-viz scene so the landscape is more of a background feature. Max is a very complex, industry standard and as

such it's well used, but not really in animation or game environments. It also carries a commercial price tag and, while there are trial versions and educational discounts, it's only worth learning if you are looking for a job in architecture and visualisation.

Autodesk Maya

The role of Maya in TV and film is well documented – it's the software of choice for big budget visual effect studios. As such its primary role is in animation rather than static imagery, though it can be used for scenes equally well. Maya is often the centrepiece of a studio pipeline that involves other apps or custom-built elements. The overall learning curve for Maya is very steep, often leading to users having specialisation in key areas. For a career in TV/film, Maya is clearly the number one choice and as such also has the studio-orientated price tag.

Maxon CINEMA 4D

Popular with studios creating work for TV such as advertising logos as well as visual effects for programmes and animations. Uses an instancing system for landscape population and has scaled pricing according to the version – each is designed for the separate markets. Also used extensively in architectural visualisation, particularly in Europe. Is easier to learn and use than either Maya or Max.



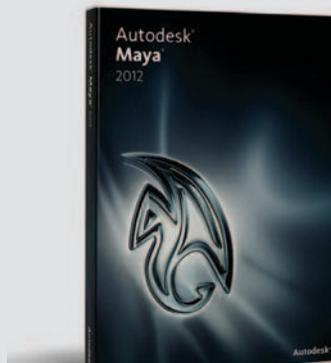
INFO

Website: www.autodesk.com

Price: from \$3495/£3421.25

Best for: Architectural visualisation, industrial product design

Format: Windows XP/Vista/7



INFO

Website: www.autodesk.com

Price: from \$3495/£3507.50

Best for: Big budget film/TV, animation

Format: Linux, Windows XP/Vista/7, Mac



INFO

Website: www.maxon.net

Price: \$995–\$3695/£780–£2800

Best for: TV/film, advertising, architecture, animation, hobbyist

Format: Windows XP/Vista/7, Mac



INFO

Website: www.newtek.com
Price: \$1495
Best for: TV/film
Format: Windows 32-bit, 64-bit, Mac



INFO

Website: www.daz3d.com
Price: Standard \$149.95, Pro \$549.99
Best for: Hobbyist
Format: Windows XP/Vista/7, Mac



INFO

Website: www.e-onsoftware.com/
Price: \$199–\$1495/£166–£1250 +VAT
Best for: TV/film, animation, hobbyist
Format: Windows XP/Vista/7, Intel Mac



INFO

Website: www.daz3d.com
Price: \$75/£55.75
Best for: Hobbyist
Format: Windows 2000/NT4/XP/Vista/7, Intel or PowerPC Mac



INFO

Website: www.planetside.co.uk
Price: Free, \$199–\$699
Best for: Specialist TV/film, animation, hobbyist
Format: Format: Windows XP, Vista, 7, 8 (32-bit and 64-bit), Intel Mac



e-on Vue

This is the number one tool for creating professional quality landscapes and it starts with some simple, content-driven packs for just \$50. The features then scale up to the pro-level xStream plug-in and Infinite versions that have been used in everything from *Indiana Jones* to *Avatar*. In *Indiana Jones and the Kingdom of the Crystal Skull* for example, e-on's Vue was used to create the lush jungles that appear along a cliff-edge. The best features of Vue are the terrain sculpting and the ecosystem which uses instancing to place thousands of plants and trees quickly over a scene.

NewTek LightWave 3D

An all-in-one package that covers modelling, animation and rendering. Most popular with studios creating work for American TV, though it has contributed to plenty of big-budget films. However, it can't compete with Autodesk's Maya for film studios and CINEMA 4D is more popular in Europe. Highlights are geometry instancing and fracturing animation. This isn't a package you would choose to learn for yourself, rather because the studio you were joining used it.

DAZ3D Carrara

If you're looking for a package that offers integration with DAZ3D's range of figures, modelling, landscape design and animation yet doesn't break the bank then Carrara is probably your best bet. It isn't as sophisticated as the packages designed for studios, but for the hobbyist it adds a level of control over the modelling process. The Pro version is much more expensive but adds support for 64-bit multi-core rendering.

DAZ3D Bryce

Bryce has its origins in the 1990s, which goes some way to explain the bizarre interface. It has also gone through various hands before finding a home at DAZ3D. Really, this isn't a patch on Vue, though water and rocks from a distance can look good. If you want to import DAZ characters into your landscapes it's worth a look.

Planetside Terragen

The main alternative to Vue has also been used in big-budget Hollywood films thanks to extensive configuration possibilities. Doesn't feature terrain sculpting so is much more difficult to learn but can create very attractive, if basic, scenery. Needs third-party collaboration with Xfrog to add much-needed flora. Classic version is free, Xfrog version of Terragen 2 ramps the price up. ■

COMPOSITION

How you arrange all the elements of an image determines where the viewer looks and how effective it will be. Good composition makes an image work, bad composition will ruin it.

Unlike landscape photography, where you have to look for the best composition in a scene, with 3D the composition is entirely yours to control and arrange. That also means that if an image doesn't work, there's only one person to blame. Composition is what sets apart a good technical photographer from a great, creative one. You have to be able to see what the image will be before you address the lighting and the technical considerations. It's exactly the same for the 3D artist, if not more so, because you are creating all the elements.

For the landscape creator then there are two rules of composition that are designed to help make the image both more pleasing and also work better. One is the rule of thirds, the other is the golden ratio. A quick word on the latter first, because we're going to discard it. The golden ratio is an algebraic equation that philosophers, mathematicians and artists from the middle ages onwards claim can be used to create aesthetically pleasing results. The upshot of this is that the ratio has a numerical value of 1.618, which in real terms relates to the relationship between specific elements that go to

make a whole. Okay, so avoiding the pseudo-philosophical garbage that comes with this topic, what it means for photographers is to place objects roughly one-third or two-thirds of the way into scenes, or inside scenes and relating to other objects of interest. Happily, this also sits nicely with the rule of thirds, which will, undoubtedly, make more sense, so let's have a look at that.

Imagine the picture, then draw two vertical and two horizontal lines through the image, all equally spaced so that they fall a third and two-thirds of the way through the image. The rule of thirds would like you to place the items of most interest in the scene where the lines intersect. The reasons are balance, spacing and extracting maximum impact. In purely practical terms, it means placing the horizon on either the top third horizontal line, or the bottom third. Rules can of course be broken, but this is a good starting point. If there is lots in the scene for people to look at, and especially if the viewpoint is high, looking down, then place the horizon on the upper line. If the sky is a dramatic sunset with flocks of birds and hills pointing into the sky, then place the horizon on the bottom third horizontal.

TOP TIP

Try to make sure there is something to look at in each of the boxes created by using the rule of thirds.



DRAFT VERSIONS OF THE IMAGE

This is how the final image came into being.



↑ This is one of the first versions of the image. The horizon is too high and there wasn't enough interest in the foreground.



↑ In order to try to make the foreground more interesting a shark and a sunken boat were added and the view is from inside a cave.



↑ The final version added a beach and trees. The horizon is now lower and sits on the lower horizontal with the islands and ship. The shark, boat and an island are on the two verticals, the birds are on the top horizontal.

That's the starting point – the trick is to then use the verticals to place other main landscape features. The intersections at the bottom of the screen should be used for things nearer the camera, the topmost intersections are the least important. Although this can add to a photo, it's the main horizon placement that's the most important immediate consideration. The next stage is to avoid mistakes which will ruin an image. This is where there's a large vertical structure right down the middle of the image, splitting it in two, or having nothing of note in the first third, or leading the eye out of the image. Where possible, you want to lead the eye in, up and through the image from foreground to background. Some of this will be automatic if the

positioning of main elements is right in the first place. Also, bear in mind the alternative to this compositional thinking is one of symmetry. Here you are reducing the landscape to more abstract shapes and it best suits very simple scenes. Instead of placing things on the third intersections, look instead to create a perfectly symmetrical image, whether that's a windmill or tree, alone in a field, placed dead centre, or silhouetted against a setting sun. ■

RENDER CAMERA LENSES

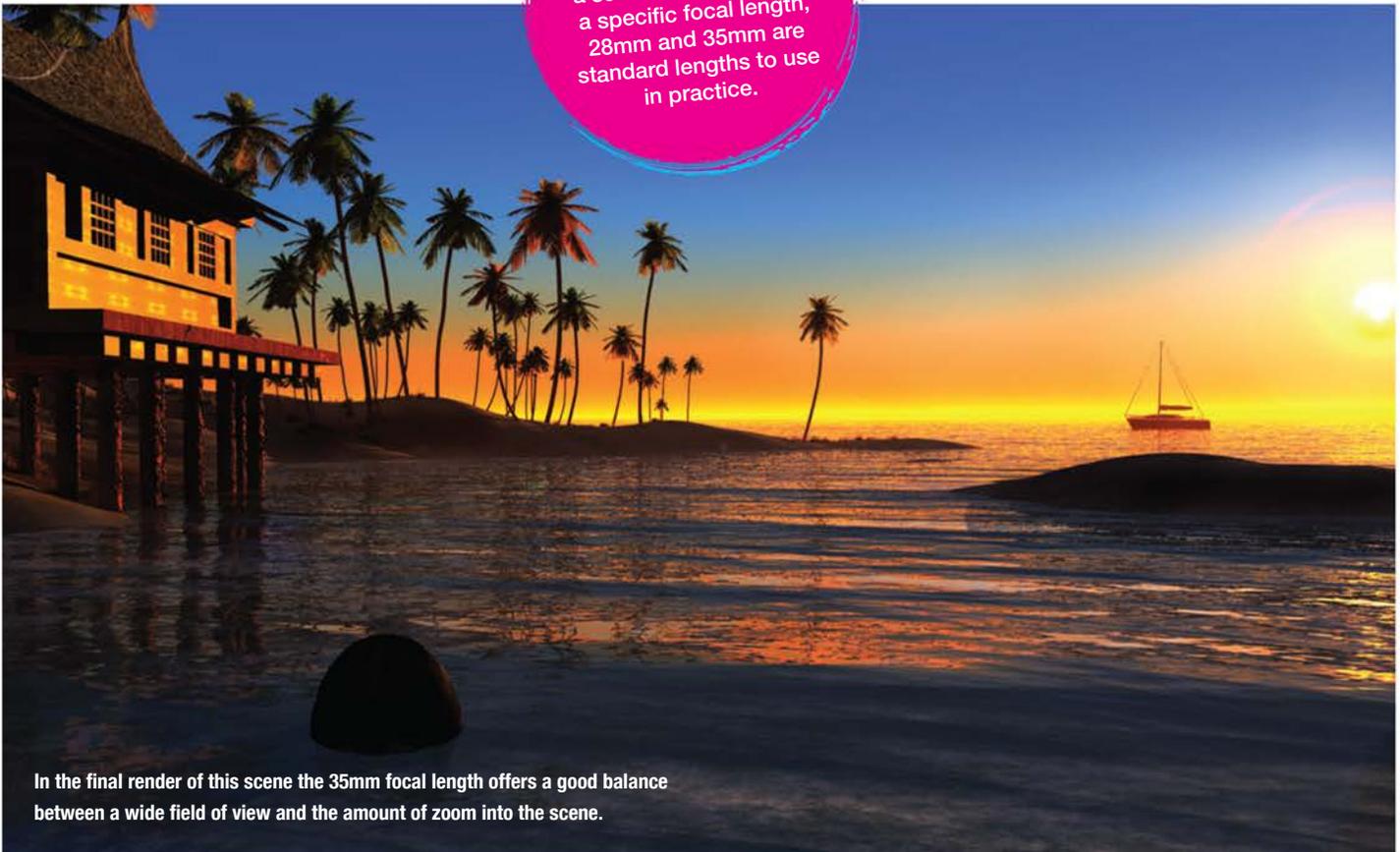
The focal length of the main camera you are going to render from dictates how much of the world you get to see and represents an important starting point for building a scene.

Camera focal lengths are one of those things that are often overlooked because it's tempting to just use the default settings. However, the focal length of the camera determines how much of the scene you can see and how distorted it can appear. If you are looking to create a scene that resembles what the human eye can see then it's usually around the 45mm–50mm area, – but what you also have to take into consideration is that you have two eyes which produce an overlapping image, giving a much wider field of view than 50mm. It can be said that you have a near 180 degree field of view but the periphery of that is not sharp so for rendering purposes a focal length of 24mm will give a more accurate field of view. However, it isn't directly comparable because at 24mm the foreground will appear much closer and the mid and background will appear much further away than what you actually see with your eyes. Note that anything lower than 50mm is usually referred to as a wide angle lens and anything above it as a telephoto lens.

There are consequences to selecting any focal length for your render camera. The first is that the shorter the focal length, the wider the field of view, but the more distortion will appear. Anything near the camera will appear elongated and larger than objects further into the scene. If you are creating a scene which has someone in it, and they are anywhere near the front, then they will suffer extreme distortion. It's better to either move them back or use a 50mm focal length and live with the narrower viewpoint. If you use a longer focal length, say 100mm upwards, then the field of view narrows. It's a common misconception that using a telephoto lens flattens the perspective, making objects in a scene that are behind each other appear closer together. It doesn't. What happens is that you cannot see anywhere near as much to the sides of the point of focus, and the subject at the point of focus appears much nearer the camera, bringing with it the objects in the background. The perspective isn't flattened, it's simply that you can see the things in the background better.

TOP TIP

Unless you are designing a scene to make use of a specific focal length, 28mm and 35mm are standard lengths to use in practice.

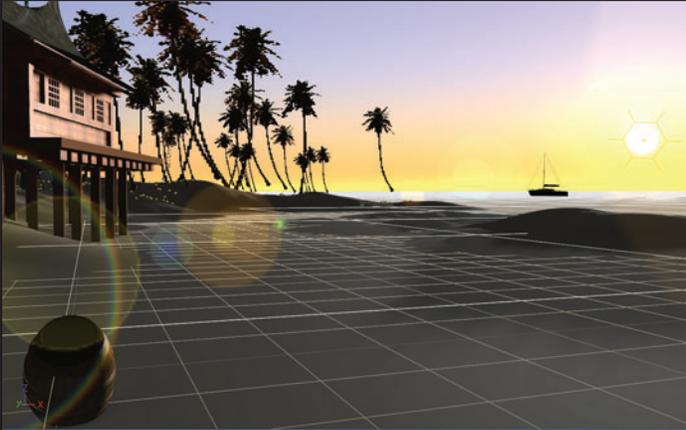


In the final render of this scene the 35mm focal length offers a good balance between a wide field of view and the amount of zoom into the scene.

PRACTICAL EXAMPLES OF DIFFERENT LENS SETTINGS

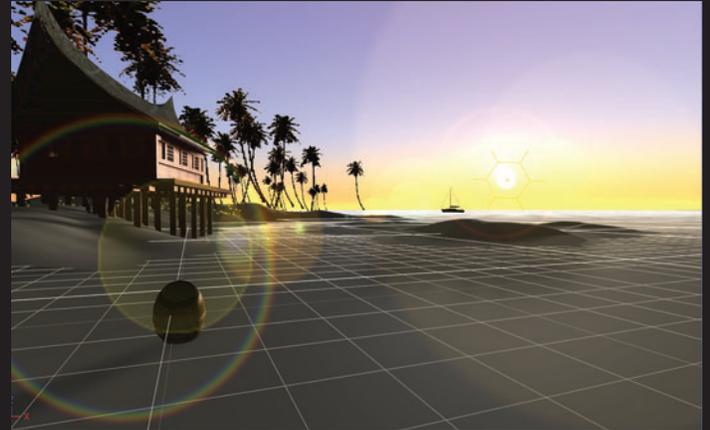
Here's how changing the focal length impacts a scene in practice.

35MM



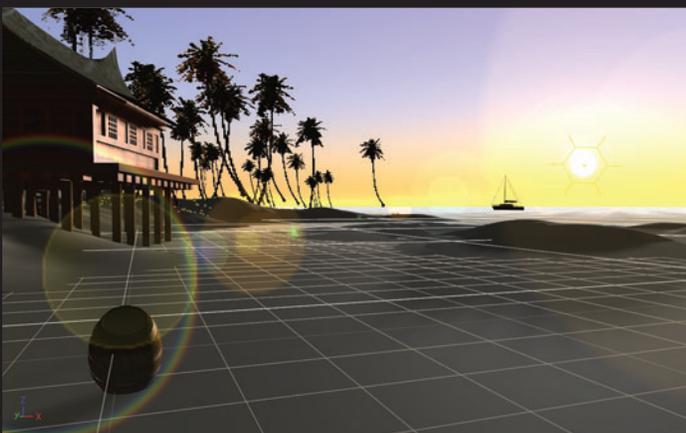
↗ This is the standard 35mm view of this scene. The barrel in the foreground is only slightly distorted and the boat in the background is clearly visible.

20MM



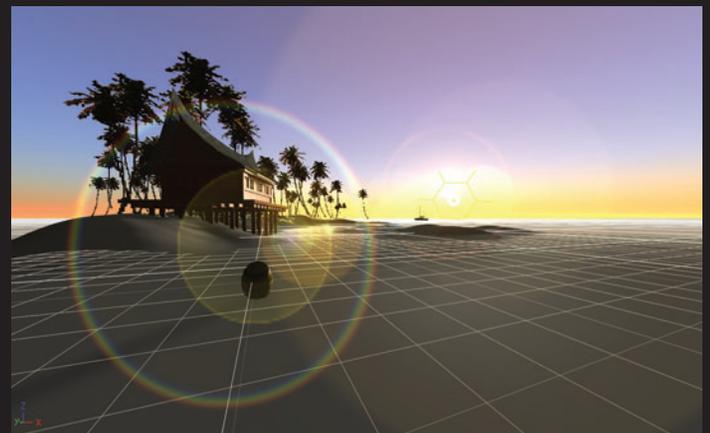
↗ At 20mm the boat in the background is very far away and you can now see around the back of the house, which wasn't intended. Note how much more water there is in the first third of the scene.

28MM



↗ A 28mm view is quite acceptable for this scene though the camera needs moving slightly.

10/12MM



↗ A focal length of 10mm or 12mm is considered to be a fish-eye lens with huge distortion and almost all the image being taken up by the foreground, which this scene wasn't designed for.

In practice, using a lens focal length of 35mm will give you a fairly standard view of a scene with only foreground objects becoming distorted. A 28mm focal length will give you a wide angle view that is commonly used in landscape photography, so the viewer will be accustomed to the amount of scenery in the render. Wider angles than that produce super-wide views with evident distortion. Using 24mm is fairly standard, and anything wider needs to have a reason. It may be the content or

the composition, but the foreground will be so extended and the background so diminished, the scene has to be created specifically to suit that view.

At the other end of the spectrum, a telephoto lens is used to pick out details in the landscape where the photographer can't get any closer for the shot. In 3D you can move the camera wherever you like so the main reason for using a telephoto focal length is negated. However, don't

overlook it. There are times when having a narrow field of view can be advantageous – if you create a ravine for example, with a rushing river at the bottom and rocky sides with trees. A standard view or wide angle wouldn't work anywhere near as well as a telephoto shot. What it comes down to is considering what is going to be in the scene you are creating and what kind of view of that scene you want to end up with. Then use the appropriate focal length in the main render camera when creating it. ■

DEPTH-OF-FIELD

Bring some variation to your landscape rendering by using creative depth-of-field rather than making everything in focus.

One of the features of CGI landscapes is that it's tempting to just render everything in sharp detail. In fact, it's often the default option and while that's fine most of the time, there are occasions when it's worth looking at the alternatives. This, of course, is the subject of depth-of-field. Quite how it works in practice depends on your software, but the theory revolves around lenses and apertures. Depth-of-field is the amount of front-to-back sharpness in an image. If all the image looks sharp then it has a lot of depth-of-field, if only the foreground subject is sharp, then it has a shallow d-o-f. The amount of d-o-f is dependent upon the type of lens being used and the aperture of that lens. Wide angle lenses create more d-o-f; telephoto lenses create far less at the same aperture settings. The aperture is the width of the hole in the lens mechanism that lets light through. The wider the aperture, the more light comes in, but

the less depth-of-field is created. Wide apertures have lower f/stop numbers, such as f/1.8 and f/2.8. Narrow apertures let in less light but create more depth-of-field and have high f/stop numbers, such as f/16 and f/22. There are other considerations, such as lens sharpness, which don't really come into play here, so the question is how your render camera uses f/stops and depth-of-field. Some software will allow you to set a specific f/stop to create customised d-o-f, while other software basically makes everything sharp regardless, only taking into account weather, light and atmosphere. Software in this category is likely to be restricted to a focussing distance and a blur amount.

Software that uses f/stops for the render camera will also allow you to specify the focus point, but the use of the aperture will determine which area is sharp and which isn't. There's usually a projection showing the limits of the sharp area.

TOP TIP

A real lens has more sharpness at f/11 than it does at f/22 but unless your software supports actual lens characteristics, you don't have to worry about this.



A final version of this scene using a shallow depth-of-field, more high atmospheric and toning that really reduces the background.

DEPTH-OF-FIELD IN PRACTICE

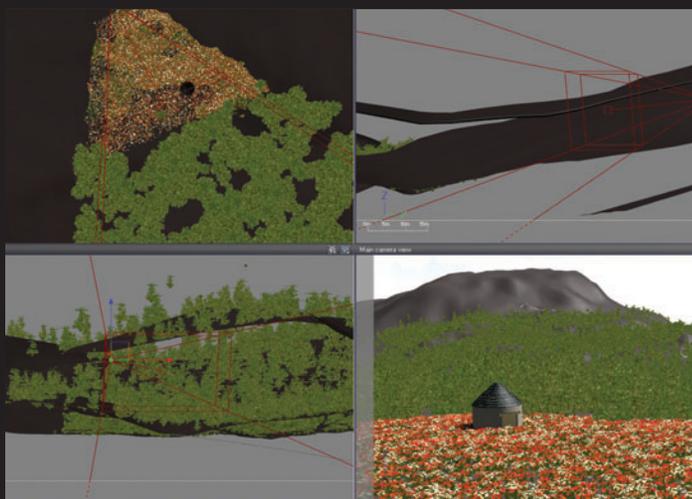
Here's how changing the focal length impacts a scene in practice.



↗ The standard view of a scene with as much depth-of-field as possible.



↗ Now the focus setting has been changed so that most of the foreground is sharp but the background is out of focus. The point of focus is the cart.



↗ Here there's a narrow band of focus where the cart is, everything else from foreground to background has gone out of focus.



↗ The camera settings in the draft version of this scene show the focal point as being about 30m from the camera with 100% blur, signifying a very shallow depth-of-field.

So what does all this mean for you when rendering a scene? Well, you can either render it out with sharpness throughout, or you can try some creative options. One is to focus on an object – a house, river, person, flower or whatever – in the foreground and use a shallow depth-of-field to make the rest of the image go out of focus. This both looks interesting and makes the viewer

concentrate on a specific subject. The alternative to this is the differential focussing technique. Here you focus on something in the near-mid ground and use a shallow d-o-f, with the result that the background is out of focus, but so is the immediate foreground. This is particularly useful for images with a narrative or characters in them as it forces the viewers' attention to a much more

limited area. Of course, you can also be more varied, with the first third of the scene in sharp focus, but then the rest of it slowly going out of focus, but not a complete blur. So whatever you try, there's more than one way to render the same image. ■

LIGHTING MODELS

The way you use light in your rendering affects how realistic the result is. Here are some of the options available.

Although many of the lighting options available to you will depend on the software used, there are some common lighting types that you will find across the board. The first distinction to make is whether to use a general lighting model or a specific one that uses ray tracing. In landscapes it's usually the case that the sun is your light source, but what you have to bear in mind is that the sun will be some way off the actual scene – not a realistic distance away, but scaled a couple of kilometres or miles above a cloud layer or behind any terrains. The sun lights up the sky and the sky acts as a giant light source for the scene. In a standard model the colour of light that is cast onto the scenery is uniform, it does not matter what cloud cover is in the sky. Flat surfaces parallel to the sky will be brighter, but that's as complex as it gets. The important point to note is that this isn't an accurate lighting model, but it is a fast one. Much faster than anything else in fact. Some software offers a slight step up from this which is to use shadow maps for objects. These use the same uniform lighting but then add shadows based on the objects in the scene. It still isn't accurate but it can appear more realistic.

After that we're into ray tracing territory and here rendering times will get longer because the software has a lot more to do. If you are going to add features like artificial lights, especially near water (since they would create reflections), then you pretty much have to use a more sophisticated lighting model.

The advanced options

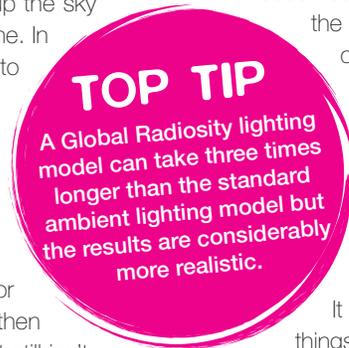
The first lighting model to look at is Global Ambience. As you might gather from the name this uses colour variations from the ambient light. As the sun shines through the clouds different colours are cast depending on the amount of cloud, the thickness of the atmosphere and the time of day. This means that white and grey clouds will cast white and grey light, whereas blue sky will add blue light and sunset reds will add reddish light to those areas. The Global Ambience model takes into account these colours in the sky itself so it looks more varied, but it doesn't cast realistic shadows. It's worth using for the variety and the speed when you're making a really complex

scene that would otherwise take a long time to render out. It works best where there's lots of water because there are fewer natural shadows. Where it really doesn't work very well is in scenes with woodland, lots of trees or fields of flowers. The difference here is quite dramatic.

So, the next step up from this is Ambient Occlusion, which is a form of Global Illumination. How they both work is that the entire sky becomes a light emitter and as the light ray is traced towards the ground, anything in the way casts a shadow. This can be small amounts from clouds, or large amounts from buildings, trees or other objects. The difference between Ambient Occlusion and Global Illumination is that AO has a depth limit in which the occlusion that produces the shadows can occur. This is useful for creating more realistic shadows thanks to clouds, but keeping the speed of rendering advantage by not creating shadows from objects near the ground.

It really suits a seascape image because there the only things really creating shadows are the clouds. Needless to say, Global Illumination delivers significantly better and more realistic results than the standard or Global Ambience models, but it increases the rendering time significantly as well.

If you want the ultimate in realistic rendering though, especially for woodland or tree-filled scenes, then have a look at the Global Radiosity model. Rather than working out shadows for light rays, this approaches the subject differently. The rays are emitted from the light source and traced to the subjects. Any subject receiving light then re-emits, or radiates, a percentage of that light based on the reflective properties of the material. Anything under a subject which doesn't receive a direct ray trace is therefore in shadow, while very reflective surfaces will shine more because they re-emit more. In complex scenes, particularly under partial cover, this leads to more sophisticated and varying light patterns. The rendering time can be much longer than any other model if the scene is a complex one. If it isn't a very complex scene requiring sophisticated shadows and light, then it's tantamount to overkill. You'll spend longer rendering for no real benefit. ■



PUTTING IT INTO PRACTICE

Here's how different lighting models can affect the same scene. The trees in the foreground are actually yellow, the ones in the middle are red and burnt orange and over in the background they are green. See how the lighting models change the colours artificially.



↗ The first example uses a normal lighting model and as you can see, it's uniform over the trees which are the wrong colour. This took 6:40m to render.



↗ The next version uses Global Ambience which has made the sky much lighter and more even, but the trees are still the wrong colour. This took 10:39m.



↗ Now we're on to the Ambient Occlusion version which has clouds in the sky. The trees have much better shading and are the right colour. This version took 16:50m.



↗ The Global Illumination version took 15:28m and is similar to the AO version. The trees are quite dark because each leaf is blocking light.



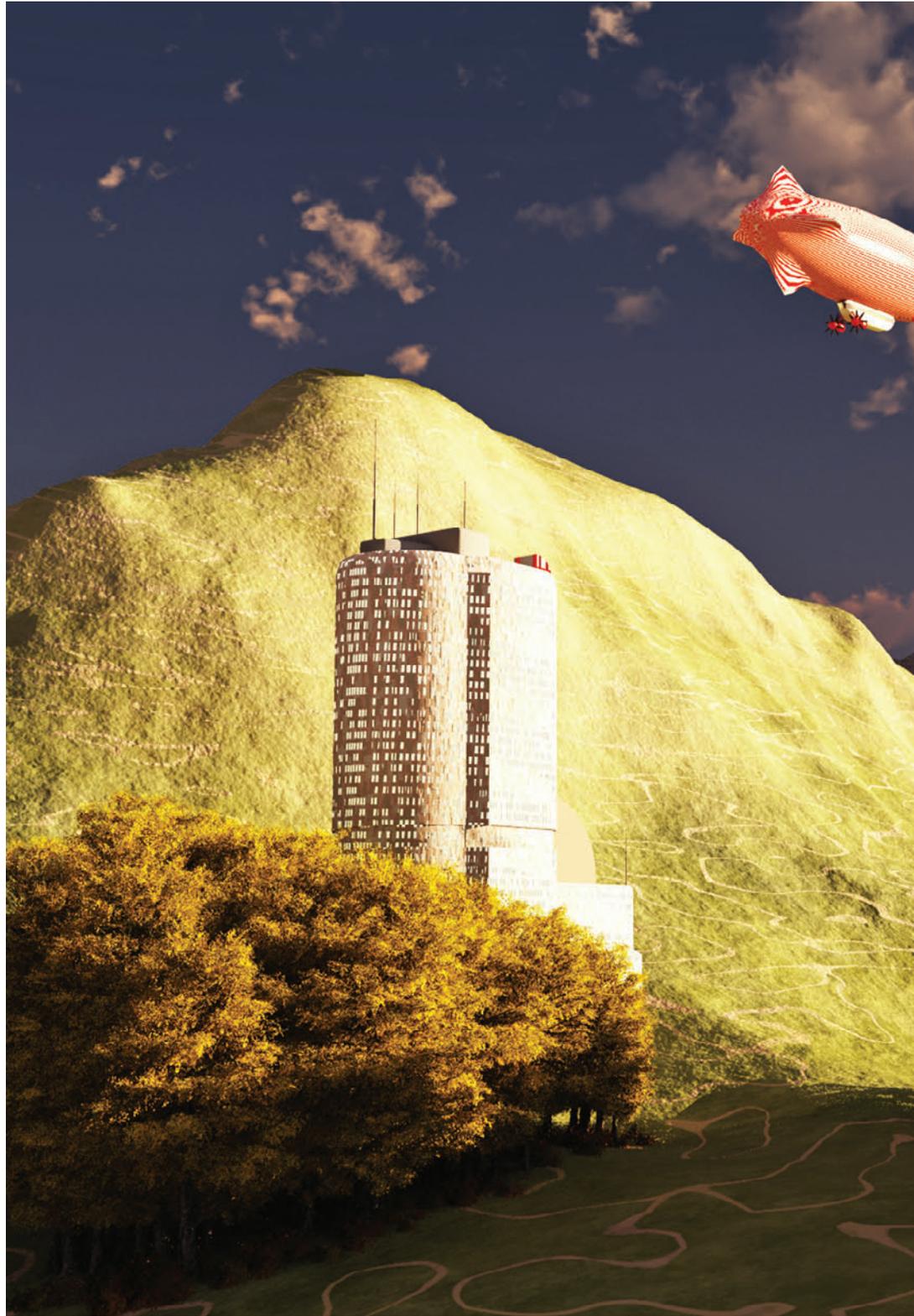
↗ The longest render came from the Global Radiosity version at 19:29m. The leaves of the trees are brighter because they're reflecting light onto each other.

Volumetric and spectral lighting and atmospheres

It's worth discussing atmospheres here because they can be created in tandem with the various lighting models already discussed. These are volumetric and spectral atmospheres. Volumetric light is basically where the rays of light illuminate particles in the atmosphere or appear as rays through blocked areas of scenery. Particularly for landscape creation software you will find pre-built skies categorised as a volumetric scene which let's you know that the light itself will have volume in the atmosphere. The position of the sun and the amount of dust in the atmosphere both affect how a volumetric atmosphere will look.

Spectral lighting is in fact volumetric as well, but it uses a lot more components to create a more realistic result. A spectral atmosphere uses three-dimensional clouds rather than flat ones and these can be manipulated in the same way as 3D object. The light coming through them from the sun then takes into account the density, height, the amount of wind, dust and water in the air. There are also more controls for spectral atmospheres so that the density of clouds can be altered and additional effects like sun coronas can be tweaked. A spectral atmosphere is certainly a more realistic element to use than a volumetric or standard atmosphere, but it all adds to the render time. Also, you'll find that it's best to use pre-made skies as they were designed. A spectral atmosphere will look completely different if rendered as a volumetric one.

For speed, use a standard atmosphere with a quick-to-render lighting model: if you want haze and volume in the sky – sunset and sunrise are great for this – then use a volumetric atmosphere, and if you want the ultimate in realism then use a spectral atmosphere with a Global Radiosity lighting scheme.



This scene uses a volumetric cloud layer and a spectral atmosphere and Global Radiosity lighting to disperse the light within the tree canopy.



CLOSE-UP WORK

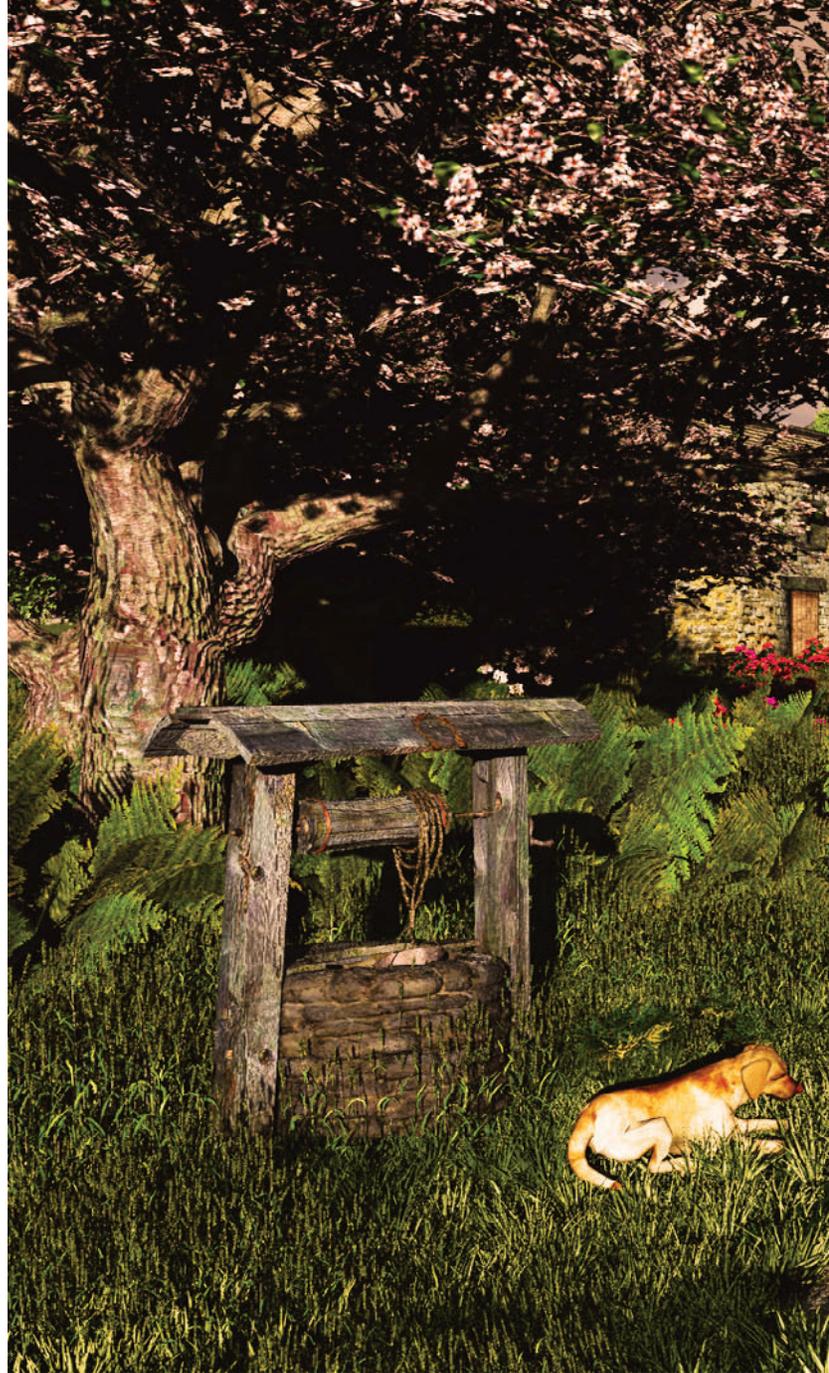
Landscapes don't all have to be massive alpine vistas with soaring eagles and speck-like figures in the fields below – get close up for a change of pace.

While the traditional landscape may have acres of land and represent the open prairie, a mountainous range or endless miles of sea and surf, presenting a more localised scene offers its own rewards and sets specific challenges for the 3D artist. A typical scene here can be anything from the contents of a wooden glade to a country house set in quaint gardens. It can even be more close up than that, and approach the macro scale, where you are looking at individual fungi and plants. In fact, the small-scale scene offers an opportunity to use lots of plants and flowers that would be lost in a large scene.

The first consideration, then, is one of scale, which is much more difficult if you are modelling everything yourself. A small difference in scale that would be impossible to spot with the camera at a few hundred feet becomes glaringly obvious at five feet off the ground. This doesn't really apply to flowers unless they're a clearly identifiable species and the scale is completely wrong. It's more a case of other objects in the scene like transport, fences, sheds and so on that are dwarfed by trees, or tower over grass. It's one of the areas that dedicated landscape creation software programs have where all objects have a scale function so you make sure everything matches.

The other obvious consideration is one of composition. In a tight area, the composition really needs to work well, much more than a big, open scene, because this scene is all about the specific elements. See the section on composition for more on this but composition in a small scene can make or break the overall impact.

Quality and lighting now come into the equation much more. Because the camera is so much closer to everything, the actual quality of the model and the textures are more open to critical gaze. Certainly while populating a scene if you are using anything that's purchased, you need to make sure that the objects are high enough quality. Needless to say, the better quality models need to be nearer the camera. As the scene recedes into the distance, you can use things like trees that have a low polygon count as fillers. The lighting model now has an increased importance as well because you're going to see more defined shadows, more reflections and the quality of the final render is more important. See the section on lighting models but now bear in mind that this is where you want to use the more realistic options.



As the scene heads down into the very small, or macro level, depth-of-field becomes increasingly important too. This is where a very shallow d-o-f can be used to great effect. Isolate the most interesting elements and use the aperture or depth options for the camera to throw the background completely out of focus so it's just a colourful, blurred backdrop. You can create great-looking macro shots this way. Even if your scene isn't that small there's still potential here for coming up with something that's a little different. If you have a horse in field for example, make the focal point the horse and allow the rest of the scene to drift out of focus, but not to the same extent as the macro shot. This concentrates the eye on the main subject, still offers the rest of the scene as context, but gives it a closer and more personal feel than just rendering with everything perfectly sharp. ■



↗ The well and grasses close to the camera were all replaced during the making of this image for ones with higher resolution textures and quality.

↘ This shows the other end of the scale: a very close-up shot with shallow depth-of-field. The texture map needed to be redone to render it in hi-res from so close.

© Gill Brooks.



BLACK AND WHITE STYLES

Look beyond the colours in a scene and discover the potential of using monochrome imagery.

One of the reasons black and white images can have a great deal of impact is simply that we are used to looking at things in colour. You don't tend to see much of it in the 3D world though, where colour proliferates. For that very reason, a well executed monochrome image can stand out from the crowd.

When dealing with black and white a different approach is required and some things work better than others. For a start, without colour in the scene, you are reducing it to shape, tone and texture. A busy scene that would look great in colour won't work in mono because there's just too much going on. It's much better to have more clearly defined shapes, objects and areas. That's why seascapes or beach

scenes always work well – they are much simpler and more defined. The attribute connected to this is tone. If everything is the same tone then the shapes will blend together so there needs to be variety of tone in clearly defined areas. Again, land, sky, water are three clearly defined areas with different tones. That leads on to the question of contrast. Very little can mean subtle shades in specific areas, but if it applies to the entire image then again, the tones aren't going to be well defined. Unless you are aiming for an antique or retro print look with faded tones, then it's usually better to have more contrast. A scene with punchy contrast will make a bigger impression and catch the eye more.



↑ This version of the image uses a lot of contrast with dark, fluffy clouds for maximum impact.



↪ This is a standard, low-contrast conversion from colour. Notice how flat it looks.



↪ Here the Nik Efex HDR Pro 2 filter in Photoshop has created a pseudo-HDR effect and conversion.



↪ The clouds have been darkened with a Curves adjustment layer but the rest of the scene is still flat.

The other area of consideration is texture. Without any colour in a scene you notice the textures a lot more. You don't have to have objects with lots of defined textures but be aware that those you do have will carry more weight. What can be overwhelming though is a scene where everything has a distinct texture because that tends to make it too busy. It's better to spread them around so

they have more impact.

As mentioned, seascapes, beach scenes, anything with rocks and water work well as a black and white subject. For focal points of interest you can include a lighthouse, boats or islands. Turning inland, an isolated cottage against a mountain range provides a good focus, while a woodland river scene

can offer lots of contrast with shade and light. Another avenue to explore is industrial decay. Here you are looking at the textures and emphasising the structures but it's important to compose the scene well and include some sky to help define the landscape. Don't forget grain effects too, as these can help give a scene more contrast and impact. ■

CONVERSION OPTIONS

It seems that each new version of Photoshop includes a new way to convert from colour to mono. Some of the latest options include using a dedicated Black and White filter that has more colour channel options. It makes the Channel Mixer defunct as this works in the same way, but with fewer channels. For a quick and easy conversion, use the Gradient Map from black to white. Also, there are numerous film stock plug-in filters like Alien Skin's Exposure series and DFT's Film Stocks that can convert an image to mono as well as give it certain characteristics of a specific black and white film.



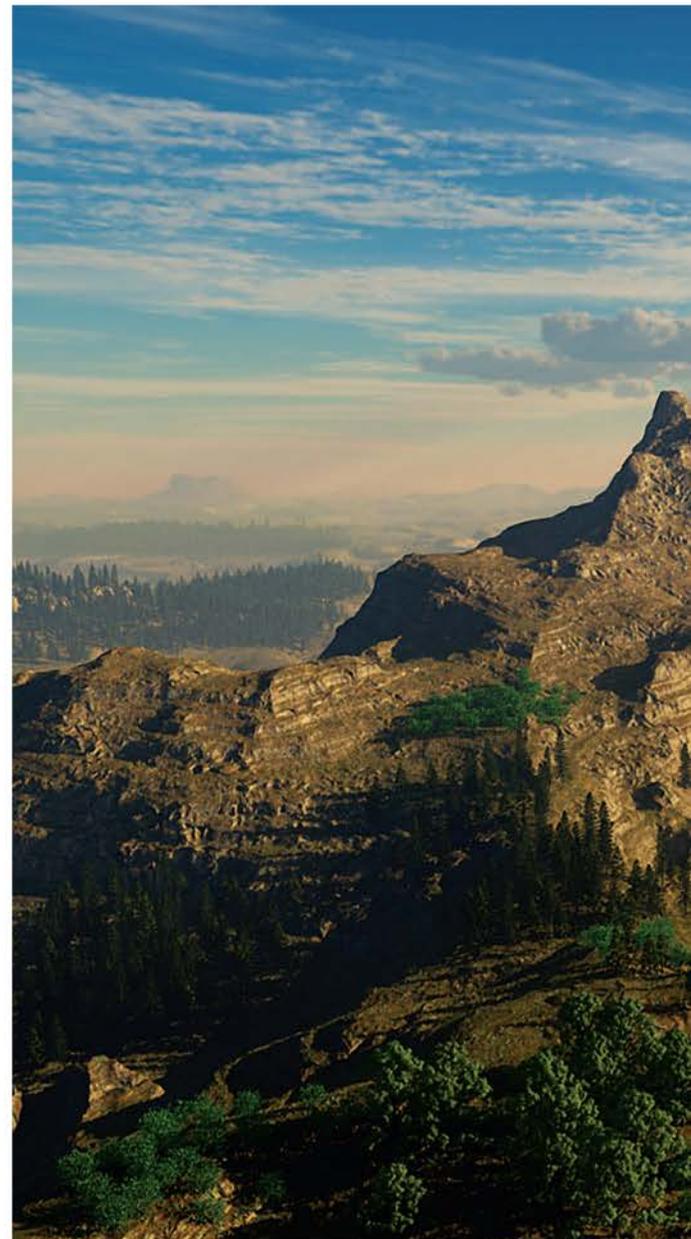
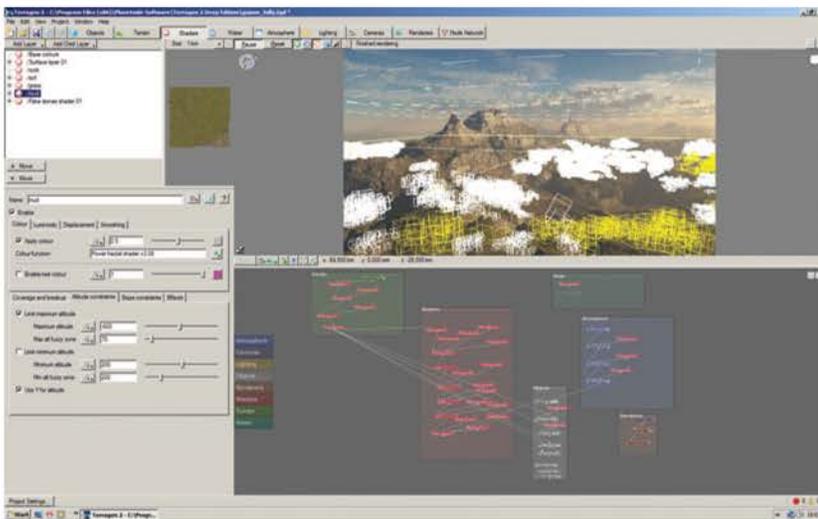
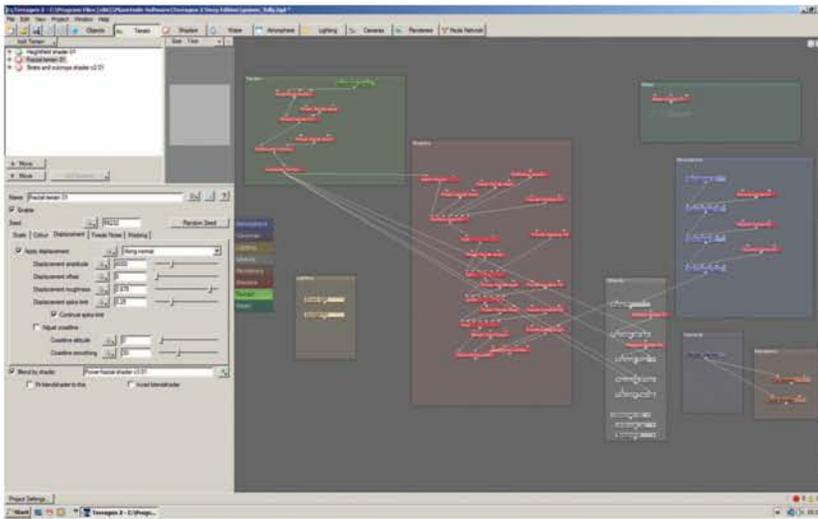
SECTION 2: LANDSCAPE MASTERS – SHOWCASES AND TUTORIALS

Welcome to main section of this book where you can admire the work of landscape masters in a variety of showcase images and learn vital tips, tricks and workflow processes in the tutorials. This section is split into chapters covering everything from mountains and water features to architecture, characters, weather and fantasy images. In each chapter there are showcase images and a tutorial explaining how a fantastic image was created.

- 34** Mountains – from alpine lakes to grand follies and railways
- 52** Seascapes – fishing boats, harbours and undersea adventure
- 80** Rivers and lakes – ponds, tumbling rivers, lakes at sunset
- 102** Water features – deep canyon streams and African watering holes
- 120** Desert scenes – dusty planets and a fabulous beach scene
- 136** Woodlands – misty forests, alpine trees and an Elven village
- 152** Architecture – buildings in the landscape for professional design
- 172** Characters – how to add people and figures as a focal point
- 190** Urban landscapes – into the city for streets, yards and places of worship
- 208** Weather and seasons – let it rain, snow and the wild wind blow
- 224** Post-industrial – signs of commerce and the decay left behind
- 238** Sci-Fi – let your imagination run riot with these tales of the future
- 256** Fantasy – from warring wizards to houses for gnomes and dragons

MOUNTAINS SHOWCASE: JOHN ROBERTSON

“ There's an Arthur's Seat in Edinburgh, so I thought Guinevere should have something to remember her by. I generally create scenes on impulse with little or no project planning. The main objective here was simply to create a scene with interestingly formed mountains and good depth to it. I also wanted to try out Terragen's recently introduced cloud localisation. I then thought a woodland lake would look good in the mid foreground with some kind of structure overlooking it. The folly itself is a simple 3D mesh made using XenoDream, imported into Terragen and textured using image projection. ”

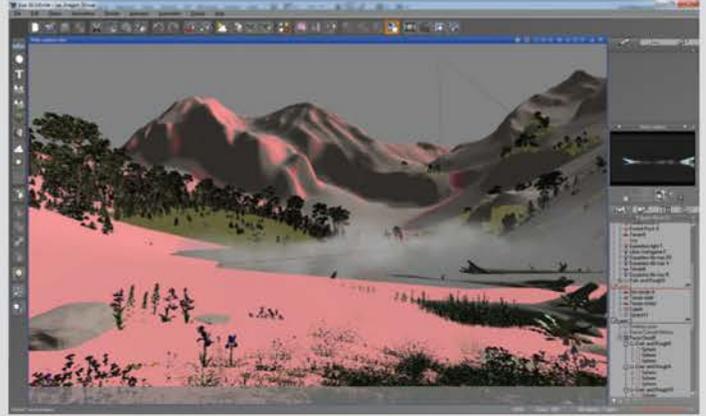


PROJECT	LAKE IN SPANISH PYRENEES
SOFTWARE USED	TERRAGEN 2
RENDERING TIME	3 HOURS
ARTIST	JOHN ROBERTSON
COUNTRY	UNITED KINGDOM (SCOTLAND)



MOUNTAINS SHOWCASE: FRÉDÉRIC BEC

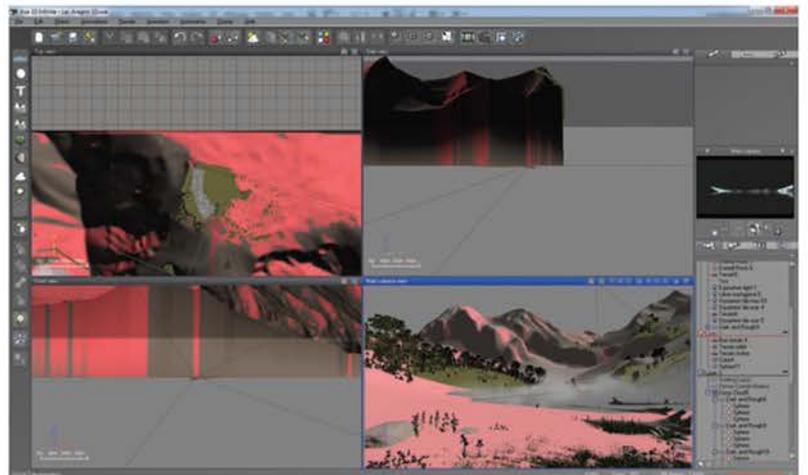
PROJECT	LAKE IN SPANISH PYRENEES
SOFTWARE USED	VUE 10 INFINITE AND ONYX GARDEN SUITE
RENDERING TIME	48 HOURS
ARTIST	FRÉDÉRIC BEC FOR GRAPHI-PAYSAGE (SARL)
COUNTRY	FRANCE



“ The picture was made for the Vue Environment Competition 2012. I wanted to represent a mountain landscape I know and love with as much realism as possible: the Ibon de Plan in the Spanish Pyrénées (Aragon).

In the real landscape, the pines are *Pinus uncinata*. I have replaced them with *Pinus sylvestris* because they are more graphic. All the other plants are growing in the zone and some are endemic (like the *Iris xyphoides* in the first plan). All the plants were made using Onyx Garden Suite, textured in Vue and placing using the Vue Ecosystem. I spent a lot of time modelling the plants to be as realistic as possible. I represented the plants and flowers as they really are in the late spring season at 1800m altitude.

The rock materials were made with procedural textures using bitmaps for some zone distribution. One of the main tasks was to build a realistic procedural texture simulating the calcareous sandstone of the zone. ”



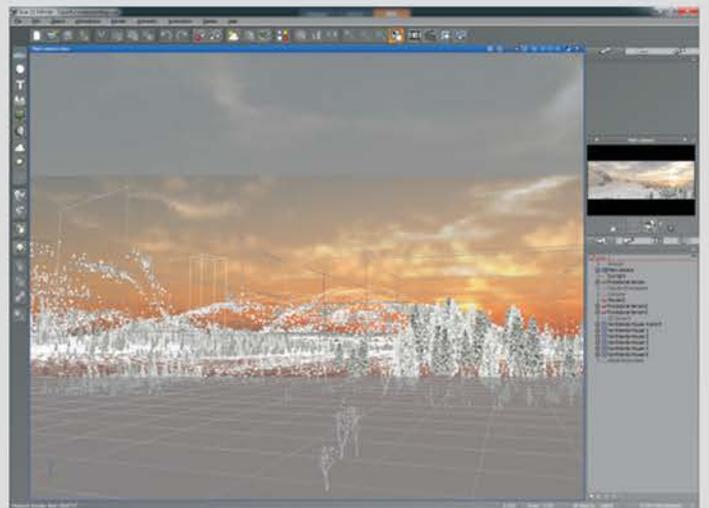
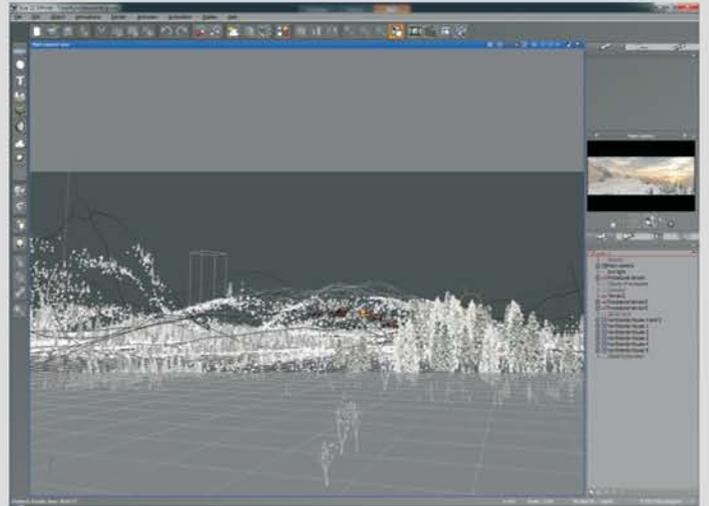
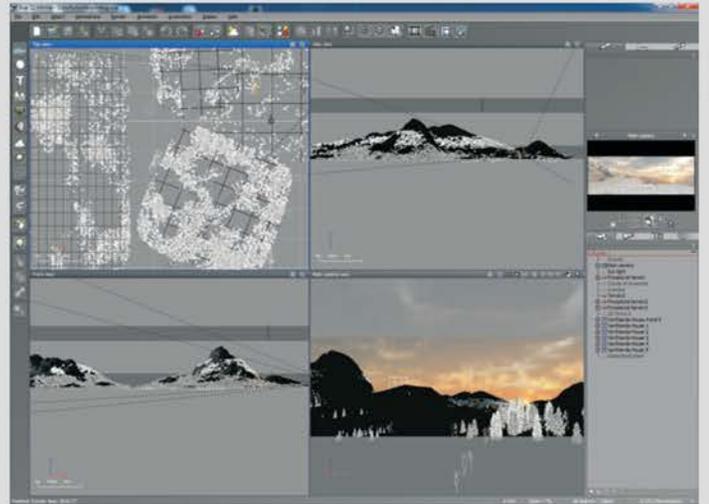
MOUNTAINS SHOWCASE: BRITTA JACOBS

“ Winter images are my favourite to create of all landscape images I do in Vue. This one was done to show that winter isn't only painting the landscape in white and blue or shades of grey on a foggy day. The unbelievably colourful sunsets in winter we get here in Appenzell were the inspiration to recreate such a sunset in Vue.

”

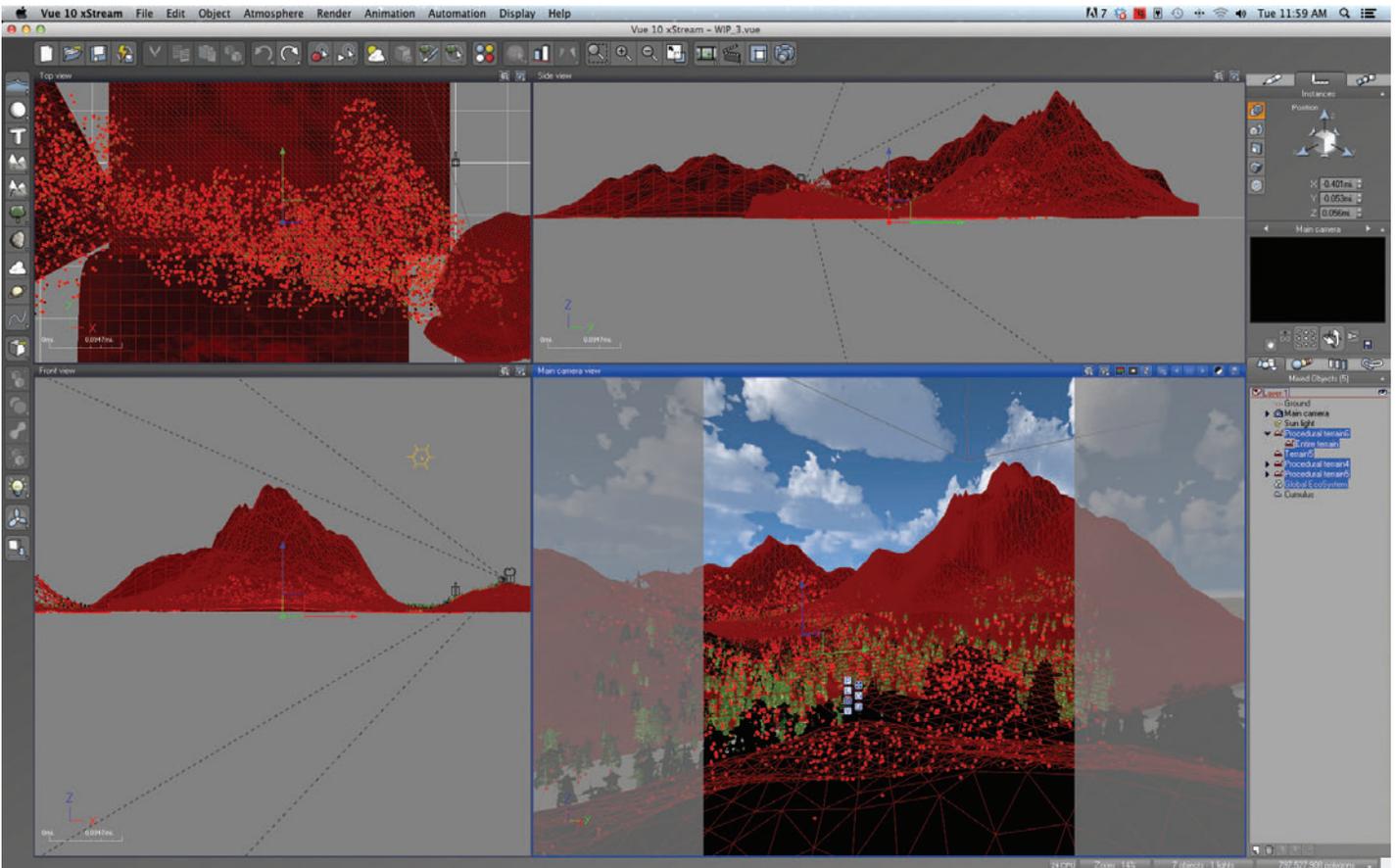
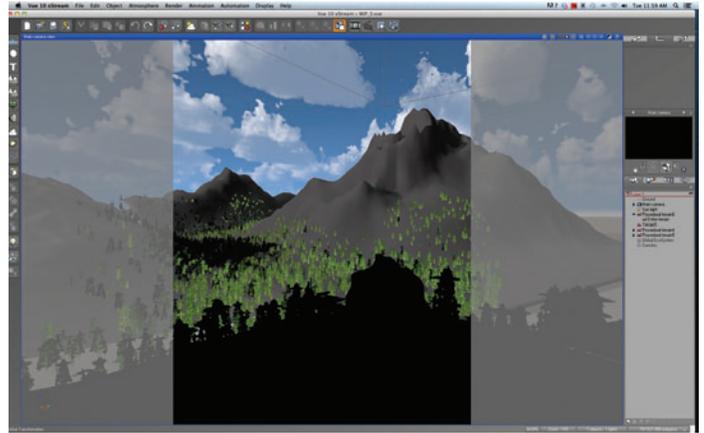
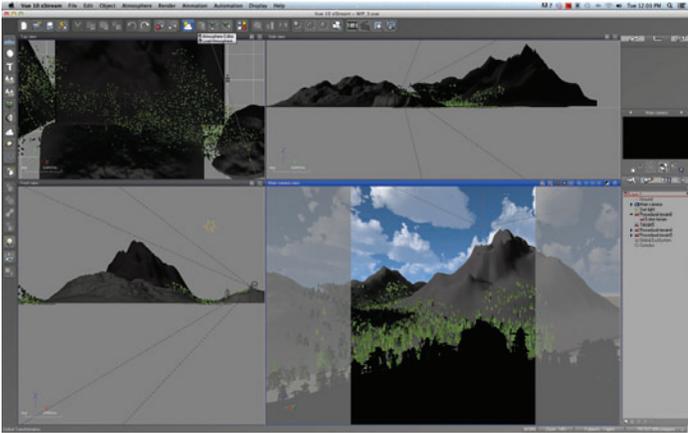


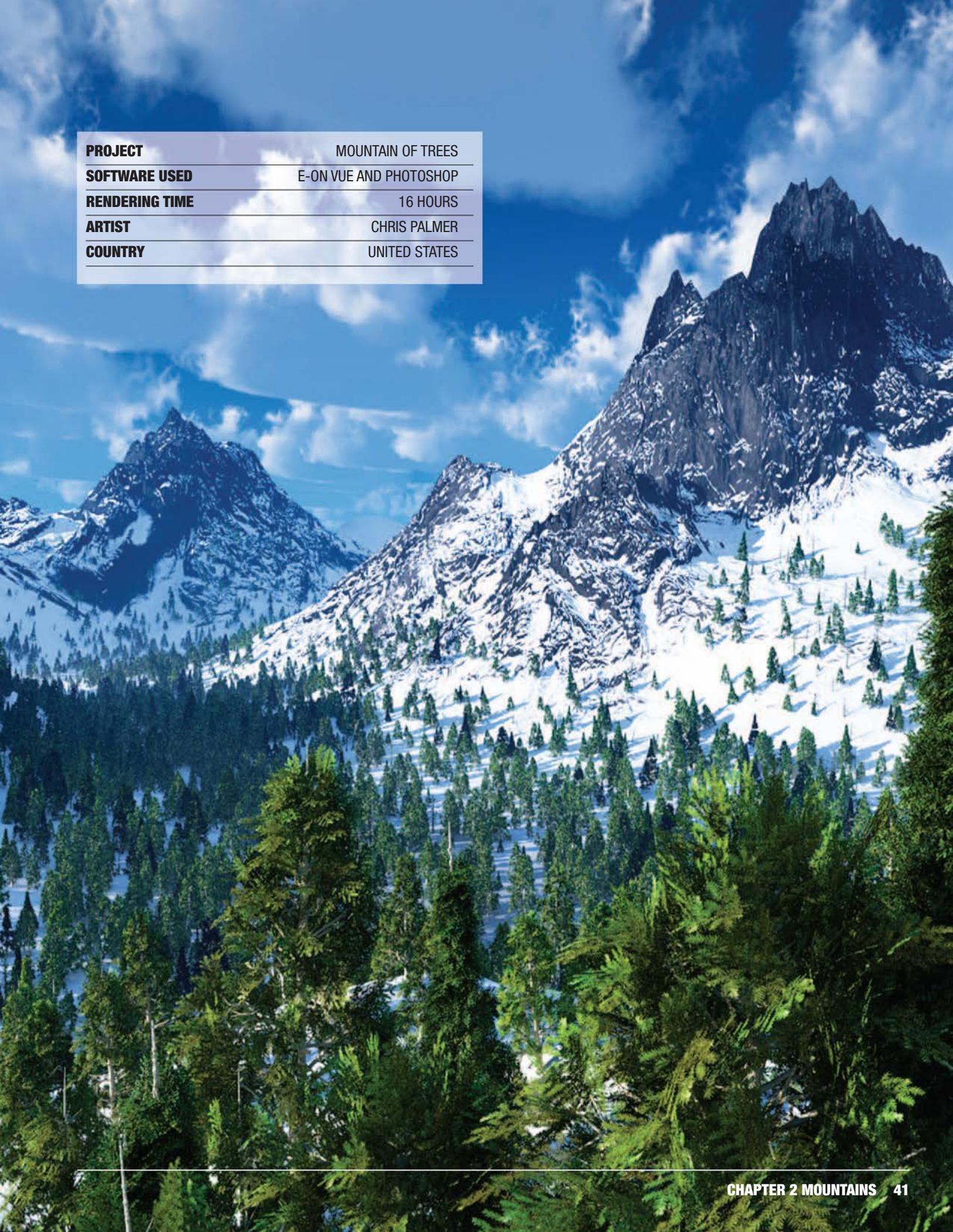
PROJECT	COLOURFUL WINTER
SOFTWARE USED	VUE 11 INFINITE
RENDERING TIME	7 HOURS AT 2720X1000
ARTIST	BRITTA JACOBS
COUNTRY	SWITZERLAND



MOUNTAINS SHOWCASE: CHRIS PALMER

“ I was inspired to make this image due to my love of the mountains during the winter. As a snowboarding enthusiast I wanted to convey the feeling I get as I glance over the perfect untouched snowy terrain and the feeling of crisp, clean mountain air. I drew from numerous reference images and my own personal experience to get the look that I desired. After about three days of working with the composition I finally achieved the view I wanted and I was pretty happy with the results. ”





PROJECT	MOUNTAIN OF TREES
SOFTWARE USED	E-ON VUE AND PHOTOSHOP
RENDERING TIME	16 HOURS
ARTIST	CHRIS PALMER
COUNTRY	UNITED STATES

HOW TO CREATE MOUNTAINOUS SCENERY

Drea Horvath explains how to build a large-scale scene and populate it with enough detail to keep it interesting.

BACKGROUND

Switzerland is considered one of the most beautiful countries of the world with its high mountains, green valleys, snowy peaks and cute little alpine towns. The country's landscapes have inspired lots of artists, including myself.

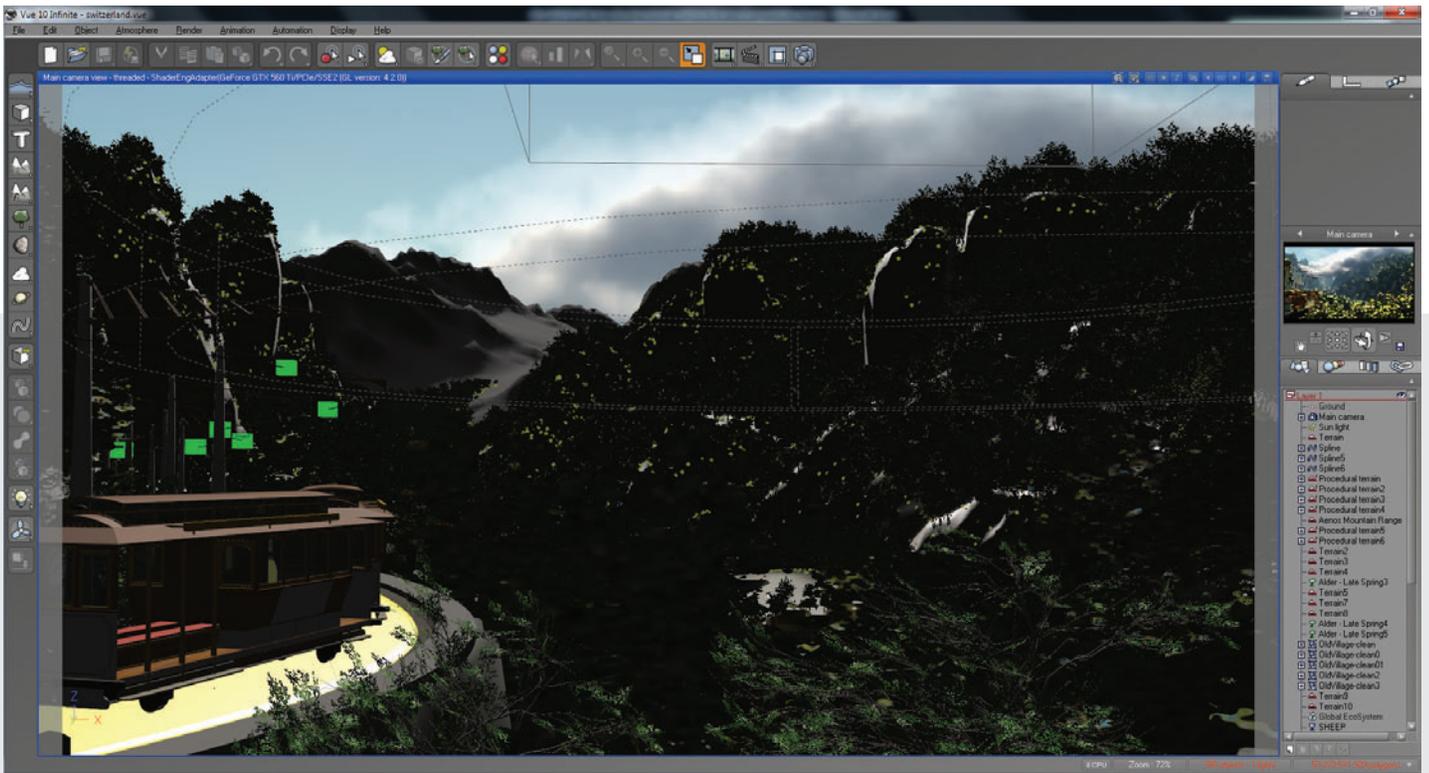
The picturesque Lauterbrunnen Valley in the heart of the Swiss Alps is a well-known destination and a perfect inspiration for landscape artists. The pictures online caught my eye right away, and I knew I just had to create a digital version. After some planning and improving skills, I gave it a try.

This landscape has everything I like: high peaks, steep cliffs, a nice valley with green pastures and lots of small, beautiful details. It was a great challenge.

The scene was created as a personal project, and it was a perfect practice for material and ecosystem tweaking, atmosphere and lighting, and – most importantly – achieving realism. In this tutorial I will cover all the important steps of creating this landscape in Vue 10 Infinite, including planning, terrain creation, material and ecosystem manipulation, use of the new Spline tool, adding details, render settings and a few steps in Photoshop as post production work. I will also share some general tips and tricks that help you bring the best out of your work in Vue.

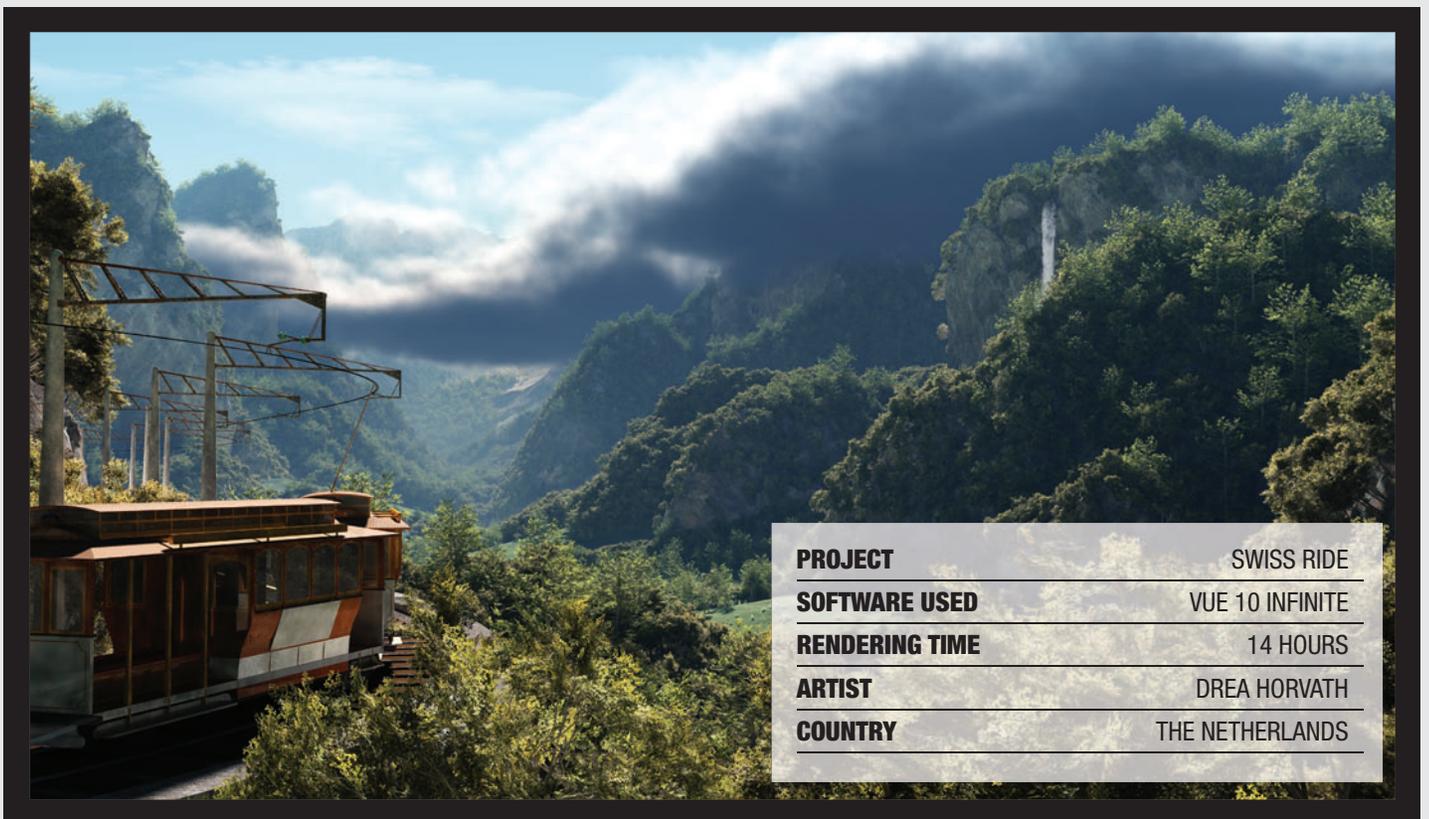
↙ **Lauterbrunnen Valley in Switzerland; one of the great shots of the valley**





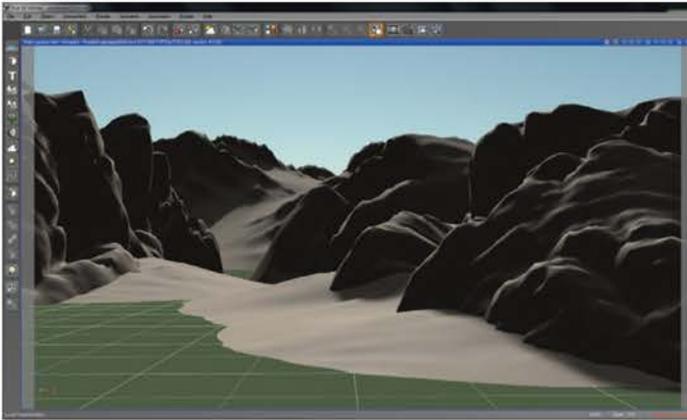
↗ Smooth shaded main camera view of the full scene in Vue 10 Infinite. Shader 4 was enabled.

FINAL IMAGE – THE SWISS RIDE BY DREA HORVATH

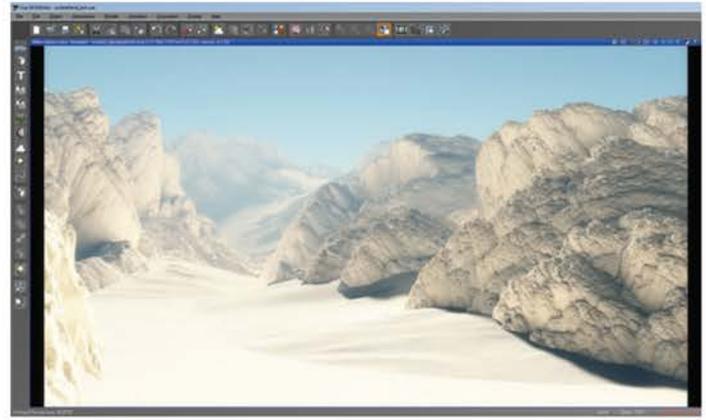




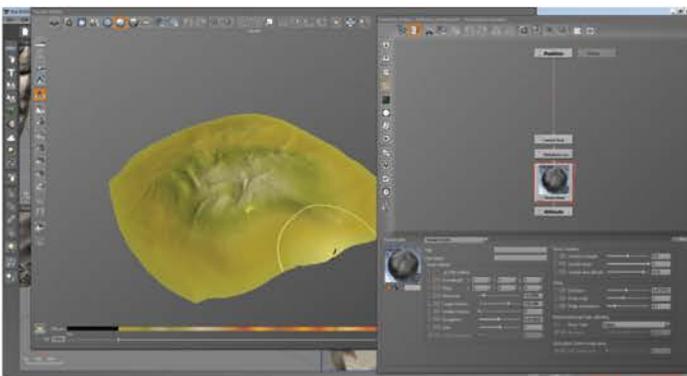
STEP 1 EXAMINING THE REFERENCE It's much easier to create a scene based on a reference image, so the first step was to pick out some shots of the scene to recreate. These shots served as a guide to help with the composition, choose the materials and ecosystem instances. They also suggested ideas for the small details that brought the image to life.



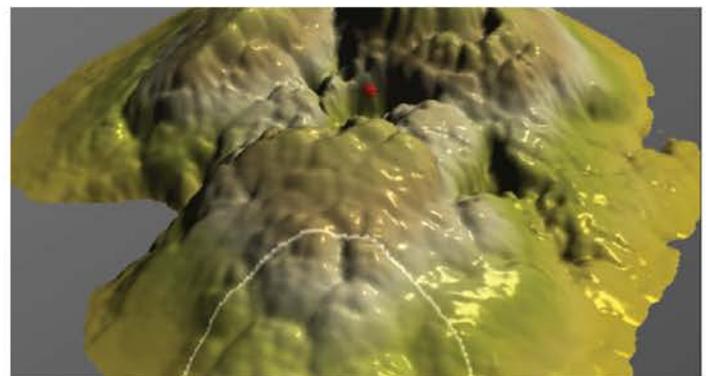
STEP 2 PLANNING BASED ON THE REFERENCE However, the goal in this case was not to make an exact copy of the photo, but one that was inspired by it. Initially the camera was positioned high off the ground and some terrains were placed into the scene as a basic composition to build upon. The terrains of the cliffs were tilted.



STEP 3 TYPES OF TERRAINS In this scene there were three types of terrains. The cliffs and the pastures were both procedural terrains with different types of fractals. The background mountain was a high-resolution standard terrain with imported height, flow and deposit maps. The extra terrains around the cliffs were standard terrains with a lower resolution. The following steps focus on these types of terrains and materials in detail.

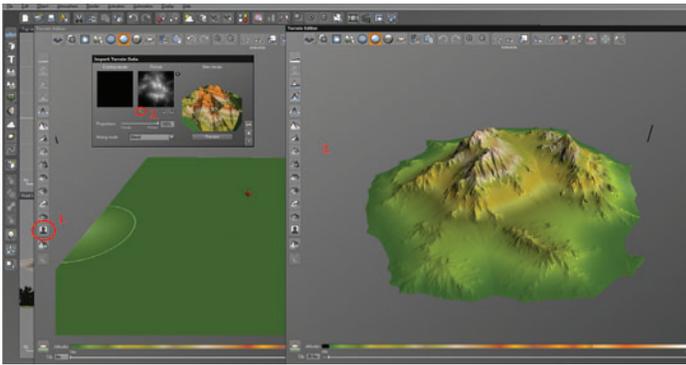


STEP 4 TERRAINS OF THE PASTURES The procedural terrains of the pastures were the first thing to tackle. The height of the terrains in the viewport were lowered, then the Terrain editor was opened. The resolution was left at 256*256, then the function editor was opened, the fractal node selected and switched to Terrain fractal. The metascale was set to 15, then the sliders were adjusted until it produced a pleasing result. For more complexity the distortion value was set to 0.47.

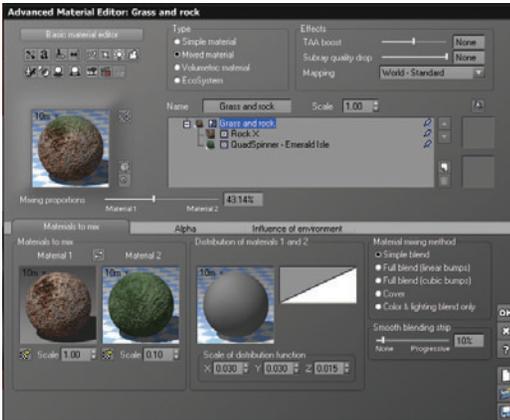


STEP 5 TERRAINS OF THE CLIFFS On the cliffs, a new feature in Vue 10 was applied; the cyclic fractal, in a combination with Voronoi noise. The wavelength was set to 5 on all axes, the metascale was set to a value between 1.4 and 1.5, and the sliders were adjusted until the terrain looked good and complex enough. To enhance the details, the canyon profile filter was loaded.

