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MAYA



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3DS MAX 5 COMPLETE USER REPORT p10

THE MAKING OF SPIRIT
HOW DREAMWORKS CREATED
ITS 'TRADIGITAL' MASTERPIECE

ISSUE 28 ON THE COVER CD THIS ISSUE

- >> 3D Buzz 3ds max video tutorial >> 225 hi-res photographic textures >> Complete cel-shading plug-in and demo kit
- >> Every winning entry from the 3D World/Act-3D/NVIDIA competition >> dvGarage 3D Toolkit (30-day demo version)

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COVER ILLUSTRATION
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CEL SHADING

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THE MAKING OF SPIRIT



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A sneak preview of Discreet's latest triumph, complete with new plug-ins, improved radiosity and much more

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DreamWorks' latest is a cutting-edge fusion of 3D CG and 2D cel animation. We reveal how it was created

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3dworld@futurenet.co.uk

Q&A QUESTIONS
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EXHIBITION
WEBSITE

3dw.qanda@futurenet.co.uk
3dw.mailbox@futurenet.co.uk
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www.3Dworldmag.com

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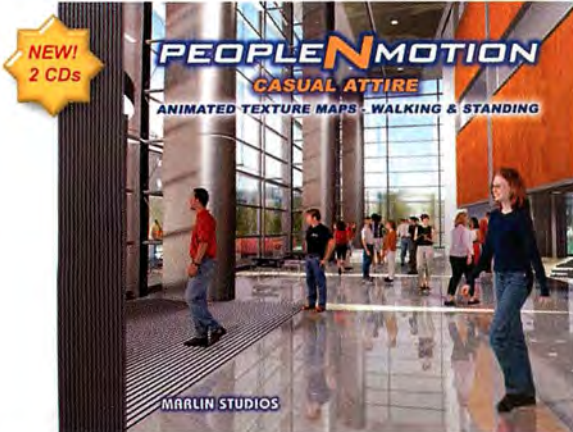


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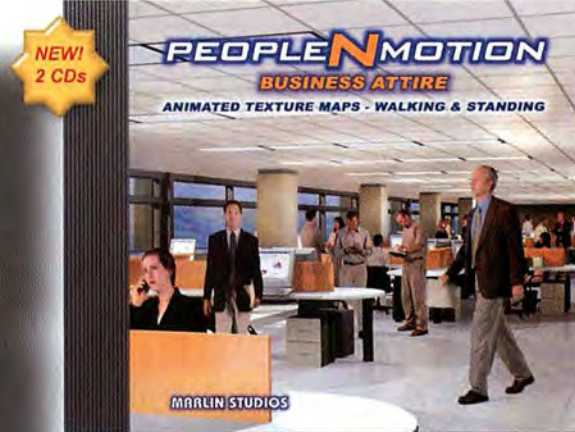
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#007

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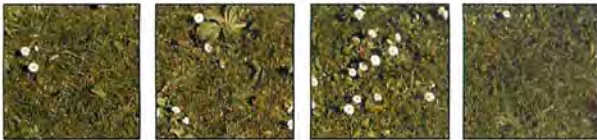


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For contact details see CD inlay

DUAL FORMAT



225 SplineMonkey textures

225 high-resolution images of bricks, rock, wood, metal and vegetation. To get more from them, see Alex Lindsay's tutorial on creating tiled textures on page 60. info@splmonkey.com

DUAL FORMAT



Exclusive 3D Buzz video tutorial

An hour and a half of expert *3ds max* tutorial from Jason Busby of 3D Buzz fame. In this ground-breaking tutorial, Jason explains how to create your own plug-ins.

www.3dbuzz.com

DUAL FORMAT



3D Toolkit Demo

This is a 30-day demo of 3D Toolkit from dvGarage. Included is *Electric Image* (2.9.3 Equivalent) *Animator* and *Modeler*, as well as extensive training materials. www.dvgarage.com

PLUS

TUTORIALS

Full-sized screenshots and supporting files for our tutorials on the disc.

EXHIBITION Your work from around the globe. Send your pics or animations and you may appear next issue. 3dw.exhibition@futurenet.co.uk

FULL LISTINGS INSIDE THE CD SLEEVE

Software not working as expected? Can't find those tutorial files? Check out the instructions inside our CD inlay for the solutions to the most common disc-related problems.

editor's perspective



Back in the distant past, one of my illustrious predecessors coined the slogan '3D World: Life's just flat without it'. It seemed an innocent enough phrase, so when I took over, I decided to keep it. You can still read it, for example, on the homepage of our Web site.

But now those seven little words have come back to haunt me, because issue 28 of 3D World is most certainly flat: flat as the Dutch countryside, flat as a hedgehog on the M25, flat as the proverbial pancake. Because the current issue of 3D World is all about 2D animation.

Before you throw the magazine aside in disgust, allow me to explain. This month's issue contains trace amounts of cel shading, not because we can't find any CG to write about, but because we want to highlight a new trend: the hybrid project, combining techniques from both 2D and 3D animation.

Take, for example, DreamWorks latest 'tradigital' epic, *Spirit: Stallion of the Cimarron*, the creation of which you can read about on page 28. Or Passion Pictures' recent series of World Cup idents for the BBC. Or any one of a whole string of Disney blockbusters, examined in detail on page 22.

You'll find those articles marked with our special 'Toon into 3D' logo, along with our making-of feature on EYE's Save The Children ad, and the profile of cult French animator Pierre Coffin – whose ads show a *distinctly* 2D sensibility.

Even this month's Key Frames gets in on the act, since we've been talking to *Antz* director Eric Darnell about his ground-breaking early work, the 'pencil-shaded' CG short *Gas Planet*. And those of you who want to get your hands dirty needn't feel left out either, since the tutorial on page 36 not only shows you how to recreate our explosive cover image, but provides some expert tips for cel-shaded rendering.

Of course, there is a little three-dimensional content in the mag. For a start, there's our profile of Tomek Baginski, this year's SIGGRAPH award winner. Then there's our tutorial on creating seamless tiled textures. And finally, there are the winners of issue 25's interactive art contest, whose stunning entries you can find on this month's cover CD.

But those are the exceptions to the rule. Normal service will be resumed next month, but until then, life is officially flat. Thank you for your co-operation.

JIM THACKER

Editor

jim.thacker@futurenet.co.uk

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letter of the month

Firstly, I think I should mention that your magazine has been fairly informative and interesting to read – I wouldn't have subscribed otherwise. But in response to your plea for suggestions and dislikes, there are many things about it that I dislike.

Obviously, it's not going to be possible for you to cater for everyone and I appreciate that. But in my opinion, the reviews and tutorials could be improved. The reviews, for instance, are often very brief and appear to have been copied and pasted straight from parts of the 'new features' section in the program's manual. How about covering the new features in depth with *examples* of how they could be used?

The same could be said about the tutorials, which are obviously aimed at the beginner. Not bad in moderation, but personally speaking, I am sick of walkthroughs on boring, mundane objects which most people would find a chore to model, texture, light or animate. I think most people can grasp the basics of how to go about modelling a vase or a pumpkin. If not, they should read the basics in the program's manual or find out some relevant tutorials from the Net!

From a magazine I pay for, I don't expect the basics. I expect professional knowledge from people who have worked in the industry. Show us some of the things that we would never otherwise be able to find out, in detail! I have read some previous articles in *3D World*, covering *Final Fantasy*, for example, but saying that "all textures were hand painted" is hardly enough.

I realise this is a lot to ask, as many companies aren't willing to give away their secrets. But if Square aren't willing to divulge such information, surely there are others that would. Either way, I'm sure you could do better than what's currently on offer.

John Kearney | Via email

PD Well, we said we'd make a complaint about 3D World Letter of the Month, and we finally have! Hopefully, our new regular 'Making Of' section (page 40) will go some way towards addressing the needs of our higher-end readers, and we're trying to include more technical detail in our features. Reviews, we're still working on. But you can consider pumpkins banned from the mag henceforth...

WRITE IN AND WIN A PRIZE!

Each issue, we award a small prize to the author of our Letter of the Month. Next issue, it's a copy of *[digital] Character Animation 2: Advanced Techniques*, by George Maestrini: the sequel to his seminal *Essential Techniques* volume. Thanks to the nice people at Pearson Education, you can also order the book at a special 30 per cent reader discount price from our sister website: <http://books.maximumpc.co.uk>



LIGHTWAVE BIAS?

Your issue 26 was great, I loved both the design and the content. But I got the impression that you were big *LightWave* fans in your article on the best 3D app. I reckon *LightWave* is a great tool, very powerful and very complete – but you forgot to talk about its interface. It's very ugly and not at all user-friendly, not to mention its very long learning curve. Of course, that's just my opinion, but I feel it may be shared by many 3D artists.

And you also forgot one major point about these 3D packages: there are just two apps which are translated into many languages: *3ds max* and *Cinema 4D*. This is very important for many people, since not everybody speaks English.

JT, France | Via the forum

PD Oh, I don't know, I thought we were pretty even-handed in our treatment of all six packages under review. We did prompt our interviewees for criticisms of *LightWave*, but no-one saw the learning curve as a major problem: particularly not in comparison to that of *Houdini*, for example.

Good point about the lack of language support, though. (We phoned up the companies to check: *3ds max* and *Cinema 4D* are available in eight languages apiece, *LightWave* in four and *Maya* and *XSI* in a rather disappointing one.) It's not something that our (exclusively Anglophone) selection of CG facilities picked up on. Perhaps next time we should interview *Sparx* or *BUF Compagnie* for their opinion?

NOT ENOUGH HASH

Admittedly, I found your feature on the various 3D apps useful, but you could have been more inclusive with your list of the main alternatives. I think you should amend this by mentioning *Animation:Master* (from Hash

Inc), which is capable of very impressive output – particularly if you are talking about animations rather than just stills – and is cheaper than all of the other programs mentioned.

John Keates | Via email

PD Hands up. *Space* prevented us from mentioning every single alternative package in the feature, which could otherwise have gone on for another five or six pages, but the omission of *Animation:Master* (which is available from www.hash.com, price \$299) was certainly an oversight, as several other people pointed out. I shall now do penance by slapping myself on the forehead, saying three *Hail Marys* and lighting a candle before the ceremonial shrine of *Martin Hash* in my bedroom.

DISCREET DISMAY

The attitude of *Discreet* on the software pricing policy has surprised me very much. [As reported in issue 26, the company issued a statement in the wake of the *Maya* and *Softimage3D* price cuts, saying that it had no plans to follow suit – Ed.] I've worked in *3D Studio* since version 1 for DOS, and I'm becoming more and more disappointed with it. I watch other packages getting loads of new features and improved stability, while *3ds max*...

I recently bought a copy of *Cinema 4D XL7* and I find it to be one of the most solid applications I've ever used. For someone who's long had *max* crashing without warning on a daily basis, I call this a big improvement. I won't mention the other pros and cons involved with each package, since we're all well aware of them.

I'm just suggesting that maybe *Discreet* should spend a little more time listening to their customers' needs and less making lofty statements about how good and pricey their software is. I find their attitude rather arrogant, and it shows very little respect for the 3D graphics community.

António Carreira | Via email

PD Without wishing to provoke another 'Who's the greatest?' argument, we should



Hash Animation:Master – it wasn't in our greatest 3D apps list in issue 26, but it should have been. A slap upside the head for whoever commissioned that one. (Hang on, that was me. Damn.)

perhaps here point out that there is a lot of new functionality in the recently unveiled 3ds max 5, including improved character animation tools and rendering options. You can read our full preview of the new version on page 10.

ONLINE COURSES

Recently I purchased *LightWave 7.0* dual format, and wow, it has changed my whole attitude to computer arts. I graduated from Glasgow School of Art with a BA (Hons) in fine art photography, but I became more and more hooked on surfacing – which in turn led to 3D modelling. I now run both Mac and PC platforms and would never be so pig-headed about being loyal to a specific platform again.

I cannot thank you enough for giving me the courage to purchase *LightWave*, for helping me to buy a Dell PC laptop (I'll never look back), and for offering support for all levels of artists, whether beginner or expert.

But my main reason for writing is to ask for assistance in choosing online training, as I live in the Scottish Highlands and need serious help. Dan Ablan's book [*Inside LightWave 7*] has been great, but he doesn't explain modelling well enough.

Mark Nichols | Via email

For *LightWave* character animation, you might like to check out Timothy Albee's new book, which you can find reviewed on page 15. And it goes without saying that you should check out some of the

LightWave-specific websites, such as the excellent *Flay.com* (www.flay.com).

But recommending good online courses is more of a problem. We're hoping to run a follow-on update to issue 21's training feature later in the year, so if anyone knows of any good courses they'd vouch for, do please let us know. You can find our contact details at the top of this page.

HEAD BOY

Regardless of whether they are stylised or not, I have always been a big fan of photorealistic films. Your magazine has always done a brilliant job of covering texturing, such as the 50 tips you printed in issue 14. However, there is also seemingly a lack of tutorials on the realistic texturing of human heads.

I realise that you can't do everything to suit everyone but those sort of tutorials would be a major benefit to people like me. I have been fine-tuning my animation abilities for nine months now, and I have already made realistic animations of both humans and animals – but not so much on the texturing side, simply because I have no idea where to start. If there are any books devoted to this subject, I would love to hear about them. Any suggestions?

Brett Lawless | Via email

When it comes to texturing characters, you can't go far wrong with long-time 3D World contributor *Bill Fleming's* latest book, *3D Texture*

Workshop: Painting Hollywood Creature Textures, which can be obtained from most major online bookstores, price \$39.95.

BUZZ WORDS

Now really, you guys have struck gold with the 3D Buzz tutorials [featured on the cover CDs of issues 26 and 27]. If they count as part of the makeover for *3D World*, you've certainly secured my subscription. I don't see how any other 3D magazine can compete with an arsenal like that, unless someone comes up with a self-hypnosis CD on 3D animation...

As for grumbles and gripes about the new look [see *Mailbox*, issue 27], pretty much the same thing happened with our local supermarket, but I think it's actually fun to wander around not knowing where the heck anything is and listen to paranoid sticklers scream, "Where have they hidden the beans?" Keep us on our toes, move that Exhibition section around every issue and call it a travelling show.

But while change is often a good way to confirm that we are still paying attention, and although I can sympathise with our American friends for being behind in receiving copies, Anthony Etheridge's DVD plea [again, see *Mailbox*, issue 27] leaves me slouching off back to the cave with a whole tribe of Mac and SGI users with CD-only systems. Think carefully before going off trailblazing, or you might leave too many of us still sitting round the campfire pixel-popping, like Mr Peachey...
Paul Grant | Via email

The Mac and SGI tribes can rest easy: if we ever do a DVD, we'll make sure that that issue comes in two versions – one in full extended-play glory, and another with the usual CD.

As for 3D Buzz, check out this month's cover disc, on which you can find Jason Busby's magnum opus: a one-and-a-half hour video tutorial on building plug-ins in 3ds max. We'd be ecstatic if we can go on including these tutorials in future issues, but it's very much down to Jason's generosity, and his ever-diminishing reserves of sleep and free time... ■

CONTACT 3D WORLD

WEB www.3dworldmag.com E-MAIL 3dw@futurenet.co.uk

EDITORIAL

+44 (0)1225 442 244
 EDITOR Jim Thacker jim.thacker@futurenet.co.uk
 ART EDITOR Annelise Brant annelise.brant@futurenet.co.uk
 NEW MEDIA EDITOR Matt Gallimore matt.gallimore@futurenet.co.uk
 CONTRIBUTING EDITOR Mark Ramshaw mark@hoops.demon.co.uk

WORD CONTRIBUTORS

Mat Broomfield, George Cairns, Simon Cornish, Simon Danaher, Pete Draper, Alex Lindsay, Andrew Osmond, Mark Ramshaw, Ed Ricketts, Jason Robertson, Joanna Scott, Anna Scrivener, Benjamin Smith, Andy Stout, Dave Throssell, Ferran Vladevall, Adam Watkins, Garrick Webster

PICTURE CONTRIBUTORS

Simon Danaher, Stuart Rowbottom, Laura Sheppard, James Wilson

PRODUCTION

PRINTED Cradley Print, UK REPRO Phoenix and Colourworks

CONTACT

3D World Magazine, Future Publishing,
 Unit 1+2 Cottrell Court, Bath, BA1 2NP, UK

TEL +44 (0)1225 442244
 FAX +44 (0)1225 732361
 ISDN +44 (0)1225 789293

ADVERTISING

+44 (0)1225 442 244
 PORTFOLIO AD MANAGER Rob Wittmaack rob.wittmaack@futurenet.co.uk
 DEPUTY AD MANAGER Darren Gratton darren.gratton@futurenet.co.uk
 SENIOR ACCOUNT EXEC Andrew Healy andrew.healy@futurenet.co.uk
 SENIOR ACCOUNT EXEC Bryony Watts bryony.watts@futurenet.co.uk
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MANAGEMENT

+44 (0)1225 442 244
 SHEENA PITTAWAY Publisher sheena.pittaway@futurenet.co.uk
 JOHN WEIR Publishing Director john.weir@futurenet.co.uk
 SIMON WEAR International Licensing simon.wear@futurenet.co.uk

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NEWSDESK

3DS MAX 5 UNVEILED

The latest version of Discreet's flagship app features enhanced radiosity, and a bunch of new modelling and animation tools. But what did the advance users think of it?

Just in time for SIGGRAPH, Discreet has given *3D World* a sneak peek at the latest incarnation of its flagship animation package, *3ds max*.

Version 5 ups the cost-to-value ante in a market currently characterised by price cuts and sales struggles. By continuing to charge £2,695 for the full version, £595 for the upgrade, Discreet is sticking to its guns – rather than dropping its price as Softimage and Alias|Wavefront have recently done.

The biggest improvement in *3ds max 5* is its new radiosity renderer. Discreet has brought the Lightscape renderer into the application – a system previously sold to the interior design and architectural markets by Discreet's parent company, Autodesk. Not only does this new complete renderer appear to be quick, but its quality is, at first look, very impressive.

This new feature will undoubtedly bolster interest in *max* from artists creating content for film and television, as well as those doing product and architectural visualisation. But render quality has never been a big issue for games developers, since everything 3D game

players see gets rendered through a game engine. With version 5, Discreet aims also to satisfy this market sector, by adding a system whereby games artists can use *3ds max* to create higher quality, more realistic textures by 'baking' in the radiosity output.

This new render-to-texture function takes the final output of a radiosity render and creates textures from it that can then be dropped into the scene. Original textures are replaced with the radiosity-rendered ones, then shipped into the game's data. Game artists can set the resolution of the baked textures to protect file sizes.

"Rendering was kind of drifting away in importance for games developers," said Discreet's Territory Manager for Animation, Nick Manning. "They used to say, 'I don't really care about rendering – we do it all in the engine now.' [This new functionality is] a good reason to look at rendering as an important feature of the product as they buy it off the shelf."

UPGRADED MODELLING TOOLS

max has long had strong polygon modelling tools. With the new release, these have been refined further. For instance, artists can now make changes to two mirrored objects by simply editing one of them.

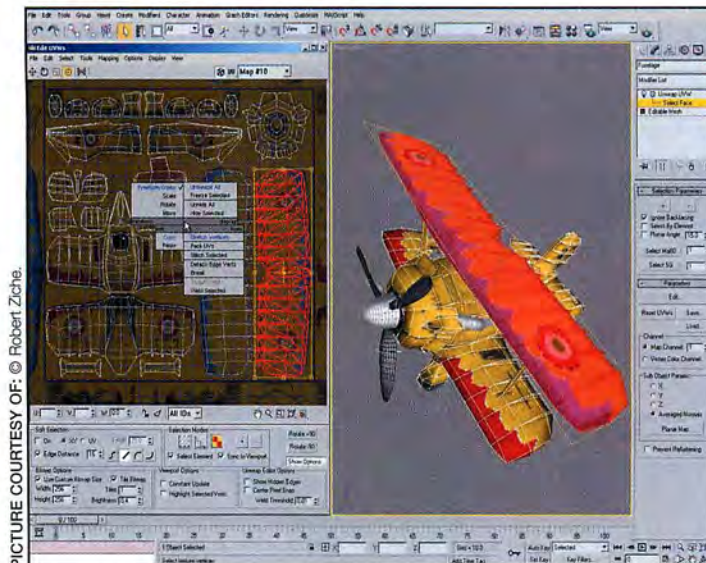
With this non-destructive modelling system, changes to an object can be previewed and gone back upon if necessary. There's now the ability to grow and shrink selections, support for shaded faces with soft selection, Quickslice, insert and remove

OPPOSITE PAGE, TOP
3ds max 5's new modelling tools allow for Shaded Faces on soft selections, and all polygon tools can be previewed before committing to changes.

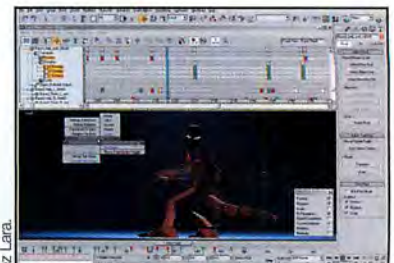
RIGHT The UV unwrap feature has been updated. Users can now snap to grids, view and stitch corresponding seams, and copy and paste UV coordinates from face to face.

FAR RIGHT, ABOVE
A pose-to-pose animation style is adopted in 3ds max 5. The new dope sheet can be used to slip and slide keys to get the timing of motion perfect.

FAR RIGHT, BELOW
Here's the new Spline IK addition in action. Animators can now control the bones by manipulating a curve instead of each individual bone. Flailing tails and serpentine motions become easier to simulate.

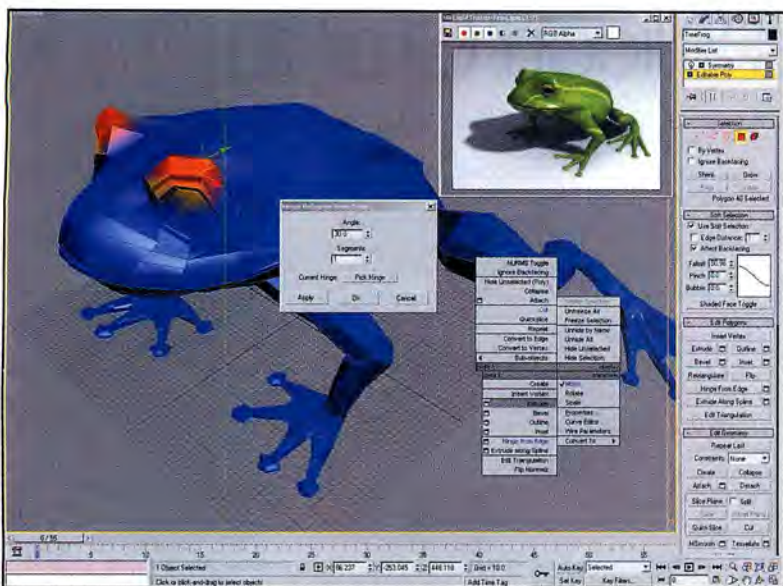


PICTURE COURTESY OF: © Robert Zsche.



PICTURE COURTESY OF: © Daniel Martinez Lara.





PICTURE COURTESY OF: © Fred Ruff.

vertices and edges, an improved Cut tool, and shapes can be extruded along a spline. According to Manning, many of the improvements here were inspired by the tools found in dedicated poly-modelling apps.

Meanwhile, texture mapping has become easier with the redesigned UV unwrap interface. A texture map can be unwrapped from an object and edited or painted, using a range of selection and texture layout tools. The aim is to give more control to the texture artist so they can create textures that work more predictably with their models.

3ds max 4 offered many enhancements in the animation department, and with version 5, once again, Discreet has been working on refining them to assist with

artists' workflows. Character node, for instance, enables animators to define a given group of objects as a character, while the Load/Save Animation function enables them to save keyframe animation data from a character that can then be reloaded and reassigned to another character entirely. In this respect max is moving in the direction of Maya and Softimage. Spline IK, animatable vertex colours, a vertex weight table, new f-curve editor, dope-sheet editor and weighted controllers are just a selection of the other changes in max's animation system.

EARLY REACTIONS POSITIVE

So far, user reaction has been positive. "From what I have seen of max 5 it seems just as intuitive and easy to use, while adding many new features, especially those aimed at character animation," said Evan Davies, Supervising Animator at Mill Film. "The Global

Illumination rendering has impressed me with its high quality and amazing speed."

One area that effects companies are now looking for in max is a new particle system. Alan Marques, Visual Effects Supervisor at Artem Digital praised the new renderer, character animation and overall workflow, but pointed to some new areas max could move into. "[Discreet] needs to develop a next-gen product with an all-new architecture, implement a robust, non-linear animation solution and a new particle system with volumetric and fluid rendering capabilities,

and integrate cloth and hair – preferably Joe Alter's software."

In addition to all the other changes, 3ds max 5 now comes with Havok's reactor plug-in,

previously priced at £450. Discreet claims that this addition alone almost justifies the price of the upgrade. The other good news on the plug-ins front is that plug-ins designed for version 4 will work straight away on version 5. There will be no need for third party plug-in programmers to recompile their wares, as happened with version 4.

With Discreet launching plasma two months ago, the only area of the market Discreet isn't hyping max for is Web design. While plasma comes with a reduced max toolset, its Flash and Shockwave 3D renderers are more powerful than the plug-in versions available for 3ds max. However, users can plug plasma itself into max to get the best of both worlds – max's modelling and animation tools, and plasma's powerful vector and Shockwave renderers.

■ We'll be reviewing 3ds max 5 in issue 29

on the web

Two Towers teaser
Set to arrive in cinemas alongside the latest Austin Powers escapade, the trailer for *The Lord Of The Rings: The Two Towers* has already found its way online. Movie-List has compiled a handy list of mirror sites featuring the QuickTime.
www.movie-list.com

Indie shorts
Filmwatcher is a superb new Web portal dedicated to short, independently-produced movies. Alongside live and traditionally animated content there's also a special section for computer generated works.
www.filmwatcher.com

All in the game
CGChat.com's Realtime 3D Video Game Artistry discussion board is now the largest online forum for graphically-minded game developers. In addition to contributions from industry pros and amateur artists, the forum also holds regular art competitions.
www.cgchat.com/board

Spaced out
Featuring work by Mill Film, Cinesite, CFC, MPC, R!OT and several others, the Eddie Murphy sci-fi comedy *Pluto Nash* is finally, nearly, almost with us. Originally expected to premiere over a year ago, it opens this August. Uh-oh.
www.plutonash.com

The Return of Nemo
Thirsting for more information on Pixar's upcoming aquatic CG movie *Finding Nemo*? ComingSoon.net has more plot information and a batch of fresh pictures.
www.comingsoon.net

USER REPORT
3DS MAX 5

3D World's own Pete Draper provides his first impressions

"With 3ds max 5, it seems that Discreet has once more listened to its user base, not merely giving max's existing features a facelift, but restructuring, reorganizing and adding a lot to the overall feature set.

"The animation enhancements are quite impressive. Character animators will love the SplineIK and advanced Character toolkit, while games artists will drool over the polygon modelling additions such as Extrude Along Spline within Edit Poly and the ability to preview your extrusions, chamfering, bevelling, etc. before applying. Progressive morphing has been introduced to the Morph modifier which allows you to add extra Morph 'steps' to the one morph channel: no more annoying eyelid-eye intersections when performing that blink!

"I also particularly liked the new UV tools, which enable the game artist to easily flatten and create automatic texture layouts to help paint textures, while the addition of max's Advanced Lighting can now make even the most basic scene attractive! Photometric and Area lights have been introduced, as has full radiosity and the facility to introduce skylight and HDRI Light Probes, enabling you to match the background environment exactly.

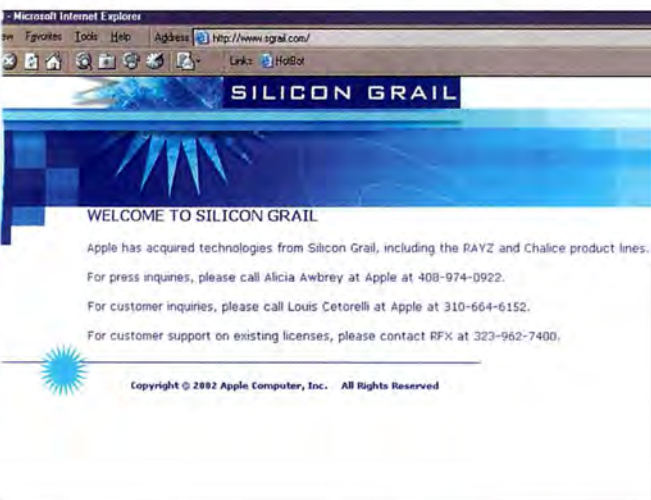
"With all the tons of new features I witnessed in max 5, I unfortunately don't have space here to write about them all. But I will mention that the main killer to the competition came at the end. Dynamics.

"Previously, Discreet had not decided to enhance its own dynamics set, but has now come back from this with the killer blow – the inclusion of reactor. Previously this was a third-party addition that you had to purchase separately. Not any more! A fully operational version of reactor is now included within the full asking price of max 5 without any feature retractions whatsoever. Numerous other new features such as Dope Sheet, Character Node, Bone Tools, Skin Pose, Improved X-Refs, Merge Animation, Mapping, Symmetry Modifier, Texture & Lighting Baking, Improved UI and workflow and God knows how many others, just enhance Discreet's position as a leader in a (currently) slightly unstable market. Personally, I'm chomping at the bit to get my hands on a copy...

Pete Draper is 3D World's very own 3ds max expert. You can read his regular 3ds max Q&A section on page 64.

Feeney sells Silicon Grail to Apple

Mac manufacturer strengthens compositing product line with latest in string of acquisitions



Apple has announced its acquisition of Silicon Grail from Oscar-winning founder Ray Feeney. This follows Apple's buyout last April of Focal Point Systems, home of *FilmLogic*, and the more recent purchase of *Shake* manufacturer Nothing Real. Feeney continues to run visual effects outfit RFX, which is to refocus now that product development is no longer required.

SILICON GRAIL'S COMPOSITING TECHNOLOGY WILL BE USED IN APPLE PRODUCTS

Silicon Grail's *Chalice* compositor was used in the production of movies such as *Men In Black*, *Deep Blue Sea*, *Prince Of Egypt*, *Fantasia 2000*, *Star Trek: Insurrection* and *Titanic*. RAYZ, its more advanced successor, was launched last year, and has since been used by teams working on *The Lord Of The Rings*, *Final Fantasy: The Spirits Within*, and *Collateral Damage*.

But while Apple has continued the *Shake* product line, it seems that it has other plans for Silicon

Grail's software. The company's official statement reads: "Apple has acquired technologies from Silicon Grail, a developer of compositing software for filmmakers and post-production professionals. These technologies include the RAYZ and *Chalice* product lines. Apple intends to use the acquired technologies in future products."

Along with the recent launch of its High Definition Cinema Display, the buyout of Silicon Grail further strengthens Apple's efforts to give the Mac a more prominent role in the compositing industry. The only gap in Apple's portfolio would now appear to an own-brand 3D package. CONTACT: www.apple.com.

Act-3D contest closes

Winning entries to be found on page 94 and the cover CD

At the time, we thought that we might have stumped you. As you may recall, back in issue 25 we challenged you to create a short, original interactive animation using the special version of *Quest3D*. Act-3D's multimedia authoring package, we provided on



RIGHT The winning entry in the first 3D World/Act-3D/NVIDIA Art Contest. *Q-Demo*, by Morten Schönau Fog, is a complete miniature videogame.

the cover CD. To us, it seemed like quite a hard task, particularly since it meant mastering an unfamiliar application in a matter of weeks – and then getting it to demonstrate the real-time shading capabilities of co-sponsor NVIDIA's high-end graphics cards.

But the results were astonishing. Entries ranged from character animations, to level designs, to – in one case – a complete mini-videogame. You can judge for yourselves by checking out the executables on our cover CD.

It made judging the contest extremely hard – but in the end, there had to be a winner, and that winner was Morten Schönau Fog of Leipzig, Germany, whose entry, *Q-Demo*, you can see on the left. Congratulations to Morten, and to everyone else who entered.

■ Check out the other winners on page 94.

CORRECTIONS TO ISSUE 26 AND 27

It has been pointed out to us that issue 27's review of *plasma*, Discreet's new Web 3D design package, gave the impression that *plasma* boasts more features than *3ds max*, when this is not, in fact, the case. The writer of the review, Pete Draper, is blameless: this was an error that crept in during the sub-editing process. The sub-editor responsible has now been shot. [Well, taken outside and given a stiff talking to – Ed.] And while we're in a mood for clarifications, Ruairi Robinson, whose work we profiled back in issue 26, has asked us to point out that many of the images that accompanied the article were from commercials done for his previous employer, Image Now, and not his current company, Pluto. Apologies for any confusion caused.