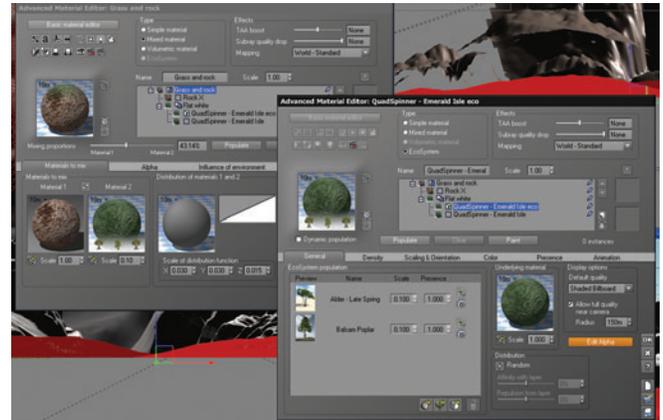
CREATING BACKGROUND MOUNTAINS



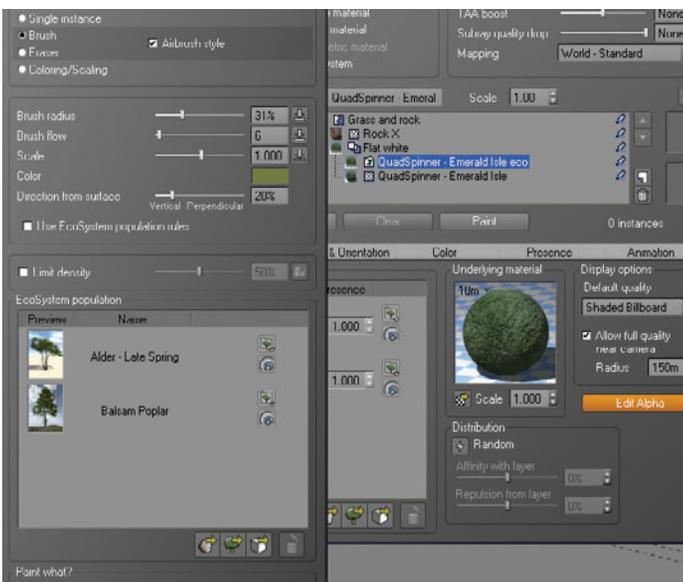
STEP 6 THE BACKGROUND MOUNTAIN For the background mountain the Aenos Mountain Range, a free product by my company, D&D Creations, was used. A standard (heightfield) terrain was loaded and its dimensions were increased to 5km*5km. Then the Terrain Editor was opened, the terrain reset and increased in resolution to 4096*4096. After that the terrain data importer was opened and loaded Aenos.tga, the height map of the terrain that comes with the pack. In the viewport the height of the mountain was lowered.



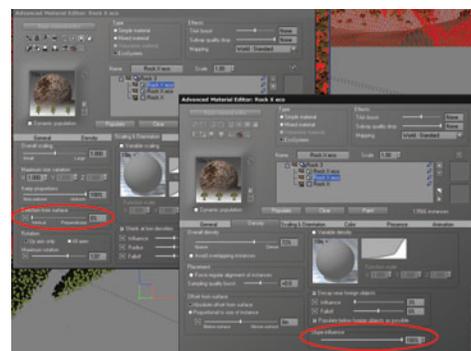
STEP 7 ADDING MATERIALS – PASTURES As a starting point for the pastures, the “Grass and Rock” material preset from Landscapes was loaded. The rock material was changed to Rock X from QuadSpinner’s Master Trinity pack, and the grass to Emerald Isle from Grasslands, also from QuadSpinner. Some roughness was added in the function editor to enhance the details.



STEP 8 ECOSYSTEM – PASTURES The Ecosystem on the pastures was a simple single-layer system, which consisted of two tree species: Alder - Late Spring and Balsam Poplar from Incredible Lush Western Mountains pack. The grass material layer was selected and the trees loaded onto that. This Ecosystem didn’t require further tweaking, because it was controlled with the EcoPainter.



STEP 9 USING THE ECOPAINTER Instead of populating the whole terrain with trees, the Ecosystem painter was used to paint random patches of trees onto the pastures, as you can see on the reference photo. By clicking on the Paint button, the EcoPainter was opened and, in the top view, painted with a scale of 1 and a low flow of 6.



STEP 10 MATERIALS & ECOSYSTEM – CLIFFS For the cliffs QuadSpinner’s Rock X was also selected for the rock material as it was perfect for that type of rock. The Ecosystem consisted of two layers; a dense layer of Alder - Late Spring (72% density) and a less dense layer of Balsam Poplar (56%). For both layers it was important to set the slope influence to 100%, so the instances didn’t grow on very steep slopes. This added to the realism. The poplars’ direction from surface was set to vertical (0%).

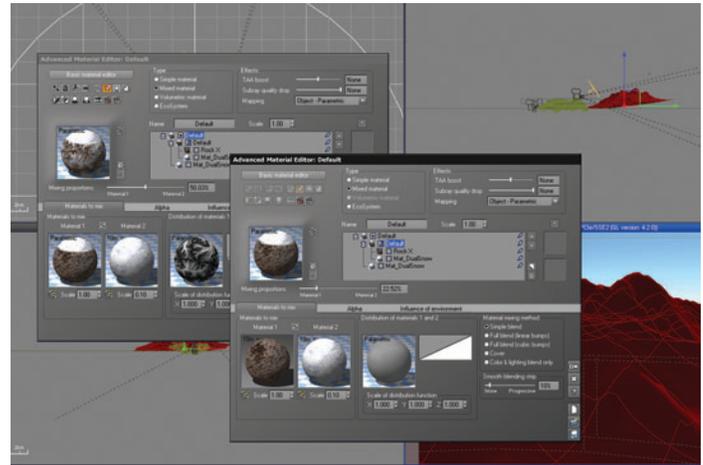
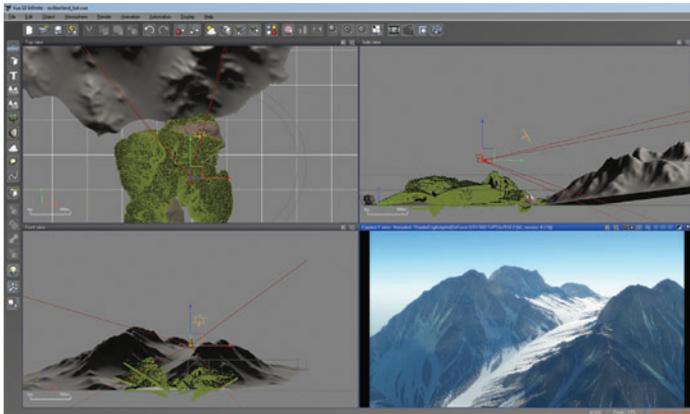
TOP TIP – THE ECOSYSTEM PAINTER

The Ecosystem Painter in Vue is a great tool for making Ecosystems with a determined shape. It gives you more control over the placement of the instances, and it can even be used for painting riversides of rocks without any complex terrain work.



DISTRIBUTING MATERIALS

STEP 11 FORESTS AROUND THE CLIFFS As a transition between the cliffs and the pastures, some extra terrains were added with a simple ecosystem to the areas where the cliff terrains met the pastures. The Emerald Isle grass material was applied with a dense layer of Balsam Poplar trees on these terrains.

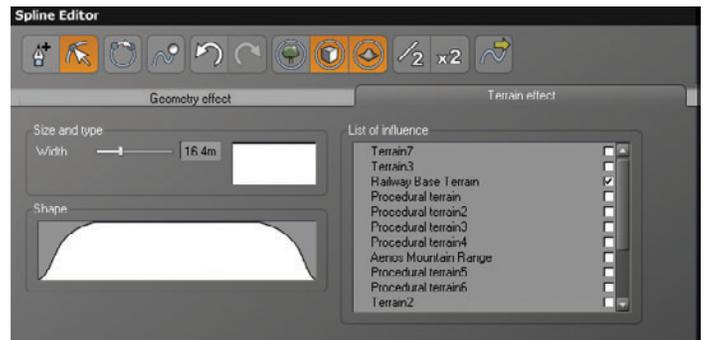
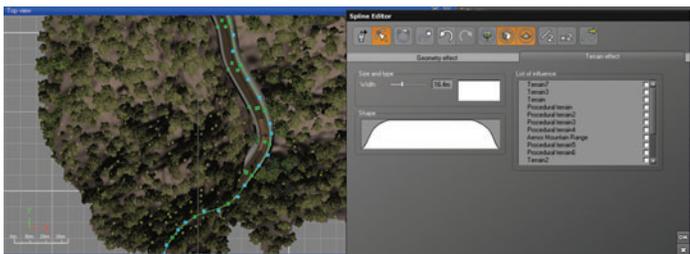


STEP 12 BACKGROUND TERRAIN MATERIAL DISTRIBUTION

Besides a height map, Aenos Mountain Range comes with a flowmap, a wear map and a deposit map as well. For the material distribution a flow map was used. In the material editor the Mixed Material was selected, and first both materials were highlighted in order to see the distribution clearly. Then the function editor of the material distribution was used, connected a texture map and loaded with the flow map. The mixing proportion was set to 50.03%.

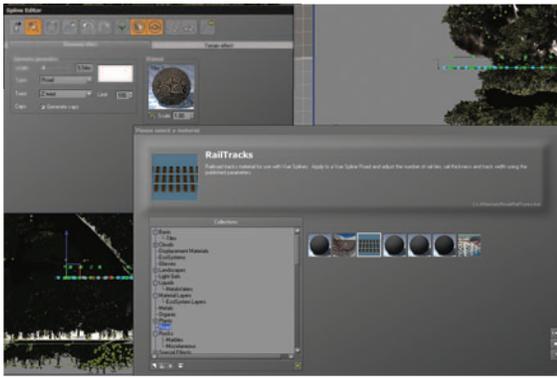
STEP 13 BACKGROUND TERRAIN MATERIALS

For the first material Rock X was loaded, and for the second material, DualSnow from "Rock My World". Since some snow was needed for the tops of the mountains as well, the rock was turned into a mixed material, loaded with the same snow material as the second material, and set with the mixing proportions of 22.52%.

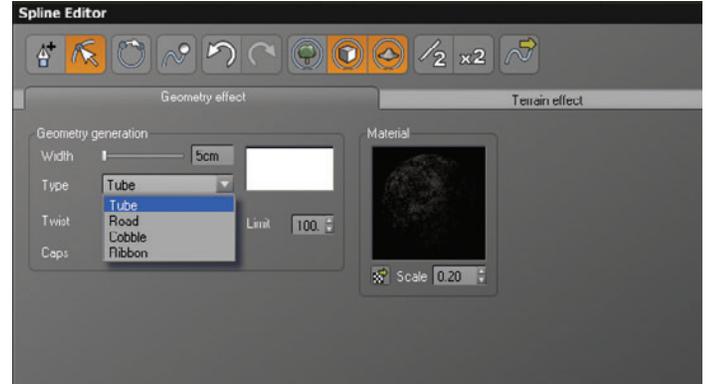


STEP 14 FOREGROUND – THE SPLINE TOOL In this scene another new feature in Vue 10 – the Spline tool – was used. The splines are created by defined points and their connections form the shape of the spline. With Vue 10's spline materials you can create roads, railways, ecosystem effects, terrain effects and objects. In this railway there were four splines and one spline-driven terrain.

STEP 15 RAILWAY BASE SPLINE For the base of the railway a simple road spline was needed that gave the shape of the railway, and a terrain that was influenced by that spline. So, a standard terrain was loaded and the resolution increased in the terrain editor to 512*512. Then reset was clicked on. Then the Spline tool was selected and some points were randomly added onto the terrain, then lifted up from the ground. Lastly, the Spline editor was selected, then the Terrain Effect tab, and the base terrain was picked from the list.

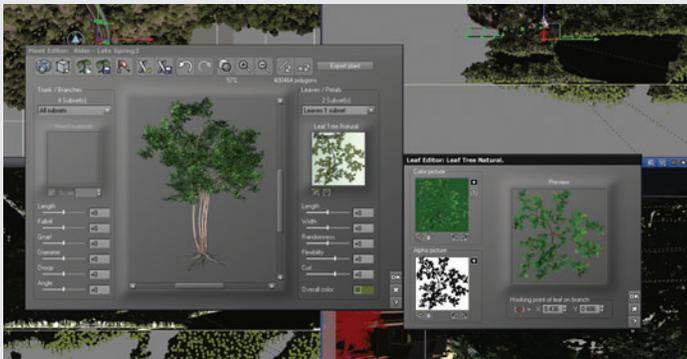


STEP 16 RAILWAY CONTINUED With the terrain effect enabled, the terrain's shape was adjusted to the spline. In the Geometry tab the width was set to 5.54m. It was important to adjust the terrain shape in a wider range, so the width in the Terrain Effect tab was set to 16.4m. For adding the railway, all that was needed was to duplicate the spline and load the railway material from Vue's spline (Road) materials.



STEP 17 MORE SPLINES I decided to add some edges right next to the railway track. The Spline tool was perfect for this too. Basically, the railway's spline was duplicated and the material and the parameters changed. The type was changed to Cobble, and the width to 1.3m. Then this spline was duplicated again, and the points adjusted to the railway track. The screenshot shows how the splines looked together as a railway.

STEP 18 TRAIN & ELEMENTS While the railway track was being built, it was time to add a train and elements such as poles and wires. The train was a free item from 3D Warehouse, and the poles were from a Railway Pack from Cornucopia3D. For the wires splines were also used; the type was switched to Tube with a few centimetres as the diameter.



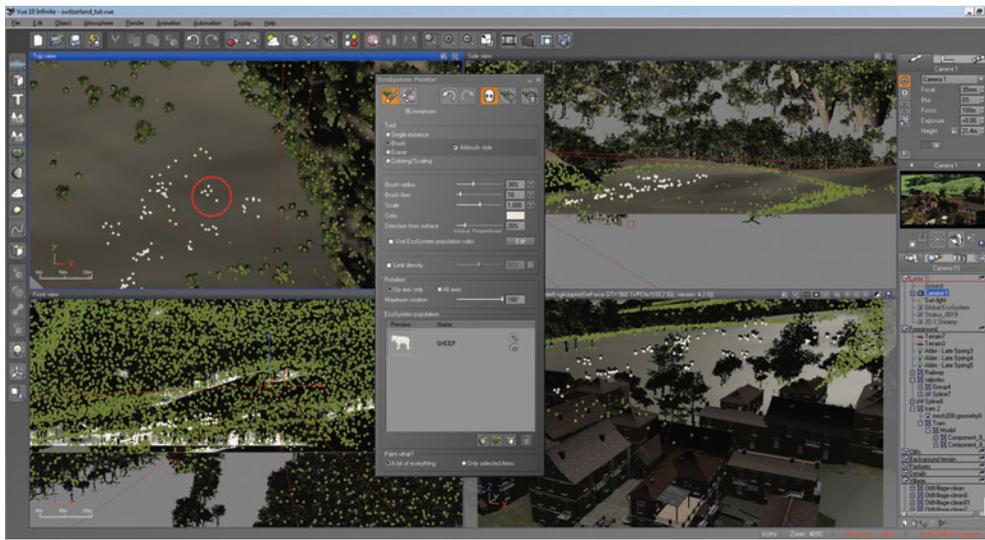
STEP 19 FOREGROUND DETAILS The foreground in this scene is not complicated; some smaller terrains were used around the railway with a single layer of Balsam Poplar ecosystem. Some Alder trees were also placed closer to the camera. Since they were HD trees, they could look good in the foreground as well, although it was important to make sure that the hooking points of the leaves met the branches.



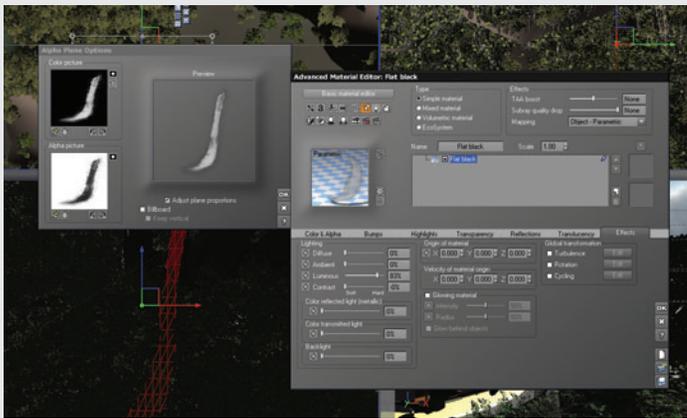
TOP TIP – HOOKING POINTS OF SOLID GROWTH PLANTS

Vue comes with lots of nice plants, but they might have a minor issue: the leaves are floating, because the hooking points of the leaves are not attached to the branches. To fix this, go to the plant editor, click on the small leaf button on the right under the image, and move the red hooking point to its place.

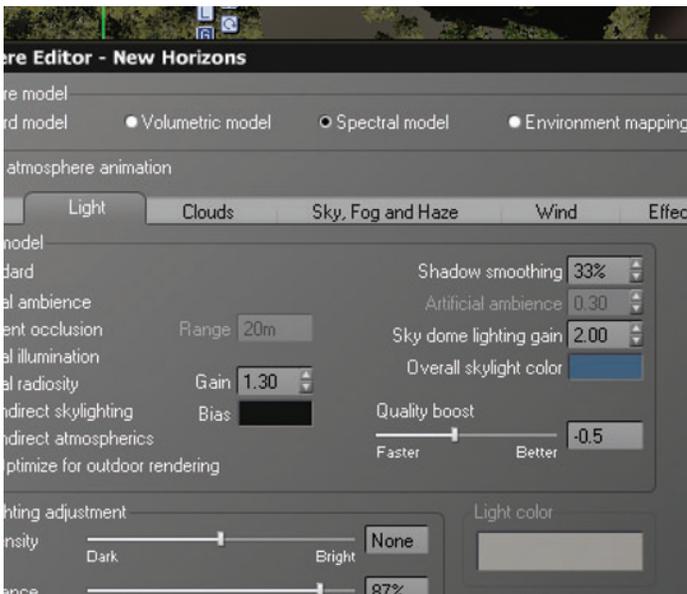
STEP 20 SMALL DETAILS – VILLAGE To add some details to the valley, some houses were placed onto the pasture terrains, just visible through the foreground trees. "Old Village" from RealMesh at Cornucopia3D was a perfect choice with its multiple houses and small, detailed streets.



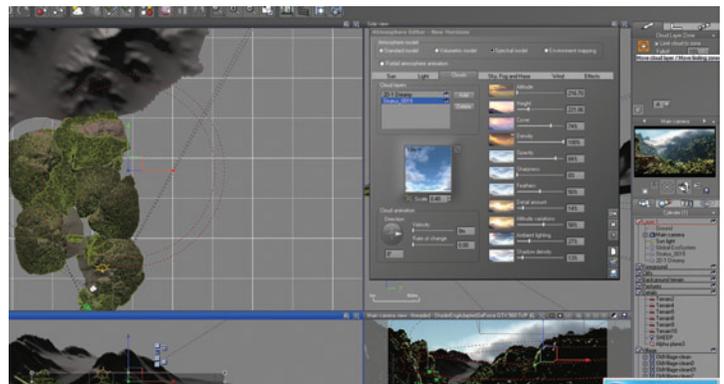
STEP 21 NO PASTURE WITHOUT SHEEP Those fresh green pastures looked nice but would be better if they had some sheep on them. A sheep herd was added as a global Ecosystem. A low-poly sheep model was loaded, the maximum rotation set to 180 degrees and then they were painted onto the meadow.



STEP 22 ALPHA PLANE WATERFALL The waterfall in the scene was a 2D alpha plane. Some really nice alpha images of waterfalls can be found on the internet. One of them was loaded as both colour and alpha picture, with the alpha then being reversed. The Material editor was opened and, in the Effects tab, the Luminous lighting option was set to 83% and all the other options to 0%.



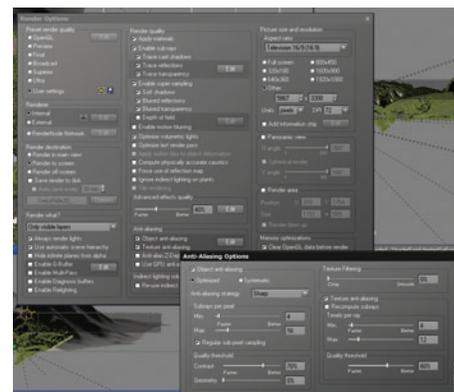
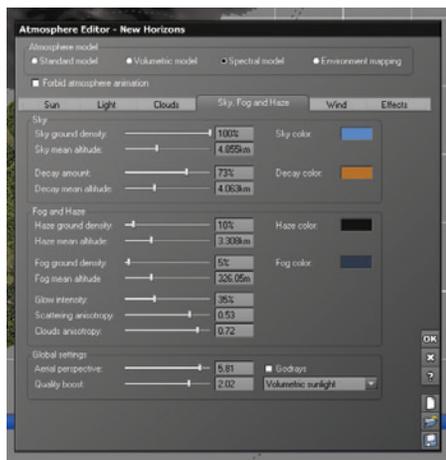
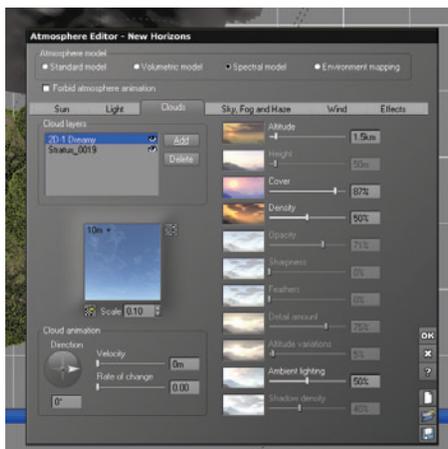
STEP 23 ATMOSPHERE – LIGHTING As a starting point in the atmosphere, the atmosphere called “New Horizons” from the Spectral Atmosphere Pack Vol.1 by D&D Creations was used. This atmosphere’s purpose was to achieve realistic lighting, based on the Global Radiosity lighting model. The light balance was pulled way towards more sunlight (87%) and less ambient light, and the Bias color was set to a dark green tone for the more natural look. The screenshot shows all the lighting settings.



STEP 24 ADDING CLOUDS – ASCENDING FOG The scene had two layers of clouds; a high-altitude sparse cirrostratus layer and a low-altitude ascending fog layer, covering a part of the cliffs. For this layer “Stratus_19” from AsileFX’s free sample cloud pack was used as a starting point. The screenshot shows the settings; the height and feather amount were increased, and altitude and the density were decreased. Since it was needed to cover the whole sky, Localized cloud layer was enabled and the circle was expanded to the valley area.

TOP TIP – INCREASING RENDER SPEED

If your computer is low on resources and you expect longer render times, you can decrease the sky dome quality boost to -0.5 or even to -1. This speeds up the render process.



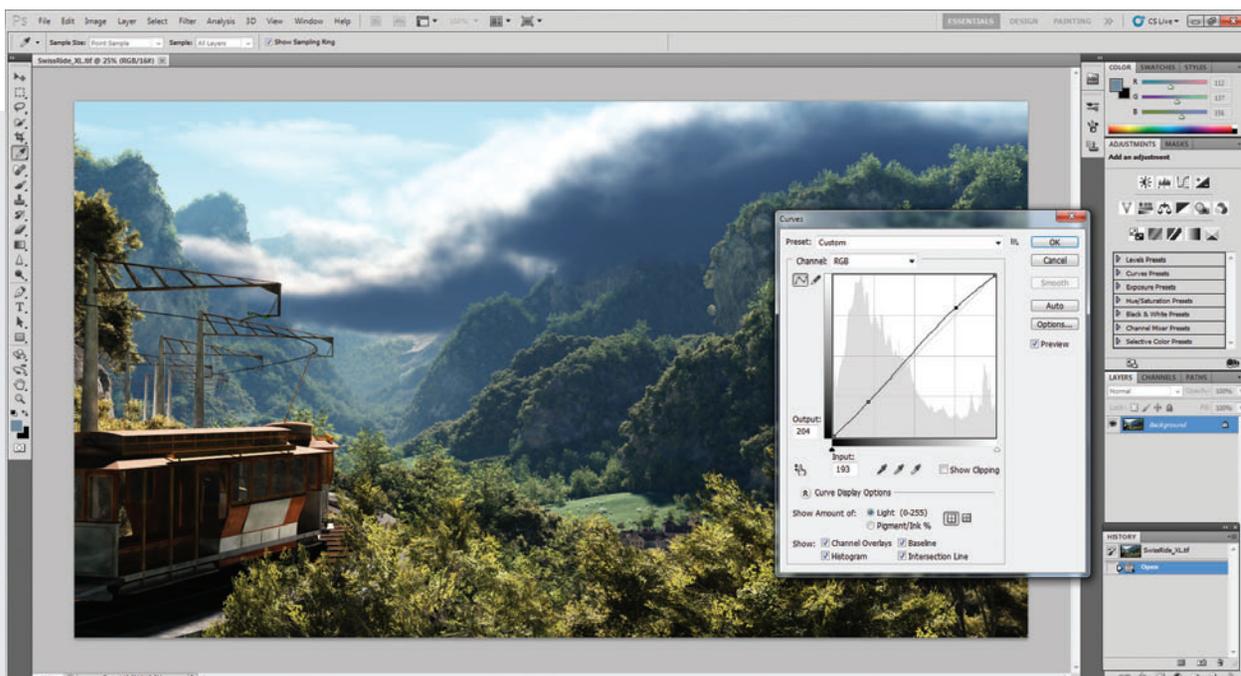
STEP 25 ADDING CLOUDS -

CIRROSTRATUS For the high-altitude cirrus “Dreamy” was used from the fantastic 2D cloud pack “White Magic” from Dick Scherzinger. These 2D clouds are not realistic, but since they don’t require as many complex calculations as regular 3D clouds, they render really fast as well.

STEP 28 POSTWORKING IN PHOTOSHOP When the render was done, it was loaded into Photoshop to make some minor corrections. To enhance the realism, the green colours were desaturated a little, there were some corrections with colour (midtones towards blue), and Levels and Curve settings (Image > Adjustments). To add some extra details, a new layer was created and a little fog added down in the valley with some cloud and fog brushes.

STEP 26 SKY, FOG & HAZE Besides the Lighting, this tab had the key role in achieving a realistic atmosphere. For a natural atmosphere the best option was to set a very dark blue haze colour and keep its ground density at a low (10%) value. For adding depth the Aerial Perspective was increased to 5.81, and the quality set to +2.

STEP 27 RENDER SETTINGS & RENDERING It may sound surprising, but the custom render settings used for this scene were based on the Final preset. The Advanced Effects quality was decreased to 40%, and depth-of-field was not needed, so it was disabled. The key to a good-looking render is the right Anti-Aliasing (AA) settings; with the Sharp AA strategy the settings used were the following: minimum 4, maximum 16 subrays per pixel at 70% quality and minimum 4, maximum 12 texels per ray at 60%. The scene was rendered in 14 hours, at 5867*3300px resolution.



TOP TIP – GETTING THE RENDER QUALITY RIGHT

If you want to render good quality images in shorter time, you need to follow a golden rule: if the render doesn’t look good enough in your preview, it won’t look good after the final render either. If the preview render is too noisy due to low atmosphere quality settings, there is hardly any chance to get the noise completely

removed, even using high Anti-Aliasing settings. If the bump is too strong on your foreground plants, no render settings will change that. Sometimes even a small change like repositioning the sun can fix issues, but before starting a render, you need to fix these little things in your scene. This way you need less AA boost, and your render will be done faster.





THE SWISS RIDE BY DREA HORVATH

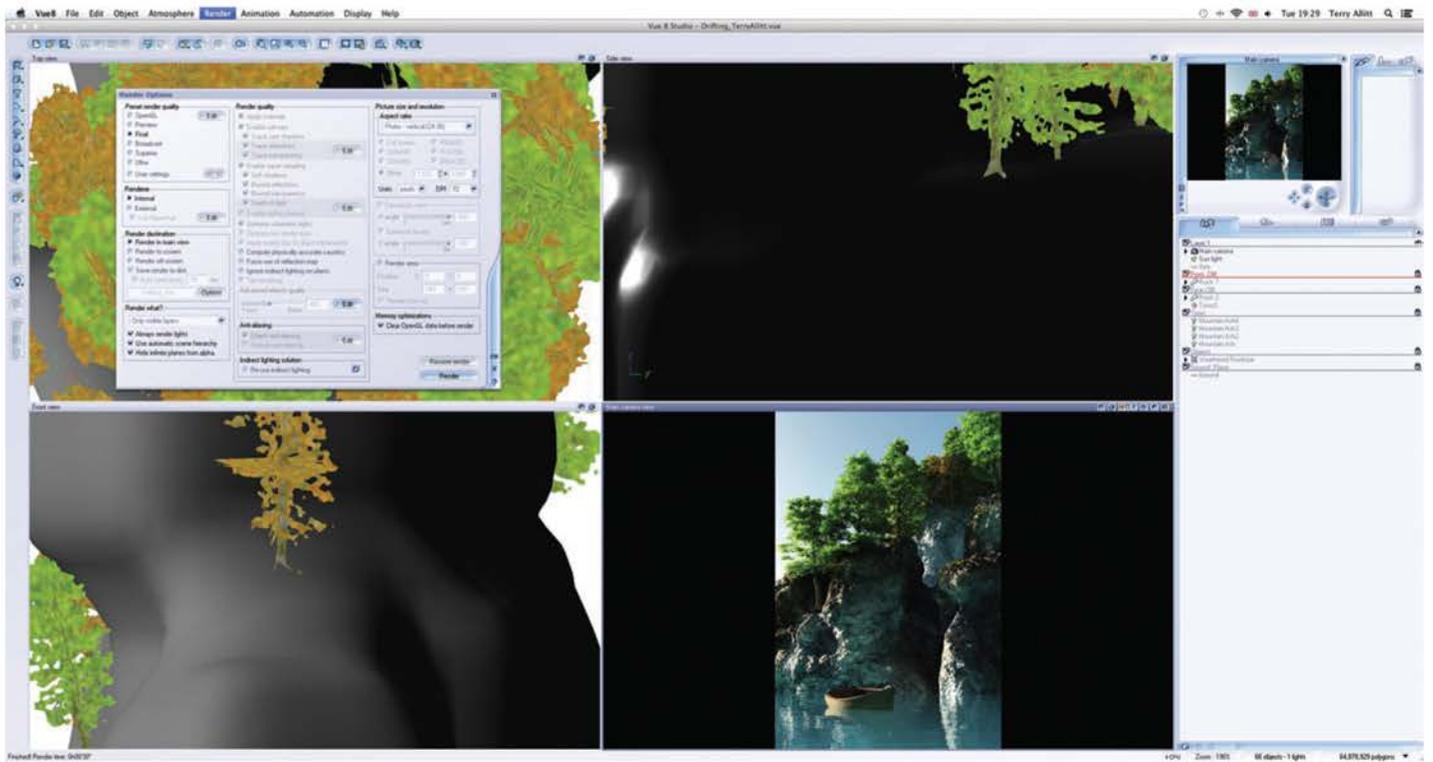
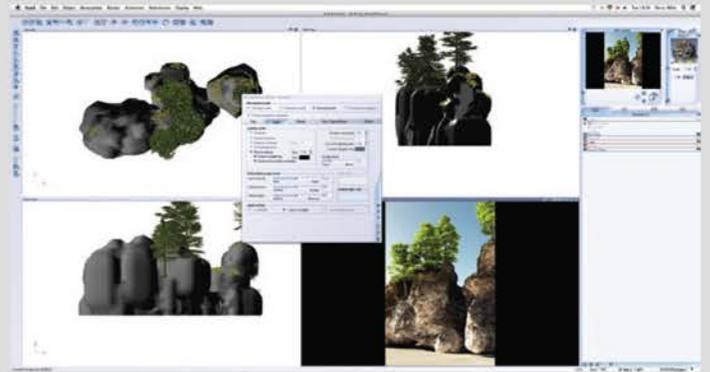
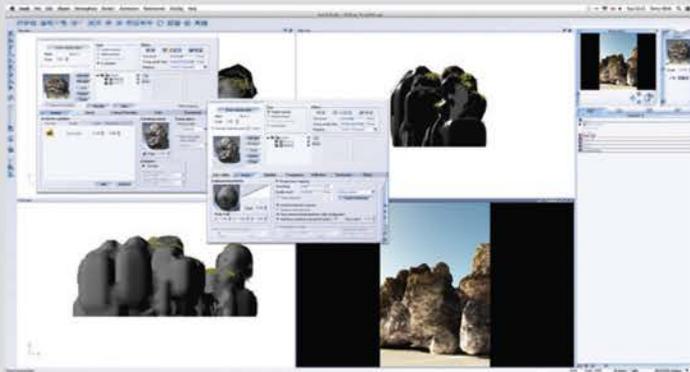


CREATED IN VUE 10



RENDER TIME 14 HOURS

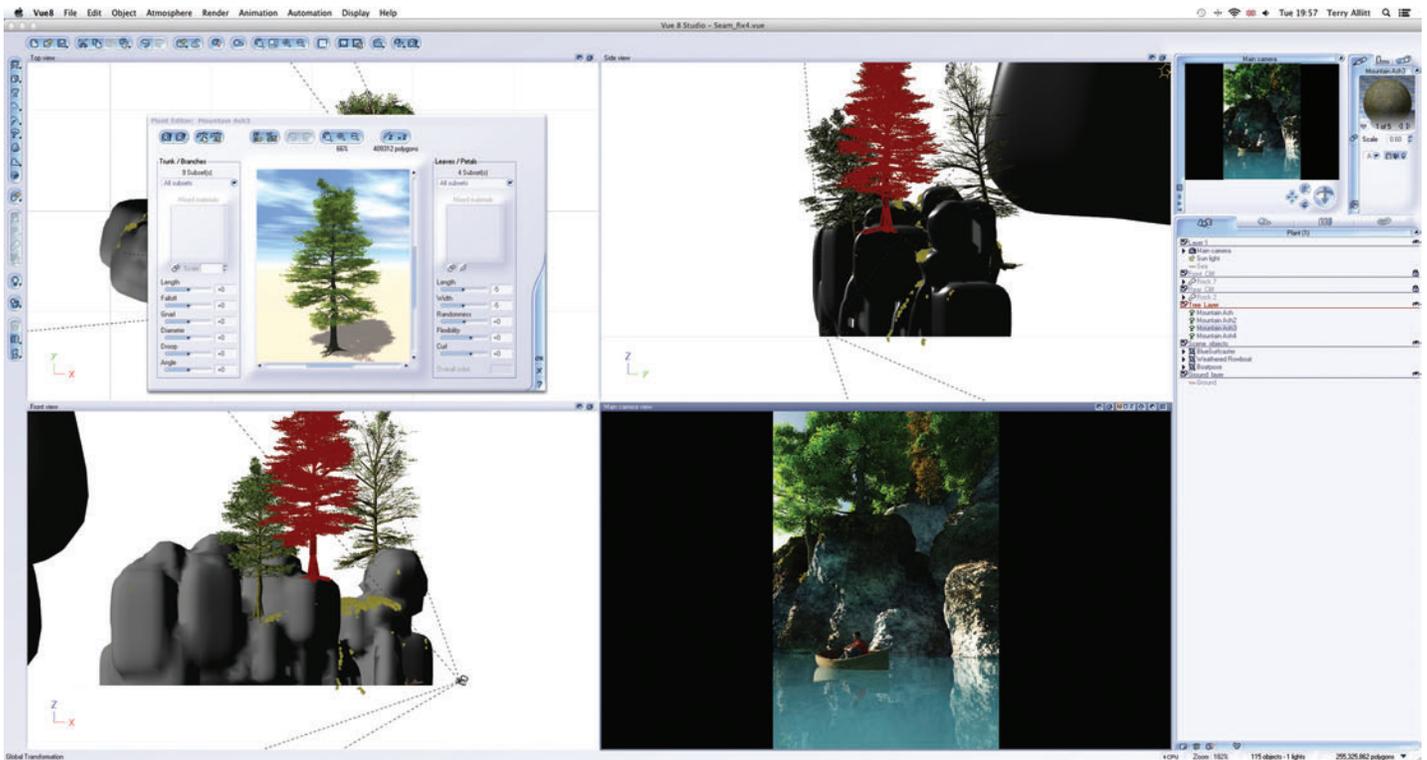
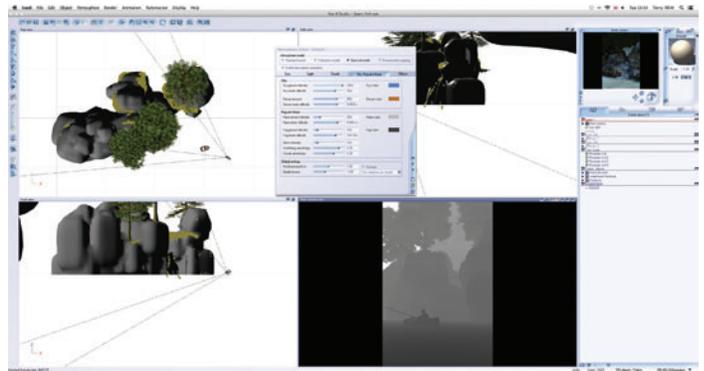
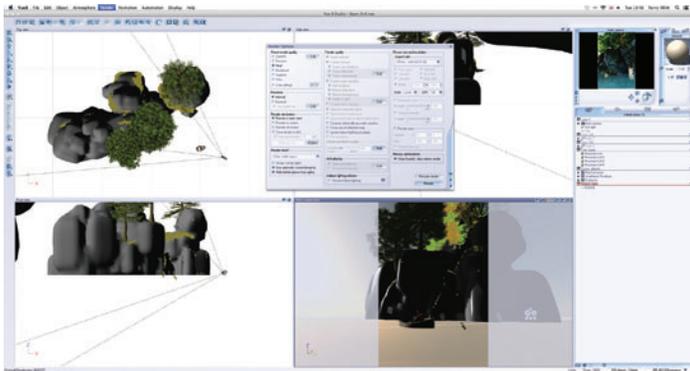




PROJECT	DRIFTING 2
SOFTWARE USED	VUE 8 STUDIO, POSER 8
RENDERING TIME	6 HOURS
ARTIST	TERRY M. ALLITT
COUNTRY	UNITED KINGDOM

SEASCAPES SHOWCASE: TERRY M. ALLIT

“ After creating an earlier version of this image without any characters in it, I decided to give the picture a broader appeal. Using Vue’s ability to move around the 3D landscape, I adjusted the camera settings so it focused in towards the boat. I imported a figure I created in Poser 8 and positioned him so that his thoughts were drifting, as well as the boat. ”

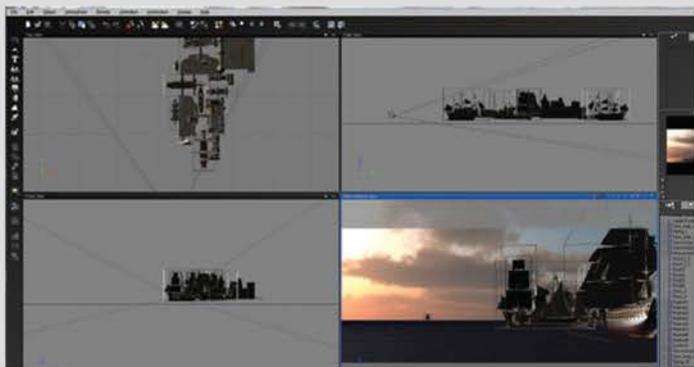




“ I don't usually create images in a medieval style but I had an idea for a harbour picture using old sailing ships. I duplicated and positioned many ships to fill the harbour up so it didn't look empty.

For extra interest I added another ship, but this time at sea that's heading in. The camera angle was set low to give the viewpoint of someone on a small boat, heading out to one of the ships or just rowing around the harbour. The smooth lighting was created with a low sun angle and shadows that were soft. The scene uses spectral lighting for more accurate light tracing. The rays of sunlight were automatically generated with some appropriate atmosphere settings for thick, high clouds. ”





PROJECT	ANNO 1712
SOFTWARE USED	VUE8 XSTREAM
RENDERING TIME	4 HOURS
ARTIST	SYLVAIN CHEVALLIER
COUNTRY	FRANCE

POPULATING AN UNDERSEA WORLD

Paul Nicholls of FactoryFifteen explains how to fill up a dense, object-filled underwater scene complete with V-Ray rendering and a huge Photoshop composition.

THE STORY OF JONAH

Jonah is a film set in the fishing town of Zanzibar about a changing man in a changing town. Aggressive tourism sparked by Jonah's discovery of the world's biggest fish has caused the town and himself to change beyond recognition. The town is now a glowing, tacky, money-making, wildly opportunistic beach resort, which has abandoned its original fishing roots. As an old man Jonah is ashamed of what his old fishing town has become and decides to hunt down the legendary fish and kill it, killing what it represents.

After the artwork was actually completed, a follower on Twitter pointed out the resemblance of the city to a film and artwork series called Tekkonkinkreet. It's not a direct reference since we'd already finished, but you can draw parallels from this. Check out the trailer here: <http://www.youtube.com/watch?v=IWOCf1wNik0>

Jonah was written by Jack Thorne and produced by Ivana MacKinnon. It was made in partnership with Film4, BFI, Channel4, Shine Films, Rubedo Studio and Warren Holder. This is the promotional poster for the film, produced by, and copyright of Factory Fifteen.

PROJECT	JONAH
SOFTWARE USED	3DS MAX, ZBRUSH, VRAY, RAYFIRE, PHOTOSHOP, AFTEREFFECTS
RENDERING TIME	VARIOUS ELEMENTS WERE RENDERED SEPARATELY AND COMPOSITED.
ARTIST	PAUL NICHOLLS, FACTORYFIFTEEN
COUNTRY	UNITED KINGDOM



This is a useful reference for the style of the city. It's a film and artwork series called Tekkonkinkreet.



TOP TIP – SCATTERING OBJECTS

Rather than create and place lots of individual elements, use the PhysX scatter simulation in 3ds Max to do the hard work for you.

MODELLING AND PAINTING

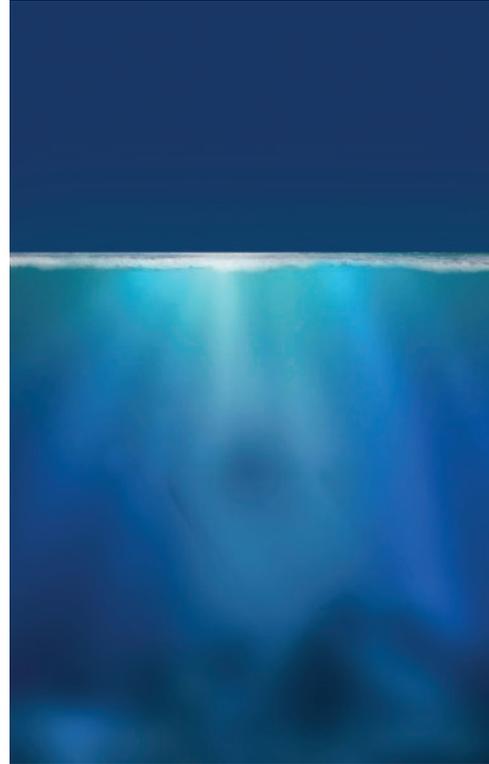
Everything in the image was custom made, which was no small task, so we split the town and the underwater up between two of us and started to build assets. These assets were to be used in a whole series of artwork for the project, not just this one image. The town models took inspiration from places like Shanghai and Tokyo to create an intense array of fish-related signs and models. Some of these were holographic and animated. They were created with basic modelling and texturing in 3ds Max for the most part, with a select few hologram models created with p-flow, Krakatoa and Frost.

The underwater elements were largely created in ZBrush, sometimes from the beginning and sometimes from a basic model in Max. All texturing of the rocks and boats were created in ZBrush. One thing which worked quite well was painting custom scatter maps on the rocks and boats and then using multi-scatter to scatter coral and grass on them. It added a lot of extra detail and covered the less worked up areas of the model or textured areas.

The overall background started as a painting in Photoshop so that there was a general scene to create the composition with. This was built up with extra layers to show light coming through the surface of the water.

3ds Max was used to assemble the basic ship formations. Some stock models were used but they were edited heavily, adding lots of other elements to them like cars and bits of broken metal and wood. I made the model single sided with no thickness in many places as this, when brought into ZBrush, can create great rust effects. In ZBrush they have a new feature called Dynomesh. It allows you to essentially re-topologise the mesh evenly but it also blends parts together. What this does to single sided faces is add lots of tiny holes to create a very realistic rust effect. One of the other features of using ZBrush was to use Z-Spheres to create objects like the coral. You can see a video of the kind of technique used for that here: <http://www.youtube.com/watch?v=6gMwK1T-c9A>

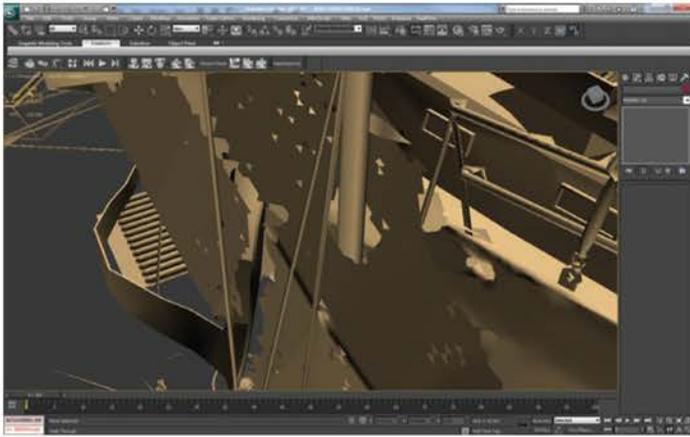
This image was constructed from a pretty huge collection of custom-made models and textures and they were used to create a variety of imagery. I will attempt to go through the fundamental elements of the image's construction including modelling and texturing and post production. I'm not going to talk much about lighting as it was all pretty basic, HDRI setup using CG-skies and an underwater HDRI pack. That involved loading the HDRIs into the V-Ray HDRI loader. I knew a lot of work would be done in post production so I wasn't too precious with the raw render and everything was saved out to EXR 32-bit. ZBrush was used for much of the modelling and texturing so hopefully seeing how it was used will be more interesting than the bog-standard render settings.



The basic scene as painted in Photoshop with extra layers adding light streaks from the surface.



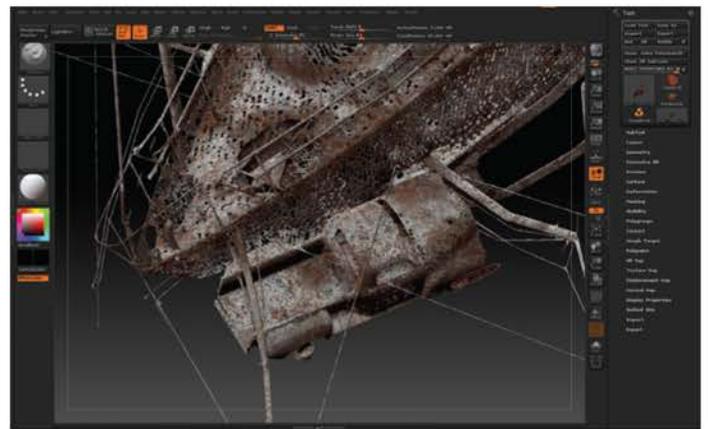
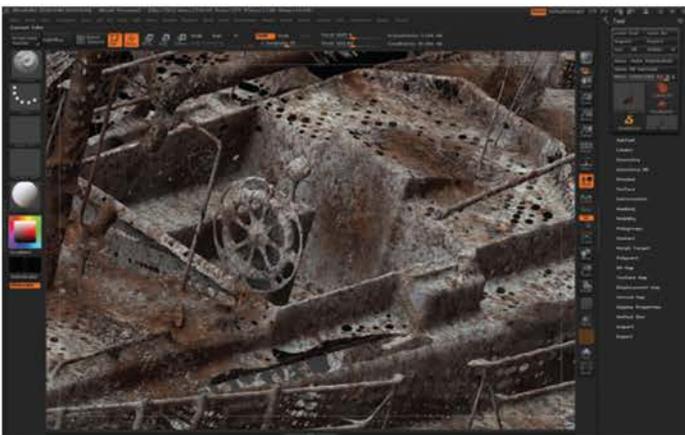
Very detailed textured models were created of sunken ships using both Max and ZBrush.



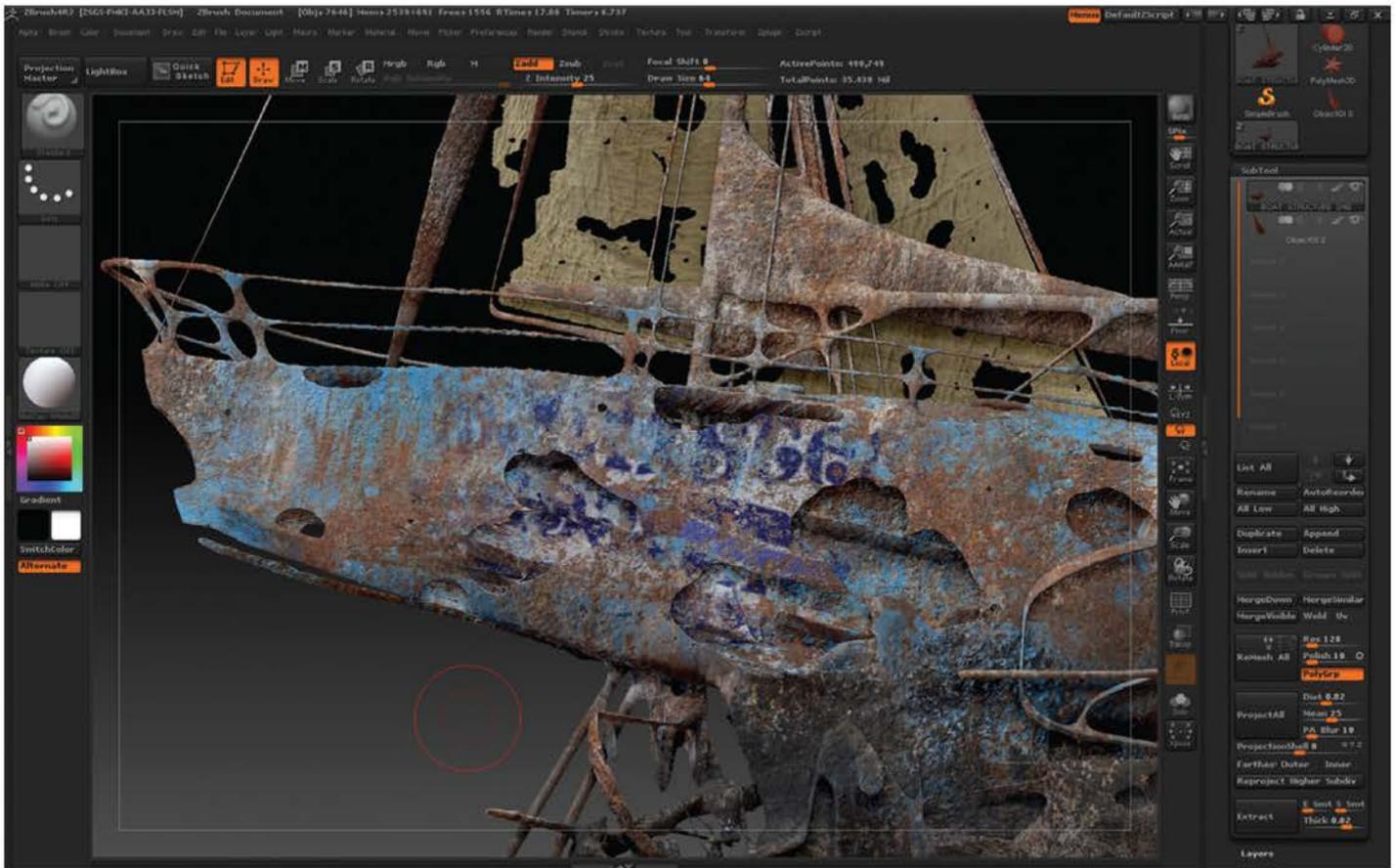
I carved up the model in places to create a decayed old rusted look. Here in Max it is just deleting polys from the model; the effect comes in ZBrush.



The rocks were made completely in ZBrush using Z-Spheres and sculpted from there.



Detail of rust and welded car. By using the specific modelling techniques in Max and ZBrush you can see all the rusty holes.



Another boat in the middle of painting on the details using ZBrush. The same technique was used for anything that needed to look rusty.



Rubbish was modelled to create all the kinds of things you see being dumped in the ocean. It was dropped in piles using PhysX by nVidia.

Here's how the rubbish was scattered on the ground and the pieces of garbage used to populate it.



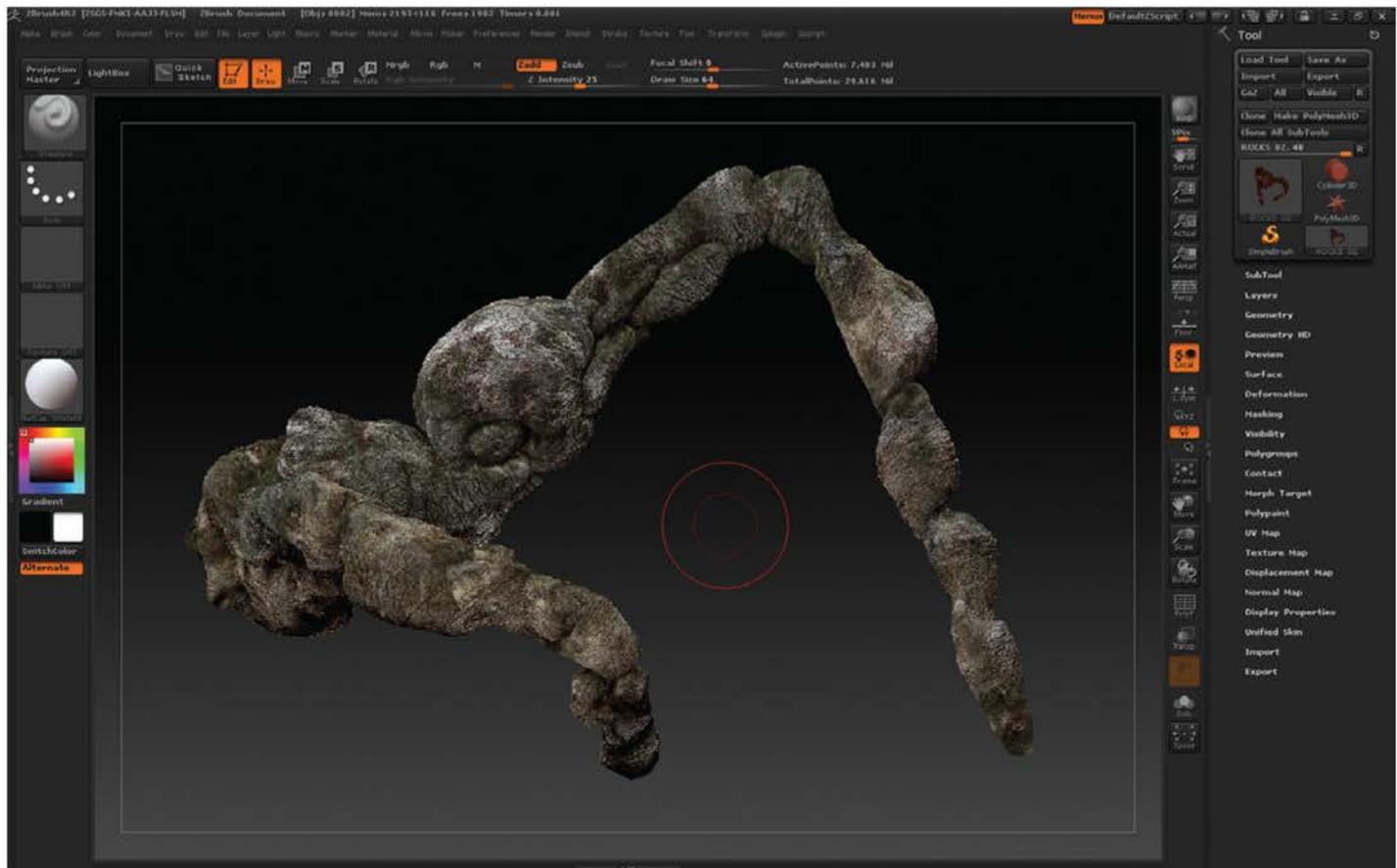
Lots of simple coral shapes were modelled and then the same scattering process was used to populate the sea bed.



Here's a painted ZBrush model of a coral growth. Making the models for these was both easy and quick.

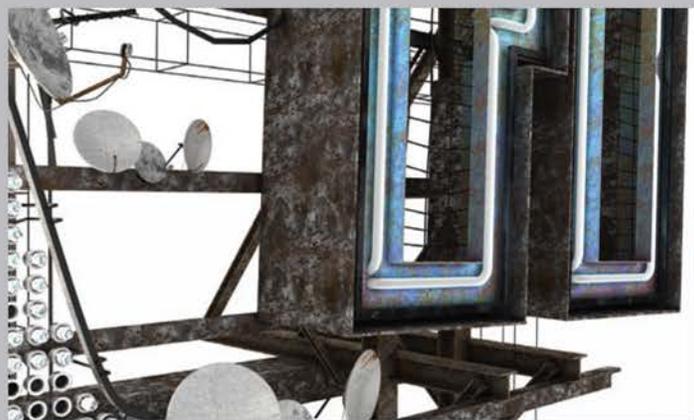
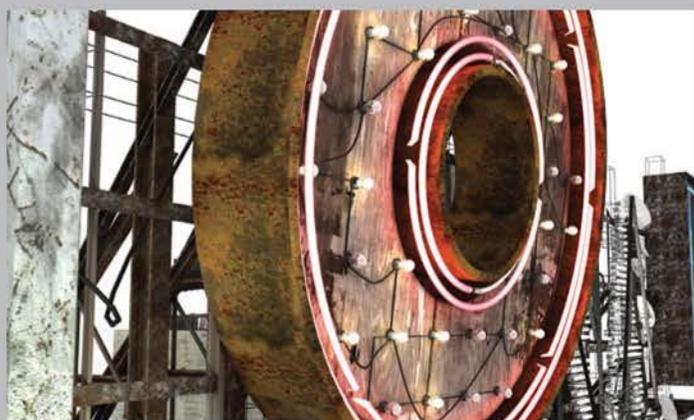
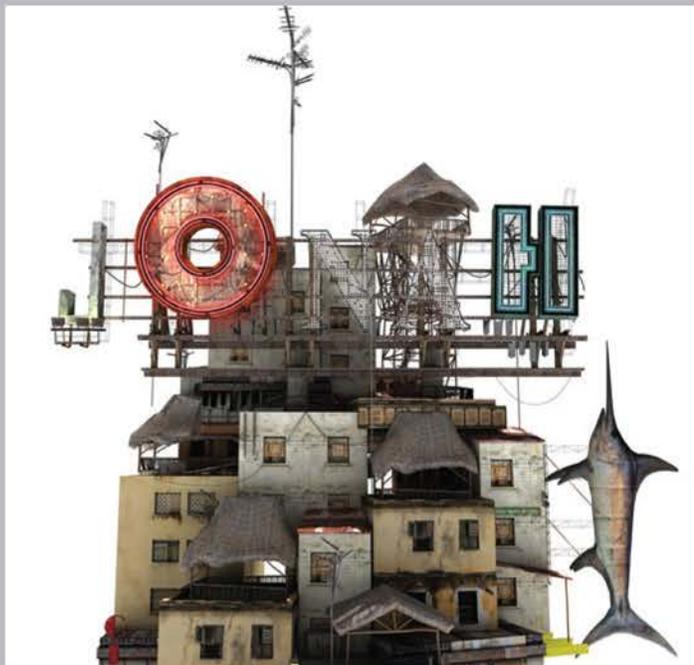


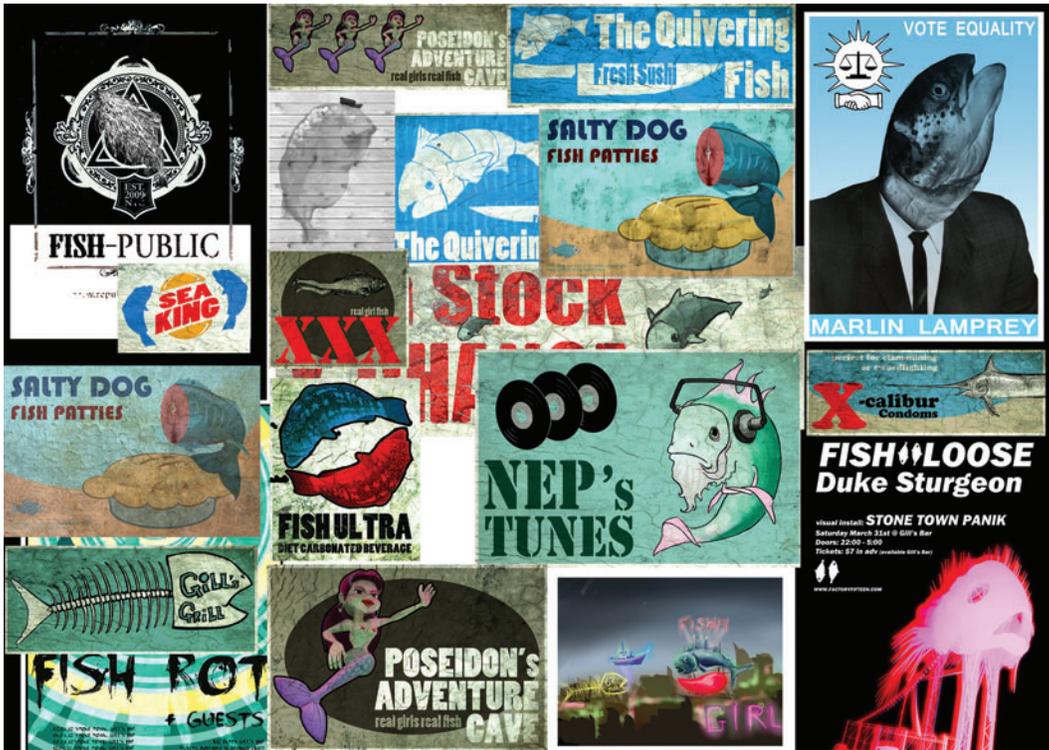
These are some of the models made for the town, including buildings, TV aerials and signs.



One of the main models was a sign with the title JONAH itself. Some other ones feature here as well.

One of the main models was a sign with the title JONAH itself. Some other ones feature here as well.





A lot of fun was had creating and designing a ton of crazy fish-related signs that were used around the town.

Sometimes it's just easier and quicker to use stock images like these ones used for splashes.

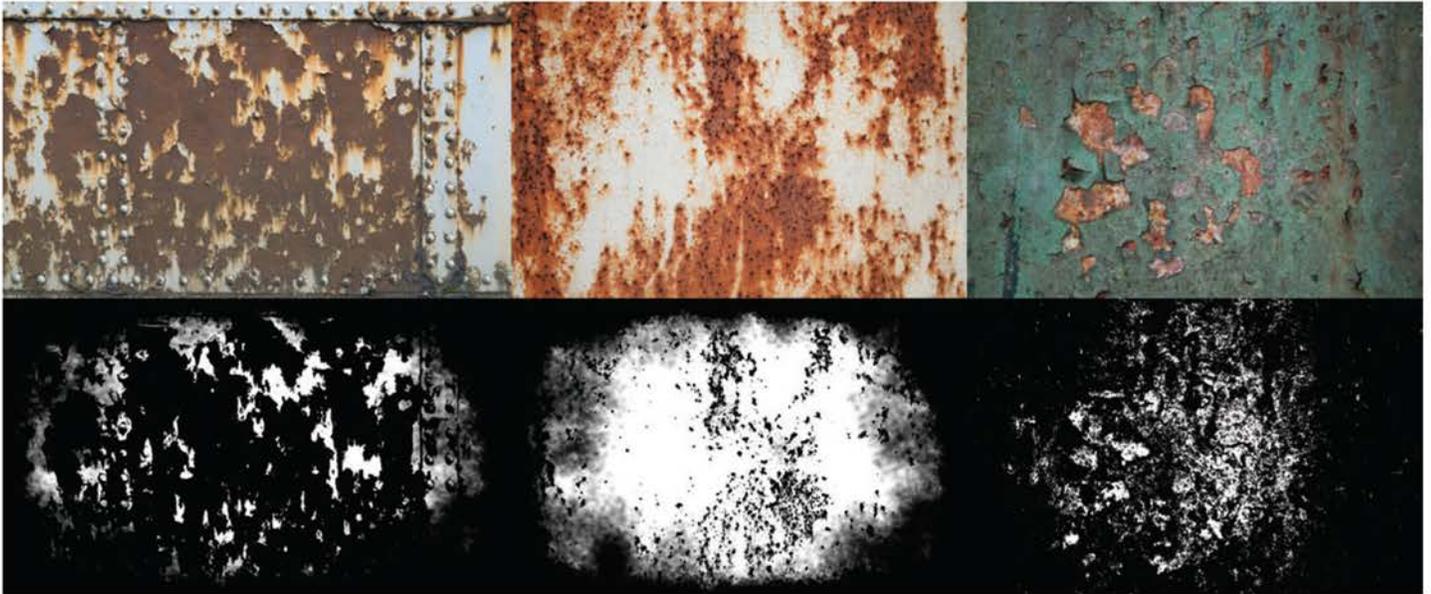


Stock images used for bubbles. Also, custom bubble brushes were created in Photoshop and bubble trails painted.

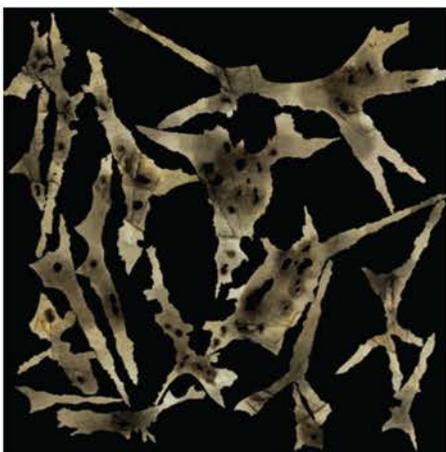
CREATING TEXTURES AND MAPS

ZBrush was used for all organic and boat texturing, exporting the diffuse, normals and displacement maps to be then used in V-Ray. The obvious effect was to create a weathered, aged feel to both the town assets and the underwater elements. We gathered a whole heap of grunge textures and reference photography for how stuff ages underwater, particularly metal. It was quite fun finding old sunken boats

and trying to replicate that effect. When the geometry on a model was too complex to unwrap properly we exported PUV tiled maps. These are actually very efficient maps as they used most of the 8000 * 8000 square space possible. ZBrush creates texture co-ordinates for every square of the model so it remembers where each section goes.



These were some of the textures used to map the boats. A mask was created from the map to paint displacement at the same time.



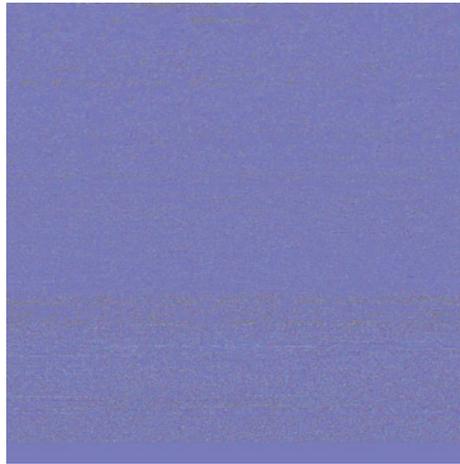
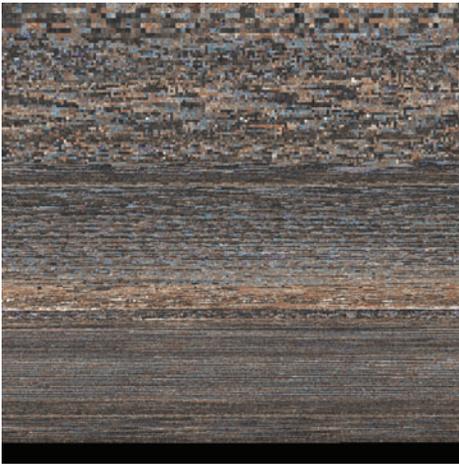
These ragged cloth fragments are an exported, unwrapped texture map of the sails.



The same item, this time it's an exported opacity map for the sails that has been painted separately.



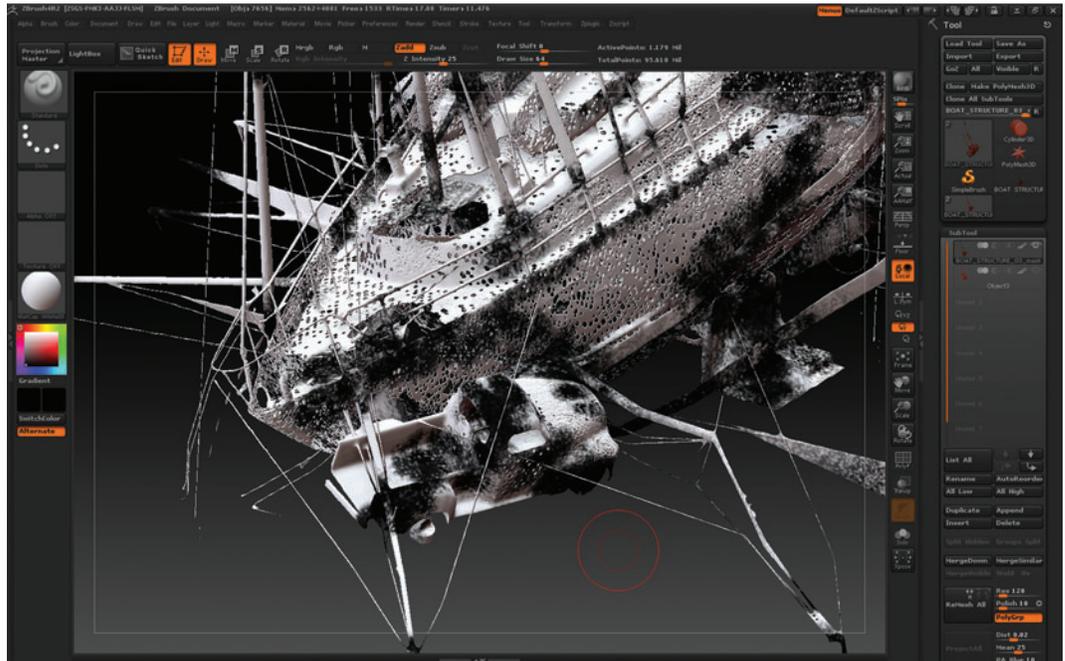
Here's an exported map for a smaller boat. Unlike the big objects these are relatively straightforward to unwrap.



Exported PUV Tiled map. This kind of map is exported when the geometry is too complex to unwrap properly.

A normal map which was created to be used as a bump map in 3ds Max to add some surface relief detail.

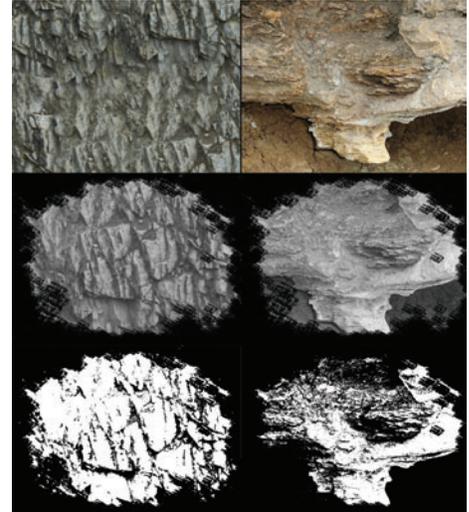
I wanted to scatter both coral and grasses onto the models so I painted a separate black and white mask to be used by multi-scatter.

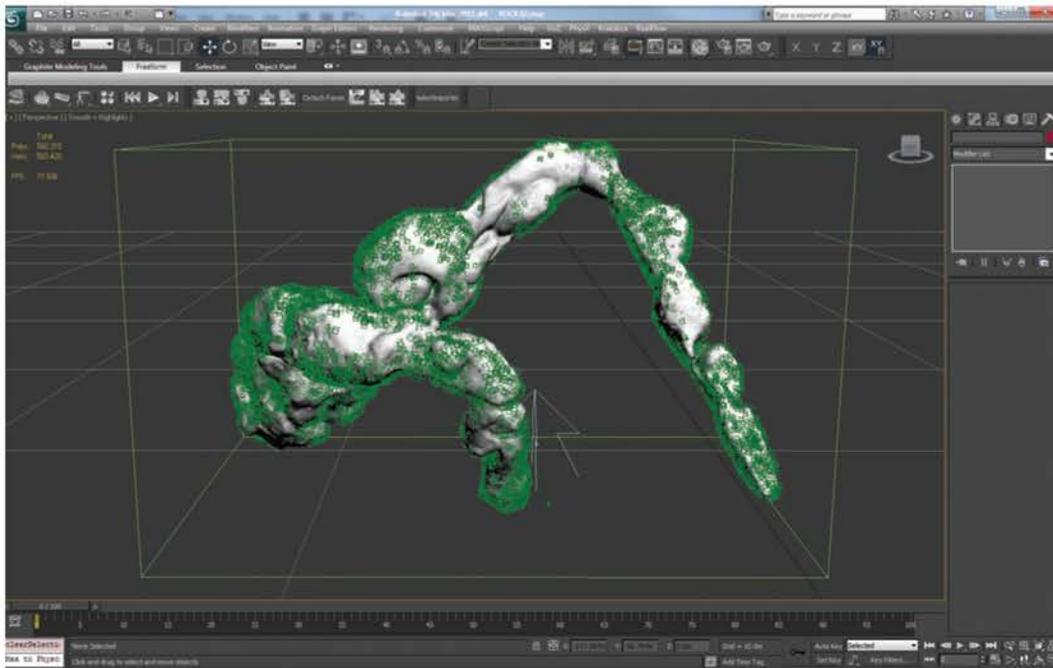


The result of the multi-scattered grass on the textured boat. It made for an effective technique for adding underwater detail.

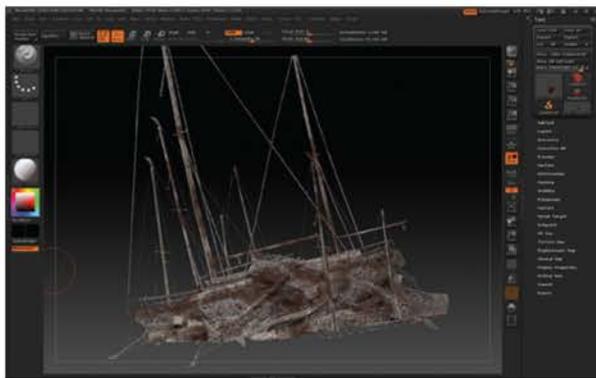


This is where we created brushes in ZBrush by importing Texture maps to paint with.

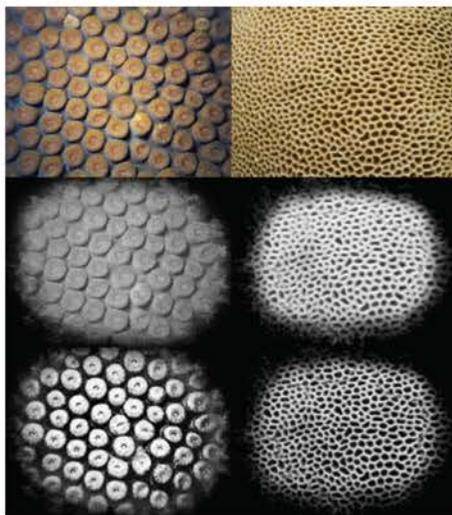




One of the strands of coral. This shows how Multiscatter was used to scatter grass and coral along rocks using the painted mask.



This is the final, textured, boat in ZBrush complete with rust, holes and debris.



Having modelled the coral trees, these were some of the textures used to map them.



Not some kind of alien, but the unwrapped texture of one of the coral models.



This map was painted in Photoshop and then used with the Multiscatter function as a template for where the rubbish should be scattered.

LIGHTING THE UNDERWATER

As this image uses two completely different environments seen in cross-section through the water, four different lighting setups were needed. There's one for the town, one for the water, one for the rubbish under the water's surface and one for the bottom of the sea. Each setup had a dome light with a HDRI and a sun light roughly in the right place as the hotspot of the HDRI.

We got our HDRIs from the CGSkies website which has simply the best resource for HDRIs on the net. We bought an underwater HDRI collection for lighting the underwater. The artwork for this project was created in the spring of 2012, we then went to Zanzibar in June to actually shoot the short film with a small crew and we captured our own HDRIs in all the locations we shot in. We are using these for the visual effects in the movie, which we are currently finishing.

In some scenes I actually created a water surface above the model to create natural caustics and in others I used the caustics generator (<http://www.dualheights.se/caustics/>) to project the effect through a light. In most cases I just used the basic underwater HDRI for the underwater part.



This was a typical underwater HDRI that was used for lighting the scene.

RENDERING AND COMPOSITING

All of the render setups were set as true linear workflow gamma 2.2, rendered in V-Ray using irradiance map and light caches as the Global Illumination and Linear Multiply for the colour mapping. The displacement settings were optimised using the V-Ray displacement modifier and the usual passes were rendered out. Everything was rendered separately and composited in a huge 10k comp in Photoshop.

Firstly all the underwater elements were added together and colour corrected. Then the above-water items were added and the original sky from the reference photo was replaced. The tacky sign-filled town was added near the end. The raw render was actually made for a separate image of the town but it was quicker to incorporate into this image rather than re-positioning and rendering again. I cloned and changed the render to fit the panorama later on.



Raw render of the sunken boats and rock structures, surrounded by sunken rubbish.



A section of what the rubbish looked like after rendering and post work was finished.



A section of render for the scattered grass after post production. The undersea effect is quite pronounced now.

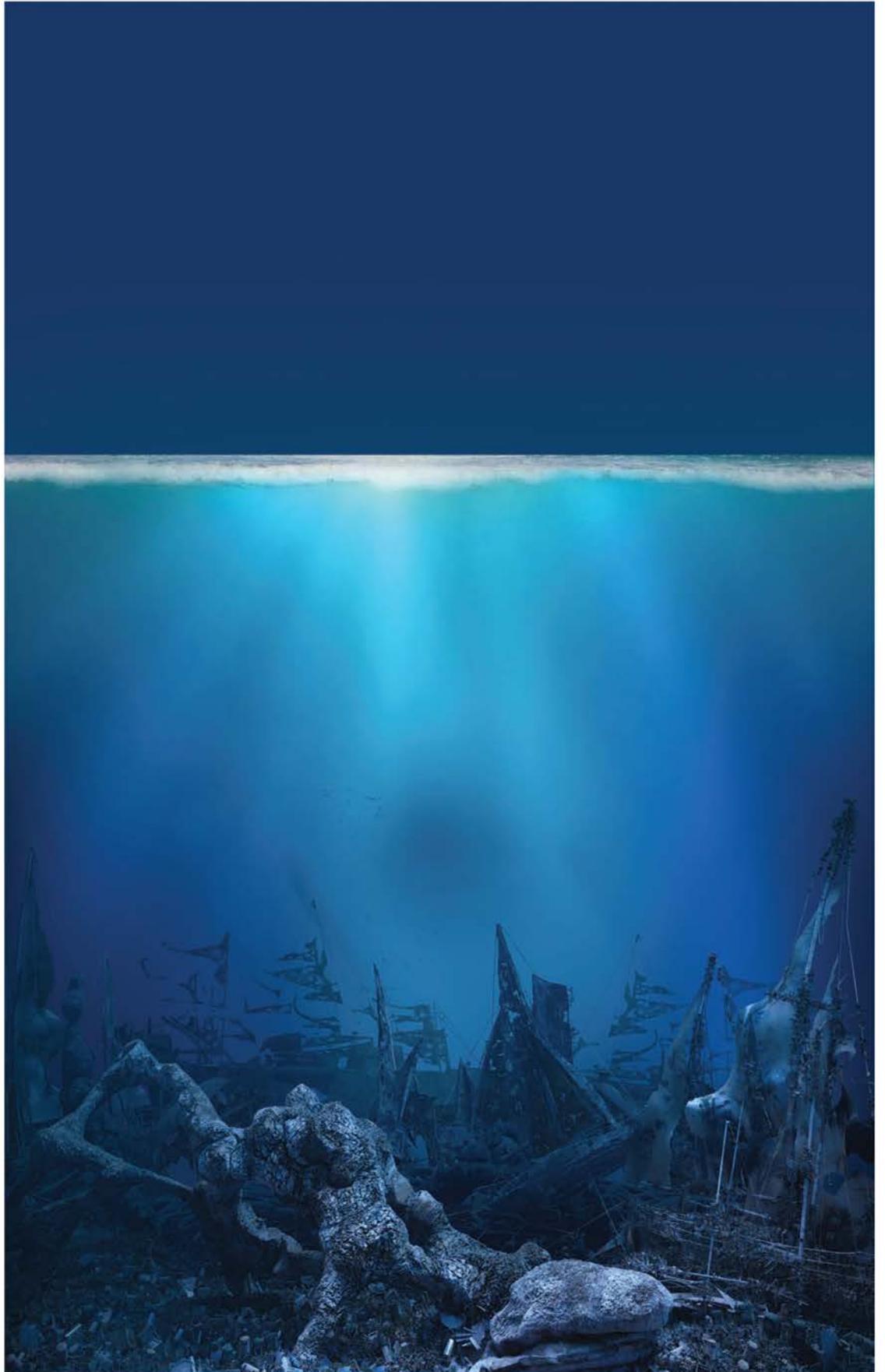


Here's the scattered coral over some of the rocks after all the post production editing.



Here's the bottom of the sea render with ZDepth integration for depth-of-field effects.

At this point colour correction has been applied and this is the composition of the layers so far.





The base photograph of the existing area in Stonetown (Zanzibar) added for reference of tone and water.



Here the flat, lifeless sky has been replaced with one with more colour and tone.



Some animated models of the future signs that were designed using Max, and p-flow, Frost and Krakatoa.

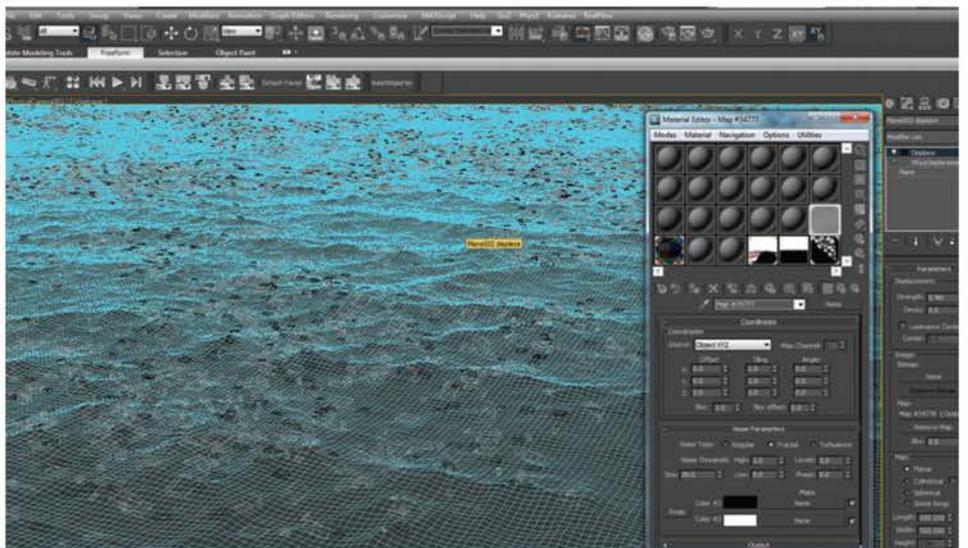
Rather than recreate the wheel, lots of the elements in the city were copied and cloned to fill out the skyline



Now the rendering of the sea and rubbish on the surface were added to the scene.



Sea created with a blended water material and displacement using fractal noise.





Once set up, the sea surface was given a render test with rubbish floating around.



It started to come together when photos of the main character and lots of other boats were added.