3D courses

London, England ESCAPE STUDIOS COURSES

New London-based training facility Escape Studios is offering production-skills led courses in 3D animation and 2D effects, created in collaboration with the heads of department

from such major UK facilities as Mill Film, The Moving Picture Company and the BBC.

The course curriculum is divided into beginners' and intermediate full-time classes, with part-time extension courses held in the evenings. The year is broken into four ten-week terms, with

evening courses lasting between five and ten weeks.

Software covered includes *Maya*, *XSI*, *Shake*, *Deep Paint*, *After Effects* and *Photoshop*, while course tutors are drawn from studios including Double Negative, Tippett Studio, Glassworks and Me Company.

Escape Studios is based at Westbourne Grove in Notting Hill, 30 minutes from Oxford Circus. Term starts in mid July.

CONTACT:
Escape Studios
T: +44 (0) 207 7524 7570
E: info@escapestudios.co.uk
W: www.escapestudios.co.uk



BBC triumphs at Annecy

Beeb's BAA Awards opener beats off Passion Pictures to scoop top spot at the prestigious French animation festival

BBC MediaArc's Birmingham-based animation studio 3D CharacterShop was the UK's major CG winner at this year's Annecy Festival in France. The event, which took place 8th June, saw the facility take home the prestigious International Animated Film Festival Award. It beat 17 other competing animations in the 'Commissioned Films' category to nab the award, including Passion Pictures' acclaimed Gorillaz (19-2000) and Coldplay (*Trouble*) promos.

The animation, which was coincidentally produced for the opening segment of the British Animation Awards back in March, is an 80-second sequence following the journey undertaken by a flock of sheep as they travel through snow and desert, over land and sea, passing landmarks and familiar sights along the way. Sporting a hybrid 2D/3D cartoon loom it was created with the aid of scanned textures gleaned from crayon, pen and ink drawings. A QuickTime segment of the

winning animation can be viewed at www.bbcmmediaarc.com.

Other winners at this year's festival included Adriaan Lokman's abstract 3D short *Barcode*, Mikhail Aldashin's 2D CG animation *Bookashky*, Finetake Production's live action and CG short *Home Road Movies*, and Bibo Films' 2D CG and pencil-drawn take on classic Japanese art, *Le Papillon*.

In the feature length category 2D/3D animated film *Mari Lyagi*, from Korean studio Siz Entertainment, scooped the Annecy 2002 Grand Prix, and the winner in the pilot category was 2D CG project *Yoko! Jakamoto! Toto! "The Fly"* from Collingwood O'Hare Entertainment. School and graduation winners included *Das Rad*, a puppet and 3D CG effort from Heidi Wittlinger, Chris Stenner, Arvid Uibel, and lavish 3D CG work *The Crossing Guard* from Josh West. For more information and a full list of winners, visit the official Annecy Festival website.

CONTACT: www.annecy.org

Trollhättan, Sweden

THREE-YEAR COURSE IN 3D ANIMATION AND ARTISTIC REPRESENTATION

The Swedish University of Trollhättan/Uddevalla and the Steneby School of Arts & Handicrafts have launched a new three-year program entitled '3D Animation And Artistic Expression'.

The course is the country's first fully fledged degree-level 3D animation program, and is based in the heart of western Sweden's film-making district. Fifteen places will be open to English-speaking international applicants.

CONTACT: Agneta Andren
T: +46 520 47 50 00
E: Agneta.Andren@htu.se

events

21-26 JULY SIGGRAPH 2002

Need we say more? If you're in the 3D 'biz' and you haven't heard of SIGGRAPH, the world's largest and possibly loudest graphics show, there's no hope for you. Although covering all areas of graphics, it's predominantly 3D-led and features top speakers, a massive exhibition, where all the majors launch their new projects, plus the chance to network like hell.

www.siggraph.org

27 JULY TO 2 AUGUST Rushes Soho Shorts Festival

It's too late to enter your work for the Rushes Soho Shorts Festival, but at least you can go along to watch. There are five categories of awards: Short Film, Newcomer, Animation, Music Video and Title Sequence and Idents. Winners are announced on 1 August and will have their work shown in a variety of Soho locations.

www.sohoshorts.com

2-6 OCTOBER

Ottawa Animation Festival With VEAFF being postponed until next year, the Ottawa International Animation Festival is Canada's largest animation event of 2002. This year's line-up is still sketchy, but over 1,000 people are expected to attend.

www.awn.com/ottawa

NEW

London 3ds max Users Group

This new non-profit-making outfit organises bi-monthly meetings where participants can share thoughts on work, industry news, techniques and technologies, as well as showcase work in film, new media, games & architecture.

www.london3d.com

BOOK REVIEW

LightWave 3D 7.0 Character Animation by Timothy Albee



In his latest book, *LightWave* animation guru Timothy Albee takes a step-by-step approach to rigging a character, with sections covering

skeleton placement, IK, weight maps and building animation controls. However, where other animation manuals stop, Albee continues, with chapters devoted to life drawing in 3D, basic and advanced animation concepts and planning scenes from start to finish.

Additional chapters give advanced tuition on creating digitgrade characters and even finding the character through method acting and meditation! Albee's accompanying CD also gives the reader access to all the character models, rigs and animations detailed in the text.

It's rare to see a manual that so neatly describes the technical, software-oriented side of the process, yet also thoroughly and practically explores the art and craft of animation and acting. Anyone who has ever animated in *LightWave* needs to read this book.

BENJAMIN SMITH

PUBLISHER **Wordware**
RRP **£43.50 (\$49.95)**

SCORE **10/10**

SOFTIMAGE PRICE CUTS CONFIRMED

Softimage has finally officially announced its latest price cuts. Regular readers will recall the company revealed that it was halving the price of its animation software exclusively to *3D World* back in issue 26.

The changes, which affect only *Softimage3D* and not the more expensive *XSI*, bring the price of the standard version of the package down to \$1,495, from \$2,995. Customers who later upgrade to *XSI* can obtain full trade-in credit for their old software.

As Softimage's European Business Manager, Richard Craig-McFeely, told *3D World* at the time, "We've only recently released version 4, and we still intend to continue development... [but] we now have the 3D solution for people who need the software at a lower price point."

CONTACT: www.softimage.com

SIGGRAPH 2002 PREVIEW

We round up the must-see firms at the giant computer graphics expo, held later this month

San Antonio, Texas, hosts this year's SIGGRAPH 2002 computer graphics exhibition and animation festival (21-26 July). The big news from Discreet is the announcement of its latest 3D modelling, animation and rendering software *3ds max 5* (see story on page 10). Meanwhile *Softimage* launches version 3 of *SoftimageXSI*, though the company is remaining tight-lipped on the enhancements to be unveiled. Alias|Wavefront will show its latest 'iteration' of *Maya* – a 4.5 or equivalent-type release – and will be demonstrating the new integrated fluids technology that has already impressed many animators, while Side Effects will unveil new additions to its *Houdini* family of 3D software, including *Houdini Halo*, a standalone compositing package, and *Houdini Escape*, a procedural character suite.

San Antonio is home to Luxology and NewTek, which will be showing *LightWave 7.5*, and perhaps giving a few hints on plans for its next-generation product line. Unfortunately pmG, creators of the *LightWave*-derived *project:messiah* character animation toolset, won't be attending SIGGRAPH as their priority is to finish development on their upcoming release, *messiah:studio*.

SAN ANTONIO
SIGGRAPH
2002

"SAN ANTONIO IS HOME TO NEWTEK, WHICH WILL BE SHOWING LIGHTWAVE 7.5"

It's not widely known that Exluna, developer of the popular Entropy rendering system, became a wholly owned subsidiary of NVIDIA in March. Exluna promises to reveal more at SIGGRAPH and believes users will then begin to appreciate the fruits of the strengthened relationship. Also in the rendering field, SplutterFish will demo *Brazil r/s* version 1.0 – the company's first commercial production renderer for *3ds max*, which is expected to ship soon. 2d3, whose *Boujou 2* is considered to be the best matchmover and automated tracker available by quite some way, will be previewing *Pixeldust*, an automated object-removal and background reconstruction application, due to launch soon. Kaydara will unveil *MotionBuilder 4.0*, the next generation of its real-time 3D character animation software previously known as *FILMBOX*.

On the content side, *Spider-Man* and *Stuart Little* may drop in, as may *Scooby-Doo*. ILM will hold a special session on 'Creating the Digital Cast of *Star Wars: Episode II*', Digital Domain will talk about how *Maya*, *Houdini* and custom tools and shaders were utilised in *The Time Machine*, and BUF Compagnie will reveal how they created the amazingly impossible camera shot that seemingly passes through floors, walls and objects in David Fincher film *Panic Room*.

EVENT: SIGGRAPH 2002

WEB: WWW.SIGGRAPH.ORG/S2002

Join 3D World at SIGGRAPH 2002! While we won't have a booth of our own this year, you can find copies of the magazine on the NaturalMotion stand (Stand 8089): previewed on the right.

trueSpace 6 announced

Customer feedback used to generate latest feature set for Caligari's popular modelling and animation package

t rueSpace6, the latest version of Caligari's 3D modelling, animation and rendering software, ships this month.

Caligari president Roman Ormandy reports that customer feedback was used to develop more than two dozen new features for the release and promises the results will impress veterans as well as new users.

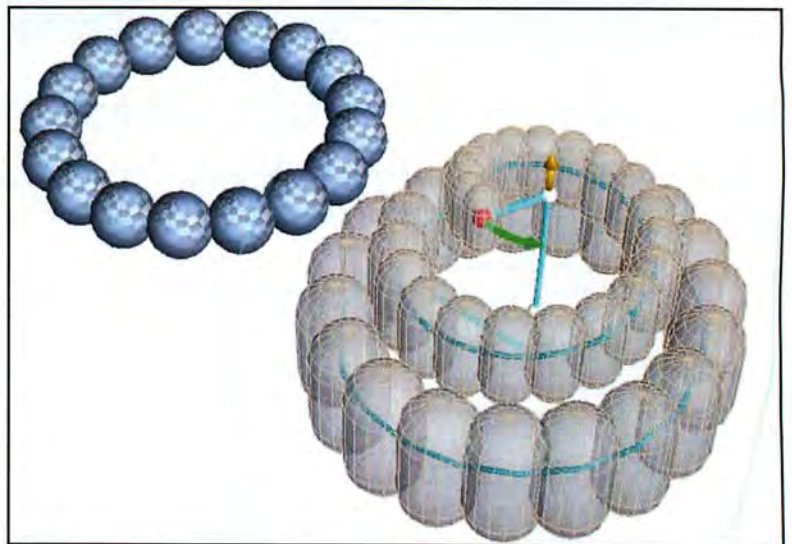
Included in the features is new layer functionality to make the creation of complex models easier, a series of array tools (below) that can be used for architectural structures

composed of repetitive objects, a UV editor for advanced texture editing and a scene editor that combines six *trueSpace* editors to give faster access and multiple methods of viewing and organising the structure of scenes.

A new Physics Module has been added, as well as the *LightWorks 6.6* rendering engine, *Facial Animator 1.2* and a large set of enhancements to the NURBS modelling and deformation tools.

trueSpace6 for Windows costs \$595, with updates available from \$129.

CONTACT: www.caligari.com



VUE D'ESPRIT TO SUPPORT NATIVE POSER ANIMATION

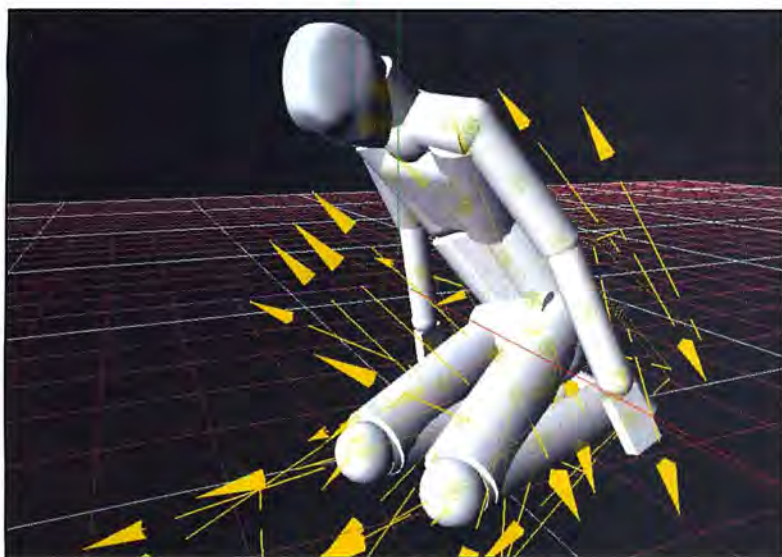
E-on Software and Curious Labs have struck a deal which will see Curious Labs' *Poser* native animation technology

incorporated into e-on's *Vue d'Esprit* landscape rendering software. The rendering and animation tool *Vue d'Esprit 4*, which is used to generate and animate natural-looking 3D scenery, will be able to host complex 3D animated humans and characters created in *Poser 4*. Currently *Vue d'Esprit 4* for Windows allows still *Poser* scenes to be imported, but the new agreement means fully animated

Poser scenes can now be integrated. Fully animated, as well as still import, versions for *Vue d'Esprit* running on Mac OS X are currently in development.

E-on Software president Nicholas Phelps said: "We believe the *Vue* user community will be thrilled with seeing their *Poser* creations move fluidly through a *Vue d'Esprit* scene."

The new *Poser*-based technology will be demonstrated for the first time at the company's stand at SIGGRAPH 2002. CONTACT: www.e-onsoftware.com, www.curiouslabs.com



NaturalMotion

SIGGRAPH 2002 The 'Holy Grail' of animation will give characters brains and let them behave for themselves.

New academic spin-off company NaturalMotion plans to launch its Active Character Technology (ACT) animation engine at SIGGRAPH, and announce and demo its first product – an animation tool, yet to be officially named, which is based on the concept of virtual motion capture.

Emerging from academic research on the control of human and animal body motions, the company claims the technology, which has been in development for almost three years, has the potential to revolutionise the way in which character animation is carried out in the games, film, special effects and visual simulation industries. Given a task, characters built in its software will produce their own body motion and interact naturally with other characters and their environment.

A physical, biomechanically realistic model of a character (human or animal) is first built, and then an appropriate brain structure (usually a neural network) implanted, and optimisation techniques (such as artificial evolution) are used to create the desired behaviour such as walking or running.

NaturalMotion's co-founder and CEO, Torsten Reil, said: "Active Character Technology aims to deliver the 'Holy Grail' of character animation. Characters are fully physically simulated and actively controlled by artificial intelligence. This is different from

current animation technologies, which are fundamentally graphics-based. With Active Character Technology, what you see on the screen is not just a computer graphic of the character, it is the character."

A feature with the working title Strobe Preview that enables animators to intuitively control the physical behaviour of the character will be showcased at SIGGRAPH. The technology, which initially concentrates on action moves but is to be refined for more sophisticated motion in the future, offers significant productivity gains compared with traditional animation techniques, since there is no need to manually animate the behaviour or use expensive motion-capture data.

NaturalMotion's future development plans include "taking the engine out of the animation tool and directly into the game" to create a runtime engine. "It will allow people for the first time in a game to have completely interactive characters," explains Reil. "You will actually have a real-time, realistic simulation, which opens up a completely new dimension for gameplay and interactivity."

Targeting the professional animation market, NaturalMotion's first animation tool is scheduled to ship at the end of this year. Founded in November 2001, the company is a spin-off from Oxford University's Zoology department.

CONTACT: www.naturalmotion.com

new products

Maya Resources

Alias|Wavefront has released its first Resource Tool for Maya: *Maya Resources 2D* and *3D Procedural Texture Plug-ins*. The CD costs \$49 and provides users of the *Maya* renderer with nine new plug-ins and 57 sample textures. www.aliaswavefront.com

AfterEffects plug-ins

Adobe has announced a new Plug-In Power Pack for *After Effects 5.5*, which has 16 new effects plus a new Windows Media output module. It supports Mac OS X and its plug-ins include Turbulent Displacement, 3D Glasses, Calculations and Magnify. www.adobe.co.uk

NXN alienbrain

Digital management system developer NXN Software has released the *NXN alienbrain Starter Pack* for small development teams. The package includes version control for media assets and source code, project management and workflow. www.nxn-software.com

dvMatte for AfterEffects

A new blue/greenscreen keyer for Adobe *AfterEffects* and *Premiere* called *dvMatte* has been released by dvGarage. It's available by digital download (at about 2.5MB) for \$79. www.dvGarage.com

combustion 2 service pack

Discreet has released a free service pack for its effects system *combustion 2* that features a revision of the core software to improve product stability and performance. A detailed list of resolved issues comes in the notes provided. www.discreet.com

MUSE-LITE

New real-time online 3D platform will change the way we chat...

After more than three years in the making, Muse Communications has released its *Muse* online 3D software platform.

According to the company, it will radically change the way people perceive online media and communicate over the Internet. The open architecture allows developers to "create immersive 3D environments that unite video, animation, audio, 3D models, Web media, and networking." The graphics engine permits the creation of broadband content, while multi-user capabilities offer shared real-time browsing, commerce and viewing.

Muse comes in two versions: the free, downloadable PC product, *Muse-Lite*, described as operating like a 'super browser' – a 3D environment where users meet and play movies and music. *Muse-Prime*, a premium version slated for this autumn, will provide more content.

Download the *Muse* Development Kit (MDK) to kick-start *Muse* content. CONTACT: www.musecorp.com

INTERACTIVE STORYBOARD

New half-point iteration for the popular Maya storyboarding app.

Australian-based Animation Studios has released v1.5 of its *InterActiveStoryboard*, an application that works within *Maya* and allows you to create – unsurprisingly – interactive storyboards. Aimed at long-form productions, IASB is a project management tool, linking animators, composers, editors and producers.

As well as keeping track of *Maya* assets, cameras and timings for each shot, IASB also exports Edit Decision Lists and automatically loads images onto a PAR edit system; exports files for compositing in *Shake*; sends files to off-site animators via FTP; and also exports project data as *Excel* spreadsheets. It can also be used to add comments and passes to shots, apply MEL scripts, batch render multiple sequences, and submit *Maya/Shake* jobs to *Smedge*.

The latest release is priced at \$195.00AU, with 'unlimited' licenses at \$500.00AU. For a full feature list and a free evaluation version, visit the company's Web site. CONTACT: www.animationstudios.com.au

Freeze frames for 007

FrameStore CFC's Bond trailer is a trip through fire and ice.

FrameStore CFC's trailer doesn't give much away about the actual film, but harks back to the cool, stylised '60s Bond intros



The 007 publicity machine is already up and running in readiness for the November launch of *Die Another Day*, with the teaser trailer first screened alongside *Star Wars Episode 2*. Created by Framestore CFC, it eschews preview footage in favour of a stylised sequence more reminiscent of the classic Bond credit sequences. Impressively, it was created in just six weeks from first pitch to completed post work.

The 60-second spot begins with a pan across what at first appears to be a moonlit vista of dunes, but is soon revealed as a landscape composed of naked female bodies. A focus shift then takes place, placing the scene behind a refractive lens of ice, which in turn reveals itself to be the barrel of an ice-sculpted pistol – based on the Walther PPK. The trigger pulls back, and an orange fireball

lights the inside of the barrel, travelling forward until it emerges as a silver bullet. The ice gun shatters as the bullets speeds out, morphing into Bond's Aston Martin.

For the field of girls, just one model was actually used, with 50 layers built up with *inferno*, and sky added courtesy of *Photoshop*. For the gun, models were built in both Perspex and ice, with the bullet glow shot live and enhanced in post.

A shot for the spot's climax has 007 carved in an ice block. The block then shatters to reveal the ice gun barrel again, this time with the film title etched along its length. The original block was built with *Photoshop* and using real textures from a real ice block, with the shatter effect created in *Maya*. The trailer can be viewed at www.apple.com/trailers/mgm/die_another_day.

CONTACT: www.cfc.co.uk



Sum Of All Fears

Rhythm & Hues creates 140 FX shots for Tom Clancy flick

Still best known for its impressive menagerie of CG animals, its creations starring in such movies as *Babe*, *Cats And Dogs* and the recent number one hit *Scooby-Doo*, Rhythm & Hues' latest movie project taps into its pyrotechnic talents. The studio has just completed 140 effects shots for *The Sum Of All Fears*, the fourth in Tom Clancy's Jack Ryan series (and the first to star Ben Affleck), primarily making use of *Houdini*'s particle effects, custom scripts, and motion-on-motion compositing.

The most spectacular effect, which provides the film's first act climax, is a sequence depicting the bloom and accompanying fallout of a mushroom cloud after a nuclear bomb is detonated in Chechnya. "*Houdini* was a key application for us in lighting each CG element and in developing dynamics solutions to give our volumetric shots believable behaviour, interaction and detail, especially during the nuclear bomb sequence," says Visual Effects Supervisor Derek Spears. "For the all-CG non-volumetric work, we rendered exclusively in *Mantra*, using large light arrays to simulate radiosity or writing custom shaders to solve some of our more difficult visual problems."

2D/3D sequences also posed a number of challenges, particularly one in which an aircraft carrier is engulfed by flames. The pyro elements were shot live and the vessel tracked in 3D. *Houdini*'s Channel Operators were then applied to detect all the locations where the fire needed to generate volumetric CG smoke. A custom tool was then written to translate between Rhythm & Hues' own in-house animation software and *Houdini*, providing all the necessary 2D space coordinates ready for compositing and additional blending by the artists.

The Sum Of All Fears is in cinemas in the USA now. It premieres in UK cinemas this September.

CONTACT: www.rhythm.com



Might of a sprite

Glassworks goblin lays waste to eatery for TV ad

Sprite has always one of the more unpredictable drinks brands, and its latest ad campaign ups the weird factor even further through some winning CG from Soho's Glassworks studio. The spot features a man eating a kebab and requesting a Sprite with which to wash it down. Cue surreal misunderstanding, with the café supplying a mischievous goblin-type sprite rather than the liquid variety. The creature proceeds to cause havoc, dipping its finger in a bottle of chilli sauce, licking its finger, and then squirming as it burns its mouth.

The goblin was first sculpted at Henson's Creature Shop, turned into a full latex puppet and scanned at Viewpoint. High-res digital shots of the latex model were then taken and applied to the wireframe for texturing. "The Henson's puppet was used on the shoot as a positioning and lighting reference," explains Glassworks head of 3D Alistair Hearsum. "The facial expressions, movement and level of detail we could achieve in CG allowed us to further develop the character."

In all, nine weeks were spent on the 3D character. The animation team used *SoftimageXSI*, utilising the help of a mime artist to create the movement and expressions of the creature. Compositing was handled with *inferno*.

CONTACT: www.glassworks.co.uk

STAR WARS II

Softimage3D made the CG a runaway success, says ILM

While fans continue to argue over the merits of its script and acting, the special effects work in *Star Wars Episode II: Attack Of The Clones* undoubtedly impress one and all. Undoubtedly Industrial Light & Magic's most ambitious project to date, the latest sci-fi saga boasts an incredible 80 different CG creatures, not least the Jedi master Yoda.

The majority of the work was, surprisingly, created using *Softimage3D*, *Softimage*'s older 3D animation app. But then, this package has been the mainstay of ILM's character work for the last eight years, from *Jurassic Park* right through to *The Mummy Returns*.

"The system handled everything we threw at it for *Star Wars Episode I: The Phantom Menace*, so we knew it would be right for *Episode II*," says Technical Animation Supervisor, James Tooley.

The studio upgraded to version 4.0 midway through production, enabling a switch over from IRIX to faster Linux-based workstations. ILM reckons the switch yielded an eightfold increase in workflow, with animators thereafter able to play scenes back in real-time.

Another change is likely to follow, with the studio currently evaluating the viability of *Softimage3D*'s successor, *SoftimageXSI*. CONTACT: www.starwars.com




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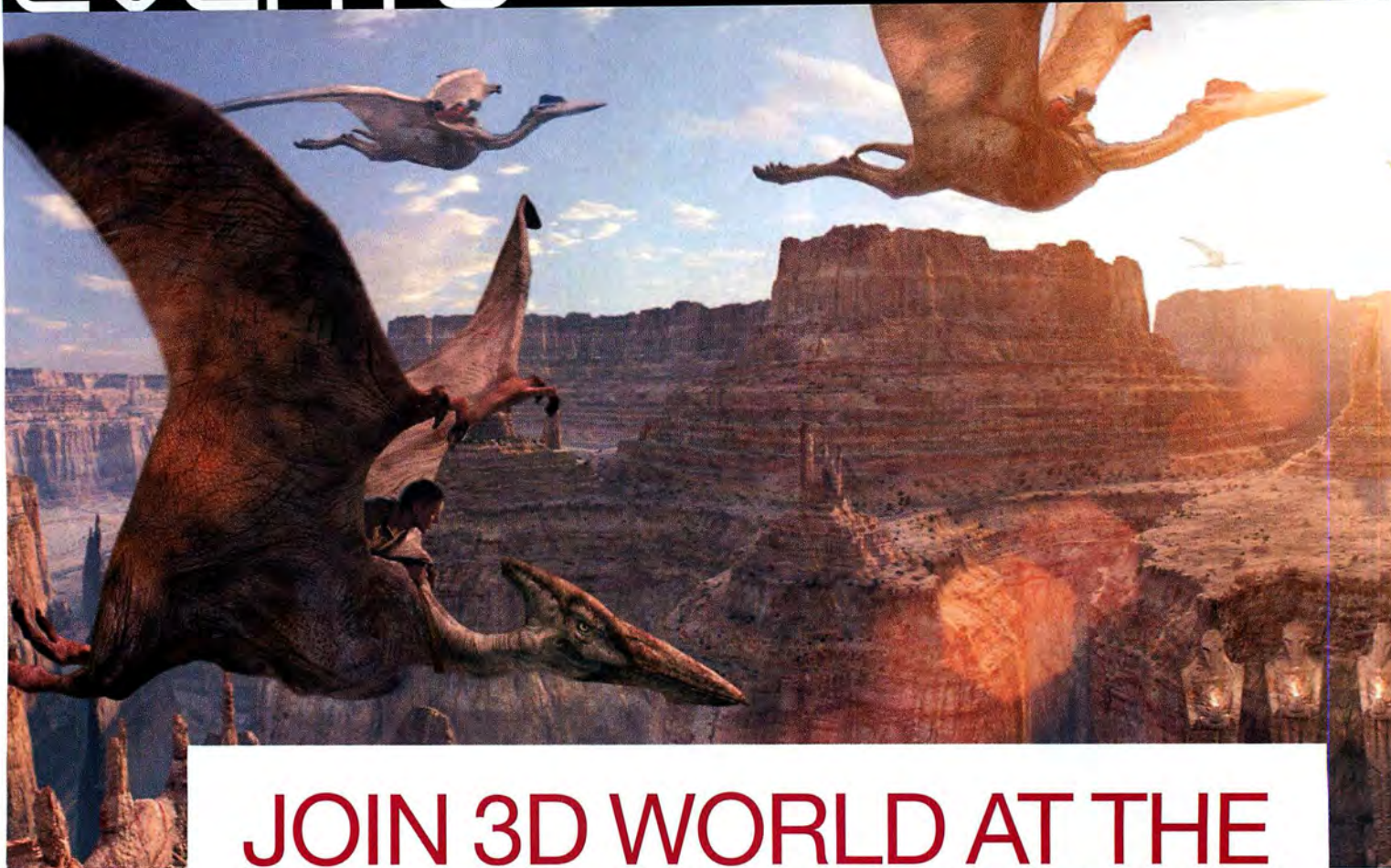
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EVENTS



ABOVE High-end 3D projects and effects, such as FrameStore CFC's work on *Dinotopia*, will be a key topic of discussion in the 3D Festival Conference: a big part of this year's Digital Arts Festival.

JOIN 3D WORLD AT THE DIGITAL ARTS FESTIVAL

The Digital Arts Festival 2002, held at London Olympia from 9-11 October, features a host of top speakers from the worlds of 3D and design. We'll be there – and you should be, too!

The build-up to the Digital Arts Festival 2002, continues, with the unveiling of a list of top-name speakers who will be attending. A major part of the event will be the 3D Festival – a special high-end conference dedicated to 3D users – and it's within this area of the show that *3D World* readers will find all the biggest personalities.

FrameStore's Mike Milne will be chairing one day's worth of sessions within the 3D Festival, as will DreamWorks' European representative Shelley Page. Laurence Plotkin, head of recruitment at Digital Domain in LA, is to speak at the event, as are Paul Franklin, the head of 3D at Soho company Double Negative, and Will Byles, formerly of Aardman and now head of 3D at Soho 601. In all, over 50 conference sessions are planned.

But while the conference will be the main source of 3D content within the Digital Arts Festival, plenty more activity will be taking

place on other stages around the event. Even David Carson, perhaps the world's best-known graphic designer, is to fly over from his base in New York to speak on the Computer Arts stage.

The DA Festival is successor to Computer Arts Live, staged by our sister magazine of the same name. As with last year's event, Designers Republic founder Ian Anderson will be live on stage in discussion with another figure from the creative industry. This proved to be the most popular session of Computer Arts Live '01, and we recommend that fans of the leading British design outfit book early to ensure tickets.

DIGITAL ARTS FESTIVAL: DAY AND NIGHT

And while each day of the festival celebrates the creation of digital art, 3D effects and Web sites, the evenings aren't empty either. The night of 10 October, for example, will see BAFTA hold its prestigious Interactive Awards ceremony. With prizes in 16 categories covering games, Internet and multimedia, the Interactive BAFTAs will tie in perfectly with the rest of

CRITICAL INFORMATION

DATE 9-11 OCTOBER 2002

LOCATION OLYMPIA, LONDON

WEB ADDRESS WWW.DAFESTIVAL.COM

#019



the show's attractions. If you wish to nominate someone's work for an award, visit BAFTA's Web site at www.bafta.org.

BIG-NAME SPONSORS

Adobe, one of the biggest names in creative software, is to be a main sponsor of the DA Festival. The company, responsible for such products such as *Photoshop*, *After Effects* and *Premiere*, will be on hand to show users tricks on its applications, in addition to unveiling the latest versions.

Elsewhere on the exhibition floor, you'll be able to check out some of the world's hottest new media talents on the Cre@teOnline Stage, and catch yet more tips on creating 3D graphics – from both companies and other creatives – on the 3D World Stage. The latest products will be being demonstrated in booths all around the exhibition, with specially dedicated villages for Graphic Design, Web Design, 3D, Digital Video and Digital Audio. Prize draws are being arranged for visitors to win new creative hardware and software, and there will be the opportunity to get the latest copies of essential magazines – including *3D World*, *Computer Arts*, *Cre@teOnline* and *Mac Format* – and take advantage of the special festival subscription deals.

Watch this space for further announcements on who will be speaking at the event. The 3D Festival's Advisory Board currently includes 33 leading industry figures, including Shelley Page, Mike Milne, Dave Throssell of Mill TV, Passion Pictures founder Andrew Ruhemann and Alex Morris, the head of CGI at Hayes Davidson. ■

ABOVE *Titanic* – the film that made Digital Domain famous. Digital Domain Head of Recruitment Laurence Plotkin will be speaking at the 3D Festival Conference.

DA Digital Arts Festival
London 2002

FAMOUS FACES AT THE FESTIVAL

You want big names? We've got them. Here are just a few of the people who'll be making sure the festival goes with a bang



MIKE MILNE
FRAMESTORE CFC

With projects like *Walking with Beasts* under his belt, FrameStore's Director of Animation Mike Milne will be chairing a full day of sessions at the festival conference.

LAURENCE PLOTKIN
DIGITAL DOMAIN

Laurence Plotkin, Digital Domain's Head of Recruitment, will be speaking at the conference. A must for anyone considering changing jobs within the 3D industry!



PAUL FRANKLIN
DOUBLE NEGATIVE

"The organisers have brought together the very best people in their respective fields," says Double Negative's Head of CG and conference speaker Paul Franklin.



SHELLEY PAGE
DREAMWORKS SKG

DreamWorks SKG's European representative, the legendary Shelley Page, is another of the leading industry figures chairing a day of conference sessions.



DAVE THROSSSELL
THE MILL

Dave Throssell, Head of Mill TV, is one of the 33 Advisory Board members who will be helping to ensure that the festival conference contains only top-notch content.



ADVANCE TICKETS

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VIEWPOINT

Dave Throssell

TITLE HEAD OF MILL TV
COMPANY THE MILL
WEB WWW.MILL.CO.UK

Who says that ads manipulate your psyche? According to Dave Throssell, The Mill's commercials-supremo-turned-TV-boss, the programs in between are *far* sneakier...

After 20 years in front of the screen running The Mill's commercial wing, I finally gave it all up last September to concentrate full time on running our new company, Mill TV. And it's been an interesting few months, not least noting the differences between how commercials and long-format projects are created. While the same computer animators may be working in both areas, subtle – and not-so-subtle – differences have already emerged.

On a day-to-day basis, the planning takes a bit of getting used to. With commercials, there was only every one speed – flat out and finish it by the weekend. You start, you work all night and then it's over: scheduling never entered the equation. This long-format stuff is far sneakier. You have six months to finish it, so why work late in the first week? Why not discuss the project with some other people, and then settle down to some R&D in the library? Five-and-a-half months later, you start to realise why long-format companies have such large production departments solely dedicated to scheduling men, women and materials. On an ad which might run for a few days, a couple of all-nighters effectively doubles the available resources. But at this time scale, the entire project is won or lost before it starts.

The biggest and most pleasant change is that I'm learning something every time I work. Nine times out of ten, on a commercial you can't even remember what product you're advertising – and you certainly don't fill your head with new information. But thanks to the projects I've been involved with to date, I've become an expert on Pyramids, DNA, The Russo-Japanese War of 1905 and The Nazis. It makes a change to have the moral high ground with the film people too; while they spend their time creating effects for wizards and spies, we can look down our noses and mutter about our projects being of 'real educational value'.

Not that this is the real motivation behind working on such long-format projects. One luxury that we

Formerly head of The Mill's ad department, Dave Throssell recently switched over to run the company's new TV wing. Phrases like 'prior planning', 'library research' and 'non-working weekend' have now been added to his vocabulary...

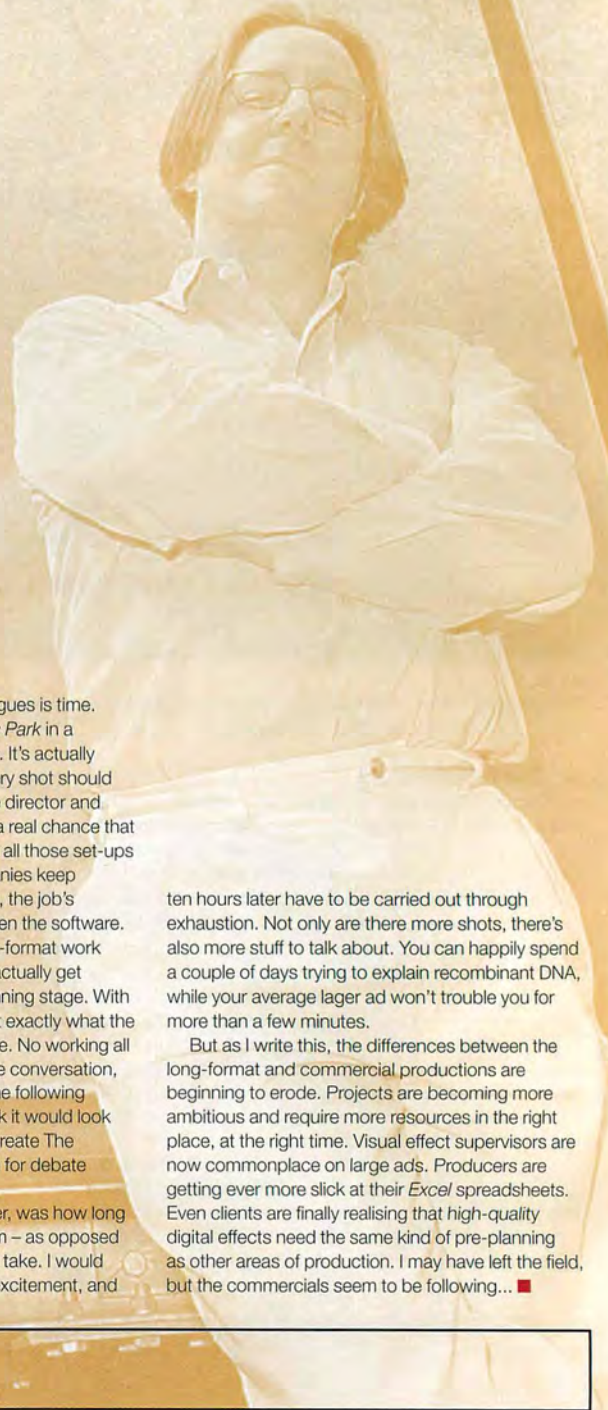
have in common with our film colleagues is time. Instead of trying to recreate *Jurassic Park* in a weekend, we can sit down and plan. It's actually someone's job to work out what every shot should look like beforehand and go with the director and make sure it all works. Plus, there's a real chance that with a film or TV project you can use all those set-ups and scripts that the software companies keep banging on about. On a commercial, the job's already over by the time you've written the software.

Another benefit is that much long-format work is of a documentary nature, so you actually get something to refer to during the planning stage. With TV productions, researchers find out exactly what the models you'll be creating will look like. No working all night to some half-garbled telephone conversation, only to have the creatives come in the following morning and announce, "I didn't think it would look like that." If someone wants you to create The Colosseum, there's not a lot of room for debate about how it should look.

One thing I didn't expect, however, was how long a meeting about a one-hour program – as opposed to a 30-second commercial – would take. I would bounce into a meeting in a state of excitement, and

ten hours later have to be carried out through exhaustion. Not only are there more shots, there's also more stuff to talk about. You can happily spend a couple of days trying to explain recombinant DNA, while your average lager ad won't trouble you for more than a few minutes.

But as I write this, the differences between the long-format and commercial productions are beginning to erode. Projects are becoming more ambitious and require more resources in the right place, at the right time. Visual effect supervisors are now commonplace on large ads. Producers are getting ever more slick at their *Excel* spreadsheets. Even clients are finally realising that high-quality digital effects need the same kind of pre-planning as other areas of production. I may have left the field, but the commercials seem to be following... ■



"SOFTIMAGE®|XSI™ and mental ray was absolutely wonderful: hair, 3 huge area lights, Final Gathering & motion blur. It coped with it admirably."

Alastair Hearsam, Head of 3D, Glassworks.



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SPECIAL ISSUE
TOON
INTO 3D
MIXING 2D AND 3D
TECHNIQUES

INSIDE STORY



3D INTO 2D DOES GO...

Twenty years ago, CG was a novelty trick. Today, it seems close to usurping traditional animation. To kick off our special 'Toon into 3D' issue, we take a look at the history of integrated 2D and 3D film-making and ask: 'How did we come so far, so fast?'

BY ANDREW OSMOND AND JIM THACKER



Behind the clock-face of Big Ben, it was showdown time. Sleuth rodent Basil faced his adversary, the Moriarty-alike Rattigan, across a whirring landscape of cogs and gears. The kids watching were too engrossed to notice, but a few adults might have noticed the precision of the clockwork, the exactitude of the movements. An even smaller number of cognoscenti knew that Big Ben's innards were computer animated. As a perceptive *Sunday Times* review put it, the scene 'ranked as one of the high points of animation' – up to that point in time, at least.

"3D IS COST-EFFECTIVE, BUT YOU SACRIFICE SOME AESTHETIC CONTROL AND LOSE OUT ON A HUGE ARCHIVE OF EXPERIENCE IN THE 2D TRADITION. 2D ANIMATION HAS SKILLS THAT THE 3D COMMUNITY IS STILL DEVELOPING."

Chris Knott, PASSION PICTURES

Basil the Great Mouse Detective was released by Disney in 1986. It was a time of beginnings. That year, a group of LucasFilm workers led by John Lasseter set up their studio Pixar and animated a desk lamp called Luxo Jr. Over the next decade, the infant technology represented in Luxo and Basil's Big Ben would grow and evolve, in conjunction and competition with old-style 2D.

HISTORY OF THE THIRD DIMENSION

What does 2D mean for 3D? One of the most respected figures in traditional 2D is Richard Williams, animation director of *Who Framed Roger Rabbit*, who now conducts masterclasses in studios round the world. "My first class, effectively a test-run, was in Vancouver. It included 13 guys from *Toy Story*, who'd just finished their film. I told them I was teaching traditional principles, and didn't know beans about computers. They said that nearly everything I was doing was relevant to them. It's strange... Computer animation characters work like high-tech marionettes, effectively extensions of puppetry, whereas old animation characters comes from drawings. Yet both types share basic needs and problems."

And what did Williams think of his student's work? "At the beginning of CG, everything looked like cafeteria chairs; it was all effects with light, reflections and textures impossible to do in drawings. Now, though... In the scene in the first *Toy Story* where Buzz sees himself cloned hundreds of times in the TV advert, I thought his expressions were becoming more subtle than any drawn work." Williams stresses, though, that many top 3D stars, including Pixar's John Lasseter, started in 2D animation. "People with backgrounds in drawn animation moved into computers. In this way, traditional knowledge came into the new media, moving CG animation past the mechanical."

CG may be a new technology, but the questions and dilemmas surrounding it are familiar from 2D. Early animators wrestled with the challenges of the new medium; how to make cartoons more vivid, more spectacular, more real. They strained for the real-world accuracy that *Toy Story* and its successors made commonplace. For example, during production of *Snow White* (1937), the artists went to the length of experimenting to find where a man's shadow would fall at 3pm. Today, a Pixar animator could find out with two clicks of a mouse.

Not that early 2D was entirely 2D. More than 60 years ago, Uncle Walt was simulating 3D via the multiplane camera. Looking like a stack of shelves, this device held several levels of an image, with backgrounds and overlays painted on



ABOVE Dancing to the beat of fusion: giant studios such as DreamWorks, Warner Bros and Disney (whose film *The Hunchback of Notre Dame* is pictured above) are all turning to integrated techniques in the battle for supremacy in today's cut-throat animation market.

MAIN PIC Hybrid 2D/3D work has even spread onto MTV. Olly Reid put together Robbie Williams' *Let Love Be Your Energy* video using *LightWave*, *messiah* – and, crucially, the Big Eyes Small Mouth cel-shading plug-in.



**FIRST PERSON
 CHRIS KNOTT**

Passion Pictures' Director of Visual Effects gives his views on hybrid animation

Chris Knott has worked in animation for over 30 years. He recently oversaw the Gorillaz video and the BBC World Cupidents, which both combine 2D and 3D.

Is it more cost-effective today to model a movie in 3D and add the cel-look as a post-production effect?

"It's an option. When we animated Gorillaz in Clint Eastwood, the band was 2D in a 3D graveyard. By 2000's jeep vid, they were 3D in some shots, when they weren't close-up. When Gorillaz performed at the Brit Awards, they were entirely 3D, projected onto dot matrix screens. We couldn't have animated four three-and-a-half-minute performances, plus a roving camera, in the six weeks we had. That's a classic example of 3D's strength over 2D.

"When we did the World Cup trailers, the humans had to be caricatured, with lots of finesse in the shading. Cel-shading is a slightly black art; it's an automated procedure and you can't be sure it'll look just how you want. We had more control doing them 2D, in a 3D environment."

Has the solid, flat colour look run its course for animation?

Absolutely not, in my opinion. It's a style thing. Animators worked with structural mattes and fake airbrushing for years, and digitally combined textures build on that. But it depends what you want. Films like Mulan (based on Chinese art) and Iron Giant deliberately go for a flat look."

Is there still a place for 2D animation?

3D is more cost-effective, but you sacrifice some aesthetic control and lose out on a huge archive of experience in the 2D tradition. 2D animation has long-established skills and ways of working that the 3D community is still developing. A 3D film like Pixar's For the Birds uses 2D tricks. Look at the 'impossible' way the birds shoot off the telephone wire at the end. It's classic 2D timing."

separate glass sheets. All but the last sheet would have a hole through which a camera lens probed. As the camera moved in, one plane would be in focus and the others out, giving a convincing illusion of depth. The most famous multiplane shot was at the start of *Pinocchio* (1940), where the camera moves over village rooftops. This used 12 planes and cost a then-massive \$25,000.

Another early technique raised issues central to 2D/3D hybrids. Rotoscoping was invented by Max Fleischer of *Betty Boop* fame and used extensively in *Snow White* for the heroine and her prince. Because humans were hard to draw, animators traced live-action film of real actors, modifying the image to disguise its origins. Or at least that was the idea. In practice, rotoscope had the same drawback as much modern CG; it was tough to blend with a drawing. The best cartoon characters, like *Snow White's* dwarves, were caricatures, with idiosyncratic, creatively-observed moves, weight and mass. Live-action tracings looked 'real' but often lifeless, standing among their toon contemporaries like so many sore thumbs. Only the best, most sensitive animators could use the method effectively.

2D OR NOT 2D?

Dreamworks' *Spirit: Stallion Of The Cimarron* represents a new level of convergence between computer and hand-drawn animation. But what was the first 2D/3D animated film? One candidate is Disney's *Tron*, though given the subject matter,

"PEOPLE WITH BACKGROUNDS IN HAND ANIMATION MOVED INTO COMPUTERS. IN THIS WAY, TRADITIONAL KNOWLEDGE CAME INTO THE NEW MEDIA, MOVING CG ANIMATION PAST THE MECHANICAL." Richard Williams, animation director, WHO FRAMED ROGER RABBIT

it's ironic that most of the effects were actually hand-drawn – 53 minutes' worth of 2D, against 15 of CG. The live-action was photographed in monochrome, and the frames blown up to make transparencies. These were backlit (normal animation is lit from the front). Layers of painted mattes exposed parts of the transparencies to different colours of light. The result looked – to '80s eyes at least – like something processed in a computer, even if very little was.



A few CG effects figured in Disney's forgotten toon *Black Cauldron* (1985). Big Ben in *Basil* followed, before CG was used more widely in the cat-and-dog adventure *Oliver And Company* (1988). Nearly 11 minutes of imagery was computer-assisted, mainly vehicles and props. The largely 3D finale, with a limousine chasing a trike through a subway and over a CG Brooklyn Bridge, looks dated but lively. *Oliver* was the first film to use computer animators, rather than animators working through a computer graphics engineer.

The Rescuers Down Under (1990) used the freer movement and angles of CG environments to enhance several dynamic action scenes, as well as an opening 'zoom' shot where the camera hurtles over the Aussie landscape. It was also the first

Disney film where each frame was scanned and largely painted in the CAPS system, which took over compositing and effects. But it was *Beauty And The Beast* (1991) that

forced 2D/3D hybrids on the mainstream consciousness, with its bravura 3D ballroom and camera swoops. With *Beauty*, CG 'officially' arrived in cartoon movies, much as the same year's *Terminator 2* confirmed its presence in effects blockbusters.

The flying carpet in *Aladdin* (1992) was traditionally animated but computer texture mapped to sport an elaborate Persian design. A tiger-head cave-mouth was also 3D, as was much of a madcap action sequence where Aladdin flies

through caverns chased by molten lava. Like many later 3D sequences, this was visibly inspired by the rollercoaster set-pieces in *Indiana Jones*, reflecting how Disney perceived its target audience.

The mega-hit *The Lion King* (1994) also went for spectacle. A wildebeest stampede included a thousand animals in one shot. First, the wildebeest run cycles were animated traditionally, then

given to computer animators who reinterpreted the creatures as 3D models. (The same method was used to create the herd scenes in *Spirit*.) After the animals were replicated *en masse*, an avoidance programme ensured that if two creatures got too close, they would turn, run till they got too near something else, turn again and so on.

Disney's next 2D/3D films were a mixed bag, especially contrasted with the triumph of *Toy Story* (1995). *The Hunchback of Notre Dame* (1996) adapted the *Lion King* program to generate Paris crowds, but humans were harder to replicate convincingly. 1997's *Hercules* saw the Greek hero fighting a head-growing CG Hydra, built in over 100 SGI workstations and animated like a Pixar-style virtual puppet. The monster drew flak for standing out too much, but didn't spoil an exciting battle. Next year, the Chinese yarn *Mulan* used further CG crowds, plus a stampede of barbarians down a snowy mountain.

BREAKING NEW GROUND

Things got interesting in 1999, when three very different 2D/3D films were released. In *Iron Giant*, released by Warner Brothers, the main CG element was the title robot. Director Brad Bird's intention was to honour classic 1940s animation, taking advantage of CG's solidity while 'devolving' its perfection. The robot was integrated by animating some CG on twos (i.e 12 distinct frames a second). It also had a specially programmed variable line 'wobble' to make it look more hand-drawn. The robot looks different from the Earth settings and characters, but not too different; from an alien planet rather than a parallel universe.

DreamWorks' *Prince of Egypt* kicked off with an impressive 2D/3D chariot race. The horses and humans were 2D, the chariots and sets 3D, and the elements were integrated by the *Exposure* program. Described as a 2D/3D 'choreographer,' *Exposure* allowed for new flexibility in switching elements between 3D, 2D digital and old-fashioned paper, allowing artists a better overview in each format. In particular, there was the option of changing 2D or 3D animation in the middle of the process, without undoing another department's work. *Exposure* also allowed hand-painted



ABOVE Could Disney's latest, *Lilo And Stitch* – which features very little CG work – herald a return to lower-tech 2D animation?

TOP LEFT London's visual effects studios combined 2D and 3D animation for the Gorillaz music videos.

BOTTOM, FAR LEFT Disney's *Oliver And Company* was the first film to use CG artists as animators rather than graphics engineers.

BOTTOM, LEFT Disney's *Hunchback* adapted *The Lion King's* herd software to create human crowds – which proved much harder.

backgrounds to be scanned and projected on 3D geometries; in other words, hand-painted landscapes in 3D.

Disney's *Tarzan* also tackled 3D backgrounds using its *Deep Canvas* programme. Rather than scanning paintings, this allowed artists to 'paint' directly onto 3D models, using flat digitiser tablets and a stylus. The trick was that the computer could record individual stylus strokes – replicating, shifting or undoing them as needed. Even more than *Egypt*, this allowed rollercoaster action through integrated 3D backgrounds, as when Tarzan and Jane flee a horde of angry baboons.

The techniques in DreamWorks' *The Road to El Dorado* (2000) were partly inspired by problems arising in *Egypt*. Toward the end of the former film, a character was carried by water onto a rock. The scene was tried with a computer particle splash, but deemed synthetic and time-consuming. The solution was to use 3D particles to 'trigger' scanned 2D splashes. By *El Dorado*, the tactic had inspired a full-blown program called *Spryticle*, where 2D effects cycles – water-

STEP BY STEP: WORLD CUP

Passion Pictures producer Erika Forzy explains the process of creating an integrated animation

It's one of those ancient, unanswerable philosophical conundrums: 'What comes first – the chicken or the egg?' For the producer of an integrated animation, however, the problem may be properly rephrased as, 'What comes first: the 2D or the 3D?' And in this case, the question most certainly does have an answer. Since one of the most topical examples of hybrid animation (to British readers, at any rate) is the BBC's series of Manga-style World Cup idents, we decided to put the question to the the films' creators, London effects house Passion Pictures. Producer Erika Forzy talked us through the process of blending CG backgrounds with traditional line-animated characters in our eight-step guide to creating seamless 'tradigital' animation.



1 CREATING THE STORYBOARD
As with any form of animation, a good storyboard is the key to successful integrated 2D/3D work. Each layout explains the action visually, giving the animators a rough idea of how the sequence will be shown on screen.



2 COMPUTAMATIC AND ROUGH CG MODELLING
Before animation begins, the CG background artist will roughly model the environment (in this case, a street with high-rise buildings) and set up rough camera moves. You can see how crude the model is at this stage.



ABOVE Audiences could spot the switches from 2D to 3D in *Beauty And The Beast*, which used camera swoops to good effect.

RIGHT By 2002, big studios had even developed their own proprietary 2D/3D software, such as *Spryticle*, used in *The Road to El Dorado* to allow 3D objects to trigger 2D effects cycles.



splashes, smoke – were triggered by particles. The cycles replaced the particles, but were themselves bent, stretched and otherwise manipulated in the 3D environment. At the film's climax, the heroes ride out of El Dorado on a tidal wave, which replicated a hand-drawn splash 10,000 times.

the lead characters, and even they were often in 3D suits riding 3D vehicles. Spaceships and weapons were created and animated in wire-frame, and hand-painted tiles were mapped onto their surface for texture. By the directors' account, Fox wanted more and more CG as production progressed, which may have overridden aesthetic concerns. *Titan* often looks like two films slammed together, perhaps contributing to its poor box-office performance.

Last year saw two examples of hybrid animation from opposite ends of the spectrum. Disney's lavish *Atlantis: The Lost Empire* saw a full range of 3D animation. Over a quarter of the film used CG elements, ranging from vehicles like the Ulysses submarine to 3D sets painted by *Deep Canvas*. 3D animators were involved in early pre-production, drawing initial designs and helping define the basic look. Meanwhile, the hard-to-classify Richard Linklater flick *Waking Life* saw a

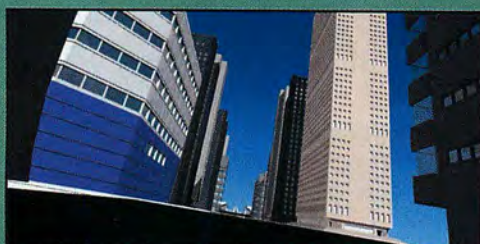
"IN ABOUT TWO YEARS THERE WILL BE A SERIES OF 3D ANIMATED FILMS THAT WILL NOT DO WELL AND A HAND-DRAWN FILM THAT RAKES IT IN. THE HEADLINES WILL BE... 'COMPUTER ANIMATION IS DEAD'"

John Lasseter, executive vice president, PIXAR

2000 also saw Fox's *Titan A.E.*, a sci-fi offering from Don Bluth. About 87 per cent of the images used CG: the space battles, many of the exotic alien landscapes and starscapes, and the skeletal alien Drej. The 2D was largely confined to



3 **LINE TEST**
 It's time for 2D to step in. Supervising animators draw key frames and get these cleaned up by assistants. The in-betweeners will take the frames and finish the animation. This is then shot onto tape to form a black-and-white line test.



4 **CG LAYOUT**
 The buildings from the computamatic are modelled and roughly textured, and the perspective and camera framing matched by eye with the first line-test animation. This is the first point at which colour enters the process.



5 **ROUGH COMPOSITE**
 The approved line animation and CG background are now taken into *After Effects*. The animation is placed against the background and the continuity of the scene adjusted. A 2D-painted sky can now be placed behind it all.

CG take on one of the oldest methods in the book: rotoscope. The film was shot as a live-action digital video, converted to QuickTime and 'painted' using a specially-developed software called *Rotoshop*. Whether it counts as '2D/3D' is debatable, but *Waking Life* was widely hailed as one of the best rotoscoped films to date.

In the last few years, 2D/3D animation has moved beyond cinema. On TV, Matt Groening's *Futurama* launched in 1999 with a range of 3D vehicles, deliberately 'flattening' the images for what he described as a *Jetsons*-style universe. Over in Blighty, one of the most intriguing upcoming series is Cosgrove Hall's wonderful *Albie* (see issue 22). Extending the idea of *Aladdin*'s flying carpet, this features sundry strange beasts – including rumba-dancing antelope and harmony-singing buffalo – with CG textures. Like Groening cohort Brad Bird's *The Iron Giant*, these seem alien, but not *too* alien.

CG has also made headway in Japanimation. As early as 1995, the cyberpunk *Ghost In The Shell* was digitising hand-drawn and CG components, with backgrounds seen through subtle distorting lenses. Elsewhere, characters wear frame-distorting camouflage suits à la *Predator*, an effect developed by Tima Software. *Princess Mononoke* (1997) had fleeting but impressive hand-painted 3D backgrounds, plus a traditionally animated god filled with particle lights. The aquatic *Blue Submarine No 6* (1998), vampire adventure *Blood* (2000) and retro-styled *Metropolis* (2001) all feature brash, sometimes reckless mixes of 2D characters and 3D environments. They're worth trying if you could take *Titan*.

And what of the future? It depends who you ask. Richard Williams thinks 2D and 3D should separate. "We need to use what makes us different. I think hand-drawn animation should go graphic, gritty, rough. That seems to be the way forward in the face of CG." In contrast, DreamWorks' bullish Jeffery Katzenberg told *USA Today* that *Spirit*-style 'tradigital' was the future. "Traditional animation as it existed in the 20th century is in the 20th century. We're in the 21st century... We don't make (old-style) films any more." Pixar's John Lasseter thought differently in a *Guardian* interview. "In about two years there will be a series of 3D animated films that will not do well at the box office and a hand-drawn film



that rakes it in. The headlines will be, "The Resurrection of Hand Drawn Animation. Computer Animation is Dead!"

At the time of writing, Disney has just released *Lilo And Stitch* in America. *Lilo* uses only a modest amount of CG, favouring 2D flatness and watercolour backgrounds. Early word is good, but it remains to be seen how well it will do against higher-tech films. Disney's very different *Treasure Planet* is due late this year, promising a cyborg Long John Silver who's half-drawn and half CG. And DreamWorks is readying next year's *Sinbad*, a whole film split evenly 2D/3D. Ladies and gentlemen, it's time to place your bets... ■

OPENS: 27 NOVEMBER 2002 WEB: WWW.TREASUREPLANET.COM

Following the release of *Lilo And Stitch*, Disney's next big animation offering is the effects-rich *Treasure Planet*, an adaptation of Robert Louis Stevenson's *Treasure Island*... in outer space. Check out the teaser trailer on the Web site.

ABOVE 2D/3D is also gaining in popularity in music videos, like this one for Robbie Williams

LEFT, TOP *Albie*, by the UK's Cosgrove Hall, is a weird and wonderful example of overlaid 3D textures.

LEFT, MIDDLE *Atlantis*' 3D sets were painted with *Deep Canvas*, and CG artists were involved in initial design.

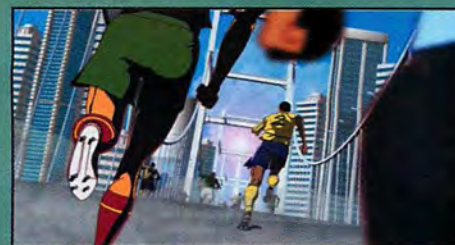
LEFT, BOTTOM In *The Prince of Egypt*'s opening scene, the horses and humans are 3D, the rest is 3D. Good, eh?



6 **TEXTURE DEVELOPMENT**
Further work can now be done to develop the computer-generated aspects of the scene, including, in this case, the textures of the buildings, the lighting design, and the overall coloration of the scene.



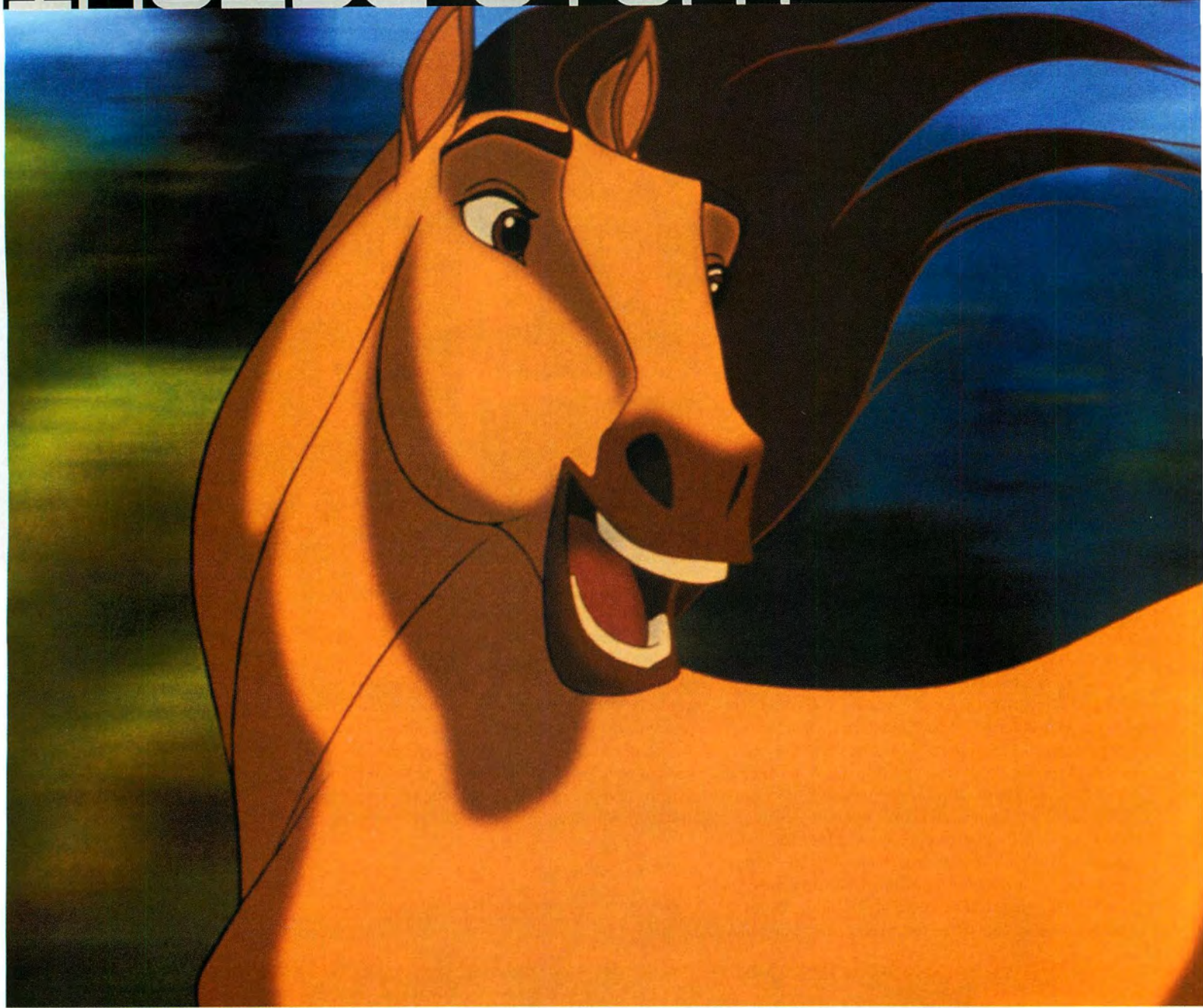
7 **FINAL BACKGROUND WORK**
Further computer-generated elements – which may have been developed independently of the main compositional process – can now be placed and rendered into the scene to finalise the background.



8 **FINAL COMPOSITE**
The digitally painted animation is composited against the finished CG background, again in *After Effects*. Small adjustments to the colouring and lighting are made at this stage so that the integration is seamless.

SPECIAL ISSUE
TOON
INTO 3D
MIXING 2D AND 3D
TECHNIQUES

INSIDE STORY



SPIRIT STALLION OF THE CIMARRON

After the pristine CG of *Shrek* comes DreamWorks' latest, a seamless blend of traditional animation and computer-generated elements. *3D World* met up with its creators to discuss how the animal magic was created.

BY MARK RAMSHAW



"THE GOAL WAS ALWAYS TO TELL THIS MOVIE'S STORY VISUALLY. IT'S JUST TOO EASY TO USE THE CRUTCH OF CONSTANT DESCRIPTION AND EXPOSITION."

Lorna Cook, co-director, *SPIRIT*

unforgiving skeletal and muscle structure, the wide range of locomotions, and the surprisingly hard-to-capture facial details arguably make them the hardest animal of all to simulate, replicate or represent.

With *Spirit*, DreamWorks not only rises to the challenge, but manages to tell the entire story from the horses' perspective, without resorting to the obvious cartoon ploy of using talking animals. There are a few lines of narration from Spirit, as voiced by Matt Damon, but essentially the entire tale is told and emoted through visual cues and acting.

"We realised the minute you have a horse speak it becomes comedy," says director Kelly Asbury. "You just can't take a talking horse seriously. So, the decision was made to make the animals more natural and allow them to act through the animation."

"It's a double whammy, having a movie not only about a horse, but one that can't speak," adds co-director Lorna Cook. "But the story seemed to beg for something more majestic and noble, a way of telling the story without the usual dancing, singing characters, and without that funny sidekick. We knew there'd be some risk, but we really wanted to find out how far we could push it."

"And any new project is a risk, really, so we just saw this as another challenge," says Asbury. "Lorna and I have worked on so many films, and they all seemed daunting in the

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Hollywood, we are constantly reminded, doesn't take risks. Tell that to DreamWorks SKG, whose team of animators who have just completed *Spirit: Stallion Of The Cimarron*, a non-comedic cartoon feature film following the fortunes of a wild stallion as he grows to adulthood, encounters humans for the first time, befriends a Native American brave, and falls in love with a mare.

While the desire to understand the motion of horses helped kick-start the entire movie industry, the animals have traditionally been a no-go area for animators. The

ABOVE The baby colt Spirit is protected by his mother.

LEFT *Stallion of the Cimarron* follows the adventures of a wild and rambunctious mustang stallion as he journeys through the untamed American frontier on his way to becoming one of the greatest unsung heroes of the Old West.

RIGHT Spirit finds a new friend in the beautiful paint mare named Rain.

FAR RIGHT A close-up of herd galloping through snow. "The hand-drawn elements are cleaned up by hand and then scanned for painting using *Animo*," explains supervising animator James Baxter. "We first used this technique on *Prince Of Egypt*."