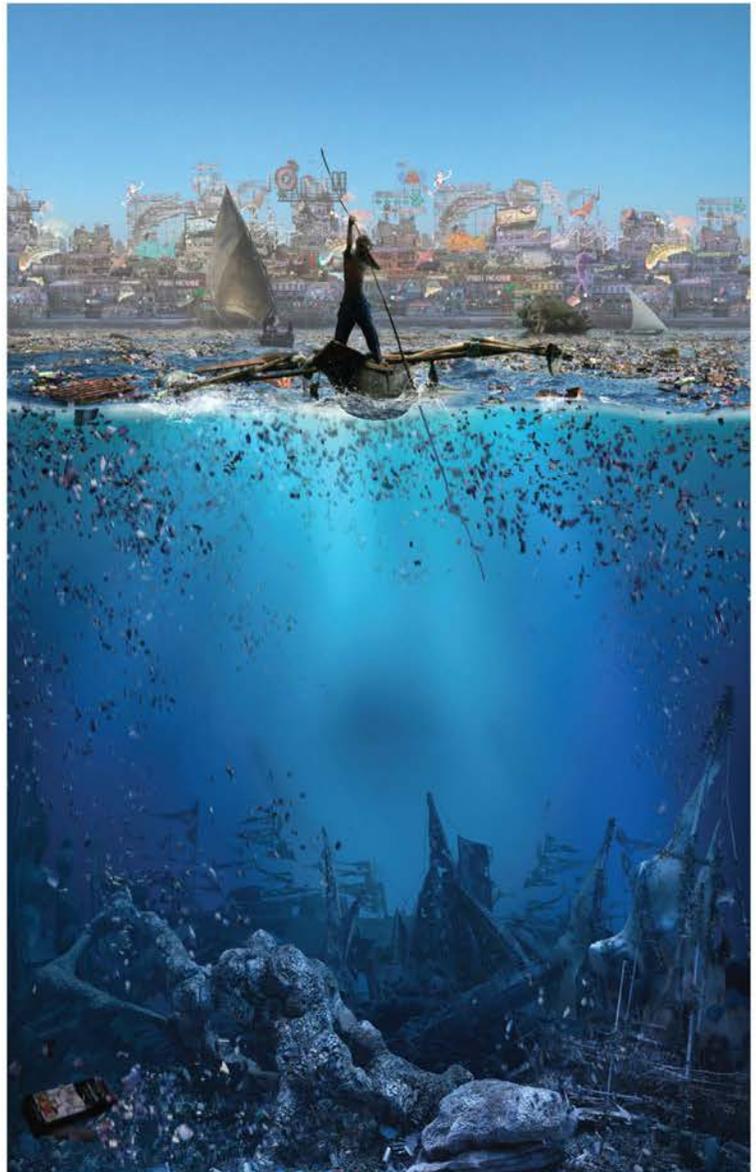


At this point all the main elements are there in the composition, just the underwater chaos was next.



Next is a render test for simulating the underwater scattering of the rubbish using PhysX.

The image was almost finished when dropped rubbish was added to the main underwater area.





JONAH BY PAUL NICHOLLS, FACTORY FIFTEEN



3DS MAX, ZBRUSH



VARIOUS COMPOSITED PASSES

RIVERS AND LAKES SHOWCASE: DOMINIC DAVISON

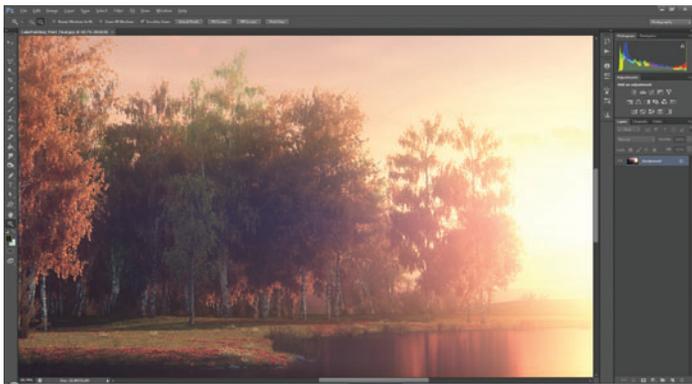




“ This scene continues a series of images featuring rural and country environments. It was created specifically for a jigsaw / puzzle company, and required as much detail as possible. That meant gathering together around 50 different 3D models, in particular plant and flower objects. Initially it included a small garden instead of a small lake, but the water added a nice reflection of the sky and so was used instead. ”

PROJECT	COTTAGE BY THE DALES
SOFTWARE USED	VUE 9 ESPRIT
RENDERING TIME	8 HOURS
ARTIST	DOMINIC DAVISON
COUNTRY	UNITED KINGDOM

“ This piece is a revision of a commercial work I did. I wanted to push the colour and atmosphere into the realm of the surreal. I really enjoy working on natural scenes in 3D. Something about the challenge of recreating nature with the generally rigid tools of 3D art is fun to me. ”



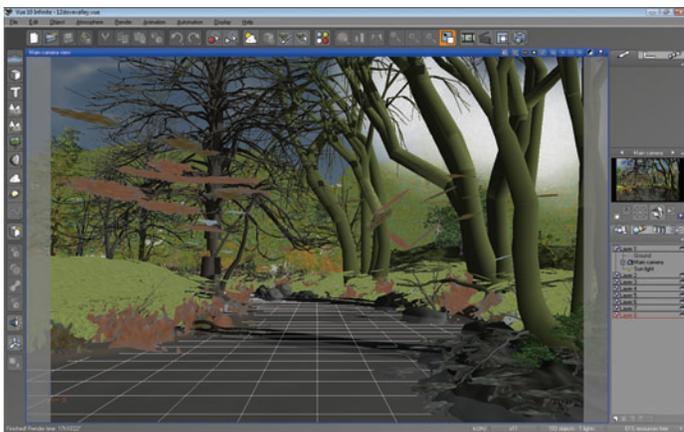
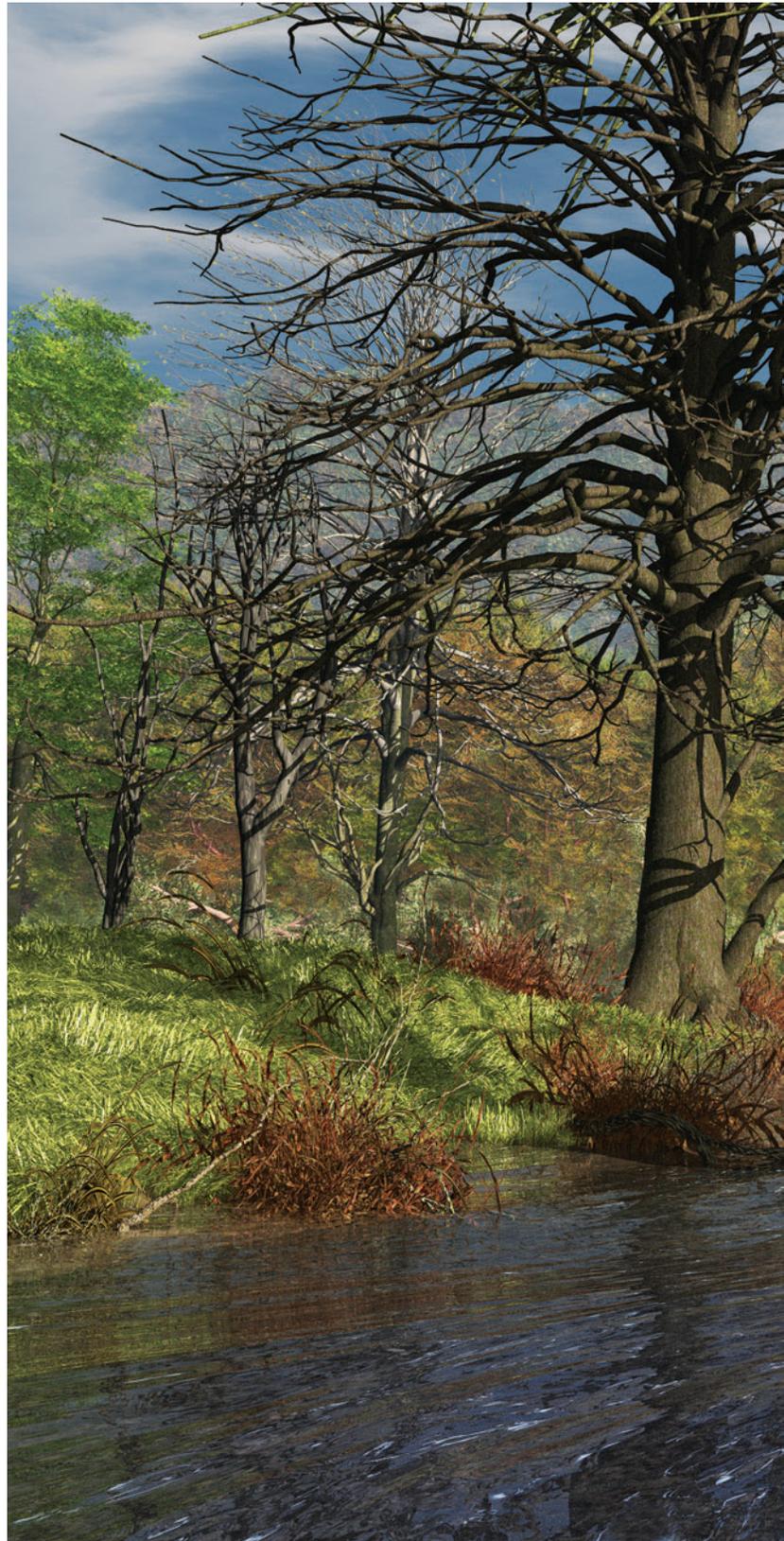
PROJECT	MYSTIC LAKE
SOFTWARE USED	3DS MAX 2012, VRAY 2, PHOTOSHOP, FOREST PACK PRO
RENDERING TIME	12 HOURS
ARTIST	JONNY ALLEN
COUNTRY	UNITED STATES



RIVERS AND LAKES SHOWCASE: GILL BROOKS

“ The Dove Valley and Dovedale in Derbyshire, England is one of the most beautiful places I've been to. I used one of my photographs as inspiration and reference for this image. The photo was taken on a crisp winter's day and I wanted to recreate that feeling, which I think I pretty much managed to do. Very little post work was required. Just a little overlay to make the water bluer and some adjustment to the levels. ”

PROJECT	DOVEDALE
SOFTWARE USED	VUE 10 INFINITE, PHOTOSHOP
RENDERING TIME	17H 10M 22S
ARTIST	GILL BROOKS
COUNTRY	ENGLAND





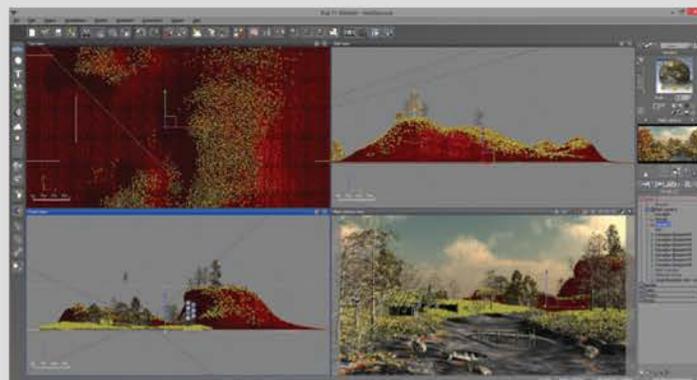
RIVERS AND LAKES SHOWCASE: VLADIMIR CHOPINE



PROJECT	AUTUMN'S REDEMPTION
SOFTWARE USED	VUE XSTREAM 11, PHOTOSHOP CS6, FILTER FORGE 3
RENDERING TIME	86 HOURS ON INTEL CORE I7 (3930MHZ, 12 CORES)
ARTIST	VLADIMIR CHOPINE
COUNTRY	USA



“ The inspiration for Autumn's Redemption was the beauty of autumn in Russia and the lovely ruins of an old country style of life being reclaimed by nature rather than urban sprawl. Also, I love fall colours. The biggest challenge in this project was that it was created for video tutorials. As a result it couldn't contain complicated techniques and had to be easy to follow by other artists.



YOUR GUIDE TO LAKES AND STILL WATERS

Daniel Seebacher reveals the secrets behind creating a scene with large expanses of water and a dramatic sky

BACKGROUND INFO

Daniel is a huge fan of calm, serene landscapes which feature water prominently. With Departure he wanted to create a scene that conveyed a sense of endlessness and the possible beginning of a long journey. He aimed for a photographic yet dreamlike look which is something that Vue does very well. The biggest asset to using Vue though is the Ecosystem which allows millions of polygons to be used

as instanced objects, without crashing the software. The introduction of Spectral Atmospheres 3 in Vue 8 also helped to achieve a distinct lighting of the sky. Departure was originally set up and rendered in Vue 8 Infinite, but it was revisited and tweaked then re-rendered with Vue 10 Infinite.



↗ The kind of colouring in a sunset that Daniel was aiming for in his image



↗ A typical still water lake scene of the type that inspired the 3D image



← Finished image

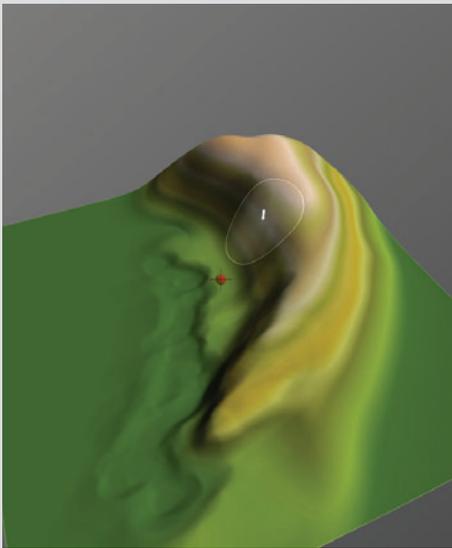
PROJECT	DEPARTURE
SOFTWARE USED	VUE 10.5 INFINITE, PHOTOSHOP CS6 EXTENDED
RENDERING TIME	98 HOURS
ARTIST	DANIEL SEEBACHER
COUNTRY	GERMANY

MODELLING THE TERRAINS

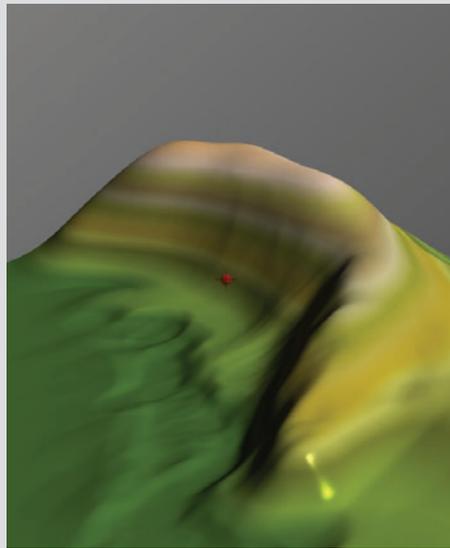
The scene was composed of one foreground terrain and three background terrains which together made up the island with the castle. Speaking of the latter, five different models were used for this image which are all available at Cornucopia3D.com: the Weathered Rowboats (\$5.60 locked/\$8.00 unlocked), the Medium Length Pier (\$0.75), the Wharf Light #1 (\$0.95) and the Tyrol Castle (\$14.95 locked/\$22.13 unlocked).

The process started by creating a standard terrain in Vue in a new and empty scene then opening it in the terrain editor by double-clicking on

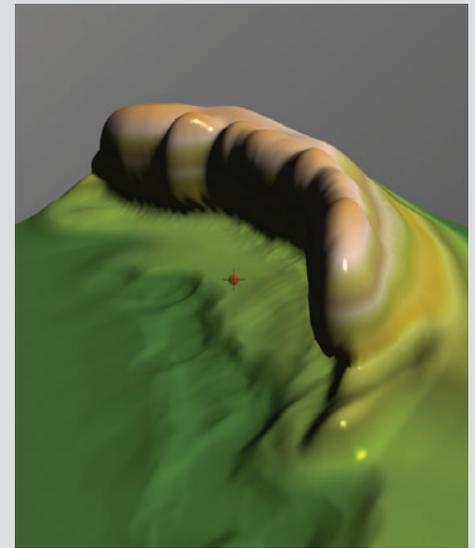
it. The Reset button was used to create a flat terrain, rather than the default mountainous one. The Raise brush was selected and used to create a mound which started in the upper right corner and slowly curved about halfway to the left. Since most of the terrain was going to be covered by water and plants the terrain resolution did not need to be increased. Then, the shoreline was created by painting with a low flow along the edges of the mound. The brush was inverted to lower the shoreline at several places to make the height look more random. This ensured that the ecosystems wouldn't be at exactly the same height later on when the terrain was populated.



This is what the general terrain shape is supposed to look like



The same terrain as above viewed from a different perspective before



Now after the ridge has had 3D sculpting so that there's a more defined shape and the overhang

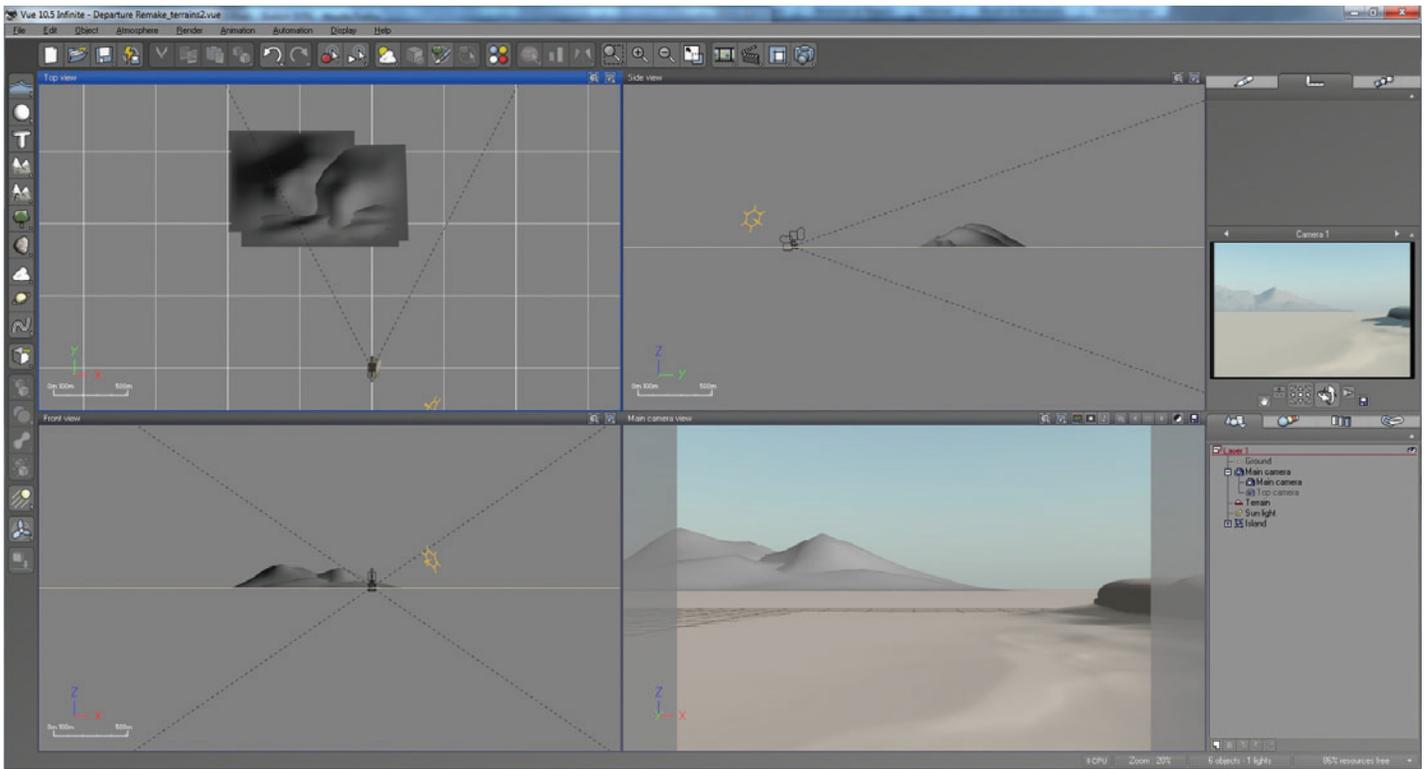
The next stage was to introduce some overhangs with the 3D sculpt brush. Freeform was checked in the Brush Editor Palette so that the terrain could be freely sculpted in any possible direction. The brush was

then used to change the upper edge of the mound into an overhang. It didn't matter if the proportions appeared stretched or squashed after modelling as the terrain was going to be resized anyway.

KEEPING AN EYE ON THE POLYGON COUNT

When sculpting with 3D brushes in Vue, the software adaptively decides how many polygons are necessary for the newly sculpted geometry in order to maintain enough detail. This means that smaller brush sizes automatically create more polygons because smaller sculpted details require more subdivisions than larger ones, so keep that in mind when sculpting with 3D brushes.





↗ The scene with the correctly placed foreground terrain showing the ridge and the sweep down to the water

Too many polygons can slow down the entire software significantly and even make the OS hang up if the computer is not powerful enough to handle the scene. As this terrain would be covered fully with plants it didn't need a high polygon count. So, a large brush size was used for sculpting to keep the polygon count reasonably low. At the last count, this scene used 131,000 3D polygons which wouldn't pose a problem on most computers.

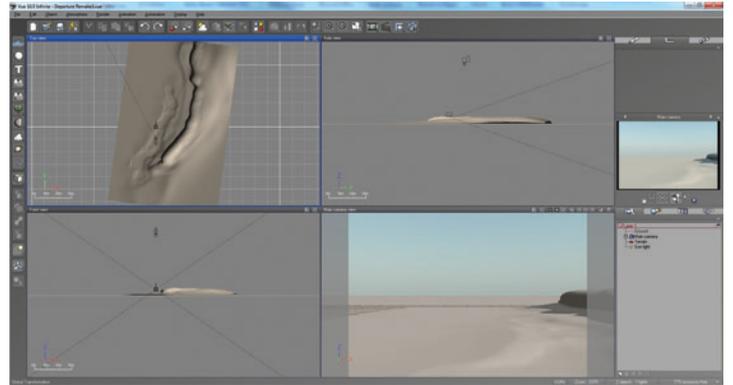
That was all for modelling in the terrain editor, so it was closed and the terrain in the scene itself was selected. This was resized to about 90 * 90 meters. Then it was stretched along the Y-axis, squashed down on the Z-axis and place it about halfway below the camera with a slight rotation to the right. The camera was raised to about two meters. The screenshots show the correct terrain proportions and placements.



↗ The proportions of the terrain

→ The final placement of the terrains to create an island in the background

For the background terrains three standard terrains were added to our scene then stretched, resized and rotated until they made a pleasing formation. They were placed in the background and grouped together to create the distant island.



This is the scene as it stood with the basic layout and the objects. Then it was time to add materials and Ecosystems

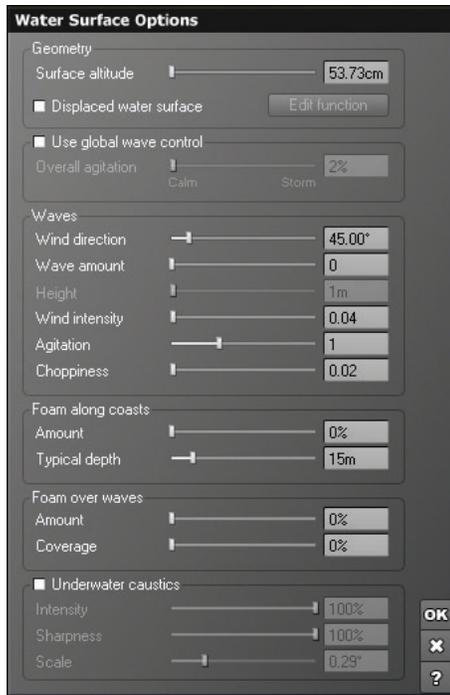


PLACING THE MODELS

Now that the scene setup was complete it was time to add objects to it. All the models mentioned at the beginning were used. The castle was placed in the middle of the island, the wharf light at the top of the mound, the pier to the right and the boat right next to it. Notice that the wharf light loads with a ready-made spotlight. The boat and

oars were rotated to a more natural position. Vue itself comes with a couple of fence models so one of these was placed along the edge of the mound. At the end, a sea plane was added to the scene and the shoreline was raised slightly to show a little more of it. Then it was time to do a test render to see how it was all looking.

USING MATERIALS AND THE ECOSYSTEM



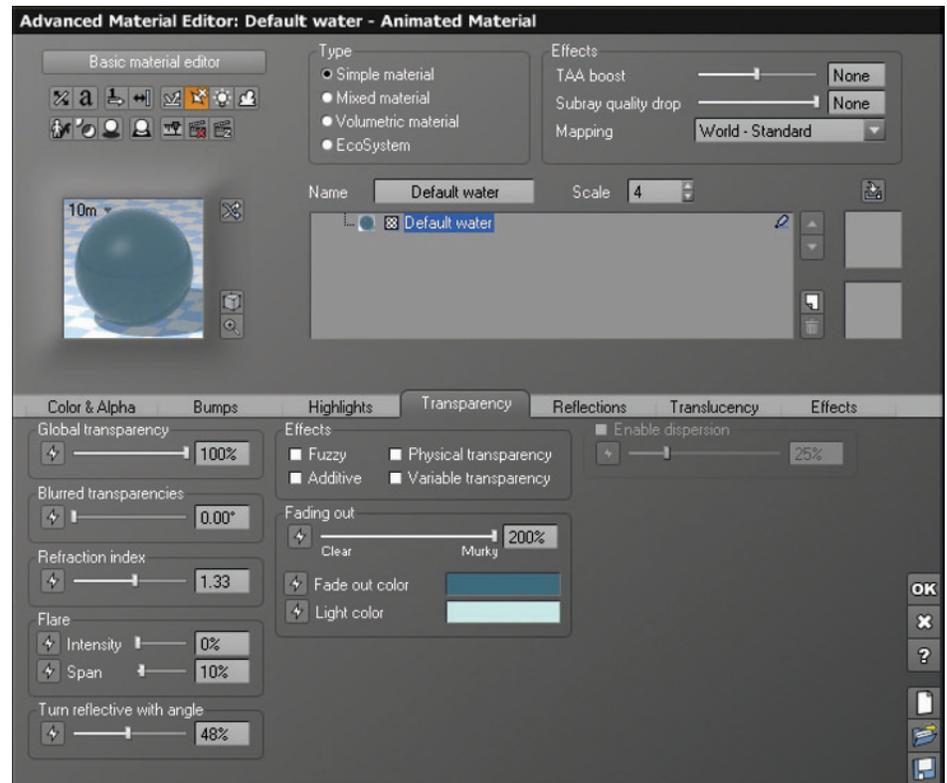
The first area to tackle was the water. This was opened by double clicking on the water pane and removing almost all the waves so it became very flat and still. The Foam sliders were reduced all the way down to 0% to remove any foam. The foam layer can also be removed in the material editor as well.

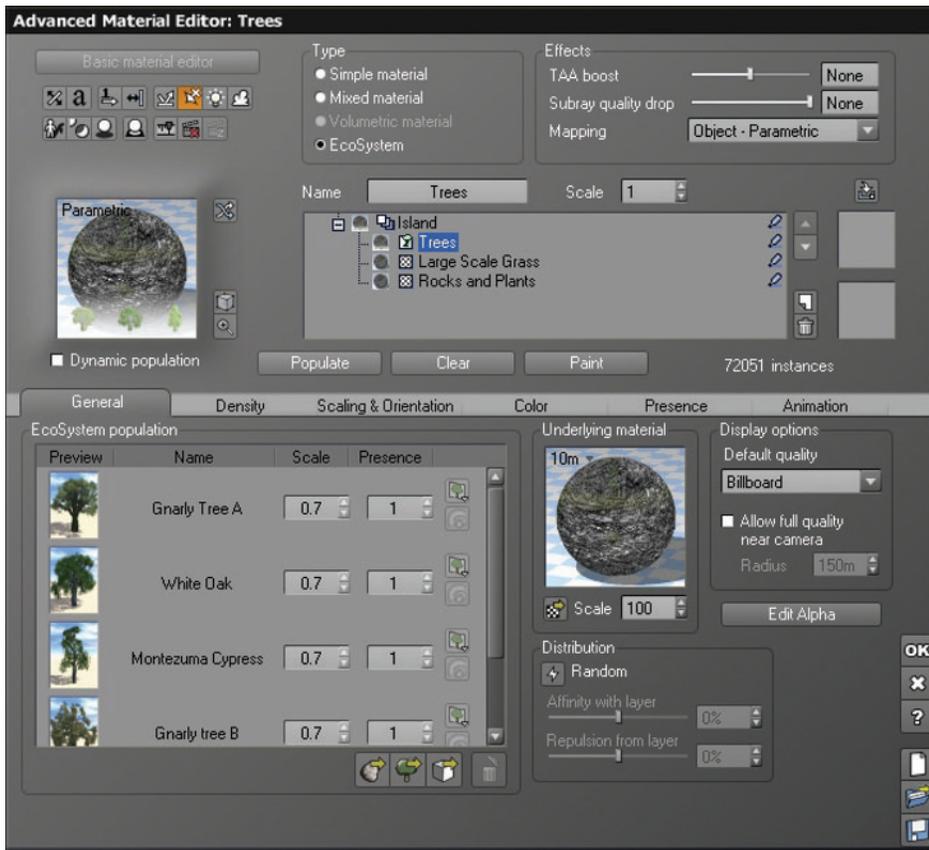
In Vue 10 e-on Software added a new water model called physical transparency that gave excellent results in scenes with very transparent water. However, it increased the render time quite a bit. Since the water in this scene needs to be reflective, not transparent, that model was unnecessary. So the material editor was opened, the default water layer selected and in the materials tab the box next to Physical transparency was unchecked to deselect it. The water was made completely murky by typing in a value of 200% and the Turn reflective with angle parameter was increased slightly.

The terrain materials didn't need to be very complex as they were going to be covered by the vegetation anyway. For the island one of the default rock materials that comes with Vue was used and a large-scale grass layer was applied to it. Remember that rock materials should be scaled to fit in with larger terrains. The Ecosystem was composed of some bigger SolidGrowth trees, mostly the Gnarly ones. Some trees were added as a new Ecosystem layer and then scaled down a little.

← The water editor settings show the waves and foam have been reduced down to nothing

In order to hide some of the underlying material's imperfections and repetitive areas, the tree population needed to be set to a high density. In the density tab, a value of 200% was entered for the density value. The instances were moved some meters below the surface to hide some of the tree trunks below the terrain to enhance the feeling of density.

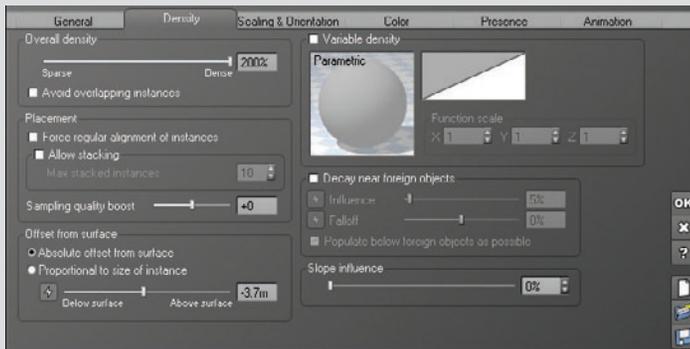




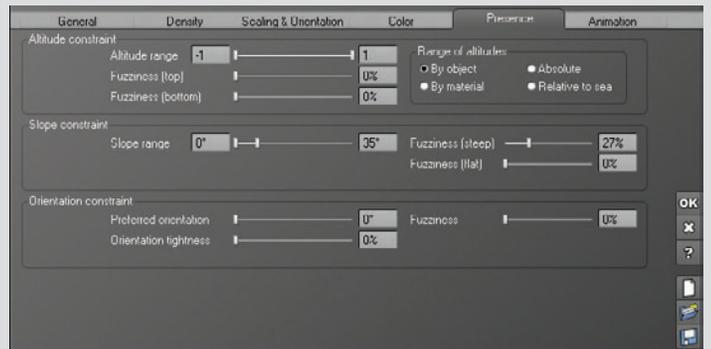
← Various tree types in the Ecosystem prior to painting on the terrain itself

To get a more random looking tree growth, the size variations in the Scaling & Orientation tab were increased significantly. However, this

made the trees exponentially bigger so to compensate for that, the overall scaling had to be turned way down.



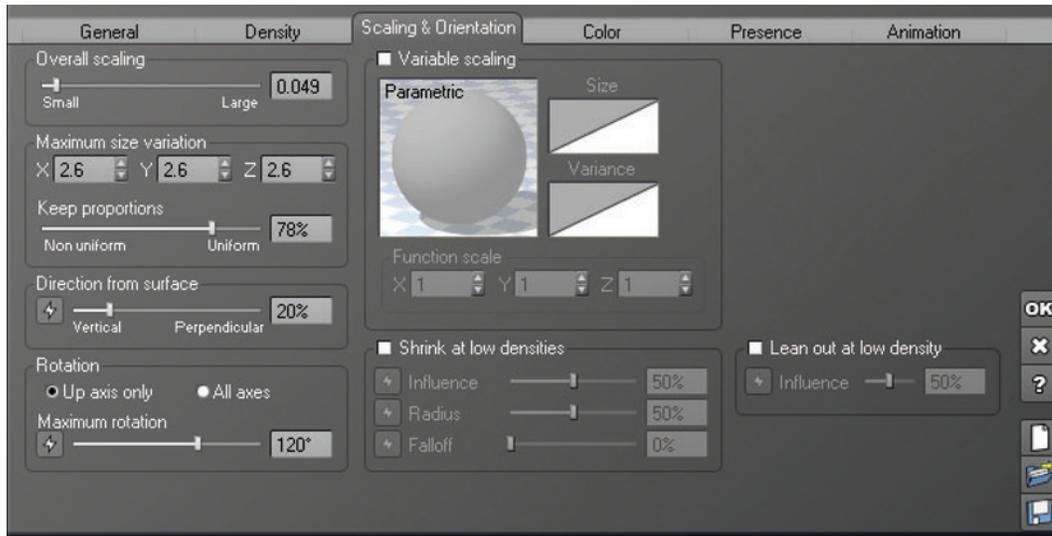
↗ Defining the population density and moving the trees below the ground



↗ Using the slope constraint function to prevent trees from appearing in certain areas when painting with the Ecosystem

TOP TIP – EASY BUSHES

Lowering trees below the terrain surface can also simulate bushes very well since all you can see are the tops of the branches and leaves.



← Irregular tree scaling can be used to stop everything looking too uniform and make it look more realistic

The idea wasn't to cover the entire area with trees and handily there's a function in Vue that can be used to limit where the trees appear. This was the slope constraint function under the Presence tab.

After populating the terrains, this is what the scene looked like.

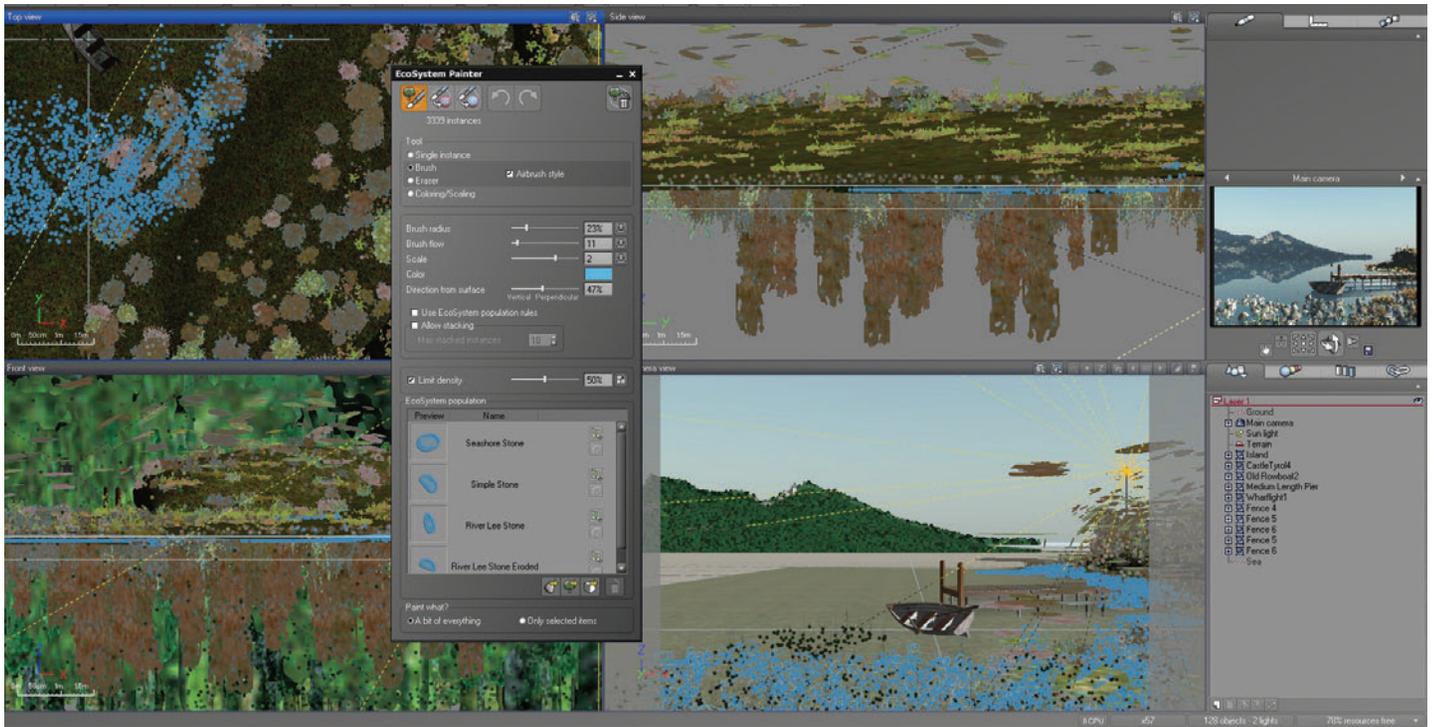


TOP TIP – REDUCING SATURATION

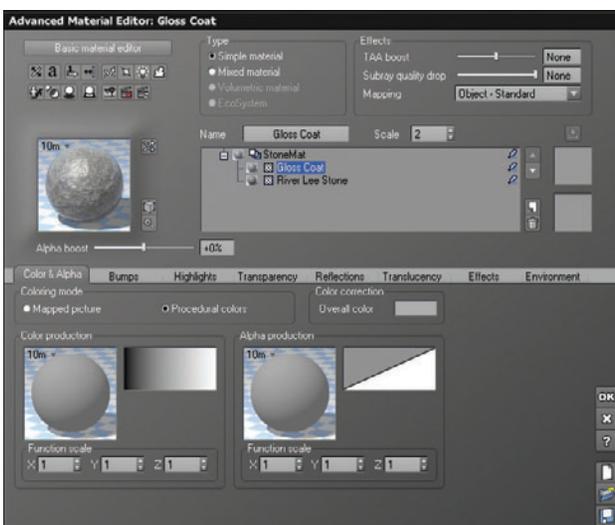
In many cases the default Vue tree colour is too saturated. Desaturate the Overall colour setting on the Colour tab to get a better colour distribution throughout the population.

For the foreground detail the image used a number of Ecosystem layers. It's easier to create a separate layer for each Ecosystem type. Here there were five different Ecosystems that were painted onto the terrain. One layer was created for each for grass, weeds, reeds and flowers and a variety of plants you like. Some dry autumn grass was also added to the scene. The fifth layer was used for adding stones.

Vue 10 ships with a huge library of dynamic rocks which are a vast improvement over the standard rock object in previous versions. One final task with the materials was to make the rocks appear wet. To do this the preset Gloss Coat material was added to the rock layer. The final stage of producing this image was the lighting and atmosphere which is detailed next.



↑ Painting the Ecosystem on the foreground using separate layers for each item type



↑ Adding a wet look to the rocks by using a gloss coat material layer

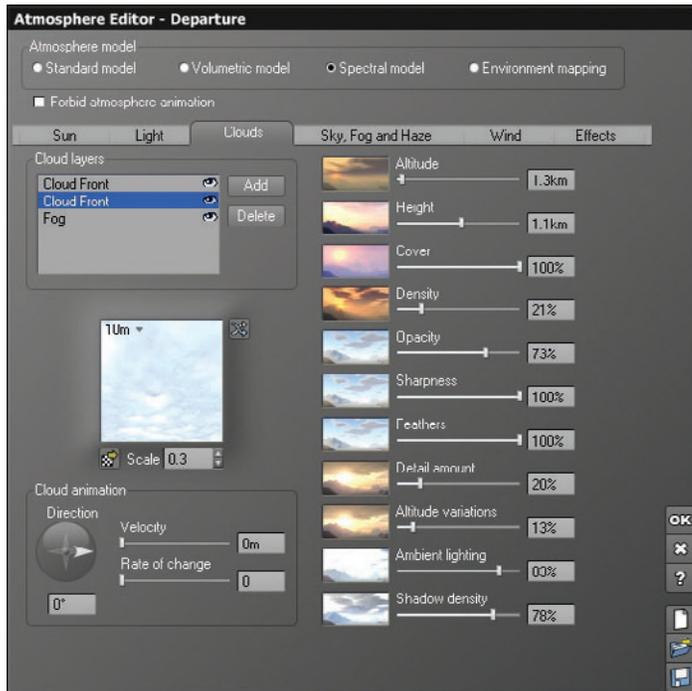


↑ The fully populated scene with multiple Ecosystem layers and all the terrains and objects in place

SETTING UP LIGHTING AND ATMOSPHERE

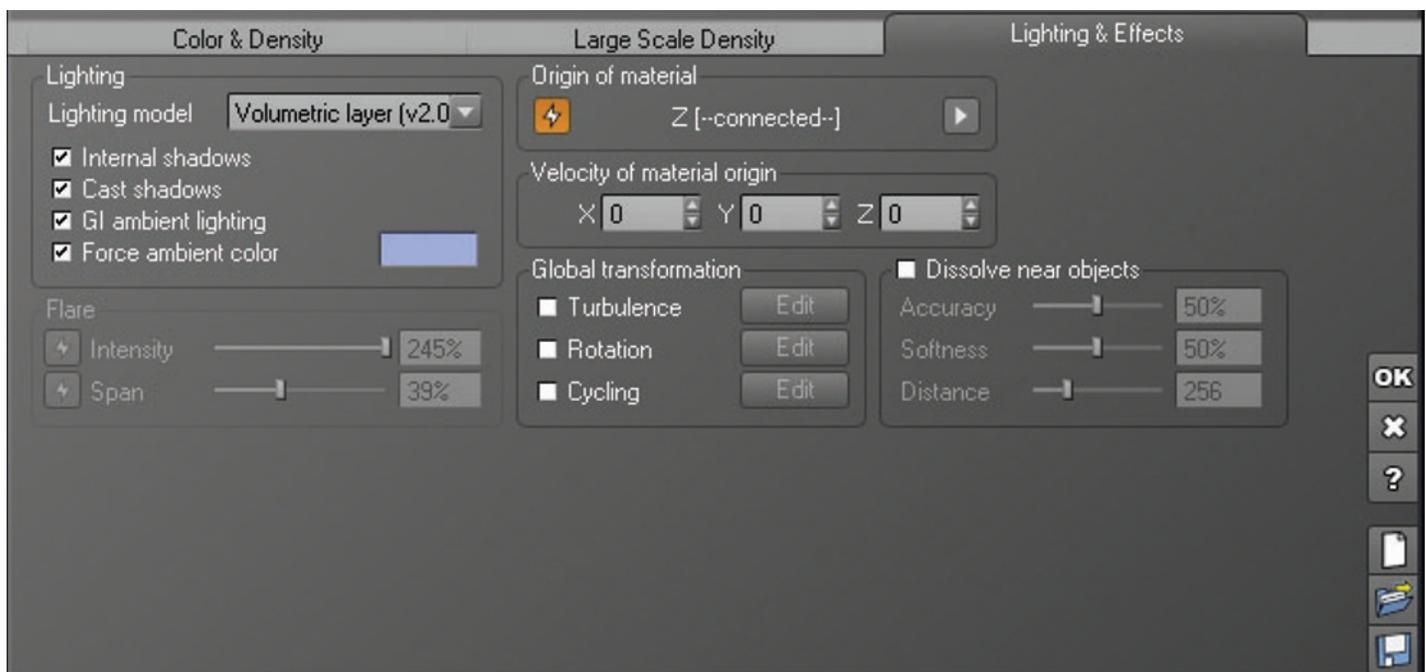
There's one thing that needs addressing before tackling the atmosphere editor and that's the spotlight intensity of the wharf light's spotlight because it is much too strong. Changing this to a power of five and a softness of 45° did the trick. So to the atmosphere then, and this was composed of two identical cloud layer presets that cast shadows onto each other. The shadow density was increased

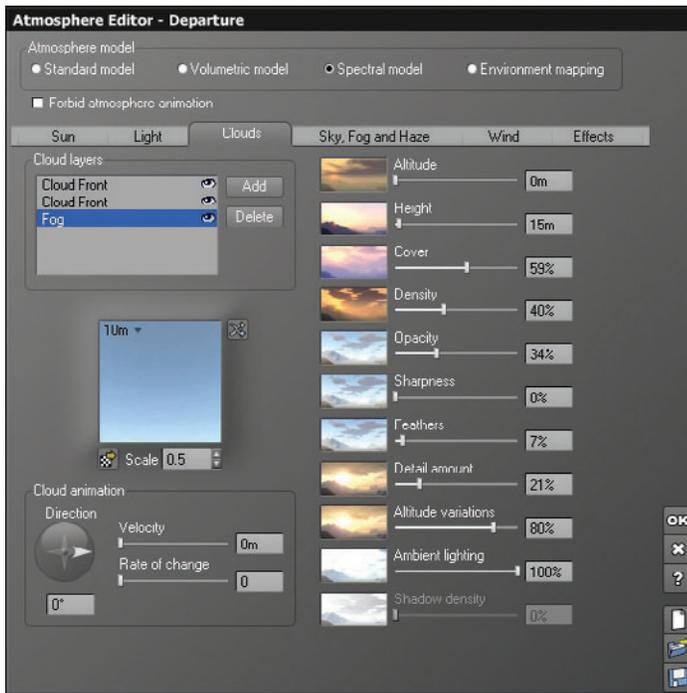
quite a bit to get more contrast both in the sky and in the scene. To get more colour in the sky, both cloud layer materials featured a blueish ambient colour. A low-placed cloud layer with a reduced density served as fog above the water. Next the sun was set very low in front of the camera, slightly outside the framed area. In the sunlight properties, the sun was given a softness value of 0.50°.



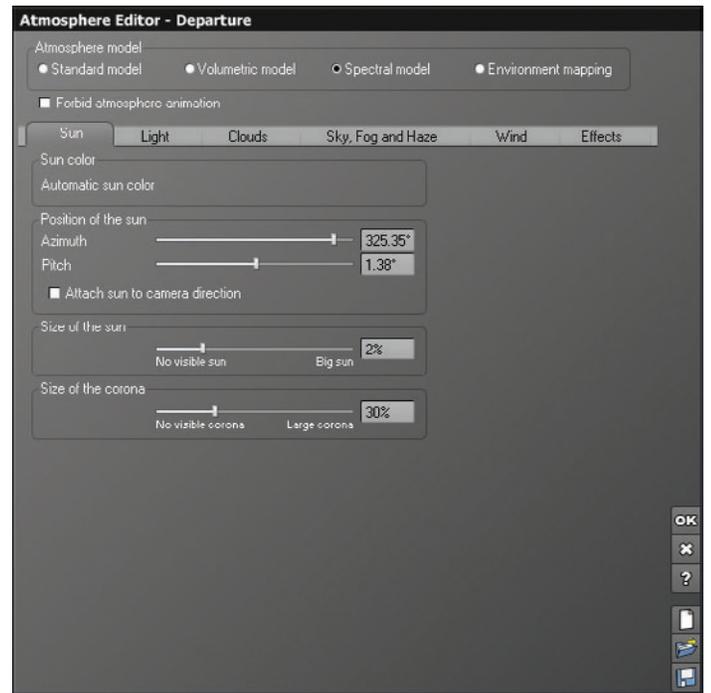
The main cloud layer settings shows lots of cover and quite a dense setting

The settings for the cloud lay show internal shadows and are forced to use a specific colour

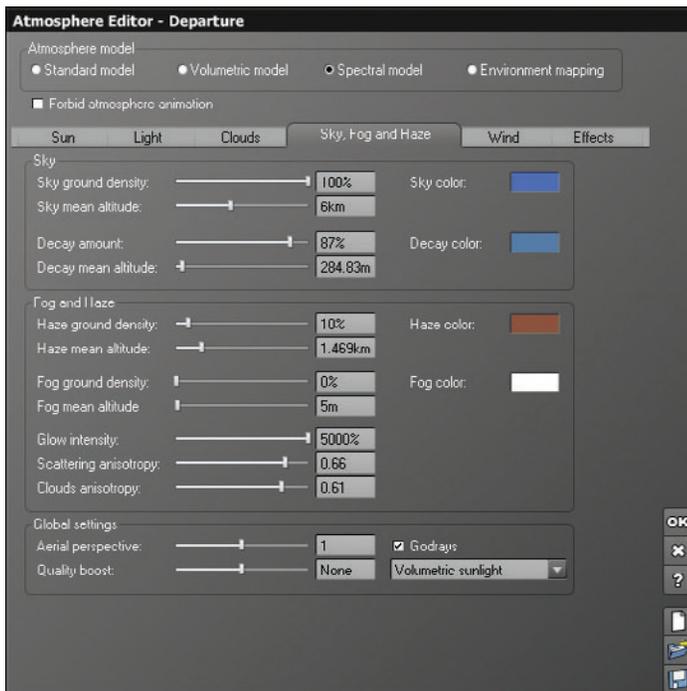




↑ The fog layer is set right down at ground level and covers most of the water area



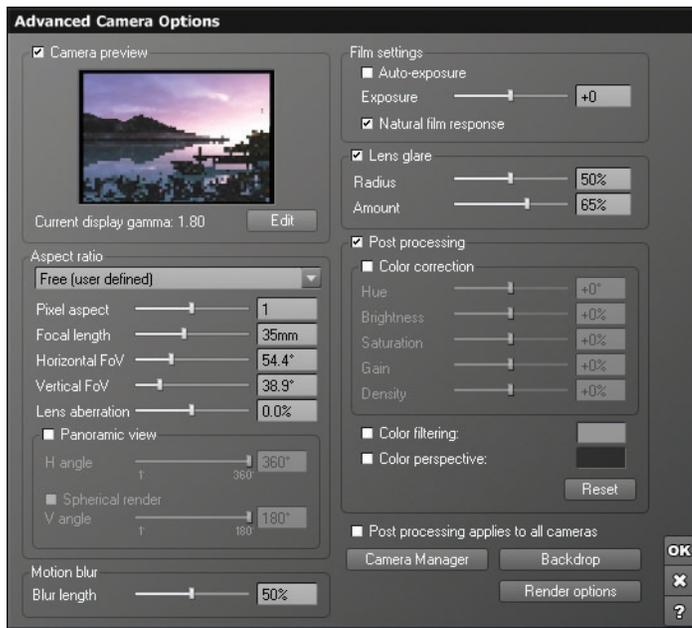
↑ The sun's position in the scene plus some tweaks to the size and the corona around it



↑ Here the sky gets its colouring whereas the fog aspect is turned off because of using a cloud layer previously

A good way to introduce additional colours into the atmosphere is to not only colour the haze, but also the decay amount with strong colors. Using a high amount would have covered the scene in blue lighting so the Decay mean altitude was kept very low. The same went for the Haze mean altitude. To compensate for the low sun angle and the total coverage of the sky an extremely high glow value and a lowered scattering anisotropy, which increases the glowing area, were used. Volumetric lighting was checked so that the clouds and sky could generate more colours in the atmosphere.

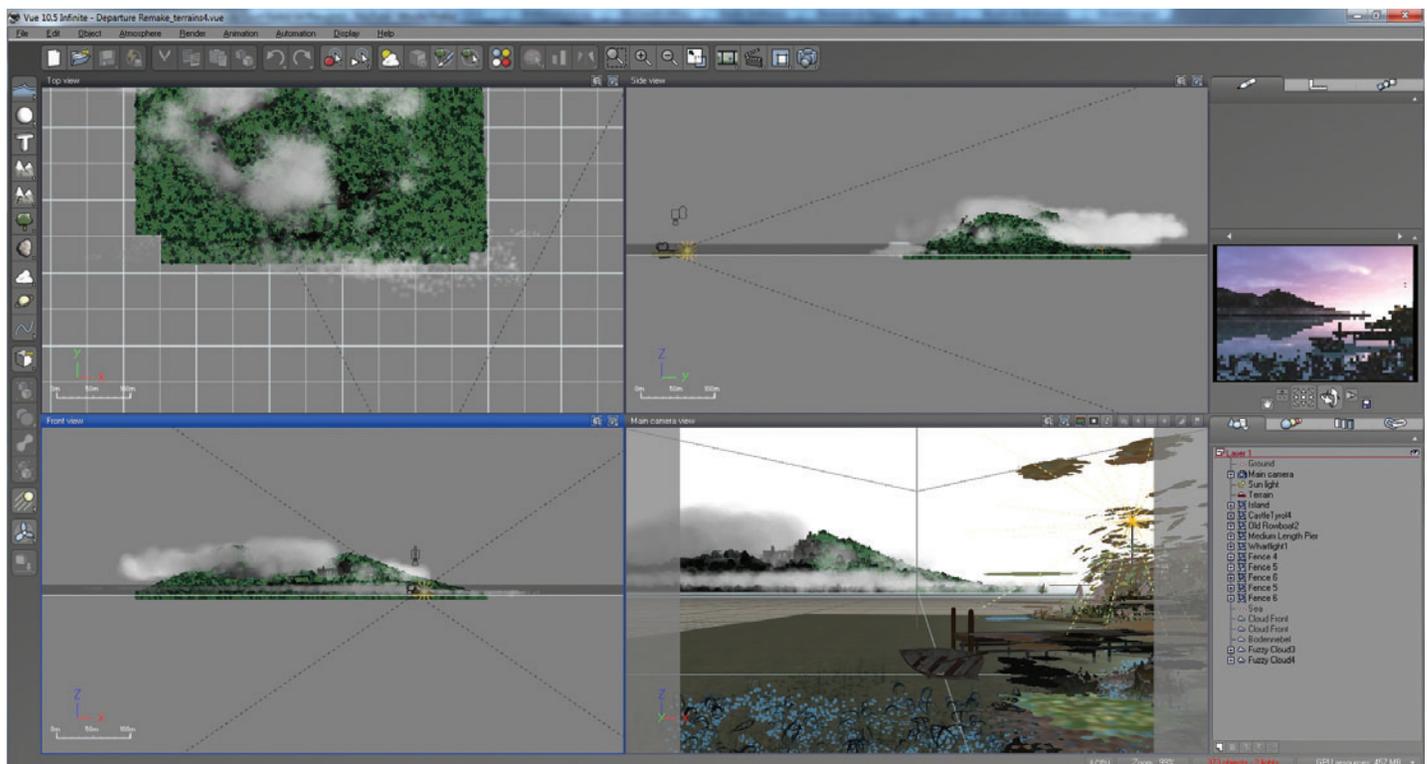
Going into the Lighting tab for the Atmosphere Editor the balance was set almost completely towards the sun for a dramatic effect. The Global Radiosity lighting model distributes some reflected light in the shadows and unlit parts of the scene so that it doesn't appear completely dark. It's also the slowest system to use when coming to render the image. The new Indirect atmospheric in the latest version of Vue take the reflected light that's coming from the sky and clouds into account. In addition to the cloud layers in the atmosphere, some fuzzy Metaclouds with a low density were added around the island.



↗ The advanced camera options show that the current gamma for this scene was 1.80

Before moving on to the render, there was one last parameter to check. In Vue 8.5 Linear Workflow was introduced. In basic terms, computer monitors are not able to display all the available brightness and colours in a picture and as a result a picture appears much too dark. This is what linear workflow is used for. By increasing the global gamma value of a scene, the whole image is brightened up and retains the full range of colour and brightness values. The downside to this is that the image can highlights can be blown out. There are two ways to fix this: You can either apply a specific gamma value to every material that appears too bright while leaving untouched those materials that are correctly lit. The second and easier method involves a simple curves correction in Photoshop or any similar image editing package. For this image a default Linear Workflow Gamma of 1.8 was used with recourse to Photoshop if needed. Remember that it's always easier to darken a picture that is too bright than to brighten a picture that is too dark. You can check and change the value for Linear Workflow by double-clicking on your current camera. Also, on the subject of the camera, some lens flare was added for a soft and dreamy look. At this point the scene was ready for rendering considerations.

↙ The scene was ready for rendering. Here you can see what the final scene looked like in the editor views



RENDERING THE IMAGE

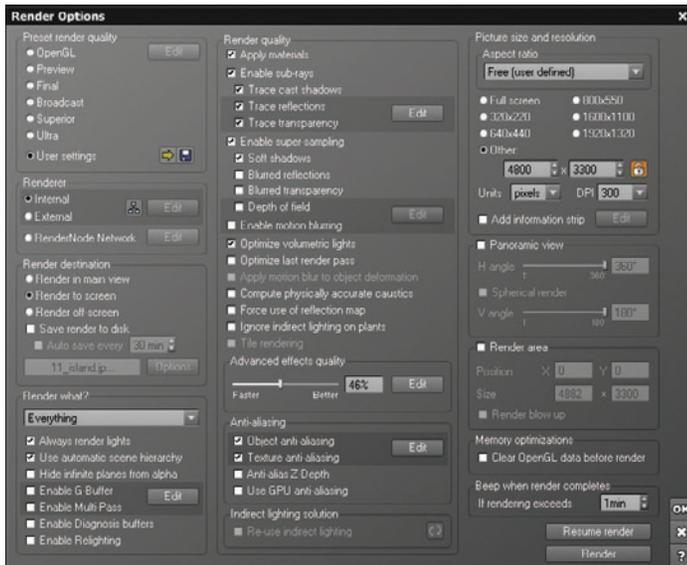
Rendering the scene would have taken quite a while regardless of the render quality, since it deals with multiple low-density cloud layers and metaclouds, highly reflective water and volumetric sunlight. Still, there are some settings that can be checked to save a little time.

In the render settings, Blurred reflections, Blurred transparency, Motion blurring and Depth of field were all disabled since the scene exhibited none of those features. The Soft shadows box was ticked because they were needed for both the shadows from the spotlight and the sunlight. The volumetric lights were also optimised, without any noticeable hit in quality.

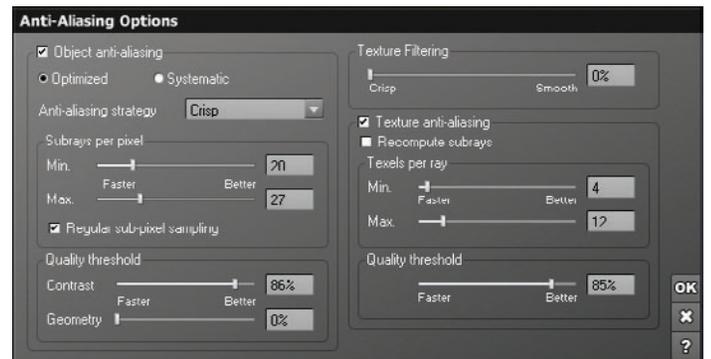
As there were a lot of reflections in the scene it was not advisable to go lower than 5/5 in the Trace reflections options. Decreasing the min and max trace level can introduce visible artefacts. The Advanced Effects slider should be kept around 40–50% as it influences the lighting quality of volumetric lights.

In the Anti-Aliasing options, Crisp was selected as the Anti-Aliasing strategy. Other strategies produced artefacts when combined with lens flare option set previously.

The Subrays per pixel value tells the render engine how many rays of light are sent into the scene per pixel of the image, both regarding the minimum amount and the maximum amount of rays. The maximum amount of rays is only used when the render engine decides that the pixel is still too jaggy. The Quality threshold decides the accuracy on which the render engine bases this decision. Increasing the min and max values seldom results in a much improved render quality. The Quality threshold can make a huge difference, but it also increases the render time significantly. This scene had a lot of very tiny details in the foreground vegetation, so it needed a high Quality threshold or the thinner lines and the grass blades would have been lost in the rendering process. The final image was colour-corrected in Photoshop CS6 and an unwanted glowing spot in the clouds was removed.



↑ The main render settings set the quality of the render but the better it is, the longer the render time



The Anti-Aliasing settings ensured that there were no unwanted artefacts and that the quality was good enough



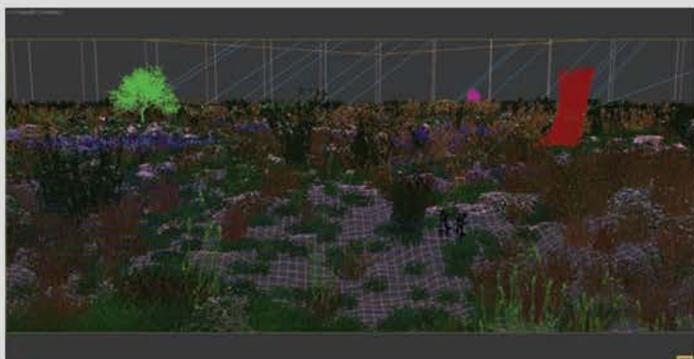


DEPARTURE BY DANIEL SEEBACHER

 98 HOURS ON A CORE I7 920 AT 2.6GHZ



“ The image was made in preparation for some bigger projects. The main idea was to try out and learn the different aspects of giving a variety of plants a natural and realistic look. A very important factor is the amount of reflectivity and the overall lighting to bring landscape shots to life. Another important thing to remember is the balance between chaotic scattering and subtle adjustments in the positioning of plants. The stump in the right half of the image proved to be a good addition to the overall composition. ”



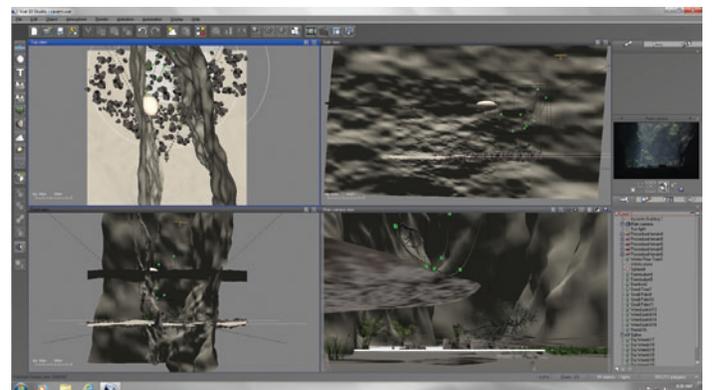
PROJECT	MARSHES
SOFTWARE USED	3DS MAX 2012, FORESTPACK, GROWFX, VRAY
RENDERING TIME	4 HOURS
ARTIST	MARTIN GEUPEL
COUNTRY	GERMANY





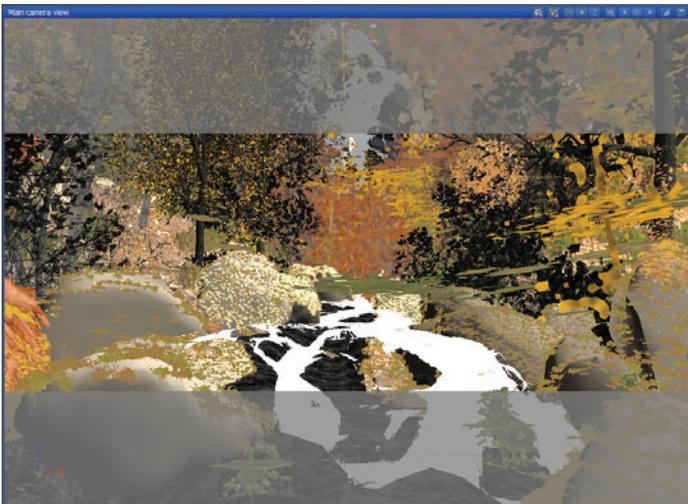
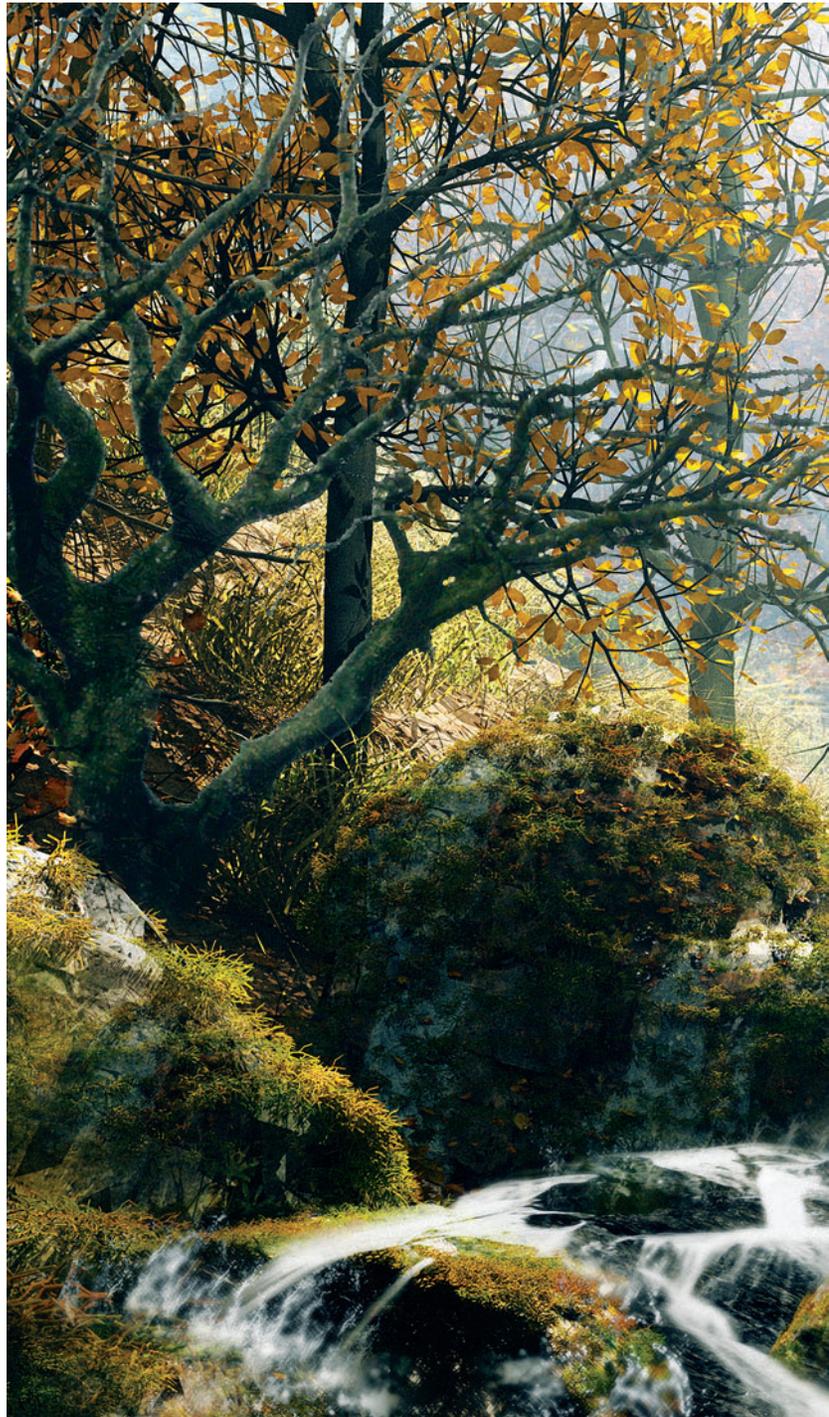
“ I really wanted to create a canyon with a more realistic look to it and spent some time on the lighting looking for some subtle rays to try and realise that goal. I also liked the idea of crafting an isolated environment where my imagination was the only boundary. I used the Spline tool in Vue to hang the vines and applied some sparse vegetation to add a little texture. Once the scene was built there was an obvious place to support a waterfall. This I hand painted in Photoshop using the simple, default brushes. Some bird models were added to complete the project. ”

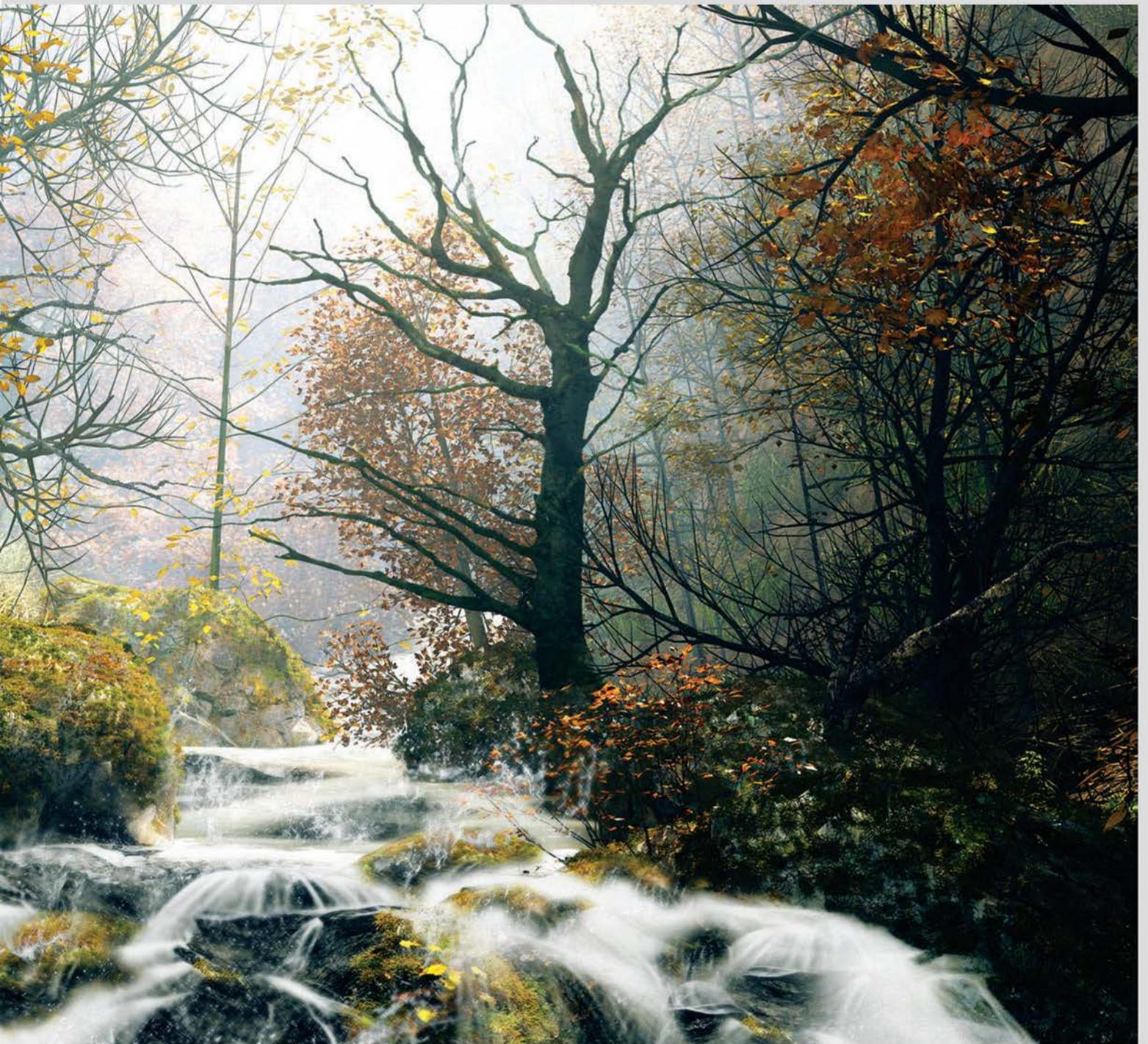
PROJECT	DEEP CANYON
SOFTWARE USED	VUE 10 STUDIO
RENDERING TIME	8 HOURS
ARTIST	SEAN FLYNN
COUNTRY	USA



“ My first idea for this image was to make a forest, which is my favourite theme. I found it interesting to add a technical challenge with a waterfall. To achieve this the landscape plane had to be angled to create a drop and Vue's physical water used to get it to flow. The long exposure effect was created in post production. ”

PROJECT	H2O
SOFTWARE USED	VUE10 INFINITE
RENDERING TIME	6 HOURS
ARTIST	DANIEL RESPAUD
COUNTRY	FRANCE





LANDSCAPES WITH WATER FEATURES

Po Andersson explains how to create a landscape with a central, water-based feature and surrounding wildlife.

ORIGINAL DESIGN IDEAS

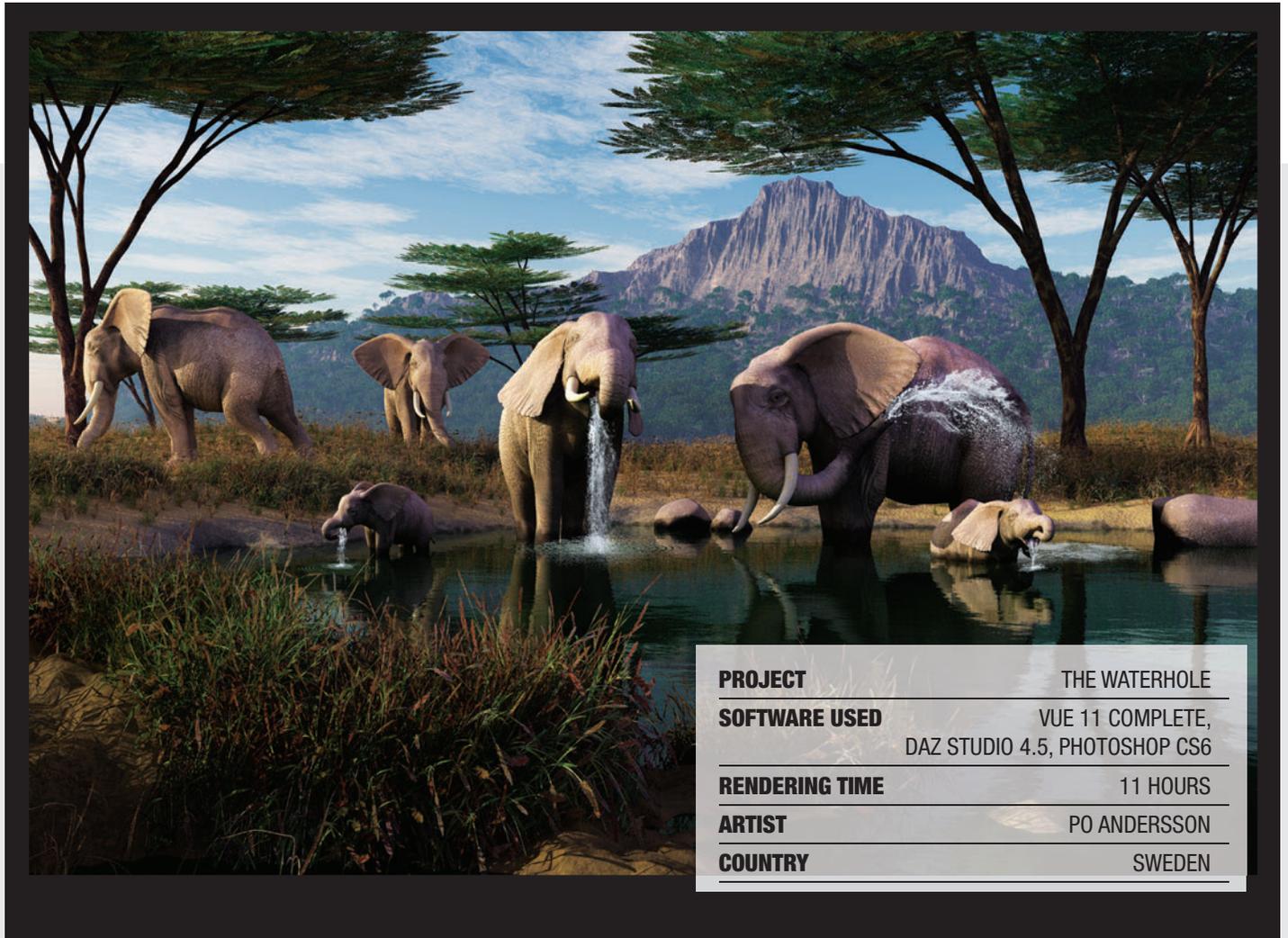
I was working on a series of scenes of wildlife some time ago and realised that I wanted to do some from Africa. I have always liked elephants so it was natural that I would create one that featured them. The important point was how to feature them. A typical scene would be in a herd but I decided I would go for a more fun image with them playing around a waterhole. This is one of a series I created around this concept. Unlike many artists, I don't sketch out ideas, I just form them in my head and try to work them out in practice. I used a couple of reference photos of elephants playing at waterholes, just to get an idea of actions and the setting, but mostly the ideas were self-generated.

Some original photos of elephants playing and drinking at waterholes and rivers.



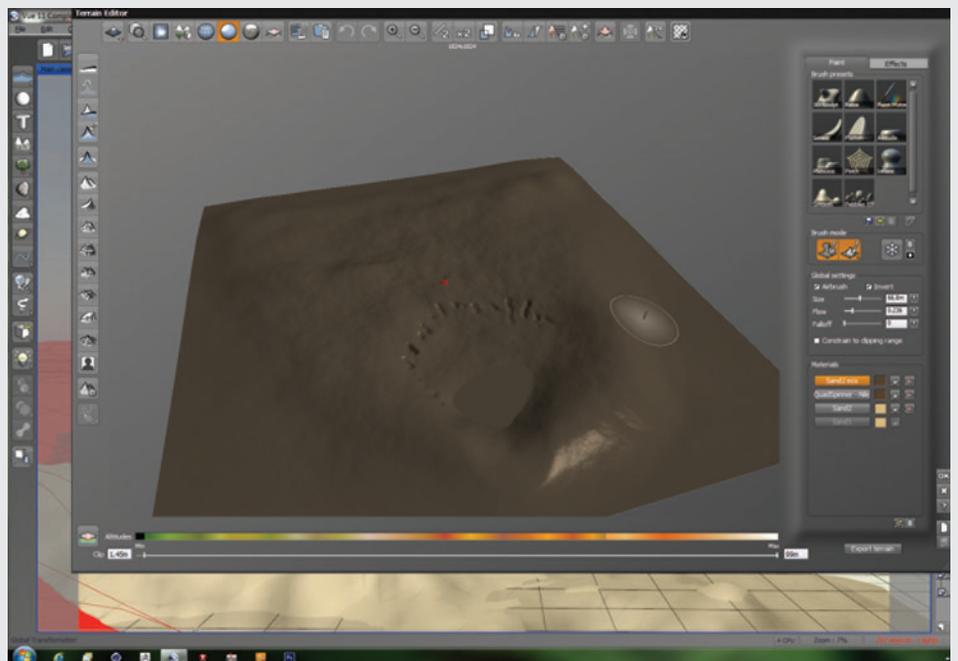
TOP TIP – LIGHTING SCHEMES

If your scene is taking a long time to render because it has a high polygon count, and is high resolution, then one way to cut the time down is to use a less demanding lighting scheme if it doesn't require sophisticated shadow detail.



STEP 1 CREATING THE INITIAL

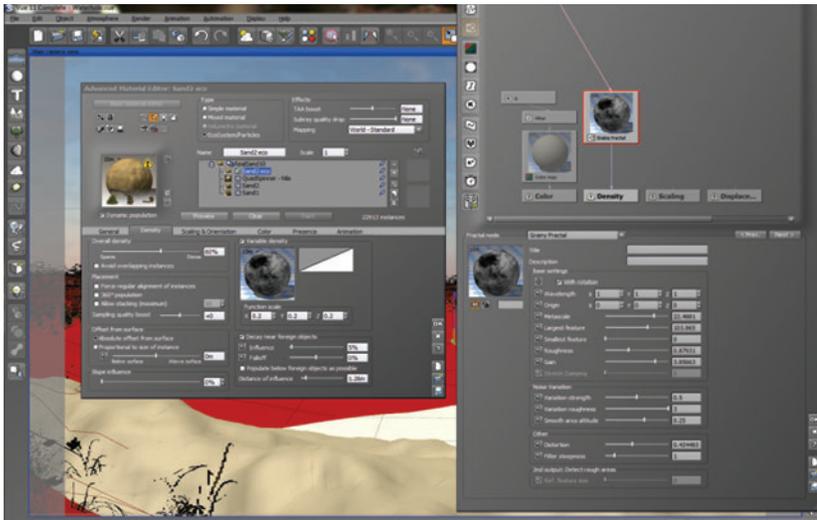
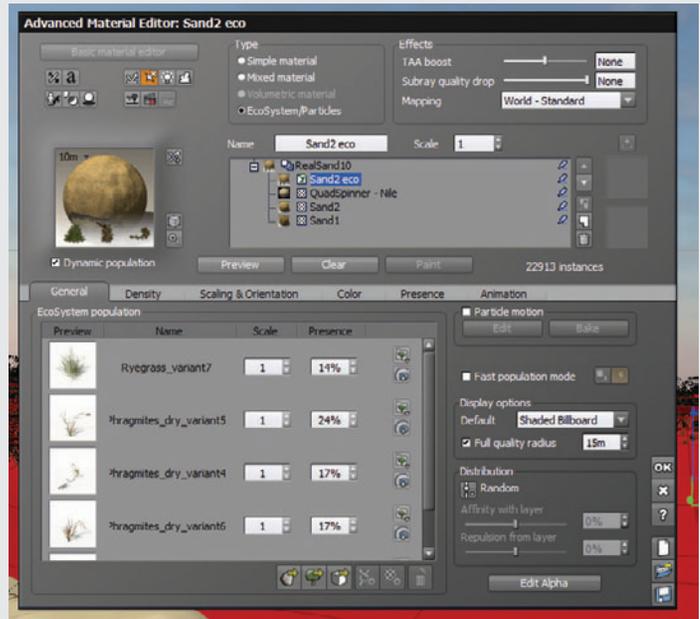
BACKGROUND The first thing to do was to create a landscape terrain at 1024 * 1024 resolution. The ground was then built up from the beginning with landscape brushes. Some unevenness was added to the edge of the water hole and new material was painted in at the edge.



TOP TIP – POSING OBJECTS

For animals and human figures, it's much easier to pose them in apps like DAZ3D and Poser because the figures come ready-rigged. All you need to do is get the pose right and export as compatible format.

STEP 2 SELECTING MATERIALS The materials chosen for this scene were Real Sand 10 and, in the Vue Ecosystem, grass from Silva 3D, Ryegrass and Phragmites in different varieties were used.



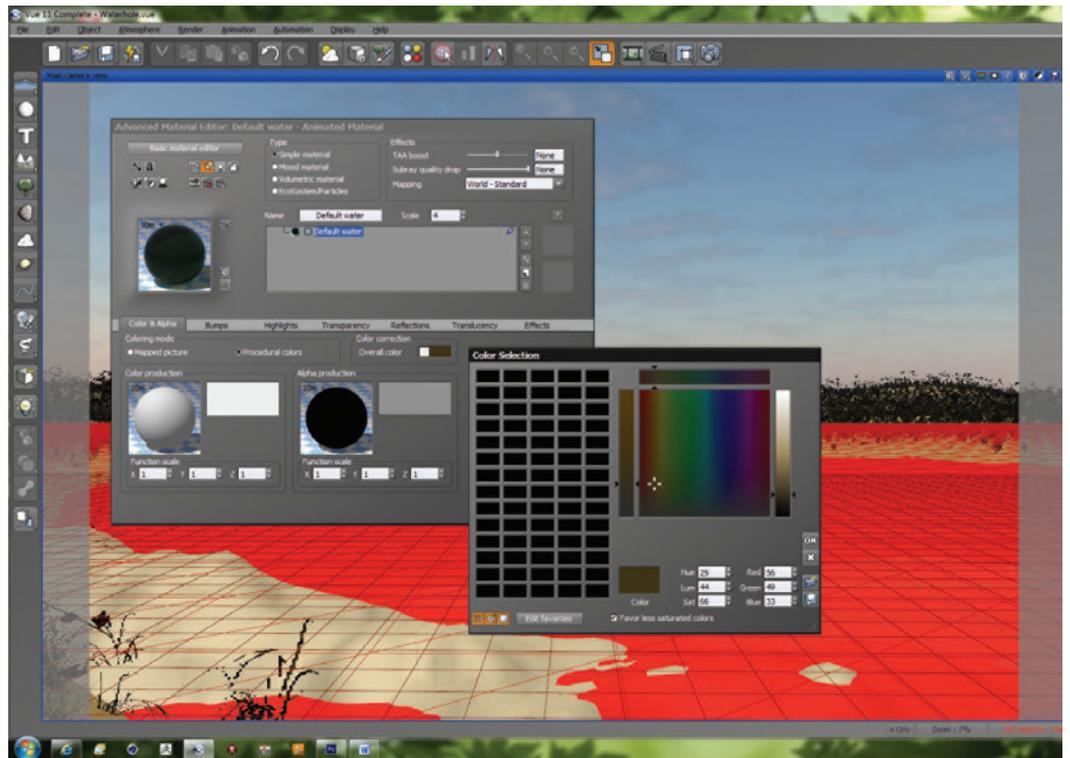
STEP 3 EDITING DENSITY FUNCTIONS The Advanced Material Editor for the Real Sand 10 material was launched and the density set to 60%. The Function Editor was used to set a variable density and the Grainy Fractal procedure was selected to generate the random distribution of material.



STEP 4 SCALING THE MATERIAL The overall scaling for the material was set to Large 15, because such a large terrain was used. The basic scale of the material was also changed to 2.8 to suit the size of the terrain.

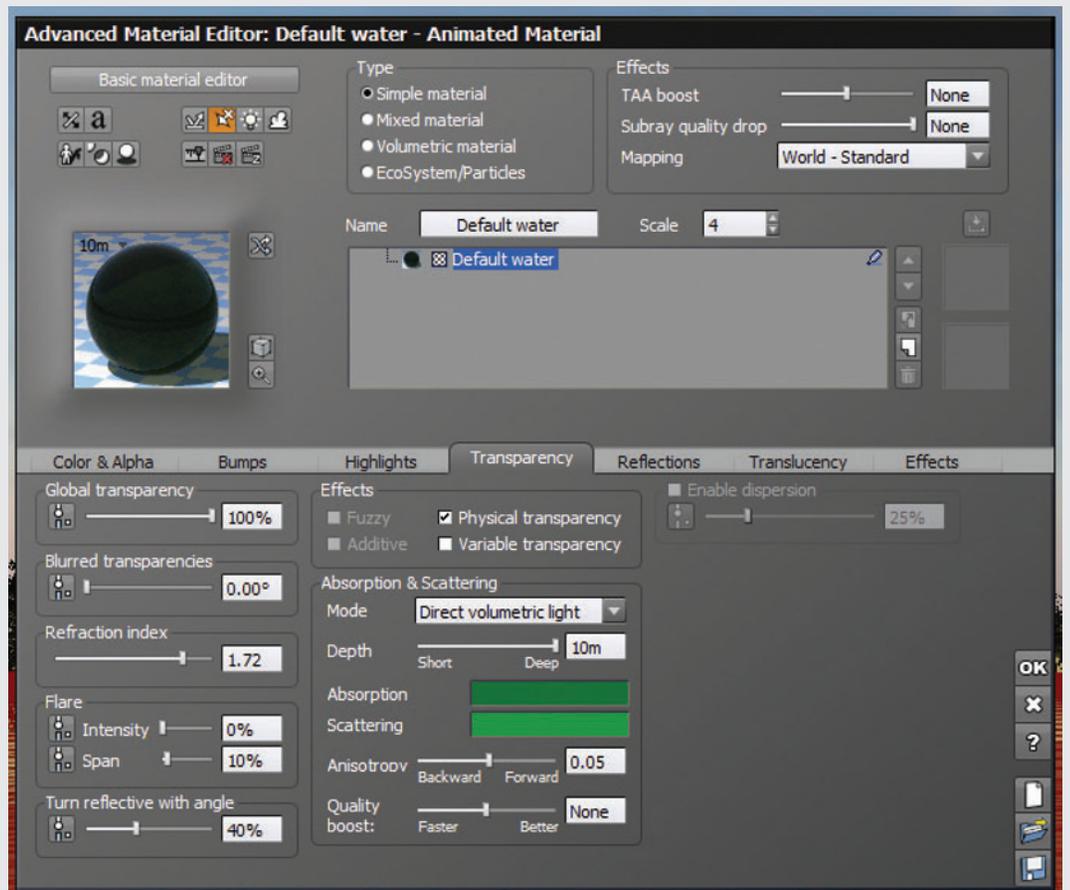
STEP 5 CONFIGURING THE

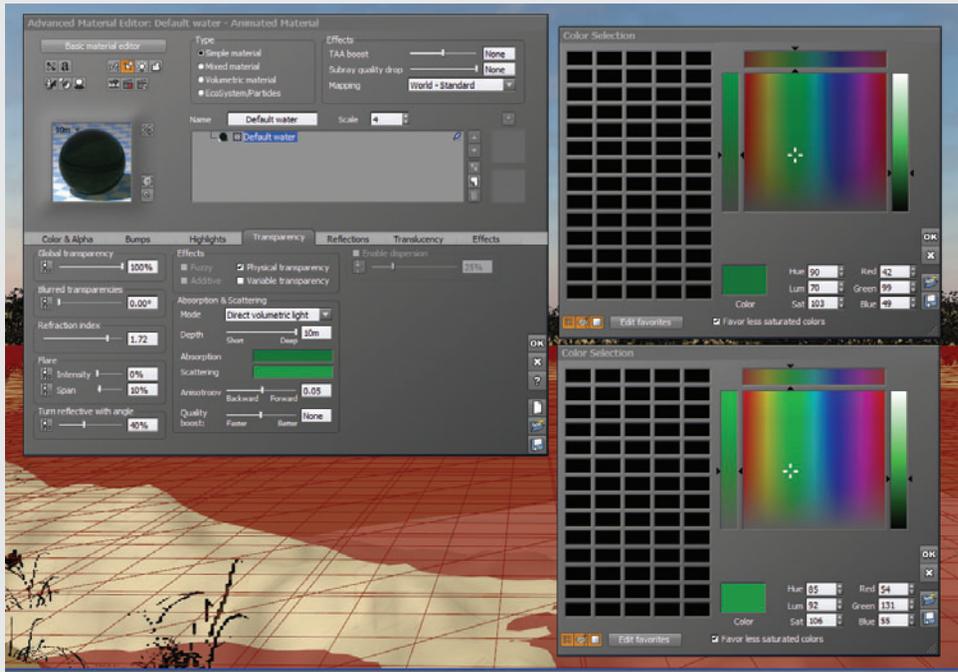
WATER The water in the waterhole itself was simply the Vue default but the colour was changed to a browner version that more represents the kind of muddied water you would find in real life.



STEP 6 TWEAKING THE WATER

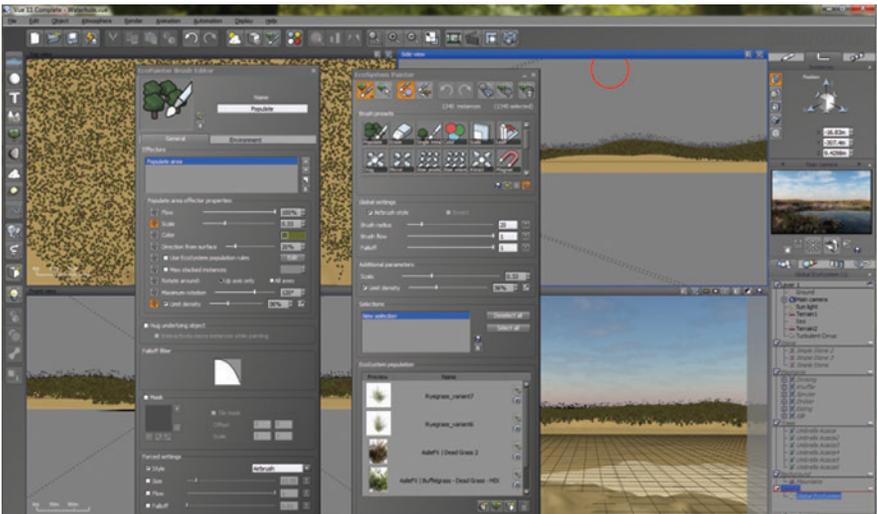
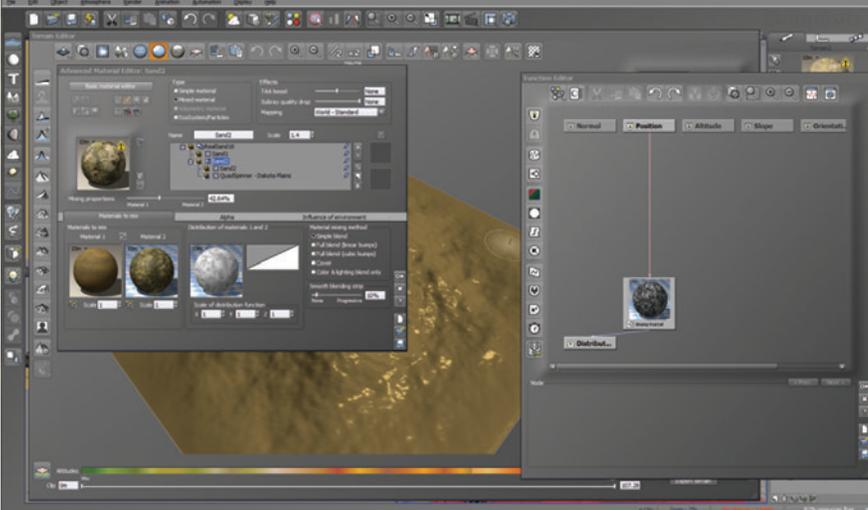
Aside from making the water browner the depth was set to 10m. The water had standard features like Physical transparency and used direct volumetric light to scatter the light rays around in the muddy depths.





STEP 7 COLOUR OF ABSORPTION In the Transparency tab the Refraction index was set to 1.72 and the colour of Absorption and Scattering to green. This was to make the underwater colouring have more of a vegetation-feel to it, rather than just being plain mud.

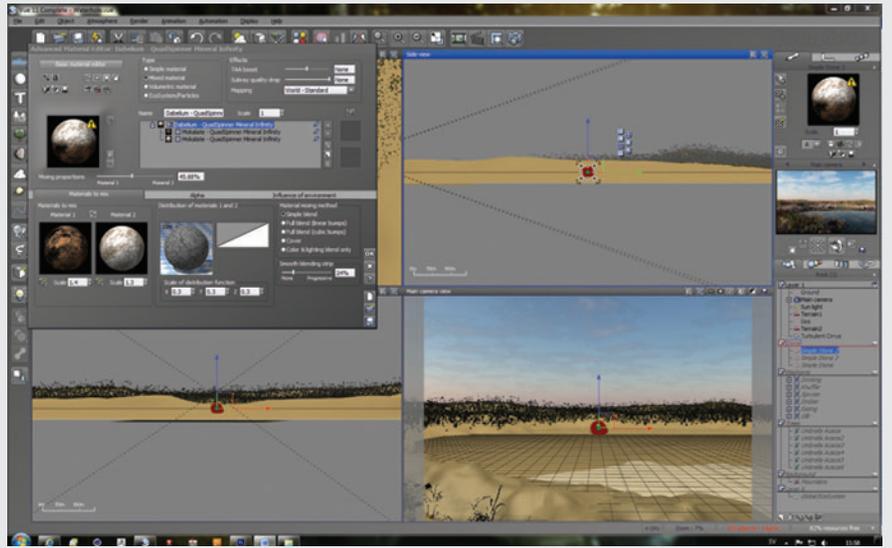
STEP 8 THE FOREGROUND TERRAIN The next step was to add the foreground. The terrain was a standard one that was scaled down to fit. Here two materials were mixed together. In the Function Editor the Grainy Fractal procedure was used to distribute the materials. These were Real Sand 10 and Dakota Plains (from Quad Spinner).



STEP 9 FOREGROUND ECOSYSTEM In the foreground terrain the Ecosystem Painter was used with AsileFX and Silva 3D grasses. The scale was set to 0.33 and the density to 36% to make sure it would populate the area without overloading it or becoming too dense.

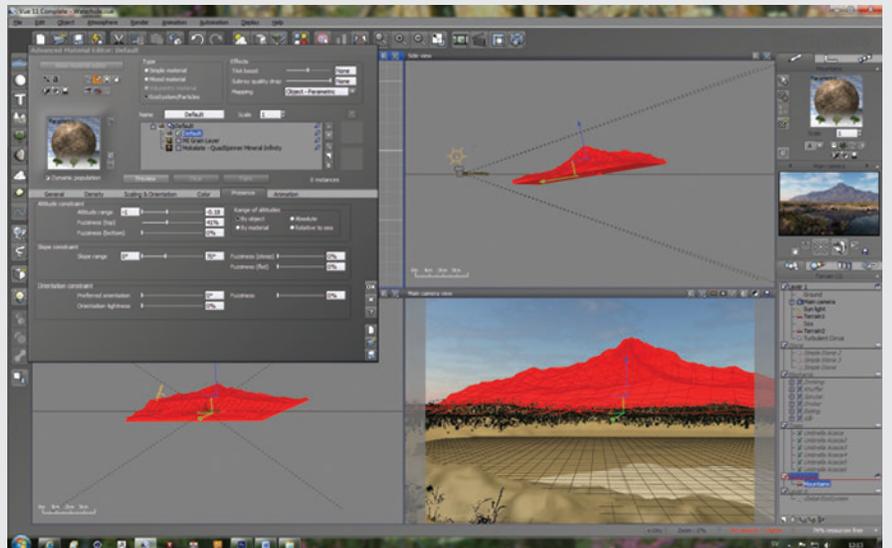
STEP 10 ADDING THE BACKGROUND MOUNTAIN

Some rocks and stones were positioned around the scene using the Vue Simple Stone. The material for them, though, was changed to Mokalate from Quad Spinner Mineral Infinity. The materials were mixed up and changed so that the top were light and the bottom were dark to represent sitting on a wet surface. To make the wet part of the rocks more visible they were scaled up.



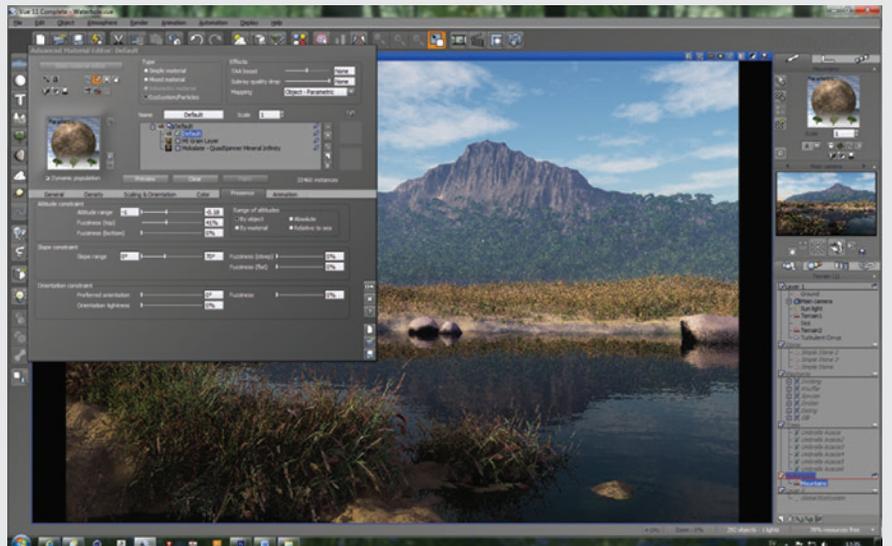
STEP 11 ADDING THE BACKGROUND MOUNTAIN

Then it was time to add the background mountain. Here a mountain that I have as a vob object in my object collection was used. The material was changed to the Mokalate material – the same as the stones – but without changing the colour. The mountain covered 10km * 10km and was about 2km high.

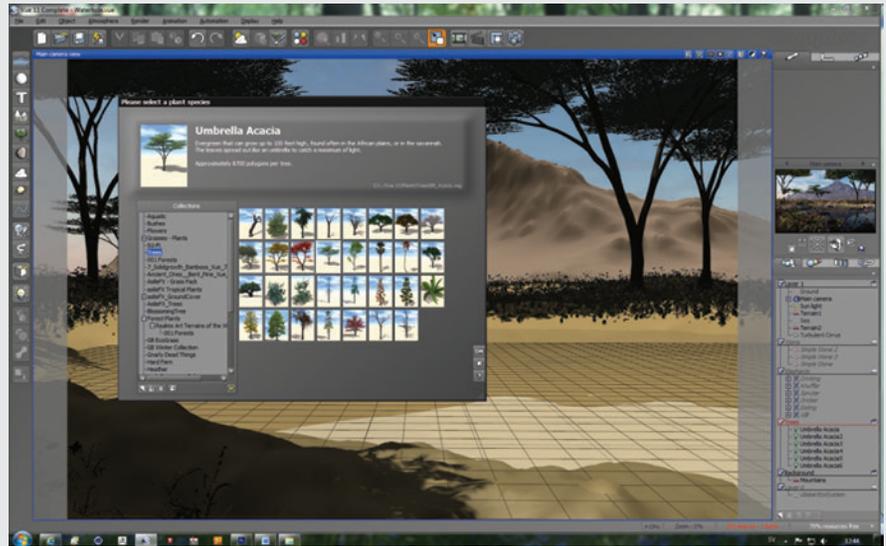


STEP 12 BACKGROUND MOUNTAIN VEGETATION

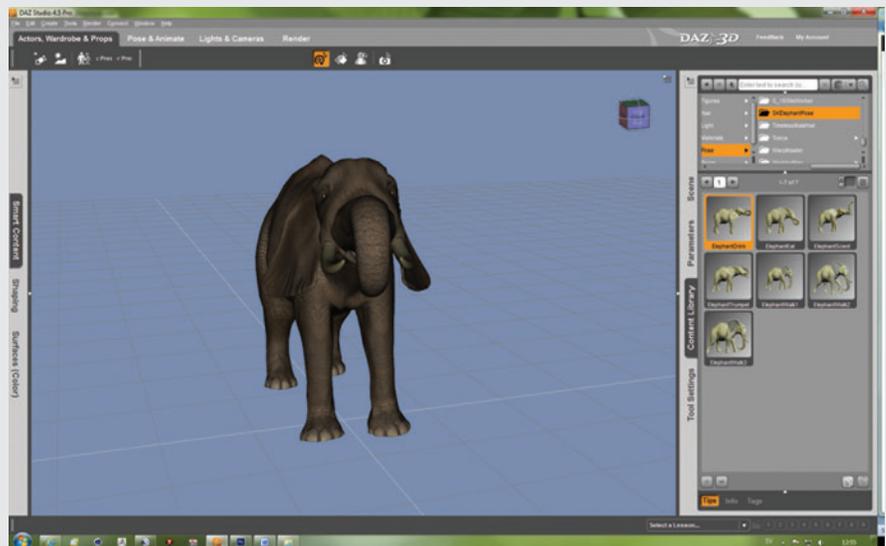
In the Ecosystem for the background there was Old Eucalyptus Tree and Rural Maple Tree. The density was set to 74% and Scaling to 3. Altitude range was set to -1 to -0.18 with fuzziness (top) at 41%. This gave a fairly thick coverage.



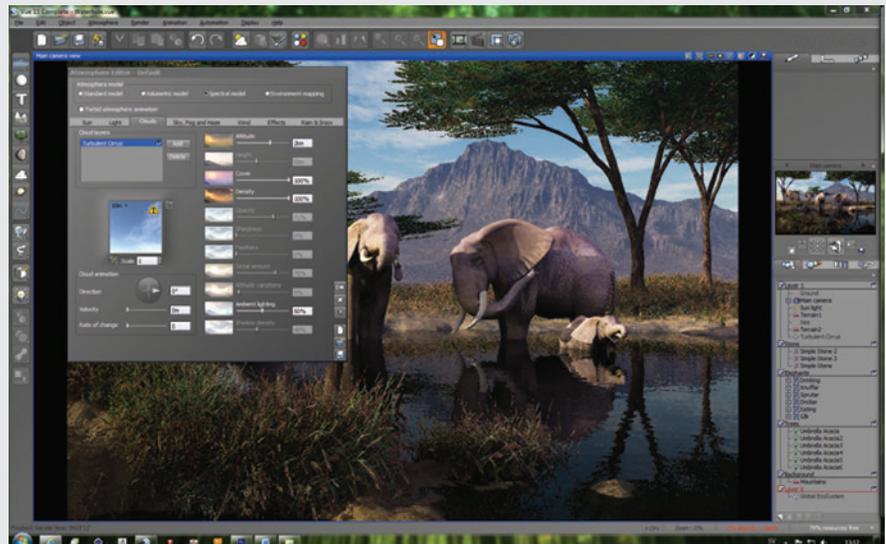
STEP 13 PLACING OF TREES At this point it was time to place some trees. The Umbrella Acacias, which are included in Vue, were used, with five of them placed into the background where they could be seen. There's also one to the left which casts a shadow into the scene.

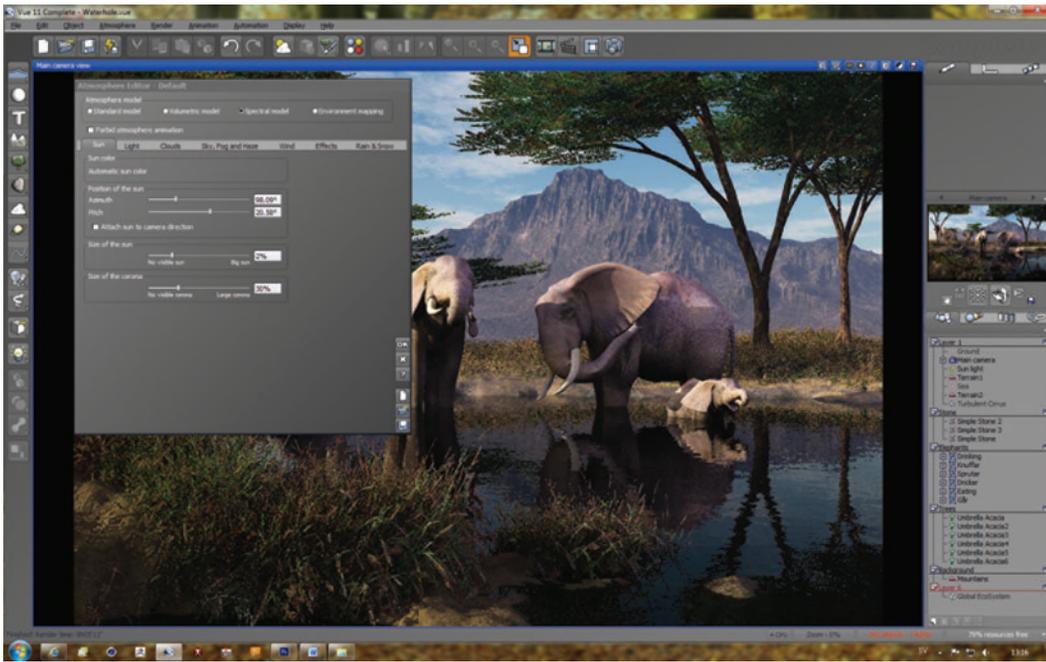


STEP 14 THE ELEPHANTS So now it was the turn of the stars of the scene – the African elephants. These were posed using DAZ 3D Studio. To make it easy for myself I simply used the preset poses that come with these figures, with a few little tweaks. There were six elephants used in the scene, with adults drinking, pushing, spraying and walking. There was also a baby elephant eating and drinking.



STEP 15 ADDING ATMOSPHERE With this scene being an African waterhole, it was important to create a bright, glaring day with thin atmosphere. To achieve this the position of the sun was moved and some Turbulent Cirrus clouds were added with an Altitude of 2km, Ambient lighting: 50%, Cover and Density: 100%.

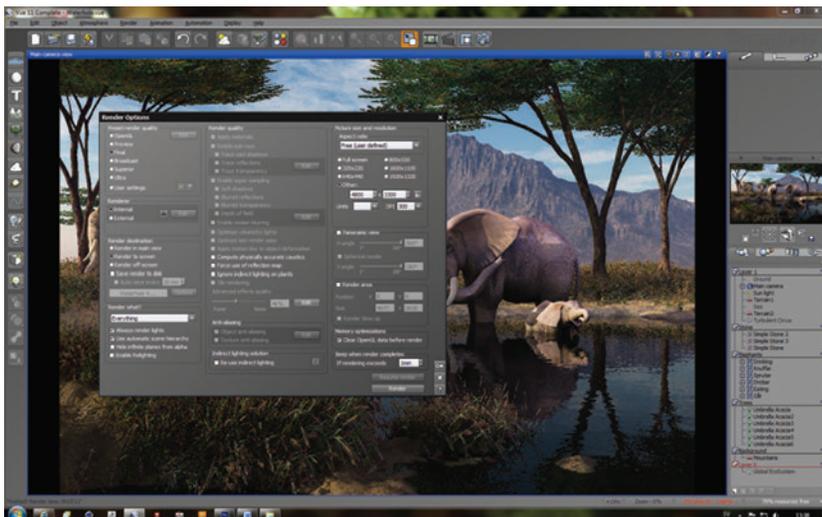
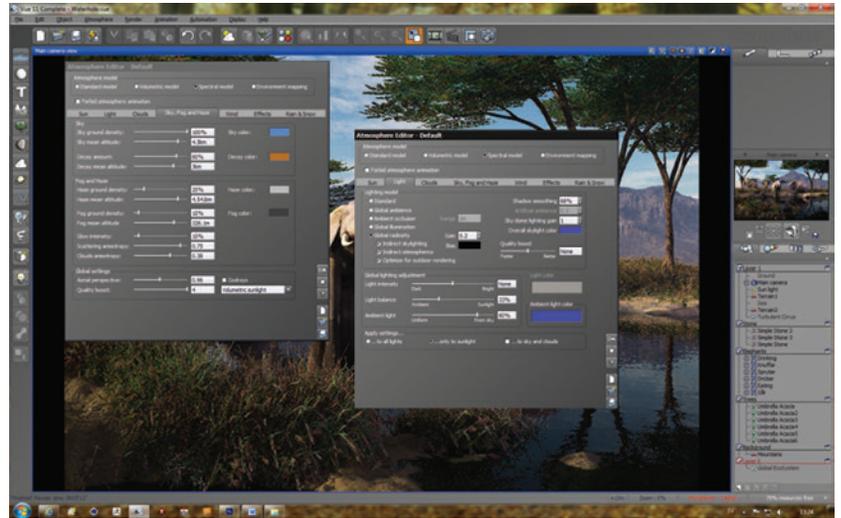




STEP 16 THE SUN To get the sun into the right position it was set with the azimuth at 98.09 degrees and the pitch at 20:58 degrees. Remember to untick the Attach sun to camera direction option to get it positioned properly. The sun itself isn't visible in this lighting setup.

STEP 17 LIGHT AND SKY, FOG AND HAZE

Using the Atmosphere Editor the lighting mode was set to Global Radiosity with Sky dome lighting set to Gain 1 and Gain 0.2. GR lighting is the most complex but also the most realistic. Additional global lighting adjustments included Balance: 33%, Light and Ambient Light: 80%. On the Sky, Fog and Haze menu the Quality Boost was increased to 4 with volumetric sunlight for extra quality.



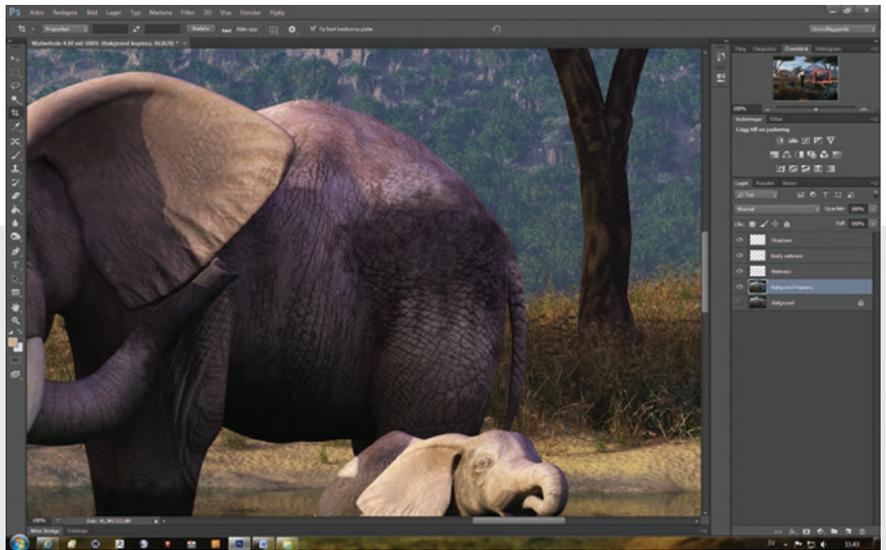
STEP 18 THE FINAL RENDER Now that the scene was pretty much finished it was time to render it out at 4800px wide and 3300px high. Thanks to the complex lighting model the render time was a fairly hefty 11 hours.

STEP 19 POST WORK IN PHOTOSHOP

There were quite a few post production touches, starting with making the elephant legs look a little wet. The brush tool was used in the Colour blend mode to paint a darker colour up the legs and on some on the bodies of the baby elephants.



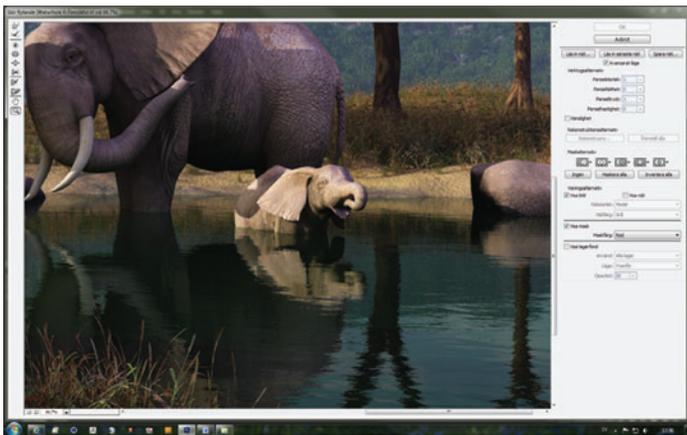
STEP 20 ADULT ELEPHANT In order to create more realism the spraying elephant also needed patches of damp and wet skin. These were painted all over the torso and the trunk as well. A separate layer was created for this alone.



STEP 21 BREAKING UP THE SHADOWS The next step was to break up the outline of the shadow from the elephant. The brush was used in Normal mode and dark and light areas were painted in so that the shadow had a more natural look. A new layer was created for this as well.



STEP 22 BANK SHADOWS It's one of the weaknesses of Vue that shadows can often be far too rigid when falling onto a moving surface. After adjusting the one on the water from the elephant the same process was used for the shadows falling onto the bank, to break them up and look more natural. A brush in Normal mode was used at Opacity: 20% for this.



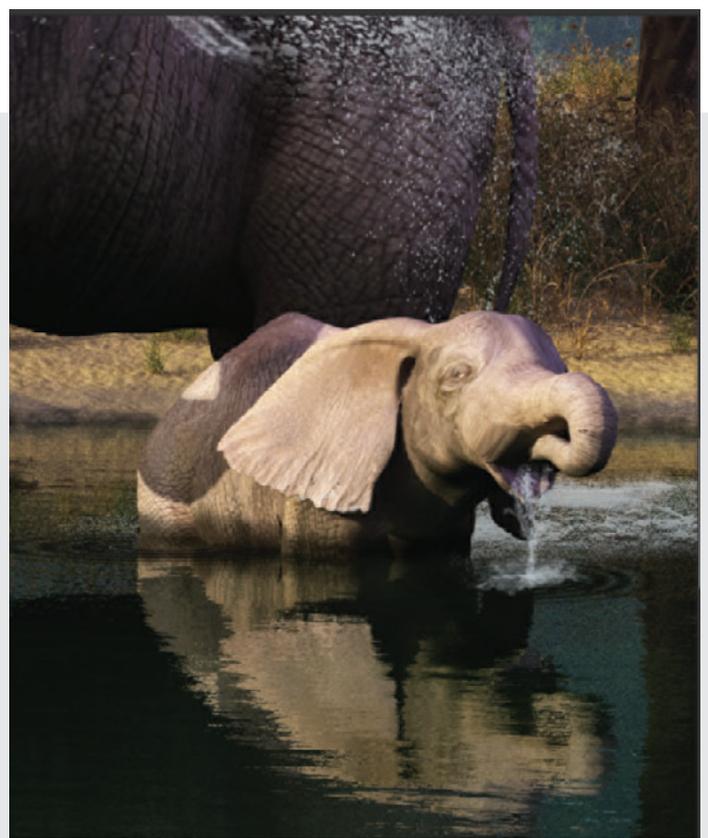
STEP 23 MAKING EDGES NATURAL The models for the elephants are quite good but you still end up with sharp angles and no protruding hair which you would find on a real animal. The Liquefy filter was used to make the edges less uniform. The edge of the elephants' ears in particular needed attention. The aim was simply to give them rounded or uneven edges that didn't look like 3D models.



STEP 24 WATER SPRAY As the elephants were playing and drinking in water the image needed water spray and water itself running from their mouths. Different brushes were used with water effects that were placed on separate layers so anything which didn't look realistic could be redone or removed. For the first layer of spray a custom brush set called Ron's Splashes was used.

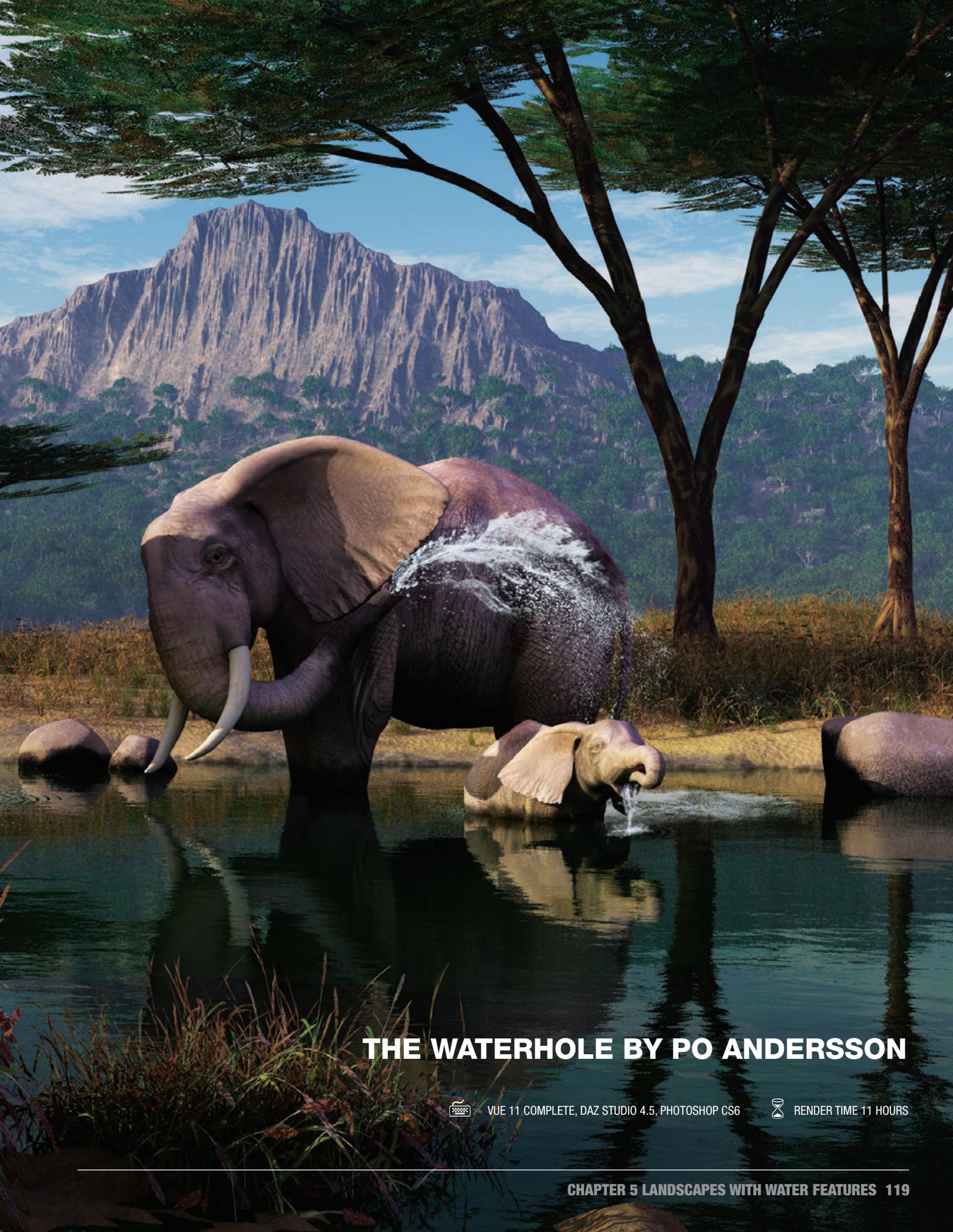


STEP 25 WARPING THE WATER I continued using brushes from Ron's Splashes to add the water that flows from the mouths of the elephants. The water was adjusted using the Transform warp. As this was done using a number of layers the individual opacity of each was reduced so the effects would blend together more naturally.



STEP 26 WATER RIPPLES The final effect to add was concentric water ripples from where the water from the elephants fell back into the waterhole. Then the colour and contrast were tweaked and all the layers merged down to complete the image.





THE WATERHOLE BY PO ANDERSSON



VUE 11 COMPLETE, DAZ STUDIO 4.5, PHOTOSHOP CS6



RENDER TIME 11 HOURS

DESERT SCENES SHOWCASE: SHANE PERRY

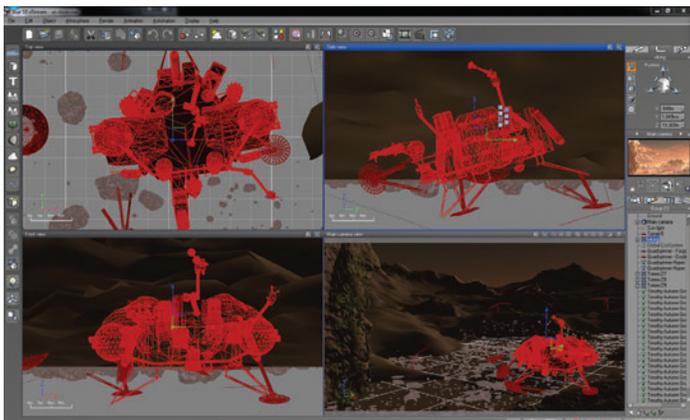
“ Viking 1 was the first of two spacecraft sent to Mars as part of NASA's Viking program.

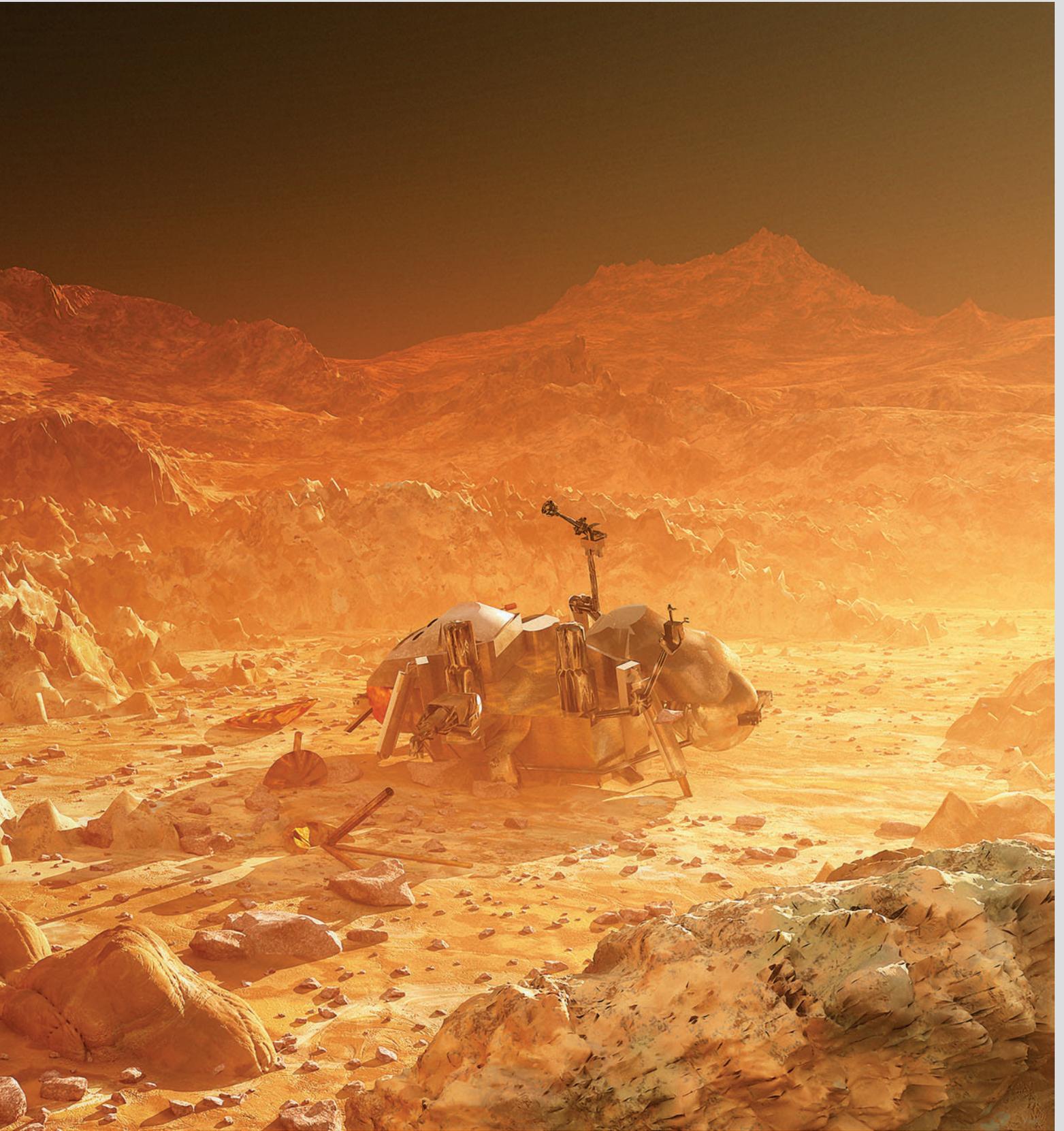
I created this image because I always wondered what happened to this craft which was never heard from again. So I created this rocky and dusty scene to create a story for what happened.

I used ZBrush for rocks, some sci-fi plants, the model came free from the NASA website and World Machine 2 was used for the background hills and a sci-fi atmosphere. There were a lot of adjustments just to get the dust and sun effect right. I spent two hours just on this aspect.

”

PROJECT	SO CLOSE
SOFTWARE USED	VUE 10 XSTREAM, ZBRUSH 4, PHOTOSHOP, WORLD MACHINE 2
RENDERING TIME	4 HOURS ON AN INTEL QUAD 4, 8GB RAM MACHINE
ARTIST	SHANE PERRY
COUNTRY	NEW ZEALAND





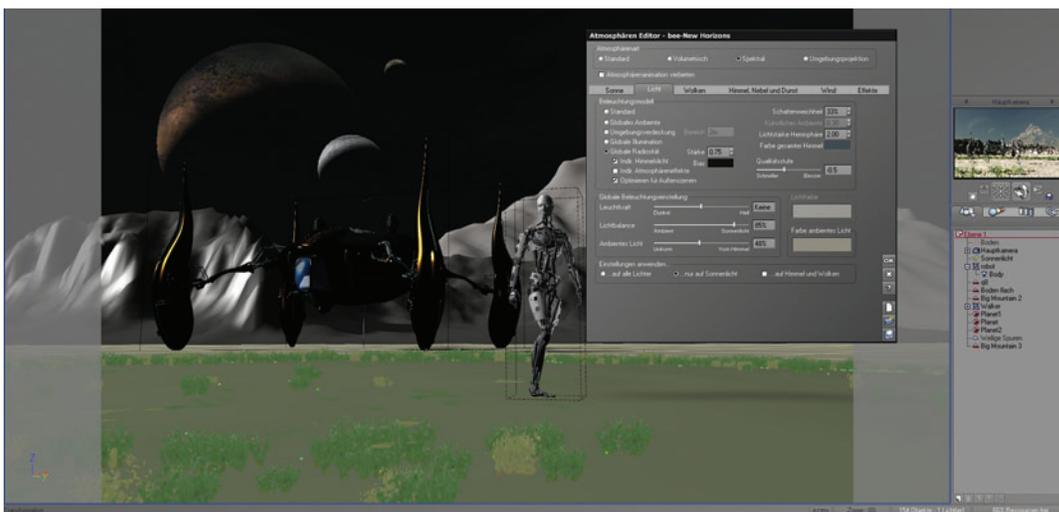
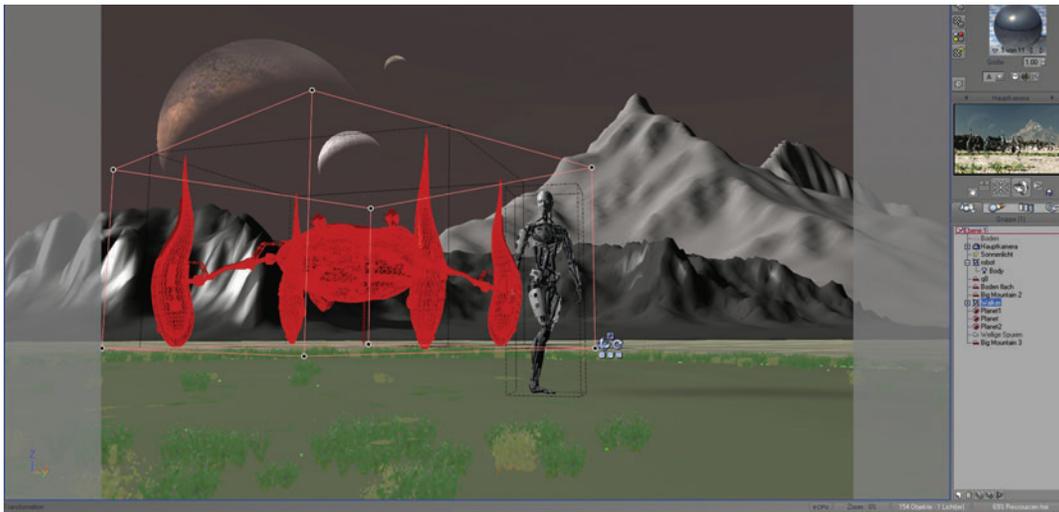
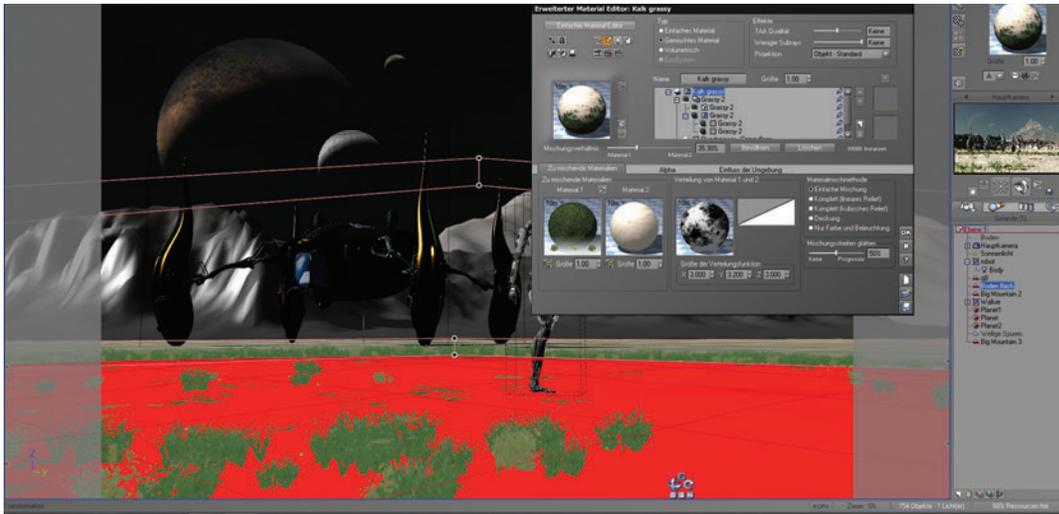
“ As I browsed through the catalogue of models at DAZ3D, I discovered by chance a humanoid robot who looked like the one from the Will Smith movie, *I, Robot*. The film was about a robot with its own awareness. As a result I came up with the idea of making a picture with a robot who has developed self-awareness, and with it has the desire to explore new worlds with his spaceship. The desert is a mixture of sand material with patches of light grasses. The escarpment and mountains are separate landscape terrains arranged in the background. ”

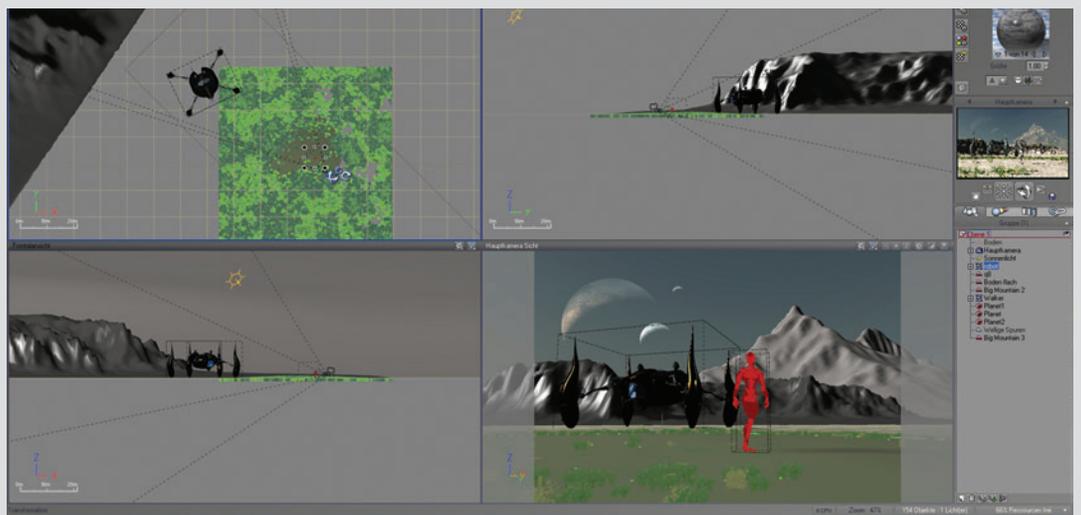
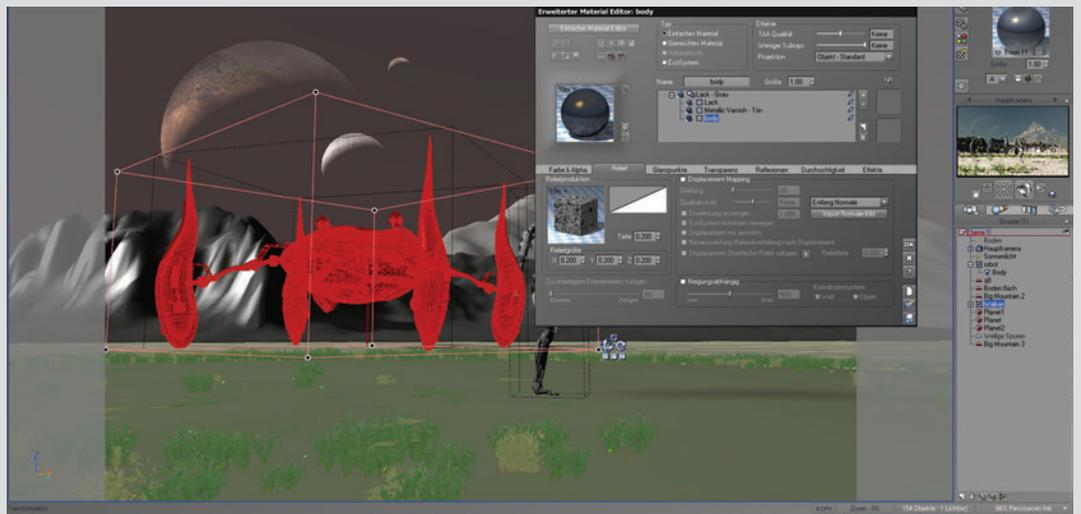
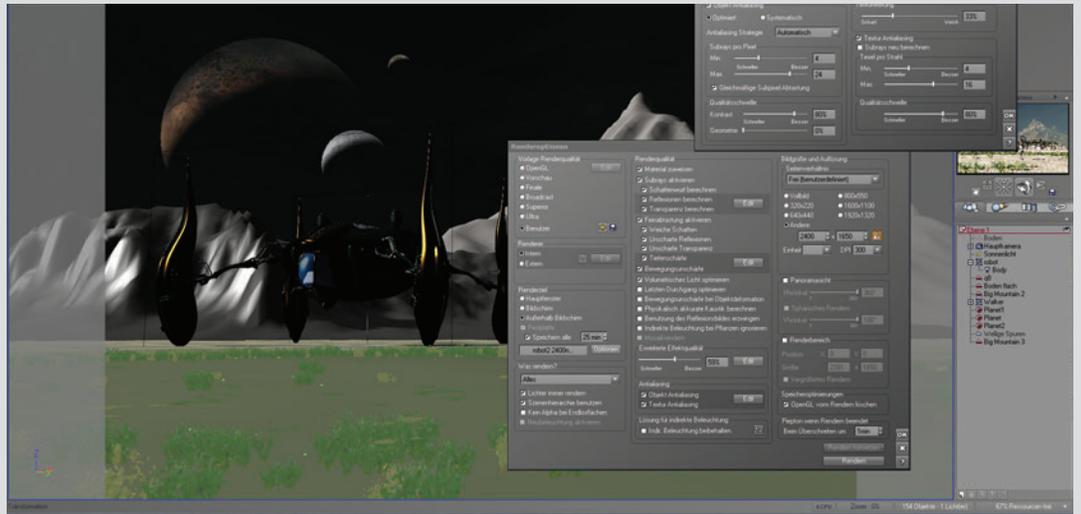
PROJECT	CUM SARCINULIS
SOFTWARE USED	VUE 10 COMPLETE
RENDERING TIME	159 HOURS 6 MINUTES
ARTIST	WOLFGANG KEIM
COUNTRY	GERMANY





DESERT SCENES SHOWCASE: WOLFGANG KEIM





THE SECRETS TO A PERFECT BEACH

Iliya Atanasov reveals the workflow used in creating his incredible Malaysia Dream image.

BACKGROUND

I was inspired by the beauty of Malaysia when I was on vacation there this winter. Diving in the islands of east Borneo I found a small island with a local village on it. The people were very poor with no water and electricity, but it was a very clean and nice place. Personally, I come from a small mountain city so I have been always attracted to well-organised living places. In this Mali village with nine to ten streets, you can find a lot of charm and beauty. The streets are kept clean, the houses are made from wood planks, roofs from palm tree leaves – only natural materials. Everything is closer to nature. Because of that the people are very friendly and, even though poor, they invite you in for a cup of tea and some dry fruits. I was very excited by

these people and their place, so I decided to capture this moment in a computer generated image. I wanted to give it a more dreamy feel, like somewhere surreal, with strong saturated colours and glowing highlights. The island was at water level with no high mountains on it but, for the sake of better composition, I decided to add one.



MALAYSIA DREAM BY ILIYA ASTANASOV

Here you can see some of the real references of the islands, sky, houses from the location itself. When I looked from a distance there were so many elements that it was impossible to remember everything at once. So, I took a number of photos and examined the details house by house, tree by tree, to organise them in my mind. The number of objects that I would see and that were going to go into the 3D landscape was a challenge. I started by exploring the photos one by one to decide what should go into the artwork.



MODELLING THE ELEMENTS

I started with modelling simple objects such as different houses, boats, elements, fruits, leaves, junk, clothes and so on. I used Maya paint effects for the roofs of the huts using combinations of straw covers and dead palm leaves. I had a lot of real references, so I could explore different designs of the huts. After that the rough assembly and composition of the scene continued. I wanted a low angle with the camera at eye level, using a 32mm lens. This is the same angle I saw the village from on the boat. The idea was to see some part of the water plus the small houses, the beach, the boats, to capture the exotic feel of the place. The water was very important being bright blue and turquoise, a typical colour for this kind of place. The houses had millions of small details and elements hanging on them, so I tried to add as many as I could remember. There was a feeling of chaos from observing the actual scene, that's why more small objects were thrown all over the place.

Local villagers spend the whole day on or in water, mainly fishing, that's why it was important to have lots of boats. The whole beach was covered with old boats. I tried to model and duplicate as many as I could, again in a chaotic way, scattered everywhere on the beach. Some of the boats had engines, most didn't.

After that I started on the foliage process. I used Maya paint effects for trees and plants, and also some of xfrog trees I have collected over the years. Some of the palm trees were high over the huts, some of them were literally going inside the windows. People were using them to hang objects and clothes, even to pull objects via wires from window to window. Most of the houses had lots of gaps in the walls which came in handy: with the high temperature and humidity, the holes acted as a natural fan for the occupants.

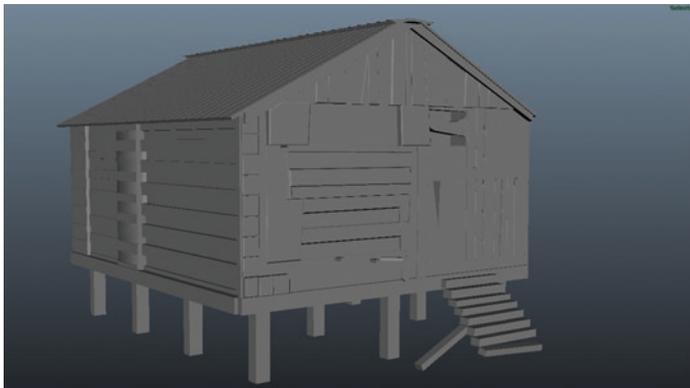
Later I decided to add some mountains in the far background, because the composition lacked depth. Here the program Vue came in handy, because duplicating hundreds of trees became too difficult for Maya to handle. The two programs have a bridge between them so it was easier to export the camera from Maya to Vue and vice versa. In Vue I used a procedural terrain with a noise modifier. Later I saw that the two mountain peaks looked very similar. They weren't duplicated, it's all one mesh – it just happened like that. For the modelling techniques I used polygonal modelling from simple objects such as spheres and squares, following the source pictures I had. Boxes were extruded to make the walls, cylinders for the water tanks and sometimes the polygon tool was used to build the cloth objects. I used curves for some of the boat exterior hulls and the loft function between them to make the shape. Some of them are just extruded boxes. Extrude, split and cut were the main instruments used. I added ropes, bolts and hanging stuff to help hide some of the low-poly feeling of some of them.

The sandy beach was a plane with noise modifier to make small sand waves on it. Later, displacement was added as well as the materials. The actual beach was much dirtier and more full of rubbish than the one I made but I decided it would look nicer and be quicker not to include all the junk.

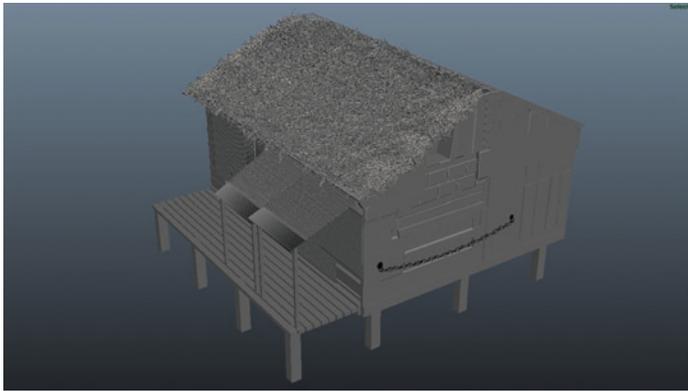
The water was a simple plane again, with displacement added later to the shader. Overall I spent two or three days modelling and preparing the objects for the scene.

TOP TIP – INSPIRATION BEFORE PERSPIRATION

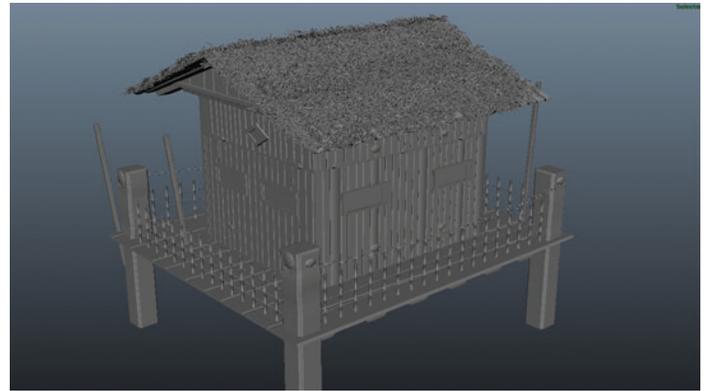
For me the most important thing is the inspiration. If you are inspired by something you can create art. Everything around gives me this inspiration. Nature surrounding us is so beautiful and rich that I can find millions of ideas for recreating it in my own way. Observe, feel and be creative! Art direction first, the technical work follows after.



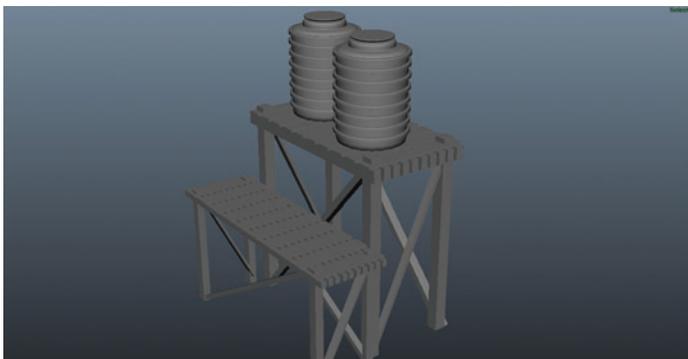
Black and white shaded models of some elements in the scene.



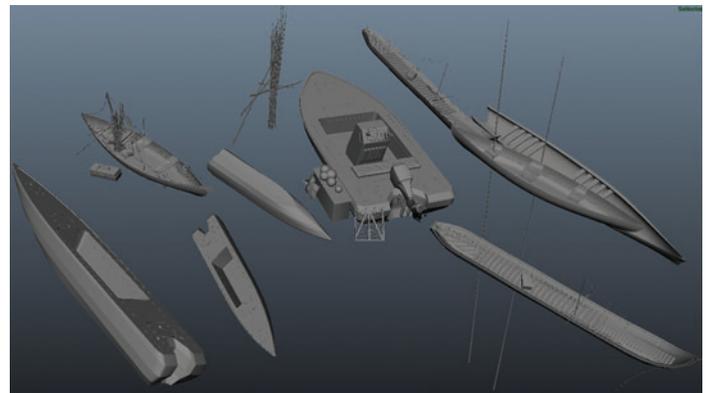
The beach huts used a paint effect for the straw roof material.



The simple poly-modelling technique was used for all walls, roofs and elements



Here's one of the smaller elements in the scene – some water containers.

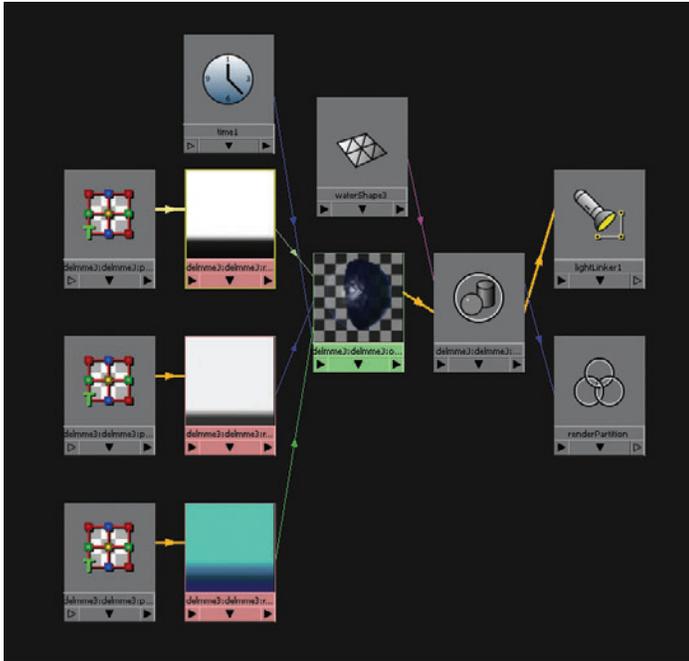


Lots of different types of boat and boat hull were created to populate the shoreline.

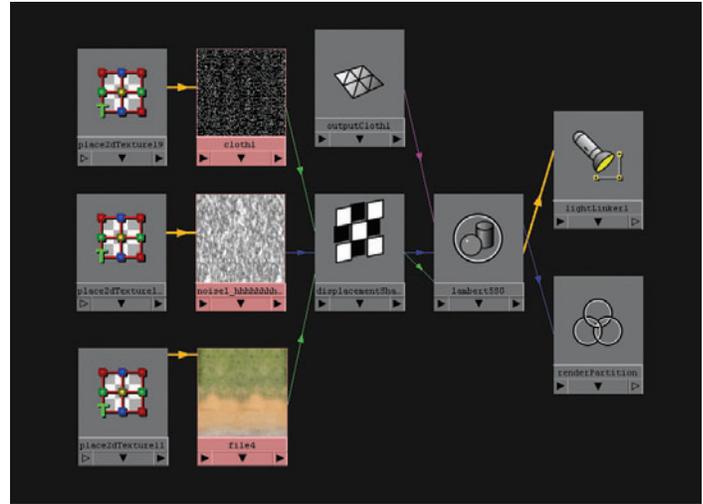
ADDING TEXTURES AND MATERIALS

All the textures were used from the real photo references I shot with the camera while I was there. With the help of Photoshop I made different files with the UV coordinates from the different objects. All the materials were simple Maya and Mental Ray shaders. Blinn and Phong materials were used for some small objects like fruits, containers and hanging cloth items. For bigger objects like the houses themselves I used MIA Material X shaders. They spread the light much better than the Phong materials. For the channels of the materials I used colour, bump and some specular attributes connected in most cases. There were reflections on the wood materials, but very blurred. I experimented with the SSS shader for the leaves of the trees, but with the high number of polygons in the scene, the render just became too long, so I used a translucent attribute instead. This made the leaves bright, but lost the depth in the tree. I corrected that later by adding an ambient occlusion pass. I had a hard time with the sand material because it didn't work the way I expected. After while playing around, I came up with something very easy – normal blinn material with procedural noise for the displacement and procedural cloth node for the incandescent.

For the ocean I had been using Maya ocean shader with ocean displacement, ramps for the transparency and reflectivity. I also experimented with a couple of materials to see how they looked. In the end I decided not to use a refraction blur on the material, as in the real life, again because of rendering time issues. The texturing process took up the majority of the time on the project, along with the modelling.



Graph of ocean shader. Some gradients were used to achieve a more transparent look closer to the shore and darker going inside. Another gradient was used for colouring the water.



Graph of sand shader. Normal blinn material was used with procedural noise displacement on it. Procedural cloth node was placed in incandescence node to give the feeling of very bright sand particles on it. Manual mapped texture was used for the colour – greenish on the top where the houses are and pure sand on the bottom where the water is.



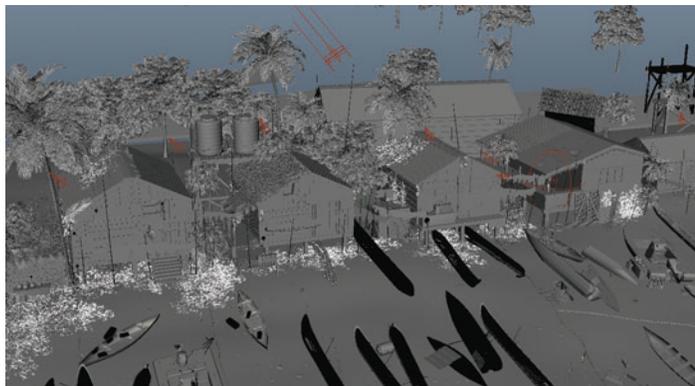
Examples of the colour textures for some of the objects. All the objects using one type of material were placed in one file. This made the working process a little faster and easier.

INTRODUCING THE LIGHTING

For the lighting model I used Mental Ray physical sky and sun. For outdoor lighting I find this technique works pretty well and is very fast for rendering. The createNode mip_rayswitch_environment node was added in combination with createNode mib_color_alpha with factor 0 to kill the natural colour of the Maya sky to make compositing in Digital Fusion easier, later. An additional directional light was placed opposite the sun direction with bluish tint to fill the shadows better. For the dreamy feel it's crucial to have a strong separation of the main and fill light colours, so if the sun is bright yellow and orange, the fill light must be more saturated blue. Also another 10–13 spots lights were used to light small sections of some of the elements such as over the house roofs and trees, for additional control of the specular and diffuse effects. Some of these lights are reflected in the water.

I wanted the lighting to be more like at early morning. I chose to place the sun on the left hand side to light the bay more. Because of this the front parts of the houses are more in the shadow than lit. I did it this way on purpose to create the feeling that nature is much stronger than all of us, and that human actions and inventions are a very small part of everything all around. The scene lets you focus not only on the houses but the surroundings as well.

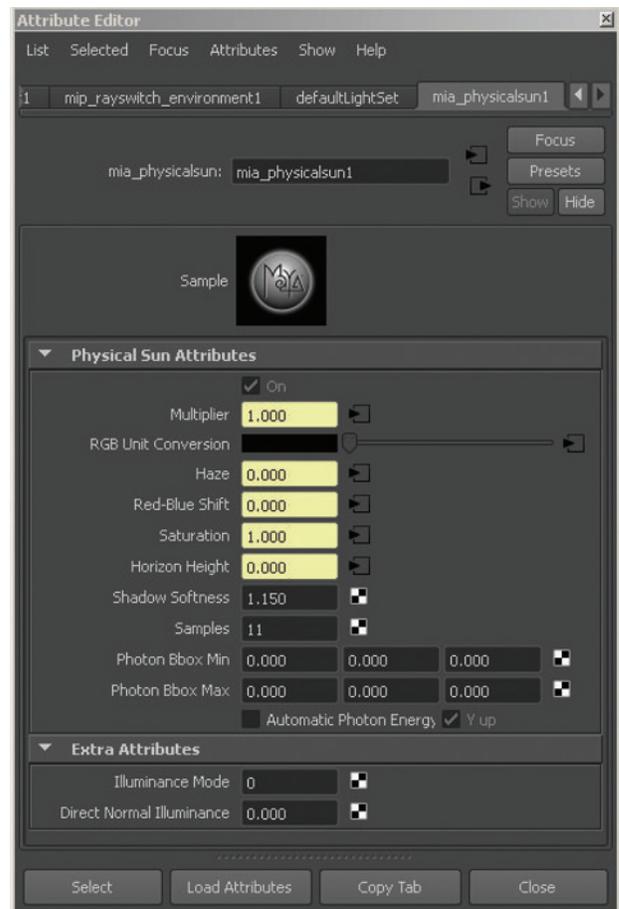
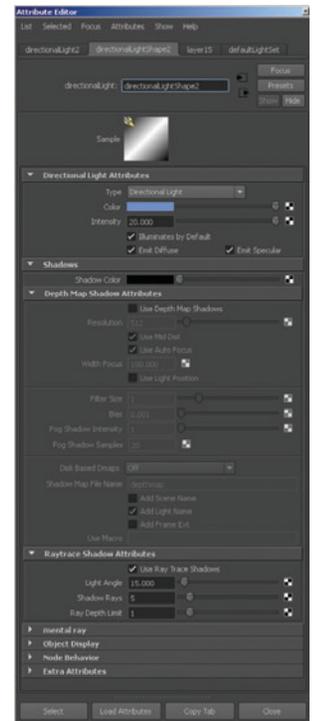
I decided to leave the water clean with no underwater rocks, fish, corals and so on, even though this area is one of the top 10 diving sites in the world and the underwater scenery is very rich, starting almost immediately from the shoreline. The focus of the image was the houses and scenery and a rich underwater element would have distracted from them. For obtaining better specularities on it, I used some of the lights to light the camera, so that the bright spots of the water waves can be seen better. This is a cheat, because the actual sun is on left hand side, not in front of the camera, but I decided that the image would look better this way.



Positions and number of the lights in the scene. One directional light for the sun, one opposite for the fill light, many spot lights to highlight certain corners of the houses and trees.

The light settings of the fill light also use ray traced shadows.

The physical sun settings use mainly defaults, beside bigger shadow softness and larger amount of samples to smooth the shadows better.

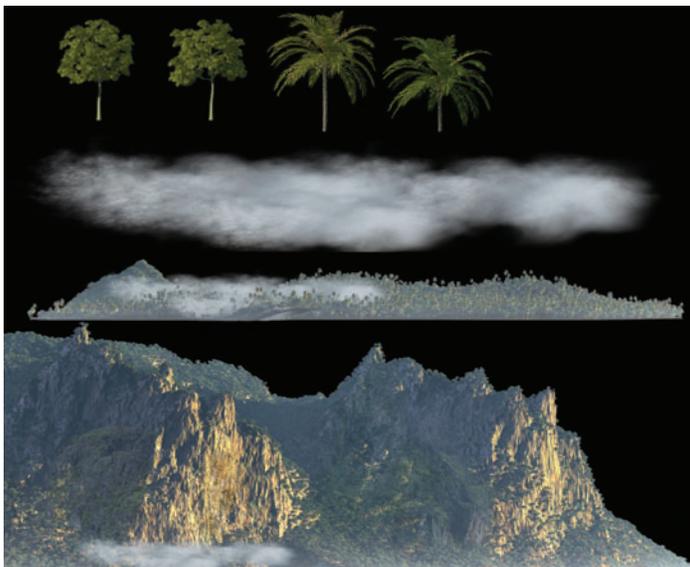


RENDERING IT ALL OUT

I started this project with an idea to test Vray for Maya. Unfortunately while actually creating this project I realised that it takes much more time to render than with Mental Ray, especially when more and more polygons are involved in the scene. Overall the scene reached 28 million polygons for the Maya part of the image. The background mountains were rendered in Vue. I rendered different passes which I composited together in Digital Fusion later to achieve the final result. The separate passes were required to give better individual results for each element and to control the final mood of the piece.

The rendering of the ocean took a couple of passes, render with and without global illumination, water with displacement and only with reflections and bump. Finally, I used all of them to assemble the final look. In the rendering settings I popped up the Anti-Aliasing a little higher than usual, with an idea to capture some small details in all of the elements in the background. The final gather was turned on, but with only modest accuracy because there aren't too many light sources and there weren't a lot of reflective and refractive objects in the scene other than the ocean.

The separate elements from Vue were rendered out with lighting to match the Maya scene so I used them for final assembly of the image. All the passes were rendered with z-depth channel, so I could put additional blur and fog in the compositing later. The machine I worked on was a Dual Xeon processor, with 24GB of RAM. The rendering of the beauty pass took around two hours at 4500 * 2532 pixels resolution. The completion of the whole project took about one full week of work. It was made for fun, so I was working at different times of the day.



Some of the rendered elements used in the scene – trees, clouds, far mountains.

TOP TIP – PLANNING IT OUT

Always, when making artworks, think through all the stages at the same time. Otherwise you end up remodelling, relighting, changing textures and all the other stuff later. Of course, this isn't possible every time, and some last-minute ideas can always be worked in, but if you plan all the elements out first, it will save time in the long run.



This is an ambient occlusion pass. Used later in Multiply mode to compose with the colour pass.





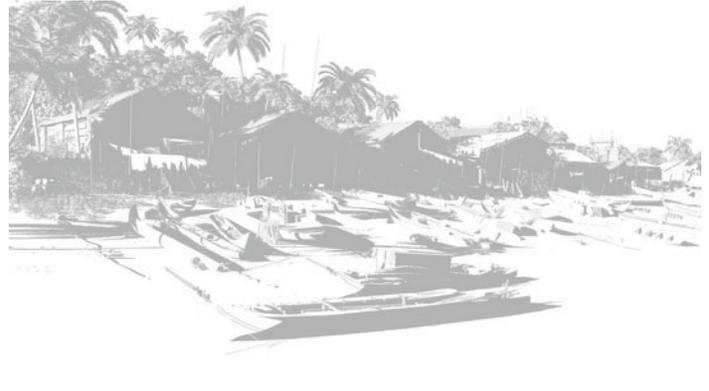
This is a dirt pass – I used it to add some variation and darker places in some of the objects later in compositing. I used polygon tools to separate different parts of this image to be shown with different opacity over the colour pass.



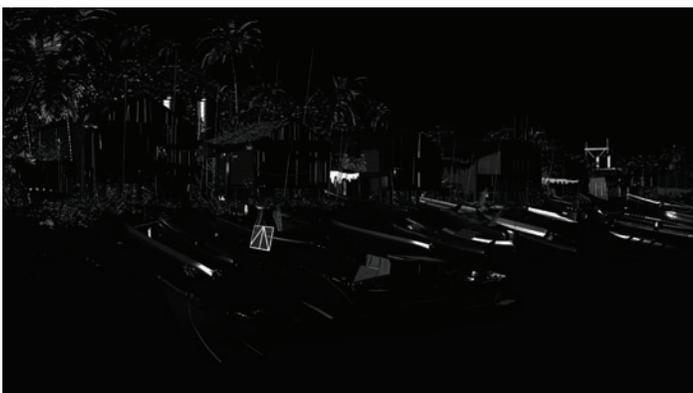
This is the fog pass. I used on screen mode over the colour pass to achieve stronger depth in the picture.



This is a diffuse pass again, but with a different ocean. I mixed both of them to achieve the final look.



This is a shadow pass. I used it for better control over the shadows in the picture. With the layer using Multiply mode, I made some areas darker than others

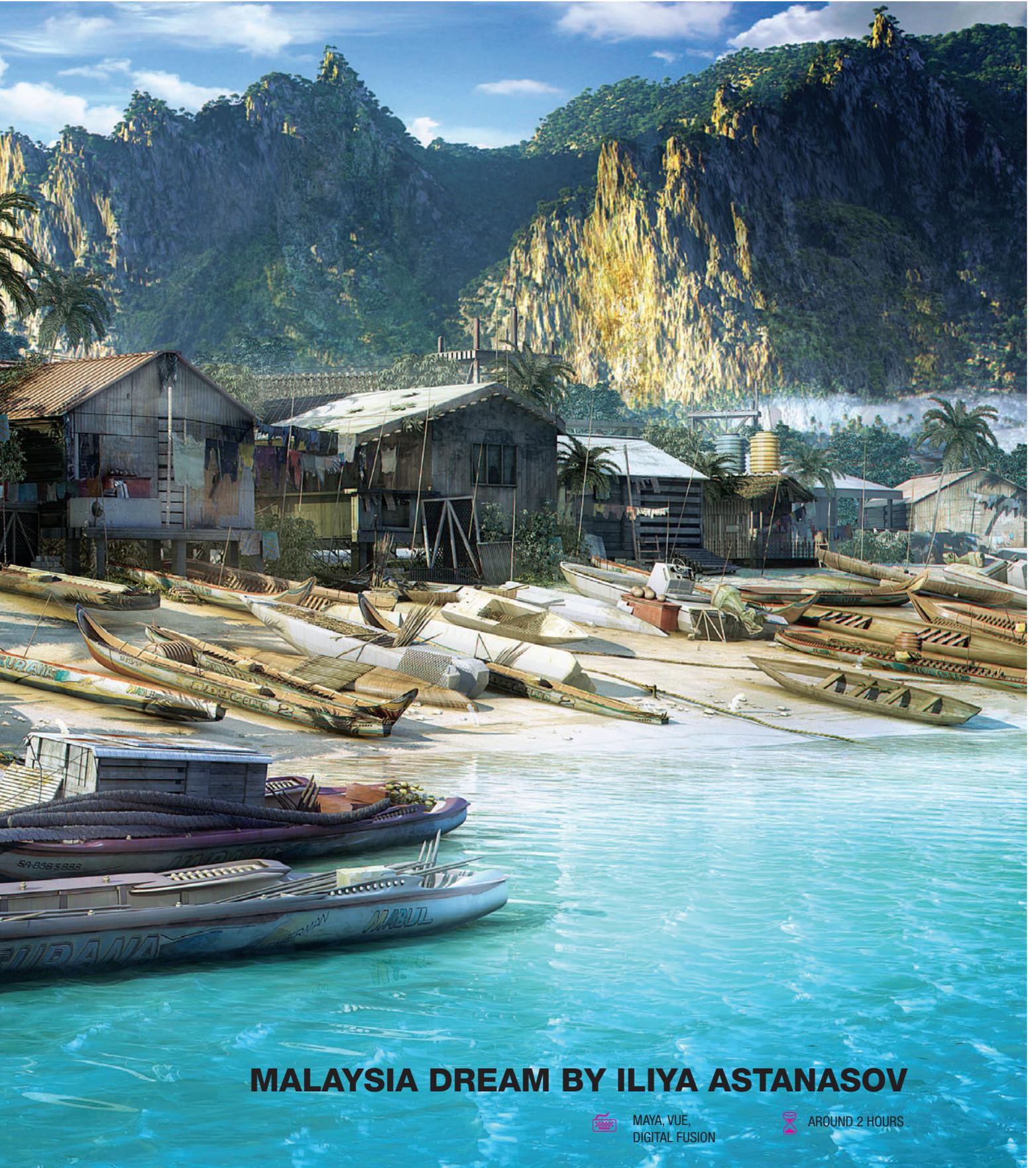


This is the specular pass. I used it to highlight certain points of the colour pass – some leaves, bright side of the boats and so on.