BIOGRAPHY

COMPANY

DreamWorks SKG

ADDRESS

1000 Flower Street,
Glendale, CA 91201

CONTACT

001 818 733 7000

WEB

www.DreamWorks.com

EMPLOYEES

More than 1,600

CREDITS

Film: *The Peacemaker* (1997), *Amistad* (1997), *Deep Impact* (1998), *Saving Private Ryan* (1998), *Antz* (1998), *The Prince Of Egypt* (1998), *The Haunting* (1999), *Gladiator* (2000), *Chicken Run* (2000), *American Beauty* (2000), *The Road To El Dorado* (2000), *Cast Away* (2000), *A.I.* (2001), *Evolution* (2001), *Shrek* (2001)

Video games: *The*

Neverhood (1996), *Lost World: Jurassic Park* (1997), *Skullmonkeys* (1998), *Clive Barker's Undying* (2001), *Medal Of Honor* (2001)

SELECTED AWARDS:

Best Director Academy Award for *Saving Private Ryan* (1999), Best Picture Academy Award for *American Beauty* (2000), Best Picture & Best Visual Effects Academy Awards for *Gladiator* (2001), ANNIE for *Shrek* (2001), BAFTA for *Shrek* (2002), Best Animated Feature Academy Award for *Shrek* (2002)

BACKGROUND

Formed in 1994 by Steven Spielberg, Jeffrey Katzenberg and David Geffen (hence the SKG), the company has used the trio's movie-making, animation and music clout to build a huge portfolio in films, TV, games and music.

beginning. When I started on *The Prince Of Egypt*, with the idea of translating a story from the Bible – now, that was really daunting!"

GOING TRADIGITAL

But it's not just the choice of lead character and lack of speech that marks *Spirit* out as a very different kind of animated movie. The movie also presents a unique blend

presented, but *Spirit* doesn't simply overlay its hand-drawn art over CG backdrops. Even the lead character is sometimes presented in digital form, with seamless interactions and transitions between the two formats throughout.

"The computer graphics work is actually much more complex than in *Shrek*," reveals Asbury. "It's the marriage of these two animation worlds that made it such a challenge. Combining them is so difficult and painstaking. In all, 450

people worked to create the necessary illusion of dimension you see in the final film. And from that first twinkle in Jeffrey Katzenberg's eye to us sitting here now it's taken five years."

"[DIRECTORS] KELLY AND LORNA WOULD HAVE THE STORYBOARD ARTISTS GO CRAZY, AND SAY WE'LL FIGURE IT OUT LATER. I THINK KELLY WAS SOMETIMES WORRIED WHETHER SOME OF THE SHOTS WERE REALLY POSSIBLE."

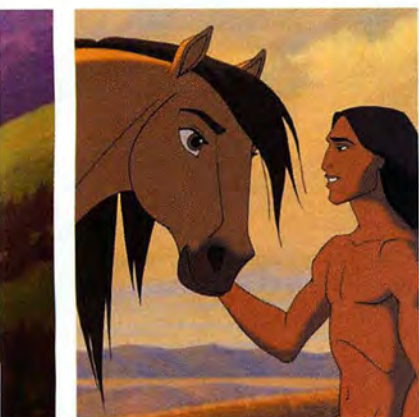
James Baxter, supervising animator. SPIRIT

of traditional cel and computer graphics animation, a hybrid technique that producer Jeffery Katzenberg refers to as 'tradigital'. With landscapes largely composed using CG, and characters brought to the screen using a mix of cel and digital techniques, DreamWorks has effectively harnessed the best of both worlds. The movie retains an abstract charm that's still only really achievable with hand-drawn art, but with character and camera dynamics that would be nigh on impossible without the aid of CG. The 3D nature of the landscapes clearly has a major impact on the way the story is

BACKGROUND HISTORY

Between them Cook and Asbury share some 40 years of experience. While Cook was previously an animator, Asbury's background is in art direction, having begun his career at Walt Disney in 1983 as a storyboard artist. There he worked on such diverse projects as *The Little Mermaid*, *Toy Story* and *James And The Giant Peach*. He was also assistant art director on Tim Burton's superb *The Nightmare Before Christmas*.

"We were able to combine our efforts, with me handling more of the art direction, her more of the animation, and



LEFT While *Shrek* was created at the DreamWorks-owned PDI studio, *Spirit: Stallion Of The Cimarron* is entirely the work of the LA studio. "Previously, PDI handled the CG and we did the traditional movies, but we're now starting to do some CG work here in Los Angeles," says supervising animator James Baxter.

then working back and forth," says Asbury. "It was convenient in that it was like having one director in two places at the same time."

Cook previously worked with Asbury on DreamWorks' *The Prince Of Egypt*, while her rich CV includes such classics as *Mulan*, *The Lion King*, *Beauty And The Beast* and *The Secret Of Nimh*, stretching right back to 1977's live action/animation hybrid *Pete's Dragon*.

"The combination was so crude back then," she laughs. "We'd shoot a bunch of live action stats and then try to animate the dragon off that."

"Yet that was touted as the state-of-the-art back then," adds Asbury. "*Roger Rabbit* then took it one step further through the use of motion control cameras, and since then we've seen the computer utilised more and more on animated features. Now, all these years later, we've got the most technologically complex animated feature yet."

SOFTWARE SPECIFICATIONS

Of course, to create that complexity, a powerful and robust 3D application was required: *Maya*. "It's very versatile," says Asbury. "We were even able to use its fur to create our grass."

Rendering – for everything from the toon-shaded characters, to props, to the 3D environments, to the various elemental effects – was handled using *RenderMan*, with some effects element pre-composites in *Shake*. In addition >>>

STEP BY STEP: WATER WORKS

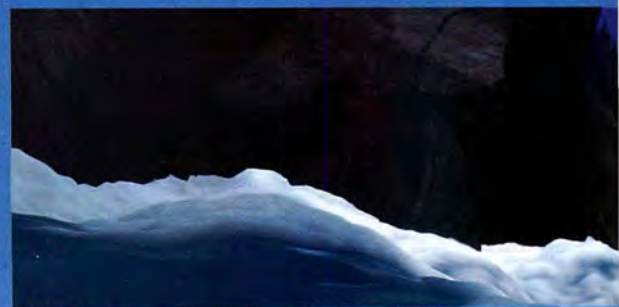
How 2D and 3D elements were blended to create a raging torrent

One of the movie's key scenes has Spirit diving heroically into a raging torrent in an attempt to save the paint mare Rain. Here more than anywhere a seamless mix of 2D and 3D elements was crucial. Although the reflective properties and movement of the water is more physically realistic than many of the other graphic elements in the movie, the animators took care to ensure it

also remained sympathetic to the overall visual tone by adding in some hand-drawn detail.

"It does look quite realistic, but not so much that it jars with the 2D elements," says James Baxter. "To get the effect we took the computer-generated water, which is driven using a particle system, and then added hand-drawn elements, such as the surface splashes around Spirit."

1 This frame shows the 3D CG water, complete with surface foam effects and shadowing. Only the rocky backdrop has been hand drawn at this stage. The next stage is to add in some 3D water splashes.



2 Having placed a proxy model into the water to drive the CG water animation appropriately, it's now replaced with a roughly-composited 2D cel animated version of the horse.



3 The Spirit model is further fleshed out with 2D hand drawn tones. Hand-painted splashes are also added here, helping to literally immerse the horse in the 3D environment.



4 And here's the scene as it appears in the movie, with all elements coloured up and comped. By this point it becomes almost impossible to pinpoint what is hand drawn and what is computer generated.





FIRST PERSON JAMES BAXTER

Spirit's supervising animator discusses the creation of realistic equine characters.

"We tried to strike a balance between realism and cartoonishness with *Spirit*. The film is obviously from the horse's point of view, but it's not *The Lion King*, which was really a story about people told using animal's bodies. But by the same token, you're trying to communicate to an audience, not just showing them what's going on, but getting inside the personality of the horse, getting them to go along for the ride. That required a variety of anthropomorphised expressions to really sell those emotions.

"Getting the performance right was very challenging. Just finding ways for a horse to express things when it's acting without dialogue – not to mention hands or shoulders – is very difficult. There's a scene where *Spirit* approaches Rain [the other lead character] at the riverbank, after she's almost drowned. As a person, you'd put your arms around someone, but you really have to use your head to figure out how to act that out as a horse.

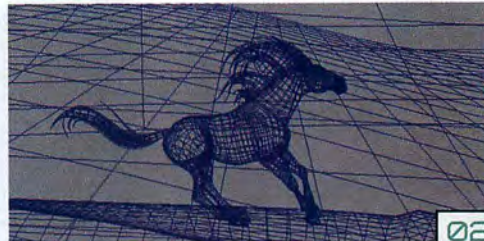
"The CG horses were all rigged with a skeleton and joints. Because we weren't doing full rendering with texturing and lighting we didn't need an intensive muscle system, but with horses you do have to pay a lot of attention to the precise position of joints. They're deceptive animals; the actual point of joint rotation is weird because the knee joint has a hammerhead end, which dictates how the knee deforms when it bends. It gives the horse a double bump as it walks.

"What's interesting is that some things that are the easiest to do in 2D are so hard with CG. For the mane and tails we used some inverse kinematics. But the animators would still have to go in and tweak it, just to make sure it wasn't looking funky from any strange angles once it was seen as a silhouette."

James Baxter began his career on *Who Framed Roger Rabbit?*, going on to work on many prestigious animated films.



01



02



03

[01] Here's Spirit in rough 2D art form, as sketched by James Baxter. This would provide a reference point for the team of 26 animators dedicated solely to the depiction of the lead character.

[02] From that initial sketch the CG animators set up their rigged version of Spirit. Here's the wireframe model, placed onto the basic landscape grid. These grids were also utilised when placing 2D elements.

[03] And here's the final shot, with computer-generated Spirit and herd, and a backdrop built using a mix of matte painting and 3D. This shot takes place just after Spirit has turned from 2D hand-drawn representation.

DreamWorks made use of a range of proprietary packages, including pencil-test software *ToonShooter*, 2D/3D camera integration plug-in *ToonStage*, and a customised version of Cambridge Animation Systems' tool *Animo*. For the first time at DreamWorks' studio, Linux-based PCs were used rather than SGI workstations.

"I've worked with stop-motion animation, traditional and CG, and essentially they're put together in the same way," emphasises Asbury. "The only difference with CG is that you're dealing with an imaginary 3D world in the box, so it's almost like a cross between traditional and puppet animation. I'd also say there are more limitations. We

"IT WAS FUN TO HAVE VIEWPOINTS THAT WOULD BE DIFFICULT TO ACHIEVE WITH REAL HORSES, LIKE PUTTING THE CAMERA UNDER A BUCKING BRONCO. THAT'D BE TRICKY TO DO WITH LIVE ACTION WITHOUT LOSING YOUR EQUIPMENT!" James Baxter

still don't have the fluidity a pencil offers. As a director, though, we're dealing with both kinds of animators in the same way. And of course most of our CG people are trained in 2D, so the two fields really are able to hold hands."

A SENSE OF STYLE

But to the casual viewer, it's not the combination of new and old animation techniques that defines *Spirit's* visuals, but the stylisation of both characters and environment. Though it's the characters that drive the tale forward, the landscapes prove just as crucial to capturing the tone of the story, even to the extent of mirroring the changing moods and emotions.

"We wanted the viewer to experience different emotions as Spirit travels through these different locations," says Cook.

The countryside surrounding a Native American camp is presented with almost impressionistic touch, for example. "Then there's the muted bleakness of the rail camp, and the hard angles of the fort."

For inspiration DreamWorks looked to four key Western artists: Frederick Remington, Charles Russell, James Reynolds and Frank Tenney Johnson.

"The individual paintings of these artists have such personality, which we let spill through into the different areas," explains Asbury. "Frank Tenney Johnson's images of pre-dawn light and cowboys sitting by campfires are echoed in the movie, for example, while the desert and cattle drive

scenes take their cue from Russell's work."

The camera work was also designed to heighten the sense of emotion in the largely non-verbal story, with

the freedom provided by the 3D digital landscapes facilitating a breathtaking array of tracking shots and unusual angles.

"We really just wanted to do what was best for the story, rather than try to be showy," says Asbury. "We did storyboard something spectacular things, and in fact I often wondered if we'd have to end up compromising some of the ideas because they were so ambitious – though when we have those impossible shots they're in there for a reason. When the camera runs with the horse we want the audience to feel like they're there, they've got the wind in their hair. We want them right up on the heels of the horse so that we can involve them and emphasise the story points. If we'd just added a crane shot just because it would look pretty, we'd have been sunk."

HORSE SENSE

Undoubtedly the single biggest challenge faced the team involved in bringing Spirit and the other horses to life. Aiding the animators were two horse consultants, who initiated a training program to instruct the team in all areas equine. Attending lectures and spending hours observing and sketching at the Los Angeles Equestrian Centre, they had to learn all about anatomy, movement and behaviour, including the locomotion of, and emotions behind, the varying equine gaits – from trot to gallop.

“They gave the animators the range they needed, which in turn affected the behaviour that Spirit and the other horses elicit in the movie,” says Cook. “They had to be able to create convincing articulation, and translate that well for each scene of the movie. The equine experts were actually really pleased that we captured the essence of the way horses move. It’s damn near perfect.”

“In the rodeo sequence, for example, we storyboarded it and decided that it worked really well, but then had to ask the question of how much we were stretching the truth with some of the action,” says Asbury. “The consultants watched it and assured us it that was all perfectly within the realms of what they’re really capable of. Horses are pretty mindful, wilful animals.”

The animators’ task was further complicated by the need to limit the usual range of squash and stretch tricks. Some are used, primarily in the shoulders and fetlocks, but it’s applied with rather more subtlety than in the average cartoon feature. Not that the movie is a complete slave to realism. Some creative licence proved necessary in order to be able to have the horses act with sufficient range.

“We had to think hard about what we wanted to do, graphically,” says Cook. “We chose to take the realistic and then caricature it somewhat, particularly around the eyes. We added eyebrows, for instance. Obviously horses have ridges above their eyes, but we needed something extra to show the range of emotions. Similarly we increased the size of the eyes to show the whites more and also brought them slightly further forward.”

TEAM SIZE

In all, some 26 animators worked on the Spirit character alone, with veteran animator James Baxter heading up the team. Although traditional animators formed the bulk of the team, three animators would be on hand to jump between the two camps as necessary. This is set to become the norm at DreamWorks, with all traditional animators now receiving CG training.

“This marked the first time I’ve worked on a character that’s been in every sequence of the movie,” says Baxter. “And while I’ve done characters with more line mileage, here I had to try to understand the physical form of the horse, its anatomy, and how the muscle and bone structure works. Getting the locomotion right was the most complicated thing I’ve done, and required more research than any other film I’ve worked on.”

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STEP BY STEP: FIRE STARTER

For the fire sequence, 3D particle effects were employed. Here’s how they were integrated with the 2D elements

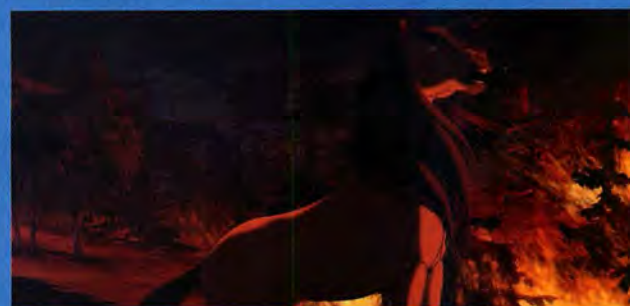
1 Setting Spirit’s world ablaze involved more blending of 2D and 3D elements. Here’s the basic painted backdrop, with the hand-drawn Spirit overlaid on top.



2 This shows the basic representation of fire particle motion in the scene. “We then use this to add the particles created as individual hand-drawn sprites,” explains lead animator James Baxter.



3 The fire plus CG smoke effects are then comped into the painted background along with 3D embers. The fully lit scene now exhibits the complexity of a procedurally generated animation but retains a hand-drawn style.



LEFT Spirit fends off a cougar. Notice the grass, generated using *Maya Fur*. “Usually we’ll animate characters separately, but here the cougar leaps onto Spirit’s back, so they needed to be worked on together. It’s the same as when working with actors, with a back and forth depending on who is acting or reacting.”

RIGHT Lakota brave Little Creek and Spirit flee from the burning forest. It would take around a year to animate all the fire elements by hand.



"If you look back now to that scene in *Beauty And The Beast* it looks like it's from a different movie," he continues. "It's a good sequence, but it just doesn't quite fit in. So the desire with *Spirit* was to integrate it better, so that all the art feels the same. There are still times when you can see which are the CG elements, but a regular audience won't notice."

BLENDING THE ELEMENTS

As with the film as a whole, the animation work of the Spirit character was assigned to either the traditional animation team or the CG artists on a shot-by-shot basis, sometimes with a completely CG version of Spirit, other times a shot cutting or dissolving between CG and cel rendering. "We had the CG animators working to render their models to look as much like drawings as possible, while the traditional animators found that they had to be very accurate and sculptural, making sure that the animation was smooth enough to hold its own against the CG stuff," says James.

Some scenes also called for the CG team to create basic animation cycles, over which the traditional team could animate. "Sometimes it was actually just a case of the CG animators being too busy," says James. "They'd get a basic gallop cycle onto which the cel animators could add the acting or anything else. It was especially useful for the chase scenes and rotation shots. I've done those without much perspective reference in the past, like in *The Hunchback Of Notre Dame*, but this time I was able to get printouts of the CG model every few frames to animate over. Without it the process would have taken longer and the results probably wouldn't have been as solid. It doesn't really work the other way around, though. Putting 3D onto a drawn 2D character seems to show the inherent inaccuracy of the model."

[01] This spectacular sequence has Spirit attempting to avoid a train as it rolls down the hill. Here's a director's approval shot, with 3D plastic shading on the training and collapsing trees.

[02] The final version of the same scene, with lighting and various bits of 3D debris added. The muted colour schemes reflect Spirit's bleak mood.

[03] Here's a closer look at the CG train. In this shot, taken from the clean-up stage, the cel-animated Spirit is attached to the 3D train with a chain (which is also computer generated).

[04] Again, here's what the final frame looks like, once all 2D and 3D elements have been coloured lit, and correctly composited.

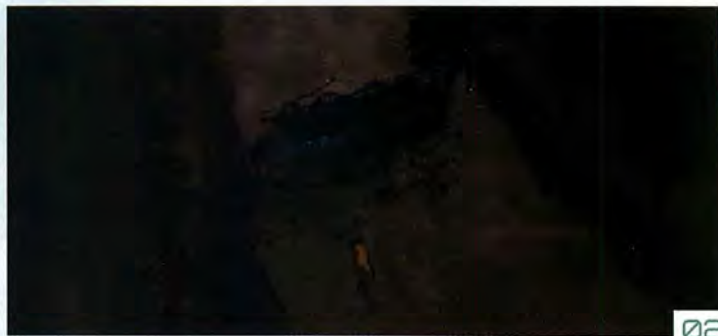
It also involved leading a much larger team than on any of his previous projects. "Prior to this the biggest was 17, so this was definitely a major organisational effort. I had a team of supervising animators, who each had their own team of guys. I did a drawing for every shot in the film, just to guide the animators, and I made sure I saw absolutely everything. But really I just had to pick my team very carefully."

Baxter began his career as an animator on *Who Framed Roger Rabbit*, going on to handle animation and lead character work on films such as *The Rescuers Down Under*, *The Little Mermaid*, *The Hunchback Of Notre Dame*, *The Lion King*, *The Road To El Dorado*, and *The Prince Of Egypt*.

"Working on *Roger Rabbit* really prepared me for doing backgrounds with perspective change. That's helped ever since, from the [pioneering 2D/3D] dance sequence in *Beauty And The Beast*, to some of the shots in *The Lion King* and *Hunchback*, and now for the cel and CG combo used in *Spirit*."



01



02



03



04



ABOVE Spirit and his human pal Little Creek escape the Colonel and his soldiers. In sequences such as this, CG animation cycles provided an ideal starting point for hand-drawn work.

TOP RIGHT A CG shot of Spirit running with his herd. With such evocative imagery, little dialogue was required to tell the story. "We did plan to have more narration, but it just wasn't necessary," says co-director Kelly Asbury.



Matching the two forms was never a major problem, says Baxter. "The layouts were done pretty accurately; they'd do a rough pass and also provide a perspective grid, so you've got one sheet with all the nicely rendered trees and another to lay over to the top so you can really see what the landscape is doing. So there's no ambiguity... hopefully!"

The only problems occurred when CG character models got too close to the camera, revealing discrepancies with the hand-drawn version. This was solved by more mixing and matching. In some scenes Spirit is built using a CG body and hand-drawn head, for example. Baxter points out that, while it would have been perfectly feasible to overlay hand-animated art onto guides throughout, *Spirit* was always destined to utilise both 3D and cel-animation techniques.

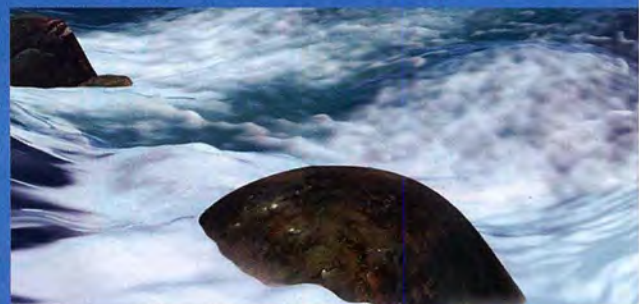
"We always wanted the 3D to drive the camera work. Once you've made the decision to use 3D environments, it opens up so many possibilities; to really have the viewer feel like they are flying with an eagle or running with a horse. And conversely we never considered just using CG, because of the emotional clarity and, frankly, the cheating that you can do with 2D. In 3D every single damn angle has to be right, and you can find you've animated yourself into a corner trying to make expressions look appealing from every position."

"We wanted capture that timeless romantic element you only get from a cartoon," concludes Baxter. "There's something the viewer brings to the film when it's traditional animation. It's like moving storybook, with a simplicity and clarity that's unique. With *Spirit* we're now also able to provide the sort of immersive experience that only 3D computer graphics can give." ■

STEP BY STEP: THE WET STUFF

Creating animated water can prove a problem, even in pure CG work. For *Spirit*, the process was complicated further by the 2D elements.

1 Another work-in-progress shot (see also "Water Works" on page 31) from the river sequence. Firstly, the scene is built up with the 3D water surface and foam, animating the movement around hand-painted rocks.



2 A still from the CG animatic, used for placing the hand-drawn character of Lakota brave Little Creek into the scene. The process is purely compositional, so little surface detail is required at this stage.



3 The placeholder model is then replaced with the hand-drawn version for final colouring. Additional hand-drawn water elements will be added at this stage, to blend the figure and background together.



OPENS: NOW

WEB: WWW.DREAMWORKS.COM/SPIRIT

The next animated projects from DreamWorks SKG are *Sinbad* (also created using 'tradigital' techniques), *Shrek 2* and Aardman Animations' *The Tortoise And The Hare*. *Sinbad* is due for release in 2003, the other two in 2004.

SPECIAL ISSUE
TOON
INTO 3D
MIXING 2D AND 3D
TECHNIQUES

TUTORIAL

JEEP IN A JIFFY CEL SHADING IN LIGHTWAVE

LightWave is a handy tool for creating 2D toons from 3D models. Here's what you need to know to recreate our explosive cover image...



Cell-shaded images are no problem using *LightWave*'s integrated 2D toolset – particularly since it now includes the *Big Eyes Small Mouth (BESM)* plug-in. And big studios like Passion Pictures are increasingly turning to the package for their acclaimed 2D-style projects. The reason for this is obvious: *LightWave* is really easy to use. You can use virtually any model to get results; lighting is simple; choosing the colours is even easier; and you have numerous options on how to put your edge

lines in. Although you still have to do your own animation, it's mainly a matter of deciding what sort of 2D style you're after. For the purposes of this tutorial, we'll be following animator Stuart Rowbottom as he creates our explosive cover image.

BY: STUART ROWBOTTOM
MAIL: MRBOTTOM@ANOTHER.COM

Originally from Lincolnshire, Stuart Rowbottom spent part of last year with Glassworks before starting with Passion Pictures in time to work on their spectacular Manga-style BBC trailers for the 2002 World Cup.

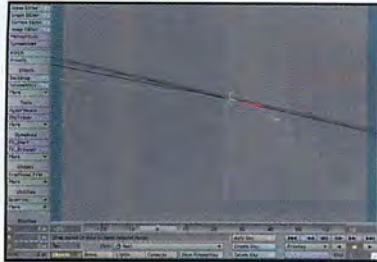


ON THE CD
Full-sized images & *LightWave*
scene files for the tutorial

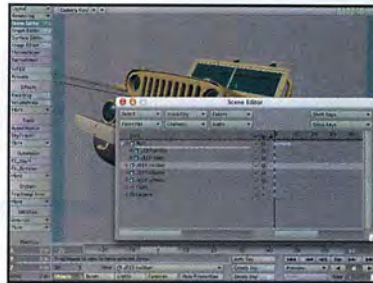
LightWave plug-ins

You may notice that *Super Cel Shader* is still included as one of the available plug-ins, which can be used to quickly produce similar effects but lacks the sophistication of *BESM*. On the other hand, if you're after a specific look and you can't quite get it with *BESM* it's worth trying *Cel Shader* as an alternative.

PART ONE: Starting with the right ingredients



1 In *LightWave*, open up the *Jeep_basic.lws* scene file included with the cover CD. It should contain a moving null and little else (this isn't actually necessary for the final image but it gives you some idea that the whole thing could be animated later). You may also notice that the camera has already been positioned at a jaunty angle. Add the *Jeep.lwo* object to the scene by pressing + on the keyboard.



2 To keep things organised use the Scene editor to parent all the parts of the jeep by dragging them to the main null which is already in the scene. Moving the frame slider should now make the jeep move towards the camera. Hit F9 to do a test render. You may need to turn on Image Viewer in the Rendering options panel under the rendering drop-down in the upper left menu.



3 It's still pretty 3D and the wrong colour at the moment. Open the Surface editor from the left menu. You will see all the surface parts listed down the left side. First select 'aluminium' from the top of the list then click on the shaders tab on the right. Use the Add Shader drop-down and select *BESM*. You will notice that the sample sphere changes to the *BESM* default buff shades.



4 Double-click the plug-in or choose Properties from the Edit drop-down to the right. The *BESM* window will open showing a range of colours at the top and a number of tabs below. The colours at the top represent the shadow, mid-tone and highlight of the cel render. Below it is a smaller bar with blue lines. By selecting one you can change the colour spread with the position value dialogue, set a blend between colours or even set a colour's transparency.



5 First, set up the colours. Click the darker brown on the left, which should bring up the colour picker. Set it to a dark grey (about 42R, 42G and 42B) and click OK. Next set the middle colour to a mid-grey (about 56R, 56G, 56B) and finally the highlight colour to a light grey (82R, 82G, 82B). Click the Add button and then click in the blue line bar about 10mm to the right of the highlight blue line. A fourth colour appears; note that *BESM* then automatically creates the in-between tone.



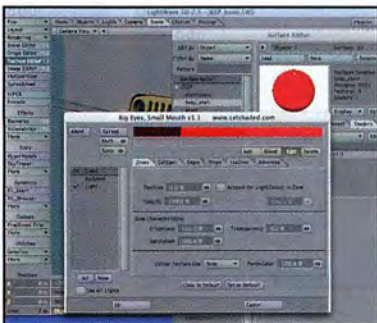
6 Under the Cel Spec tab use the drop-down on the right side to turn the cel-look specular highlights on; the default settings should be fine for our purposes. Now select the Edges tab and for this tutorial make sure they are disabled. The *BESM* edge features work very well with curvy human shapes to give a Manga-type effect, but Stuart chose to use object property edges for the jeep as they tend to look crisper on mechanical objects. Click OK to close the window.

General tips

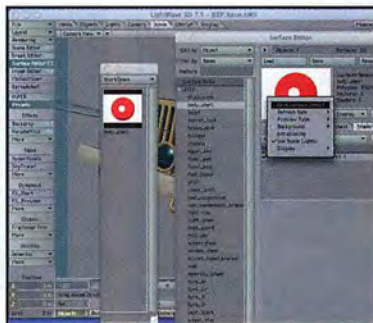
Traditional cel shading involves using ink outlines and a single paint colour, with possibly a second shadow colour. However, with 3D programs, you don't have to stick to that formula. Interesting results can be created using radiosity rendering with ink, or by trying no paint at all with shadows.

Create a harsh *film noir* look by using a black-and-white two-colour fill. Add raytraced shadows to complete the Frank Miller 'Sin City' effect.

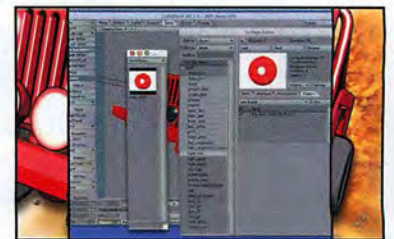
Fake a cel-like flat fill colour using high levels of ambient scene lighting. Use negative lights to add shading.



7 Select the *body_shell* surface in the surface editor and add *BESM* to the surface as before. This time you need to set a deep maroon shadow (24R, 0G, 3B) a bright red mid-tone (91R, 4G, 7B) and a blush highlight (100R, 14G, 18B). As before turn Cel-look specular on and Edges off.



8 To save some time, rather than repeating this process for each part, open the Presets window (left menu in the main LW window) and double-click or right-click on the red surface sphere from the *body_shell* surface to add it to the workspace preview settings.

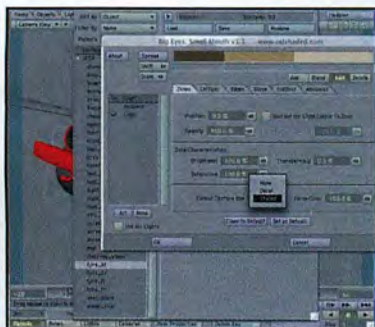


9 Select the next surface in the list in the Surface editor 'bonnet' (that means hood, for our US readers.) Hold down the Shift key and click on the surface named *light_rim*. This should select everything in between. Now simply double-click on the new *body_shell* preset to add its properties to all of them. You will also need to add the *body_shell* preset to all the other surfaces, except for *light_glass*, *screen_glass*, all the tyres and *vent_black*.

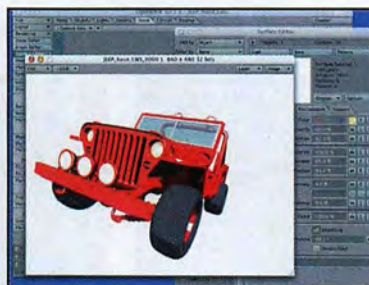
TUTORIAL

Handy tool tip

You can try out one of *LightWave 7.5's* useful features for colour. With the colour picker open, position the cursor over any bit of colour anywhere on your screen. Hold down the alt key – a paint dropper tool appears and picks that colour. If you are trying to emulate an existing colour scheme just open up the image in a preview package and position it so you can see it next to the *LightWave* window, then just pick the colours straight off it into surface editor.



10 Add *BESM* for tyre_bl and set the Colour Texture Use drop-down button to Shaded. This uses the grey colour the tyre already has instead of setting the cel colours. Don't forget to turn the Edges option off. Set the other tyres in the same way, and don't use a preset as this may kill the tread pattern image maps.

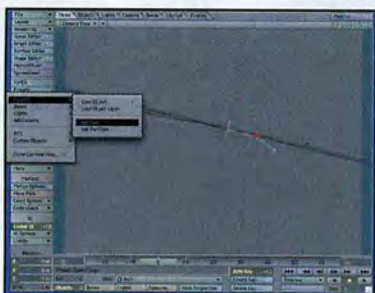


11 While you have Surface editor open, select the light_glass surface. Set the surface colour to a creamy yellow and turn the luminosity up to about 80 per cent, to turn the headlights on. Close the Surface editor window save the scene to something like jeep_red.lws. Also choose save all objects to save the surface settings. Hit F9 to do a test render. You should now have a red 2D jeep.

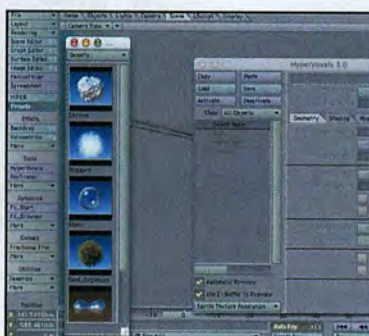


12 For the real cel look, select the jeep_grille object from the object drop-down at the bottom and press P or click on Item Properties. Choose the Edges tab and check both Silhouette edges and Unshared edges. Repeat this for all of the other jeep parts. The tyres may need a slightly bigger line thickness – about three pixels – to make them look chunkier.