These are the render settings I used with Maya sun and sky, final gather turned on with an accuracy of 155 and filter put to 2.





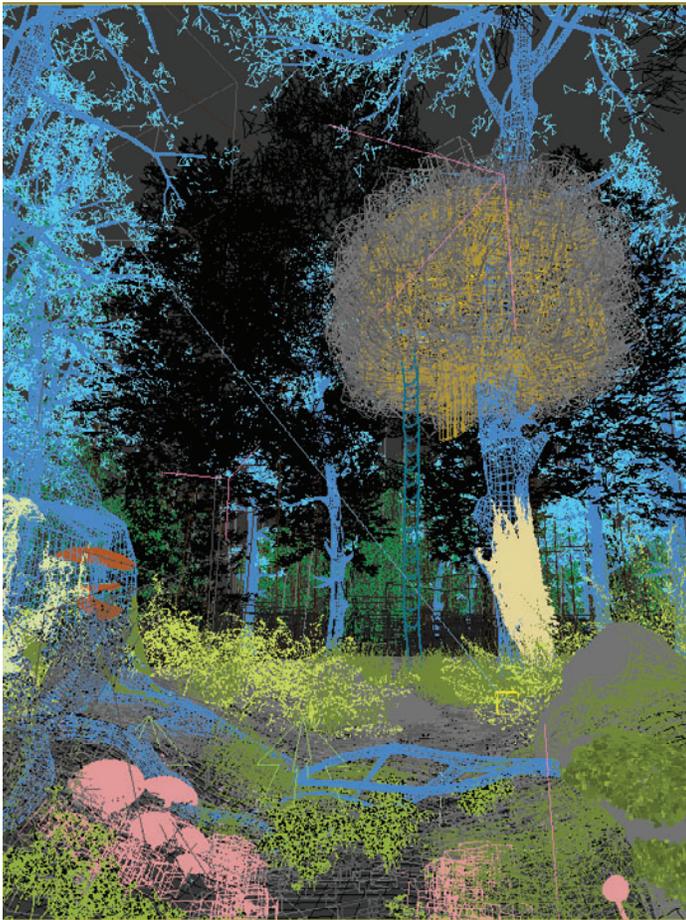
MALAYSIA DREAM BY ILIYA ASTANASOV

 MAYA, VUE,
DIGITAL FUSION

 AROUND 2 HOURS

WOODLANDS SHOWCASE: VASIL KIROV

“ I wanted to create a photorealistic, nature-based environment. I was inspired by a Bertil Harstrom design for the nest house. I like volumetric light effects and thought they would be very effective in a woodland setting, so I checked some reference images over the internet. ”



PROJECT	MIST FOREST
SOFTWARE USED	3DS MAX 2011, VRAY 2.30, ADOBE PHOTOSHOP
RENDERING TIME	MORE THAN 20 HOURS ON QUAD CORE PC
ARTIST	VASIL KIROV
COUNTRY	BULGARIA



“ This image combined a number of concepts including the mountain ranges and tree population for them in the background. The Alpine cottage is the focal point, which caused some problems with shadows on the wall being too grainy but these were mainly cleaned up. The foreground is a collection of flowers for an Alpine meadow, but with a shallow depth-of-field, these are out of focus. ”



PROJECT	PYRENEAN COTTAGE
SOFTWARE USED	VUE 10
RENDERING TIME	4 HOURS
ARTIST	MASSIMO VERONA
COUNTRY	THE NETHERLANDS

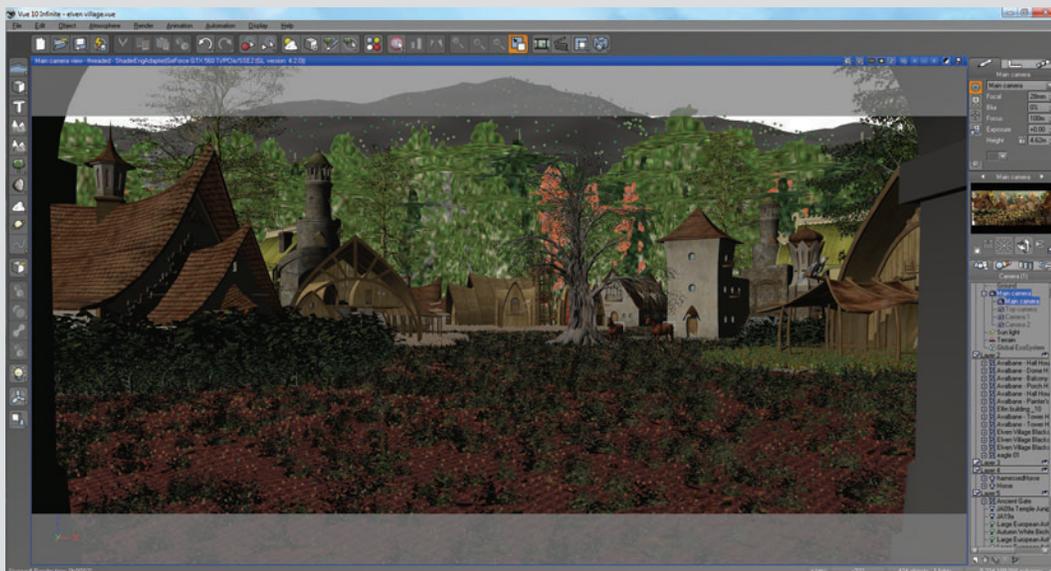




“ I always wanted to make a deep forest scene. I picked an Elven setting, surrounded by lots of trees. I used the FFF metanode from Barry Marshall to create all the flying leaves. The trees came from xfrog and there are over 424 models in this scene. The lighting model used was radiosity for a realism while the polygon count reached 5,334,189,016: that’s over five billion. ”



PROJECT	ELVEN VILLAGE
SOFTWARE USED	VUE 10 INFINITE, POSER 2012 PRO, XFROG
RENDERING TIME	37 HOURS
ARTIST	MICHEL RONDBERG
COUNTRY	THE NETHERLANDS



MAKING A RIVERSIDE FOREST IN WINTER

Britta Jacobs reveals the techniques required to construct a winter woodland scene, complete with snow.

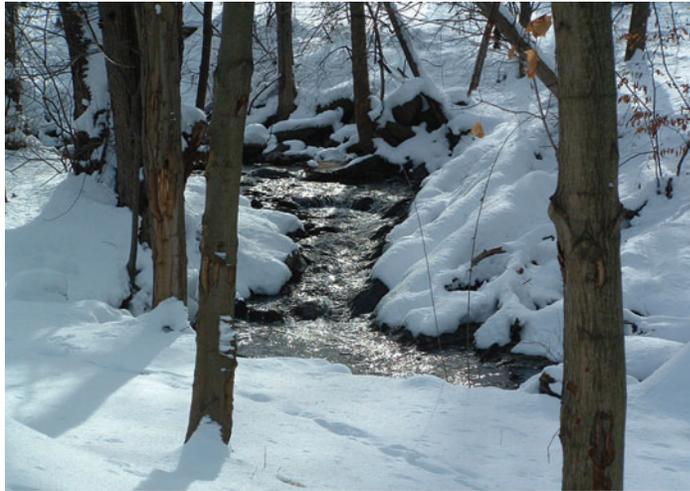
SCENES OF INSPIRATION

Inspired by a documentary on television about the Spreewald landscape southeast of Berlin, Germany, I began to search the net for photos about Spreewald in winter to get more impressions about this wonderful place. The very flat landscape with little canals built by the river Spree with lots of old trees almost looks like a fairy-tale – and it is nearly unbelievable you can find such a quiet and somehow back-in-time place just a few kilometres outside a buzzing metropolis. These fairy-tale looks were what made me think of doing a render. As I love to do winter images, winter was the season I chose to create an impression of this type of landscape. That meant a certain choice and creation of materials and creating a special atmosphere for this render.

One of the photos I found with Google inserting just 'Spreewald' and 'winter' was the inspiration for creating the overall composition of my render. The photo was taken by Ypsi and can be found here:

<http://www.flickr.com/photos/39008346@N00/3167236852/>

Before I start a project I always look for more information and details about the theme or location. Browsing pictures is my friend here, because I gain other perspectives and the picture of a special landscape gets more complete, more details added, although – in most cases – I have never been there in person.



Other typical woodland in winter scenes that formed part of the inspiration for the overall scene.





RIVERSIDE FOREST IN WINTER BY BRITTA JACOBS

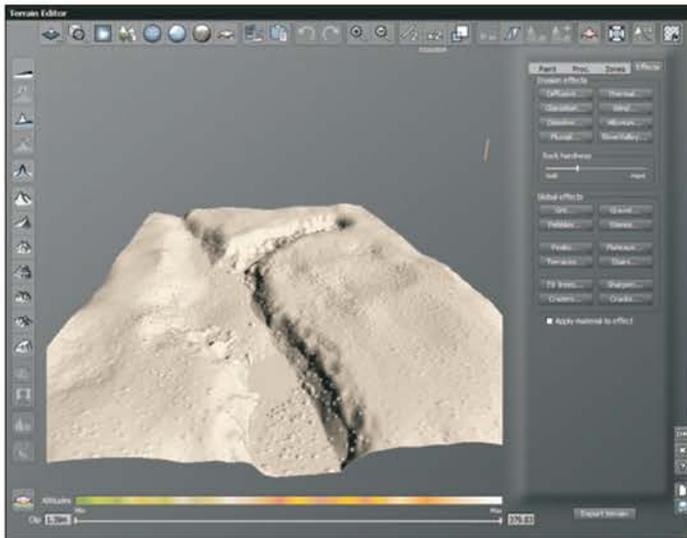
 VUE 11 INFINITE

 3 HRS 40 MINS

CREATING AND POPULATING THE TERRAIN

Setting up the render format from the beginning is always the first step. Vue comes with widescreen set as default, but for some renders Ultra-Panavision or A4 vertical might be better. In this case widescreen was just right.

The first modelling task was the terrain near the camera with a small canal coming in from the left side. I chose a procedural terrain, which is grown from a fractal and has a lot of detail near the camera – a lot more than a standard heightfield terrain. I changed the standard cubic size to 512 * 1024. Using the altitude modelling tool I created a flat landscape and modelled the little canal by sculpting it out. I added gravel and diffused it a bit to give the terrain the final look.



The material editor with the completed terrain, sculpted and gravel added.

TOP TIP – INTERESTING DETAILS IN TERRAINS

In terrain creation for such a close-up render it definitely pays to take a procedural terrain (which has more detail) and to add some interesting details to the surface with the effects you have at hand in the terrain editor. The material you add can only do so much. In nature you will find a very smooth surface only in rare conditions.

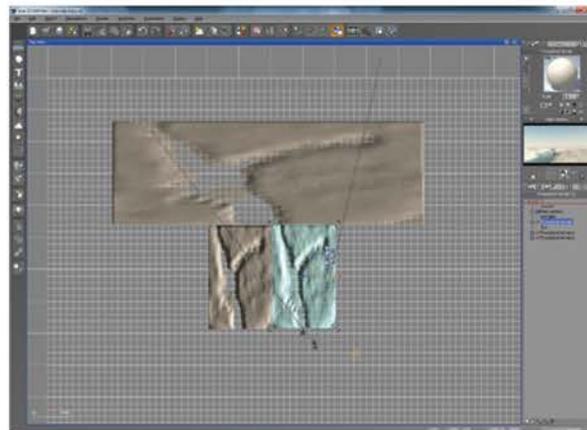


A first pre-render shows the terrain without material and ecosystem layers in a frontal position.

The next step was adjusting the camera and adding and levelling a water plane. As the camera angle was set up now it was obvious that even with trees on the terrain and a fairly diffuse winter atmosphere other terrains needed to be in the background to give the impression of depth. So I simply copied my terrain twice to cover the side and resized one of the copies for putting it in the background.



Pre-render with the camera adjusted to a different angle and the water plane added.



This is how the arrangement of terrains looks from the top view, showing that you can re-use elements without causing obvious duplication.

As this was a winter scene it was important to get the right kind of look from the start. So, I added a winter material to the terrain to make the water look more like how it appears in winter. It also changed the atmosphere for the first time. The material used for the terrain was called 'Snowdrift' and comes from the Winter materials mini-package by Gill Brooks, which is available at www.cornucopia3d.com. This contains six materials, three for land and three for water. I can only say this is well worth spending \$1.99 on for your winter scenes in Vue.



Snow material added and atmosphere changed to get a first wintry impression.

The next step is adding plants on the terrains, especially the trees. The photos of the landscape showed it had a nice sort of sleek, leafless tree terrain and I found one fine prototype in my collection: The leafless tree – old & dead – which comes with Vue Infinite and can be bought on Cornucopia 3D at \$9.95 for an alternative version. This is one of my favourite leafless trees because it is so versatile, especially if you have the Botanica module in Vue, which the professional versions have, and which can be bought for the more entry-level, Artists versions of Vue. The tree looks very nice as it is, but for my scene I had to change it a bit in appearance and material.

The tree has nicely defined root, several trunks and normally a heavy broad build. For my landscape I needed it to be slender and with a more wintry appearance.

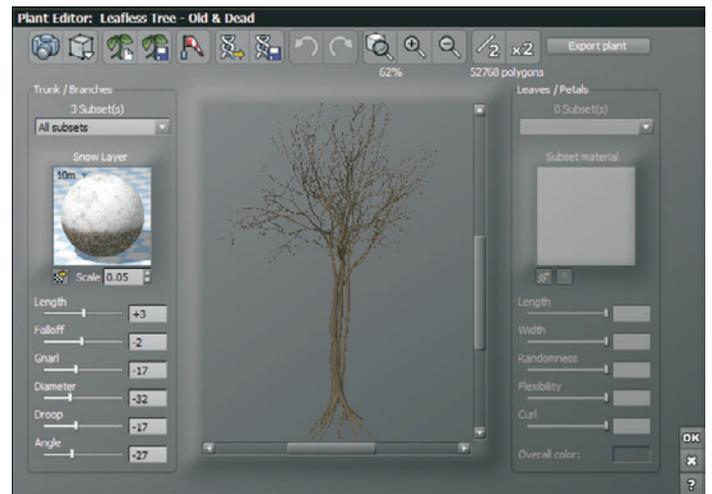
Vue has the nice feature in which you can safely change a model and save as a new species, and thus will have another model in your collection for populating your ecosystems – this was just what I did for this render.

TOP TIP – CREATING YOUR OWN SPECIES OF PLANTS

Creating your own species of plants is really fun and you have a whole additional wealth of possibilities not only by changing the subsets in their settings but also by giving them new, more detailed or different material for the bark or creating your own leaf, and saving the new tree, bush, grass or alien plant as a new species.



The Botanica Plant editor showing how the chosen leafless tree, old & dead, looks normally.



The leafless tree now changed to a slender-looking appearance, looking slightly covered in snow.

Populating the foreground terrain took a little time. The most natural-looking Ecosystem would, in most cases, be one painted by hand. But it's quicker, and it gives good results as well, to use the Ecosystem painter to rapidly populate a scene. Here I used the Ecosystem painter and experimented with the settings. The density ended up being 62%, decay near foreign objects was set to 3% and the proportions of the tree itself were set 86% to uniform. A grainy fractal in the density variation slot works very nicely to get a more natural looking population overall. It takes a bit of time and several pre-renders to get the look you want this way but it makes for a quicker workflow to get the forest background done. You can always refine the scene by creating and posing some 'hero' trees by hand.

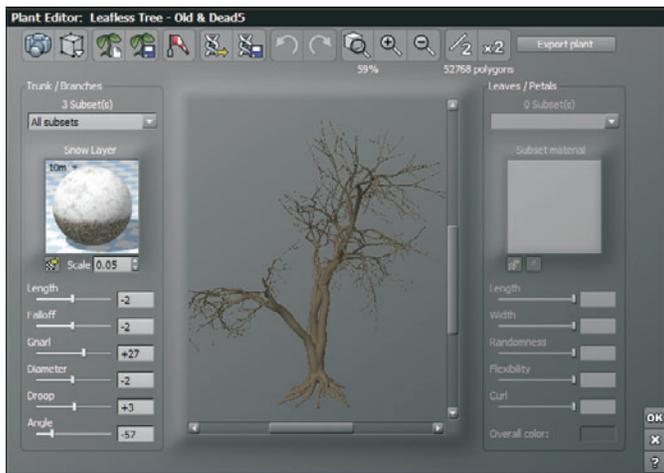
At this point the tree population looked very regular so some different tree models were needed to give the scene some points of interest. I created another new single tree from the leafless model – this time a gnarled one – and placed it on the left side of the canal pointing to the other side with the branches.



A pre-render with the first population experiments with the newly created slender leafless tree.



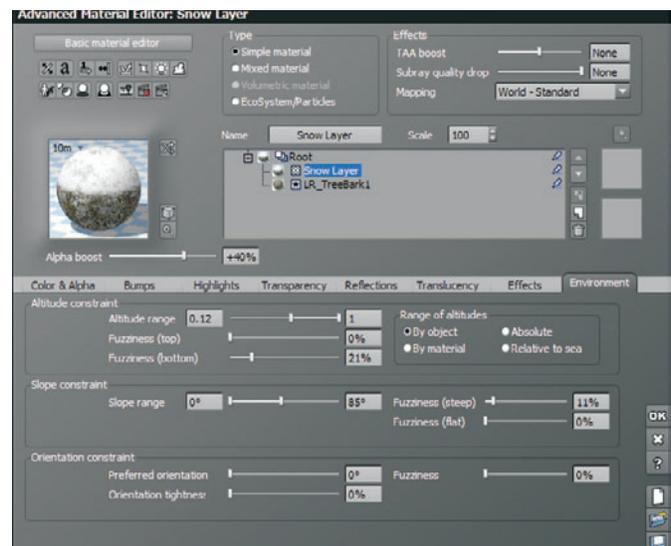
Pre-render of the foreground terrain with the different tree choices – this time without a general population.



The gnarled tree model created in the plant editor from the original leafless tree, old & dead.

Another model which fitted in nicely here, especially as a highlight for close up, was the Poseable tree trunk by Laurent Rodriguez, a very detailed, ivy-covered tree trunk – available for \$10.95 at Cornucopia 3D – again a very good choice for your renders. Two of these trunks were placed in the scene as points of interest. One was right in front to get the highly detailed textures to show and another, resized one, in the back, on the right hand side, was used to give a break into the similar-looking forest trees.

The Poseable tree trunk came as a highly detailed summer version which did not fit in my winter image so I changed the materials by altering the overall colour and adding a snow layer.



The setting for the added snow layer on the bark of the Poseable tree trunk.

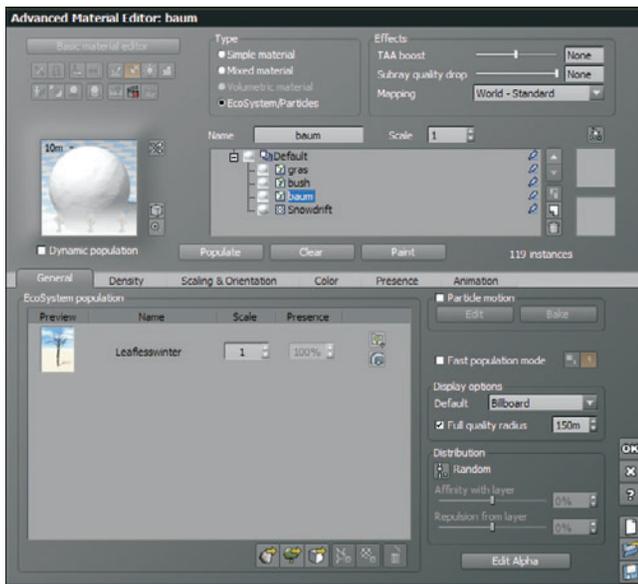


On the right side of the screenshot the colour change for the ivy leaf by just changing the overall colour is visible.

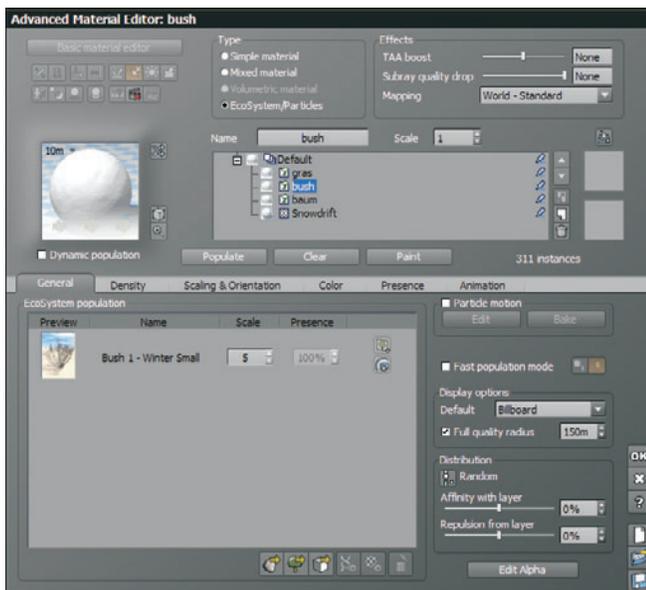
TEXTURES AND MATERIALS

With the tree for the Ecosystem created and chosen the terrains were populated with a first Ecosystem layer. The foreground terrain got some more Ecosystem layers to add to the natural look so another layer for bushes and a third one for grasses were added.

The tree layer worked well with the newly created species of the slender leafless tree with the density set to 62% and a grainy fractal guiding the population and making it look natural.



Material editor for the foreground terrain showing the three Ecosystem layers for trees, bushes and grass.



The second Ecosystem layer with bushes showing the settings in the Material editor.

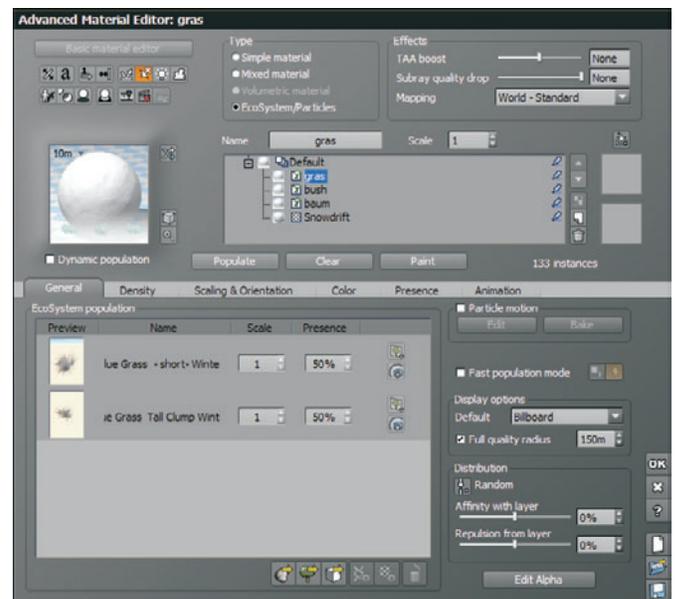
TOP TIP – NATURAL-LOOKING ECOSYSTEMS

Populating an Ecosystem has many possibilities. The most natural-looking Ecosystems are created by hand painting them. However, you can get very nice and natural-looking Ecosystems, especially for large scale landscapes, by populating them with a fractal (grainy fractal or Perlin noises) co-efficient driving the density.

The second layer to the terrain was populated with the small winter bush which comes with Vue. Here I changed the size to 5 to make it higher and fit in with the trees. The population density was set to 50.

The third Ecosystem layer was the grass. The ones used were Blue grass short white and Blue grass, tall clump, winter from the Winter Grasslands Megabundle by Martin Frost (available for \$13.99 at Cornucopia 3D).

Again the size for the grass was changed to be roughly 8 so it would fit in nicely with the trees and bushes. The population density was set to 98% which still left some clear spaces around it.



The Material editor showing the third layer of the foreground terrain using grasses for population.

TOP TIP – HARMONY IN SIZE

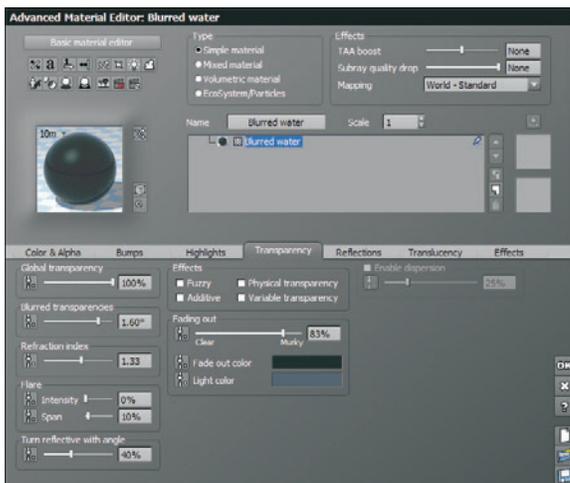
As sizes may vary a lot in the models you use for your Ecosystems, try them out on the terrain nearest to you with a single plant and render a crop to screen to get a feeling for the harmony of sizes. Thus you can adjust everything to fit in neatly before starting to populate for real.

Now the foreground terrain was neatly populated and only needed some details to finish the composition. The background terrains were then populated with the same materials by copying and pasting the same Ecosystem layers. The third layer of grass was deleted as it wasn't visible anyway and doing so reduced the polygon count. To save even more polygons and get a faster render the population method on the background terrains was set to automatic, but with dynamic population so only those parts of the terrain that were in the view of the cameras were populated.



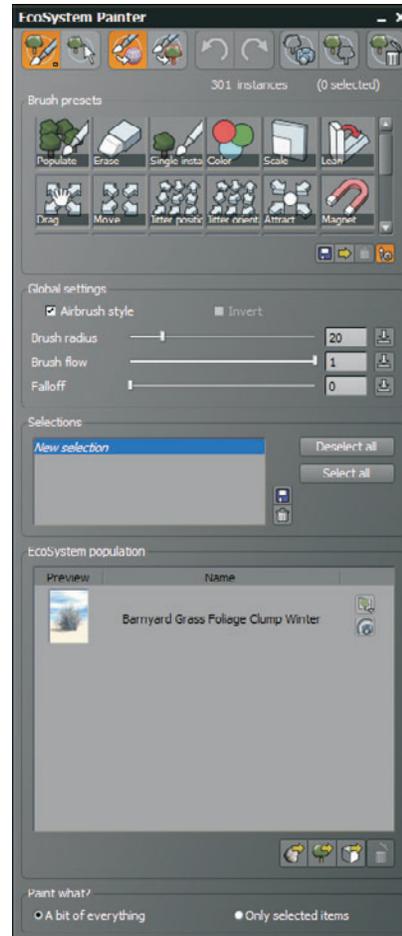
The foreground and background terrains now populated with trees, bushes and grass and some individual trees added.

For the river I changed the water material to reflecting dark water, which added to the impression of cold weather in this render. The blurred water from the liquids material folder, which comes with Vue, was selected and changed to my liking. To get the dark, but relatively clear, impression of winter water the fade out and light colour in the Transparency tab were changed to make it quite murky. To get the very calm surface the bump map was almost erased with a setting of 0.005.



The Material editor showing the water plane and the colour settings in the fade out and light colour of the water's transparency.

For finishing and adding some more details in the right places another Ecosystem was created. This time it was a global one so it could be painted on all the terrains. The Barnyard grass, foliage clump, winter selection was chosen from the aforementioned Winter Grasslands collection by Martin Frost to paint in at those places where they would complete the natural look. Another three winter rocks were added to the sides of the river. These were rocks from Laurent Rodriguez second collection of sculpted rocks, available from Cornucopia for \$11.



General ecosystem settings to add some more details with a bit of different grass.

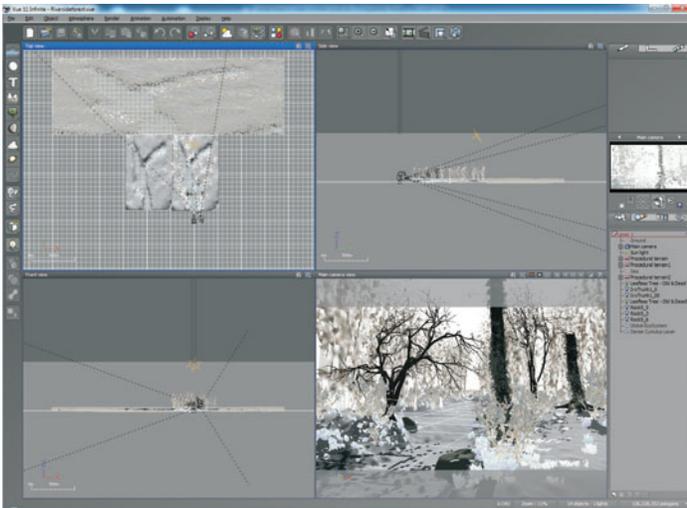
TOP TIP – ADDING DETAILS EASILY

Creating an additional general Ecosystem for painting in gaps or adding more details in the overall look is a really good idea in addition to what you do with Ecosystems on your terrains.

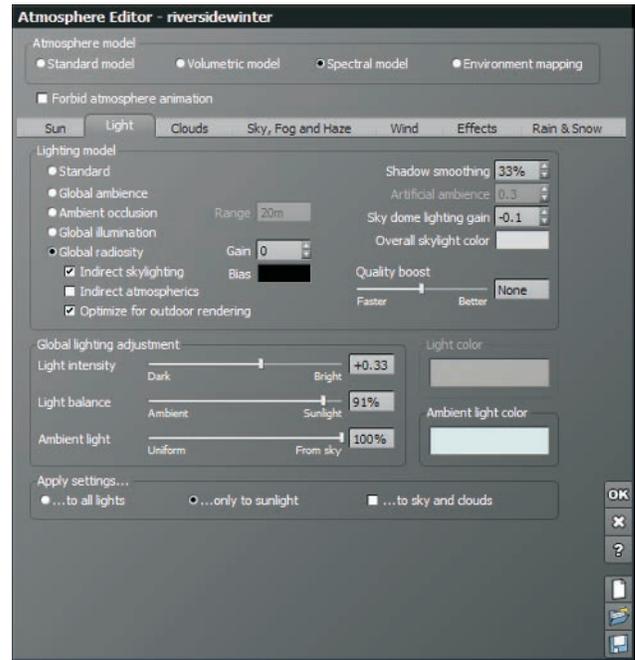
LIGHTING AND ATMOSPHERE

Lighting in this render was only done with the sunlight so no additional lights were used. The atmosphere was a greyish-looking cloudy atmosphere I had already created. The atmosphere parameters were changed to get the cold and slightly foggy-winter look.

The sun position for this render was just below the clouds and the light came from slightly right of the middle opposing the camera. The sun was positioned so it could not be seen in the render itself, but just gave some diffuse light from the front. To get the soft impression the sunlight itself has the softness set to 2.00 in the Material tab. For outside renders I nearly always set the light settings to Global Radiosity, as this is the most perfect imitation of real outside lighting. It does take longer to render though.



Overview from four directions where the sun was positioned.

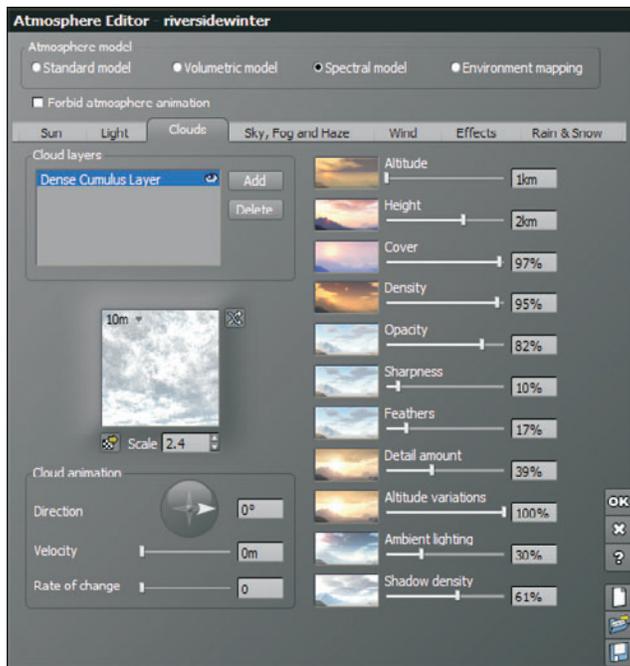


An atmosphere editor screenshot showing the settings in the light tab.

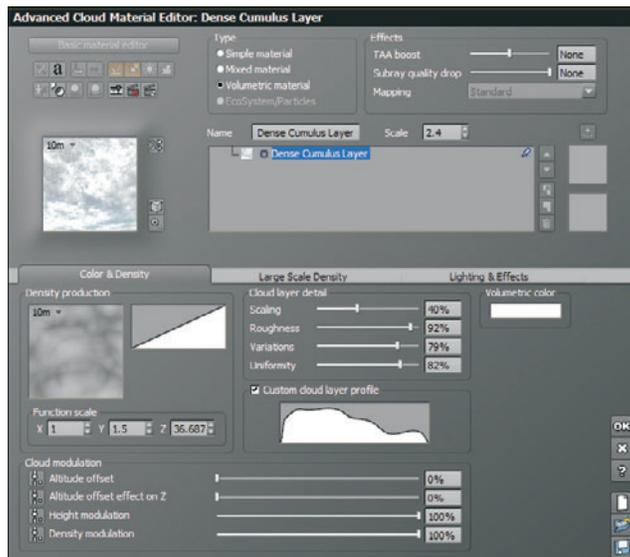
The ambient light and light balance were set to Sunlight and From Sky to get the very white, reflected light you have in winter. As these settings would normally result in some very harsh shadows the shadow smoothing was set to 33% and a dense cumulus layer was added in the Sky, Fog and Haze tab. This blended out any harsh shadows with the light, haze and fog all mixing together.

The cumulus cloud layer which was added had preset values that needed to be changed a lot for this render. First, the altitude was increased from 300m to 1km and the height of the layer itself was also altered, from 500m to 2km. The Density was lowered from 500% to 95% and the Opacity went from 41% to 82%. The Sharpness and Feather setting were nearly doubled and the rest of the settings left unchanged except the scale of the material which went up from 0.005 to 2.4. In the Advanced Cloud Material editor there were some minor tweaks as well.

Changing the function scale z value from 12 to 36 gave the clouds a long stretched form. The other two main changes were raising the uniformity from 15% to 85% and giving the clouds a custom layer profile which changed the density inside the clouds themselves to being dense at the bottom and thinner at the top.



The Atmosphere editor showing the settings for the dense cumulus layer.



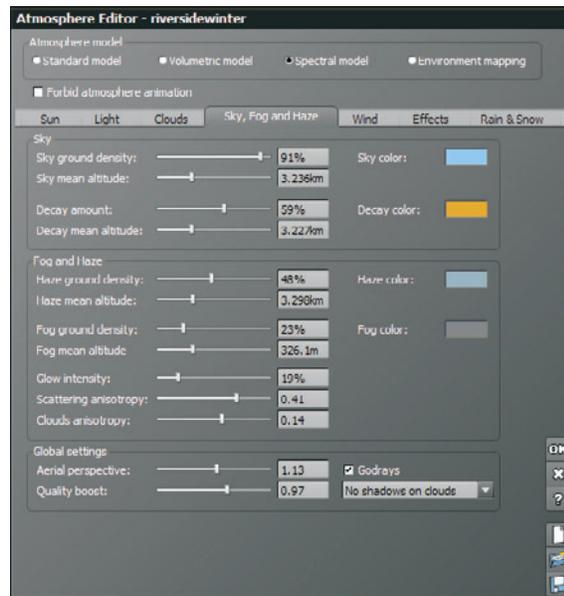
Advanced cloud material editor for the cloud material showing the altered settings.

The Haze and Fog and the glowing settings were the main ingredients for the mood of this atmosphere. The sky colour and decay colour added up to an overall greyish white sky colour. The haze was set up at 48% which, with a mean altitude at over 3km, gave this grey a slight bluish touch. Adding the low fog gave a depth and darkness above the ground. The fairly high glow gave this setting a colour change to a more shiny white, which is more typical for winter.

Added to this was the clouds' anisotropy which let 14% of the light

penetrate through the clouds which then got scattered to 41% to give a wonderful, puffy white mood.

The final element here was a slightly visible snow fall, which is a new feature in Vue 11. This gave another, barely noticeable, winter touch to this image. The main change here was not only the snow falling but also the added fog boost which does change the overall impression of the atmosphere.



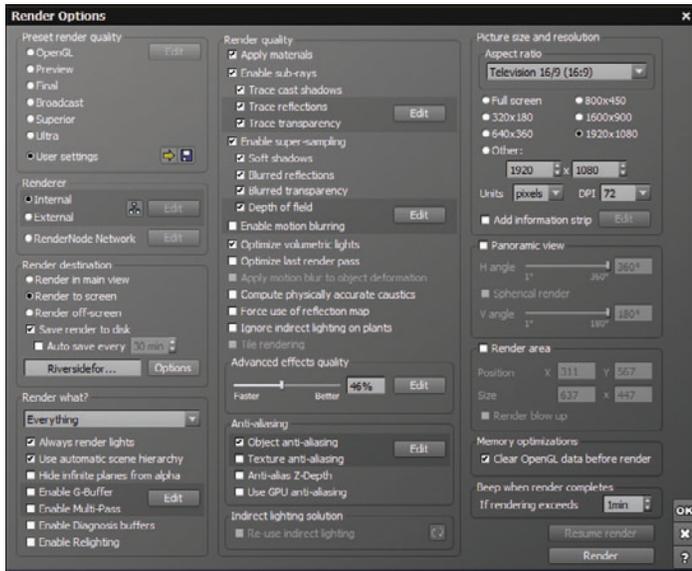
Sky, fog and haze settings of the Riverside Forest atmosphere.



Atmosphere editor showing the new rain and snow feature tab which adds another change of appearance to the atmosphere.

RENDER SETTINGS CONTROL

The final render was done in Vue 11 Infinite with my personal settings which are shown in the screenshots. The first render was done at 1980 * 1080 and was very quick in just about an hour. The second one, for publication, was at 3556 * 2000 and took 3 hours and 40 minutes.

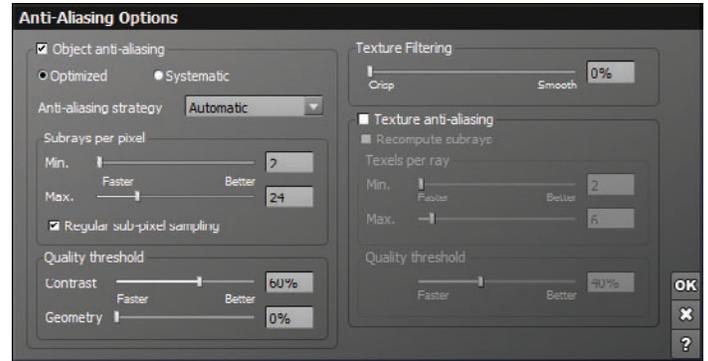


General render options in Vue 11 Infinite.

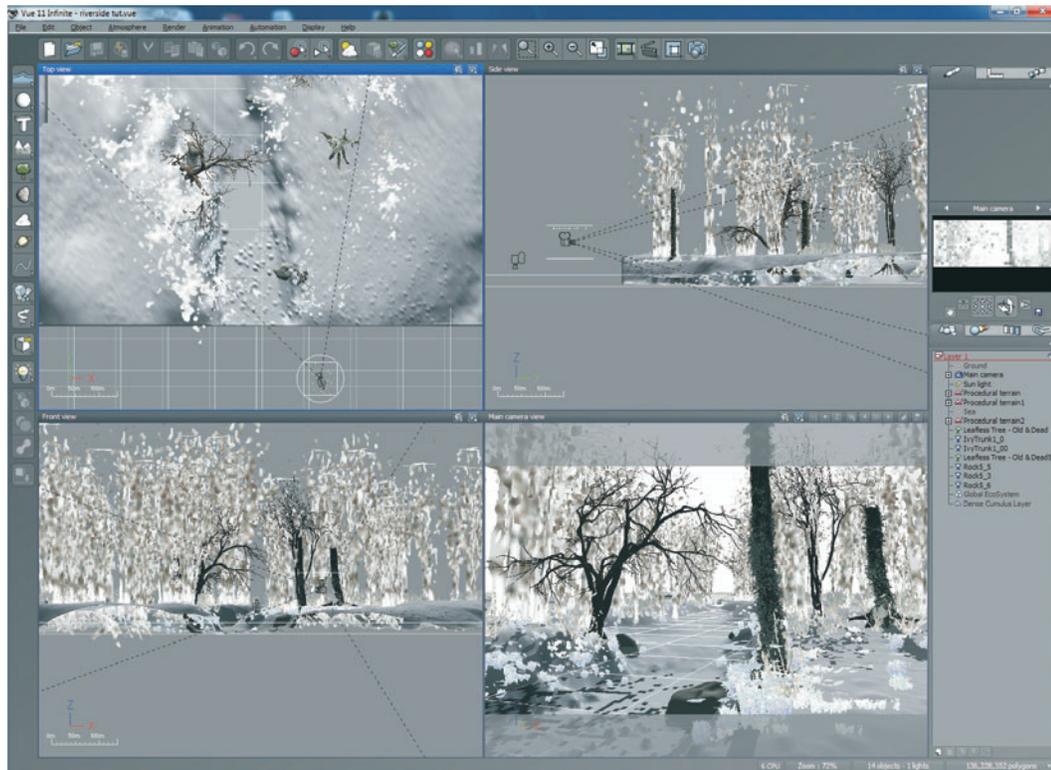
For the blur and the depth-of-field the settings are set to hybrid 2.5 instead of distributed raytracing with just one pass to keep render times low as this only affected the snow particles.

The Anti-Aliasing, or super sampling of the objects to reduce stair-step, jagged edge effects was set to automatic but the subray maximum and the quality threshold were raised. Texture filtering was not necessary for this render so not ticking that box also saved on the render time.

The only post production work done to the render was copying the picture and adding the copy as a Multiplying layer with 30% Opacity to enhance the contrast a bit.



Anti-Alias render settings.



Screenshot of the final setup of the scene before rendering.

“ This was my personal work, not commercial, that was modelled and rendered in my spare time. The project idea was to practice creating a photo-realistic 3D landscape and rendering it. As a reference, I used an existing villa in Norway called Villa Storingavika, by Saunders Architecture, but I changed the landscape to my liking and did all the modelling. ”



PROJECT	VILLA STORINGAVIKA
SOFTWARE USED	3DS MAX , VRAY, MUDBOX , PHOTOSHOP, AFTER EFFECTS
RENDERING TIME	12 HOURS
ARTIST	DMITRY LEONOVICH
COUNTRY	ISRAEL



“ The idea for this project came when I looked at the model of these small blocks of flats, just wondering which would be perfect for people to use and enjoy nature where they could perform outdoor activities. So I tried to create an image of a natural environment in 3D where there was something happening – in this case people flying kites in a contest. The people were the only 2D elements in this image and they were added later using Photoshop. Everything else was entirely created in 3ds Max and rendered with Vray. ”

PROJECT	CUBUS HOUSE
SOFTWARE USED	3DS MAX, VRAY AND PHOTOSHOP
RENDERING TIME	6 HOURS
ARTIST	SÉRGIO MERÊCES
COUNTRY	PORTUGAL

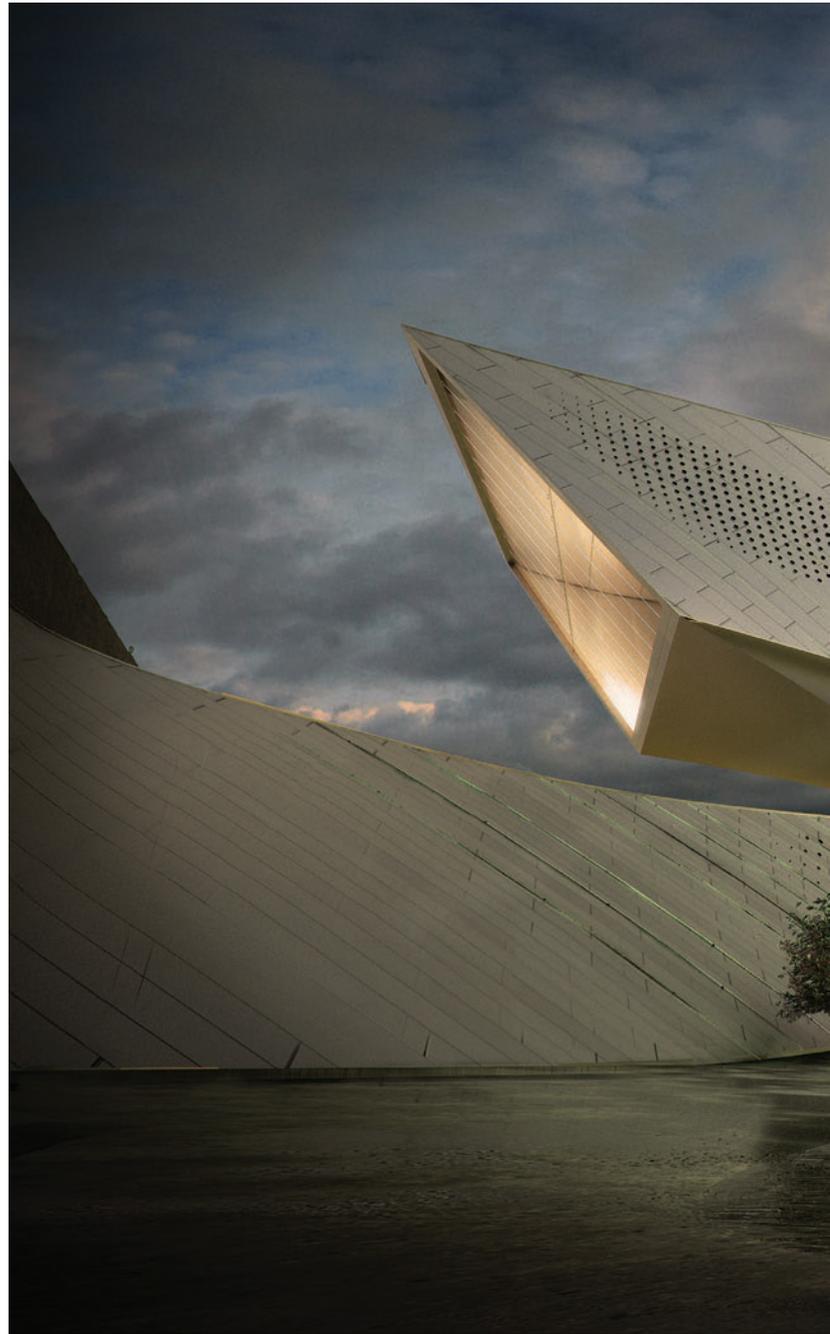
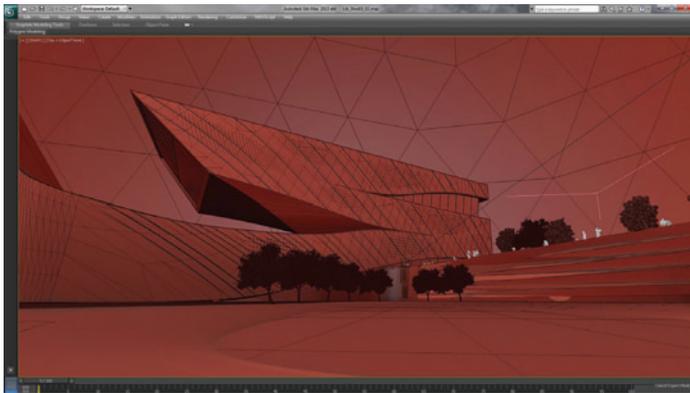




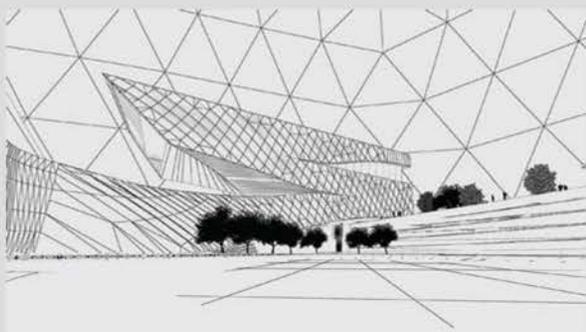




“ This is one of four images for our winning competition entry for the Dalian Public Library in China. Being a visual communication department in a very busy architectural firm, one needs to learn every trick in the book to be able to successfully create effective yet still visually pleasing renderings to extremely tight deadlines. I had only three short days to produce four visuals for this amazing project. Fairly happy with the result given the short time frame. ”



PROJECT	DALIAN LIBRARY
SOFTWARE USED	RHINO, 3DS MAX, VRAY, PHO
RENDERING TIME	2 HOURS
ARTIST	SHANE DALE
COUNTRY	SOUTH AFRICA (LIVING IN HONG KONG)



VILLA S BY Juan Carlos Ramos Figueroa

CREATING STYLISH ARCHITECTURAL LANDSCAPES

Discover how Juan Carlos designed and rendered a commercial arch viz project with a realistic landscape.

BEHIND THE SCENES

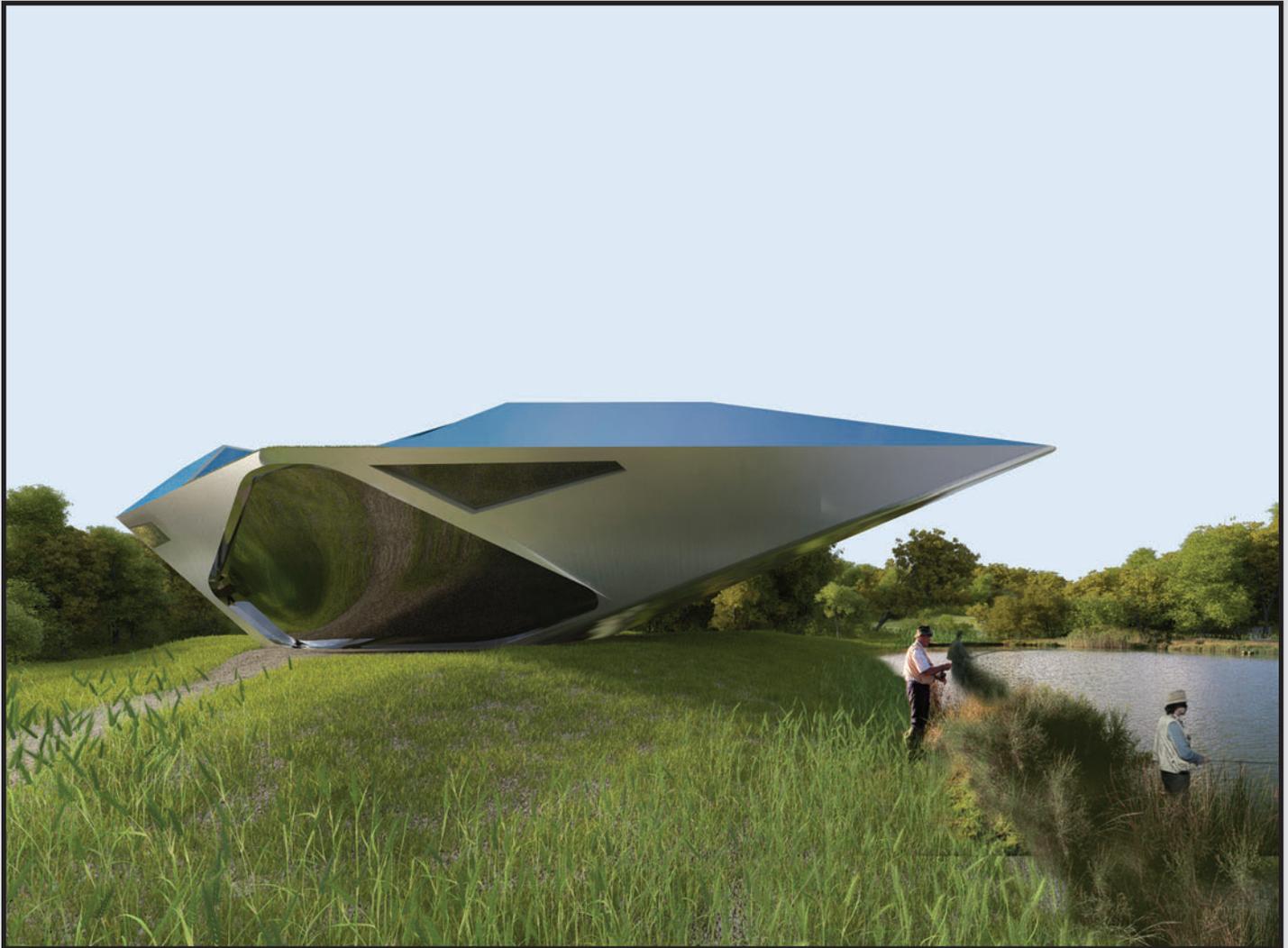
Villa S was a sustainable housing project located in Mexico City. The project was developed by the Mexican office of architecture, FREE, or Fernando Romero Enterprise, with which I collaborated in producing animation and rendering. My purpose was to create an artistic image, putting aside photorealism and looking for a result that would be closer to painting and visual arts, but using digital media.

I am originally from Michoacán, State of Mexico which has vast natural wealth, with beautiful sunsets and lush vegetation. I wanted to capture the essence of these environments and proposed a very dramatic sky with an intense light that highlighted the formal contrasts and materials of the villa. Also, it was important to create a good dialogue between the project and its context. To achieve these objectives I made several sketches, some with a lake next to the town, but in the end I decided to make a field full of vegetation. If you refer to the end of the tutorial you can see some of variations that were considered before the final image was rendered in its current form.





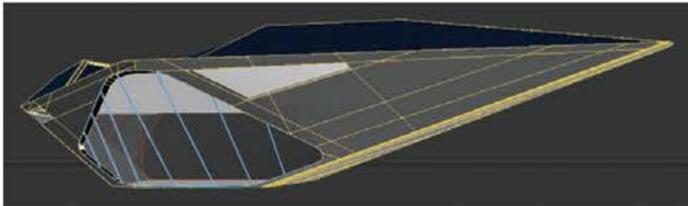
PROJECT	VILLA S
SOFTWARE USED	3DS MAX 2012, VRAY 2.0, MULTISCATTER, AFTEREFFECTS, PHOTOSHOP
RENDERING TIME	14 HOURS
ARTIST	JUAN CARLOS RAMOS FIGUEROA
COUNTRY	MEXICO



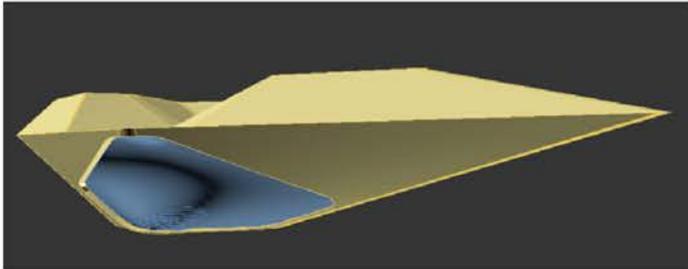
These are the source images for the type of location under consideration and some rough sketched overlays showing how the building would sit in the environment.

MODELLING THE ENVIRONMENT

The model of the building was created with 3D printing in mind and was delivered in Rhinoceros format (NURBS modelling program). So the first stage was to export it to 3ds Max. Once exported to my work platform I made some adjustments to the model and added many details to elements like windows and floors.



The model as it was imported from Rhinoceros where the basic modelling was carried out.



The model once in 3ds Max, where it was expanded with extra details added.

To create the interior I used existing libraries of furniture from <http://www.evermotion.org/Archmodels>. This made it very easy to have ready a general model of architectural design and I then spent most of my time creating the natural environment.

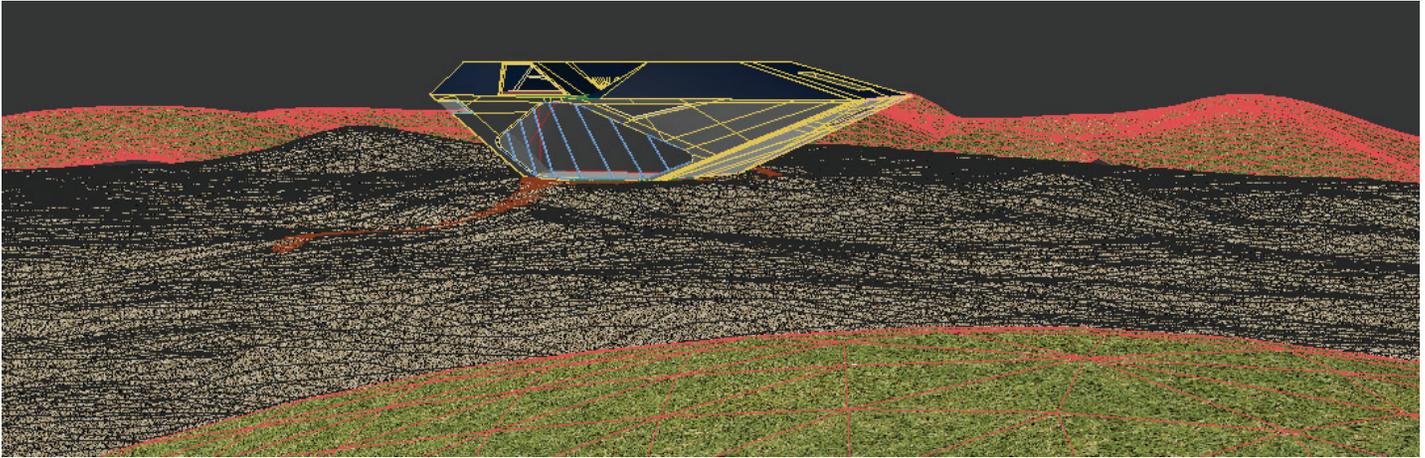
For the natural environment in the surrounding terrain it was modelled to a basic level with a plane of many subdivisions converted using Edit Poly. The uneven ground was created by using the Push command within the Paint/Deformation tools. Also a slight amount of Noise and Turbosmooth were added to smooth out the geometry. A line was then drawn to create a path to the village and the plane geometry was cut with a modifier of Compound Objects called Shape Merge. This created the landscape with the path appearing to lead through it. The same kinds of procedure were used with the landscape in the distance, which then meant it was time to start adding vegetation.

The models for the trees and grasses came from the iTrees and iPlants libraries at <http://rendering.ru>. They were scattered around and placed on the landscape using the 3ds plug-in called Multiscatter (see www.multiscatter.com) which uses a form of instancing to place lots of vegetation models on the scene without overloading the polygon count. There were six multiscatters covering the grasses, bushes near the villa, trees near the villa, distant bushes and distant trees. The vegetation included lawn grass, elm trees, generic trees and lilacs. The other advantage of the plug-in is that you can place, rotate

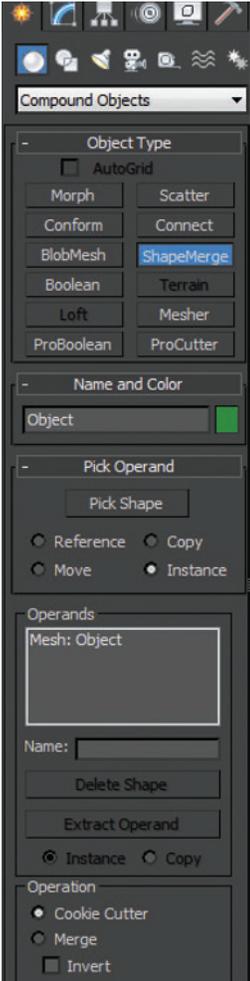
and scale models randomly, thus effectively creating a simulated ecosystem. Once planted, the vegetation placed Polylines linked to each multiscatter to mark off areas to contain or exclude the plants. These were used, for example, in the trees so that there was room for sunlight and in the Secale plants to prevent them from being planted around the plane surrounding the villa. The field in the foreground was entirely populated using the multiscatter plug-in.



These are some of the objects that were used from an online library, making it much quicker to finish the project.



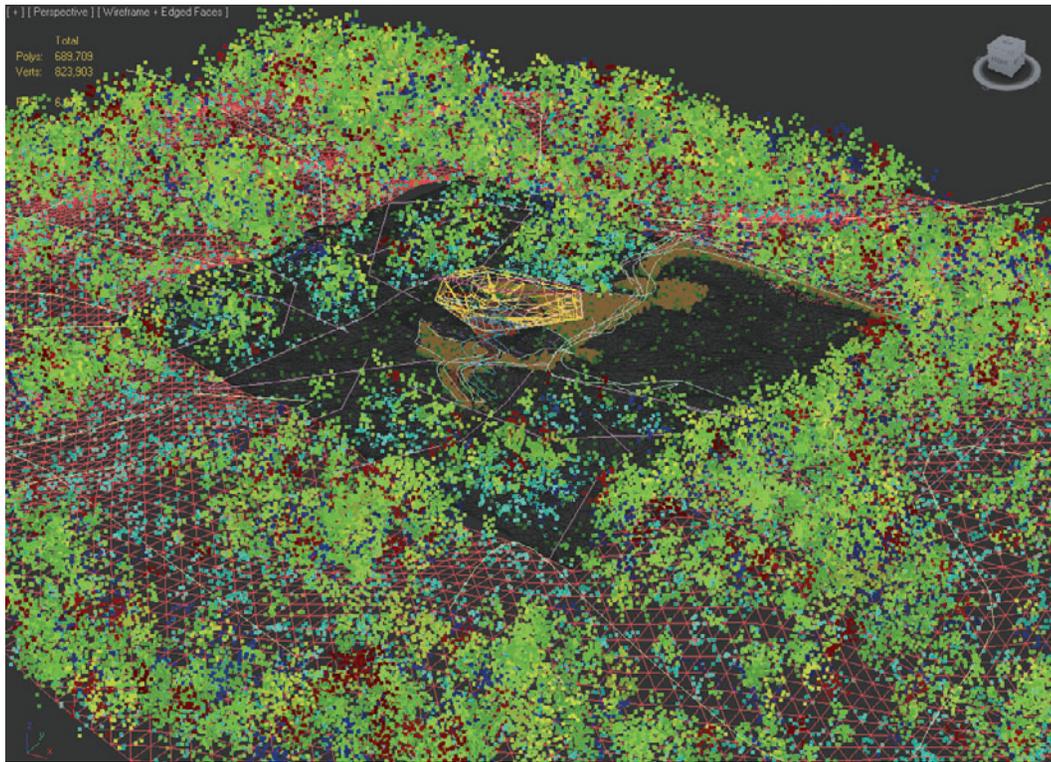
The landscape was created to be uneven with a path leading through it to where the house was placed.



The Shape/Merge tool dialogue box showing some of the parameters used when placing vegetation around the scene.



The various plant and tree models that were used with the multiscatter plugin to populate the terrain.



The various plant and tree models that were used with the multiscatterer plug-in to populate the terrain.

TOP TIP – EXPORT MODEL FROM RHINOCEROS TO 3D MAX

Exporting very large models with many layers from Rhinoceros to 3D Max can be a pain if you use 3ds files because it divides the geometry into elements. But if we export the model in *.DXF format, the file keeps the layers configuration and keeps the original weld geometry.

TEXTURES AND MATERIALS

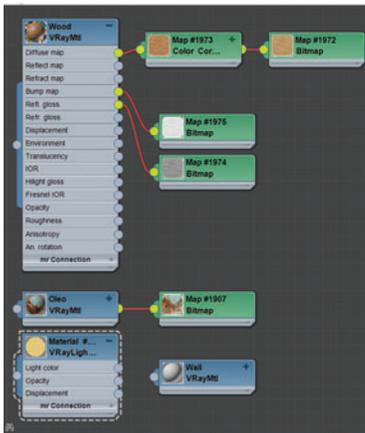
To edit the materials the Slate Material Editor was used as it allows better organisation of the textures and makes working with them more dynamic. The materials themselves are quite simple in the scene as there are only nine of them in total. For the indoor elements there were just four materials including wood, the paint on the wall, the walls and a Vray light material. The wood was sourced from www.cgtextures.com and edited in Photoshop prior to being used. The parameters set for it were Diffuse: 100, Highlight Glossiness: 0.6, Reflect Glossiness: 0.65, Subdivisions: 36, Reflect Glossiness Map: 100, and Bump Map: 100. The wall painting was a Google image and used Diffuse: 100 and Bump Map: 30. The walls themselves were white and set to Diffuse: RGB 191,191,191, Reflect: RGB 112,112,112 with a Fresnel Reflection.

The Vray light material was used for the warm light lamps inside so that the interior had a welcoming feel. This used settings of Diffuse: RGB 221,170,60 and Intensity: 0.9. It was also compensated against the camera exposure to make it bright enough.

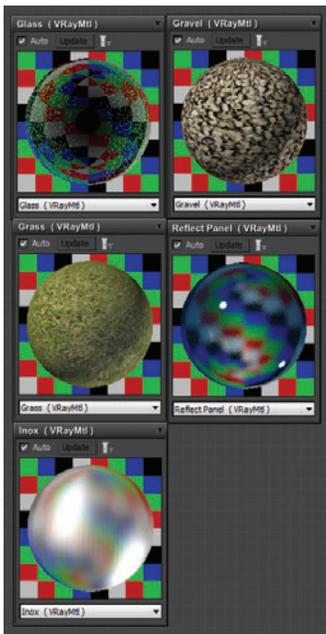
Materials used for the interior of the building included wood, white walls, a wall painting and the lighting.



CREATING DRAMATIC LIGHTING



The textures for all the objects outside the house were deployed in the Material Editor of 3ds Max. These included those for the house itself as well as the vegetation. The main ones were glass, reflective panels, gravel and grass. The settings for these were as follows, starting with the Glass material: Diffuse: RGB 0,0,0, Refraction: RGB 155,155,155, Reflect Map: Falloff – Fresnel, Affect Shadows, Affect All Channels. The Gravel material used Diffuse Map: 100, Reflect: 03, Bump Map/Normal Bump: 12 and Vray Displacement to model: 1". The Grass was set to Diffuse: 100, Reflect: RGB 13,13,13; Reflect Glossiness: 100, Bump Map: 30 and Vray Displacement to model: 2". The reflection panel needed to be very glossy and reflective and used Diffuse: RGB 0,3,10, Reflect: RGB 183,183,183, Highlight Glossiness: 0.9, Reflect Glossiness: 0.82, Reflect Map: Falloff/Fresnel with sky texture.



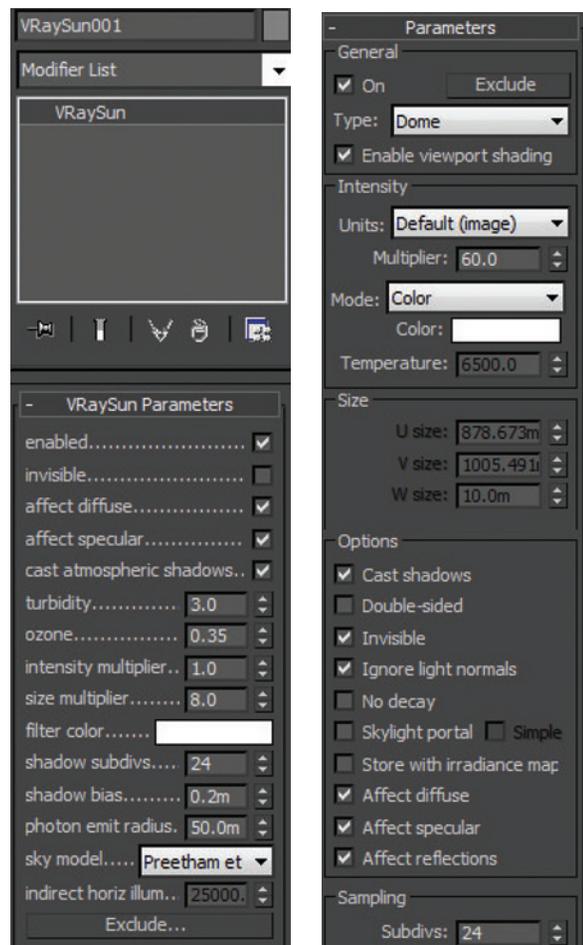
The materials used for the exterior of the building and the scenery in the Materials Editor.

TOP TIP – MATERIAL VARIATION

When using a lot of vegetation in the scene it's good to vary the tone a bit. For this you can duplicate the material and apply a Color Correction Map on the Diffuse Map. This map provides tools such as Hue, Brightness, Contrast and Gamma. Thus you can slightly change the tone map and increase the variation in the vegetation without leaving 3ds Max.

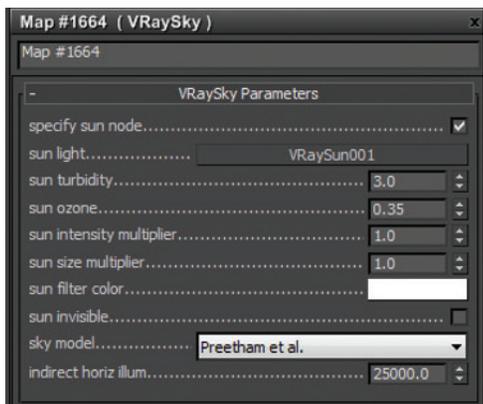
The idea for the lighting was to achieve a very dramatic sunset, that would create glare and a caustic, metallic sheen. It would also create shadows from the human figures and help give the scene a sense of scale. To achieve this a Vray Sun was used to create the effect of dusk and this was linked to a Vray Sky which changed colour in response to the tilt of the Vray Sun.

To improve the reflections in the scene it was tested with an IBL model. Image Based Lighting is a geo-spherical model with Vray light material that simulates the atmospheric light. However, after several tests it was decided to use a Vray Dome Light linked to a HDRI stock image that you can find at www.viz-people.com. The Vray Dome has the option of being invisible to the camera and replacing the sky with alpha channel support. Also, the Raw Vray Global Illumination channel tab under Render Elements in the settings was tweaked to improve the final quality of the Vray render in post production.

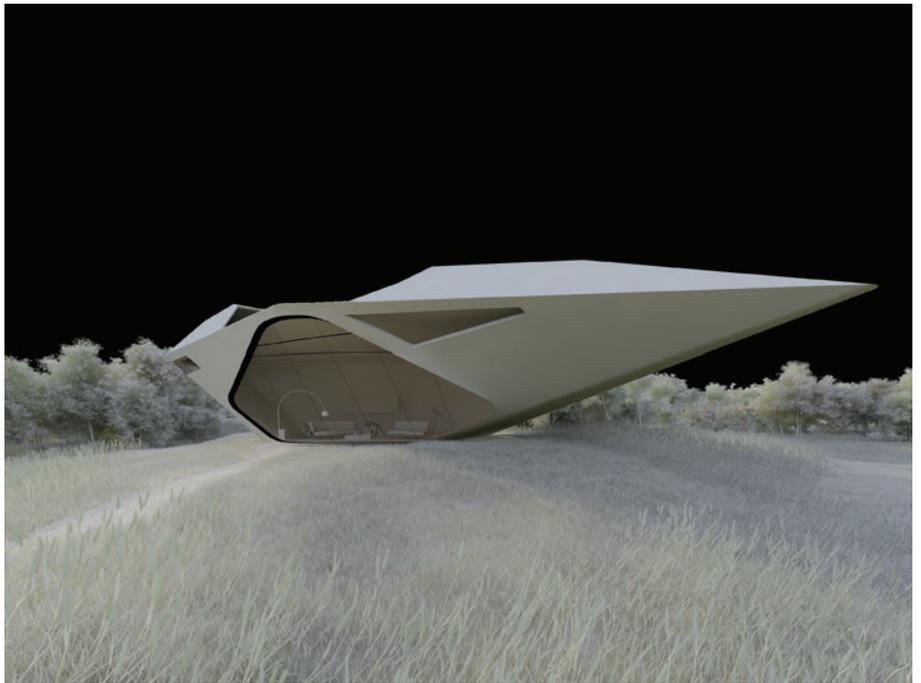


The settings used for the Vray Sun.

After some deliberation a Vray Dome was used for the sky.



The settings for the Vray Sky to help create that dramatic sunset.

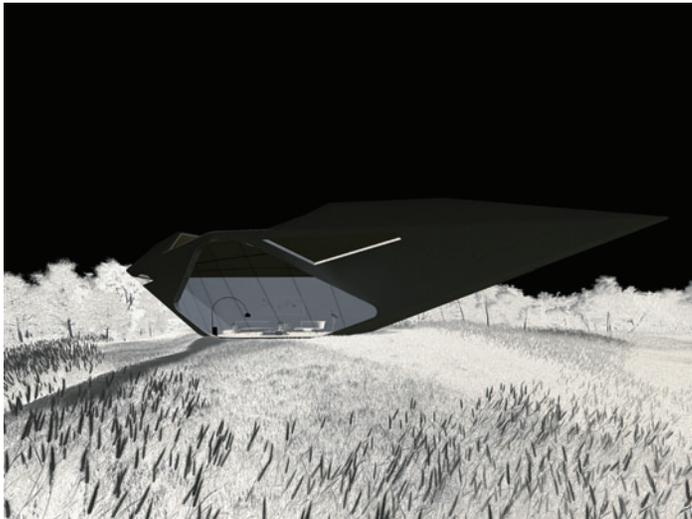


A pass from the Vray Raw global illumination model.



The High Dynamic Range Image was linked to the Vray Dome light to create a wide range of tones in the scene.

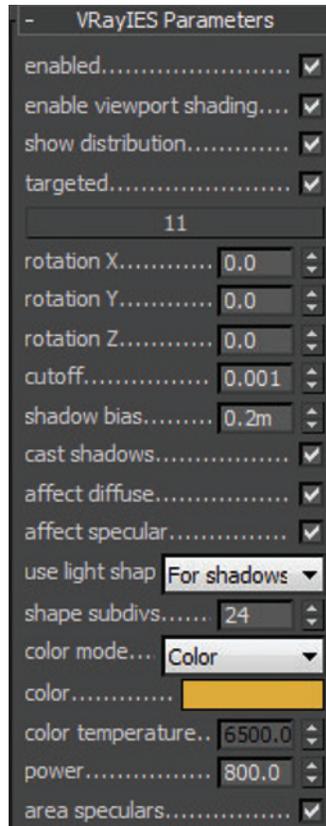
As far as the lighting inside the building goes, the Vray IES Light was used to emulate the lighting of lamps and three Vray Light Spheres were also used to improve the general interior lighting. Otherwise there would have been too many shadows and dark areas so this filled it all out. In addition to the Raw Vray Global Illumination channel, Raw Vray Shadows and Vray Specular channels were used to improve the look of the materials and the lighting in the post-render processing. Finally, in combination with the Vray Sun and Vray Sky, a Vray Physical Camera was used which is very good at emulating a real photographic camera with regards to exposure and sharpness.



The shadow pass from the rendering engine to create depth and shadows.

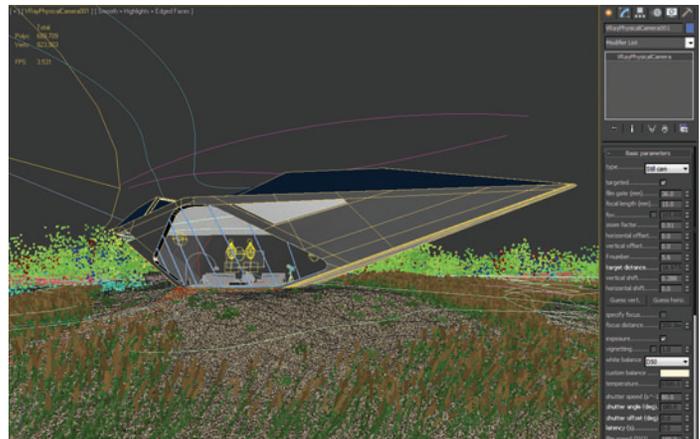


There's not much in the way of specular highlights, just the reflection off the corner of the building.



The settings for the Vray IES light that was used in the interior to simulate the table lamps.

A Vray Physical Camera was used with a 15mm focal length at f/5.6 aperture to give a wide field of view and limited overall depth.



TOP TIP – GEOSPHERE LIGHTING WITH IBL (IMAGE BASED LIGHTING)

A simple trick, but useful to illuminate the Geosphere is to remove the option Visible to Camera, found in the object's properties. It allows the scene to be illuminated without displaying the Geosphere in the render, so the sky can be changed in post production.

RENDERING OUT THE IMAGE

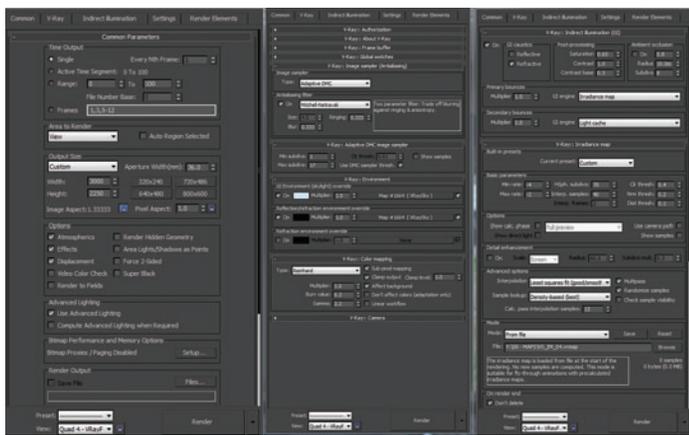
As mentioned in the lighting section, the rendering engine used was Vray 2.0. It's my personal favourite because the rendering engine offers excellent quality in respect of the time it takes to render. It is also one of the most popular engines so you can find a lot of information, tutorials, tips and materials for free in the internet. Any problems you have with respect to the engine you can solve through forums where experts comment on their experiences and resolve the challenges that are thrown up when you work in architectural visualisation every day.

Into the settings then and the Vray Frame Buffer was set to work with gamma correction to 2.2 to get a clearer picture with more natural colours. In the Anti-Aliasing options, Adaptive DMC with Mitchell-

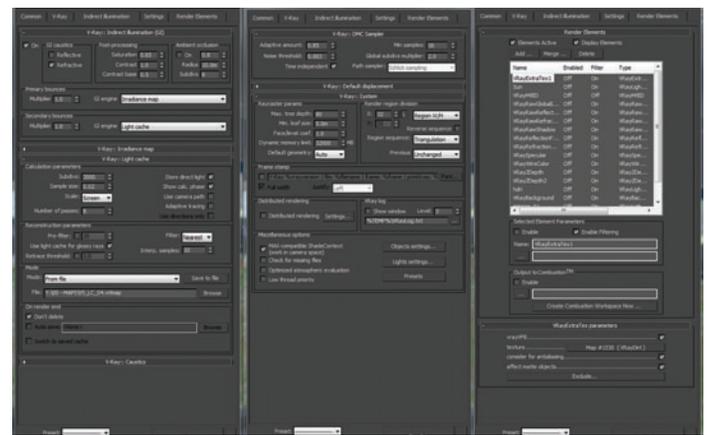
Netrevali was used to create a good definition of the image volumes. For the Color Mapping I used the Reinhard setting and in the indirect illumination Irradiance Map with Light Cache was used to improve and enhance the overall colour saturation.

In the main Settings tab the Noise Threshold was set to 0.003 for improved sharpness and the Min Samples was changed to 16 and Global subdivisions multiplier to 2.0 to improve the general subdivisions reflexes.

Finally in the Render Elements tab ambient occlusion lighting, reflections, refraction, specular gloss, lighting and depth-of-field were all used to improve the channels for post production.



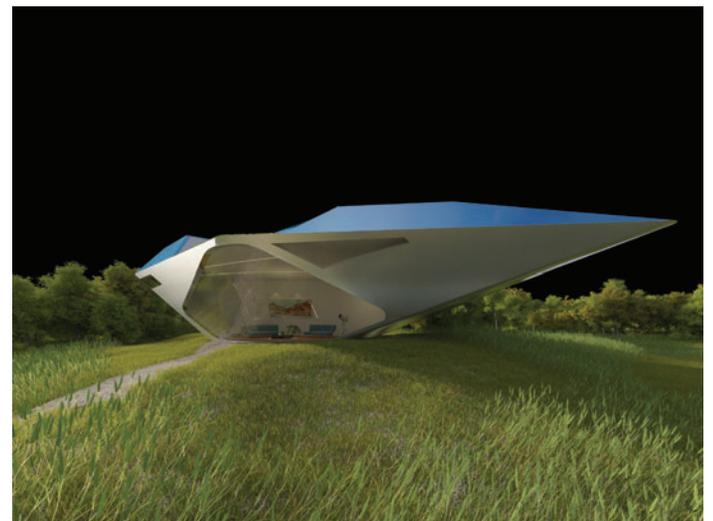
The first of the Vray rendering settings uses advanced lighting parameters to help create that dramatic sunset.



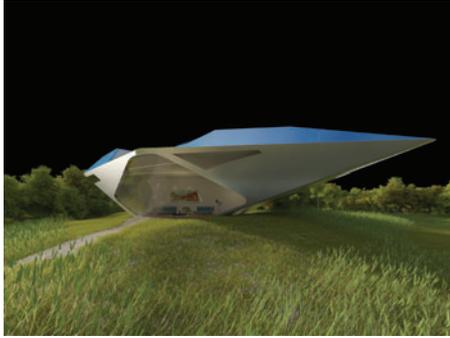
More settings, including those for determining how the light cache was used and which Global Illumination engine was used.

COMPOSITING AND FINISHING OFF

Once all the separate elements had been rendered they were imported into After Effects to do the compositing, then exported to Photoshop to add details like human figures, solar panels, clouds, birds and mountains. Finally, the Photoshop file was sent back to After Effects to do the final colour correction, depth-of-field, brightness, contrast and intensity, grain and chromatic aberration correction. One final tweak was the addition of a flare effect from the sun. This was created with the Optical Flares plug-in from Andrew Kramer – www.videocopilot.net. It can be a little tricky to import and export between After Effects and Photoshop, but it has worked very well in correcting the render when there were changes in the model. In this way I simply replaced the old files with the new ones and the overall effects were updated automatically.



The raw render still has a lot of work to do and additional elements to add.