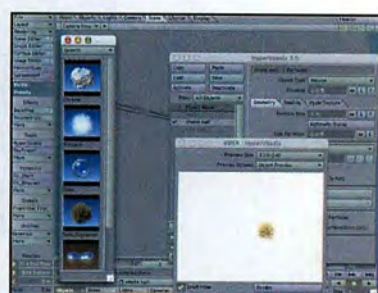
PART TWO: Goodness gracious, great balls of... sand



13 Save your jeep scene and object then open the original jeep-basic.lws scene, with just the null. Create a new null with Add> Objects> Add null and call this one 'smoke null'. Do the same again and call it 'fire null'. Position both nulls a little to the right and down from the centre.



14 Click the Scene tab at the top and open the Hypervoxels window from the left hand menu. You will also want to bring up the Presets window and the VIPER window.



15 In the Object box on the left side of the panel, select the smoke null and click Activate. It should get a tick. Find the hypervoxel preset 'Sand_explosion' in the Generic preset section of the Preset window and double-click to add it to your null. It should appear in the VIPER preview.

Cinema 4D users

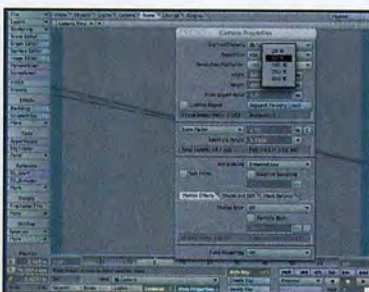
Cel shading comes built in to *Cinema*, and is chosen from the Rendering Effects panel. You can render paint (no shading) or ink (outlines), or both – although the results are not traditional.

Create custom ink lines around objects by linking a soft-shadow spot light at the camera's location, adding a huge sphere to catch the shadows and enabling ambient illumination and outline shadows. Try it.

Change the light very slightly to create varying line thicknesses. You can also change the shadow map size and sampling to create harder or softer ink edges.



16 Change the particle size to about 6m or something that pushes just outside the edges of the window. Select the shading tab and change the colour a little to a slightly warmer orange. Hit F9 to do a render and save the result as a *Photoshop* 32 file.



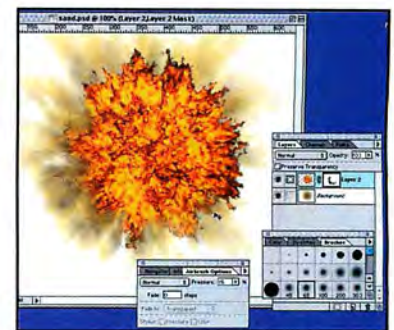
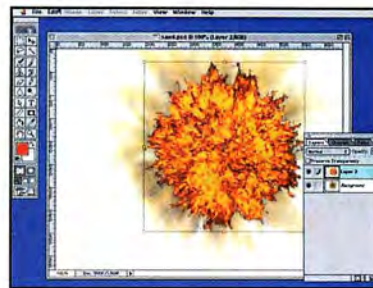
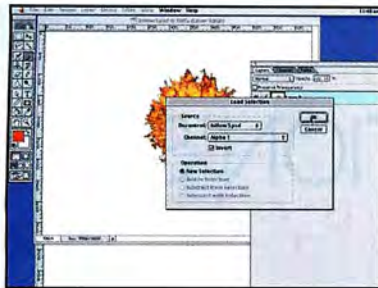
17 The previous step may take a long time, so as a workaround you can open the Select camera button from the bottom, press P to open the Camera properties panel and reduce the Resolution multiplier to 50 per cent before rendering. Nobody will notice the difference in quality, but remember to scale the image back to 640x480 again in *Photoshop* afterwards.



18 With the Hypervoxels window still open, uncheck the smoke null and activate fire null. Find the preset Billow_3 under the Fire & Smoke section of the presets window. Reduce the size of the particle to about 4m, so that it fits within the window and again hit F9 to do a single render and save the image as a *Photoshop* 32 file. Save the scene as jeep_bang.lws.

Depth of field

Once you've 2D'd your jeep, have a play with the depth of field or motion blur on it. The results are surprisingly good. Go into the Camera properties panel, set the anti-aliasing to medium, click the Stereo and DOF tab at the bottom and turn on the depth of field option. Set the focal distance to, say, 12m so the back of the jeep is in focus and turn the F-stop right down to about 0.2 to really narrow the field and blur the front of the jeep. Hit Shift-F9 to do an OpenGL depth of field preview to test your results.



19 You will now need to open the two explosion images in *Photoshop*. Change the billow picture first – double-click on the background in the Layers window to change it to a layer. Choose Select>Load selection from the top menu and choose the alpha channel in the resulting panel. Make sure Invert is checked and click OK. Use the delete key to remove all the background white that's now selected.

20 Bring the billow layer into the sand picture by dragging it from one image to the other. Roughly align the billow to the centre of the explosion. You may also want to use Edit> Free transform to scale it a bit. Now using either a mask (click the dotted circle at the bottom of the layers window) and then airbrushing out the edges, or simply an eraser, vignette the edges of the fireball so it blends into the sand.

21 Try to use a largish soft airbrush effect (say 20 per cent in the Airbrush options setting) and make strokes that fan away from the centre. You can spend as much or as little time as you like tweaking the explosion. Save the altered file in the *LW* images folder as *bang.psd*.

PART THREE: Adding the final rock and roll touches



22 To get that comic-book action feel I've added a few rocks flying out from the explosion. First, add a new null to the scene using the Add> Objects drop-down to the left of the main window. Call it something complex like 'rock null'. Open the Scene editor window and in the eyeball column click on the little T icon to change the various parts of the jeep to either Front Face Wireframe or Vertices, which makes it easier to locate the nulls and speed up the redraw.

23 You should now be able to see rock null. Move it so that it is somewhere below the jeep. Click the scene tab at the top then open the Hypervoxels window from the left-hand menu. You will also want to the presets and VIPER windows open.

24 In the Object box on the left side of the panel, select the rock null and click Activate. It should get a tick. Find the hypervoxel preset 'Rocky' in the rocks section of the preset window and double-click to add it to your rock. You should see your rock in the VIPER preview. Change the particle size to about 300mm and give it a size variation value of 25 per cent.

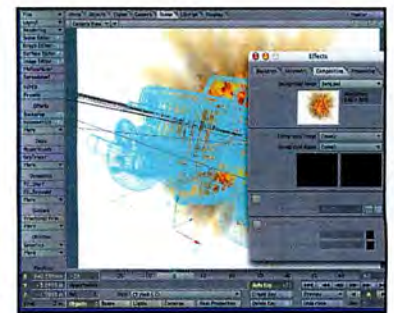
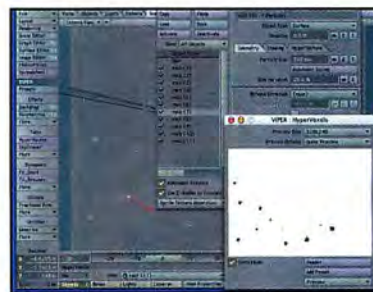
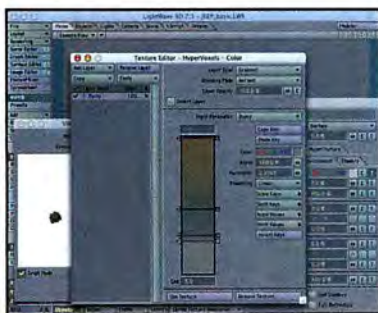
Other packages

Maya users can download a number of free toon shaders from www.highend3d.com. These include *TJ Toon Shader 1.4*, *Toon 1.0*, *Toon Light 1.01* and *Toon Texture 1.0*.

Dot Painting and Stippled Shaders are also available. These simulate a sketchy, pointillist rendering style. Not quite cel shading, but an interesting alternative.

3ds max and *Maya* users can also take advantage of a proper commercial cel shader: *Inkworks* from Cambridge Animation Systems. This is a simple but powerful system, with good ink and paint settings. You can find it on the cover CD.

Another excellent *max* shader is *Illustrate!* by David Gould. This plug-in can create all kinds of cel, ink and sketch styles.



25 Choose the Shading tab and then the texture gradient (the highlighted blue T next to the Hypervoxels colour setting). The Gradient window appears, so click on each of the gradient lines in turn and change the colour to mid greys or darker browns. Close the gradient window. Close the Hypervoxels window.

26 With the rock selected, use the Add drop-down again; choose Clone current item and clone about 15. You won't see much at first as the items are all on top of each other, so just begin selecting each one and moving them to random positions below and around the jeep. If you were animating this scene you would probably want to use particles.

27 To finish the image click the Scene tab at the top and choose Compositing options from the left menu, and for Background Image choose Load image from the drop-down options. Load the *bang.psd* image you created earlier and click OK. Press F9 on the keyboard to render the final image.

THE MAKING OF

EYE ANIMATION'S BEAT POVERTY AD

The team at EYE Animation discuss how painterly 3D skills were used to highlight the dangers of poverty in this striking ad for Save the Children **BY MARK RAMSHAW**

From groundbreaking early work on the promo for Soundgarden's 'Black Hole Sun' through to spots for Heinz, Ford and Disney, EYE Animation's work has ranged from the surreal, to the cartoonish, to the photorealistic. More recently the studio has been experimenting with a style of CG that blends the look of organic, hand-painted textures with 3D geometry. First explored in an award-winning ad for Martell Cognac, and more recently in the title sequence for *The South Bank Show*, it's now been further developed for the latest TV ad for Save The Children's 'Beating Poverty.'

"The agency was looking to create the ad with a Tim Burton-esque fairytale look," says illustrator and co-director Jo Simpson. "The producer had been to our studios before and noticed my puppets and illustrations, with their skeletal look and large eyes."

"We kept the integrity of Jo's characters, and worked them into a 3D form," says co-director and texture creator Pat Gavin. "We worked with Jo directing from a character point of view, and me bringing an overall film sense and contributing to the environments."

"The process involved working with 'toytown' geometry, work on still frame to paint projection maps, creating flat surfaces rather than painting around objects", says Pat. "That meant I could add a painter's sense of ambiguity, and then go back to cover all the extra angles. It's a powerful way of working that I want to take further and use on a more substantial project. Imagine a movie about Rembrandt that actually looked like his paintings, for instance... you can go anywhere with this technique."

'Stolen' was aired on UK channels ITV, C4 and C5 in April and May. You can find more info at www.beatpoverty.org



1 An early concept pencil sketch by art director Jo Simpson. "I drew the mother and father with their faces close together to emphasise their love for one another," she explains. "I originally put tiny mouths in there, but they weren't needed. We felt that their body movement could convey everything. With the colours we were trying to avoid any suggestion of a particular race, and so looked at blues and greens."



5 The hand of Poverty crawls over the landscape. "There were so many different models of Poverty," explains lead animator Kevin Rooney. "In this shot we wanted the character to look very spidery. I created a blend shape from the fingers, emphasising the blobbiness. I tended to work with this sort of scene, so I didn't really get to see many of the textures or pretty renders."



DETAILS

Title Save The Children
'Stolen'
Agency Catalyst
Director Pat Gavin and
 Jo Simpson
Running Time 40 seconds
First Broadcast
 28 April 2002
Where On ITV, during an ad
 break in *The Forsyte Saga*
Effects house Eye Animation
 Studios, London W1
URL [www.eye-
 animation.com](http://www.eye-animation.com)
Team size on project Ten
Time taken to complete
 project Four months
Software used Maya, Shake



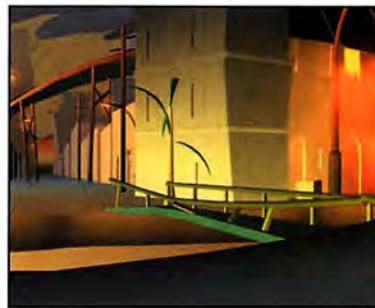
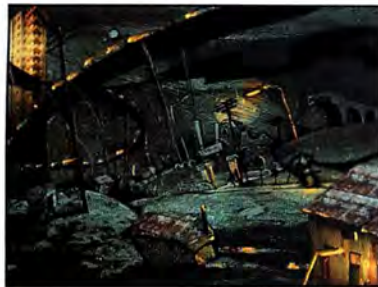
9 The mother character, with texturing added. "I'd paint up the characters to create projective textures," says Pat. "The main tool was *Painter 7*. It's a great little program, with some good textural algorithms. I also used a couple of my own tricks to get that surface effect, ones that I'm not about to reveal! A lot of it is down to how you employ and position the materials, though."



10 The broken bridge seen earlier, now with full texturing added. "The final look of the environment springs a whole mix of references," explains Pat. "Some came from looking at photos of Cuba, then there's also cubism, *The Cabinet Of Doctor Caligari*, German expressionism... plus I've always been interested in Australian and African art."



11 From its beginnings as a shadow, and then a spidery hand, Poverty begins to take a more definite shape, growing in size. "The idea is that the viewer won't quite realise what it is at first. At this stage it's still quite ephemeral, gliding along the road. We wanted to show that Poverty grows from the environment. It's only when it enters the house that it finally assumes a human-like form."



FREEZE FRAME

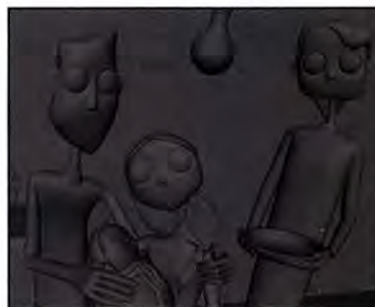


Still from the finished advert. Accompanied by poem narration from the gravel-voiced Christopher Lee, the ad lends poverty a sinister physical form. In the opening shot a blinking eye can be seen on a street wall. From this springs a shadowy, hand-like form. As it floats through a run-down urban landscape the view cuts to a loving but poverty-stricken family. Poverty enters the family's home, assuming a near-human form, and extinguishes the single light in their solitary room. As a coda the hand of Poverty reappears, attempting to snatch the child from the Save The Children logo, only to recoil and disperse as it makes contact.

2 The concept is further developed with elongated figures and experimental colouring. "The intention was to show that, though the family doesn't have money, they're still very graceful, with the long forms emphasising their movement," says Jo. "This early test has an image taken from a derelict wall with flaking paint, with the texture bleeding through into the characters."

3 Just as the characters are designed to avoid issues of race, so the early concept work for the landscape emphasises that poverty is a global problem. The design takes in elements from northern slum towns, African shanty towns and every problem spot in between. Once Pat Gavin's textures, with their own range of artistic references, are applied, the environment will become even more of a global amalgam.

4 The street model with basic lighting, prior to the addition of Pat Gavin's textures. "There's only very basic lighting done using Maya," explains Pat. "It really comes from the textures, which are pre-lit. There's not a lighting algorithm in the world that's going to give you, say, a Van Gogh lighting set-up, you have to do it yourself. A lot of it involves using contrasting colour tricks."



6 "This is the skeletal model for the mother," says Kevin. "It's a fairly standard set-up, but with six joints in the back. Where possible I'd animated with forward kinematics, to get fluid movement, good breaking of joints and nice arcs. Each shot had to be set up differently though, so if the father has his arm around the mother that's done with IK, for example, to have their movement linked."

7 A wireframe of the family, with some control points eye locators visible. "It was a very light, easy to manipulate scene," says Kevin. "One of the more detailed areas is with the hands. They're set up with individual finger joints, because the project required a number of subtle movements such as stroking the baby's head. Feet weren't a problem, though, as they're never seen. The final character designs are a mix of NURBS and subdivision surfaces."

8 "This is the next stage up, with hardware shading to show them in their simple forms without textures and prior to the addition of lighting," explains Kevin. "The lighting again is very simple, with a single point light for the bulb. Because the faces have no mouths there are quite a few blend shapes, so that worry, concern and fear can be expressed with the eyes."



12 The family room, filled with items such as the sewing machine and mobile to suggest a loving family. Working with 3D enabled the team to employ a few tricks and cheats. The family are effectively floating in the air, for example. "We also added a trombone shot, like that used in Hitchcock's *Vertigo*. If you're doing that sort of thing as live action it's very difficult, but with 3D CG it's a gift."

13 The spectral figure of Poverty looms symbolically over the helpless family. "Designing the figure of Poverty was very tricky," says Jo. "We had to be careful that he didn't symbolise death, but he also had to be a shadowy character. We kept it quite simple, with a small head but broad, strong shoulders. The unusual look came from my original sketches. When I draw shadows I tend to make them from pencil scratches."

14 Poverty literally steals the light from the lives of the family. "We used Maya's particle systems hooked to a skeleton to achieve the look," says Pat. "There are also little bits of 3D geometry and texture maps added to the model. Even though he doesn't grimace or scowl, we used texture mapping on the face to give some expression and personality." ■

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PROFILES

Tomek Baginski

Living in *The Cathedral* for 15 months may have made this Polish artist paranoid, but it also garnered him one of Siggraph's most prestigious awards **BY ED RICKETTS**

BIOGRAPHY

So how did an architecture drop-out become an animation whizz, especially with no formal teaching?

"I always wanted to make animations," says Tomek. "*Real4D* on the Amiga was my first 3D program, a long time ago. I liked to draw, and realised that I could make movies on a computer without the need for a camera. Which was great, because I love movies but I don't have a camera..."

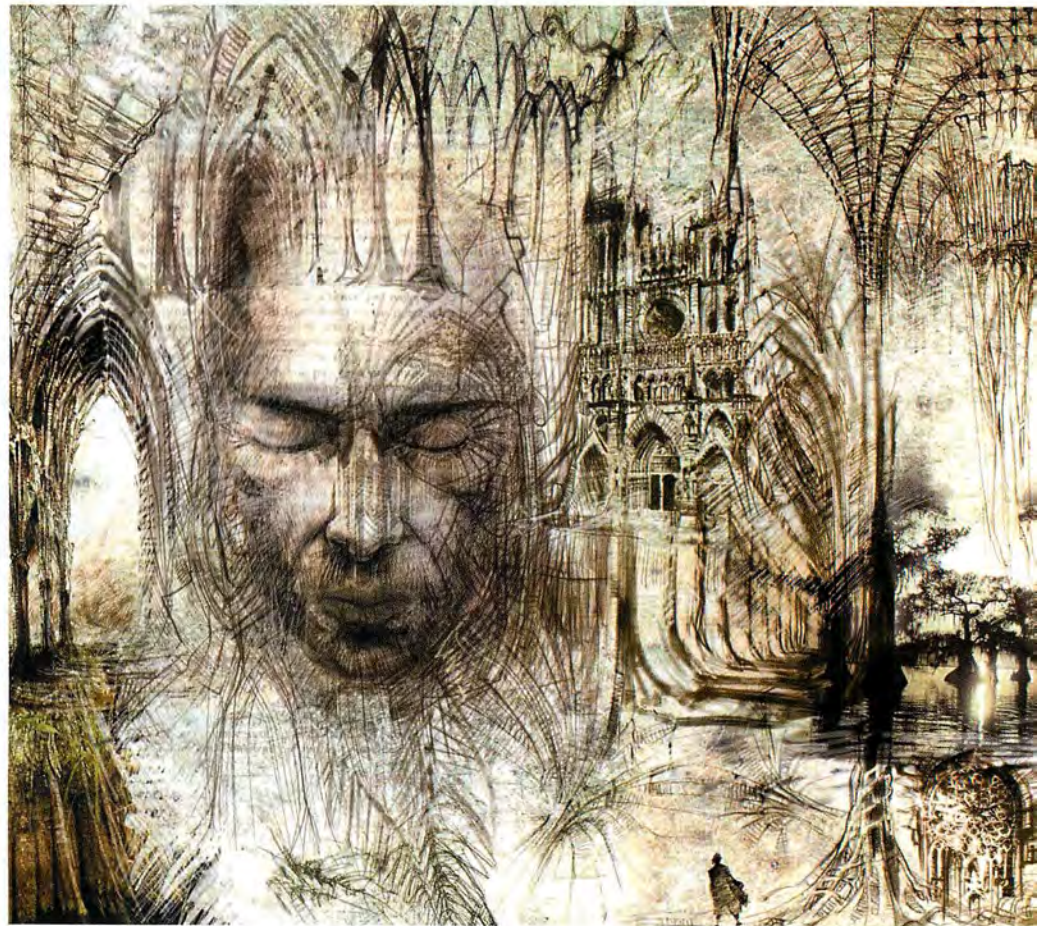
After leaving high school, he embarked on an architectural degree, but always with one eye on the animation industry. Although Poland is rich with animation talent, it's not exactly well supported through formal education in this area.

"As there's only one school of animation in Poland, only six students each year have a chance to study it – and that's targeted mostly at traditional animation," Tomek explains.

"If you want to be a computer animator, you have to learn on your own."

So when the job at Platige Image arose in 1998, he had no qualms about quitting his course before graduation and joining the company full-time. Fortunately Platige encourages its employees to develop their own personal projects alongside their mainstream work, and thus *The Cathedral* was begun.

You can see *The Cathedral* in motion at platige.com.



Tomek's rich, dark sketches for *The Cathedral* draw together his Gothic and eastern European influences.

For someone who "doesn't think much about style things," Tomek Baginski is doing pretty well for himself. First off, there's the little matter of his pet project, a six-minute animation called *The Cathedral*, winning Best Animated Short at Siggraph 2002's Computer Animation Festival.

"I was scared. Really," Tomek says of learning he'd won the prestigious award. "I wanted to get to the Electronic Theatre but I didn't think that I could win. Also, I got that information just after I'd sent the final animation. The final had quite different music to the jury version, and I'd begun to think it would be disqualified because of that new music. It was classic paranoia and exaggeration, but that was after eight months continuous time spent on *The Cathedral*. My brain was definitely overheated."

Now that the information has sunk in, Tomek is enjoying his success – as well he should. *The Cathedral* is a rich, dark, moody yet sumptuous labour of love, an adaptation of the eponymous short story by Polish sci-fi author Jacek Dukaj. Designed and animated over a period of 15 months, it's decidedly European in feel; no bright colours, frenetic animation or punchline ending here, just attention to detail and an exquisite style.

Tomek is also Polish and currently works at Platige Image, a post-production house specialising in 3D animation which actively supports its artists with their own personal projects. Work on *The Cathedral's* screenplay began in 1999, in conjunction with Jacek Dukaj himself, who contributed more than 300 pages of ideas. "I started the film at the end of 1999, and finished in April this year. The longest period of continuous work was the eight months leading up to that... I think the whole project was something like 3,000 hours, not including render times."

But not all those months were spent living in *The Cathedral*. Bills have to be paid and Tomek also contributed to many other commercials, music videos and effects work for Platige Image. The company generally deals with local Polish or European brands, but has also completed work for the likes of Nescafé, Danone, Knorr and Peugeot. The jewel in its crown is *Quo Vadis*, a swords-and-sandals Roman epic which has become Poland's largest feature film project, with various *Gladiator*-style effects created in *3ds max*.

max is also Tomek's software of choice, along with *Photoshop*, but by dint of familiarity rather than any particular technical reason. "I don't think the choice of software is very important for pieces on the scale of *The*

Cathedral," he says. "Short films can now be done much the same way in either *max*, *Maya* or *LightWave*... the set of tools which comes with each is quite similar. Of course there are strengths and weaknesses but there is no such thing as ideal software, right?"

Nor does he spend sleepless nights worrying about where his influences come from. "I don't know. I'm trying to make good-looking pictures, that's all. Probably my biggest influence was when I read the short story," he says. "It's very good 'visual' literature – you're seeing it in your head as you read it. All you have to do is copy that from your mind to the computer... it can take some time, of course. Even as long as 15 months."

"When I was younger I was really influenced by the art of Polish painter Zdzislaw Beksynski. Now I think I've found my own way, but his influence is still visible in my art. For *The Cathedral*, I also studied lots of Gothic architecture and work by Antonio Gaudi."

Tomek's next dream is to make another "longer, better" story based on the new Jacek Dukaj novel – "and to make it with more than one person. Who knows? Maybe I will. We're starting to work with Jacek on the new screenplay." In the meantime, a short film about a serial murderer is in the works, "extremely different to *The Cathedral*. Just for

fun. It's not a funny idea – it's pretty dark and gory – but I think we'll some have fun doing it." Hard to reconcile from a man who quotes *A Bug's Life* as his favourite Pixar film...

Hopefully Tomek will allow himself to sit back, relax and bask in his glory for a while, but somehow we don't think that's likely. There's too much to be created, and we suspect that fame and fortune means little to him. His bio on Platige's website reads simply: "I don't want to write about myself. Not yet. It always looks insincere." And, you know, he probably means it. ■

NAME	Tomek Baginski
AGE	26
YEAR GRADUATED	Quit architectural course in 1998
CONTACT DETAILS	Platige Image +48 22 844 64 74, tomek@platige.com Warsaw, Poland
BASED	www.platige.com/katedra
WEB SITE	<i>3ds max</i> , <i>Photoshop</i> ; Platige also uses <i>Maya</i> , <i>Softimage</i> , <i>Shake</i> and others.
PRODUCTS USED	
FUTURE GOALS	Tomek is making a short film about a serial murderer, and is also in the process of developing a screenplay of Polish novelist Jacek Dukaj's new book in conjunction with the author.



Tomek brings sci-fi author Jacek Dukaj's characters to life in style.



There's a definite hint of Gaudi's architectural style in Tomek's work – does this seem at all Familia?



While he has more than one 3D app available to him at Platige Image, Tomek favours 3d max.



'No bright colours or frenetic animation here...'

CREDITS

Rain (1997) – "Very amateur" student work. Won first place in the Magazine 3D awards, Poland.

Various award-winning projects for Platige Image, including commercials, music videos and TV layouts.

The Cathedral (2002) – Winner, Best Animated Short, Computer Animation Festival, Siggraph 2002.



"YOU'RE SEEING IT IN YOUR HEAD

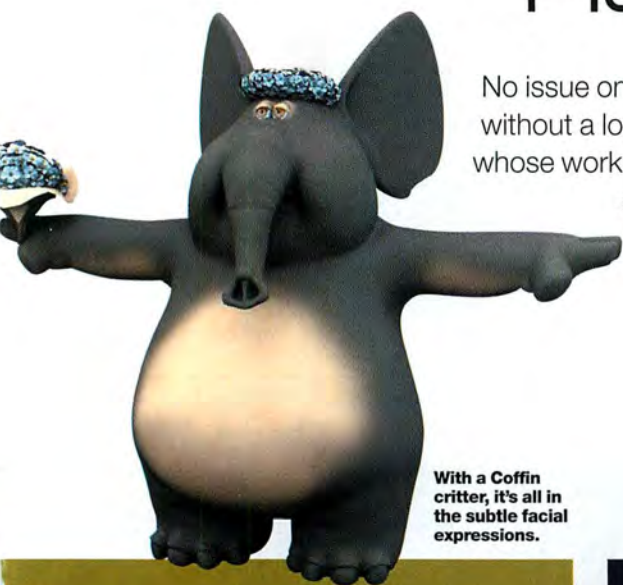
AS YOU READ IT. ALL YOU HAVE TO DO IS COPY THAT FROM YOUR MIND TO THE COMPUTER."

TOMEK BAGINSKI,
CREATOR, *THE CATHEDRAL*

PROFILE

Pierre Coffin

No issue on 2D techniques would be complete without a look at French animator Pierre Coffin, whose work combines panache, pencil-shading and... er, penguins **BY JIM THACKER**



With a Coffin critter, it's all in the subtle facial expressions.

A signature is an equivocal thing; it cuts both ways. At the bottom of a canvas by Picasso, for example, a signature is a guarantor of riches; at the bottom of a committal form, it can herald the start of a lifetime of incarceration. For the cult French animator and commercials director Pierre Coffin, his own signature style is similarly ambivalent.

"After *Pings*, the only proposals I got offered were for films done in that particular style," he explains. "And I wanted to get away from it. These days, most of my work is more conventional 3D animation."

The *Pings* in question was a series of two animated shorts, knocked up during a brief lull during commercials work at his then-employer, French effects house ExMachina. The shorts, which featured a troupe of animated penguins and blended whimsy and black comedy in equal proportions, rapidly became a hit when they were shown at SIGGRAPH 98 – partly because they satisfied the public's deep-seated need to see bad things happening to cute baby animals, but mainly because of what was then taken to be Pierre's signature style: a meshwork of dancing pencil lines, applied over the surface of three-dimensional models.

"In fact, I stole everything from *Gas Planet* [the groundbreaking PDI short, profiled on page 96]," he explains. "When I met [GP creator] Eric Darnell at Ancey, I told him that, but he just laughed."

BIOGRAPHY

They say that national service makes a man out of you. In Pierre Coffin's case, it made an animator.

Born in suburban Paris and raised in Nantes, Pierre Coffin initially moved back to the metropolis to do a film degree. After two years, dissatisfied and with the impression that "I hadn't learned anything," he left to do his military service.

Far from being a set-back, this enforced sabbatical proved to be a turning point in his career, with Pierre spending "most of the final year" working on his application for famous French animation school Gobelins. Quite what the authorities thought of this use of military resources remains unrecorded.

On graduating from Gobelins, Pierre spent nearly a year working at Ambimation in London, the studio formed by Steven Spielberg before DreamWorks SKG. Returning to France, Pierre worked for ExMachina for several years, first as a staff designer, and later in a freelance capacity.

Now based during the day at MacGuff Ligne, his current projects are produced by Wanda Productions on the Continent, and Passion Pictures in the UK, whose Managing Director, Andrew Ruhemann, he describes as "a genius."

"I've never met anyone as intelligent and open-minded as Andrew," he enthuses. "He doesn't talk about money that much, but he pushes me to the limit creatively. If I didn't already work at Passion, I'd want to!"

CREDITS

Present projects include commercials for Caisse d'Epargne and Snuggle. Previous ads include Moltone! and the French National Lottery (Wanda Productions, France), Oscillococcinum (Prêt à Tourner, France), Handy Bag (La Foumi, France), Electrolux (Nexus Films) and Flora (Passion Pictures, UK; won Best Commercial, *London Effects and Animation Festival*). Other work includes *The Quest of Gnomes* (1998), produced for the Hyonosen Nature Museum and *Pings* (1998) which was shown at SIGGRAPH 98 and won third place (3D/CG shorts) at Vancouver 1999.



A little Flora margarine helps Mrs Spratt turn sloppy hubby Jack into her dream hunk in this Passion Pictures ad.

But regardless of its provenance, the hybrid 2D/3D styling displayed on *Pings* was a striking technical innovation. Created by photographing four separate sheets of pencil hatchings, then mapping them onto the surface of CG models, the technique brings some of the vibrancy of hand-drawn art to the more impersonal world of 3D. By cycling from one texture to the next at a rate of about five transitions per second, then overlighting the scene to flatten out the image, it creates the effect of a pencil drawing come mysteriously to life.

Following the success of *Pings*, Pierre did indeed complete a number of projects in a similar vein, including commercials for Electrolux in the UK and Pastilles Vichy in France, and the short film *The Quest of Gnomes*, based on a book by the Dutch author Rien Poortvliet. *The Quest*, which was commissioned by the Hyonoson Nature Museum in Japan, brought about a logical extension of the surface-shading technique: instead of pencil hatchings, Pierre substituted watercolour brushstrokes, giving the animation the look of a living book.

The Quest of Gnomes also had one further unforeseen consequence: it brought the technique back to the attention of the US. When Eric Darnell's PDI colleague Cassidy Curtis was doing his landmark work on non-photorealistic rendering, he contacted Coffin to find out how the effect was achieved. "I got an email from him asking how I did my stuff," laughs Pierre. "Which is ironic, because it was basically all a cheat!"

PROGRAMS AND PEOPLE

A classically-trained animator, Pierre has worked in a diverse mixture of packages over the course of his career, including early versions of *Softimage* and *3ds max*. These days, however, he mainly uses *Maya*. "I think it's because of the modeller and the animation modules," he explains. "I'm not that good at modelling, so *Maya*'s the only one I can really work. Using it is just sheer pleasure; I don't have to think of anything technical, I just animate."

For rendering, Pierre employs the in-house software developed by MacGuff Ligne, the French effects house whose facilities he uses during the days. Now a highly sought-after freelance animator, Pierre works mainly for Wanda Productions on the Continent and Passion Pictures in the UK.

Never one to let the grass grow under his feet, Pierre is currently working on three commercials projects simultaneously: one for a local brand of candy, one for Snuggle fabric softener, and one as part of a four-part series for the French bank Caisse d'Epargne. Each Caisse d'Epargne ad features a different animated animal. Unsurprisingly, Pierre suggested his beloved penguins. "Every time I send in a proposal, it's penguins," he explains. "They have always been rejected so far, but I'll get them in there..."

Sadly, plans to turn *Pings* into a 20-part series for French TV channel Canal+ are currently stalled in development hell. "I've been pushing this for years,"

Pierre groans. "At one point, the producer told me he'd got all the money for it, but apparently he never did. To be honest, I think I just want to move on."

Which is bad news for *Pings* fans throughout the world. The two original episodes can be seen in QuickTime format on the Passion Pictures Web site (www.passion-pictures.com), and in DivX format on Pierre's own site (below). But for now, that's your lot.