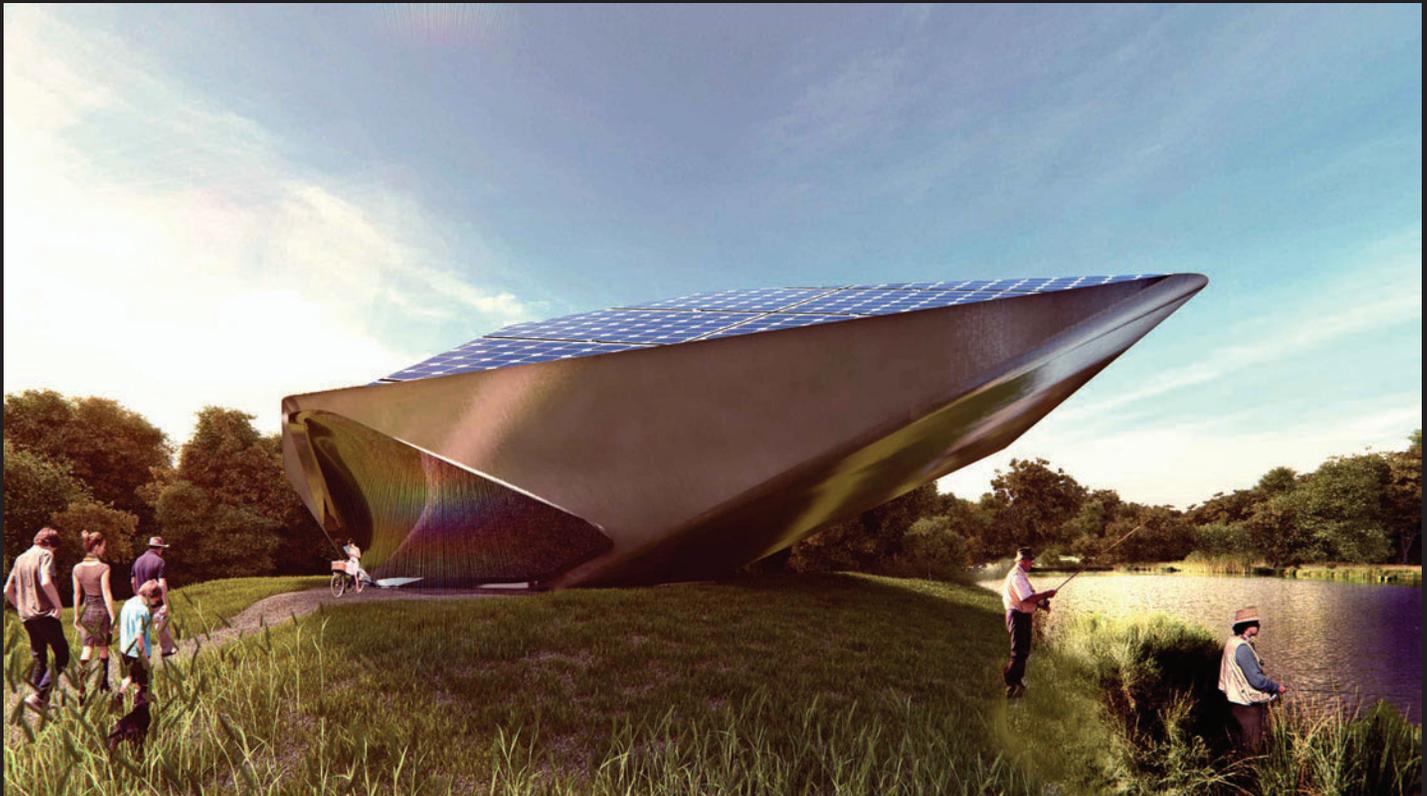
The raw render still has a lot of work to do and additional elements to add.



The layers and render passes being assembled in Photoshop as well as using various adjustment layers.



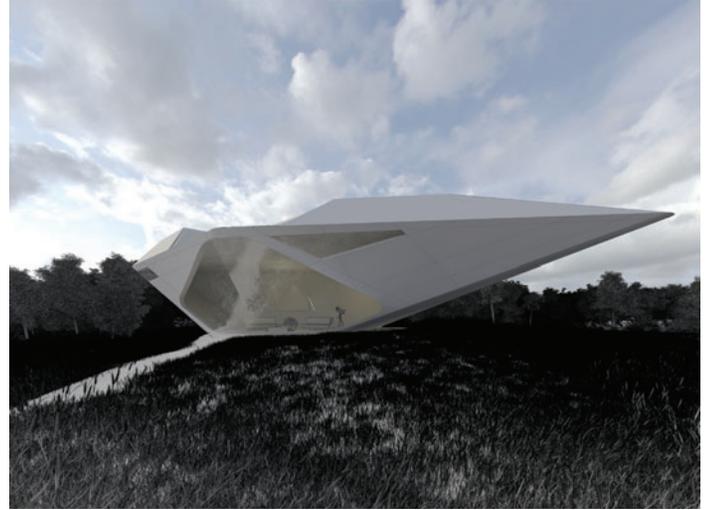
Then the project was exported to After Effects for visual effects and colour correction.



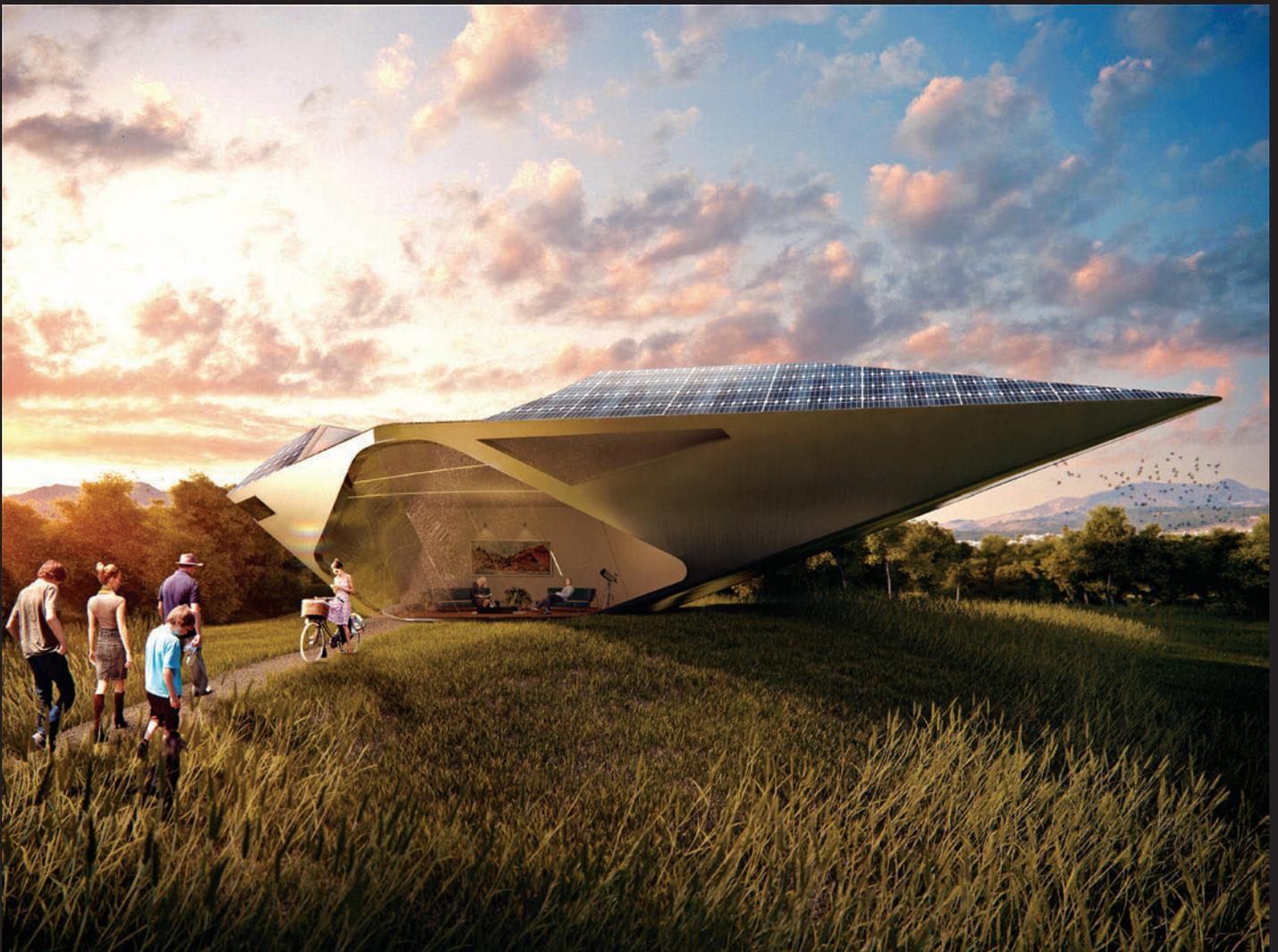
One of the concept shots from early on where the building was going to be placed in front of a lake.



The lake version with the background, sky lighting and birds added.

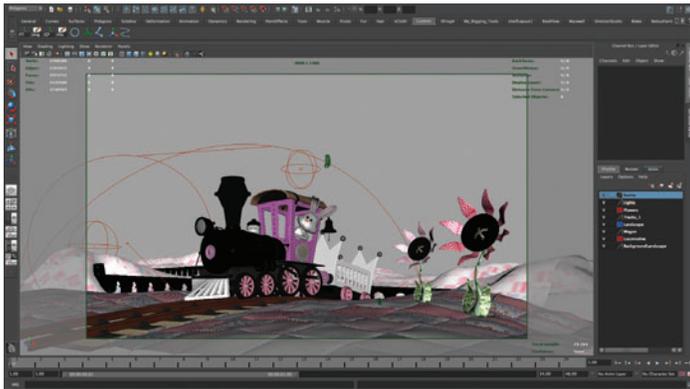


A render pass with override material using the Vray Edge Text.



The final, completed image, with people, a sunset, interior lighting and composited mountains in the background.

“ This scene is called Fenna Land and was modelled in Maya, sculpted in Mudbox and rendered with Vray. In October 2012 I became an uncle so I decided to make something for my little niece. It is a kind of dreamworld inspired by Disney's Lullaby Land. The landscape represents a blanket that my mother-in-law was making at the time and the wagon is the crib that my mother made. It is a poster-sized image and it is hanging on the wall of her room so when she is older she can look at it and dream away. ”



PROJECT	FENNA LAND
SOFTWARE USED	MAYA, MUDBOX, VRAY
RENDERING TIME	20 HOURS
ARTIST	JONATHAN KRIJGSMAN
COUNTRY	THE NETHERLANDS



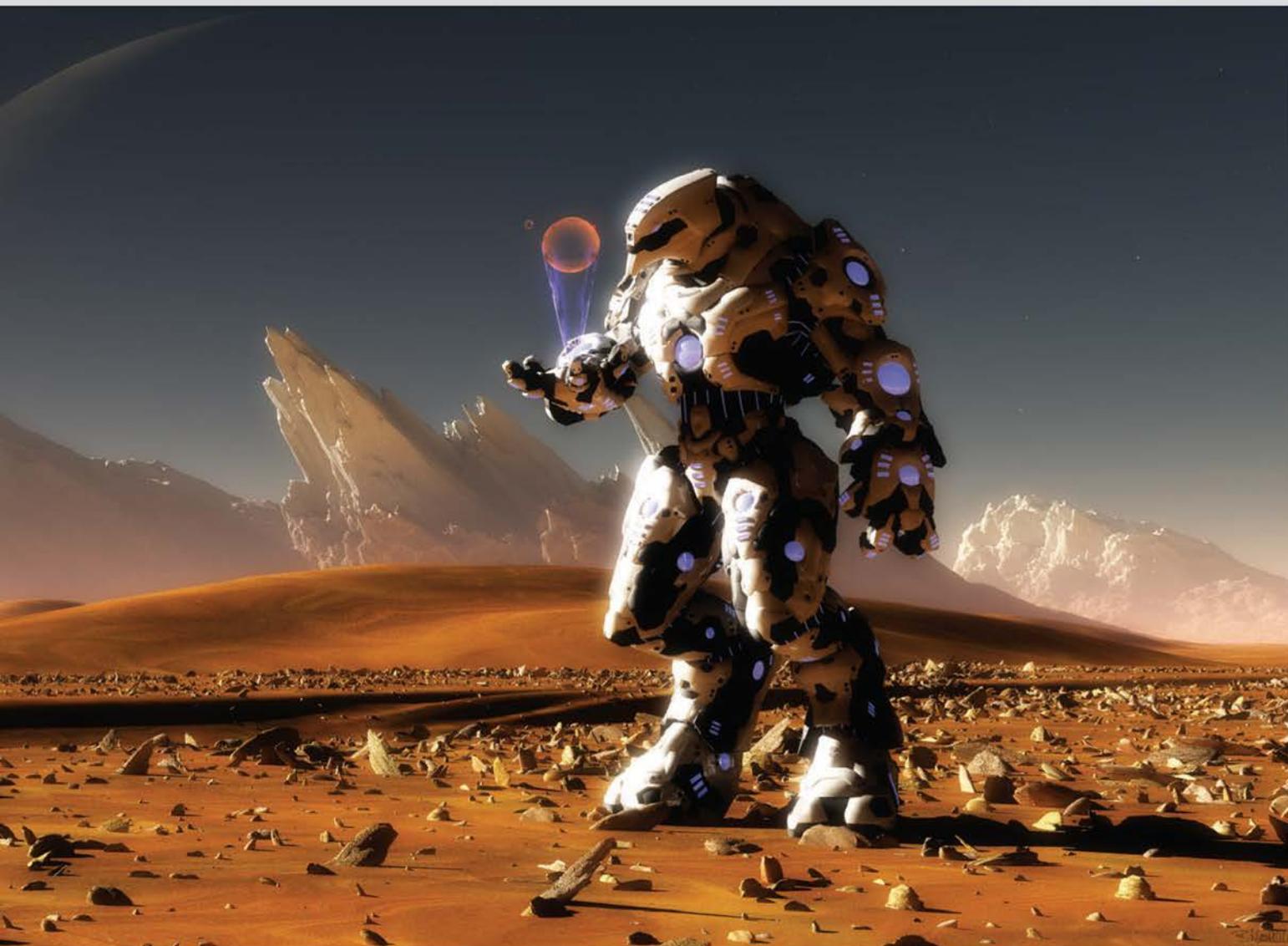
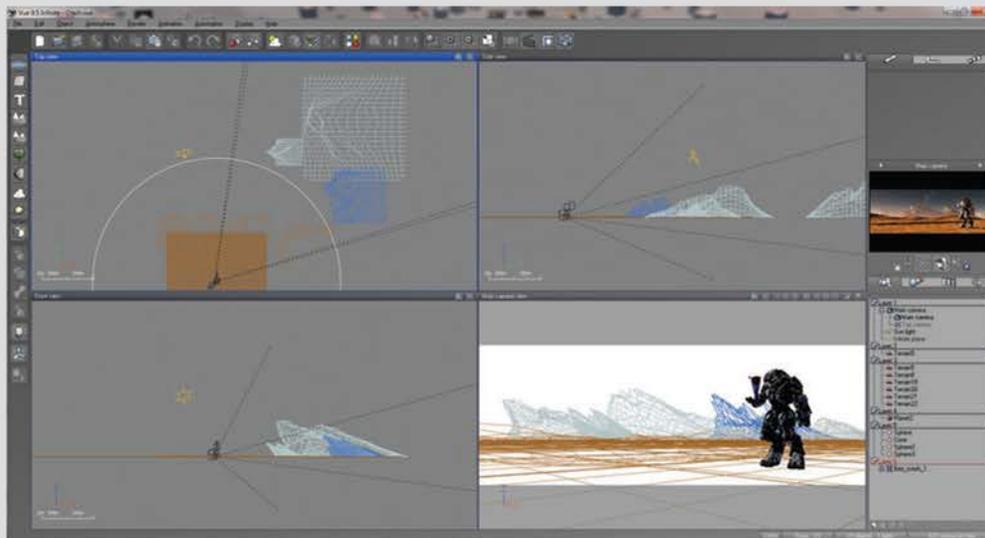


CHARACTERS IN THE LANDSCAPE SHOWCASE: BARRY MARSHALL

“ This image is the result of a series of renders where each contained an element from the previous image. In this instance it was the distant mountains. These were the product of a series of experiments intended to produce unusual formations just using the standard Vue terrains. ”

PROJECT	LANDMARK
SOFTWARE USED	VUE 9.5 INFINITE
RENDERING TIME	2 HOURS 2 MINUTES 13 SECONDS
ARTIST	BARRY MARSHALL
COUNTRY	UNITED KINGDOM





CHARACTERS IN THE LANDSCAPE SHOWCASE:

“ The work is devoted to two cute ponies called Lira and Bon Bon. This was my attempt to create a cartoon-style image with a surreal landscape and two very cute characters. The inspiration for the scene, and especially the style, was one of my favourite TV cartoon series, *My Little Pony: Friendship is Magic*. I modelled all the elements including the two ponies, house and tree. Some of the leaves were scattered to give the impression of wind on a sunny day. The ponies use simple materials while the house in the background is textured for the facia and thatch roof. ”



VIKTOR ALEXANDROVICH BUCHYNSKIY

PROJECT	SUN AND PONY
SOFTWARE USED	3DS MAX 2012, VRAY
RENDERING TIME	3 HOURS
ARTIST	VIKTOR ALEXANDROVICH BUCHYNSKIY
COUNTRY	UKRAINE



CREATING BUILT-UP SCENES WITH CHARACTERS

Ognian Bonev details the process required to build up a complex village scene with characters to add scale, detail and points of focus.





PROJECT	UNDER THE BRIDGE
SOFTWARE USED	3DS MAX, PHOTOSHOP, ZBRUSH, MENTAL RA
RENDERING TIME	4-8 HOURS
ARTIST	OGNIAN BONEV
COUNTRY	BULGARIA, NOW USA



Some research photos showing people and the medieval town structures that were to form the basis for the image composition.



DEVELOPMENT SEQUENCE

The goal for this project was to create an environment illustration representing the everyday life in a small, fantasy-like medieval village. The idea of this environment was to try to drag the viewer into the imaginary world represented by making them look, observe and want to discover more with a variety of small details and activities surrounding the lives of the village inhabitants. There were two aspects to this village then: the arrangement of the buildings and the placement of the characters to add scale, life and focus to the entire image. To help build the atmosphere and increase the liveliness of the image the scene also had a lot of additional small props and objects such as barrels, boats, casks and lanterns.

Being an environment artist myself, when working on a single image like this I usually imagine that it could and should be a part of a bigger world and that it represents a tiny portion or fragment of this world setting. That's why I usually start by designing an environment set of different connected modules and props which can complement one another. They could be used to create multiple varieties of structures

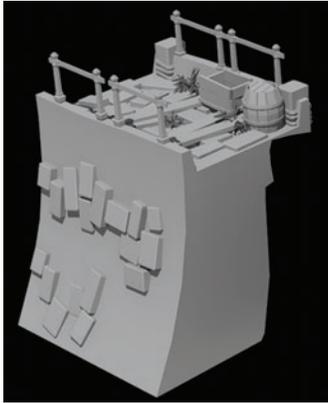
to expand and enrich the story behind the illustration and to give me an option quickly to expand or change the environment itself.

After formulating the overall idea of the project in my mind the first step was to search and gather a database of some reference images. They helped by giving me a better idea of which were the important elements and details that could help to make the illustration more believable. Even when making an imaginary environment it's always a good idea to base it on multiple elements from real life that the viewers could, sometimes subconsciously, connect with. Such elements, in this case, were typically medieval: architectural shapes of the house rooftops, watch and bridge towers. Then there were typical objects from everyday medieval life such as barrels, lanterns, small tools and so on. The overall look and planning of a medieval small town or village, the way the shapes and volumes of the buildings overlap each other and the silhouette of the entire village, were drawn from reference images, thus helping to determine the placement of the focal point and where to place the characters in the final image.

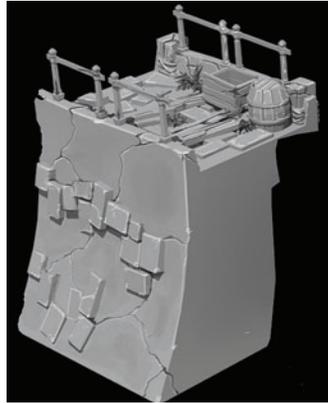
INITIAL GEOMETRY MODELLING

After identifying the important assets for the environment the next step was to start creating some concept ideas for them. For this stage, and for the rest of the project, I used a combination of 2D and 3D techniques, pushing the final art style of the image along. The first step was to create actual 3D models and geometry to use later in building the final environment for the image. To speed up the process I started

by building very rough shapes in 3ds Max – just basic primitives like cubes and cones – then rendering them with a single direct light and pasting them into Photoshop as templates and base images. The goal was to trace a very rough silhouette of the props using a perspective view and a simple light for shadow direction guidance. Using these templates in Photoshop I then quickly painted details, changed the shape and finalised the overall colour, texture detail and art style of the main elements.



The initial template shape plus some added details to start the modelling.



Working in grayscale in Photoshop small details such as cracks are being painted in.



Using solid colours in a separate layer. This is the paint layer showing where it is being added.



With the layer set to Overlay blend mode the colours are then added to the model and give it colour variation and detail.



Additional layers were then used to add a photographic image using Overlay and Multiply blend modes.



The result was to add a lot more detail and make the prop look considerably more realistic.



The next step was to use a Hard and Soft light blend mode and to paint on some opaque detail.



The result of this was to add lighting volume to the object without having to address this in the 3D stage.

Using the combination of 2D and 3D techniques the art style and models of the props set were created. These could then be used to populate the environment for the village without having to use complex lighting setups or extensive, finely detailed modelling. The props were all designed to be modular so that they could be used in combination or separately to create a completely different looking environment every time. This saved a huge amount of time in the construction of this and subsequent scenes.

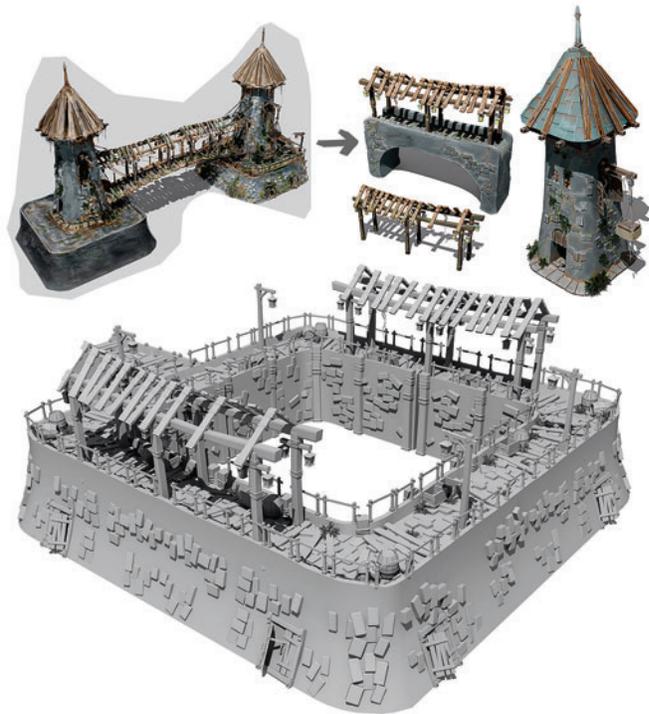
After creating the basic geometry of all the main details used to populate the scene it was time to create some textures and begin building the scene itself by creating the terrain and overall look and plan of the village.

TOP TIP – FIXED TEXTURES

Rather than spend time creating UV-mapped textures if you are working on a static illustration with a fixed camera, create the textures in Photoshop and paint them directly onto the props. It's much quicker and isn't noticeable in the final image.



Individual assets once complete with simple lighting and then painting work in Photoshop to add extra details.



The final set of props as initial geometry with colour correction, tone and added detail. All were then available to use populating the 3D scene.

TEXTURING AND ADDITIONAL

I started by creating various tileable brick and wood detail textures that were used, sometimes in Overlay mode, to add detail to the tree trunks, building walls and various elements. Firstly a single brick object was created in Photoshop. Then, a tileable texture was created in ZBrush and added to the brick by scaling, moving and adjusting the brick itself. A Normal map for the brick was created in ZBrush and then the process went back to Photoshop. Here the Normal map from ZBrush was used as a base image and colour was added using the Overlay blend mode. There were selective colour and level adjustments to make it more distinctive. Finally the Diffuse map was created and applied to the bricks.

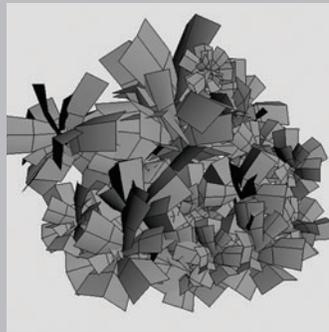


The brickwork was created in ZBrush and had various maps applied using Photoshop blend modes.

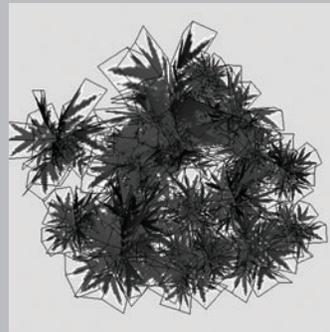
For the majority of the vegetation I painted a small set of leaf textures and mapped them on differently arranged low poly planes creating clusters and sprites to form various tree-crowns.



The Color and Diffuse map and Alpha channel painted on directly in Photoshop.



Low-poly planes forming a cluster of leaves for a model, prior to adding the textures.



The cluster of leaves with textures mapped onto the geometry with alpha channel present.



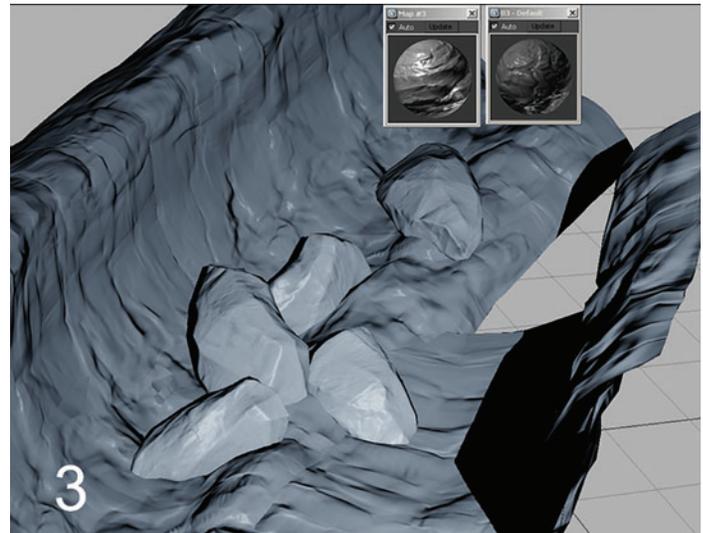
The completed tree geometry with the cluster of texture-mapped leaves on top.

TUTORIAL: CHARACTERS IN THE LANDSCAPE

For some parts of the terrain and river bed where there are small rocks some geometry patches with Normal maps generated from the high-resolution poly geometry were modelled in ZBrush. Firstly the low-polygon mesh was created with a mapped Normal map, then extra detail was added and colour corrections were performed to make it match the tone of the rest of the scene.

TOP TIP – PAINTED DETAILS

Rather than spending time with tricky modelling of extra details and increasing the polygon count it's possible to add the little details using Photoshop and export the models from there. It cuts down on render times for all the elements.



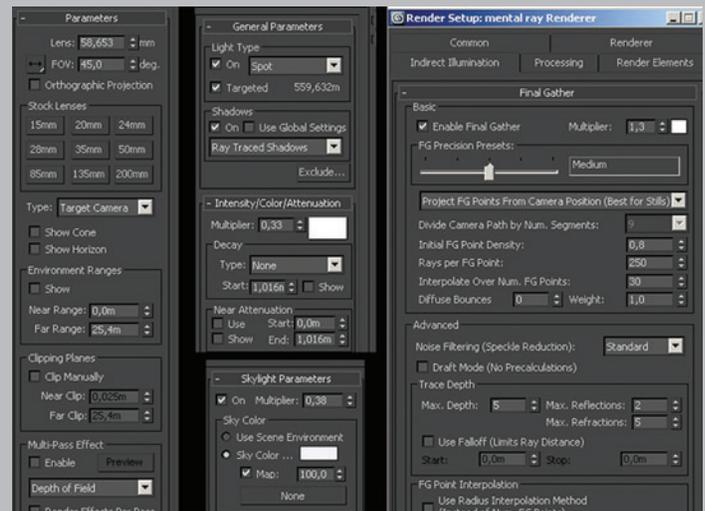
Terrain sample mapped out with additional detail and colour corrections.

CAMERA AND LIGHTS SETUP

As the majority of the final light processing and colour correction, environment effects like fog, soft lights, and final post production adjustments were to be done in Photoshop the light and camera setup was actually very basic. The main purpose of the light setup in this scene was to provide a good light and shadow direction and push or define the volumes of the objects. Only two simple lights were used in the end. There was a target spot light to create the shadow direction with ray traced shadows turned on, and a skylight for better light distribution with Mental Ray's final gathering.



The position of the main camera at the front of the scene, looking into the valley and the village.



The Skylight to add more light to the scene so that it gave a better result when rendering with Mental Ray.



The settings for Mental Ray for the render. There was only a spot light and the Skylight for the entire scene.

SCENE BUILD UP AND FINAL PRODUCTION

Having prepared the set of props, textures, camera and lights setup, the visual art style and keeping in mind the image references of the overall planning and silhouette of a small medieval village, it was time to propagate, arrange and adjust all the elements in the final stage.

I usually separate the different elements by type such as buildings, trees, vegetation, characters, water planes and so on, and areas, in separate layers. This is so that the various areas such as the front, middle and back, or highly complex areas, can be rendered in separate passes and have multiple images with alpha channels in Photoshop for better working organisation. Then, if, for example, I needed to adjust the colour on the trees' crowns I could easily do that if they were in a separate layer with their own alpha channel for a quick selection.

Additional detail was painted in Photoshop in Greyscale mode, using tiled and Normal map textures as a base to paint onto for some of the elements. Colour and water refraction effects were then added to the water plane using a Colour Dodge blend mode in Photoshop. The same kind of process was used for other assets and elements on a separate Overlay mode. Solid colours were painted onto the layer and this added colour variation to the assets when blended together. Added to that there were background details from a combination of photo images. The layers used selective colour, level and contrast adjustments to blend the photo images into the overall colour, tone and detail of the image. A standard brush with a soft, feathered edge was used to paint additional fog onto the background image. This

used separate layers in Lighten and Soft Light blend modes with a white colour to add this level of depth and ambience without having to add extra lighting and the overheads that would imply.

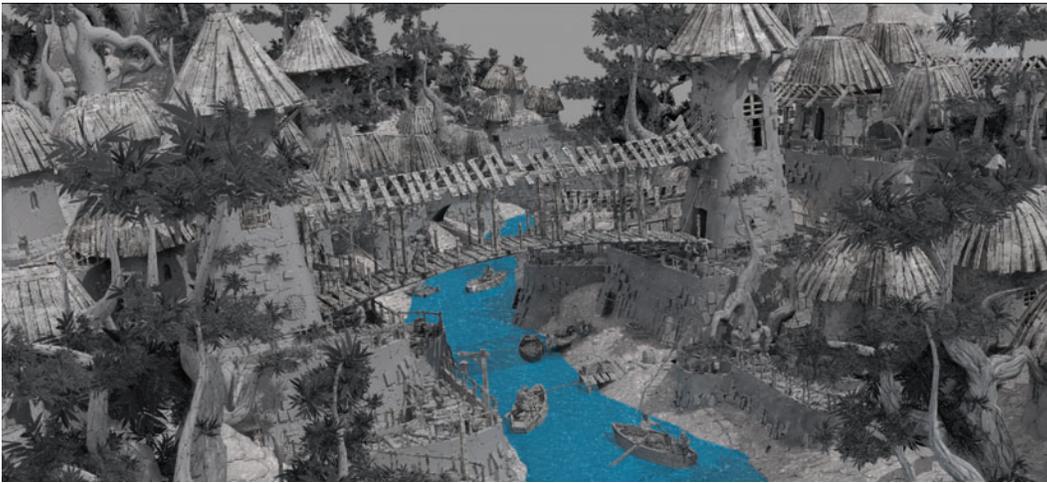
The next step was to push further the overall light and shadow levels and distribution using the shadows cast by the initial direct light – the target light from the 3ds Max file – as a guidance for the light and shadow directions. This was done again by combining multiple layers with soft brush strokes in Hard and Soft Light blending modes. A final touch was to sharpen the image to bring out the smallest details. Everything was then flattened and the image saved out.

TOP TIP – SHARPENING UP

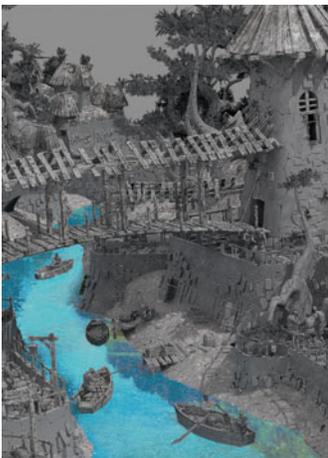
Use the Smart Sharpen filter to bring out details at the end without causing halos or artefacts. Alternatively duplicate the image on a separate layer, convert it to Greyscale, then apply a High Pass filter with the desired pixel radius settings and use it in Overlay blend mode to sharpen the image.



The initial render with the camera and light setup in shaded mode.



Using Normal maps as a base that was painted on with Photoshop in Greyscale mode.



Additional colour and water refraction added to the water plane using images in Colour Dodge mode.

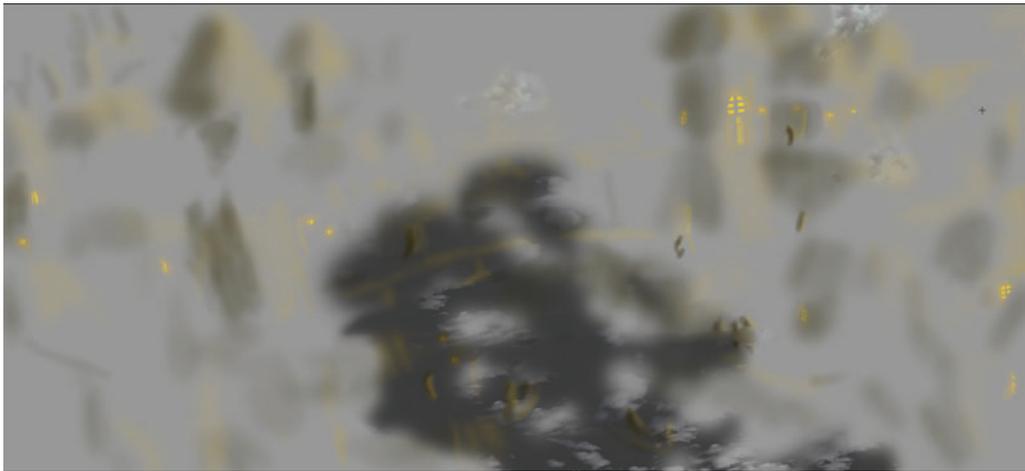
Additional colour variations added to the different types of asset using separate layers shown in solid colours.



Water plane and scene elements with added additional colour and detail.



Background added using combination of photo images with selective colour, level and contrast adjustments.



It may look like a foggy day but this rough painting adds colour, contrast and highlights when used as a blend mode.



Light and shadow adjustments added to the image using Soft and Light blending modes.



The Sharpen filter was used at the end to push a bit more of the small details into view.





UNDER THE BRIDGE BY OGNIAN BONEV



MAX, PHOTOSHOP,
ZBRUSH, MENTAL RAY



4-8 HOURS

“ The autumn is possibly the loveliest season of the year. It was a cold day in the fall when I was walking along a beautiful street in my city. I decide to recreate the street in 3D, using my imagination to help bring it alive. The first sketch was done on paper and then I drew it in AutoCAD. After finishing the 3D modelling it was imported into 3ds Max. There I tidied up the del and created the textures for the scene and the shader. Various passes were rendered and finally composited together in Photoshop. The alternative images show other areas of the same street outside the immediate camera view which were also modelled. I hope you enjoy!

”



PROJECT	LOVELY AUTUMN
SOFTWARE USED	3DS MAX, VRAY, PHOTOSHOP
RENDERING TIME	12 HOURS
ARTIST	AREF RAZAVI
COUNTRY	IRAN



“ Odessa’s Old Yard was made for fun and development of my skills rather than as a commercial project. The idea was to convey the atmosphere of the old yard, which I really liked. I wanted to practice my skills at good texturing and modelling. Absolutely all the models in the scene were made by myself because I did not want to use any models from libraries. The texturing was given special attention and took up most of the time spent on the project. ”





PROJECT	ODESSA'S OLD YARD
SOFTWARE USED	AUTODESK 3DS MAX, MUDBOX, VRAY, PHOTOSHOP, AFTER EFFECTS
RENDERING TIME	4 HOURS
ARTIST	MAX LEVIT
COUNTRY	ISRAEL

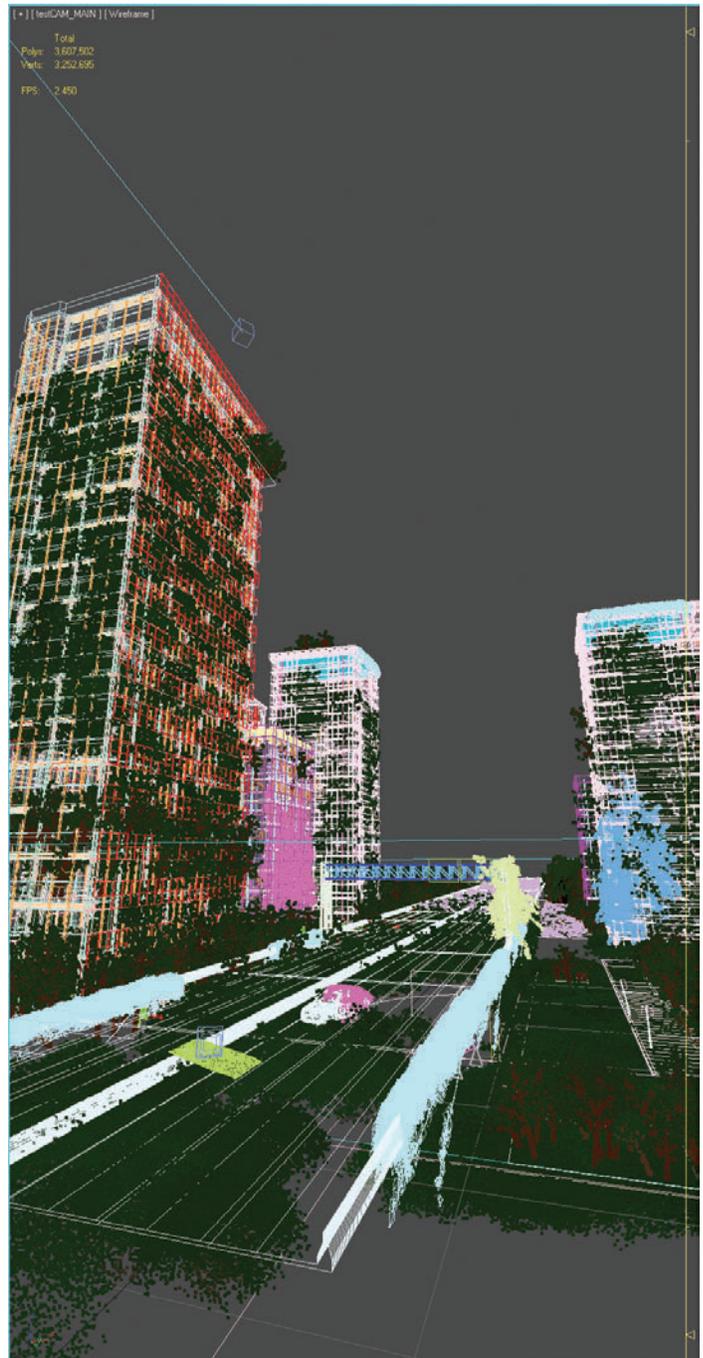




URBAN LANDSCAPES SHOWCASE: ANDY WALSH

“ I was inspired by some 3d art I'd seen on the subject of post-apocalyptic ruined cities which reawakened a love of the subject that goes back to my early teens. I wanted to create a city that looked over grown with vegetation but didn't show any signs of war or obvious destruction, to imply that our extinction was perhaps less predictable or more mysterious. Other inspirations were the movies *Logan's Run* and *I Am Legend* as well as the TV show *Life After People*. ”

NAME	100 YEARS ON
SOFTWARE USED	3DS MAX, V-RAY, PHOTOSHOP, FOREST PACK LITE, IVY GENERATOR
RENDERING TIME	8 HOURS
ARTIST	ANDY WALSH
COUNTRY	UK





CREATING URBAN ARCHITECTURE

Gurmuck Basin explains how he created the towers and minarets of a fantasy mosque.

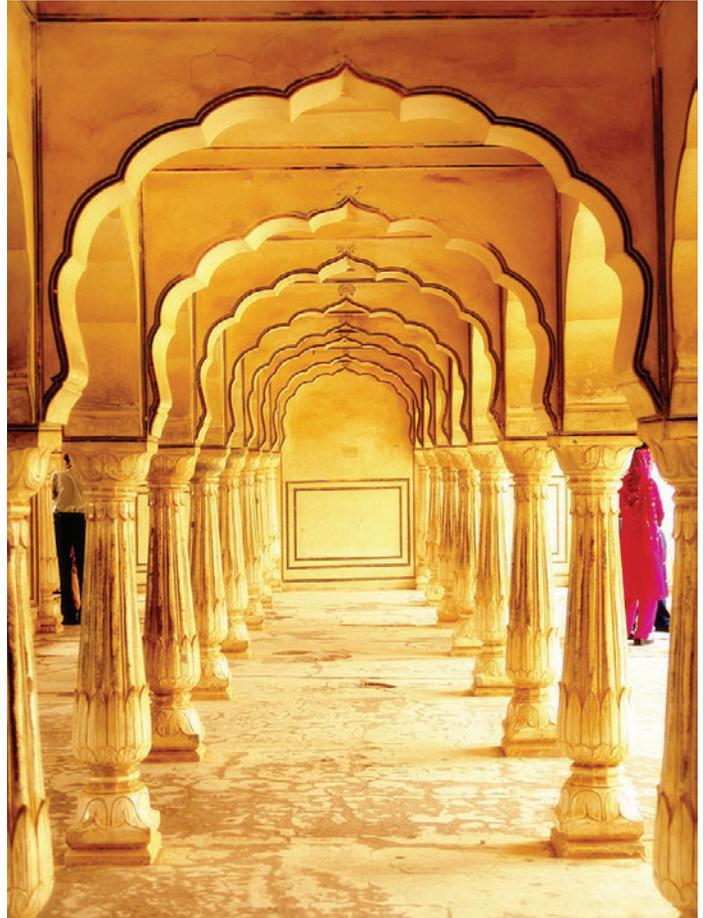
BEHIND THE SCENES

In creating the Fantasy Mosque image, I aspired to incorporate aspects of my own heritage, while exhibiting my love for architecture itself. My father is Indian and as a teenager, I was fortunate enough to experience living in India for a few years. This inspired me to create a piece that would display a special place of worship like the ones I visited during my time spent there. To me, religious structures always radiate a magical and heavenly feel, irrespective of the religion they represent or what geographic region they are established in. The detail that is reflected in the building, the hand-crafted feel to the construction, the history felt in the space, and the love that people have for these enchanted buildings were all qualities I wanted to portray in my artwork.

As well as a historical element, I set out to blur the line between reality and fantasy in this piece. To add to the dream-like feeling I always get from religious structures, I set out to create something realistic in architectural detail, yet hint at the unbelievable with the use of exaggerated overall scale to the design of the entire Mosque.

The Sharjah Library provided reference for the columns and smaller archways.

Architectural reference for the large archways that I planned to incorporate into the image.



Sheikh Zayed Mosque in Abu Dhabi. This image became the major inspiration behind the piece. The domes, towers and architectural details were borrowed from this beautiful building to recreate my Fantasy Mosque.



MODELLING THE DOME'S

I started this project as I do with all projects, by finding reference images of different temples from the Middle East and India, as well as reference images from different artists who have covered similar topics in their work. During the creation of Fantasy Mosque, architectural reference images were very important. I wasn't trying to reinvent historical architectural elements such as the arch, dome or patterns but instead

I borrowed the design of these iconic architectural elements and built myself a kit of 3D assets in Maya. The idea was to use these to build my own religious building. While looking through reference images I came across the Sheikh Zayed Mosque in Abu Dhabi and discovered which architectural elements I needed to design my piece. I also found some Middle Eastern and Indian patterns which I wanted to include in my design. Since this was a personal project and I already had an idea of what I wanted to create in my head, I decided to skip the sketching phase and immediately jump into 3D modeling.



Middle Eastern and Indian patterns.
These patterns were used in the design of the 3D handrails.



Middle Eastern and Indian pattern.
This was used to create the 3D mesh for the meditation rooms.



Architectural detail. This was used to add detail to the outside of the meditation rooms.

TOP TIP

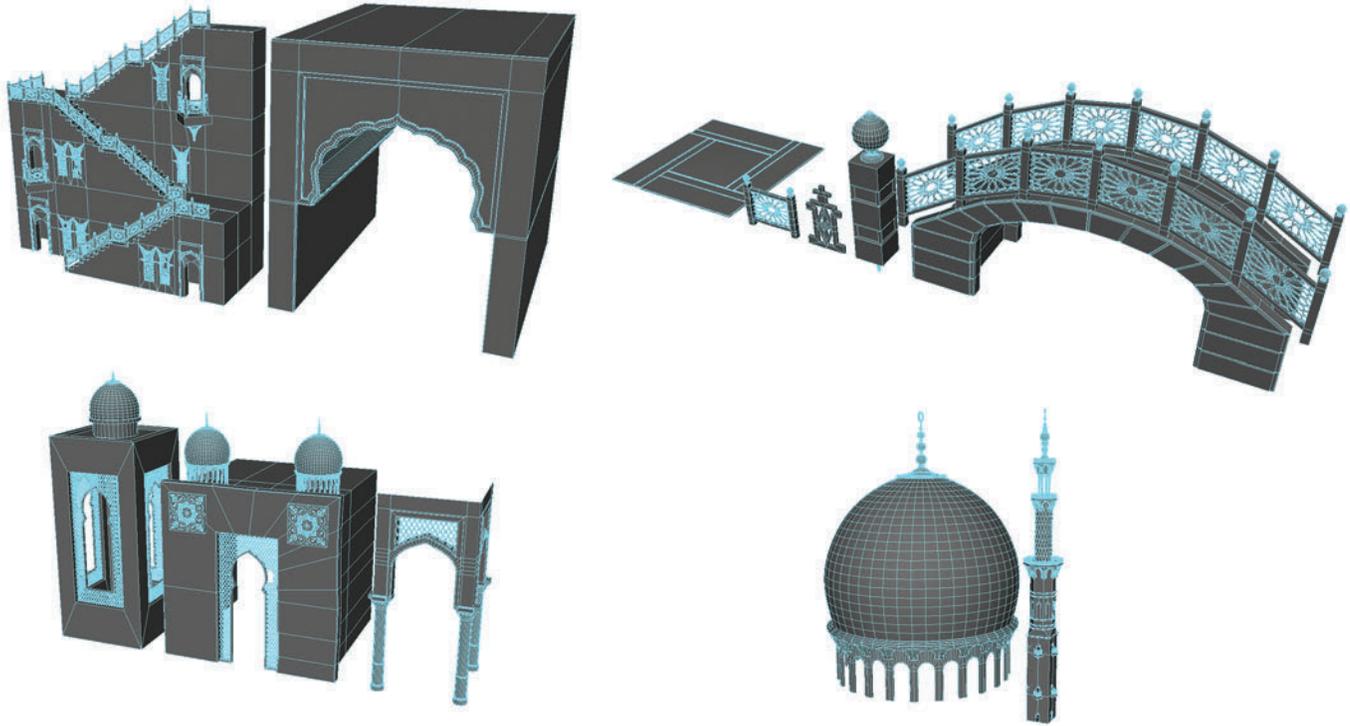
When referencing artists, it's important to not let their work influence your design. I only use reference artwork to help me decide on camera angle, composition, mood and colour palette.

I made a list of assets, most of which I could repeat and vary in scale, and soon began to model. My list of parts included a dome, a tower, a large arch, a small arch, a switchback staircase with windows and balconies, a bridge, a handrail, floor tiles, two different types of meditation room, doorways and the ornamental details. Once all the assets were modelled, I started with the basic massing and positioning of the large arches. I knew that these arches would be the most important parts to grounding the project and influencing where the other assets would be placed. From there I would be able to set up my final camera angle before designing the overall building.

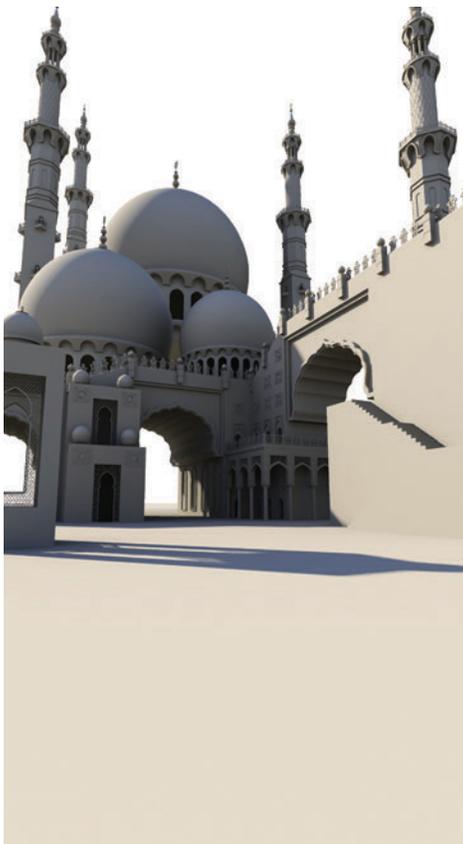
Next I added three large domes that varied in size, four towers and I started to build up the front stairs and spaces in the foreground. Originally, I wanted to use a realistic number of these assets and was thinking to keep the building to three domes and four towers, but each time I looked at the image, I didn't feel the excitement and prestige I was attempting to portray. I then started to play around with the 3D model by adding more towers and domes to the back. By adding an over-exaggerated number of towers and domes, I felt I was able to bestow the fantasy and magical feel I set out to create from the very beginning.

TOP TIP

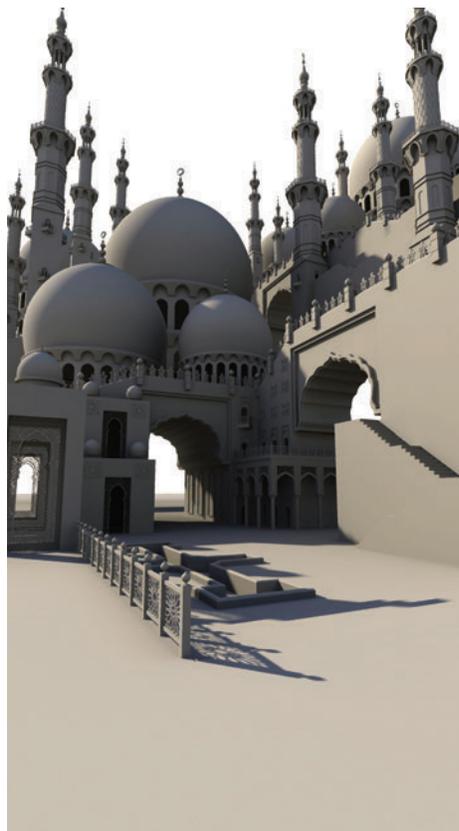
Figuring out the camera angle early helps to inform you which parts you have to model and which parts you can hide. All of the domes and towers in the background are just floating in space and are placed where I thought they looked best for the overall composition of the image.



Wireframes of all 3D assets in the project laid out onto one screen.



The initial process of creating the composition by putting all the models together.



Adding more foreground details and objects. The background is now full of towers and domes.

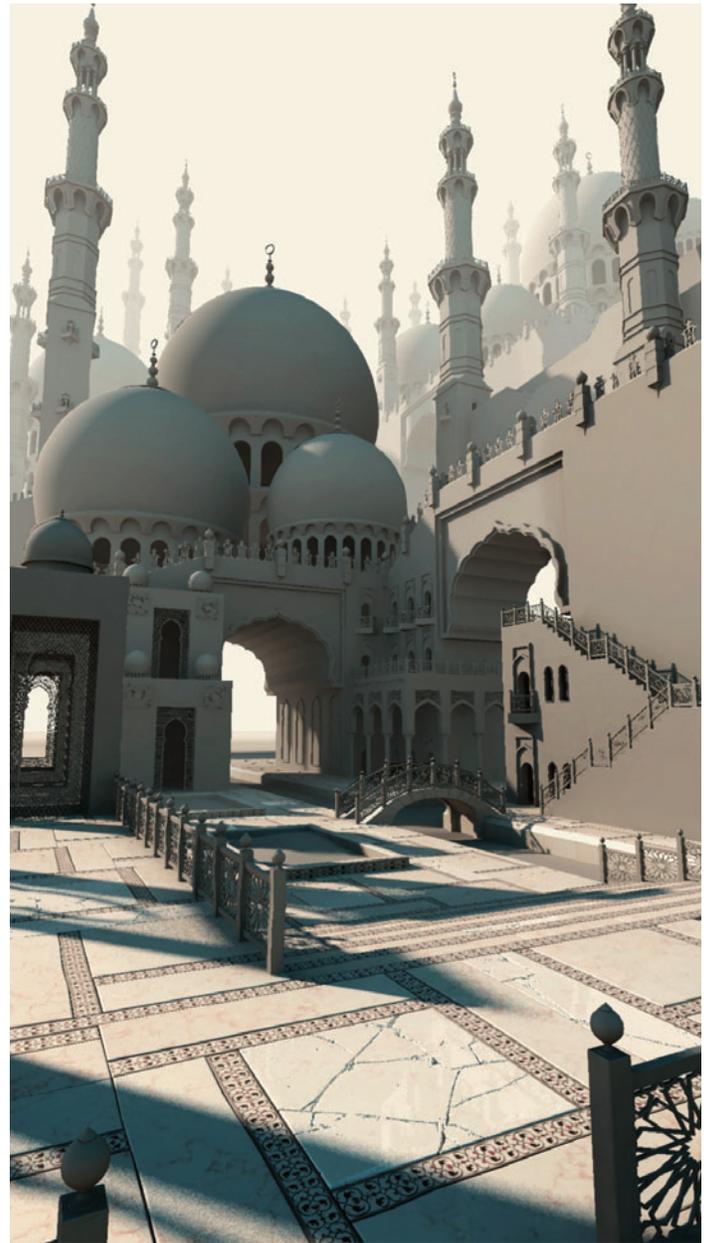
Once I was satisfied with the background, modelling and detailing the foreground space was my next task. I used repeatable floor tiles to add some detail on the horizontal plane and I manually distorted a few of the tiles in the front to break up the perfect hard lines that 3D modelling gives you. A displacement map was used to model cracks to specific tiles to show natural wear and tear to the environment. Two planters and a river were inserted in the courtyard to add a splash of colour to the overall image. I added a bridge over the river as a fun way to add variety to the circulation in the image. Windows, doorways and balconies were added to the switchback stairs and arch walls to soften up the building and to portray the fact that this place was

occupied by many people with lots of activities going on beyond what was superficially visible to the eye. I then finished adding all the rails and architectural ornaments to add details on a micro level. At this point, all the modelling was almost complete. Soon after, I was able to show the piece to a few friends and the feedback I received was that there were too many domes and towers. I decided to do a basic test render to play with depth and atmosphere and to get an idea of how the image would look for the final render. It was important to get the final composition and the numbers of structures right before I went onto texturing and finishing up the render.



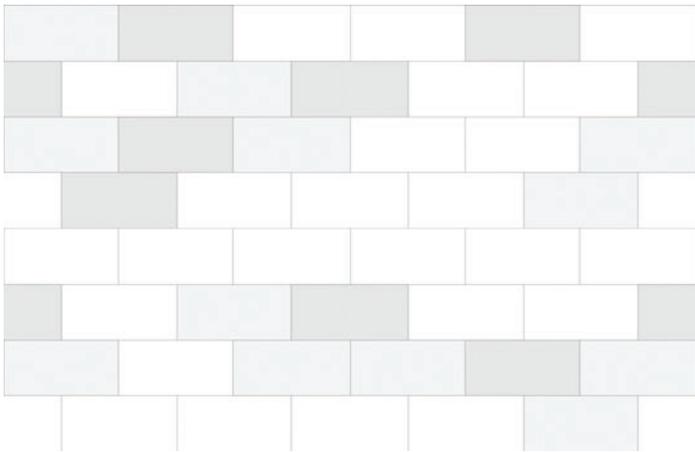
A displacement map for the cracks in marble floor tile.

The third part of the 3D massing stage including a test render for the atmosphere.



TEXTURES AND MATERIALS

For the Fantasy Mosque I used one simple texture of marble brick with a bump map for variation for the majority of the buildings. Since the final output of the project was going to be a still image, I knew I was going to paint in dirt and variation to the materials, so didn't want to spend too much time making the UVs for this project. I decided early on to texture the assets after I had modelled the entire building, because I wanted to make sure that the parts I had scaled larger or smaller had possessed the same brick size, while looking like they were made out of the same materials. Simple projection mapping was used to apply the brick texture to the geometry, while making sure all projections had the same base point 0,0,0, and scale. This would ensure that all the textures would line up seamlessly. A repeatable, but subtle, pattern was used on the floor tiles to insinuate some visual excitement.



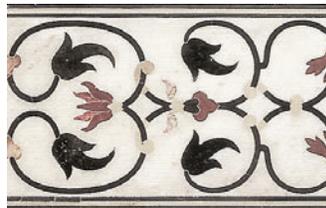
Marble brick texture map made in Photoshop that could be used to seamlessly tile areas.

SETTING UP THE LIGHTING

A simple physical sun and sky was used for the lighting. When setting up the lighting, the most important part for me was how the domes were to be lit. I wanted them to be lit from behind on the top left. I liked how this lighting setup enhanced the curvature of the domes with a bright highlight and a nice curved gradient. The lighting setup was created early on as soon as the first three domes in the project had been modelled. The sun was only moved around slightly for the final image. I usually keep my lighting setups rather simple in Maya because it's so much easier to adjust the lighting in Photoshop, especially if the final output is going to be a flat image.



Marble brick texture map made in Photoshop that could be used to seamlessly tile areas.

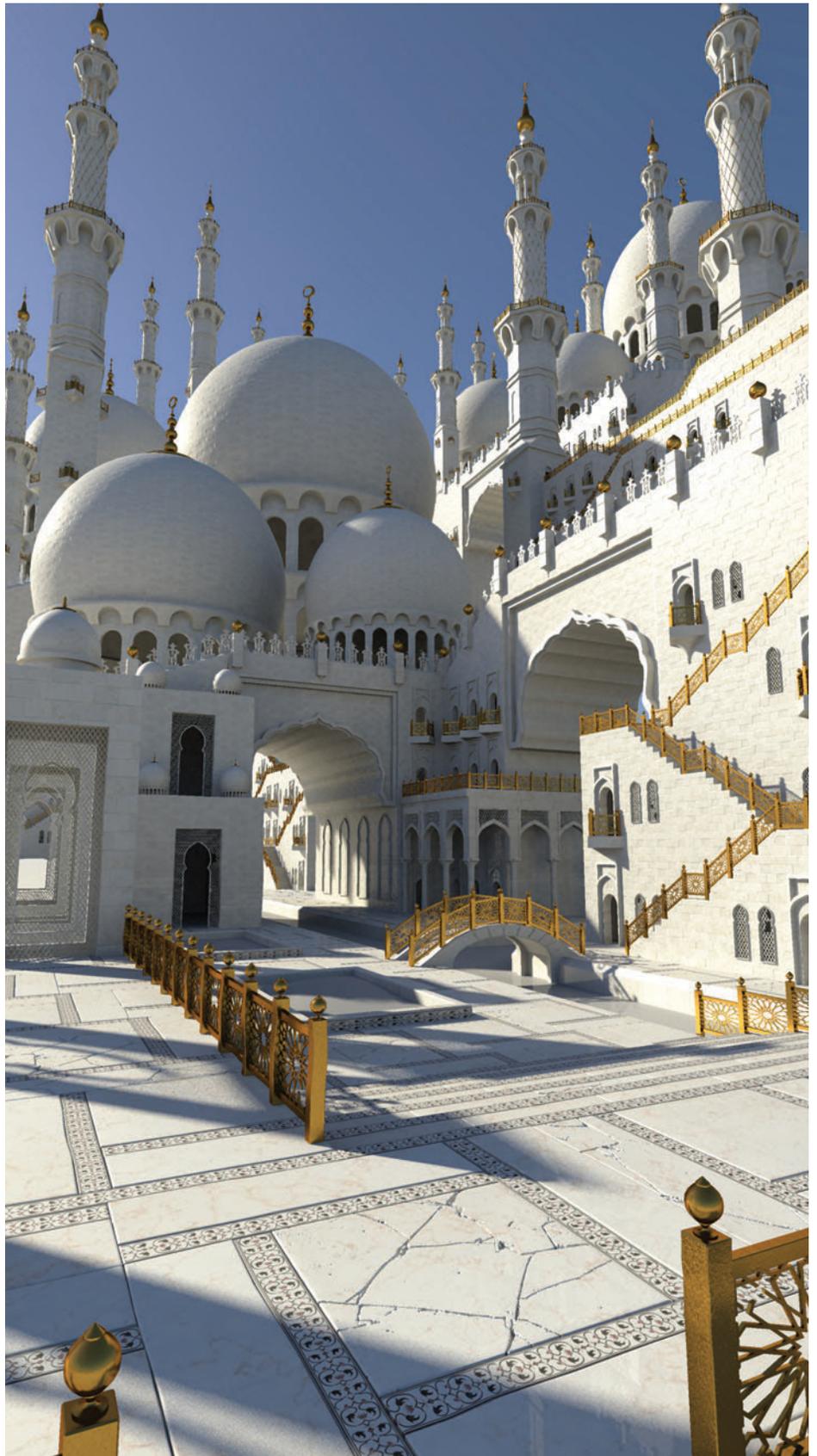


Tileable floor tile detail. This pattern was used to add a kind of opulence to the flooring.

RENDER PASSES AND POST PRODUCTION

Mental Ray was used to render and only a few passes were used for the final composition. I rendered out a Base Beauty pass, an Occlusion pass, a z-depth pass and some material ID passes for easy selection in Photoshop. Once all the render passes were done, I composited them in Photoshop, while adjusting hue and saturation, curves, brightness contrast and photo filters to figure out the overall mood I wanted to deliver in the final piece.

It was at this point that dirt, destruction and texture were painted onto the scene in Photoshop to break up the repetitiveness of the brick texture, while adding some life to the piece. Some grass was added to the cracks in the floor tile and some water to the river. The painted details softened up the clinical lines of the 3D render and added a slight painterly feeling to the overall piece.



Base Beauty pass onto which everything else would be composited.



The Occlusion pass for creating depth of shadow.



The z-depth pass is useful for varying the depth-of-field. White is nearest, black, furthest away.



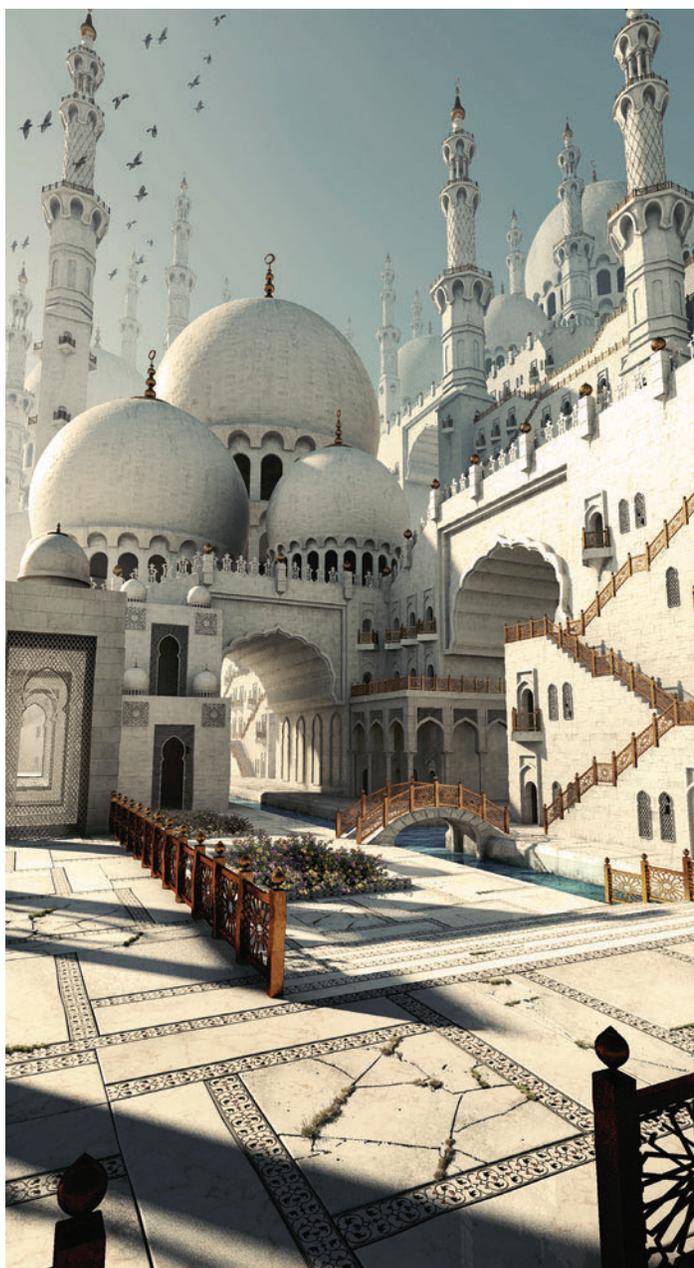
This was a test render to see what the mood of the piece looked like.



Some grass in a crack to add as a post production detail to make the image more natural.

Source photo for adding water to the small canal that runs through the image.





A test render using lower quality settings to see how it came out prior to the main rendering passes.

TOP TIP

When creating digital 3D art, things look very stiff and overly perfect. In the real world no two things are exactly the same, so digitally painting over a base render is an easy way to add variation, mistakes and life to the image.

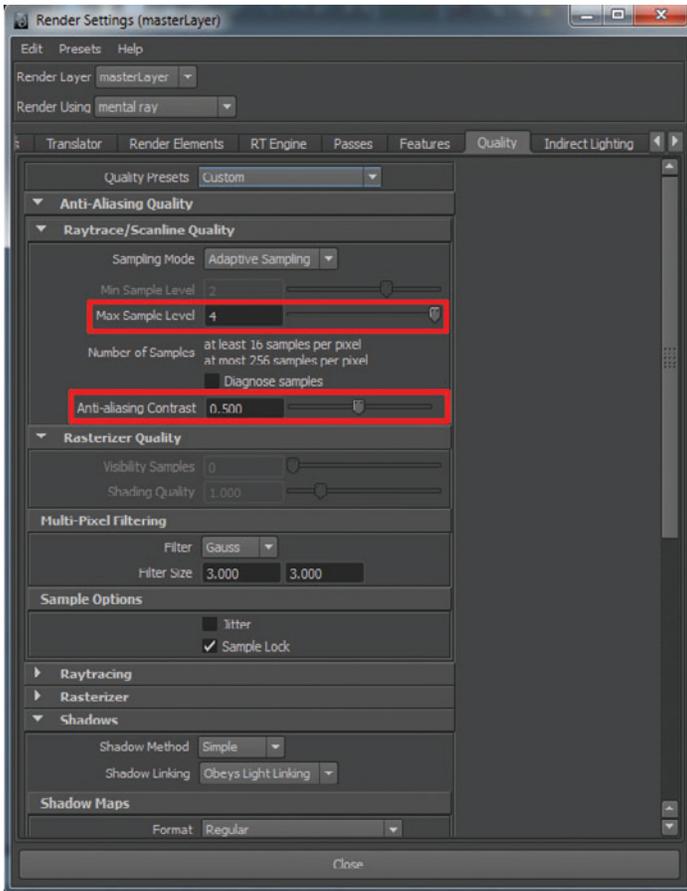
At this point, I believed I had completed the image and went along to post it in numerous places on the internet. I received some great feedback, which brought to my attention how low the quality of my render settings were. An experienced individual told me that I should increase the levels and samples in my render settings in order to get a crisper and clearer final output. At first I wasn't going to re-render the project because my old computer could barely handle the file since it had around three million polys in the entire scene. However, I had just built a new PC and decided that I could use this piece to test out the strength of my new workstation. The levels and samples were increased to maximum settings and the new image was rendered out in two hours. The difference was noticeable right away and so I decided to rework the final image. The old render was muddy, overly yellow and the sky was too plain. The overall colour was adjusted with hue and saturation, a photo filter, and I added some clouds and more birds to the background.

TOP TIP

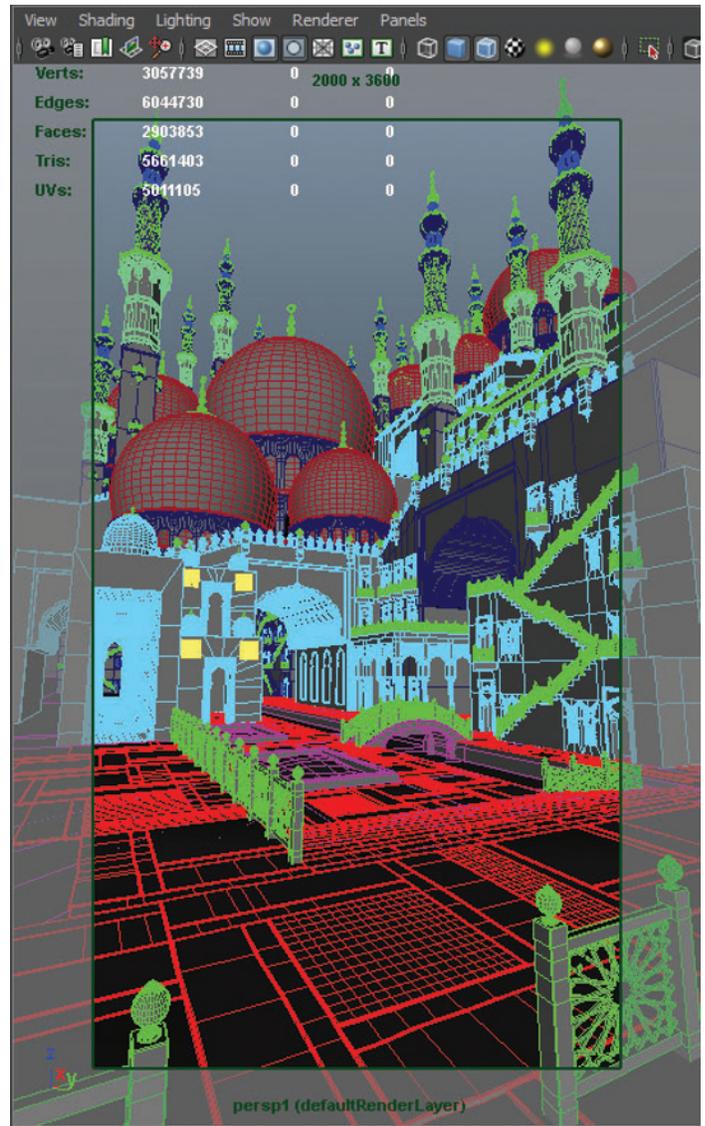
When adding a sky image to the render it is important to make sure the colours in the sky match the colours of the render. The colour of the sun and sky is subtly reflected in the architecture. What I do is adjust the sky image until the blues in the sky match the blue colour that is rendered out of Mental Ray. Then I use hue and saturation to adjust the colour of the overall image completely. This way your sky doesn't look out of place and fake behind your render.

And after all that, the image was finally done! I always strive to learn something new when constructing personal pieces. Usually, I make a list of things I need to master and figure out what the next step will be in order for me to master these skills. For this image, I learned a lot about render settings, pushing my computer to its limits – which required me to buy a completely new one – and figuring out how to cut corners.

I don't always stick to modelling with quads when poly modelling, I just do what is quick and easy, because in the final render, the difference is miniscule and not visible.



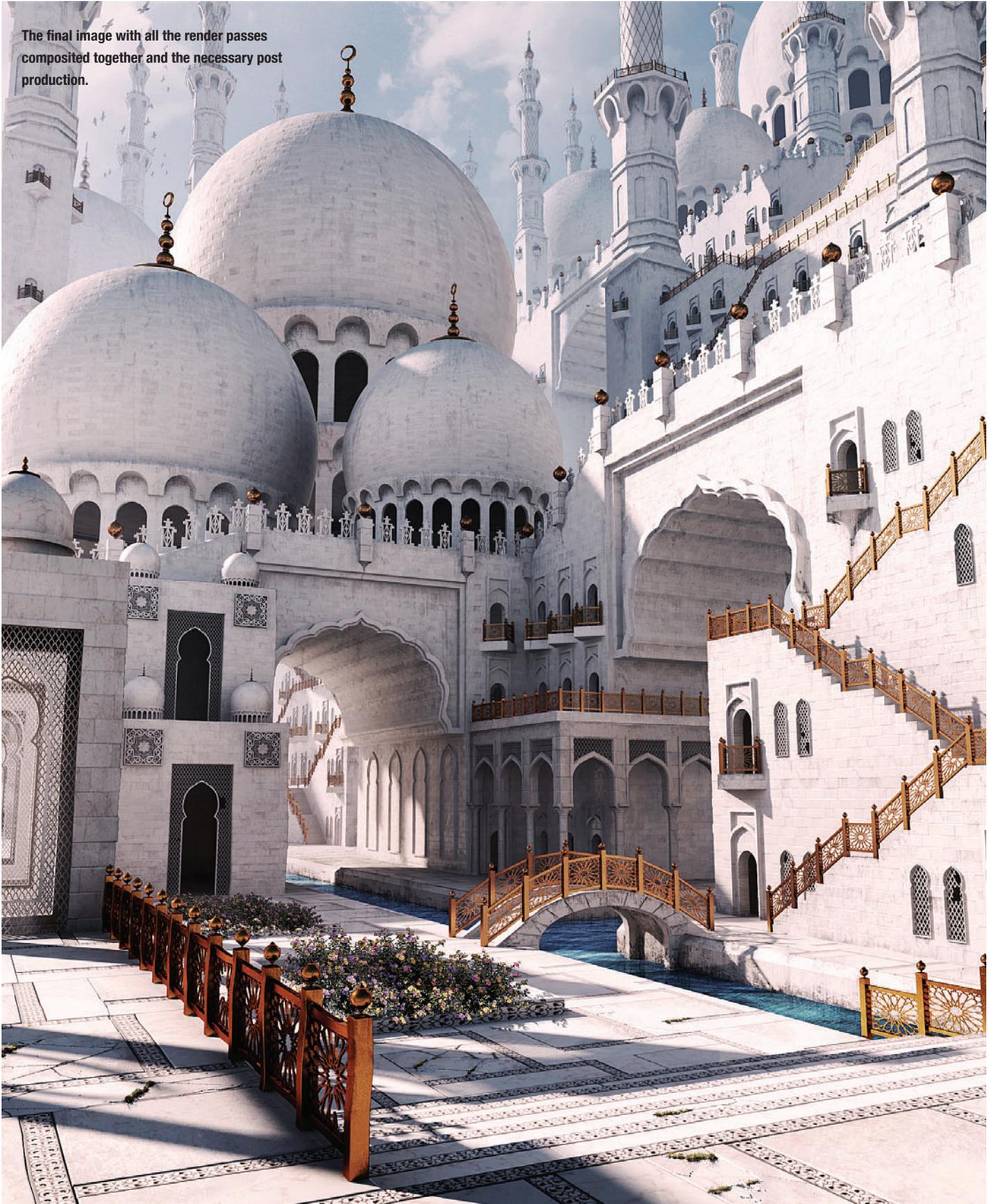
The Levels and Anti-Aliasing Contrast in Anti-Aliasing Quality were increased substantially.



The wireframe of the entire scene showing the poly count.

PROJECT	FANTASY MOSQUE
SOFTWARE USED	MAYA, RHINO, MENTAL RAY, PHOTOSHOP
RENDERING TIME	2 HOURS (100 HOURS FOR ENTIRE PROJECT)
ARTIST	GURMUKH BHASIN
YOUR COUNTRY	UNITED STATES OF AMERICA

The final image with all the render passes composited together and the necessary post production.

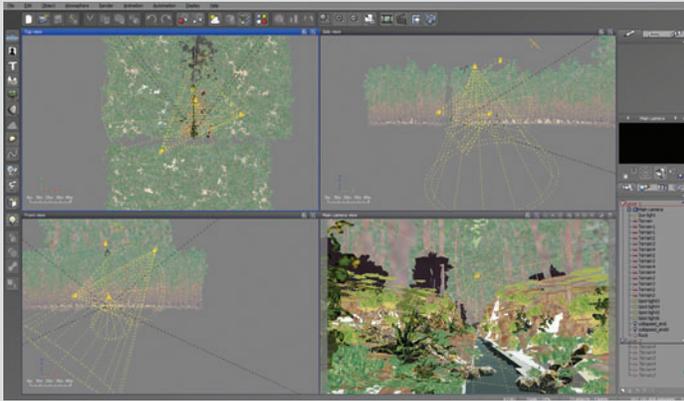


WEATHER AND SEASONS SHOWCASE: DANIEL RESPAUD

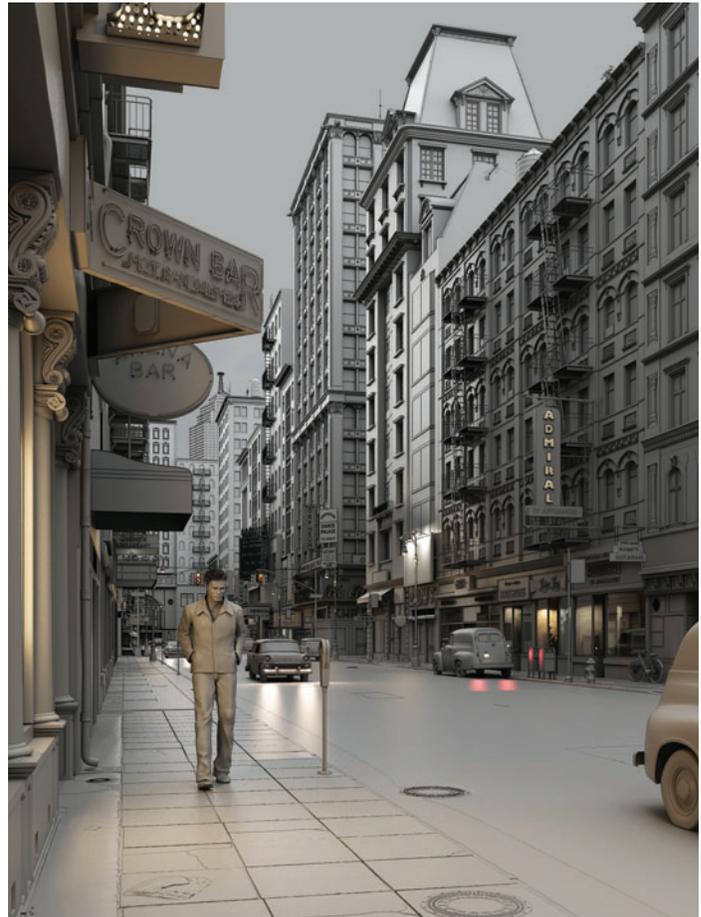
“ This image is a part of a series of forests that I wanted to do for a long time. To make it I looked at many photos of forests in the wet and rain with the wind blowing. I tried to extract key features from them that I used to make my forest. In this image I tried to make a wet atmosphere, and a forest that was almost alive and agitated. ”

PROJECT	WILD FOREST
SOFTWARE USED	VUE INFINITE
RENDERING TIME	5 HOURS
ARTIST	DANIEL RESPAUD
COUNTRY	FRANCE





“ I have always been fascinated by New York and especially by vintage black and white photos of the city. The project started out quite differently but during the modelling process I decided to go for a fictional street scene inspired by 1950s New York. When I made the main character I was inspired by a famous photo of James Dean walking on Times Square. The entire concept is one of wet, slick pavements in the cold winter season, reflecting the neon lights back as the character hunches up against the cold. ”



PROJECT	NEON CITY
SOFTWARE USED	3DS MAX 2012, VRAY, MUDBOX 2012 AND PHOTOSHOP
RENDERING TIME	SEVERAL MONTHS IN ARTIST'S SPARE TIME
ARTIST	DENNIS KAYA IVERSHOLT
COUNTRY	DENMARK



CROWN BAR
HOT SANDWICHES

BAR
BEER ON TAP
RESTAURANT

ARENA BAR
TENDER STEAK 6.5
SANDWICH

Quincy's
RESTAURANT

ORIENTAL
BIG SPECTACULAR
BIG ENTERTAINMENT
BIG GREAT DRAMA!
"THE BIG SHOW"
CHINA TOWN

ORIENTAL
MUSEUM

DANCE PALACE
TONIGHT

GARDEN
LOCAL

CHILDREN
RESTAURANT

RAPH'S
RESTAURANT

BOOKSTORE

ADMIRAL
TV APPLIANCES

ADMIRAL
TV APPLIANCES

MANNY'S RESTAURANT

COLD WEATHER EFFECTS

Olivier Vernay-Kim explains how he created a winter wonderland scene, complete with a blanket of snow.

BEHIND THE SCENES

At first, this image was an environment I did for a Fable 2 cinematic shot at Blur Studio. I really liked the subject of a peaceful winter scene in the countryside, so later I decided to take the project a bit further by adding more details and atmosphere. It was also a good exercise for snow modelling. My goal was not to make an ultra realistic image, but rather giving it an illustration look that suited the subject.

Since it was originally a professional project, I had a concept design (not always the case) which gave me roughly the composition of the image.

From this point I gathered some reference of a typical countryside: trees, fences, mud paths, preferably snow covered. The image was supposed to be in medieval times, so modern structures like electric poles were prohibited.

PROJECT	HEADING SOUTH
SOFTWARE USED	3DS MAX, MENTAL RAY, PHOTOSHOP, TERRAGEN
RENDERING TIME	7 HOURS
ARTIST	OLIVIER VERNAY-KIM
COUNTRY	USA



HEADING SOUTH BY OLIVIER VERNAY-KIM



This is a concept art made by Chuck Wojtkiewicz from Blur Studio. It was open for interpretation.

I used a lot of reference pictures, which helped me visualise specific details and objects.



TOP TIP – EXPERIMENTS BOOST CREATIVITY

When working on a personal project with no deadline, don't be afraid to move objects around, try new colours and objects, even if it seems weird at first, or when you think you're close to the final version. You might discover a great idea which you'd never have thought about before and that you will take pleasure in developing.

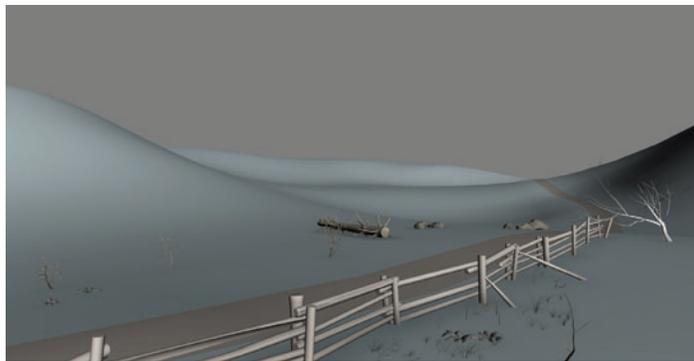
MODELLING THE BASICS

The scene was divided in three distinct parts: foreground with the muddy path and detailed trees, mid-ground with the farm and mud path continuation, then background with distant hills and mountains. This way it was really easy to manage the level of detail according to the distance from the camera.

The ground consisted of one plane with both the ground itself and the snow layer integrated in the modelling. It was more difficult to change the snow distribution this way, but it allowed better control of the snow/mud transition when texturing.

At first I roughly modelled the snow using the Paint Deformation tool in Editable Poly. Then, satisfied with the basic shapes, I added a lot of details simply by using a Displacement map on top of the original modelling.