Pierre does have one piece of good news, though. "I'd like to do one more episode to make a trilogy – because trilogies are trendy, like *Star Wars*," he laughs. "Then, in 20 years, I'll make another one containing the prequel to the story, and everyone will realise how crappy the originals really were!" ■

NAME	Pierre Coffin
AGE	35
JOB TITLE	Freelance animator
BASED	Paris, France
WEB SITE	http://pyer.3dvf.net
PRODUCTS USED	Has used early versions of <i>Softimage</i> and <i>3D Studio 1</i> . Currently working in <i>Maya</i> , along with MacGuff Ligne's in-house rendering system.
FUTURE GOALS	Pierre is currently working on three separate commercials, and pitching for various titles projects for kids' TV. He still has hopes of working those penguins into a commercial project...



Pierre's generally pretty mean to his penguin chicks.



Pierre's Web site. Tip: click on 'Ouch!' Classic touch!



Pierre works mainly in *Maya* with a proprietary renderer.



A still from *Pings*. Note the pencil-shading effect.



"I REALLY, REALLY HATE HAVING MY PICTURE TAKEN. CAN'T YOU JUST USE ONE OF THE PENGUINS IN MY PLACE?"
PIERRE COFFIN,
 ANIMATOR

Digital Quest Studios

Demand for rendered 3D imagery is growing in the print advertising industry. This new studio has been capitalising on the trend, and could well be putting photographers out of business... **BY GARRICK WEBSTER**

G With productions like *Walking with Dinosaurs*, *Tomb Raider* and *Harry Potter and the Philosopher's Stone* coming out of London CG studios over the last few years, it's easy to forget that there are plenty of ways to gain job satisfaction in 3D without working on big-scale TV or film projects. Digital Quest Studios is a case in point. Founders Clive Biley and Chris Davis see their work on Tube posters and billboards all around London – and, for that matter, other cities across the globe. With less than a year under their belts as Digital Quest Studios, the pair are exploiting their 3D rendering skills in the advertising market, an area where demand for 3D grows daily.

"My background has been as a retoucher – high-end retouching using *Photoshop*," explains Clive Biley. "Then from there we went into 3D. They [ad agencies] were having a lot of things shot – expensively – and then retouching them, so it made a lot of sense for us to build the models, which they could obviously rotate them around and have perfect every time."

Whereas two years ago Clive and Chris (as a previous company) were delivering 90 per cent retouching work and 10 per cent 3D, today the ratio is more like 50-50. Digital Quest is gradually convincing more and more art directors on the advertising scene that 3D can be the way

BIOGRAPHY

Clive Biley and Chris Davis form the driving force behind Digital Quest. These are their stories...

Clive Biley: At the age of 30, Clive already has 12 years experience in photo retouching, going back to the days of the airbrush. At 21 he and some friends set up Nucleus Creative Services in London, and in 1994 he first became interested in 3D. When *LightWave* was ported to SGI in 1995, at a cost of £1,900, he started using it. Eventually, after eight years, he sold the company to Tag This and began a new venture with them called Adventure Tag, as well as Digital Quest Studios.

Chris Davis: Until 1996, Chris had never used a computer. At that stage he took a course on graphic design (and started buying our sister magazine *Computer Arts* for its DTP and *Photoshop* tutorials). After looking into it, he got into 3D. He began with *Inspire 3D* from NewTek because, he says, it brings with it 75 per cent of the features of *LightWave* at a fraction of the price. He's since graduated to *LW, messiah* and, as part of Digital Quest, specialises in hi-res 3D.



Digital Quest specialise in high-quality 3D stills, like this image they produced for a Royal Bank of Scotland campaign, which has been running in the UK national press.

to go if they haven't got the budget for photo shoots and all that they entail. The company's clients include the ad agencies Bates UK, DLWK, JWT and Stroke Savers. These have led to work on brands as prestigious as Benson & Hedges, 555 Cigarettes, Cadbury's, The Royal Bank of Scotland, Boots, Nestlé, Carphone Warehouse and Wentworth Golf Course.

According to Clive, once an art director has gone the 3D route and feels comfortable with it, they're likely to use it again. It's getting them to feel comfortable with it in the first place that has been the challenge. "It's basically getting the art directors into a way of thinking – getting them to think around doing 3D, rather than doing it the original way," says Clive. "Part of the problem with doing it 3D is that they don't get to see anything. If they were going to photograph it they'd have reference shots, they'd have their model maker. As the job went on they'd actually see stuff. With 3D, you can spend two weeks modelling a car before they see what they're getting. That is actually quite a big worry for them, but once you've worked for them a couple of times they come round and leave you to get on with it."

Chris and Clive are in a unique position when it comes to developing relationships with art directors. On top of running Digital Quest, they both also work for the agency TAG Creative. Plus they have previous experience in

setting up a digital retouching studio. Reps from TAG bring in work that can then be subcontracted out to Digital Quest if it requires 3D or retouching. In addition, Digital Quest takes on overflow work from the animation house Darkside Animation.

Indeed, the company is now finding itself working alongside some of the biggest names in British animation and effects. The Carphone Warehouse television ads featuring the walking, talking mobile phone were done by Passion Pictures, with Digital Quest brought in to do the press work. Passion had used *messiah* to rig the animation but sent over the mobile phone model without its character rigging. Digital Quest re-rigged it in *messiah*, and upped the subdivision mesh on the model for print resolutions. Backgrounds were taken from the original 35mm footage shot for the ad. "What we did, because the resolution was so poor, was an R-type print, and then we scanned that in," says Clive. "It would have come out too grainy otherwise."

New work the company is doing involves Smoke & Mirrors. Clive sees the company ultimately going into TV commercials and moving images.

Thanks to its render quality and speed on the PC platform, *LightWave 3D* is the tool of choice for Digital Quest. The company runs it on dual Xeon Dell PCs, with GeForce 4 graphics cards and a RAID hard drive system

for added power. "The number one benefit is speed," says Clive. "Our clients, because we've got a retouching history behind us, expect 3D to have the same sort of turnaround. If they say they want something, they want it the next day."

With strong clients and relationships in the advertising industry, Digital Quest proves to be a great example of a CG house that's gaining recognition without going the entertainment route. For Clive, the way ahead is to stay small and friendly. "Getting bigger? Not necessarily, to be honest. I think you can lose that sort of family touch if you're not careful, and that's one thing that makes it successful for us," he concludes. ■

NAME	Digital Quest Studios
FOUNDED	2002
STAFF	25
BASED	East London
CONTACT	+44 (0)7802 280272
WEB SITE	www.digitalqueststudios.com
PRODUCTS USED	<i>LightWave 7.5, Photoshop 7, Xeon Dell Dual 1GHz workstations</i>
FUTURE GOALS	
Digital Quest has seven ads for Craven A coming up, work on Cadbury's Flake press advertising, and a job creating rendered visualisations of the holes on Wentworth Golf Course.	



Welcome to Wentworth Golf Course, or at least Digital Quest's virtual rendition of it – part of their ad portfolio.



"WITH 3D, YOU CAN SPEND TWO WEEKS

MODELLING A CAR BEFORE ART DIRECTORS CAN SEE WHAT THEY'RE GETTING. THAT IS ACTUALLY QUITE A BIG WORRY FOR THEM"

CLIVE BILEY, DIGITAL QUEST FOUNDER

GOING IT ALONE

Clive Biley of Digital Quest Studios gives his eight key tips on setting up your own 3D studio...

- 01 Know your packages. Learn two or three covering different media – *Photoshop*, a 3D package and a typography package. Learn them inside out.
- 02 You have to know your clients very, very well. Build one-on-one relationships with them.
- 03 Always have a back-up plan. Whatever your clients promise you, it never happens – guaranteed. No matter how much work they say they're going to let you have, they won't.
- 04 Get the right kit.
- 05 Get the right people in.
- 06 As to location, I'd say these days, because of the Internet, it isn't so much of a problem.
- 07 Always expect to have to change your image. It doesn't matter how wonderful you think it is. It's the client who has the last say and it must fit their brief.
- 08 When starting out, try and produce maybe three detailed, finished 3D pieces. Do as much as you can in the render and stay away from those horrible space-monster shots and lens flares.

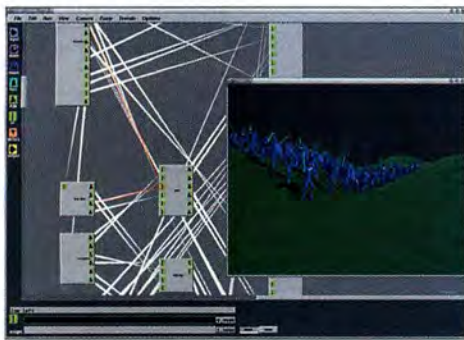


PROFILE

Stephen Regelous

The author of Weta Digital's *Massive* crowd-simulation software is proof that behind every Orc army there's a software guru coding his socks off...

BY ANDY STOUT



Command *Massive* armies at the touch of a button.



"TO ME, CODING IS JUST A WAY OF ACHIEVING

MY ENDS. IF THERE'S SOMETHING I WANT TO DO AND THERE'S NO TOOL FOR IT, THEN I'LL JUST DAMN WELL MAKE ONE."

STEPHEN REGELOUS
AUTHOR, *MASSIVE*

Every high-end effects house has developed its own crowd-simulation software over the years, but few have managed anything as accomplished as Weta Digital's *Massive* system; the software behind multiple battle sequences in *The Lord Of The Rings: The Fellowship Of The Ring*. As its author, Stephen Regelous, points out, it's more than a way of filling up screen real estate with bodies. *Massive* is a full-on system for creating autonomous agents, with Regelous distilling more than a decade's worth of interest in artificial life into its creation.

"I used to do graphic design, but that got kind of boring," he explains. "But in the late '80s I got interested in computer animation and applied for some jobs. There were only a couple of studios in the country [New Zealand] at the time and they wanted people with experience, so I got myself an Atari ST, got myself a book on writing in C, and put together some animation software to show them I could do stuff."

Eventually, this led to Regelous working as a TD on *The Frighteners*, where director Peter Jackson asked him if he could put together a crowd system for what was then going to be *The Hobbit*. "At the time, I was looking for an avenue to get paid and do artificial-life-inspired animation, which wasn't going to be easy," explains Regelous. "So I turned it down at first, thinking that it would be just a particle system with animation cycles stuck to them. However, then I realised that if you were going to do it right, you needed a more A-life inspired approach and that this was the opportunity to do something really cool."

Massive – nicknamed 'Plod' in-house at Weta – works by allowing users to design a motion tree, build a skeleton, import motion-capture data, then construct a virtual brain from AI routines. Parallel to this is the creation of the geometry and shaders for the agent, which come together with the motion during the render. There are limitations, of course – Regelous says that he wouldn't

really want to simulate more than a few hundred thousand agents at once, while skeletons can't be broken and are limited to around the 1,000-bone mark – but it's still a very powerful proposition.

Regelous owns the rights to the system himself, and is planning a release version for this year. In addition, he is currently working on adapting the software so that any facility can use it, including plans for a cutdown freeware version. "It's such a shame that the most interesting and powerful tools are not in the hands of those that should use them because they're so expensive," he says. "You get these wonderfully creative people who only do perfume ads and movie shots with technology that could be used for much greater things. So I thought I'd make *Massive* available to as many people as possible with a cheap version. Then I thought no, bugger it, why not just make it free?"

Massive's results on screen so far have set new benchmarks in mass crowd simulation, and its work is set to feature even more extensively in *Fellowship Of The Ring* sequel *The Two Towers* as Tolkein's epic moves into battle mode. And Regelous, despite never really thinking of himself as a programmer, is keen to continue developing the system's A-life aspects. "I want to continue working on it," he concludes. "I just don't know whether everyone will agree with me on what's useful for production!" ■

NAME	Stephen Regelous
AGE	38
EDUCATION	Graphic Design course at Auckland Poly, 1982
CONTACT	www.massivesoftware.com
TECHNICAL SET-UP	Has IBM Intellistation with dual 2.2GB CPUs and 2GB RAM. Prefers Dell laptop
SELECTED CREDITS	<i>The Frighteners; The Lord of the Rings: The Fellowship of the Ring and The Two Towers</i>

FUTURE GOALS

To keep developing *Massive*, bringing out a release version and a basic freeware version of the software for 3D animators.



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The pleasures of flame and inferno – without particles!

ISSUE 27 EARTH: MODELLING TECHNIQUES
Worm, root and rock – recreating a micro-diorama

ISSUE 28 WATER: PARTICLE EFFECTS
From dripping taps to rolling seas: we show you how

THE SKY'S THE LIMIT

Air, the third of our Elements tutorials, shows you how to use volumetric techniques to create dramatic skies, as seen from Earth and space.

Atmospherics and sky rendering are usually the preserve of dedicated applications such as *Bryce* or *Vue d'Esprit*. But while these packages are good at what they do, the output may not be quite what you're after.

So here's the good news: it's relatively easy to recreate great skies and other atmospheric effects from right within your main 3D application without ever reaching for a plug-in or having to fork out for a specialist program.

This Air tutorial shows you some techniques for creating skies and atmospheres using both volumetric methods and standard texturing. This method offers a lot of flexibility, because you can control every parameter using controls you already know – essentially, the texturing controls. These parameters are usually directly animatable, too, so by their very nature the techniques can be applied to animation just as easily.

Incorporating volumetric lighting adds that bit of flair needed to sell the effect – but, as we'll show, it's also possible to use imagery rendered from landscape-generation packages, such as *Vue d'Esprit*, and incorporate them into the scene via your main 3D app. In this case, you can take advantage of the atmospheric effects on offer and marry these with the more complex animation capabilities of 'pro' 3D applications. For the purposes of this tutorial, we'll be focusing on *LightWave*, but you can use these techniques in almost any package.

BY: SIMON DANAHER

Simon Danaher is a regular contributor to *3D World* and has fond memories of going up, up and away in a beautiful balloon.

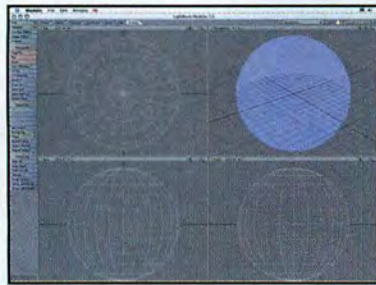


TUTORIAL

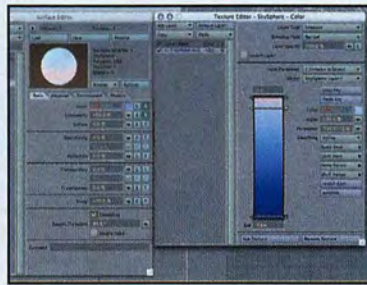
General tips

1 To calculate the distance to the horizon on any planet, use this simple formula: distance = square root of ($h^2 + 2rh$), where h is the eye height and r is the planet's radius. Because h is so small compared to r , you can reduce the equation to distance = square root of ($2rh$). So for an eye height of 1.5 metres on Earth, the horizon is about 4.4km away. (Earth's radius is about 6,370km.)

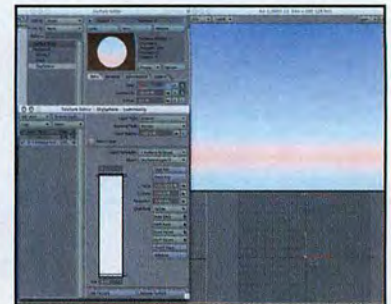
CLOUD-BUSTING: Generate great clouds using standard texturing tools



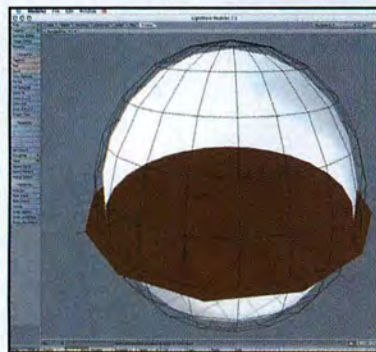
1 The first thing you need to do is to make sure you know what's required of the sky. Will it serve just as an attractive backdrop, or is it more of a feature in itself? For the former, here's a quick set-up. Begin with a large sphere. If working in standard units, extend it as far as the horizon for a given eye height (about 4.4km for a 1.5m eye height). [SEE TIPS](#)



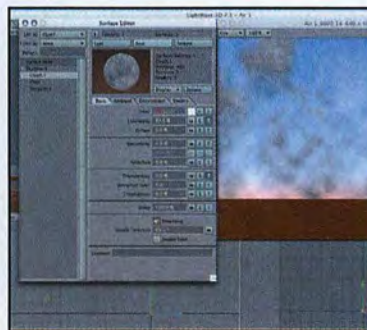
2 Name this sphere 'Sky' or something logical. This is the background skydome. As we're working in *LightWave*, we'll send the object to Layout for surfacing. The sphere is given a Gradient texture in the Colour channel set from mid-dark blue to pale blue to pink, the gradation determined by the distance from the dome's centre (a simple spherical projection would also suffice).



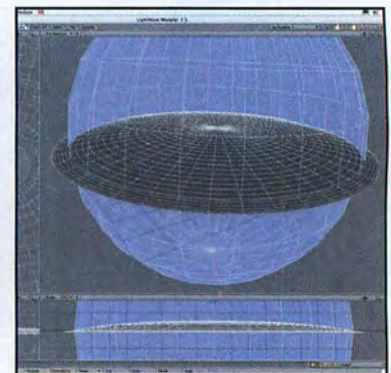
3 Apply another gradient in the Luminosity channel. Here you can (if your 3D app supports it) use super-bright values to help create a more blown-out look to the sky. As the skydome is essentially diffused light, set the diffuse shading to zero – we don't want it to be affected by scene lights.



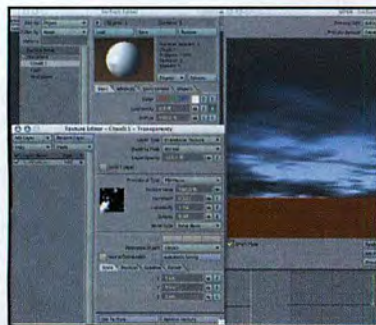
4 Next, we add two more objects: a floor disc and another sphere. The floor extends beyond the skydome, while the second sphere is scaled slightly smaller than the skydome. Let's call this one 'CloudsL1'.



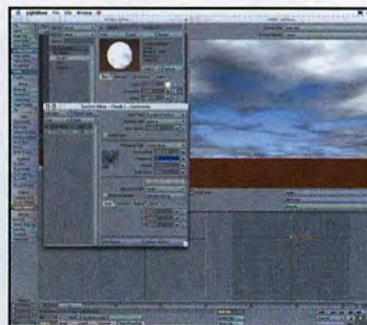
5 Here's a render of the current model with a cloud texture applied. The problem here is that the cloud sphere is the wrong shape, making the clouds appear like a vertical wall. We need to flatten the cloud sphere in the y-axis to make it behave almost like an infinite plane.



6 Here the cloud object is made from a lathed curve. It has a very shallow curvature, which will look much like a plane overhead, but which will sweep down to meet the horizon.



7 To create the cloud texture, apply a fractal noise shader to the Transparency channel of the CloudsL1 surface. The size of the texture is set to about 3km, in line with the object size. Notice that the clouds look more like they're streaming overhead now. Much better.



8 We can control their brightness and add detail by applying another fractal shader in their Luminosity channel. This much smaller shader boasts finer detail. Because there's a single distant light pointing downwards, the Diffuse channel isn't contributing to the brightness of the clouds.



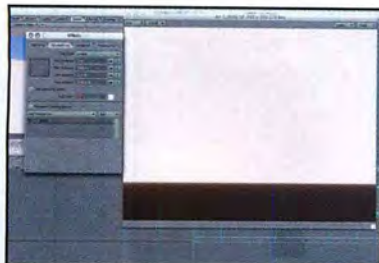
9 To control the clouds, you can simply change the overall transparency to make them brighter or dimmer, as required. Here, we've also tinted the clouds' colour with the same gradient as the sky. Depending on the look you want to achieve, this basic method is pretty good for most simple sky backgrounds.

General tips

10 Though air is usually invisible, there are plenty of atmospheric effects to take into account over long distances, including haze, mist and fog. It is also important to take into account the differential attenuation of light at different frequencies, which accounts for the sky appearing blue at noon, and redder towards sunset.

16 Creating three-dimensional volumes of cloud is difficult to do with standard tools. In such cases, a volumetric approach is the only option.

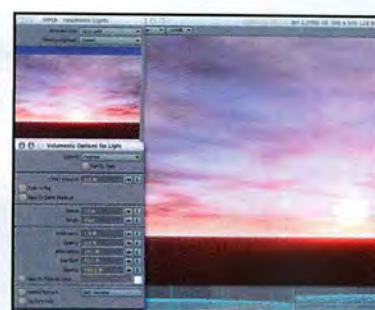
MAKING SUNSHINE: Adding haze, light and altitude with attitude



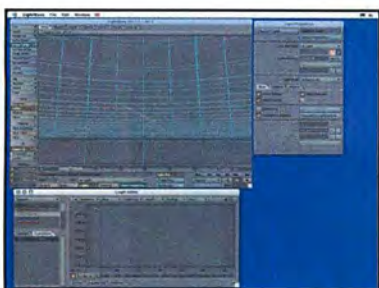
10 Improving the atmosphere is quite easy, too, but may require some lateral thinking. For example, to add some murky atmospheric haze at the horizon, you may first think that some simple z-depth fog would help. Unfortunately, with this sort of fog, there's usually no vertical attenuation, so the background skydome will tend to disappear. [SEE TIPS](#)



11 Ground fog is better, but it doesn't have attenuation in depth from the camera. However, you could use ground fog and then render out the scene as a QuickTime VR panorama, (for LightWave you'd need to use a plug-in such as Eki's RefGen). Use this image as a spherical backdrop and fade the floor object using a gradient in the Transparency channel. You could also just render out the scene without fog and edit the image in Photoshop.



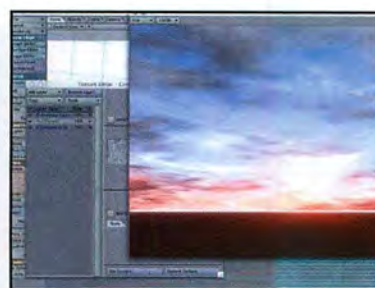
12 Adding a sun to the sky always helps to sell the effect. In this simple set-up, we can dramatically improve the image by assigning the distant light a volumetric glow effect. The light is moved in front of the camera, close to the ground, and the glow enabled.



13 This set-up, using a manual approach, gives you plenty of control over the look of the sky, and also makes it easy to animate. Here we've animated the path of the light and its colour to make the sun set in time-honoured time-lapse style. There are no volumetric shadows, so it renders very fast.



14 The cloud object is duplicated and scaled up to give a second layer of clouds, which we can then texture differently to create high-altitude cirrus. Luckily, LightWave has a shader that creates such clouds, but they can easily be simulated using a normal fractal-type shader, or painted as a texture map. Here's the cirrus layer on its own...

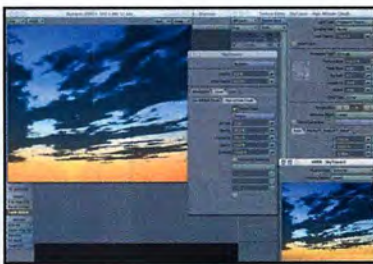


15 ...and with the lower cloud layer. To add contrast, reduce the brightness of the lower clouds. Notice that the cirrus will be much brighter than the other clouds, and less tinted, too. This is because they're higher up in the sky, so the effects of the sun aren't so diluted by atmospheric conditions.

HANDY PLUG-INS: Plug-ins offer better rendering effects – but come at a price



16 As an alternative to using textures, some 3D apps have a volumetric system for generating clouds and skies. In LW, this is done by the SkyTracer plug-in (now part of version 7). But when using such utilities, you have to relinquish some degree of control. These plug-ins take a different approach and rely on an accurate simulation of atmospheric physics. [SEE TIPS](#)



17 And while they may be more accurate, you usually have to figure out a load of different parameters before you can use them properly. This means experimenting – a lot. Preview rendering usually takes longer, too, so it pays to take the traditional route if time is tight and you don't have much experience with a volumetric plug-in or app.



18 Of course, the benefit is realistic-looking clouds with real depth and substance. In Skytracer, for example, you can render clouds as true volumes, with self-shadowing and true height. Render times can be high, but then clouds rendered in this way can lift your 'atmospheric' visuals into another league.



TUTORIAL

General tips

24 Hot air will cause distortion because light is refracted by the differing atmospheric densities around the source of the heat. Take this into account for deserts, fires, jet exhausts, etc.

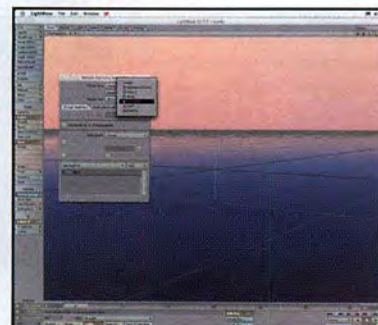
MIX AND MATCH: Combine a specialist landscape app with your main 3D system



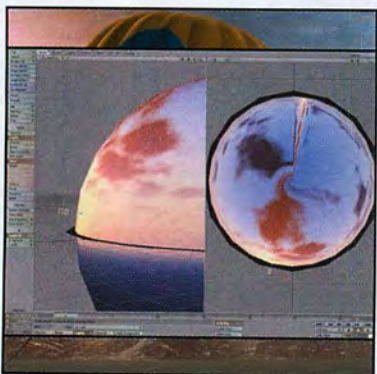
19 While landscape-rendering apps are good, you won't want to use them for much else than creating lovely environments. However, it is possible to combine the two. Here's a volumetric landscape in *Vue d'Esprit 4*, which we'll render out for use in *LightWave*.



20 The simplest thing to do is to render out a 360-degree panoramic image from the scene, which you can do in both *Vue d'Esprit* and *Bryce*. This image is then applied to a large sphere skydome object set to 100 per cent luminosity. As you can see, the scene in *LightWave* is pretty much like it was in *Vue d'Esprit*.



21 There are a few things we can do to help integrate this backdrop. First, we can set the scene light to Distant and move it outside the sky sphere. It's set to always point at a Null object at the centre of the scene, enabling us to move the light to set its direction.



22 OpenGL comes in handy here, enabling us to view the texture on the sphere so we can position the light, making it coincide with the sun in the skyscape.



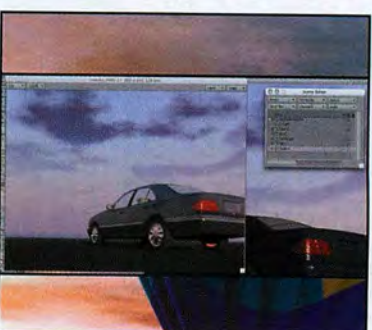
23 Now to add some objects to the scene. First, a floor. This is a large disc object, which extends past the sky sphere. To prevent a hard horizon edge, add a gradient (as we did earlier) to fade out the edges. You could also use a circular image map generated in *Photoshop*, mapped to the plane. The gradient applied is based on the distance to the camera, which lets us easily control the degree of fade.



24 Here's our first object: a car. The light's colour is set the same as the sun in the background. We'll achieve this by sampling the colour in the OpenGL view, using the system colour picker. **SEE TIPS**



25 A test render shows that things are looking okay. The light matches the backdrop and, because it's a full 360-degree sky panorama, the raytraced reflections on the car body match perfectly too. Of course, you can point the camera anywhere you like as well.



26 In this way, we can very quickly change the lighting and the sky. The light is parented to the sky sphere, remember, which you can rotate easily enough. The light moves with it, so you can change the look of the scene with just a flick of the wrist.

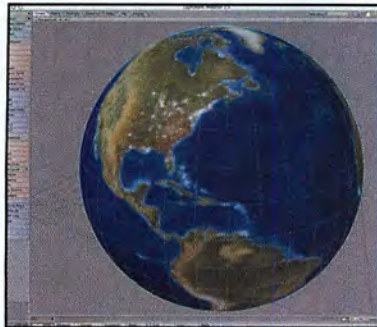


27 Making an animated sky backdrop involves little more than replacing the still panorama image with an animated one, either as a still image sequence or as a movie file, depending on what your host 3D app accepts most easily. You can then take advantage of the landscape-rendering app's animated clouds and sun features.

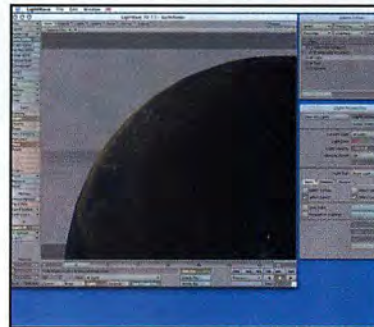
General tips

Cotton wool-like cartoon clouds can be created using a decent model and some Fresnel effects (colour, diffuse, luminosity, etc.) Radiosity or global illumination rendering can also help to create a soft, fuzzy effect.

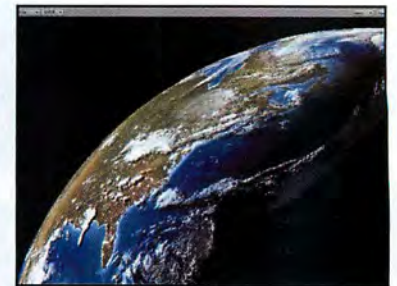
ASTRONAUT'S VIEW: To depict the earth from space, volumetrics are required



28 We've looked at atmospherics at the planet's surface, but now we'll create an atmosphere as seen from space. In this example we'll use a volumetric light to help create the Earth. The model created is simply an SDS sphere with a large texture mapped to it.



29 Now create a second sphere that's slightly larger than the first. This will form the Earth's cloud layer. Both objects are opened in Layout and the view is set to focus on the edge of the planet. The distant light is targeted to the sphere for easy directioning.



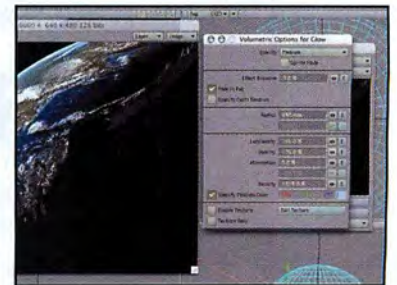
30 Here's a test render without any atmosphere. Note that the diffuse fall-off for the Earth's surface has been increased to recreate a sharp 'terminator' – the point where the sun is no longer illuminating the planet's surface. In *LightWave*, Diffuse Sharpness is set to 100 percent. Other 3D apps have similar settings to create a sharp diffuse fall-off.



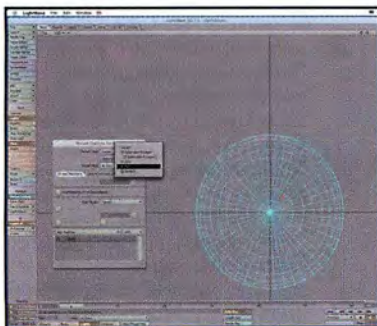
31 A point light is added to the scene, positioned at the centre of the spheres, and its volumetric option activated. It's set to a pale blue colour and the outer radius of the glow is set just beyond the Earth, so that you get a bright edge of light beyond the spheres. Settings to control the glow fall-off vary from package to package, but you need to get it quite sharp with almost no fall-off at all.



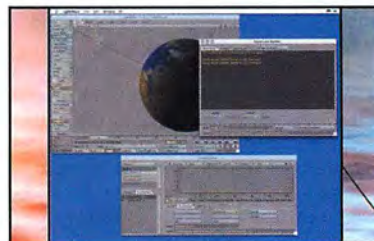
32 The atmosphere should actually dim the brightness of the planet limb through diffusion and absorption, but this is not yet happening. Increasing the opacity of the volumetric glow may help here if your system has it, but a simpler way is to use a Fresnel gradient in the Diffuse channel of the Earth material.



33 This also helps to prevent the edge of the planet from over-exposing because of the accumulative effects of the volumetric glow and diffuse illumination. However, the dark portion of the Earth is no longer very dark. We can fix this by moving the light so it's offset from the Earth away from the shadow area. To compensate, reduce the radius of the glow.



34 To do this properly, we set the glow light to point at the sun (using motion options or an expression) which enables you to easily move the light towards the source of illumination, which, handily, is now directly along the light's local z-axis.



35 If you're really clever, you could write an expression that keeps the glow light a tiny percentage of the distance between the Earth and the light (which corresponds to the offset). Alternatively, the expression could keep the glow object between the sun and the Earth, but move it no more than the offset distance from the Earth. Either way, wherever the sun is, the glow will always be at the correct offset and direction for the effect to work.