The foreground trees are Xfrog models. Adding a believable snow layer on these was a little tricky. For me, the most logical way of doing it was to pour some particles on the leaves, using Particle flow (with speed at 0 after the collision), but this was way too slow, even after a good mesh optimisation. I ended up using Blobmesh (in Compound Objects), which basically creates a sphere on each vertex of a selected object then melts the spheres together to form a single mesh.

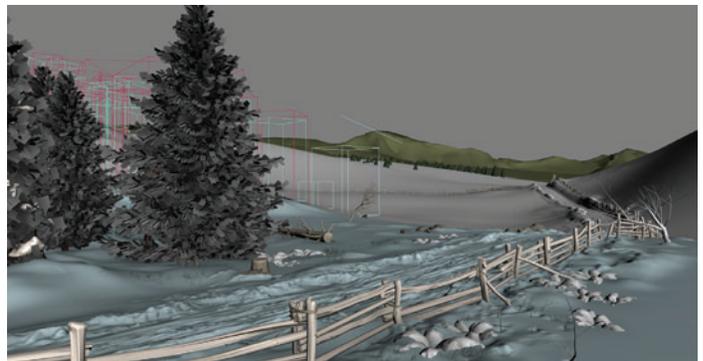


Very early version. Simple ground and fence modelling to block composition. Temporary vegetation and rock placement (although some rocks made it through the final version).

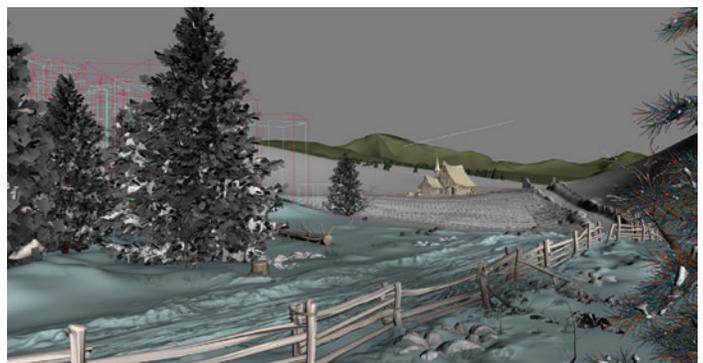
I applied Blobmesh only on the most exposed leaves. I had to find a balance between not enough details and too many. With too much resolution the Blobmesh tends to look like the leaves shape, which is a simple plane with opacity map. Some modifiers like Relax, Turbosmooth and a little bit of noise were also added.

A simplified version of that technique was then used for the smaller vegetation. Most of the small vegetation models were grabbed from older projects. The tall grass was just painted on the ground using the script Advanced Painter. The rocks were very old meshes I did about 10 years ago (it's time to make new and better ones, maybe for future projects). For the snow, I used a Landscape shader, which is a kind of Top\Bottom material but with many more parameters – part of the Lume shaders, and works only with Mental Ray I think. This shader was applied as a mask for the rock/snow material and as a Displacement map. The same technique was used for the fence, with an additional extruded mesh from a selection of, theoretically, the most exposed polygons to the snow.

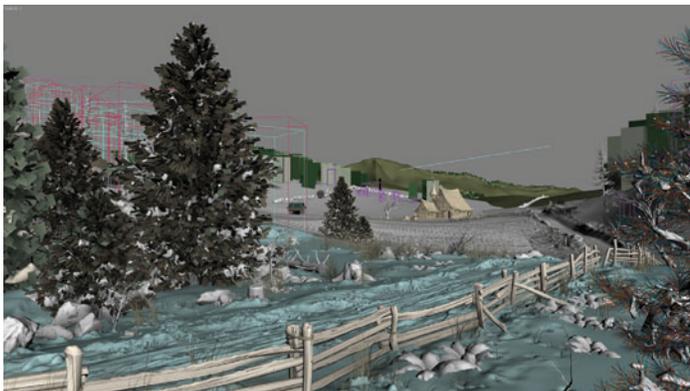
For the mid-ground and background some long grass, custom billboard trees and bushes were scattered around. It's a fast process, but it's worth looking at the reference pictures as much as needed and to try to have a global view of the result at all times to keep the overall consistency.



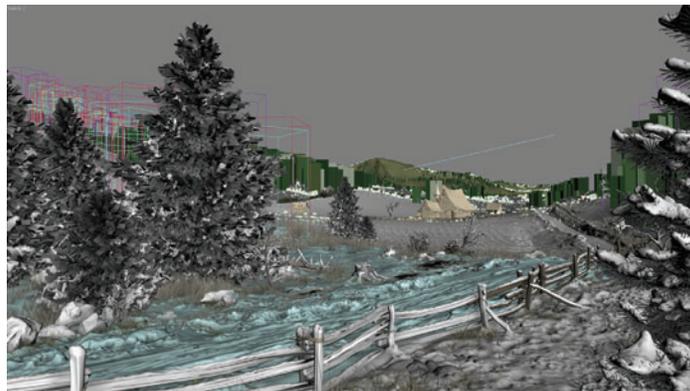
Some trees are placed and the road sculpted with Edit Poly's 'Paint Deformation'. Background mountain added (simple edit poly mesh).



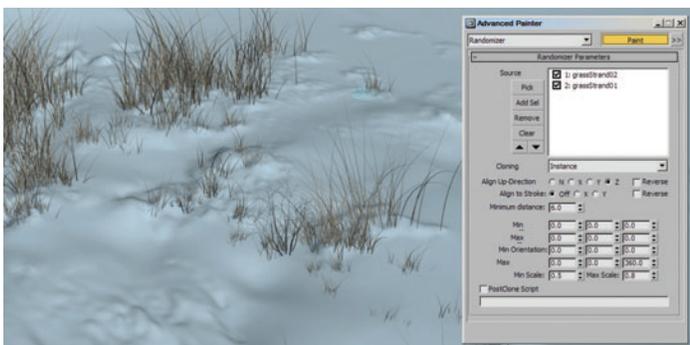
Snow on trees, early version of close-up tree on the right side, mid-ground detailing with farm and displaced plane for the field.



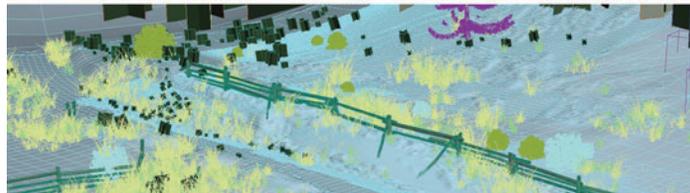
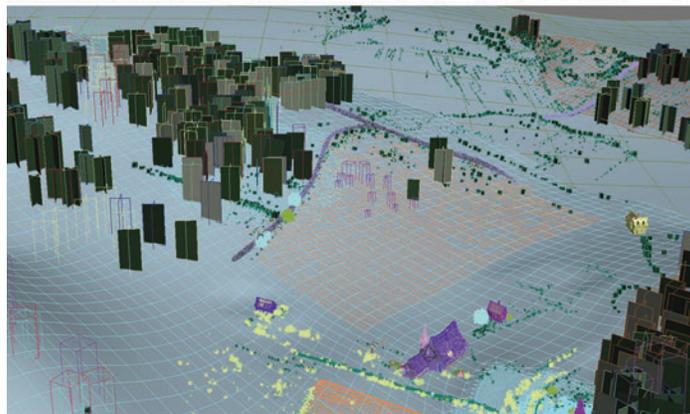
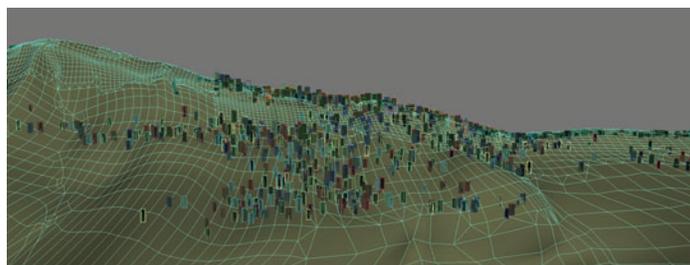
Final fence modelling, billboard trees placement, more rocks and vegetation added. Snow modelling on foreground fence.



Snow on trees, early version of close-up tree on the right side, mid-ground detailing with farm and displaced plane for the field.



Using two basic grass models to paint the grass on the ground. This technique works great for scattered objects. To place millions of instances it's advisable to use a dedicated tool like ForestPack.



Advanced Painter was also used to scatter trees and bushes (actual meshes, but mostly billboard objects for the background).

TOP TIP – HOLD BACK FOR A SECOND!

While being a perfectionist is often a requirement to reach a certain level of quality, working for too long on small details can drive you away from the main composition. Always check how your new object or texture fits into the globality of the picture: scale, harmony of colours, meaning, etc.

TUTORIAL: WEATHER AND SEASONS



Only modelling is shown here, without displacement.

Wireframe render. Some areas on the ground are more defined because Mental Ray uses a subdivision technique for displacement. It can take a lot of memory so I prefer to manually subdivide specific areas where I want more details, while keeping low displace settings.



The three distinct parts of the scene. Very convenient to manage level of detail.

Rock models can be rotated in any direction to add variation. The displacement shader always creates a snow layer on top, whatever the orientation of the models.



CREATING THE SNOW AND MATERIALS

The snow material is a simple white standard material. I did some tests using an Arch and Design material with sub-surface scattering, but it increased render time without really improving the look of the snow. In the end I did use A&D materials, but only for objects with opacity maps, as A&D's Cutout works better with Mental Ray than Opacity in the standard material.

I think with this type of lighting (sunset with a low and relatively dim light), the modelling is more important than the shader to make it look believable. Also, using a simple shader was much easier to manage than a complex one. Indeed, as almost all of the objects had at least one snow material on them but with different maps, they had to look exactly the same.

I was not quite satisfied with the snow covering the pine trees in the foreground. There was clearly a lack of details compared to the scale of the trees. I tried to completely remodel the snow using a new selection

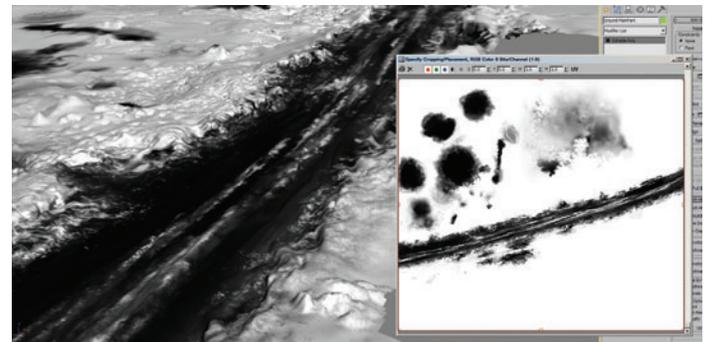
of leaves and some tweaking in the Blobmesh parameters but that didn't work out too well. So after testing a couple of possible solutions the best way I found was to use a Landscape shader in the Opacity slot, so when rendering we see only the upper part of the mesh.

Another trick to simulate a snow layer on the trees was to bake a set of lights placed on top of each source tree using Render To Texture. The resulting black and white maps were used as masks in the leaf materials. These maps could have been used for snow displacement, but I did some tests and it took a bit too long to render.

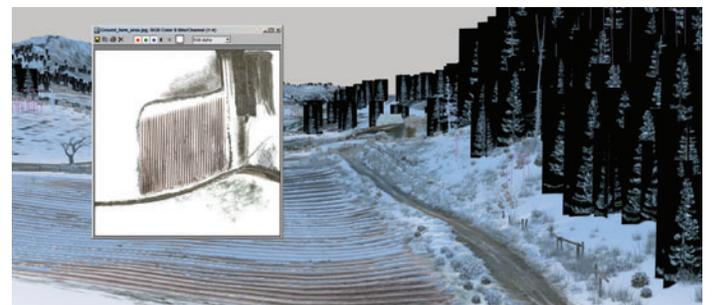
The map for the field and road in the mid-ground were painted in Photoshop, as something specific was needed for this part of the environment. In the background was a satellite view grabbed from Google Maps and edited in Photoshop for contrast, colour correction, adding and suppressing some details here and there. Same for the mountains in the background, with a different map.



Some of the materials used in the scene. Most are very simple standard materials with hand-painted textures. No fancy reflections or sub-surface scattering were needed.



Some of the materials used in the scene. Most are very simple standard materials with hand-painted textures. No fancy reflections or sub-surface scattering were needed.



The mid-ground part of the ground texturing consists of a single diffuse map; no mask used here.



I didn't want heavy snow, so an opacity map helped to remove the excess (using the shader 'Landscape' as a mask).

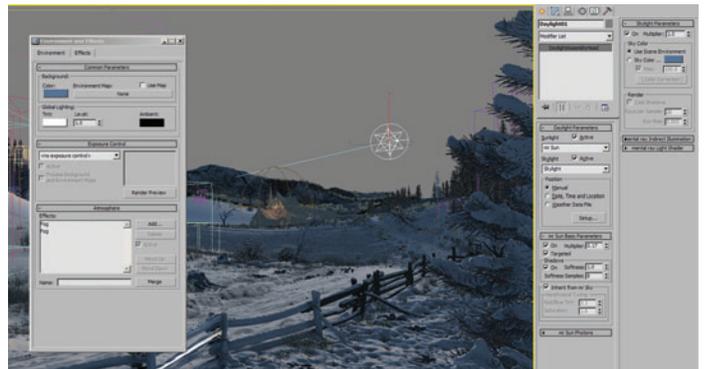


Final version of the main tree with snow.

APPLYING A LIGHTING SOLUTION

Lighting is a single Mental Ray sun and a plain blue Skylight. I did some test renders with HDRI maps, but wasn't really satisfied with the results. There's also a warm-coloured omni for the farm.

At first I tried to use some photographs for the sky, but none of them really matched what I wanted in terms of cloud shapes, colours and lighting. So I tried with Terragen 2, and after a lot of time experimenting with the many different parameters, I got the desired result. I could have painted it, but it was a good opportunity to test the possibilities of Terragen 2 for skies. It's also much faster that way, but of course you don't get as much control as with a painting. The final sky consists of two 2k renders assembled in Photoshop, as there is no panorama export option in Terragen. I used a wide ratio to adjust it freely into the image composition.



I used a daylight system that combines a sun and skylight. The sun multiplier is set at 0.17 because I wasn't using exposure control or linear workflow.



Early version of the sky in Terragen. Placing the sun and tweaking parameters to obtain good looking clouds.

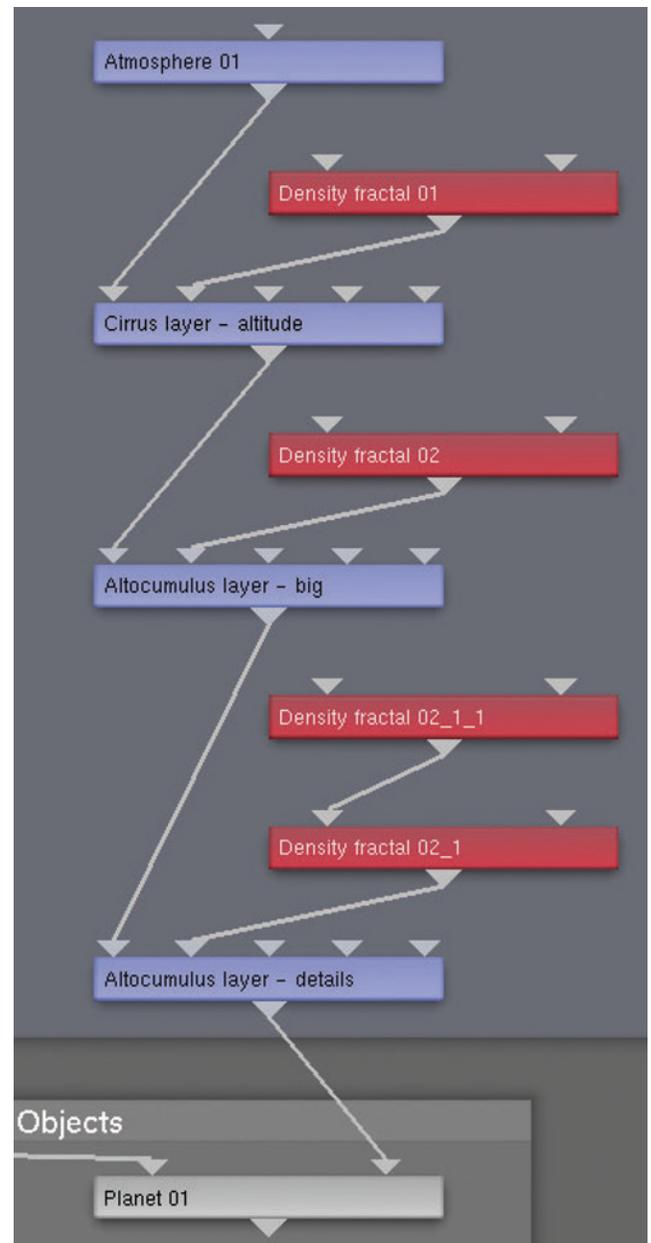


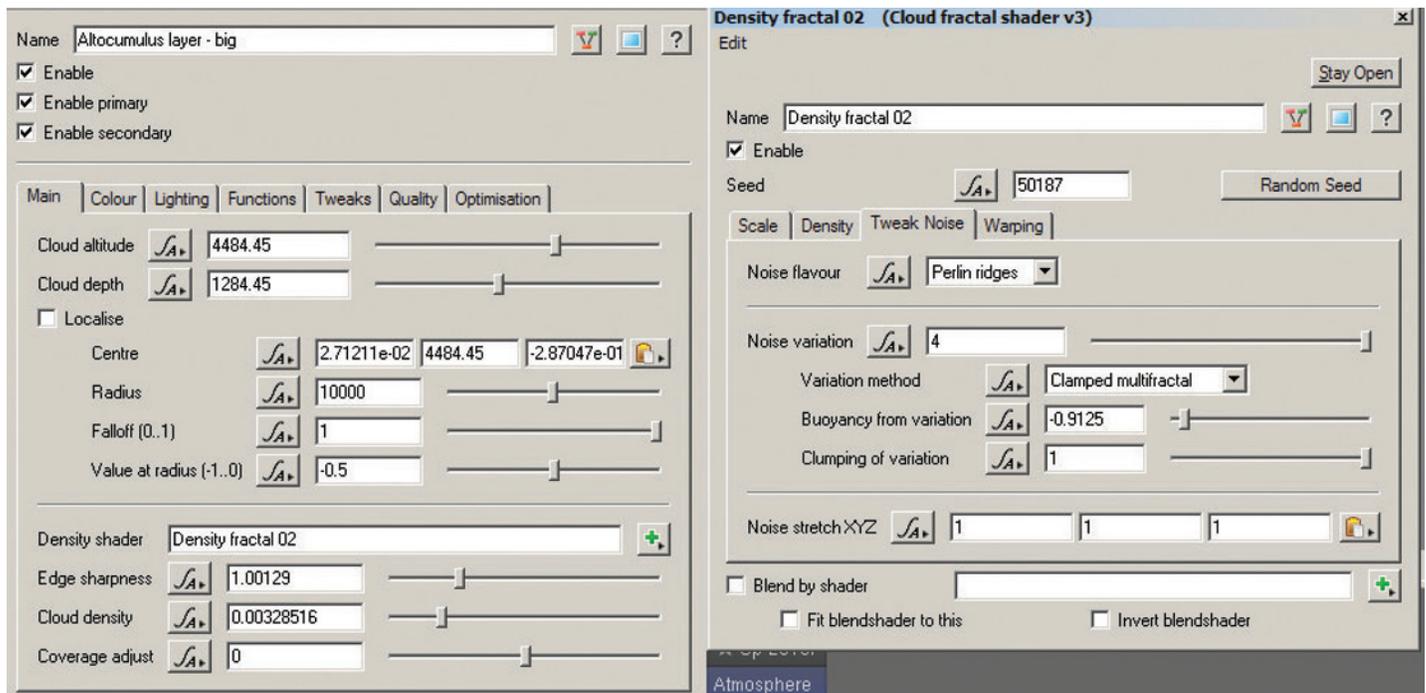
Clouds are almost final, but need some refinement. The tricky part was to tweak parameters without altering the overall shapes.



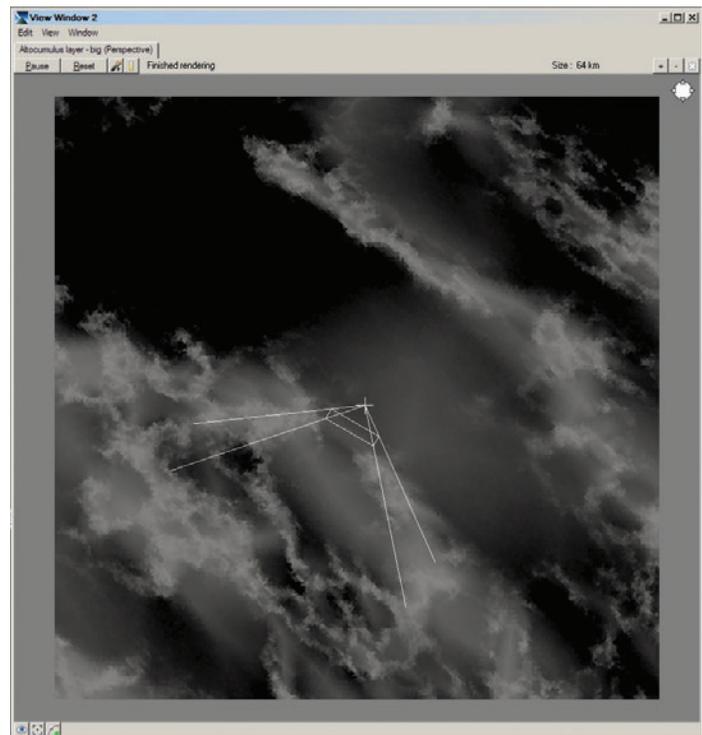
Final version of the sky, rendered at high quality settings and 2k resolution it took around 10 hours to render.

The three cloud layers with their respective fractal shader nodes, which serve as a base to define the shape of the clouds.





On the left are the basic cloud layer parameters, and on the right the fractal shader parameters. It can be sometimes difficult to understand which parameter does what, so I rely heavily on the preview window.



A very useful preview window. It's a top view of a single cloud layer, with the camera displayed.

RENDERING LAYERS

Mental Ray was used for rendering due to the high-quality results. Settings were very basic, Final gather was set to Low, and Use radius interpolation method was checked under Fg point interpolation. That way it rendered relatively fast at 4k resolution – around 7 hours on an Intel Q9550 – while providing good ambient shadow detail.

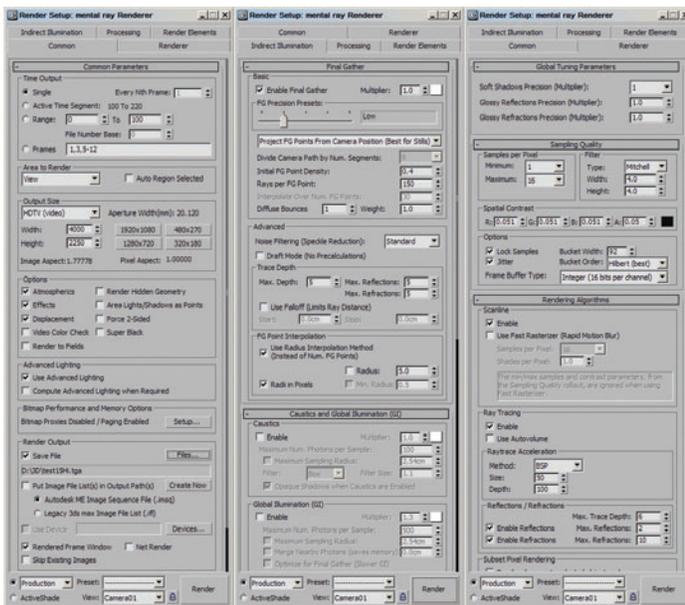
I wanted to keep the compositing process very simple, so there were only two passes: the beauty pass, which contains everything including the sky, and a distant fog pass, which is used as a layer mask with a blurred version of the sky. Fortunately I had enough memory to render everything at once.

Once the beauty pass was rendered, the scene was updated in Max

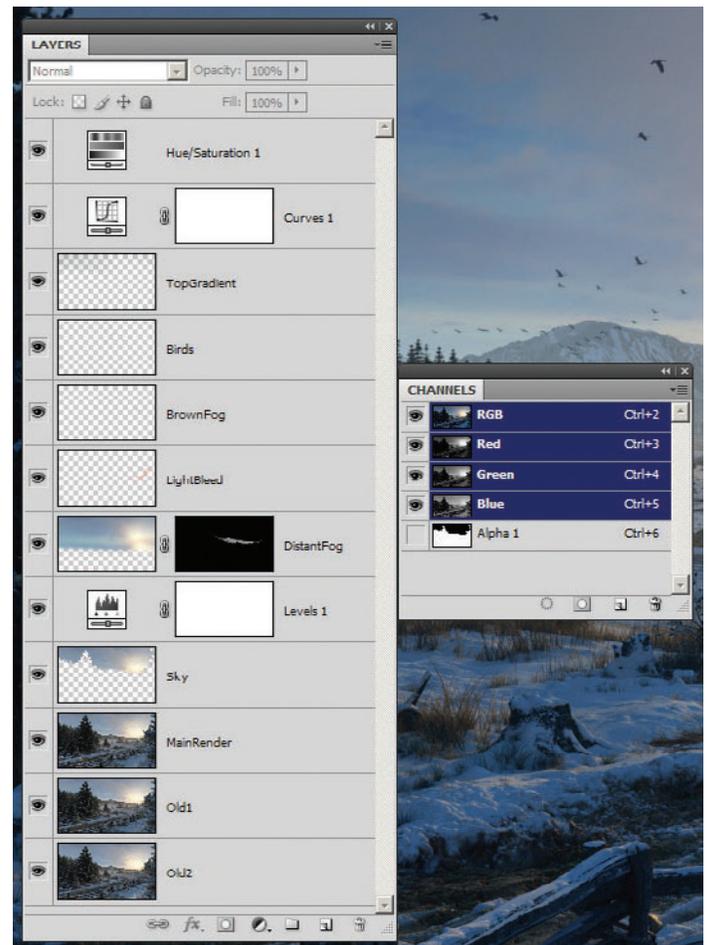
while starting compositing in Photoshop. From this point I rendered only small regions of what changed and integrated them in the PSD file.

There were also two layers for older versions of the beauty pass – I like to compare the latest version to older ones, so I know if I'm still going in the right direction – and one layer for the birds (cranes), taken from a photograph. I colour-corrected them and changed their position individually for better integration and composition.

Then the beauty pass was painted over to fix some minor issues that would have taken too long to do in 3D. The rest was mainly colour and contrast correction.



These are the parameters I used for final rendering. I also have a preset for draft rendering.



This shows how layers are organised in Photoshop. I did some paint overs directly on the main render, with a copy of the original render for reference and recovery.



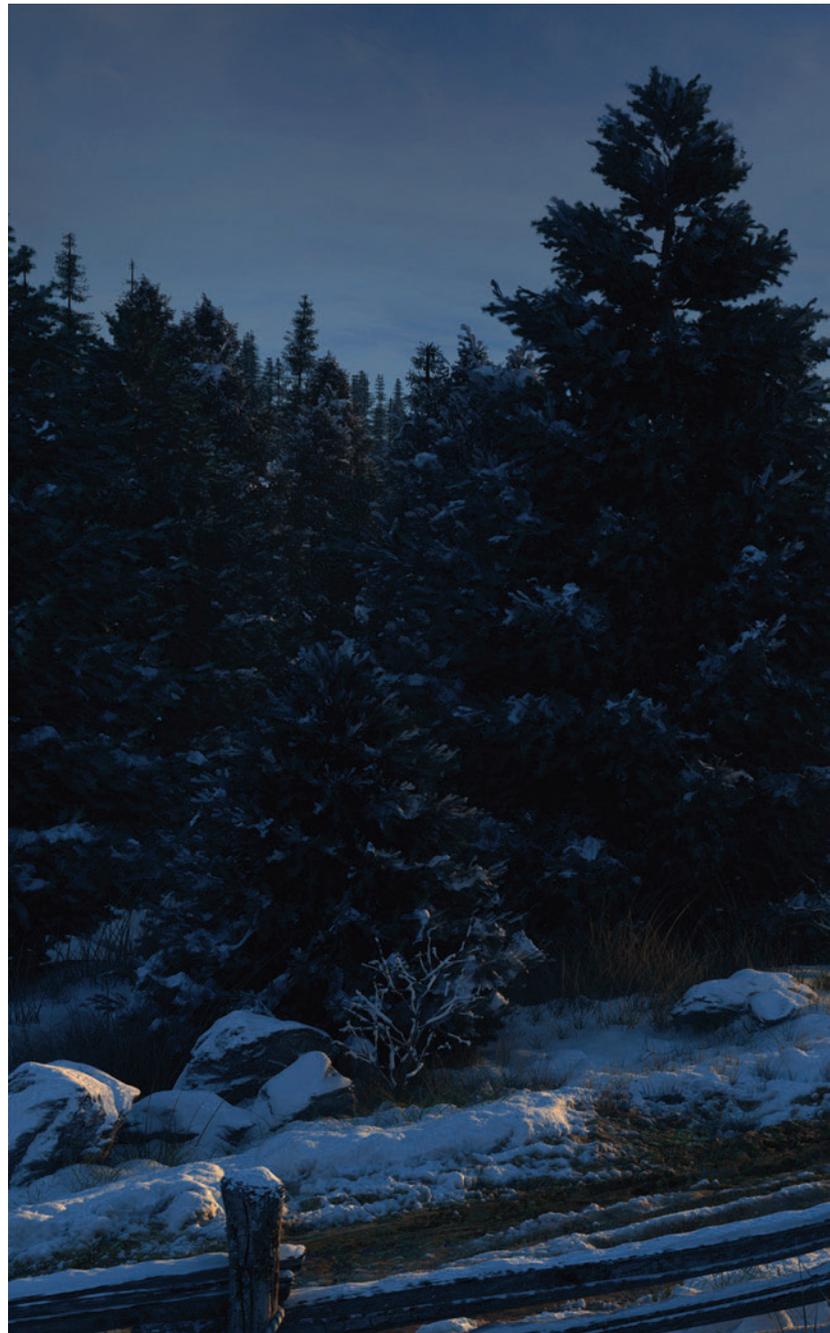
Work in progress version with a temporary sky. I like to work on every aspect of the scene from the beginning. Placeholders are helpful to give an overall look of the scene.



I tried several different skies but wasn't really satisfied with any of them. But it was great to see the same scene with different ambient colours and lighting.



This one was close to the atmosphere I was looking for, but to me the sky felt too realistic compared to the rest. At that point I decided to use Terragen to generate the sky.



Final version of the image. It's always hard for me to tell when an image is final, since I always find something wrong in it. It's a matter of finding the balance between quality and having a life!



HEADING SOUTH BY OLIVIER VERNAY-KIM



3DS MAX, MENTAL RAY,
PHOTOSHOP, TERRAGEN

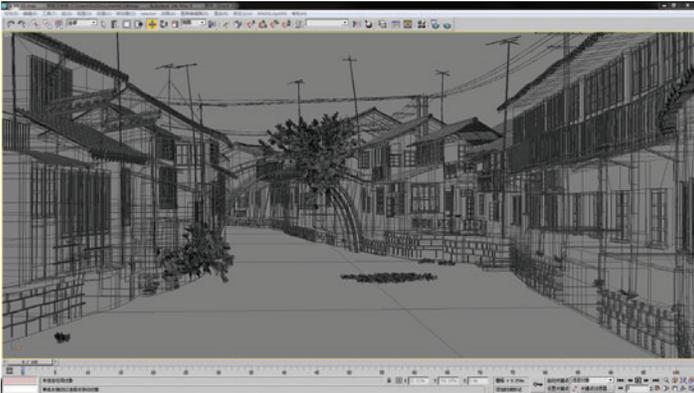


7 HOURS

POST-INDUSTRIAL SHOWCASE: JING WU

“ The picture was inspired by a place called Wuzhen, somewhere in South China. All along the river used for commerce are old houses in a post-industrial setting. It’s a combination of the old town, where the industry related to the river has moved on, and nature is starting to blend back into the modern setting. These kinds of old building in China have a strong historical and cultural feel and you can almost hear the buildings whispering stories about the past.

”

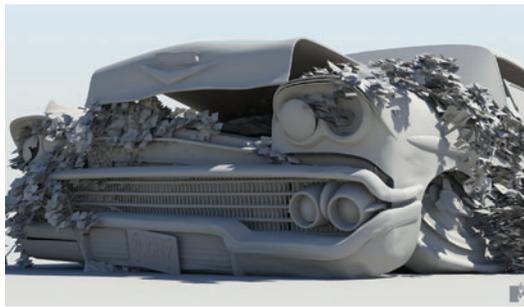


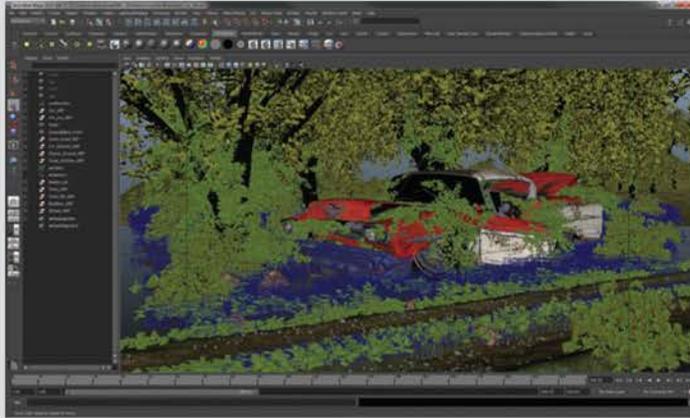
PROJECT	TOWN'S WHISPER
SOFTWARE USED	3DS MAX, MAYA, PHOTOSHOP, V-RAY
RENDERING TIME	20 HOURS
ARTIST	JING WU
COUNTRY	CHINA



POST-INDUSTRIAL SHOWCASE: JOCHEM AARTS

“ I wanted to improve my skills in creating environments. While doing some research I came across some pictures of old car graveyards. That got me inspired to make a tribute to an icon, the Chevrolet Bel Air. I started to create a library with different types of vegetation so I could use these to fill up my scene after I built the car. I rendered out a diffuse, occlusion, depth and a matte for the car pass and composited it in Photoshop. A mini making-of can be found on: <http://www.jochemaarts.com/abandoned-bel-air-making-of/> ”





PROJECT	ABANDONED BEL AIR
SOFTWARE USED	MAYA, MUDBOX, RENDERED IN MENTAL RAY, PHOTOSHOP
RENDERING TIME	12 HOURS (DIFFUSE, OCCLUSION, DEPTH AND MATTE PASS). TOTAL TIME FROM START TO FINAL IMAGE WAS ABOUT 7 DAYS
ARTIST	JOCHEM AARTS – REALISM CREATIVE
COUNTRY	THE NETHERLANDS



THE ABANDONED GAS STATION

Recreate the classic American refuelling stop in the desert as Eugenio Garcia explains how he modelled and textured the scene.



PROJECT	ABANDONED GAS STATION
SOFTWARE USED	LIGHTWAVE3D, PHOTOSHOP
RENDERING TIME	3 HOURS
ARTIST	EUGENIO GARCIA VILLARREAL
YOUR COUNTRY	MEXICO



ABANDONED GAS STATION BY EUGENIO GARCIA

THE STORY OF THE STATION

In the 1950s the booming west coast of America was mainly accessible by road, and along those dusty highways sat the eponymous gas station. These gas stations provided fuel and refreshment for travellers and often were accompanied by diners and motels. Out in the desert though, the main function was to keep your car running. As time passed and new highways were built, traffic dwindled on those old roads and the gas stations closed and fell into disrepair. That's the starting point for this image, completed with signs and the colour scheme of the era. One of the ideas I had was to create a complete 3D scene into which I was going to composite a model from a photoshoot. The first step though was to assemble reference images and plan the layout for the scene.

MODELLING THE PUMPS

The modelling is basically box shapes for most of the buildings, objects and pumps. The exceptions are the plants, which were either modelled separately or bought in from xfrog. The modelling package used was Lightwave 3D which has a very intuitive system for building objects and then creating the curves and shapes. It also has a very clean and uncluttered interface, especially compared to something like Maya which is just overloaded. With Lightwave you can really just concentrate on creating things.

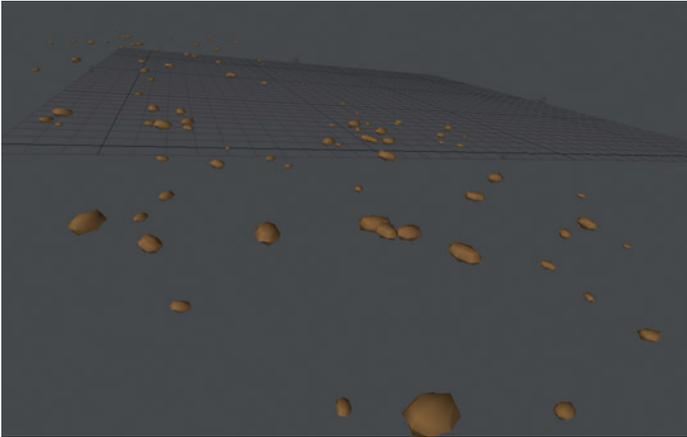
The gas pumps all started as simple boxes and then, referring to my source photos and images online from the era, the edges were tweaked and manipulated to form the curves and smooth surfaces. The gas station building is the same thing, just on a bigger scale. Here a number of the more interesting tools in Lightwave were used to create the various features. The Knife tool, for example, was used to create the broken window effects while the Multishift, Bevel and Band Saw Pro tools helped shape the outline. The rest of the objects were virtually all created in Lightwave separately and then added to the scene. The only one that wasn't is the skull, which was created in Zbrush. All the objects were modelled first, using the reference materials. During the process I decided I needed more details so simply looked online for more photo references. Once everything was completed, only then did I start actually putting the composition together. This was then just a matter of arranging them to form an effective composition.



The most important objects to model were the gas station pumps as these are a focal point in the image.



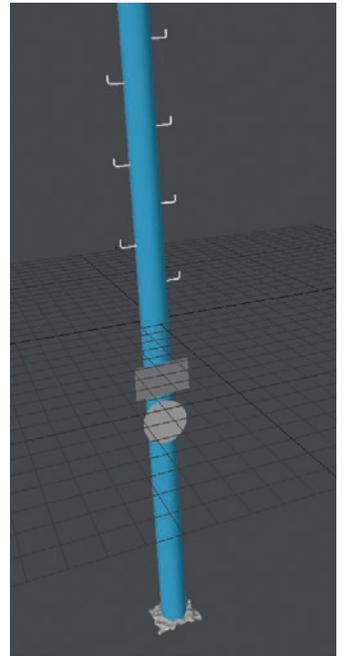
The station itself is quite a simple box shape with some windows and a doorway. The Knife tool was used on the windows.



Here there are some rocks scattered across the scene which form part of the foreground decay.



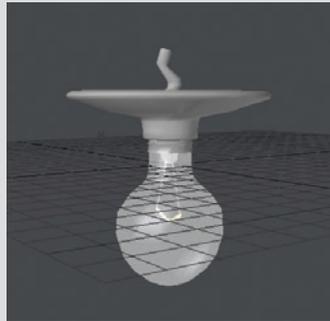
This funny-looking box is actually the cooler for bottles of Coke. The shape itself was quite quick to create.



A telegraph pole with some hooks in it is simply a tube-based model.

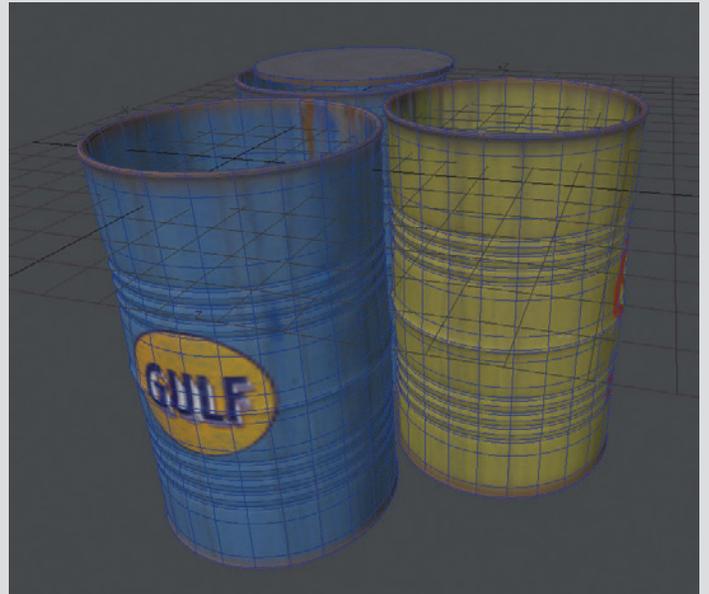


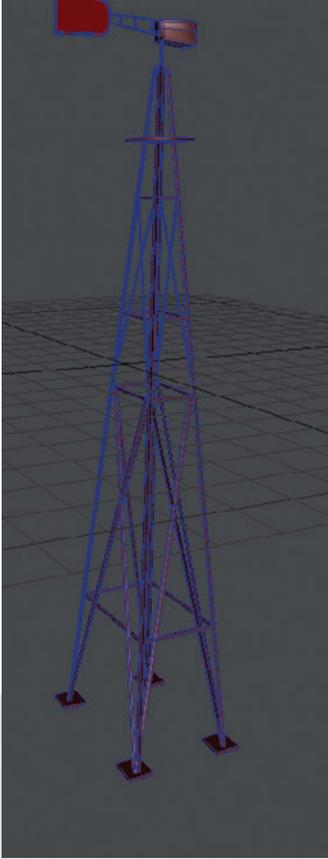
No gas station front is complete without a chair for the proprietor to sit in.



One of the light fittings in the station. They were modelled after those seen in the source photos.

Barrels of oil are simple tube shapes with some extra ridging to form the banding.

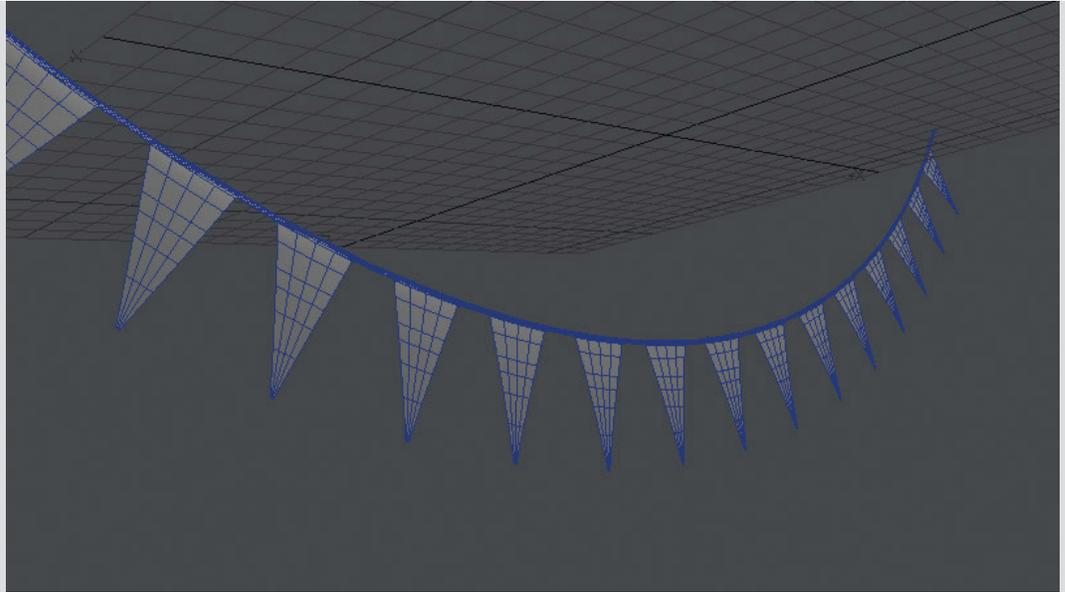




You know it's old and abandoned out in the desert when you have a rusty old weather vane flapping about.



The only thing not modelled in Lightwave was this steer's skull, which was created in Zbrush.



Finally on the modelled object front, a line of old pennants to hang from the telegraph pole.

TOP TIP – HANDLING TOOLS

Lightwave has a lot of tools that you might not think about using but they all have specific purposes and once you know what they all do it can speed up the

modelling workflow tremendously. My advice then is to experiment and see what they do so that during your next project you'll suddenly remember a tool that will make that process a lot quicker.

CREATING TEXTURES AND LIGHTS

The key aspect of this project was the weathered textures and also the vintage logos and product signs. Without these, it simply doesn't work. There were two invaluable websites that I used: www.cgtextures.com and www.brandsoftheworld.com. I also used Google images to find vintage logos. The CG Textures site provides some great textures for the dirt and the wood for the gas station itself as well as rusted metal sheets. The Brands of the World website has various logos in .ai format that can be downloaded and used in your projects. Photoshop was used to merge several of the textures together and then those that looked too clean were aged using the Burn and Colour Dodge tools. When the textures were added, all the large models in the scene use basic UV mapping so the textures wrap properly and don't distort.

When it came to shaders for the materials I simply used basic ones

and tweaked the preset materials to make them look a little better. There was a displacement map for the ground though to make it look more bumpy and realistic. Over the top of this there's a particle layer using stones and gravel. The Spray Point tool and the Point Clone tools were used in Modeler to add a sprinkling of stones and gravel to give it a more authentic desert feel.

For the lighting there's a basic area light which creates soft shadows. It has an orange colour to give the impression of impending sunset. The second light in the scene is a point light. Perhaps the biggest influence on the scene though comes from a textured environment image which was used to give typical desert colours to the entire scene. This is a simple but effective way to give the right kind of colour ambience to an image.



Here's a basic render of the scene without the textures so you can see all the models clearly.



With all the textures added the scene looks much older and more worn. A displacement map made the foreground more uneven.



A close up of the front porch of the gas station. All the logos and product signs are accurate for the period.

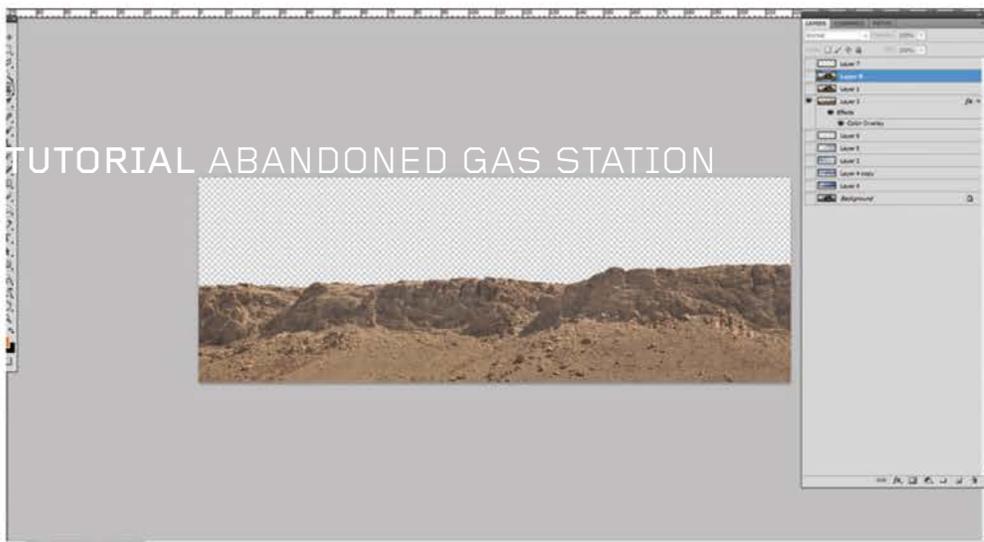
FINAL POLISH AND COMPOSITION

A number of render passes were made and imported into Photoshop, where the colour was corrected. The Levels were then adjusted and some photo filters such as Color Efex Pro were used to give the image more of a period feel. Something straight out of the render engine always looks too clean, regardless of the textures used. All the modelling concerns the fore and mid-ground, there's nothing in the background. The idea here was to use a stock photo of an actual desert mountain range and possibly use a photo of a real sky as well. I normally go to www.cgtextures.com for my background sources. Photo backgrounds add a nice feel to the project and also save time considering you're spending enough of it modelling and texturing everything else. After some looking I found a mountain range scene that fit in with the perspective of the gas station foreground and also had similar light in the sky so that it matched the conditions in the CG world.

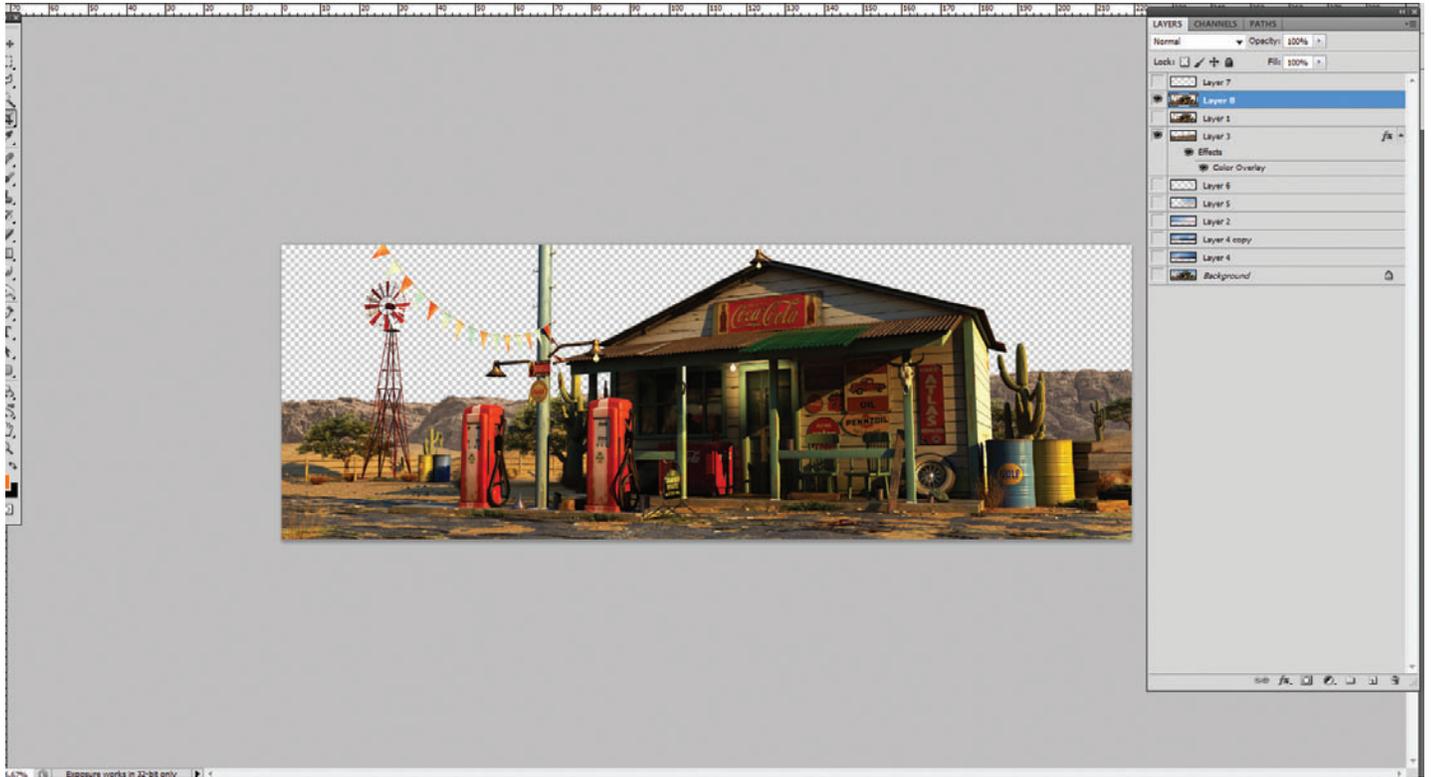
Once everything was in place the Dodge and Burn tools in Photoshop were used to provide specular highlights in certain places and add or darken shadows in others. The layers were then merged as I prefer to use as few as possible otherwise projects can simply get bogged down as you try to work out what each one is doing. There was some more retouching with adding spots of light and glow to areas that needed to be brighter. Also the Sharpen brush was used selectively to sharpen up some of the textures. There was around eight hours of post-render work before finally tweaking the colour values and adding some more photo filters to get that slightly washed out and dry look. The entire project took around three days from start to finish and offered a good lesson in using textures. It was a challenge to use the large number of particle elements for stones, bottles, gravel and glass as well as getting some of the details to really stand out sharply.



One of the options was to use a different sky. Here parts of it are being blended into the image.



This is the mountain range that forms the background scenery. As you can see, it excludes the sky.



The CG foreground now has the rocky mountain background from the photo added, which suits the scene.



Photoshop was used to sharpen up some of the textures so that they had a little more bite.

ALTERNATIVE VERSION

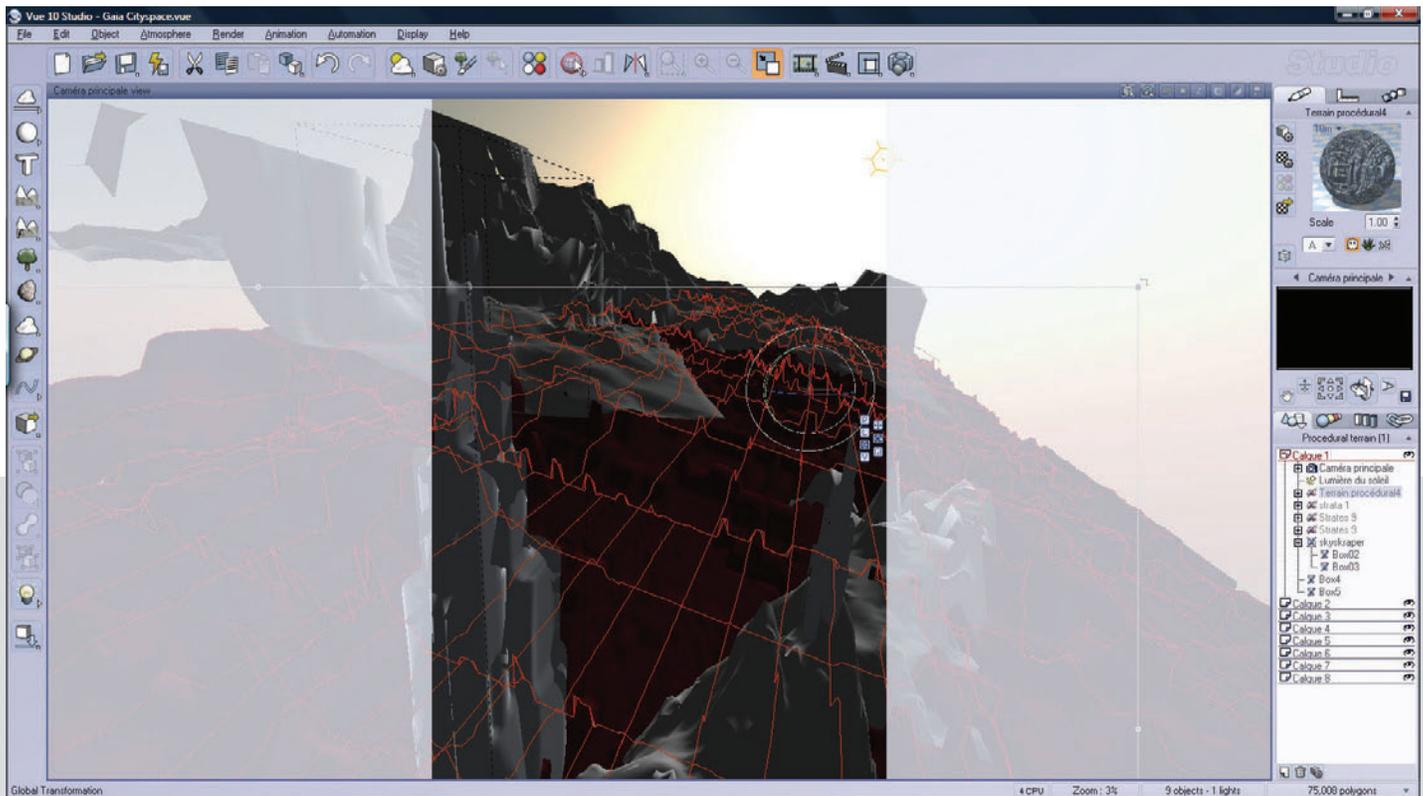




Here's an alternative version of the completed Gas Station, this time using some retro filters and layers to make the colours more faded and washed out, plus adding some print deterioration and a funky edge.

SCI-FI SHOWCASE: SEBASTIEN HUE

“ A piece made for the art collective of The Luminarium. The exhibit theme was Gaia and Nature. Republic fighter inspired by the artist Warren Fu. ”



PROJECT	THE VALLEY OF GAIA
SOFTWARE USED	VUE 10, 3DS MAX 2010 AND PHOTOSHOP CS3
RENDERING TIME	AROUND 3–4 HOURS
ARTIST	SEBASTIEN HUE
COUNTRY	FRANCE



SCI-FI SHOWCASE: DMITRIY FILIPPOV

“ I’m a big fan of the Steampunk style and like to draw or create 3D with this kind of flavour. The image here is based around the concepts of the Aquarius Zodiac sign, but done in a Steampunk style. This makes it into a giant waterwheel, driving the mechanisms for a clock. There are a couple of Victorian-era people in the foreground to add a sense of scale. The image also has some painterly filter treatment to add subtle scratches and give it a more aged look rather than the very clean and sharp style of a 3D render. ”



PROJECT	THE TIME MACHINE
SOFTWARE USED	AUTODESK 3DS MAX
RENDERING TIME	NOT KNOWN
ARTIST	DMITRIY FILIPPOV
COUNTRY	THE RUSSIAN FEDERATION



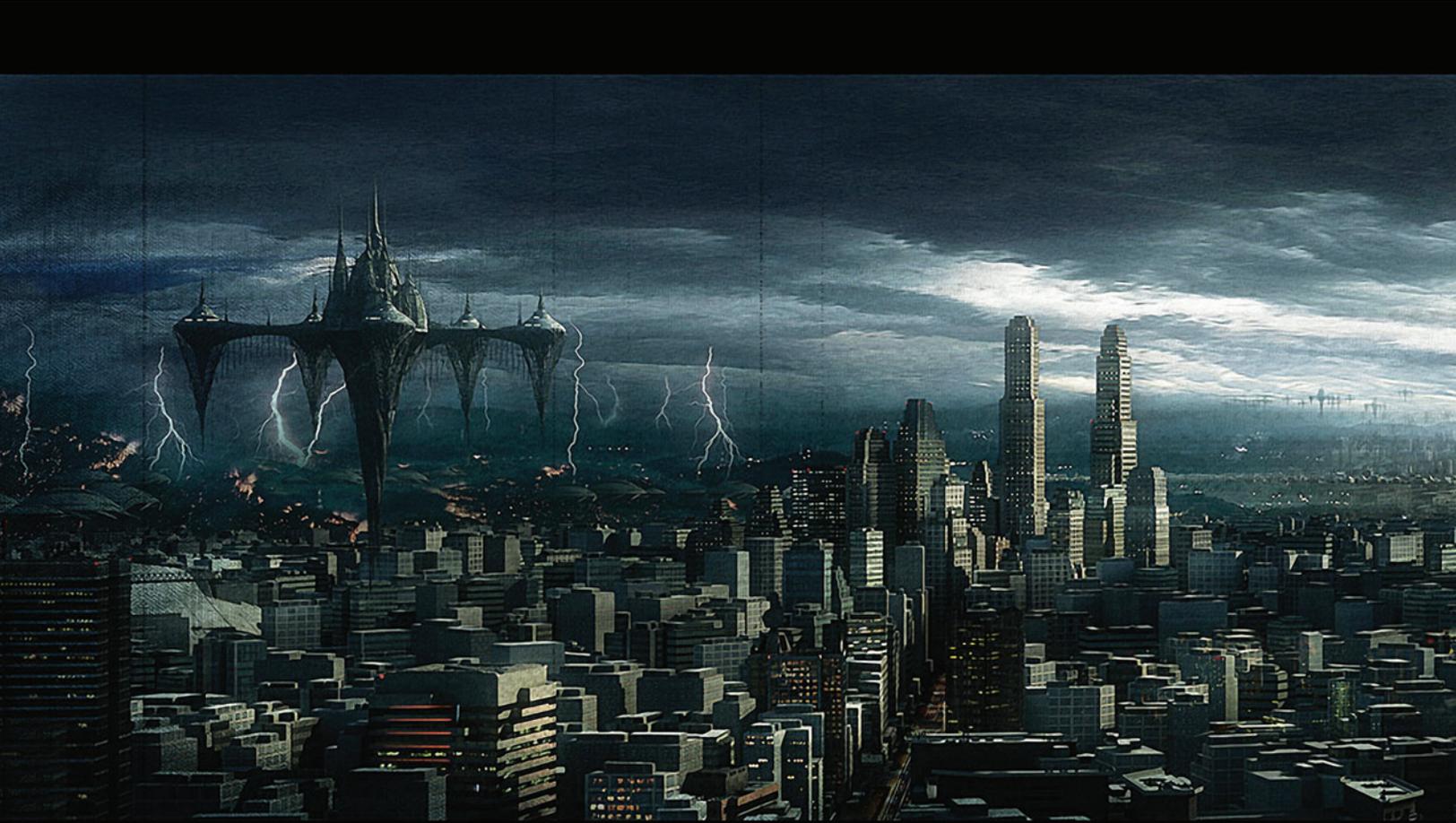
SCI-FI SHOWCASE: LIANG BO LONG

“ This is my future city works series with the theme of parasitic environments. First of all, I think, after the deteriorating environment, the city is how the future has turned out. In my mind the future city becomes more and more a deep shade of horror, as if the end of the world is warning us.

In this series of images, I used cool colours. The first image was called the Biochemistry Crisis – Evolution, the second, Future City – The Way Home. I like the cool colours as they can make me calm down and think clearly.

In this work, I first created three different cities from near to far. I added more details of the construction as it developed. For some of the building concepts I imagined that they were not built by humans. Some are floating in the air and may also belong to alien races with their own spacecrafts. In the distance, volcanoes, lightning and a storm have destroyed homes making the city full of sadness and the human beings question whether they have any hope at all.

”



PROJECT	FUTURE CITY – PARASITIC
SOFTWARE USED	3DS MAX 2012, PHOTOSHOP CS3, VRAY 2
RENDERING TIME	ABOUT A WEEK
ARTIST	LIANG BO LONG
COUNTRY	CHINA







“ This image was an experiment in vanishing points and ship building. I created new spacecraft using engines from 3ds spaceship models and blending them with Zbrush objects. I love breaking things apart and mixing them up to create something new. The terrain was basic because it's just a backdrop with lots of mist to dirty it up a bit. It's an old trick of traditional matte painters. ”



PROJECT	ON DA BUS
SOFTWARE USED	VUE 10 XSTREAM, ZBRUSH 4, PHOTOSHOP
RENDERING TIME	2 HOURS ON AN INTEL QUAD 4 WITH 8GB RAM
ARTIST	SHANE PERRY
COUNTRY	NEW ZEALAND

CREATING A SCIENCE FICTION COLONY

Shaun Williams reveals the secrets behind modelling outpost buildings and creating the environment for a desert planet.





SCI-FI INSPIRATION

Final Approach was created for fun and also for a graphic promo. The main aim for the project was to create an Earth-like colony on a desolate, desert planet. I had seen various Sci-Fi worlds and colony concepts in films, games and artwork and decided to do mine a little differently. It needed to have lots of buildings, a desert-based surface and a dusty atmosphere. After playing with various strata terrains in Vue I set out to make a realistic-looking environment that could be used

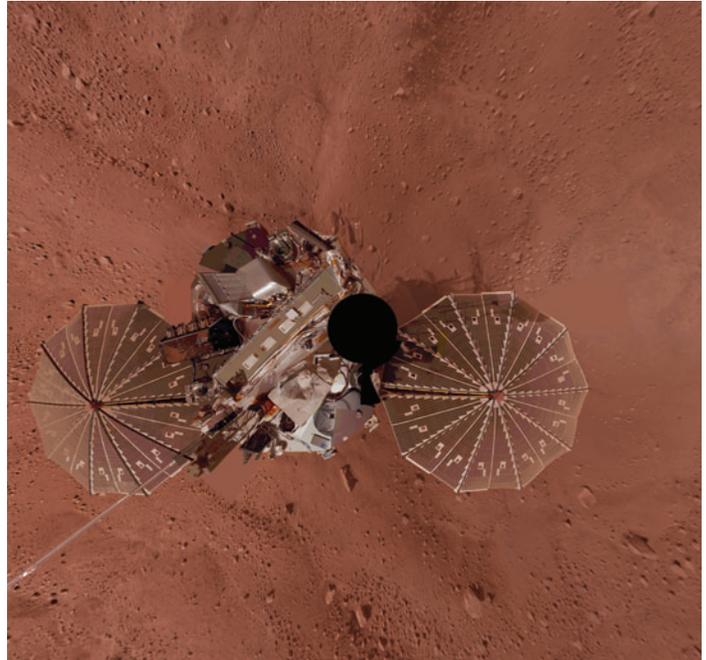


Typical dusty environment with rocky formations found in deserts that would be inspiration for the image.

The NASA Phoenix Lander on the surface of Mars showing how rocky and coloured the surface is.

Credit: NASA/JPL-Caltech/University Arizona/Texas A&M University.

for an animation as well. I had modelled many assets and was armed with a variety of colony bases and ships that could be used in the scene. Final Approach was set in the CDF (Colonial Defence Force) universe and this piece featured the SIRRUS 3 Colony. The artwork was developed as a promotion of the CDF fleet and website which features the wiki about the CDF universe.



MODELLING THE BASES

I have made many, many models over the years, some of which I have released commercially. This huge stock of assets ranges from space ships to HGV. As with all my models the initial concept is designed first then it is modelled and textured. The style used for the Sci-Fi models is unique, with a very detailed and practically designed craft. My ships are inspired by all Sci-Fi such as *Star Wars*, *Star Trek*, *Babylon 5*, *Stargate*, *Battlestar Galactica*, *Aliens*, *Event Horizon* and so on. I take elements which work well together and model my ships like the 80s-style models which are packed full of detail the closer you get. The ships have many features such as docking bays, satellite dishes, antennas, gun turrets, vents, escape pods and numerous other details. The Colonial Defence Force fleet I have modelled is comprised of over 20 ships and has specific ships for specialist roles such as frigates, carriers, destroyers, drop ships, fighters, transports and so on.

Although I've used many different software packages for modelling and 2D over the past 20 years, over the last decade in particular it has been 3ds Max for modelling and Photoshop for textures and general

artwork. I have used Vue for a few years now, which I use for its great terrain and realistic environment lighting. Importing my own model assets into Vue has produced some nice results in showing off the colony bases and futuristic environments. When it comes to scenes set in space it's better to use 3ds Max though for the greater modelling ability.

For the Final Approach scene I needed a colony base, or structure, and a small shuttle-type space craft which would be flying towards the base. I also wanted to include a huge base structure for the background to give it some depth. When the scene was nearly finished I decided to add a vehicle and a couple of people to emphasise the scale of the shot. The model I decided to use was my moon base alpha model for the colony structure as it fitted a large landscape well with its modular design and lots of antennas and communications equipment. I used a different main texture on the model to give it a grey, dirty look. The next model was the CDF Shuttle which was used in the foreground. The engines were quite detailed on the CDF Shuttle

and made it ideal for a camera shot from the rear of the craft. I decided to use the Base Omega model as a main base structure because this was one large, tall structure with lots of detail. It emphasised the scale of the scene whilst keeping a similar style to the colony base. After

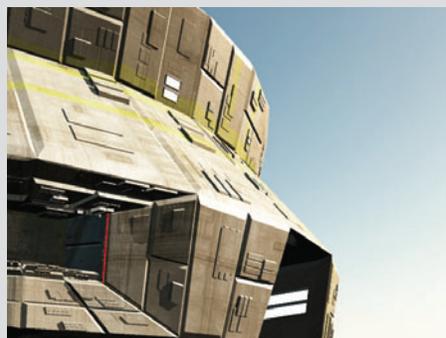
putting the scene together with the terrain and effects I then decided to add the CDF Recon Vehicle and one of my spacemen models to lend some perspective to the scene so the viewer could appreciate the relative scope of the base.



This is a render of the main colony base with all the modules.



This is a close up render of the main colony hub so you can see more of the detail.



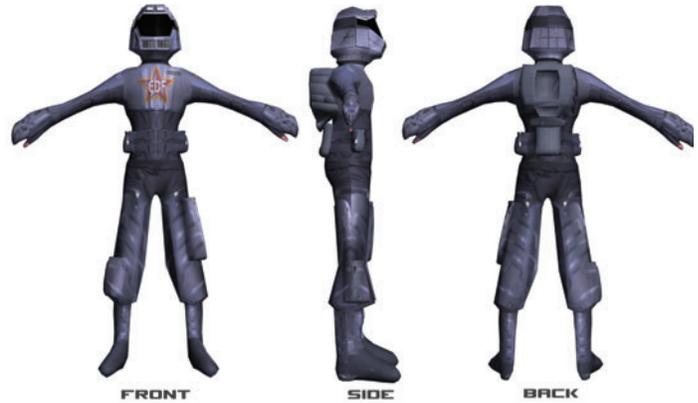
This is a close up render of the Base Omega model that can be seen in the background of the scene.



The front end of the CDF Shuttle; you only see the rear of the craft in the scene. If you look closely at the final image you can see another shuttle on one of the docking pads.



The CDF Recon Vehicle which can be seen at the bottom of the final render.

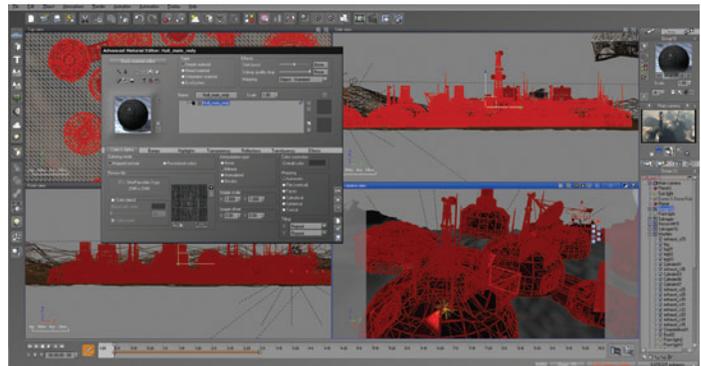


The figure in the image is a very basic, low-poly model of a spaceman I did for a game. As the people are very small in the final render they didn't need to be of high quality.

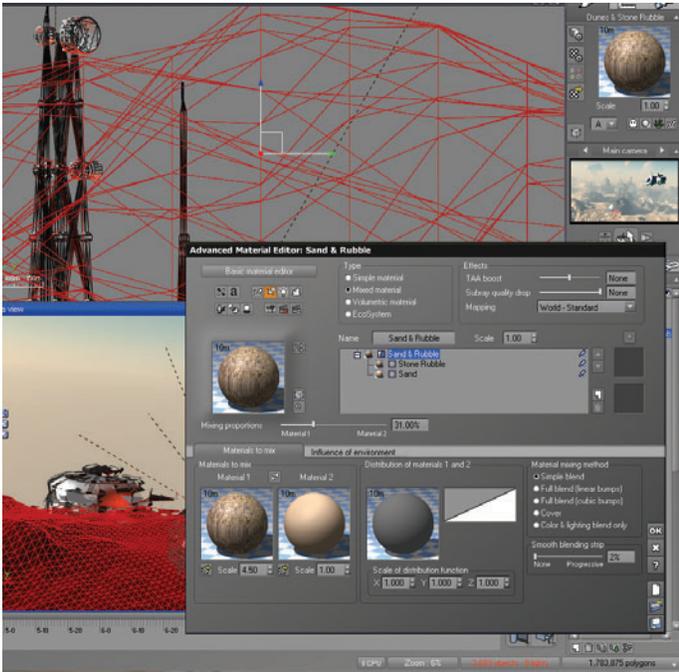
ADDING TEXTURES AND MATERIALS

As with all my models I use and produce my own textures. I use both UV mapping and tiled procedural mapping. The Colony Base was the only model where I changed the texture to make it unique and suitable for the scene. When I import models into Vue I normally set up a new material for each texture or UV on the model to make a metal texture look more like a metal material, make a light texture glow and so on.

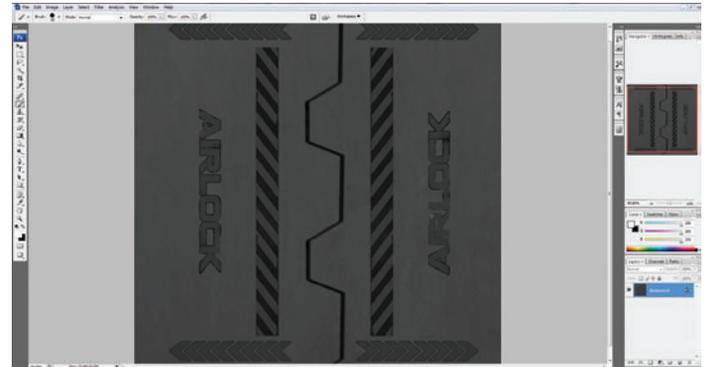
While there are some good stock materials in Vue such as metals, woods, water and so on, I generally make my own materials using the diffuse, spec and bumps maps to give it detail. Some of my textures use a panelled effect, for example, so loading my bump map texture for this slot in Vue's Material Editor enabled some nice looking materials while still using the same texture used for the model. For the terrain itself I used the standard desert texture which comes with Vue as this was ideal for the look of the terrain. Using a strata effect, mixed with a fractal effect, I managed to achieve the right look for mounds and scrapes and paths in the sand. There are no clouds because it was intended to be a dusty planet. Instead a dense spectral fog layer was used, leaving enough open gaps in the sky to make the moons visible. Over 60 textures were used in the materials created for this scene.



A darker material was used for the base to give a little more contrast, as the scene is a bright hazy day.



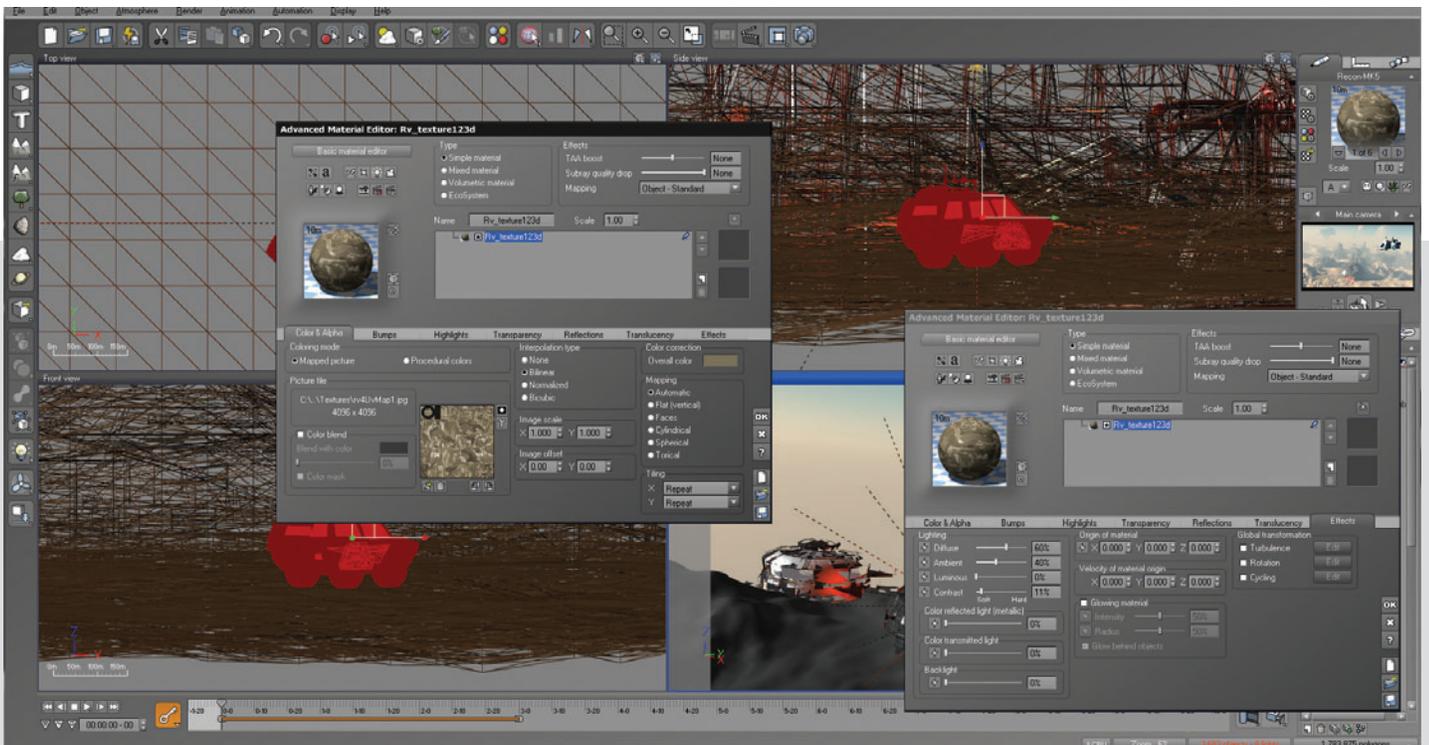
For the terrain, the simple stock sand material was used and a few settings were tweaked.



Photoshop was used for both UV layouts and the tiled textures.

TOP TIP – SIZE OF SCALE

Scale is very important in a scene where large outdoor scenes look better and more believable with a reference to size. Using windows, doors and characters can all give the viewer an indication of how big something is meant to be. In this scene you will notice I have used windows as well characters to give the viewer a clear scale of the shot.



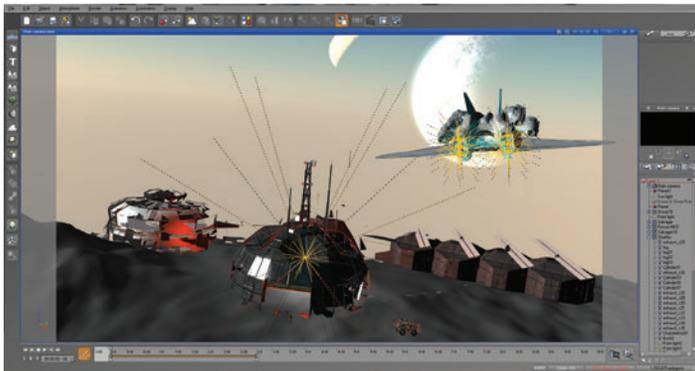
Setting up the textures with the materials in Vue is very simple. A custom texture was imported and tweaked.

LIGHTING THE DESERT

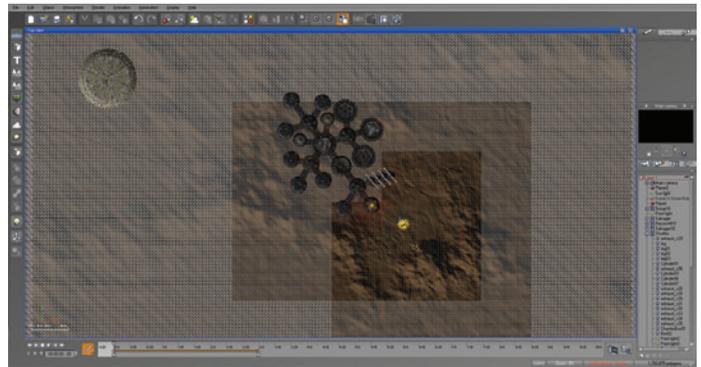
The lighting, as with most renders, is the key to a realistic and successful image. The lighting in this scene was too well lit to show off the terrain and the structures. Because this was an alien desert planet I wanted to keep similar lighting to deserts here on Earth with a dusty and sandy atmosphere. There is one main dominant light in the scene - the sun - that casts all the light. I used a spectral light setting in order to get some lighter and darker areas through the sandy fog effect. As well as the main light I ended up using a few more lights in the scene, the first being several point lights on the engines of the shuttle. Although the actual engine effects were done later in Photoshop I wanted to emit a small amount of light from the engines to illuminate parts of the engines at the rear of the ship. The only other light in the scene was the red light emitting from the garage module of the Colony Base structure.

By adding a small vehicle and a couple of people it made the scene more believable and added scale, as you can see where they have just left the main building.

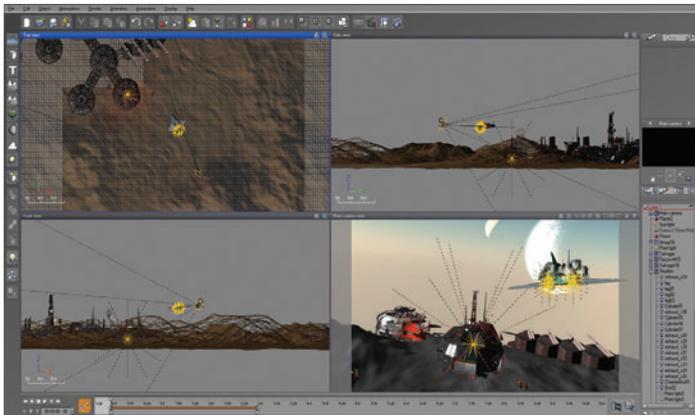
Making the scene with just a single light source can make the image look bland and desaturated, so adding a few different coloured lights helped lift the scene a little. The main lighting was shining from the left of the picture and gave the best overall results. If the light had been in the middle of the shot then all the base structures and shuttle would have been too dark and unnatural. Fill-in lighting would have not produced as good a result. As with all imagery lighting is the key to most scenes, I always try to put a lot of emphasis on the lighting and try and keep it as real as possible.



Numerous point lights were used on the shuttle and in the garage module of the Colony Base.



The main lighting of the scene came from the sun to the left of the camera.



It took a little time to get the lighting just right for the scene with the dusty atmosphere.

TOP TIP – ATMOSPHERE

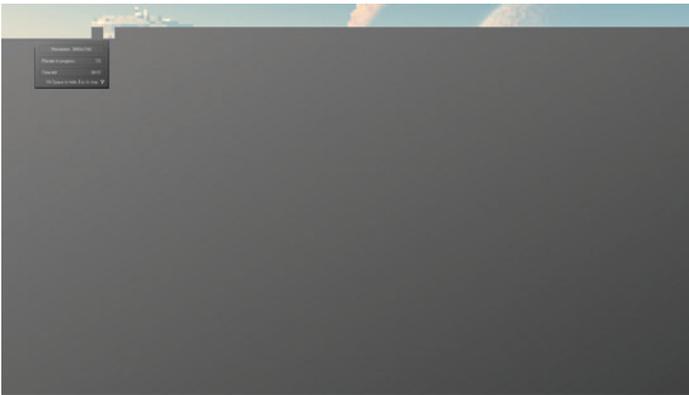
Over the years I have found that giving a scene some atmosphere really helps lift it. If it's a dusty desert type environment like Final Approach then making the air

look dusty and sandy makes the scene more believable. If it's raining for, example, make the air moist and thick and add extra gloss to give wet and shiny impression.