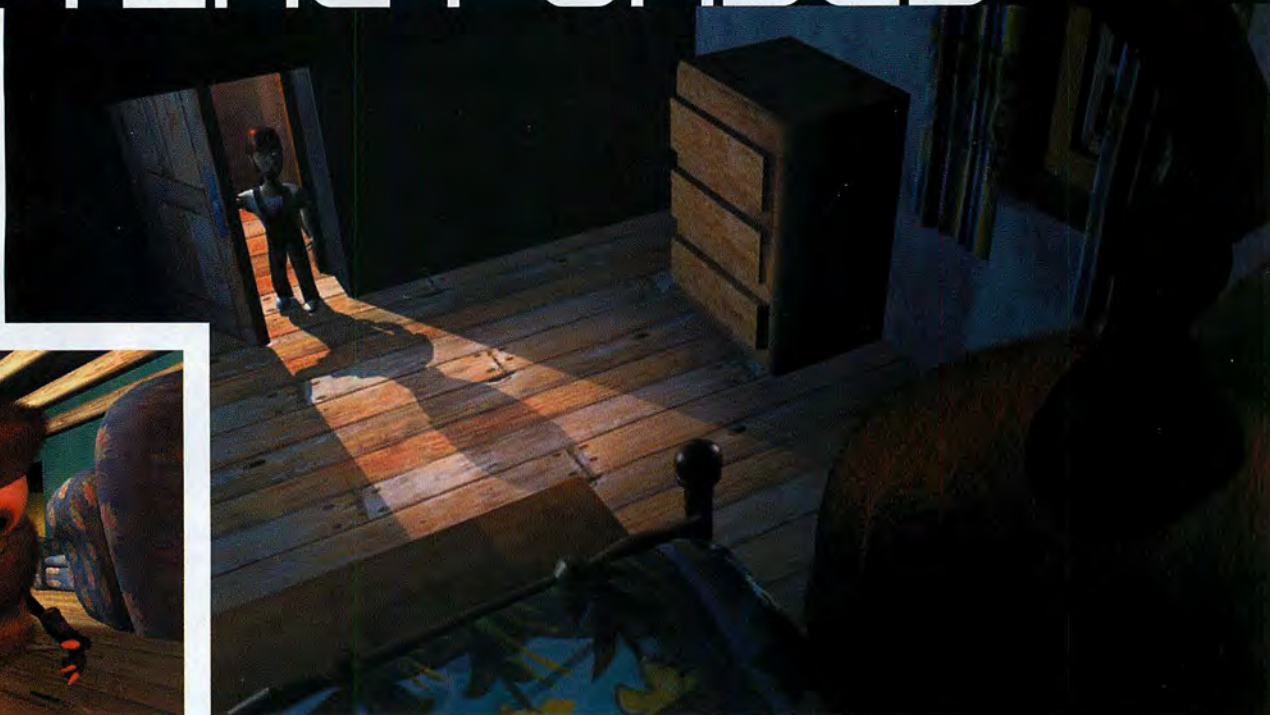


36 Pull the camera back and you can see that, thanks to the offset, the glow doesn't appear on the dark side of the Earth where there's no light to excite the atmosphere. Welcome to the final frontier. ■

GETTING FUNDED

>> PART #02 |

RIGHT & BELOW
Impressing the big
cheeses can be pretty
daunting, but they're
not all monsters.



PREPARING YOUR PITCH

In the second of our four-part series, we reveal how even a small unknown company can approach the big boys – and still convince buyers to part with their cash **BY JASON ROBERTSON**

When pitching a project, your first task is to decide who you're pitching to – be it bank, investor, broadcaster, arts funding body or distributor – and tailor the pitch accordingly. Each will have their own priorities. It's also vital to talk to other producers. They can fill you in on important areas – as well as the eccentricities of specific buyers!

For the purposes of this article, I'm going to concentrate on broadcasters and distributors, with particular reference to my own short independent animation, *Furry Story*, which was picked up by BBC Northern Ireland. When it came to selling our concept to the Beeb, we ensured that our pilot script had local elements and included a couple of industry in-jokes to appeal to the commissioning executives. After all, they were our target audience.

Program buyers find it reassuring to know that you know your business, so read up on every report and key article you can. Research current schedules and prices. They change regularly. Broadcasters often publish well in advance what kind of thing they're looking for. A good idea is to meet the buyers and discover their specific interests. There are various trade and networking events (the BBC even organise special 'meet the commissioning editors' days) and you should go if you can.

Ideas are intangible, so prepare good physical evidence. For banks and business funders, I produce detailed market reports and cost and sales forecasts. For commissioning editors, I recommend

producing a clear proposal, a good sample script, good graphics and storyboarding, and/or an animatic or pilot (if you can afford it) to tell the story visually. The more the project looks real and achievable, the safer it seems. However, don't produce more work than is necessary, and certainly not a whole feature or series on spec. If you are unknown, you may need a good animatic or pilot, or a showreel of past successes, but any more can put you at a serious negotiating disadvantage as the buyers will know you need to sell to cover debt. If they like the idea enough, they will pay for series development, so aim for a short trailer or pilot, plus good support graphics and sales material.

Certainly, franchise names or phrases (i.e. successful existing properties, such as a best-selling book) can make your pitch seem a safer bet. And if it's an original concept, then having established partners can reassure the buyers, particularly if you have a limited track record (one of our associate producers was an Oscar winner – and that helped us sell *Furry Story*). Try and use established actors for voice-overs, too. Marquee value exists for TV as much as it does for film. Indeed, many producers believe that audiences will tune in to see anything with certain actors – if you have one or more attached, it'll tip a good idea or script over into a sale.

Testimonials and PR coverage can help. When the grand poobah of Hollywood script gurus has just said your comedy script is "very dark, and very, very funny," as Robert McKee did when he read *Furry Story*, then use it in your promotion. Arranging big-screen screenings with audiences or festival screenings are better than review VHS tapes

IN OTHER ISSUES

27 PRE-PREPARATION: AVOIDING THE PITFALLS 29 CLOSING THE DEAL 30 THE ROLE OF THE PRODUCER



watched on a portable TV in a smoky, noisy office, (especially if your own people are in the audience ready to audibly love the film). Prizes, positive reviews by critics or known celebrities and good word-of-mouth all add value, and some festival showcases (like Sundance) are based around pitching and sales events, so choose your festivals strategically. If you are going to industry sales events such as MIP (www.miptv.com), identify the decision-makers and make your appointments well in advance, then organise fast follow-ups afterwards to close any final points on a deal.

Don't take an idea or a work-in-progress to pitch at market too early. We waited an extra year before going to the Cartoon Forum with a pilot promo reel of *Furry Story*. The film had glitches that we needed time to fix, and we also brought in big names for the character voices. An unsuccessful early showcase would have hurt the film, and it's very hard to bring a rejected film back to life – the maxim is that a corpse never smells better the second time you dig it up. Buyers will figure that if everybody rejected it a year ago, then the whole world can't have been wrong. So be absolutely ready and have it perfect.

THE PITCH

It's a good policy to start with a great idea or script. It was the quality of our script for *Furry Story* that brought the BBC on board, and with the BBC attached we were then able to go for additional funding partners.

Be confident and enthusiastic. Execs are terrified of making mistakes, so you have to be seen to believe in your idea. Plus they want you to succeed. They want to discover successes, so act as if your idea can't fail. The enthusiasm and certainty you attach to your idea may diminish as it is reported and on up the chain, but at least you can enthuse the guys who pass on the idea, and if it's a good idea it will keep going.

Communicate concisely and knowledgeably. Keep it simple. Don't lose your key selling points among too much extraneous detail. Start with a good log-line. The phrase "Jaws in Space" sold *Alien*, and we



TOP *Furry Story's* success with the BBC lay in its originality and humour, but it mightn't have got past first base without the crucial pitch. Investors need to see a perfectly-finished teaser, a brief plot summary, a target audience and plenty of relaxed confidence from you.

ABOVE Good animation skills are one thing, but are nothing without an entertaining, surprising and original script. If you can get any big-name actors to voice your pilot, you'll do even better.

10 GOLDEN RULES

Plenty of advance homework and excellent presentation skills will help sell your idea.

- 1 Know the market – do your research thoroughly.
- 2 Know who you are selling to and what they want.
- 3 Recognisability sells – the adaptation of popular property, involvement of successful co-producer or famous actors.
- 4 Know what makes your idea different from all others. Be original or at least have your own unique twist on an established successful concept.
- 5 Generate awareness in advance (but avoid annoyingly protracted teaser campaigns).
- 6 Ideas are intangible, so prepare good support materials – without breaking the bank.
- 7 Don't pitch until you are absolutely ready.
- 8 Be concise and explain your idea in a memorable way. This does not mean dancing and juggling puppies or going on at too much length.
- 9 Be passionate and convinced that your idea cannot fail. Or at least fake it well.
- 10 Talk with the buyers, not at them. Get them involved and excited.

used "ET from Hell via *South Park*" for *Furry Story*. Then elaborate in simple terms (make it easy for them to remember and repeat when they pitch it to their superiors). Outline the story, the talent involved, and the genre. Independent film-making guru Dov S.S. Simens suggests 15 to 25 words outlining the protagonist, antagonist and situation followed by "...and complications arise when..."

I asked one of our BBC Executive Producers, Gemma McMullan, what the BBC look for in a pitch. She suggested to "keep the piece very focused: just a short paragraph that allows you to understand what is actually going to happen in the film. A lot of people discuss sweeping, vague themes, such as 'This is a film about love and honour!' This is not the best way to pitch an idea. Give your target client the story in a nutshell. Also give reasons why it should be considered, for instance: 'After the huge success of other projects in this field such as X and Y, I think my project is...' But also tell us what makes your project different. Aim the project at a certain slot and channel – is it primetime BBC1 or late-night BBC2? Also include potential casting ideas."

Finally, be ready with answers – on key elements, length, target slot and audience, cost and the like. Talk with the buyers, not at them. Your advance research will now pay off. More importantly if you leave gaps for them to come in, you make them collaborators. Also, be willing to compromise and think outside the box. If they are willing to fund your project as a kids' series instead of an adult comedy, ask yourself if this would be acceptable to make a deal? Most commissioning editors want to feel involved in the creation of any success. Also, while some suggestions may make you want to scream, others will help. Try not to be precious. Pouting isn't a good sales tactic, and the buyers need to know that you can listen and that they can work with you. There will be plenty of time to argue later – close the deal and get the money first! ■

BY: JASON ROBERTSON

WEB: WWW.MAGICSTONE.CO.UK

Jason Robertson is the writer and producer of the digital 3D animation *Furry Story* for Magic Stone Productions, The Brothers Dimm and the BBC. He lectures in media business at the University of Paisley, and has worked with Pedro Almodovar's company, El Deseo.

DON'T MISS NEXT ISSUE

THE MOST CRUCIAL STEP OF ALL: NEGOTIATING AND CLOSING THE DEAL



TUTORIAL

TRADE SECRETS CREATING BETTER TILED TEXTURES

Anyone can create a workable texture from scratch. Here's how to use *Photoshop* to turn real-world images into seamlessly tiled maps.

BY ALEX LINDSAY



Alex's tips for top texture photography

When you're labouring over your own images remember – a few extra minutes' shooting can save you hours or even days of corrections. Here are a few things to remember...

01 Shoot in diffuse light. Cloudy days are your friend. Shooting in shadow is fine as long as you don't include the background (which will throw your exposure off.)

02 Shoot with a small aperture. Stop down to f8 or more if you can. A small aperture increases your depth of field and will help reduce softness at the edges of your images.

03 Use a long lens if you can – the longer the lens, the flatter the texture. It will be much easier to work with later.

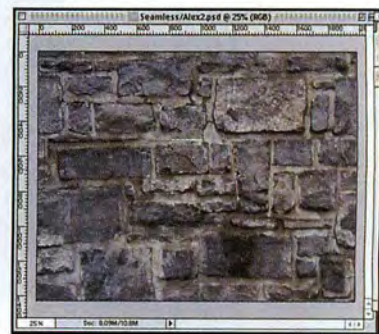
Often a project will require a floor or a wall that we could shoot with a digital camera. But how can we use it directly? If it needs to be repeated to wrap or cover the required area, we will be confronted with seams at the edge of every repetition, and obvious pattern replication. But this can be solved very quickly and easily. The key lies in an obscure filter built into *Photoshop* called 'Offset'. This filter will actually shift an image up and down, back and forth, and wrap the image front one side to the other. What this means is that we can move the edges of our would-be texture to the centre of our image. Now, with some simple cloning, we can hide the seams and create our seamless texture.

Okay. It's not quite that easy. This isn't like just removing blemishes; you often need to re-construct the details at the edges. This means you need to look for similar details elsewhere in the image and carefully graft them into place. You may use a corner here and an edge there. In the end, hopefully, you will end up with something with no head or tail. When doing your reconstructive surgery, be careful not to use a completely hard brush that will leave edges or a completely soft brush that will cause softening.

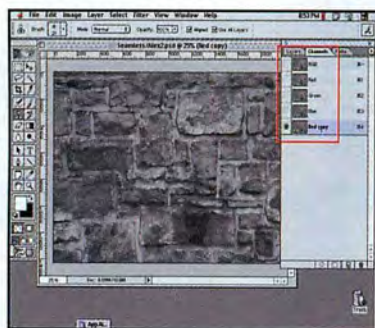
You can visit texture guru Alex Lindsay's own site at www.dvgarage.com, where you can download a free 30-day trial version of 3D Toolkit, with built-in tutorials. We have also provided 225 textures on this month's cover CD.



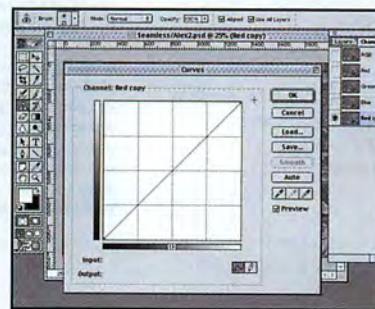
1 Examine the texture Look at the image to decide what you will need to correct. Is the light even? Is there distortion? Is it straight? Are there distinctive elements that will stand out when the texture is repeated? Have some idea of where you are going before you start.



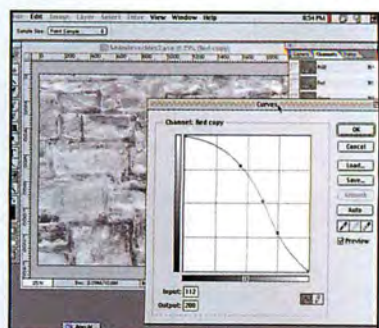
5 Find a similarly angled stone With the measuring tool selected, you can select and move the line you have just created. What you are looking for somewhere in the image, is another stone that has an edge that is almost exactly the same angle as the stone you want to extend. This will allow you to clone with ease.



9 Duplicate the red channel The next step is to create a basic bump map from the image itself. To begin, duplicate the red channel. This new channel will serve as our bump map. The reason the red channel is used is because it has the highest contrast from black to white. This gives us more shading range to work with.



10 Load curves Now take a look at the black and white map and decide what areas should be the peaks and what areas should be the valleys. For this image, we would assume the seams should be darker than the stonework, so we need to adjust the image. To do this, load the curve editor. We will use this to make the proper adjustments.



11 Adjust curves To bring the bricks forward and send the mortar back, you first need to invert the curve. Pull the left end to the top and the right end to the bottom. You can then subtly add contrast as required by adding more control points along the curve and making adjustments.



2 Measuring tool This photo is a bit crooked. To figure out how crooked, select Photoshop's measuring tool and select across the long horizontal line. Now, select Arbitrary Rotation – you may notice the measurement has been inserted into the dialog box. Hit Enter and the image should be straight.



3 Offset image Now that it's straight, we need to get rid of the seams at the edges. Let's pull them into the centre of the image where we can see them. Select the Offset filter. Set to wrap around and the amount to half the resolution of the image. This should bring your seams to the centre of the image.



4 Measure stone angle Select the measure tool from Photoshop's toolbox. Find a stone line that you want to extend. You are looking for an angle that you can continue: in this case, perhaps a rock that can be expanded to cover the seam in the middle of the image.



6 Clone in stone Select the clone tool, now option-click (Mac) or alt-click (PC) to pick the point at which you want to begin cloning. This first selection will define what the cloning tool will use as reference for the clone. When you click on the stone you want to extend, it will paint in data from the opt/alt-click. It will be tempting to dab in the new data. Don't. This makes undo difficult.



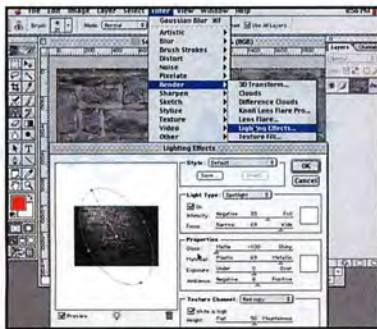
7 Find a corner and clone into place In the same way you extended the edge, you can find corners to literally build stones from scratch. You can now find edges and extend them, find corners and add them, then extend the opposing edges to complete the stone. The whole operation is simply more of these two steps.



8 Finish cloning To finish, you simply need to repeat the two previous steps over and over again. As you do this, make sure to cover the edges with an irregular pattern. This variance will make the seam much harder to see when it is applied. In this image, you can see the red line of the old texture edge. Notice how many rocks now go far beyond the edge.



12 Blurring the bump The image is a little sharp for a bump. Black and white look similar in the bump calculation: what really matter are the grey levels. To make sure there is enough grey, add a very slight bump (0.5 to 1 pixel) to the image. This will yield more natural results.



13 Load Lighting Effects To see what we've done, we can use Photoshop's Lighting Effects filter for a bump preview. Add the filter, set the light to a glazing position, and load the alpha channel at the bottom of the filter. Lower the surface to matte and look at the results!



14 Finishing Undo the last result and you're ready to apply it to you're 3D environment. While every image will be a new challenge, all the solutions will be a variant of this process. After the first 50 or 60, you should start to get the hang of it...

More texture photography tips

- 04 Try to keep the film plane parallel to the surface – this will minimise distortion that you want to extend. You are looking for an angle that you can continue: in this case, perhaps a rock that can be expanded to cover the seam in the middle of the image.
- 05 If you've tried the first four tips, you will quickly realise you need a tripod.
- 06 If you are buying a digital camera, seriously look at one that shoots 16 bit RAW images. Minolta and Canon make cameras in this class.



DIY TEXTURES

Years ago, I asked a Zen master of textures, Paul Huston from ILM's Digital Matte department, for advice on shooting textures. He said "Buy lots of film. Take a lot of pictures." Frustrated, I left feeling that he was keeping something from me – some trick to taking great textures. Well, about 2,000 pictures into my own texture journey, his wisdom dawned on me. It really is about taking a lot of pictures and working with them to see what happens. Take pictures! Take lots of them! Never be without a camera! You will learn far more from this than from any titbits in this article – and just maybe, you'll discover a world you never knew was there before. My personal meditation on the subject resulted in dvGarage's Surface Toolkit. Creating it was a turning point in how I saw the world – you can see the results at www.dvgarage.com/stk.php

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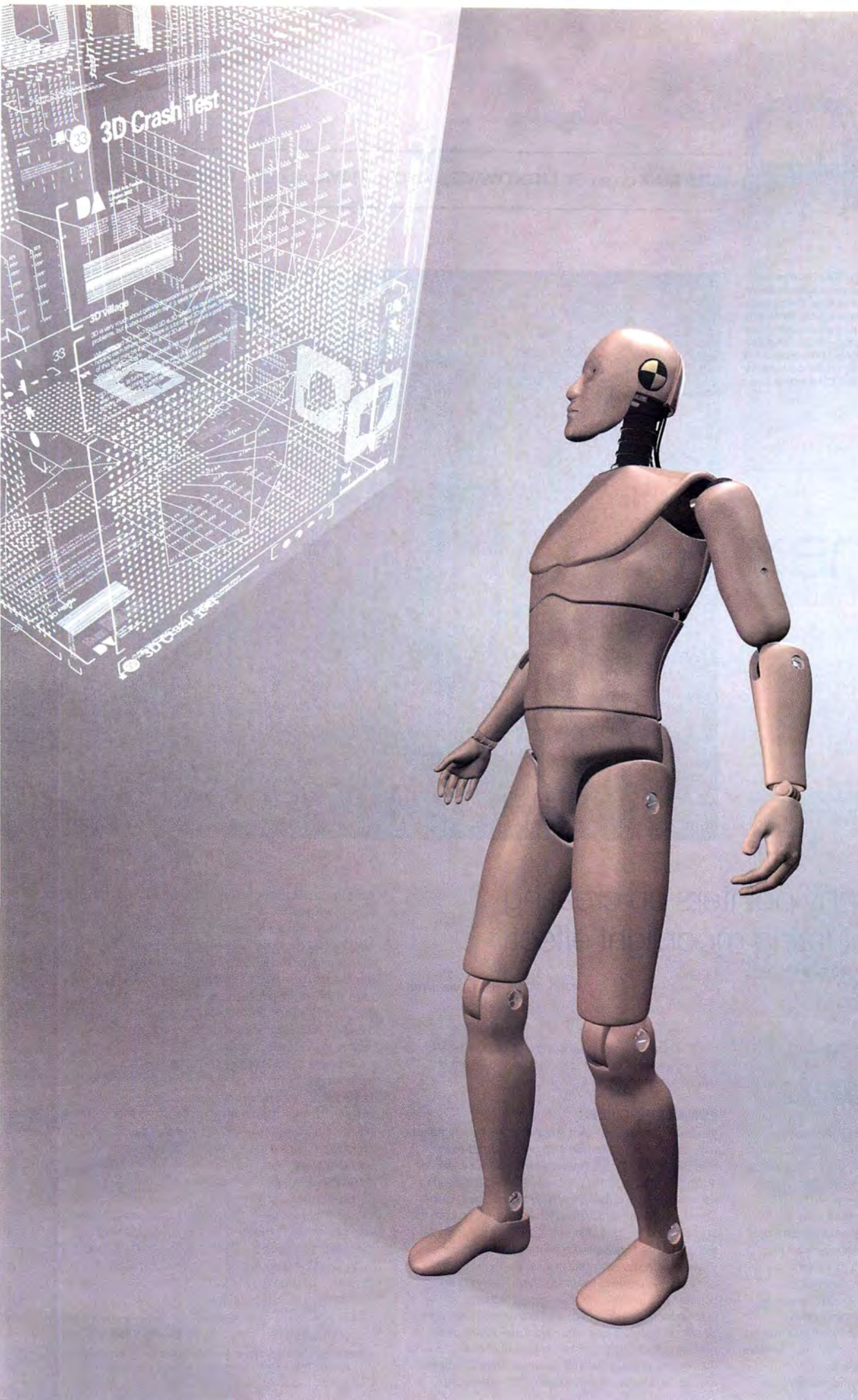
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EDGE



Q&A

3DS MAX page 064 LIGHTWAVE page 066 MAYA page 068 CINEMA 4D page 070

RIGHT The final render. Additional post effects have been used to blur the clouds and moon slightly. Note the use of Self-Illumination in the clouds and the introduction of the coloured ring effect caused by the light refraction.



ON THE CD
Supporting files for this Q&A

3ds max

by PETE DRAPER



QUESTION

“Can you give me any pointers on creating a realistic and illuminating moonlight effect using just *3ds max*?”

DANIEL PORTUGAL | via e-mail



ANSWER

Moonlight is not all that difficult to recreate, but the real thing varies in intensity as the month progresses. The weather can also affect its light on an hourly basis, so if you want the full array of subtleties, you may have to take this into account. We're going to concentrate mainly

on creating a full moon on a slightly cloudy night. A good array of cloud can reveal interesting effects as the lunar light shines through, which are nice to recreate in 3D.

With a full moon, slightly overcast, you will notice that the sky is lit up and that the illuminated subjects on the ground are lit using diffused ambient light: the light refracted from the clouds. These refractions can also create a unique halo effect around the moon that almost looks like a lens-flare ring in the clouds themselves.

Observe the real thing, if possible, and start by breaking the scene down into its individual layers. First, we have the field of stars; you can generate this either by using a procedural or bitmap background. For this example, we

used the latter, because we wanted to include the Milky Way as a background image, which would be rather difficult to reproduce as a procedural.

LUNAR PRINCIPLES

Next comes the moon itself; this can either be integrated as a decal onto the starfield map or as a stand-alone object. We'll opt for the latter again, to make it easier to add any further glows or post effects. We don't need to use a wrap-around cylindrical map for this stand-alone object, because we only need to view the moon from the front and not the 'dark' side. Instead, we'll use a single planar-mapped image of a photograph of the moon, as this is what you'd see in the night sky.

Finally, we come to the cloud layer. This normally consists of a cylindrical map wrapped around a hemisphere as a 'skydome'. Actually creating the night sky cloud layer can be taxing, because it is difficult to photograph clouds to create this texture at night. So what we've done is use a daytime cloud panorama, removed the blue and replaced it with black. This makes the



skydome transparent, so we can see the moon and stars in the background.

As the moon goes behind the cloud layer, some backlighting of clouds will also occur, which causes the clouds to glow more brightly the closer to the moon they are. We can generate this effect using a Gradient Ramp map in the self-illumination slot of the clouds material, assigned to an additional map ID on the skydome, with the UVW map's gizmo positioned in front of the moon, relative to the active camera.

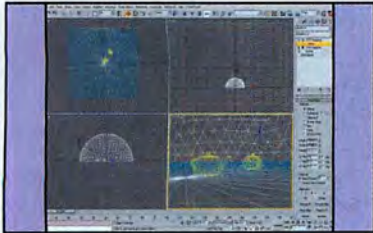
To create the diffused lighting effect, position several lights around the moon so that the intensity of each one fades the further away it's positioned. Go for a small array of lights to simulate this effect, ranging from intense with harder shadows to background light with soft, diffused shadows. Creating this array will also generate an area light effect, with the shadow more intense at the base of the illuminated subject before fading off and dispersing.

You'll notice that in any moonlit situation, the rear of the illuminated subject is not entirely black; some light is reflected back off additional surfaces, so you'll have to place lights accordingly. These should be 'cooler' colours, such as a faint tinge of blue or purple, to bring out the contrast. Also use slight uplighting, especially if you're working with reflective surfaces.

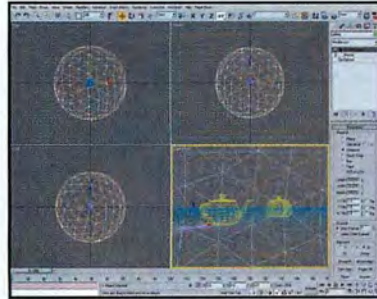
BY PETE DRAPER WEB: WWW.XENOMORPHIC.CO.UK
Pete Draper is a long-suffering *3ds max* artist, and a regular contributor to *3D World*. He is currently open to offers of more luxurious day work.

STEP BY STEP: MAKING MOONLIGHT

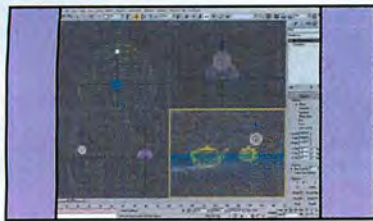
The sky at night is one of nature's breathtaking marvels – but that doesn't mean you can't make a good job of it, too.



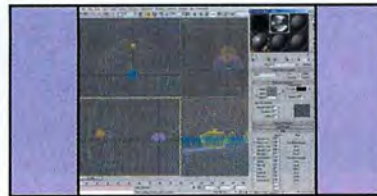
1 Initially, create a skydome hemisphere to encompass your scene and scale it vertically. This should be a simple Geosphere primitive set to Hemisphere. Add a Normal modifier to its stack and check on Flip Normals. Add a UVW map to the skydome's stack and set it to cylindrical mapping (you may wish to delete the base faces). Create another UVW map and set its ID to 2. Position it as shown.



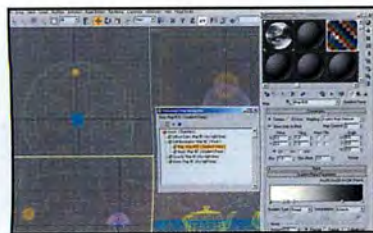
2 Create another Geosphere primitive so it is several times larger than the skydome you created in Step 1, as shown above. Add a Normal modifier to its stack and check on Flip Normals. Add a UVW map to the Galaxy Geosphere's stack and set it to spherical mapping.



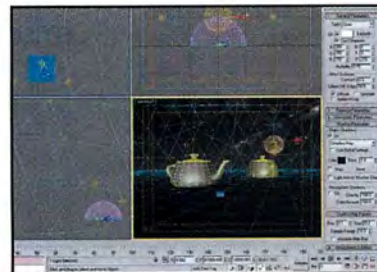
3 Create another Geosphere primitive and position it against the backdrop of the Galaxy Geosphere and behind the skydome. Reposition, scale or resize it so it's prominent in the scene's camera. Add a UVW map to the stack and ensure that the planar map's gizmo is facing the camera. Reposition the second UVW map's gizmo of the skydome so the centre of it is over the centre of the moon as viewed from the camera.



4 Create a new material and label it 'Galaxy'. Assign it to the Galaxy Geosphere. Create a new Mask map in the diffuse slot. In the Mask map, create a new bitmap map in the Map slot and load in a starfield background image. Clone the bitmap into the Mask slot. Crank the material's Self-Illumination spinner up to 100. Create a new material for the moon and load the 'moon.jpg' bitmap into the Diffuse slot. Instance-copy this into the Self-Illumination slot and check on Self-Illumination.



5 Create a new material for the skydome and load in the 'sky night.bmp' bitmap into the Diffuse slot. Instance-copy this into the Opacity and Bump slots. Check on Self-Illumination and create a Mask map in the Self-Illumination slot. In the Mask map's Map slot, create a Gradient Ramp map, design the gradient as shown and ensure that the Gradient type is set to radial and the Map Channel set to 2. Copy this Gradient into the Mask slot and amend the gradient so it runs white to black.



6 Create lights as illustrated around the Moon Geosphere, with varying intensities from 0.75 over the moon to a grey 0.1 intensity light overhead. Also, create fill lights around the illuminated subjects with diffused shadows. Create additional post effects such as blur if required, to generate a little specular bloom and to intensify the glow around the moon.

3DS MAX TIPS

Get your night sky moving with rushing clouds and perhaps some dramatic shooting stars (it's a Spielberg thing).

01 The skydome's clouds, although just a cylindrical mapped bitmap, can be easily animated (as shown in the sample MAX file and resulting render included on the cover CD). Use either a Volume Select modifier or Mesh Select and select the top vertex of the skydome. Check on SoftSelect and increase the amount until the base of the hemisphere is slightly affected. Add an Xform modifier and animate the Xform gizmo rotating to 60 degrees, so it twists the mesh. Looking directly forward it will appear as the clouds are moving, but don't move or pivot the camera too far, or the illusion will be lost.

02 Add a little more intensity to the brightness of the moon and the reflections off the surfaces by adding a Blur effect to the scene for a little specular bloom. Don't go overboard, though, because this can dramatically blur the image. Also, try using material changes on the clouds (try a Raytrace material) and glow effects on the moon's material.

03 Additional elements could be included in the night sky to add extra realism and ambience. The occasional shooting star, flock of birds or aeroplane (white dot!) flying overhead, highlighted by the intensity of the light emanating from the moon, can add emphasis to its brightness.

04 Instead of simply using a cloud bitmap on a skydome, try using a particle system or plug-in to generate your cloud effects – volumetric cloud plug-ins such as Afterburn or Pyrocluster, for instance. The lights positioned behind the clouds will produce a backlit effect on the volumetrics, thereby creating the glow we originally had to produce using a UVW map.

For quick fixes for 3ds max problems, post your questions in our online forum: www.3dworldmag.com/forum/3dsmax

Q&A

RIGHT Once an ambient light set-up is in place, it's relatively easy to add extra lights to pickout details. Since you're already using motion blur, it makes sense to use the Spinning Light Trick (see text) to soften these lights as well.



ON THE CD
Supporting files for this Q&A

LightWave

by BENJAMIN SMITH



QUESTION

“How can I realistically light the inside of a warehouse in *LightWave* without waiting ages for radiosity?”



ANSWER

Lighting any subject in 3D is a complex business, because as a 3D artist you must constantly juggle three different factors to produce an ideal image. First, you must actually point lights at the scene, or else it will be dark and you won't be able to see it (which sounds obvious, but is the most important function of lighting). Second, you must try and use the lighting to accentuate the design and message of your visuals. For instance, you might try and use rim lights to bring out the outline of an important foreground character or object, or you might use colour to suggest a particular mood or *feeling*, making a fireside scene a warm orange, for example, or illuminating a cruel villain in a cold blue light.

Both these factors would be a consideration for cinematographers lighting a scene in the real world, but the third is unique to computer animation: you must try and light things so that they look *realistic* and not like computer graphics! In many ways, radiosity rendering



STEVEN RAYNES | via email

is a good solution to this. With radiosity renders, light can bounce around the scene, throwing soft shadows and endowing objects with a highly realistic, solid appearance. However, for most artists the render times associated with radiosity are still prohibitive. It's just too time-consuming to wait for radiosity renders when normal renders are orders of magnitude faster. This means you have to fall back on normal illumination models and shadow types.