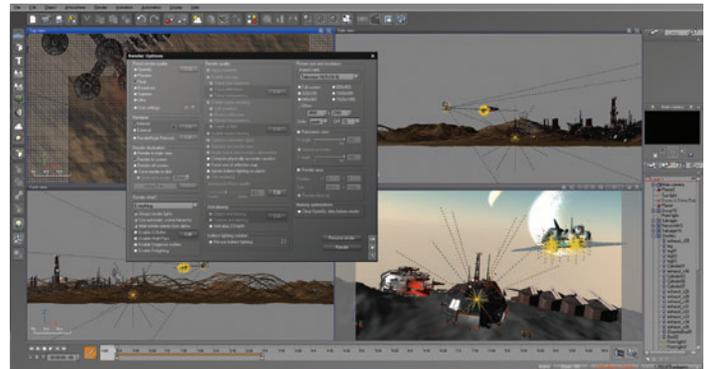
RENDERING COMPLEX SCENES

Rendering the final scene was quite a lengthy process. After using the Vue engine to render the scene I found that it was very resource intensive and for high-quality renders could sometimes take days at a high resolution. For a lot of my renders I use 3ds Max and V-Ray – these are great for interior shots but not as good at large outdoor scenes as Vue. Similar results can be achieved in 3ds Max but it takes a lot more time to get it all right. It is the final result that matters and Vue's

excellent lighting and environmental systems made it a great choice for this scene. The preview renders only took minutes but the final renders took six or seven hours. For the final render I used Ultra quality settings mode and a lower resolution and it still took over 14 hours to render. I always do preview renders when building the scene to make sure everything is just right at every stage. As high-quality renders take a long time you only need a preview of how the final render will look.



It took almost 10 minutes to finish a basic preview render. Numerous previews at various stages were required to make sure everything was right with models, lighting, colour and so on.



A Final quality setting render was used for the main image render because using the preferred Ultra setting would have taken days.



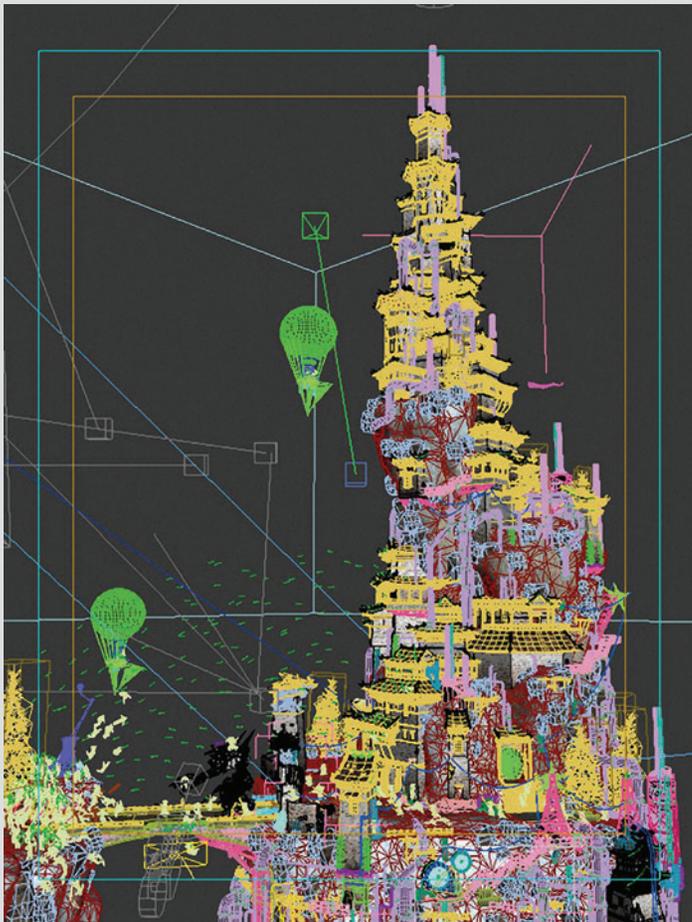
A final render without any post-production work which added glow to the spaceship exhaust and other tweaks.





PROJECT	FINAL APPROACH
SOFTWARE USED	3DS MAX, PHOTOSHOP, VUE
RENDERING TIME	14 HOURS
ARTIST	SHAUN T. WILLIAMS BA
YOUR COUNTRY	UK

“ The background story for the image is that the towers of the Steam Magi are located away from human eyes. These wizards have learned to use ancient technology for their own purposes. But nothing lasts forever and the young, rapidly expanding empire wants to get its hands on this magic. The project was made for a contest on the render.ru website. I decided to create one of the Steam Magi towers and position the strength of the empire against it. This image won first place in the competition. ”



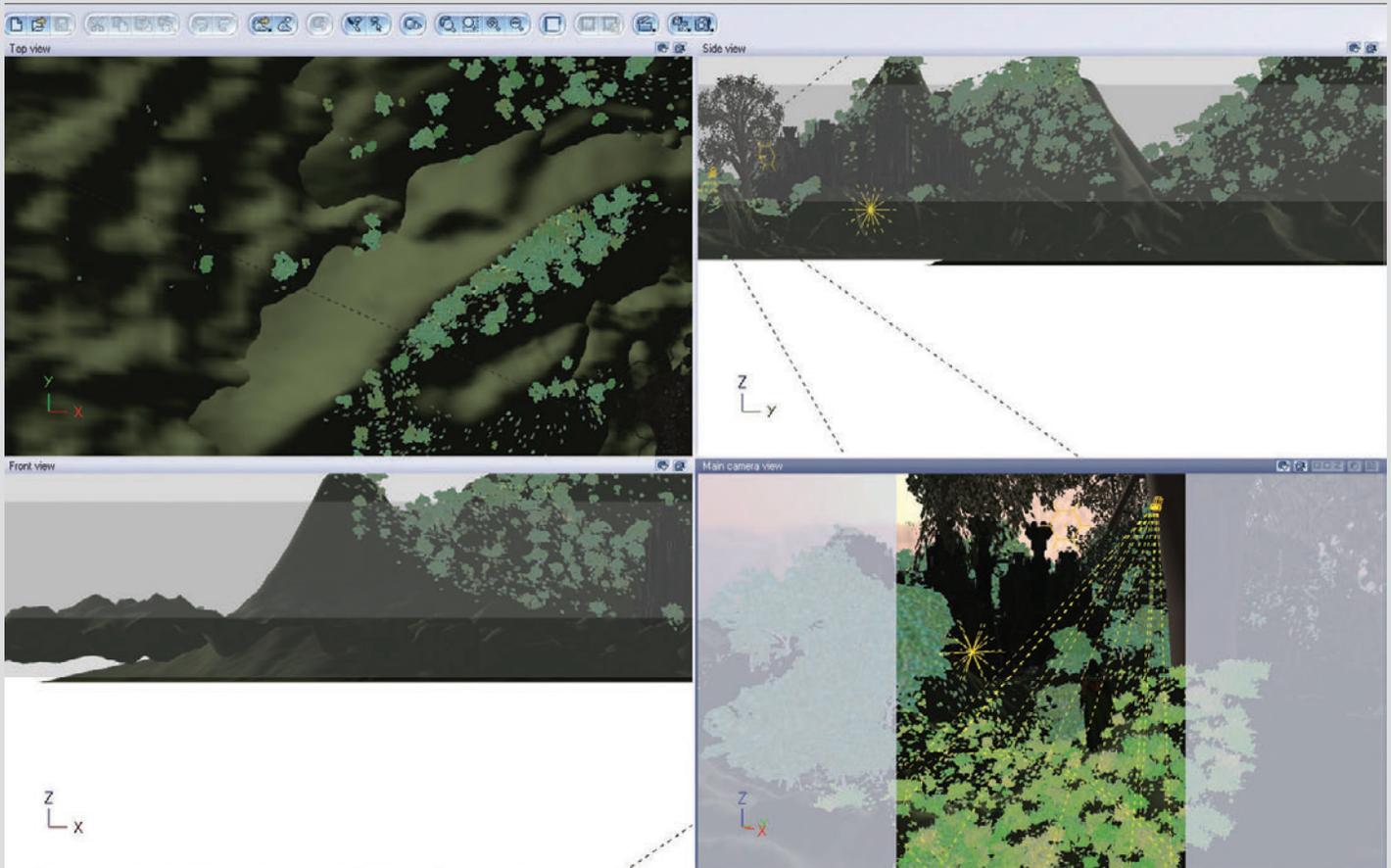
PROJECT	STEAM MAGE TOWER
SOFTWARE USED	DS MAX, PHOTOSHOP, VRAY, ZBRUSH
RENDERING TIME	60–90 MINUTES
ARTIST	ANDREY SEREBRYAKOV
COUNTRY	RUSSIA



FANTASY SHOWCASE: MELISSA KRAUSS

“ This was a private commission for a book; it’s an RPG inspired work. I was after an epic and vast feel, and used lights and shadows heavily to achieve the end result. The lighting also really added to the overall mood and tone of the image itself. ”

PROJECT	THE HUNTSMAN
SOFTWARE USED	POSERPRO2010, VUE 7.5 PRO STUDIO AND PHOTOSHOP
RENDERING TIME	40 HOURS
ARTIST	MELISSA KRAUSS
COUNTRY	USA





“ The Gnome House was inspired by the world of gnomes and elves and a general fantasy feeling. The house is on top of some small rocks for protection for the occupant. The rocks were sculpted in Mudbox while the house was modelled in 3ds Max. Photoshop was used to composite various passes together and also to add the background sky. ”



PROJECT	GNOME HOUSE
SOFTWARE USED	3DS MAX, MUDBOX, PHOTOSHOP, VRAY
RENDERING TIME	8 HOURS
ARTIST	RAPHAEL BALDINI
COUNTRY	BRAZIL



“ I’ve always taken inspiration from classic fantasy artists like Ken Kelly or Boris Vallejo and I wanted to do a fantasy scene where you see something that makes you think about the story happening in the image. It was done purely for fun and also to practice in some areas that I haven’t touched before. ”



PROJECT	DRAGON CAVE
SOFTWARE USED	3DS MAX, VRAY, PHOTOSHOP
RENDERING TIME	2 HOURS
ARTIST	RICHARD HOMOLA
COUNTRY	CZECH REPUBLIC



HOW TO CREATE WEATHERED RUINS

Chris Lomaka describes how he created a fantasy castle, eroding away in a cliff-top location.

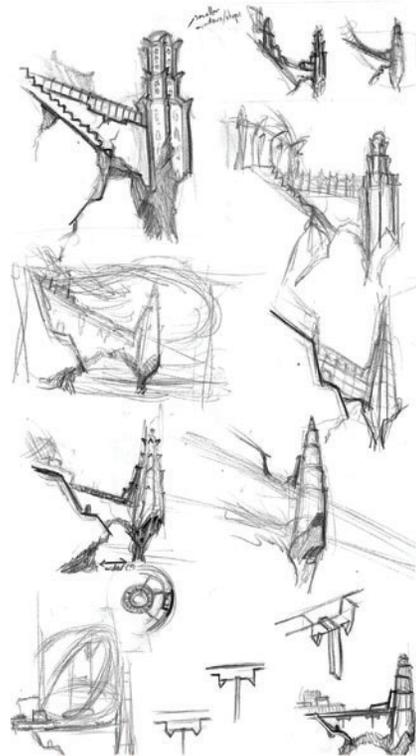


THE LAST SENTINEL BY CHRIS LOMAKA

IDEAS FOR THE CASTLE

This piece wound up being a mix of several ideas I've had floating in my head for a while. Part of me wanted to do a *Lord of the Rings* inspired castle in ruins, part of me wanted to do something with the idea of a rock formed into an arch by massive erosion, and part of me had been enjoying doing weathering effects in zBrush, so I wound up combining them all into a piece that made me quite happy.

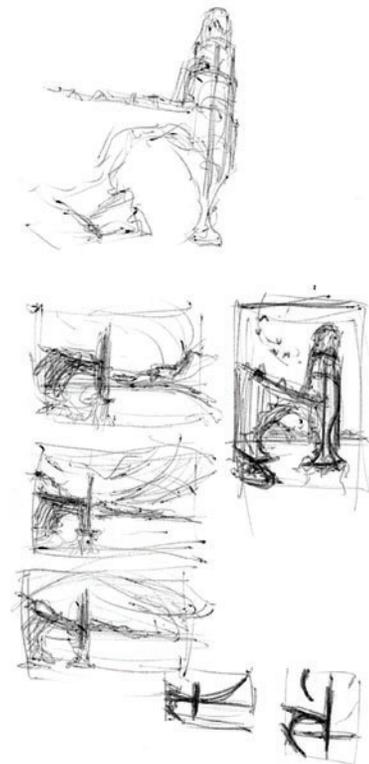
I always try to sketch out at least part of my designs before working on them in 3D. Initially I started with the basic idea of a crumbling tower. I considered having it in a jungle with trees growing out of the top, but I opted for a tower collapsing into the ocean. Then I sketched designs for the tower, with all the fiddly bits around the windows. Then I worked some more on the overall composition of the piece. One great advantage of knowing what the final image will look like is that I can know all the stuff I can ignore because it will never be seen. I didn't need to waste energy designing a door into the tower because I knew it wouldn't show up from where I would be placing my camera.



Early sketches exploring silhouettes, wall details, and even a staircase.



A typical castle in an elevated position. The idea was to incorporate ruins into a dramatic location.

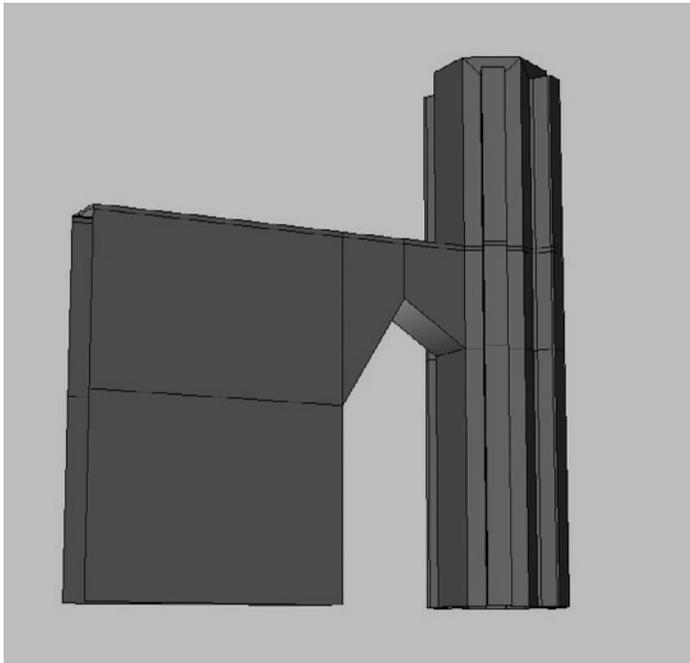


Compositional sketches for figuring out the flow. At the bottom are two super-simplified sketches of the major lines for both vertical and horizontal orientations. These helped me know where to add birds, mountains and clouds.

PROJECT	THE LAST SENTINEL
SOFTWARE USED	STUDIO MAX, LIGHTWAVE, ZBRUSH, PHOTOSHOP
RENDERING TIME	8 HOURS
ARTIST	CHRIS LOMAKA
YOUR COUNTRY	USA

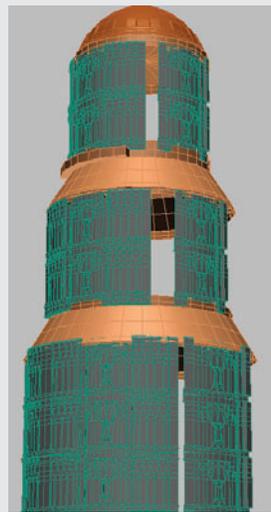
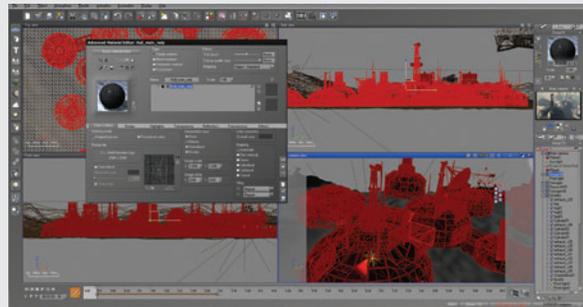
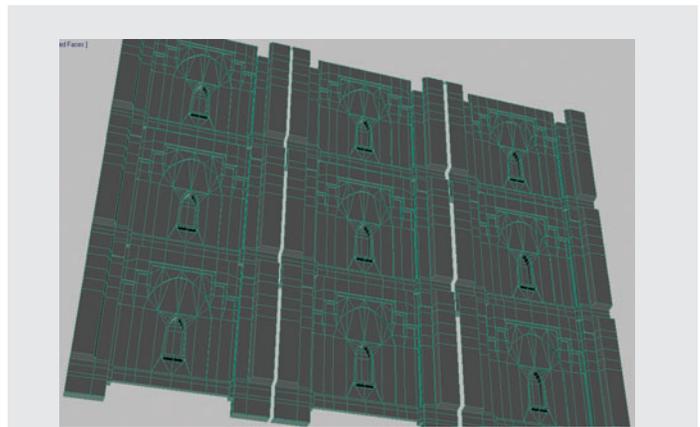
CREATING THE CASTLE

Now that I had a pretty good idea of what I was making, it was time to create some actual geometry. I chose to model in Max simply because that was what I was using at work at that time. After a couple of false starts where I worked on a single wall piece only to discover that the scale wasn't right when I bent it into a cylinder, I made a really basic shape defining the shape of the wall and the size of the tower and buttresses. This was good for two reasons: first it let me quickly test whatever piece I was modelling and see how it fitted into the whole; and second it was something I could take into zBrush (when I was getting frustrated with my designs) and play around with, knowing that in the end it would be productive because everything was getting built around this basic shape.



The base shape used for size and proportion reference, and brought into zBrush for detailing.

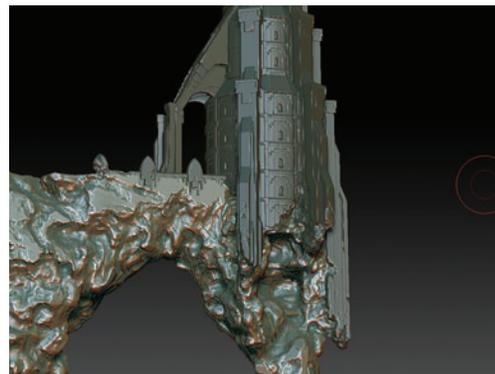
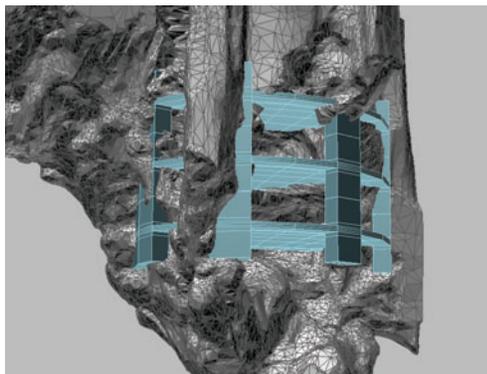
Once the rough shape of the tower was established I began working on the walls. With a whole wall of instanced wall sections I was able to design the join between floors to gracefully interlock. The gaps on the left and right sides are where the buttresses were to go. Once happy with the design, I put a bend modifier on them and stuck them into place around the base shape. After enough of the model had been built up, the locations for the tiers was decided and a quick roof and dome were added. The same process was used for the buttresses and the wall decorations.



The evolution of a single wall section into a whole tower. The tower was gradually formed from the modelled walls.

To prepare for bringing everything into zBrush, I had to decide what parts were going to need erosion and what were not. Everything that didn't need work (like that back flying buttress) got exported as one piece, and everything else got exported in logical groups (all the walls as one piece, the buttresses as another, etc.). Bringing them into zBrush as separate subtools made things a little easier on my computer and let me get into some of those tight corners.

Eventually I decided that I wasn't happy with the resolution of the detail in the floors exposed by crumbled rock so I brushed it out of the subtool, went into Max to construct new floor pieces, and brought them into my zBrush project as a new subtool.



The erosion was going pretty well on the main piece, except for the exposed floors, so a new subtool was made with just the exposed floors.

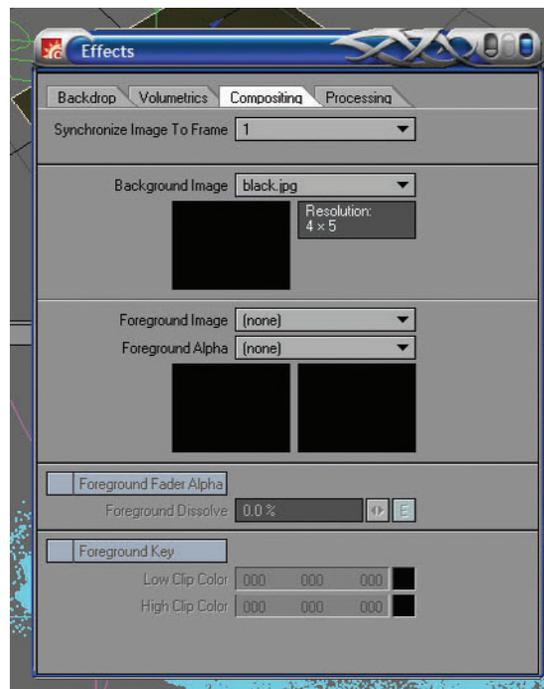
A new subtool was created for each new piece needed – the various debris in the water, the wall section broken off, and a small rocky chunk to be used later to add detail to the silhouette (and cover up spots I

didn't like). When everything was done, each piece was decimated down a little and exported out.

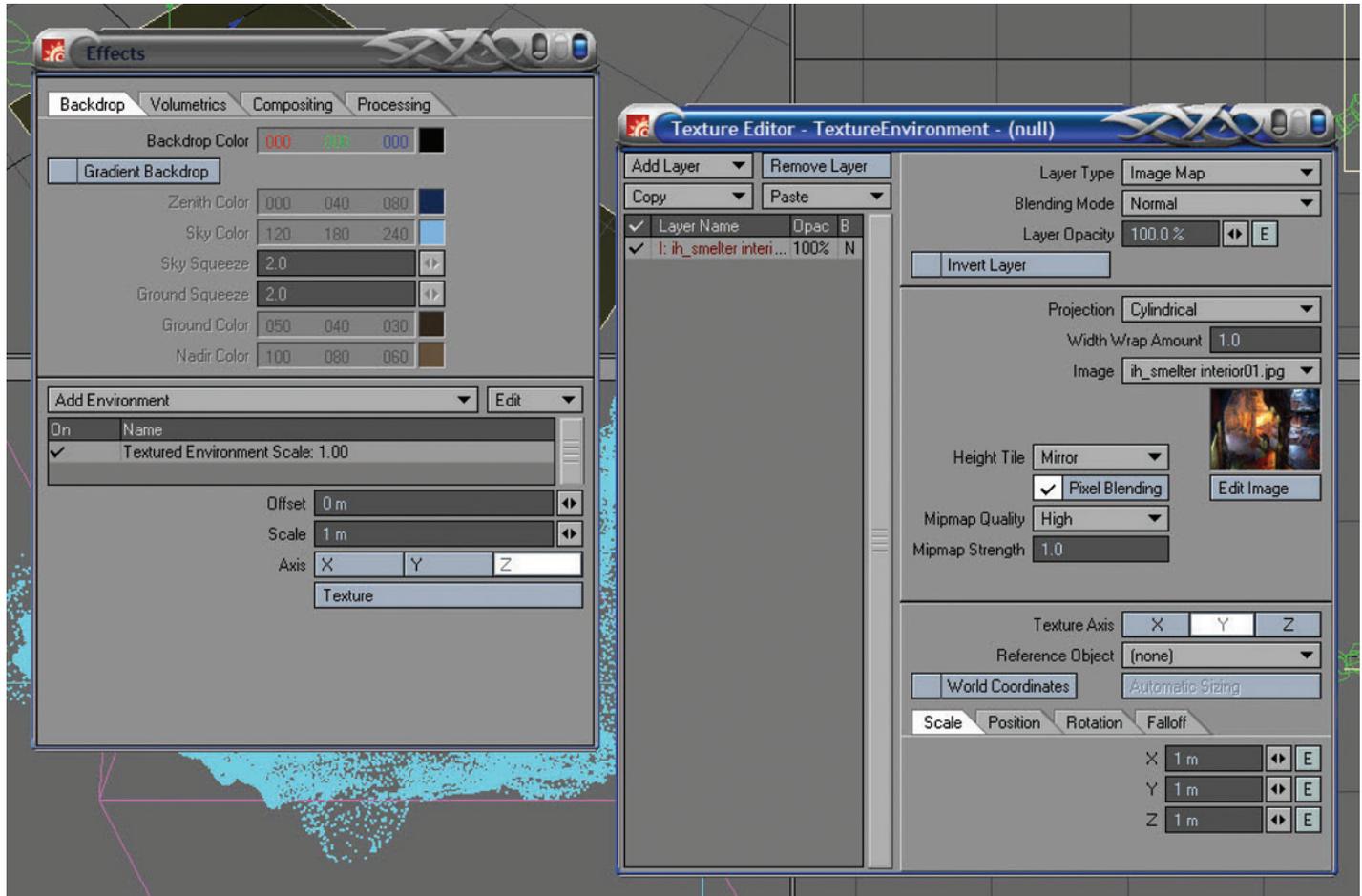
INITIAL RENDERED ELEMENTS

All the pieces were brought into Lightwave for rendering. Placing the camera was pretty simple since I knew what view I was going for from the start. Then the placement of all the ruins was tweaked – adjusting a piece's angle here, duplicating a part and placing it on the other side, things like that. A fair amount of the shoreline is composed of pieces of ruins that were duplicated and strategically placed.

Rendering with Global Illumination can take a while, so before the textures started to be added, which would make the render much slower, all the materials were made of a simple medium grey so I could concentrate on the lighting. Since I knew that whatever image I used for global illumination would probably not be what I wanted appearing in the background of the final image, I went to the compositing options and loaded a black image. That way the lighting on just the model could be evaluated without me getting distracted by seeing the image that is doing the lighting.



In the backdrop settings a textured environment was added and some images were loaded up to give potentially interesting lighting. These could be any kind of image, I was mostly looking for one that had a good contrast of light and dark and a variety of cool and warm colours.



Loading an image Global illumination in the backdrop options.

I turned on Global Illumination with some really low settings and did some quick renders at a really low resolution. This let me quickly evaluate whether the image would work or not, and I quickly tossed out most of the images I tried. I settled on one that was dark with one light spot with warm colours surrounded by a dim area with cool colours. This gave me a render that felt a little like the beginning of a sunset with warm light all over and blues creeping into the shadows. Once I decided on the global lighting, I added an area light about where the sun would be so that I could get some nice shadows.

TOP TIP – MODEL WITH INSTANCES

It's important to use instances/clones to quickly and easily see how changes affect the overall feel. Changes made to one piece will also be reflected in all the instances. This also means that you only have to do UVs for one piece.

TOP TIP – REMEMBER THE VIEW

Check your work often from close to the angle you expect it to be rendered from. It's easy to get carried away detailing things from the best view to work from, only to discover that an area is going to be hidden from view or that your work just doesn't look quite right from the point of view of the final piece.

TEXTURING THE SURFACES

With the lighting figured out I moved on to texturing. I attempted to texture everything all in one go, masking out areas for clean stone, crumbled stone, wet stone and so on. This did not work very well for a number of reasons: trying to get the mask images perfect was incredibly difficult, and it slowed my render down a lot because it had to load and process all the images I was using. Instead I decided to break my render down into several passes and opt to blend everything

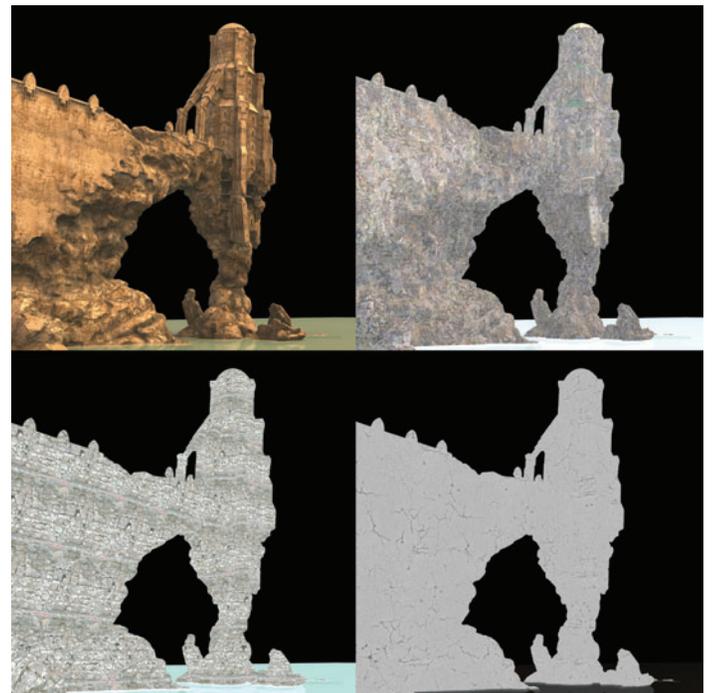
together in Photoshop.

The first three passes were some of the fastest to render. There was a depth mask for use in adding some atmospheric perspective, an alpha pass used for compositing in a sky and also a pass of the model with no textures for ambient occlusion and specular information.



Depth, alpha, and ambient occlusion/spec passes rendered out separately to be composited in Photoshop.

Then I worked on creating the various surfaces I wanted. I applied the surface to the whole model knowing that I'd be blending them in Photoshop later. I applied a diffuse texture with its matching specular and normal images. Most of these images were taken from my texture library. I checked to make sure there were no seams on the diffuse and then created the specular and normals from that. Some of the various materials I rendered out were a couple of versions of slightly worn down stone, rough stone, exposed bricks (which tile horribly but would only be seen in a few tiny spots), barnacled and chipped rocks, and even a few passes of cracks.



Some of the many material passes rendered out, from smooth stone to rough and craggy rocks.



Renders of just the tiered roof for deciding on the best option.

There were also some renders of just tiny portions of the whole image so a couple of options could be checked out without having to render the entire thing. This was done for the dome and the tiered roof. I didn't really think about it much while I was modelling so it was time to finally decide what I was going to do here. Wood shingle would never have survived as long as this tower has, so I needed to come up with

something else that would be interesting and fit with everything else. Plate mail made cool shingles but they didn't match the rest of the architecture. Herringbone bricks worked but I felt that they were kind of boring. What I decided on turned out to be a sort of cinder blocks – the pattern worked well with everything else and it was a little unusual.

POST-RENDER BLENDING

Once everything was rendered out, all the objects and passes, it was all loaded into Photoshop. I decided to start with the render where I tried to blend all the materials at once – it wasn't perfect but it gave me a place to start. A few interesting sky images were loaded into place to check out. Most of the sunset sky images in my library did not have

good clouds in the positions I wanted, so I grabbed a few blue sky images that did have clouds that would work with the composition I wanted. It reminded me of bright sunny days by tropical waters so I thought I'd give it a try.



Compositing in a sky and sea thanks to the alpha image rendered out.



With brightness and specular pass added to the image to give it highlights.

Since the entire background is separate from the renders the canvas could be expanded to whatever dimensions I wanted without having to re-render everything out again. I decided to make the image wider as I could always crop it back again later. The tower was way too dark for the sky so I created a Curves adjustment layer to brighten things up. I

also add in the Specular render and set it to Overlay blend mode. The result lightens up the tower and brings out more detail, especially in all the eroded rock. I also worked in some blue into the shadows using a Colour Balance layer.



Small tweaks to the colours help blend the tower into the background.

Some mountains were added to the background and the image as a whole was worked on – lots of little things to help balance the picture out. I made the background have a little less contrast and the tower more, with more light and shadows on the buttresses.



Mostly little adjustments to make sure the viewer focuses on the tower.

TUTORIAL: FANTASY

Now for the last little touches, or so I thought. Using my composition sketches as a guide, I used a bird brush to add in some wildlife. I used Ron's Splashes brushes to add the spray on the rocks at the bottom.



Adding a little life to the image also suggests scale. At this point I thought the image was virtually finished.

After putting the piece aside for a week or so, I decided that the tower was a little too plain – too monochromatic and the un-eroded wall uninteresting. I brought in all those other texture renders and played with the layer styles, using masks to blend it all in. I also added paint to help draw the view's eye around the tower.



I can't stop myself from adding more textures, but I found that the eroded rock really needed smoother textures to show off my work.

Now for the final touches for real this time. I added in some more splashes and some rainbows. Using the bird shapes I had quickly brushed in, I went around and painted in their tails and heads, and added a few more for the viewer to find. A few more cracks and crags

to the silhouette and it was time to call it a day. I keep a wide version of the image for use as a desktop, but crop it down to a vertical composition for show since that really focuses the viewer on the tower, which is the main element.

THE LAST SENTINEL BY CHRIS LOMAKA



STUDIO MAX,
LIGHTWAVE, ZBRUSH,
PHOTOSHOP

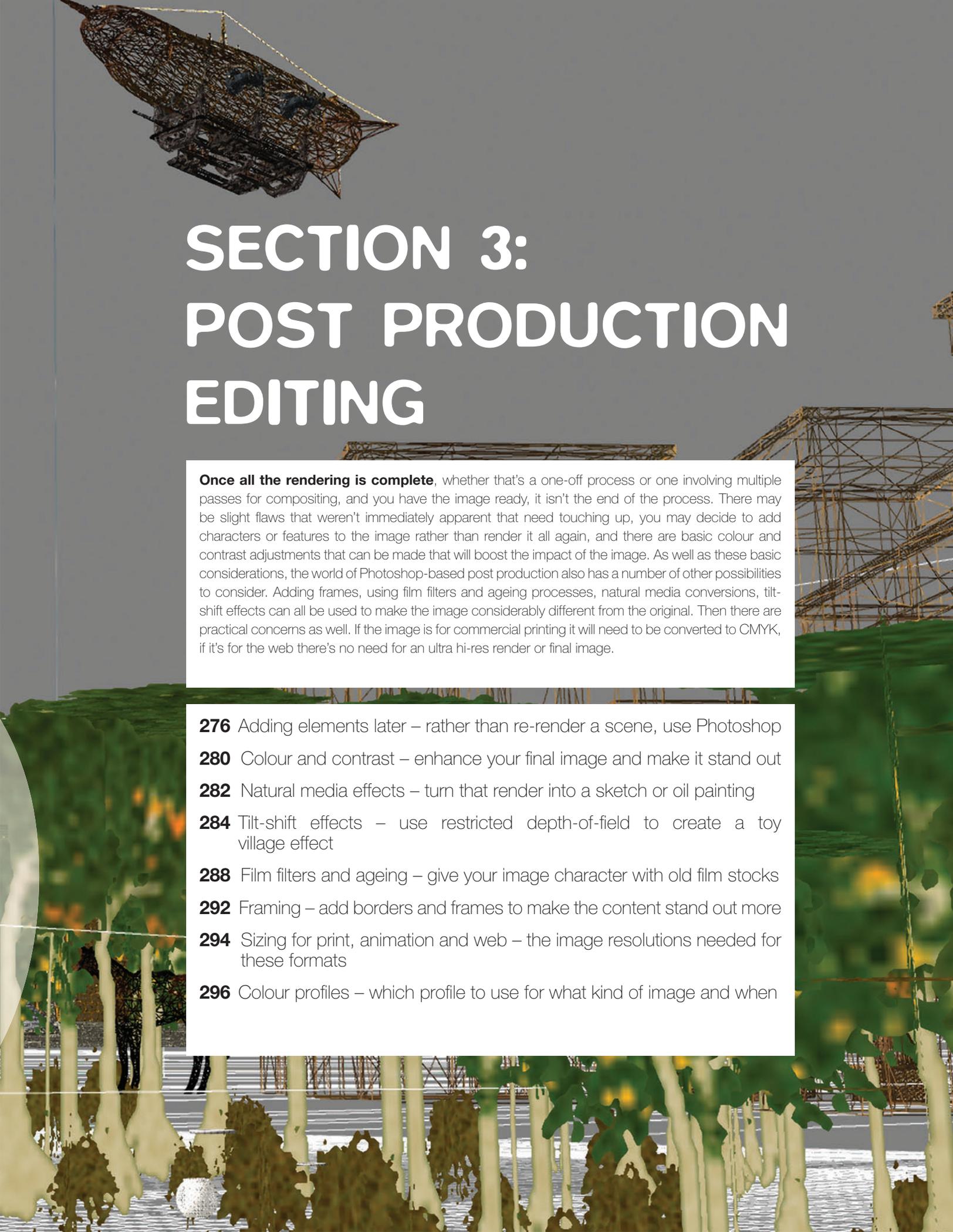


8 HOURS



The final image with all the corrections and enhancements added to show off the rocky texture.





SECTION 3: POST PRODUCTION EDITING

Once all the rendering is complete, whether that's a one-off process or one involving multiple passes for compositing, and you have the image ready, it isn't the end of the process. There may be slight flaws that weren't immediately apparent that need touching up, you may decide to add characters or features to the image rather than render it all again, and there are basic colour and contrast adjustments that can be made that will boost the impact of the image. As well as these basic considerations, the world of Photoshop-based post production also has a number of other possibilities to consider. Adding frames, using film filters and ageing processes, natural media conversions, tilt-shift effects can all be used to make the image considerably different from the original. Then there are practical concerns as well. If the image is for commercial printing it will need to be converted to CMYK, if it's for the web there's no need for an ultra hi-res render or final image.

- 276** Adding elements later – rather than re-render a scene, use Photoshop
- 280** Colour and contrast – enhance your final image and make it stand out
- 282** Natural media effects – turn that render into a sketch or oil painting
- 284** Tilt-shift effects – use restricted depth-of-field to create a toy village effect
- 288** Film filters and ageing – give your image character with old film stocks
- 292** Framing – add borders and frames to make the content stand out more
- 294** Sizing for print, animation and web – the image resolutions needed for these formats
- 296** Colour profiles – which profile to use for what kind of image and when

ADDING ELEMENTS LATER

No matter how good the preview or test render there's often times when after many hours, the final result contains some unforeseen flaw that needs correcting.

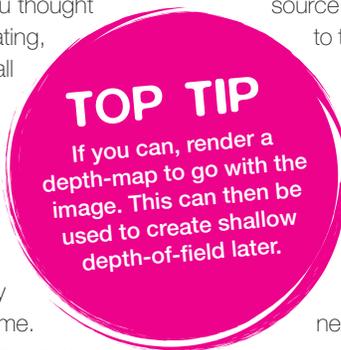
Lightness, colour and toning are all the kinds of things you might expect to tweak once the rendered image has finished. The problem is, preview versions aren't accurate or detailed and after anything from a couple of hours to a couple of days rendering it's only then that the flaw is spotted. It might be that your tree roots are showing where they shouldn't, that the object you thought was positioned accurately now appears to be levitating, or that the composition lacks something. The small elements are relatively easy to fix and shouldn't cause any sleepless nights. If you decide you want to put something large back into a scene – like a person – then there's all manner of considerations. The first thing is that the nearer the camera it is, the better the technique has to be to do it. If it's going to be right at the front of the scene the viewer has every opportunity to see any flaws that give away the game. Now, the sensible thing to do is re-render the entire scene with the missing object, but sometimes that's not possible. Maybe it's an old file and you have the render, but not the scene file; maybe you just don't have time.

The first consideration is lighting. The lighting on the new object has to match the direction and angle of incidence of the lighting in the scene. The more lights in the scene, the harder it gets. If you've decided to render something separately, then pay attention to the original scene

and try to set the lights up to match. A secondary issue is the colour of light. A figure rendered in white, studio-type lighting will look out of place in a sunset where the colour temperature is much lower.

Tied into the lighting is the issue of shadows. Any strong lighting source is going to cast shadows and these have to be applied to the composited scene as well. If you're placing someone at the front of the scene then it's possible to get away without a ground shadow if they are placed so you can't see their feet. This also solves a secondary problem of integration. The new object has appear to sit on the ground (unless it's a bird or other flying object) and merge with the scenery. In case of buildings, you can mask off areas around the bottom to allow bushes, weeds, flowers and the like to appear next to or in front of it.

This brings us on to the practical issue of combining the elements. If you are rendering your new object against a white background, create an alpha channel for it as well because this can be used as a layer mask, removing all the white background, just leaving the figure or building. If you are looking at simply combining two elements then you need to either mask the second one to place it, or select it first to get as tight a fit as possible before adding it to the scene.

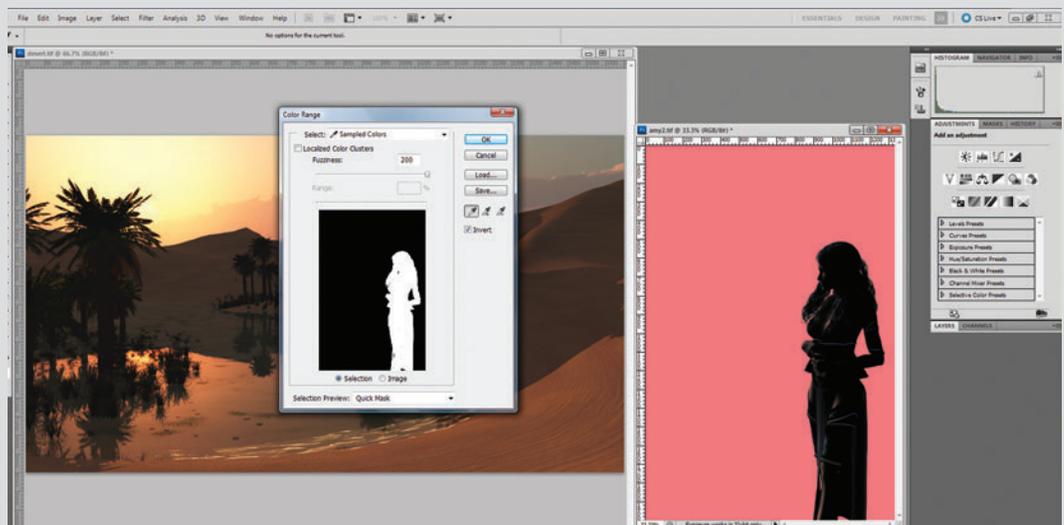


ADDING A FIGURE TO THE LANDSCAPE

Here's how to add someone in the foreground where you don't have an alpha channel to provide the mask. The figure is against a white background which needs to be removed.

Step 1 →

Load both images. The figure is facing the wrong way so use Image > Image Rotation > Flip Horizontal to turn her around. Then go to Select > Color Range and put a tick in the Invert box. Increase Fuzziness to 200 and click on the background.





Step 2

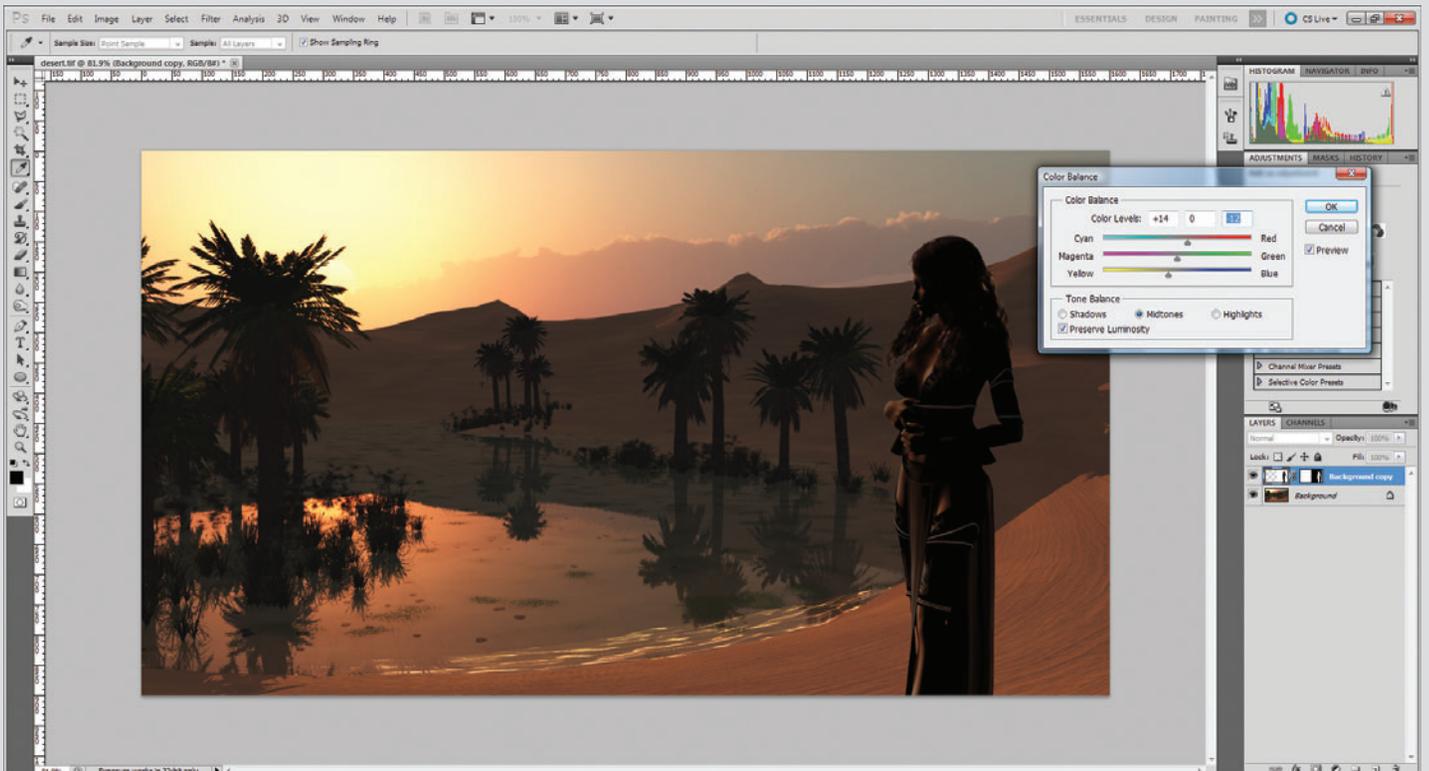
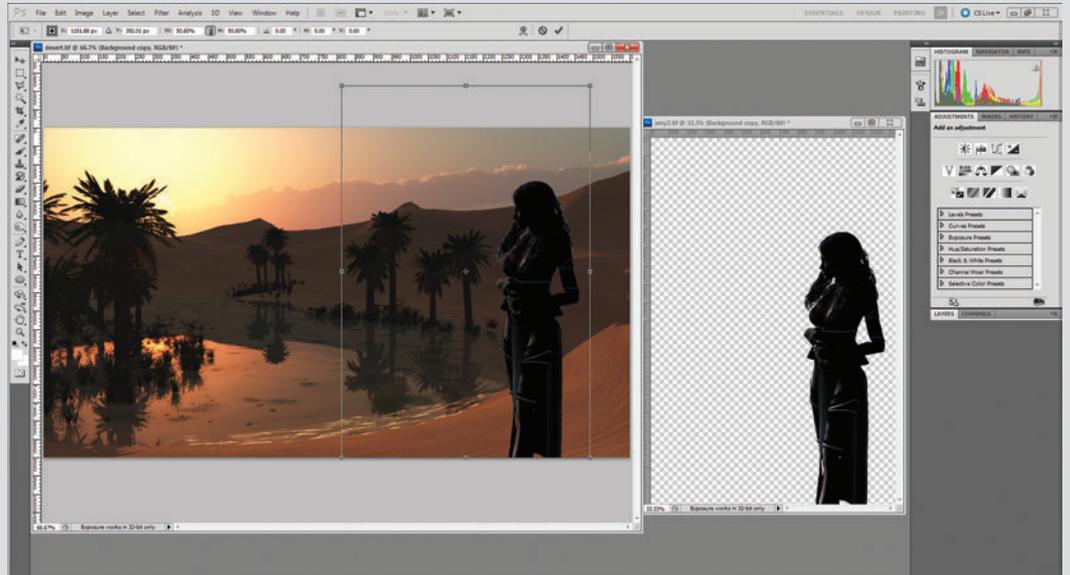
Click on OK and then go to Select > Modify > Contract. Enter a value of 1 pixels. Then go to Select > Refine Edge. Put a tick in the Decontaminate Colors box. Feather slightly and increase edge contrast a little. Click on OK to apply.

Step 3

Select the Move tool, grab the figure, drag her to the main image and let go. At this point she is clearly too large for the scene so go to Edit > Transform > Scale. Click on the Maintain Aspect Ratio button then drag from the corner carat to scale down.

Step 4

Position at the bottom of the screen to avoid shadows. Select the Paintbrush with a black foreground colour, 40% Opacity and 25% Hardness edge. Zoom in and click on the layer mask for the figure. Touch up any elements that need more transparency, specifically around the hair.





Step 5

Finally, go to Image > Adjust > Color Balance and add more red and yellow. Then increase the Saturation with Hue/Saturation. Check the contrast of the figure and also consider adding some grain to the entire image to help the blend.



COLOUR AND CONTRAST ENHANCEMENTS

Maximise the impact of your final render by increasing the colour saturation and contrast.

Whether your render just needs a tweak to improve it, or a dramatic upgrade in terms of colour and contrast, making those final adjustments can make the difference between a striking image and one that looks flat and uninteresting. There's also the opportunity to alter the colour balance selectively so if the sunset isn't red enough or the sky isn't blue enough, these can be adjusted independently of the rest of the image. There are numerous ways to do this in Photoshop, from adjustment layers with layer masks to making selections with Color Range, to overall Color Balance adjustments on duplicate layers, using layer masks to control the areas being affected. The same applies with contrast. It isn't enough to just use Levels to maximise the tonal range in an image, a Curves

adjustment layer can boost contrast while using the built-in layer mask prevents losing highlights or modifying the effect in certain areas.

The other consideration is one of time. After spending a few hours churning out a render is it really worth spending another four or five doing it again just because you adjusted the decay colours for the clouds in the sky? Or is it better to make a simple adjustment in Photoshop that takes 5 minutes? Obviously you always want to get as good a job for the render as possible, but ones involving multiple passes are all going to be composited and adjusted in Photoshop anyway.



ADJUSTMENTS IN PRACTICE



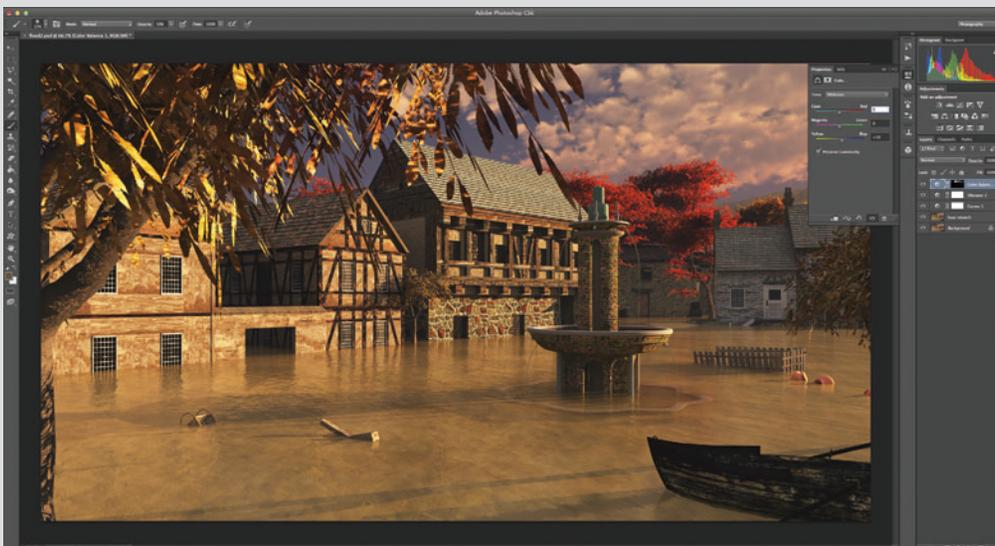
1

A duplicate layer was created for some minor retouching and then a Curves adjustment layer added to boost the contrast.



2

A Vibrance/Saturation adjustment layer was used to increase the warmth of the colours and make them more saturated.



3

A Color Balance adjustment layer was then used to put a little blue back into the sky with the mask used to block off the effect on the rest of the image.

NATURAL MEDIA EFFECTS

At the opposite end of the imaging spectrum to CG is the natural media look. Here's what it has to offer.

While for the most part your CG images will stay as nice and shiny as the day they were rendered there is a case for giving them a different look and feel. Using film filters is one such route but another is where the image particularly suits being given a natural media finish. These tend to be landscape images with classical themes and there's a movement afoot to give them treatments that conjure up thoughts of the old masters of painting. For

this we're talking about oil painting, pencil and charcoal sketches and watercolour effects. The effect can be subtle so it gives the image a fibre-based look or it can be full-on, natural media treatment to make it look as naturalistic as possible. While there are some built-in filters in Photoshop CS that offer a modest job of this – and the oil painting filter in CS6 does a good job of impasto effects if nothing else – it's mainly third party plug-ins that are your port of call here.



↑ This image has had the detail reduced, and oil painting and hand-drawing effects applied to give it a natural media look.

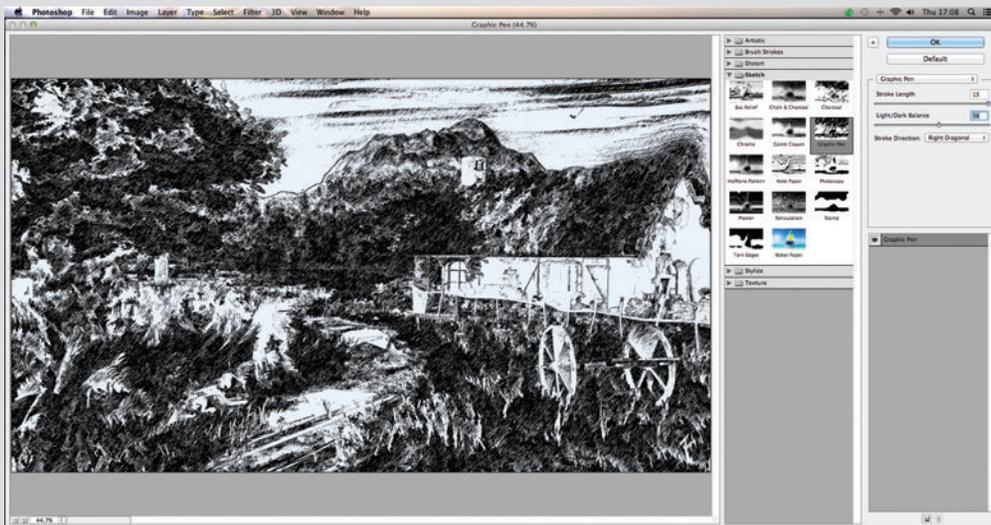
DIFFERENT LOOKS

So here are a number of different treatments for the same image



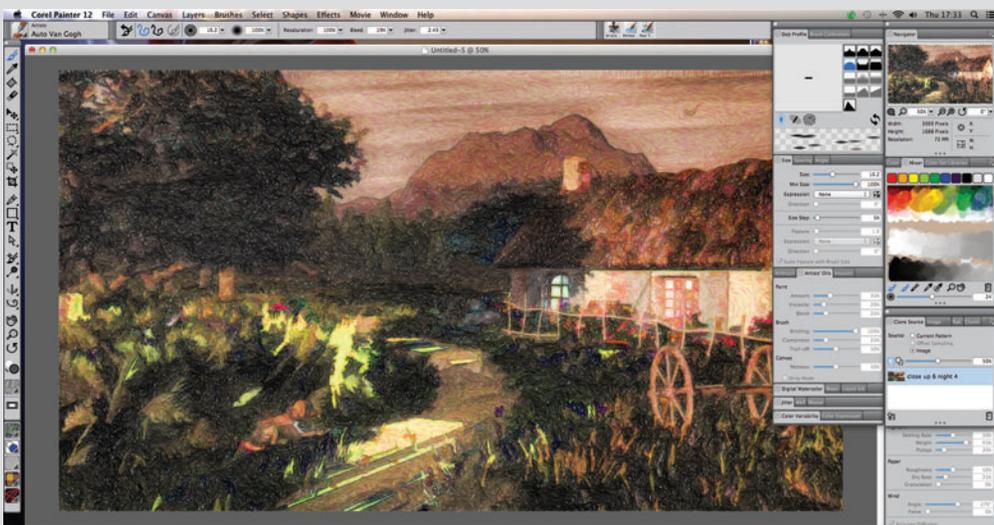
1 OIL EFFECT

A duplicate layer was created for some minor retouching and then a Curves adjustment layer added to boost the contrast.



2 SKETCHING

Again, the detail has been removed with Simplify 4 and then the Graphic Pen filter in CS6 gives a hand-drawn, ink-pen effect.



3 PAINTERLY STYLES

An alternative to Photoshop is to import the image into Corel Painter and either clone the source and then hand-paint over the top yourself, or use the Auto Van Gogh painting system.

TILT-SHIFT AND OPTICAL EFFECTS

Try some lens effects in post production that give your rendered image a completely different look.

One of the most popular lens effects of recent times is Tilt-Shift, otherwise known as the toy or miniature village effect. It is used to create a parallel strip of focus in the middle and two out-of-focus strips on either side. When used from an elevated position of typical subjects like towns, it makes them look toy villages. To create this effect with a camera requires a specialist lens, which is why it's far more popular to do it in Photoshop. Now, 3D is ideal for this because you control the entire scene and can set the render camera up in an area where it would be impossible if you were trying to photograph a scene, unless it was from an aircraft or on an opposing mountain. As well as designing scenes that can be made to look like this, it's also worth revisiting existing scenes and perhaps changing the camera position to make it work. This usually requires some extra work though, as the scene will be set up to show what is in front of the camera, rather than having extra scenery out of shot. The other consideration is that for a medium height shot you need both lots of scenery to fill the view and also plenty of detail on the ground. This invariably leads to higher polygon counts and much

longer render times. With long distance shots you can sacrifice some of the ground-based detail.

The problem for creating the effect inside 3D software is that the strip of focus runs across the entire image with a soft-edge, but abrupt transition to out of focus. A render camera with a wide aperture or shallow focus setting will have trouble emulating that because the transition tends to be more gradual. Still, it's worth trying because each software package creates lens characteristics differently.

The other thing to consider is post production lens changes. Instead of re-rendering an image, change the perspective and look of the image in Photoshop. Of course, you can just change the render camera focal length in your 3D software as well but in post production there's the opportunity to play around with perspective as well as the distortion from using a wider angle camera. One way to do it in Photoshop is to use a plug-in filter that is specifically designed to create the effect. The other is to create it using blurring and masking layers.

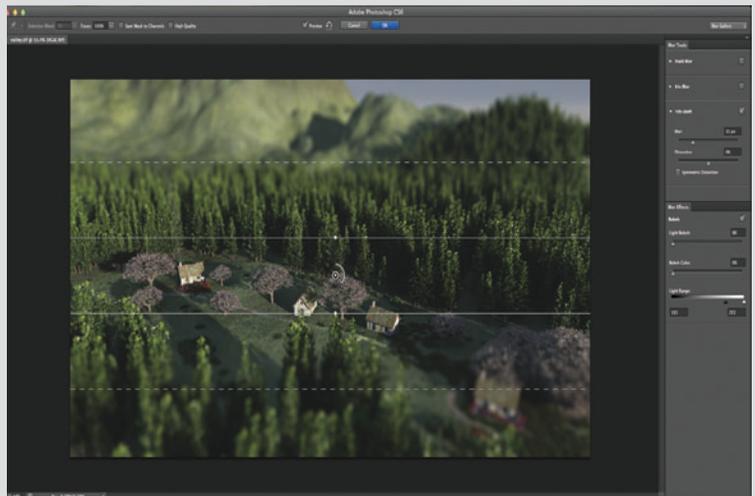
CREATING THE TOY VILLAGE EFFECT

Use the new Tilt-Shift blur in Photoshop CS6.

STEP 1

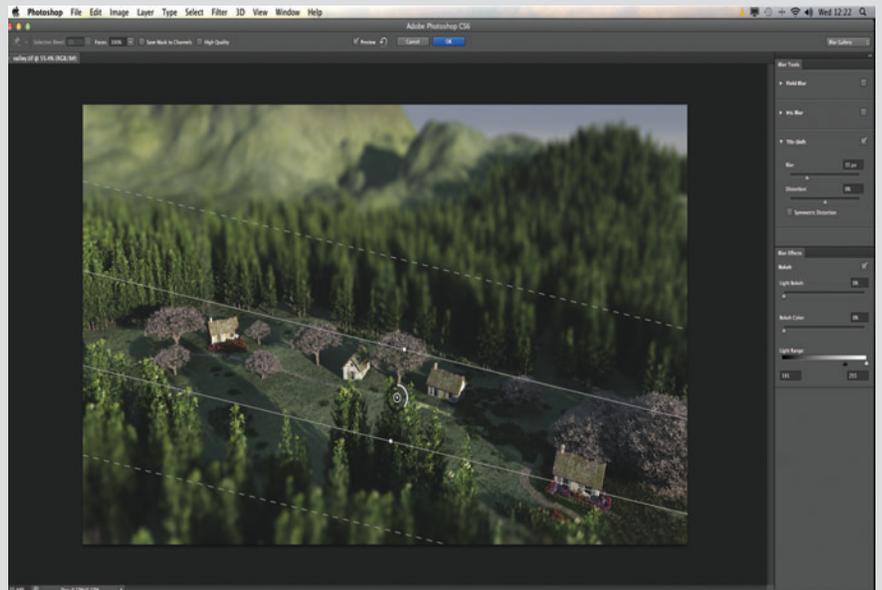
LOAD AND RUN THE FILTER

Load your image and go to Filter > Blur > Tilt-Shift. This is actually a combined tool allowing you to use it with Field Blur and Iris Blur at the same time. However, ensure that only Tilt-Shift is ticked.



STEP 2 LINE IT UP

As you can see, the starting position for the focus strip is horizontal. Move the cursor over the central control carat of either of the two focus lines to see it change to a rotate icon. Grab hold on the central control point to move the entire strip.



STEP 3 FINE TUNE THE EFFECT

Grab either of the completely out of focus, dotted lines, to make the transition more or less dramatic. Increase the Blur amount to maximise the toy village effect and use the Bokeh effect to add highlight circles where light is reflected. You can also click and add extra strips of focus.





BEFORE AND AFTER





FILM FILTERS AND AGEING

The thing about digital images is that they look just that: digital. One of the more interesting post-production options is to give the image a more distinctive look.

There are a lot of different options for changing the look and feel of an image in post production. Once past the usual tweaks of contrast, saturation and correcting any minor mistakes you can consider whether to apply film filters that directly simulate analogue film stocks. There's over a hundred years of different stocks and also photographic types that can be plundered, from super-saturated Velvia emulations to the blue tinting of Cyanotype. The important thing is to match the film stock type with the theme or feel of the image, so for example, industrial decay in Eastern Europe would suit a desaturated and bleak finish, compared to a tropical jungle which would benefit from increased saturation. In terms of sharpness, most lenses before the 1960s weren't very sharp so if you are creating a really old look then the image needs to be softened. Also, vignetting could be a problem depending on the type of lens and film used so adding that to the corners of the image could be considered. Grain is another feature of film to use as well as actual deterioration like colour shifts, surface dirt, colour bleeding, fading, even cracks and water damage. The older the intended image, the more deterioration you can apply.

While you can achieve these looks just through the manual commands in Photoshop, the use of plug-in filters make for better results, a lot

more options and a much faster way of previewing and applying them. You can either get Photoshop actions, which use the built in functions, or actual third-party plug-ins which offer the most choice and power. However, the actions are interesting because if you come up with a combination of effects yourself that you like, you can record the process as an action, save it and run it on subsequent images as a script.

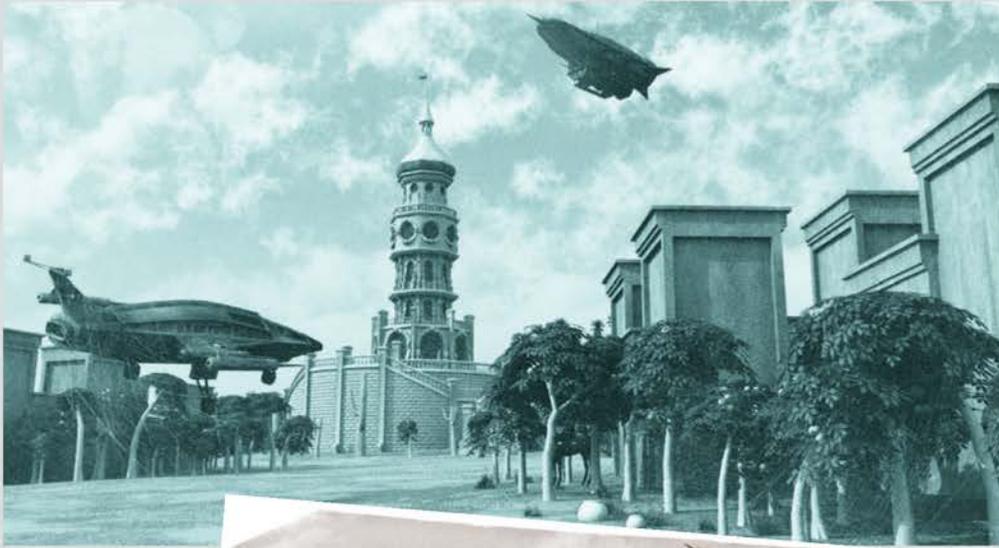
There are a couple of packages that can be recommended on the plug-in front, which can also be used in Lightroom and Aperture. The first is Color Efex Pro from Nik Software. This has an incredible number of different looks, styles, film emulations and special effects from adding fog to high key and cross-processing effects. There's another couple worth your time: one comes from DxO Labs and is called FilmPack, the other is from Alien Skin and is called Exposure. FilmPack is a more direct film stock emulation package, rather than the special effects of Color Efex Pro, while Exposure features generic stocks but concentrates more on classic processing types like Dageurrotype as well as general grunge, grain and dirt rendering. With a combination of plug-ins and actions you can give your renders a completely different and distinctive look, all without having to spend hours rendering different versions.



The original, untreated image, straight out of the rendering engine with no post production work at all.

CHANGE THE LOOK AND FEEL

Here's a number of different styles that can quickly be applied in post production.



Using Alien Skin's Exposure to create a cyan tone with scratches and fading of the emulsion.



For something more retro this image features sepia, grain, a little dust and a just-pulled-from-the-album frame.



The final exercise is to use a Velvia film emulation to completely saturate the colours and make the image jump out.



Here the colours are darkened and a vignette is applied to represent early colour film processing.



FRAMING THE IMAGE

Adding a border or frame to an image can help add polish or give the finishing touch to make it stand out.

In many instances, particularly if creating images for commercial clients, once the final render has been cleaned up and composited in Photoshop if necessary, that's the end of the matter. For showcasing images though, they can often be enhanced by adding a border or a frame. While borders can also be frames, they can vary from them by impacting on the image itself. A frame is simply a graphic that goes around the image. These tend to work better on images that hearken back to pastoral oil paintings rather than clean and modern images. A border can do the same but tends to

be simpler, a small black or white rule, a white canvas extension. However, borders can also be destructive in that they overlay the edge of the image, obstructing or removing parts of it. The biggest use of this type of border is for film stock effects, wet print or old printing techniques, where the edge is eaten away by simulated tearing of paper or chemicals. The important point to bear in mind is that the type of border or frame needs to suit the style of the image, and that it shouldn't detract from it or overwhelm it. Used correctly, framing your image can enhance the impact it has.



↑ Lake House, © Anna Marynenko, Ukraine.

DIFFERENT STYLES OF FRAME AND BORDER



SIZING FOR PRINT, ANIMATION AND WEB

The audience for your image determines what resolution you need to render it at, and that decides how long your computer is going to be chugging away.

Of all the parameters that are involved in creating a 3D image, one of the most important is resolution. This determines the level of detail in the image and the amount of time it's going to take to render. What the landscape is going to be used for determines how much resolution you actually need. If it's for the web then 1024 * 768 pixels is plenty big enough, whereas for animation 1280 * 720px or 1920 * 1080px – full HD – may be required. The highest resolutions though are demanded by magazines, books and print projects. These typically print the image using a print density of 300dpi (dots per inch). Note that 300dpi is not an image resolution in itself, and on its own is meaningless. An image 300x300px could be printed one inch square and it would be 300dpi, whereas an image 10"x7" at 300dpi would need to be rendered at 3000x2100 pixels. So dpi is intimately tied to the target print size and without knowing that, doesn't mean anything. However, you can look at things conversely so that if you know the image is destined for print, you know it will use 300dpi, so therefore you are working on pixel resolutions with regards to how large it will print.

The problems with larger resolutions for print are of course computer resources – will it have enough RAM and can the graphics card cope with a very large scene – and the time taken to render the image. The bigger the image, the longer it takes because if you double the image size then you quadruple the data in it. An image sized 2000x1500px has 3 million pixels. One that is twice the size at 4000x3000px has 12 million pixels – four times as many. So, any time you come to render an image, you need to know what the target format is and how large it really needs to be. For example, you're asked to create an image that will fit across an A4 spread. This is around 16" wide and 11" high. Printed formats usually require 300dpi for the images so the image resolution you would need to render to fit the requirements would be 16x300 or 4800px wide and 11x300, or 3300px high.

When you need to resize

Now that's all well and good in theory but there are times when you need a hi-res image and either your system can't cope or it takes just far too long to churn it out. Aside from investing in more powerful hardware the only solution is to either reduce the complexity of the scene so it has fewer polygons and can render faster, or to render it at a slightly smaller resolution and use specialist image resizing software to make it larger. There's a number of apps and Photoshop plug-ins that do this: Blow Up from Alien Skin, Perfect Resize from OnOne Software and Magnifier from Akvis are just three examples. Don't bother using the resize option in Photoshop because it simply isn't good enough. The practice of increasing image size like this is known as interpolation and the better the quality of the original image, the better the final result. Fortunately you can render the image as a TIFF to start with – not a compressed JPEG – and so have a very clean starting point. The specialist software packages do a very good job of avoiding jagged edges but the more you increase the size, the less convincing the result becomes. Who and what the final image is for really determines how much you can get away with. For a final image for a commercial client you really don't want to be doing this at all – but for a preview image or personal use you can easily interpolate 50% larger and retain most of the quality.

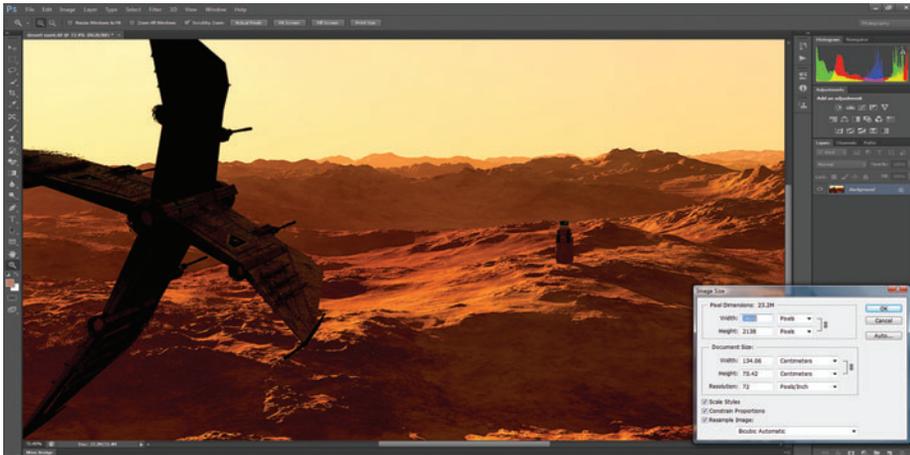
TOP TIP

If an image is only going to be used on the web and not for print, it wastes time to render it large and downscale.

The flipside of this is when sizing images for email or the web. Here you are probably reducing the size of the image because if you are sending samples over email you don't want to be using hi res TIFFS. Instead resize the image to smaller sizes like 1024x768 and use JPEGs. For web use as well, smaller images are required, so again 1024x768 or 800x600, or widescreen versions of those image widths are more the norm. So here you're resampling and decreasing the size of the image but bear in mind that there's one consequence of doing this. The image will get softer. So, always check the image after downsizing and if necessary, use a sharpening tool to make it sharper.

MAKE IT BIGGER

So here's a typical example. The starting image is 1920x1080 but we need a higher res version for print. Let's have a look at how this pans out in photoshop against a dedicated plug-in.



This is what it looks like when you use Photoshop to interpolate anything larger. This is at 3800 wide, so nearly twice the original width.



With Alien Skin's Blow Up the result is much better because the landscape lines have been smoothed off. The more you do though, the more painterly the result.



This is the image when it has been rendered directly at 3800px wide. If your system can manage the higher resolutions, especially if the scene isn't polygon heavy, then it's better to render it this way.

COLOUR PROFILES

The delivery platform for your image dictates what colour profile you need to use, but it has implications.

There are two main colour profiles, with numerous interpretations of those in sub-categories. What your image is going to be used for dictates what it ends up as. To start, any images for use digitally, whether by projection, on-screen, on web pages and so on, will need to be RGB. RGB is an additive colour model where the displaying device adds red, green and blue colours together to create the finished spectrum. One of the issues with RGB is that it is dependent upon the device displaying it, and all devices render colour differently unless they have been colour calibrated first. For the 3D creator though, RGB tends to be the main platform for colour profiling.

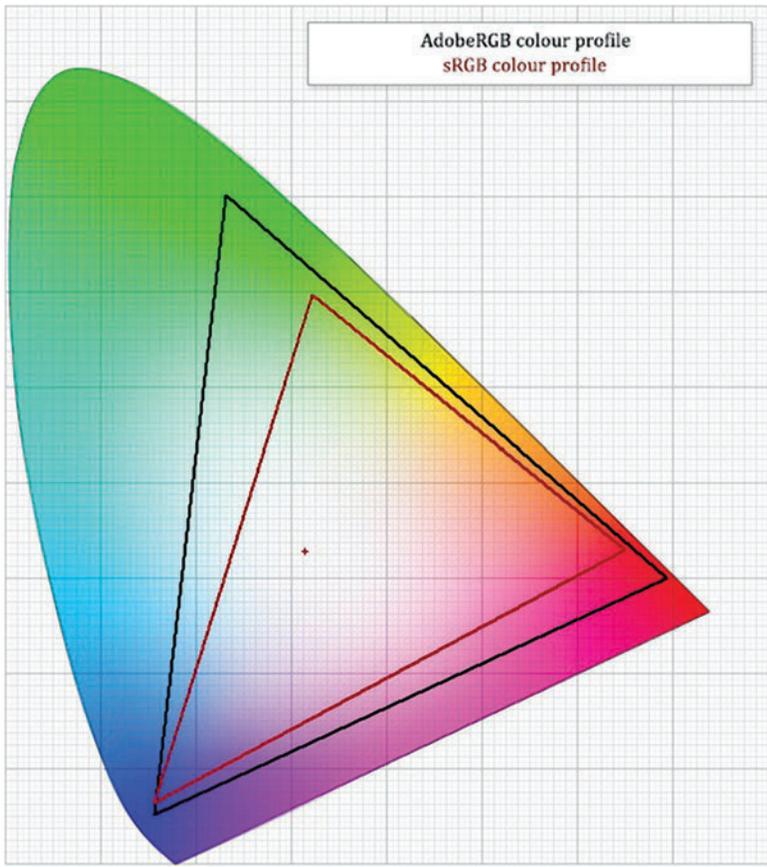
There are a number of different versions of RGB, mainly for medical, scientific and technical sources. The two main ones for our consideration are sRGB and AdobeRGB. The former is used by web pages so even if your image is saved as AdobeRGB, only the colours in the sRGB spectrum will be displayed on the internet. AdobeRGB has a wider colour gamut than sRGB, which is to say it has a wider range of colours. Both models only have a finite number of colours they can display in a typical 8-bit file though, so in some cases you can find that an AdobeRGB image with very fine colour graduation across a wide spectrum suffers from banding, or gamut compression.

Conversely, the sRGB image faced with colours outside its gamut may just clip them, known as gamut clipping, so you end up with blocky colour in places. In reality, it's rare that this happens, but it's worth noting that if your image features a very wide range of colours, AdobeRGB is probably better, and if it has fine colour graduation, then sRGB is better. All of which is irrelevant if the image is going to be displayed on the web because, as mentioned, it will only render the sRGB colours anyway.

The alternative to RGB is CMYK which is a subtractive colour model consisting of Cyan, Magenta, Yellow and Key. This is used for print, such as for this book and for magazines. The problem for 3D artists is that CMYK has a much smaller colour gamut than any version of RGB, specifically in the bright or neon colour bands. Usually this isn't a problem in a landscape scene, but if you are rendering an urban scene with neon lights, expect those colours to degrade significantly when converting the image to CMYK. The only recourse is to increase the contrast and overall colour saturation, but you can't actually replace what the profile can't display. That's why, if your image is destined for print, it's better that you convert it to CMYK yourself first, so that you can control what it looks like, rather than leaving it to the mercy of an art editor or printing service.



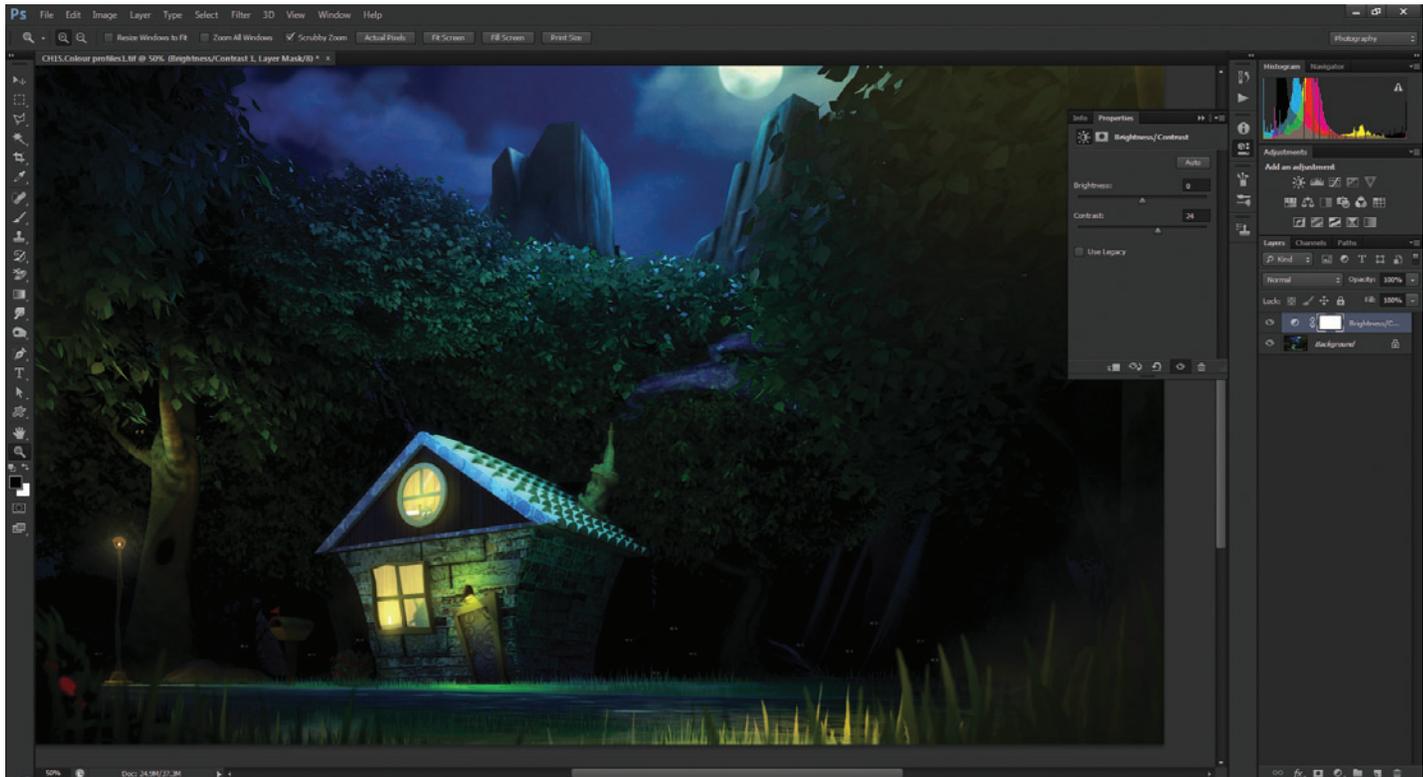
Time to sleep by
Peter Ang



AdobeRGB colour profile
sRGB colour profile

← A representation of sRGB versus AdobeRGB colour spaces. Ignore the actual colours as this is printed using CMYK.

↙ With Alien Skin's Blow Up the result is much better because the landscape lines have been smoothed off. The more you do though, the more painterly the result.



APPENDIX – RESOURCES

Some handy places for information, free models and help

Digital Mayhem: 3D Landscapes

www.focalpress.com/cw/evans. The companion website for this book where you will find tutorials, downloads and links to the work of some of the exceptionally talented contributors to this book.

Cornucopia 3D

www.cornucopia3D.com. From the makers of Vue, the website offers help and advice on the forums, galleries to showcase your work and a world of models, plants, atmosphere's and lighting set ups to purchase.

Renderosity

www.renderosity.com. Site for enthusiasts with plenty of galleries for showcasing work and also free and paid-for models to populate your scenes with.

CG Society

www.cgsociety.org. The number one website for professional artists with features, jobs, galleries and forums.

TurboSquid

www.turbosquid.com. Leading site for paid-for models to use in your renders.

Free models

www.3dmodelfree.com. Plenty of free models to download.

e-on Software

www.e-onsoftware.com. Home for Vue, the number one app in still and animated CG landscapes.

Planetside Software

planetside.co.uk. The main alternative to Vue for pure landscape creation.

YouTube

www.youtube.com. There are hundreds of how-to-do videos on YouTube for all the popular makes of 3D software.

Autodesk

www.autodesk.com and www.autodesk.co.uk. Website for the biggest name in 3D with support for 3ds Max, Maya and SoftImage.

DAZ3D

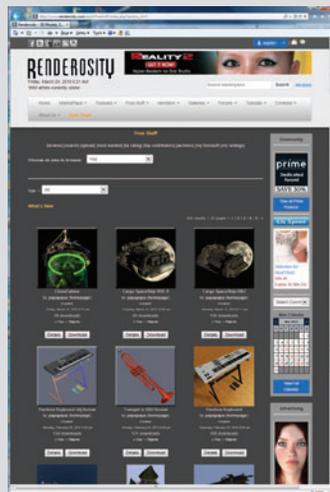
www.daz3d.com. Home for Bryce 7 Pro, a very low cost introduction to the world of 3D landscape software. Also features an extensive shop for props and models, mainly people.

Geekatplay Studio

www.geekatplay.com. Lots of free and paid-for tutorials from an expert in the field of landscape creation.

D&D Creations

<http://www.ddcreations.eu>. High quality 3D environments, content and resources for your 3D landscapes.



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To those who wanted to contribute, but for one reason or another couldn't make it this time, don't you worry – this is the first in a new series so there's plenty more to come from the *Digital Mayhem* line.

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