AMBIENT GROOVE

A good approach to lighting the warehouse is to start by adding some ambient light so everything is generally lit and visible, and then to go in and add specific 'stage lights' to do the more artistic business of adding highlights and pointing out details. *LightWave* has an ambient light setting available on the Global Illumination panel, but as with almost all 3D applications, it's best to just turn this down to zero percent from the offset. The Ambient Light setting here merely adds a base value to all surfaces, without the light seeming to come from any particular direction or cast shadows of any sort. The important quality of ambient light

is that it should be very soft, but still leave the crevices and undersides of objects dark.

To do this in the warehouse, we'll create an array of shadow-mapped spotlights that simulate light coming from the overhead striplights, the set-up of which is detailed in the walkthrough on the facing page. This array makes use of *LightWave*'s Motion Blur feature to reduce the number of lights needed to illuminate the scene, a variation on the Spinning Light Trick. (For more details, see <http://ee3806162.hypermart.net/pdf/SpinningLight.pdf>)

STILL IN THE DARK?

One of the drawbacks of this approach is that it doesn't illuminate the ceiling. While radiosity would enable light to bounce off the floor and walls and hit the girders of the roof, normal illumination won't do this. To fake the effect you're after, simply create more spotlights and parent them to the first array, but this time have them pointing upwards, towards the ceiling. You'll have to fiddle with the cone angles and shadow settings to achieve a realistic effect, but by using small shadow maps you can prevent these lights adversely affecting the render time. You can also use the Objects tab on the Lights Properties panel to exclude these lights from any objects in the scene that might get in their way and prevent them from lighting the roof.

BY: BENJAMIN SMITH

WEB: WWW.SFDP.CO.UK

Benjamin Smith is animation director of Stormfront Digital Pictures, an award-winning studio specialising in effects for TV and multimedia.

EMAIL US: 3dw.qanda@futurenet.co.uk

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#067

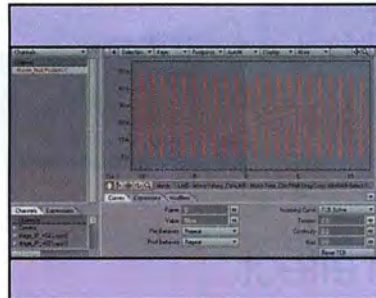
STEP BY STEP: STRIP TEASE

Creating the distinctive ambient light of overhead strip lighting needn't be difficult – all it takes is a little *LightWave* subterfuge.



1 Open the Scene Editor and click the tick in the row for the single default Distant Light called "Light" – this prevents it lighting the scene in renders, but means you can still see what you're doing in Layout. From the Global Illumination panel, set Ambient Intensity to zero percent.

2 Add a Spotlight and name it "Ceiling_Spot". Position it just under one of the striplights on the ceiling and rotate it down to point at the floor. Set the light's cone angle quite wide (around 70 degrees). Switch on Shadow Maps for this light and use a high shadow map size – say, 1,000 pixels.



3 Clone the light and move the clones to make a row of strips that stretches the entire length of the room. Add a Null, call it "Light_Array" and parent all the lights to the null. Move to frame 1 and give the Null a keyframe. Then go back to frame 0 and drag the Null so that the Lights move across the width of the room, ending up on the opposite side.

4 Give the Null a keyframe, enter the Graph Editor and select the key on frame 0 for whichever channel is animated. Set the Value of this key to twice its keyframed value by adding *2 to the Value field and hitting [Enter]. Set both post- and pre-behaviour to Repeat.



5 Render a frame and you should see the effect of a row of lights down one side of the room. enter the Camera Properties panel and set Antialiasing to Medium before switching on Motion Blur. Leave the Blur Length at 50 percent and render the frame again. You should get a render with soft global light across the whole scene.

6 To adjust the lights' intensity or shadow parameters, use the SpreadSheet Scene Editor to affect them collectively. Simply multi-select the parameter you need to change – Intensity, for example — type a new value at the bottom of the panel, and hit Apply.

LIGHTWAVE TIPS

Faking it, colour confusion and better light arrays – if you're seeking further illumination, the answers lie within...

01 The Shadow Colour option on the Light Properties panel is new in *LightWave 7.5* and is ideal for faking ambient light. In the warehouse scene, you could set this colour to be a very dark shade of blue (for instance, 017:018:020) which will give you a very slight coolness to the shadows.

02 There's a confusing terminology surrounding colour temperature in lighting. Technically, "cool" or "warm" refers to the temperature of the filaments used in stage lights, so "cool" lights are low temperature and have an orange or yellow tint, while "warm" lights have a high temperature and are blue or white in colour. This is, of course, barmy. To most people (and throughout this article), we say "warm" to mean a snug orange or yellow and "cool" to mean a frosty blue.

03 To see Colour Temperatures in action in *LightWave*, visit the Option Panel [o] and set the Colour Picker to LW_ColrPikr. Now when you choose the colour of a light, you have a handy Kelvin tab that enables you to pick an appropriate colour temperature.

04 If you create light arrays, it helps to make sure that each array uses different names for its lights. This means that you can easily use the Filter option in the Spreadsheet editor to find all these lights and therefore make changes to them.

05 Because the light array needs motion blur to render correctly, it doesn't usefully illuminate the scene in Layout's OpenGL window. It's best therefore to deactivate Affect OpenGL for these lights and use some non-rendering lights instead.

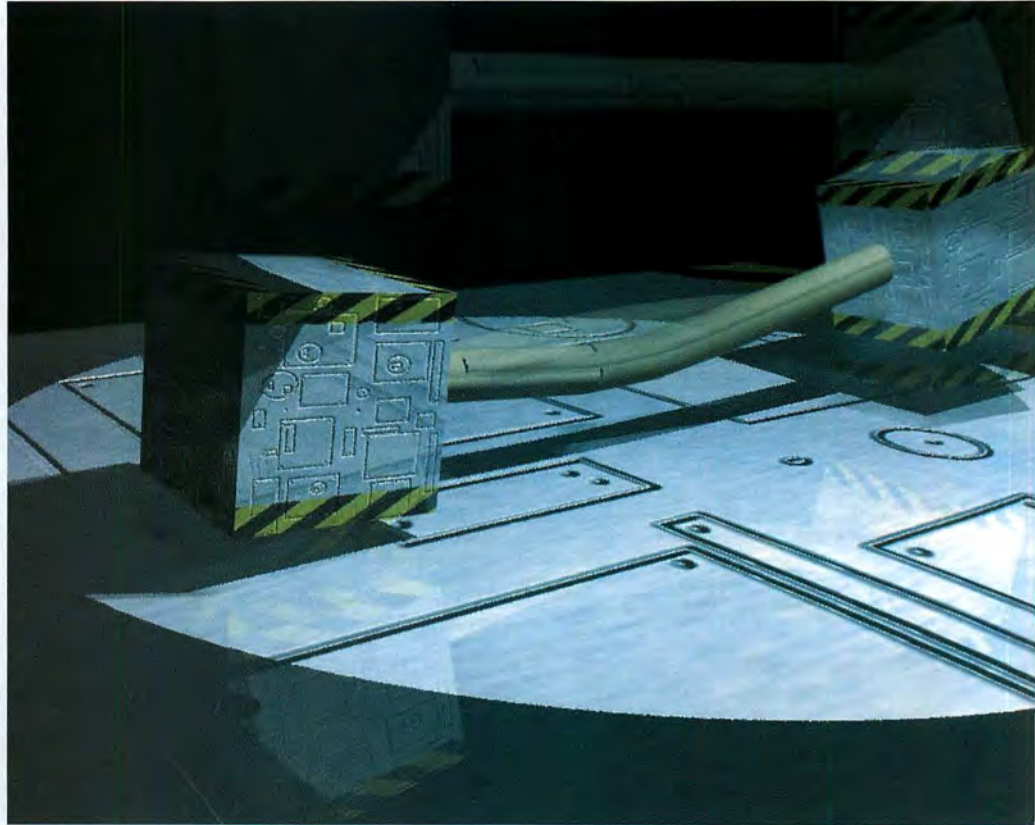
For quick fixes for *LightWave* problems, post your questions in our online forum: www.3dworldmag.com/forum/lightwave

RIGHT When the two cubes are dropped, the string connecting them goes slack and then taut as they bounce about the plane. To recreate this realistic effect (check out the result, *RopeTrick.mov*, on the cover CD) required deft use of *Maya*'s dynamic fields and inverse kinematics tools.



ON THE CD
Supporting files for this Q&A

Maya
by **GEORGE CAIRNS**



QUESTION

“How can I use *Maya* to simulate the effect of a rope linking two objects together? The rope must go taut or slack as one object drags the other about.”

ALES MAV | via email



ANSWER

When this question first popped into the *3D World* mailbox, my initial reaction was to hide it at the bottom of the “mind-shreddingly difficult” Q&A pile and look in the “not quite so difficult” pile for an alternative query. But as it was such an intriguing challenge, I couldn’t resist picking up the gauntlet and scratching my head with it for a couple of days, mulling over the possibilities. This is the result.

Here’s a way of achieving the desired effect by combining some of *Maya*’s powerful Dynamic Tools with inverse kinematics. There has been a trend to criticise the use of Dynamics as giving “animation for free”. Sounds good to me! Alas, Dynamics isn’t quite the free ride that it might appear to be at first. It often takes hours of fine-tuning and experimenting with different values to get the

required artistic result. To create the animation for this Q&A, for instance, I burned much midnight oil adjusting the height of the cubes so that they wouldn’t send the rope falling through the floor by bouncing too vigorously.

ROPED IN

We’re going to attach a rope between two cubes and drop them. The rope will appear to be holding them together and will also react with them as they bounce around. *Maya*’s Dynamic Tools will enable us to make the cubes solid, and we’ll add gravity to the scene so that the cubes bounce off the floor in a realistic way. If we rotate the cubes slightly before playing the simulation, they’ll go bouncing off in different directions, too. To simulate the effect of them being attached together by a piece of rope, we’ll need to add an invisible constraint so that, while they’re free to bounce around, they’ll also stay linked to each other. The movement of one cube will even affect the other and vice

versa. The next challenge will be to make a cylinder behave like the piece of string that is supposedly linking our two cubes together. A simple poly cylinder will do fine as the string model. To make the cylinder bend and flex, we’ll also add joints along its length. The cylinder will be bound to these joints so that it bends as the cubes bounce. The clever bit will be to link the joints on one side of the invisible constraint to the left-hand cube and the joints on the other side to the right-hand cube. Once we’ve achieved this, the cubes will move the joints and the joints in turn will deform the cylinder in a realistic way.

JOINT OPERATION

Some fine-tuning of the joints will be required to make the bend in the rope less angular and more curved. If the cubes bounce too high, there is also the danger the rope will disappear beneath the ground plane – not particularly realistic! We can’t give it *and* the cylinder a solid body, like we did the cubes, because then it will no longer be able to flex. Instead, we need to reposition the cubes and rerun the simulation until the rope no longer disappears beneath the ground plane. Blowing one of the cubes with a fan will help keep them apart, and this in turn will help keep the string taut. This should stop it disappearing into the ground and thus ruining the effect.

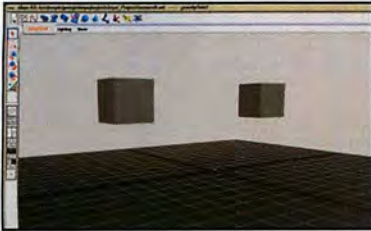
BY **GEORGE CAIRNS** WWW.GEORGECAIRNS.COM
George Cairns has been climbing the *Maya* learning curve since issue one of *3D World*. It’s been a knackered climb, but the view is great.

EMAIL US: 3dw.qanda@futurenet.co.ukGO ONLINE: www.3dworldmag.com/forum

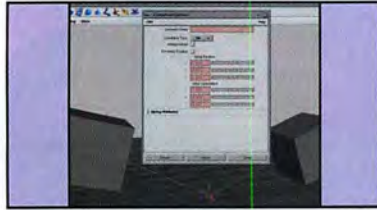
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STEP BY STEP: ROPE REFLEXES

If only animation graphics were ruled by the forces of nature! How can you make a piece of virtual rope behave like the real thing?



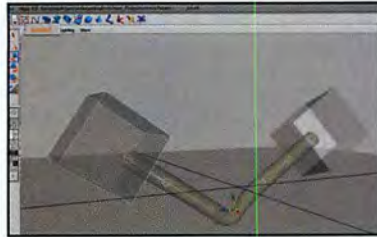
1 In the Modelling Menu Set, create two cubes. In the Dynamics Menu Set, select each cube and make it an Active Rigid Body (Soft/Rigid Bodies > Create Active Rigid Body). Add a gravity field to them (Fields > Gravity). Play back the simulation and chortle as they fall through the floor. Now make the floor a Passive Rigid Body (Soft/Rigid Bodies > Create Passive Rigid Body) and the cubes will bounce off it.



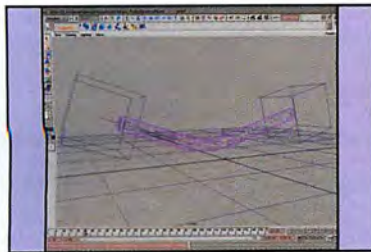
2 To fake the effect of a piece of string linking the two cubes together, go to Soft/Rigid Bodies > Constraints > Option Box. Set the Constraint Type to Pin. Click Create. Move one cube up higher than the other and play the simulation. When the first cube tries to bounce away, it tugs the other cube along with it. The constraint hinges in the middle and holds the cubes together. You can select the constraint and move the hinge-point left or right, depending on where you want the bend to occur.



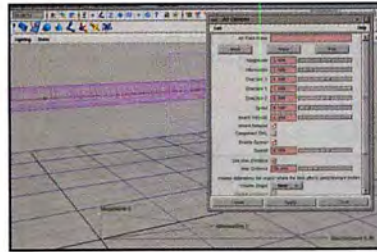
3 Create a Poly Cylinder. Scale and position it between the cubes. Go to its inputs section and set the Subdivisions Height to 16. Add joints along its length. Select joint_1 (the root joint), then [Shift] + select the first cube. Press [p] to make the joint a child of the cube, then select the root joint and [Shift] + select the cylinder. Go to Skin > Bind Skin > Smooth Bind. The cylinder now follows the first cube and is influenced by the bones.



4 To finish linking the cylinder to the two cubes, select the middle joint (joint_4 in this example). Make this joint a child of the second cube. Now the appropriate joints are linked to both the left and the right cubes causing the cylinder to bend as the cubes bounce about. You may find that the string falls through the floor here. Solve this by repositioning the cubes' starting points to change where they bounce.



5 The crease where the rope bends might be little sharp. To soften it, experiment with selecting the Pin constraint and moving the hinge left or right using the Move Tool. This will change where the bend in the string occurs. Also move the joints on either side of the constraint's hinge further apart. This will soften the curve of the cylinder as it bends and flexes.



6 To help keep the cubes from bouncing too close together (which makes the string disappear through the floor), select one of them and add an air field to it (Fields > Air > Option box.) Choose the Fan. This will blow the cube away from its fellow, making the string end up in a taut position. It will also add more movement to the scene as one cube tugs the other along.

MAYA TIPS

Fine-tune your cube and string creation with these nifty tipettes – don't think Dynamics has all the answers...

01 Dynamics will only get you part of the result you need. You'll always need to do some keyframing. But once you're happy with your simulation, you can Bake it. This will enable you to keyframe certain events to fine-tune the sequence. Helpfully, Maya also enables you to switch from keyframe animation to dynamic animation using the Soft/Rigid Bodies > Set Active Key or Set Passive Key options.

02 Don't forget to take the timeline back to frame one each time you run a Dynamic simulation. If you try playing from any other point Maya's dynamics won't calculate an accurate simulation.

03 When Maya creates a Dynamic field like wind or gravity, it places the field's icon at the centre of the scene (0,0,0). It's quite easy to select the wrong icon by mistake, because they occupy the same space. To make it easier to select the desired field, choose the Outliner view. Click on the field's icon from the list of nodes.

04 You can change the fan's magnitude and spread attributes by typing values into the channel box. For more intuitive hands-on control, select the fan node and press [t] to evoke its manipulator tool. Then you can click-drag to change the intensity of the fan and the direction it blows in. Many other objects – a spotlight, for example – have their own Manipulator Tool settings.

For quick fixes for Maya problems, post your questions in our online forum: www.3dworldmag.com/forum/maya

Q&A

RIGHT Good eyes in *Cinema 4D* (or any application for that matter) are not really a matter of texture control, but rather making sure your model is anatomically correct.



ON THE CD
Supporting files for this Q&A

Cinema 4D

by ADAM WATKINS



QUESTION

“I’m unhappy with my attempts to create good eyeballs in *C4D*. Somehow, the map on a sphere just ends up looking not quite right.”

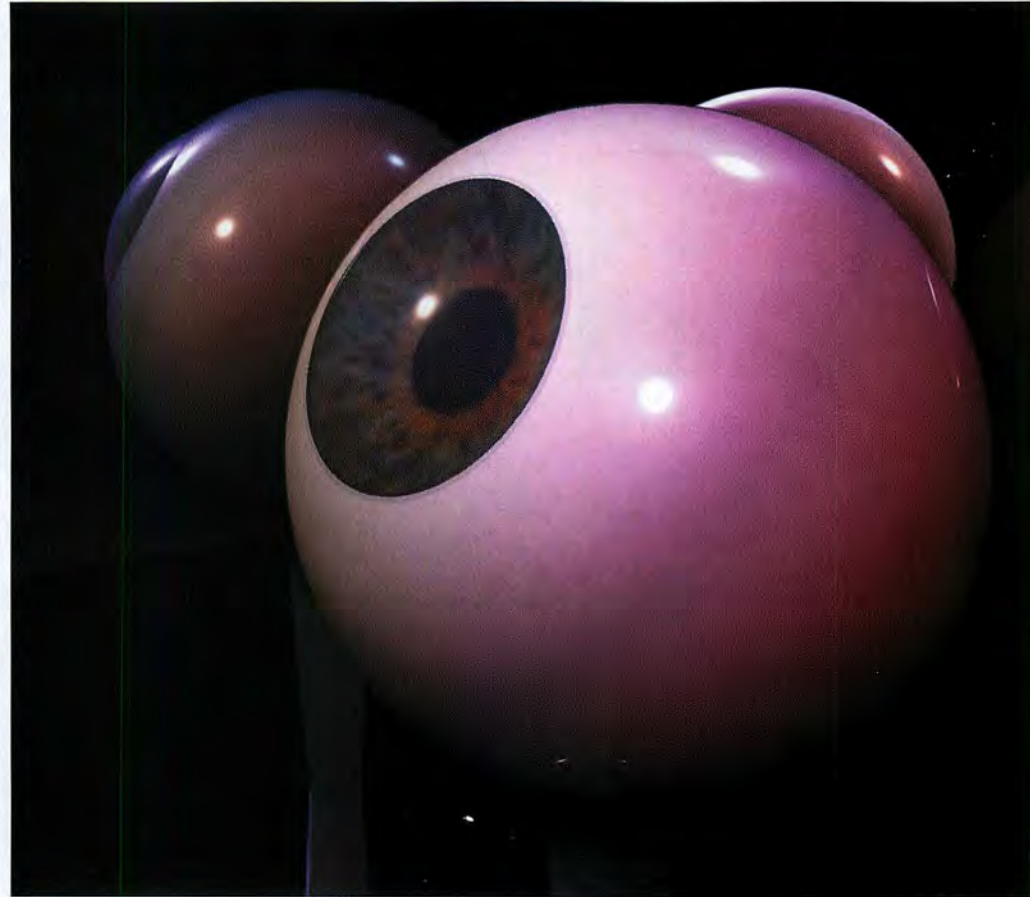
JAKE HAVEN | via e-mail



ANSWER

It’s often said that television and movies are “all about the eyes.” And, indeed, it is hard to find a movie or television show without the obligatory extreme close-up of the character’s face, or even just the character’s eyes. The reason for this is that the eyes and eyebrows are some of the most expressive parts of the human physiognomy. So, as 3D artists striving for accuracy, it’s important that we get them right.

Having said that, it’s also important to remember that if there’s never a close-up shot in your scene, there’s no good reason spending the time outlined here to create gorgeous-looking peepers. After all, you don’t need to comb the eyelashes on a film or TV extra that stands 200 feet from the camera; they’ll never be seen. For good character animation, however, it’s unlikely that your main



characters will not have a good close-up or two to enjoy. For these situations, it’s important to understand how to create believable eyes.

LOAD OF EYEBALLS

Part of the problem with most CG eyeballs is that they’re created as spheres. It turns out that even the part of the eye that is inside the head isn’t a perfect sphere. The part of the eye that we see is even more un-ball like. Especially around the coloured part, the iris, where there exists a surprisingly complex collection of forms.

The pupil, the black central part of the eye, is actually a depressed hole in the middle of the iris. This is one reason why placing an eye texture on a round ball runs into trouble; the black concave hole is wrongly portrayed as a black circle on the face of the sphere. The iris, which controls how much light is allowed to strike the lens, also sits as a concave surface receding into the eye. All of this is

surrounded by the sclera, the protective white outer layer of the eyeball. Finally, there’s the cornea, which sits on top the lot. This surface is actually convex and rounds outward away from the rest of the eye, like a sort of bubble on the surface of the eyeball.

So the first step to getting believable eyeballs doesn’t lie in good texture maps, but rather in proper models. Since most of the eye isn’t seen, there’s no need to make sure that the general shape of the eyeball matches the oblate sphere that it is in real life. However, the front of the eyeball, complete with cornea and flexible iris, is important to render anatomically correct.

Thankfully, modelling these shapes isn’t a complex issue. The eyeball model illustrated in the walkthrough, right, was entirely built using arcs placed within Lathe NURBS objects. Each object boasts its own texture, too, which provides greater control over the overall look of the eyeball. Furthermore, because the shapes, such as the iris, are individual objects, they’re animatable. This means you can easily replicate real-life ocular effects, such as when the iris expands or contracts suddenly in response to, say, a sudden change of light in your scene.

BY: ADAM WATKINS

WEB: WWW.UJW.EDU

Adam Watkins lives in Texas, where he is the director of computer graphics arts at the University of the Incarnate Word.

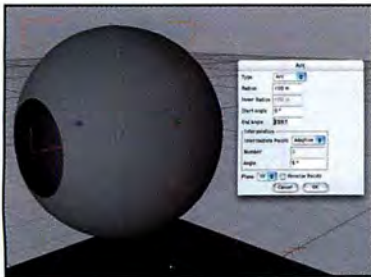
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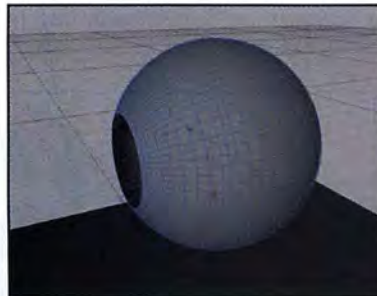
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STEP BY STEP: EYE, EYE, CAPTAIN!

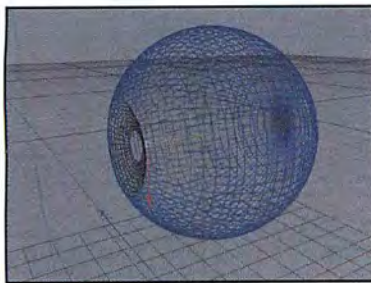
If characters are to express close-up emotion, it's all in the eyes, you know. Here's how to get those digital peepers just right...



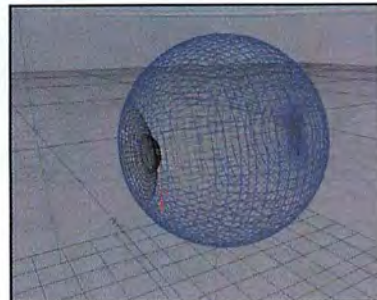
1 For the eyeball, use an arc in a Loft NURBS. The arc should be less than 180. Place this arc inside of a Lathe NURBS that is turned on its side. This should leave you with a hole in the front that will be filled with the iris – and eventually covered with the cornea. Now texture with a white or a red/white gradient.



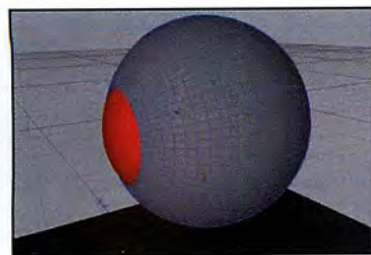
2 To create the sclera, copy and paste the eyeball into the scene. Change the scale of the new copy to 1.005. This makes the sclera slightly bigger than the ball. Texture this with a high specular material that is completely transparent. This will help give it a wet look.



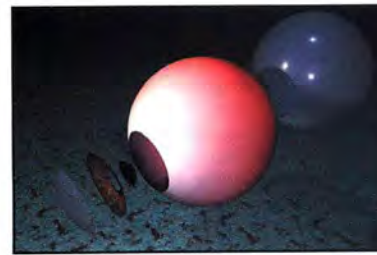
3 Next, model the iris in a similar way. Make sure that the axis for the Lathe NURBS is organised to produce a concave surface. Notice that the iris goes into the eye. Texture this surface, if possible, with a photograph. There's so much variation in irises that it is much easier to work a photo than create it from scratch.



4 So that you do not have to worry about seeing the inside of the eyeball (which will be white), place a little "cap" over the hole in the iris. This isn't completely anatomically correct, but without it, every time a good light gets inside the eye, the middle will look white.



5 Create the cornea with an arc and Lathe NURBS. The curve should be close to that of the eyeball, but not identical: it should bubble up from the surface. Take special care to ensure that the edges of the cornea meet up with the edges of the hole left in the eyeball. Overlapping, or underestimating, will create unsightly seams that destroy the look of your eye.



6 By this stage, you should have pieces that look like this — take time to arrange all the elements properly. Remember to look at the eye from orthogonal views at both the top and side to ensure that all the edges match up. It would be a shame to be this accurate with shapes and then have edges sticking out where they ought not to because you failed to spot them.

CINEMA 4D TIPS

Optimising your mince pies isn't a case of sweatmeats and pastry – you must master your bhodiNUT shaders, too.

01 Keep in mind the power of the bhodiNUT Smells Like Almonds (SLA) shaders contained with version 7 and higher. These 3D and 2D shaders that are so quietly hidden in the Materials Manager are hugely powerful. For spot-on glass, nothing beats bhodiNUT's Banji. In fact, in the tutorial here, we created the sclera entirely using this shader. The highlights are higher and you have total control over how the multiple layers of the specular highlights occur.

02 Remember that SLA has built-in 3D shaders, but that you can use many of the shaders in the various channels of custom-made materials. Incredible collections of procedural bump maps are available, and wide variations of map control tools (usually only seen in *Photoshop*) can help control brightness, contrast, and colour of maps. There are even shaders within the SLA library that help define how textures meld together. The power of these nested shaders are often overlooked when we're creating materials, but should be mastered.

03 Create a thumbnail sheet of SLA options. Mastering SLA is not particularly easy, because many of the features it has defies simple descriptions. Because of this, the names are far from intuitive. Blindly going through all the settings and randomly changing things in the hope of getting what you want in the middle of a project is a frustrating waste of energy. However, if you have a thumbnail contact sheet recording past SLA discoveries, you can quickly find the effect you want based on past experiences. So take the time to record and render random discoveries that you make. And if business is slow, take some time to explore the dark corners of the SLA shaders and discover for yourself what sorts of effects are possible.

For quick fixes for *Cinema 4D* problems, post your questions in our online forum: www.3dworldmag.com/forum/cinema4d

REVIEWS

IN THIS ISSUE

- 072 CARRARA STUDIO 2
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- 076 3DS MAX PLUG-INS
- 078 PIRANESI 3

Carrara Studio 2

Good God, it's little *Carrara*. Haven't seen you for years. And haven't you *grown*? BY ED RICKETTS

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MAIN FEATURES

- >> Spline, vertex and metaball modelling
- >> Subdivision surfaces
- >> NURBS modelling (using *Amapi 3D*)
- >> 3D light effects and flares
- >> Object deformation
- >> Procedural shaders
- >> Multi-channel shaders
- >> Global illumination rendering
- >> Caustics
- >> Toon renderer
- >> Bones and skinning
- >> Physics and dynamics

Remember this old face? *Carrara* was the mainstream 3D application that everyone thought had died a death long ago. Released by MetaCreations shortly before it bailed out of the market, it was hardly an auspicious debut. Version 1 was, in some cases, buggy to the point of being unusable, and offered nothing that a thousand (well, okay, ten) other applications couldn't do, and usually faster.

When it reappeared last year, with a 'Studio' suffix and in the hands of Eovia, nothing much had changed; supposedly the bugs had been fixed, but of new features there was little sign. Now version 2 has arrived, sporting a raft of improvements and claiming to be a professional tool at an entry-level price. Hmm.

Certainly the laundry list of new stuff sounds pretty impressive: Global Illumination with photon mapping, caustics and indirect lighting; bones, skinning and IK; subdivision modelling and myriad under-the-bonnet tweaks. Surely that's irresistible in a program of this price? Well, no, actually.

In my opinion, *Carrara*'s interface is horrible. This is old-skool MetaCreations through and through, all pretty anti-aliased icons and slide-out drawers, but actually using the damn thing is like trying to cook wearing boxing gloves.

Eovia has kept the debatable concept of 'rooms', so you put together a scene in the Assemble room, model in the Model room, apply textures in the Texture room, and so on. Sounds logical, but actually having to continually flip between rooms becomes a real chore with anything but the simplest scene.

Working with *Carrara* is full of mystifying moments. "How the hell do I rotate with angle snap turned on?" There are no angle snap settings that I can see. Properties drawer? Nope. Menus? Nope. Sequencer? Nope. Consult manual. Twenty minutes later, throw manual aside in frustration, having



PICTURE COURTESY OF: © 2001 LIST

02

slogged through continual and largely arbitrary cross-references. Fiddle with the rotate command. Ah, I see – hold down R for rotate, hold Shift as well, and then rotate. (In Eovia's defence, it later transpired that there are also other ways to do this.) "But how do I change the angle snap value?" Still no idea, just as I have no idea how to flip a spline object's normals (or whether it's even possible).

Even controlling the camera is wilfully obscure. The Dolly control actually rotates around the scene rather than, well, dollying. Want to zoom? Well, you can forget about the middle mouse button, it doesn't work. And why call X, Y and Z rotation Yaw, Pitch and Roll, except to be cantankerous?

Carrara retains the peculiar 'working box' idea from as far back as *Ray Dream Studio*; the object's bounding box projects onto each plane, for no good reason that we could fathom. It's supposed to aid with object placement but actually just adds visual mess.

This working plane idea also makes modelling far more confusing than it needs to be. And inexplicably, although there are simple lathe, loft and extrude commands for vertex editing, you can't do the same with spline editing; you have to fiddle about with sweep paths and cross-sections, like it or not.

If all this sounds petty and griping, bear in mind that these workflow-stoppers are

scattered all over *Carrara*. It's not that *Carrara* can't do most things, it just doesn't make it very obvious *how* to. And with a manual that thinks it's a tax return form (the online help is just a PDF version of same), you'll be constantly frustrated by seemingly random design choices. And this, according to Eovia, in an interface that is ideal for beginners.

BUT NOW THE GOOD NEWS

Which is a shame, because in feature terms *Carrara* is well-stocked with goodies. It can do spline, vertex and metaball modelling; if you want NURBS, you need to use the bundled *Amapi 3D*, with its very own whacko interface. Objects can even be constructed by typing in mathematical formulae.

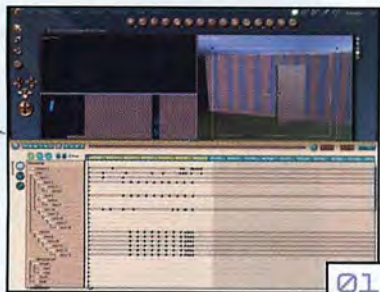
You can add reasonable-looking fire, clouds (including volumetric ones), fog, a basic particle system, and even terrain effects, thanks to a sub-*Bryce* terrain editor.

Lights include spot, bulb, distant, moon and sun, plus area lights that can be applied to any object. If you manage to get them working, you'll find they render quickly and fairly pleasingly, too. And there's a reasonable dynamics-stroke-physics system, which is good for simple scenes, though it gave us some peculiar results now and then.

Animation is fairly basic, using the traditional keyframe-timeline model, and doesn't really

[01] In time-honoured fashion, *Carrara* uses a hierarchical object and animation track display.

[02] Smooth and fast though *Carrara*'s renderer is, it doesn't deal too well with 'realistic' shaders, so photorealism can be difficult to achieve.



01

get much more complex than assigning an object to a motion path using the standard set of ease in/out curves. The Storyboard room might be useful for simple logo animations, but the keyframe displays are just too small for anything more adventurous.

Carrara's shaders are remarkably flexible, with a tree-based approach that lets you nest and sub-nest to mind-boggling detail. There are a number of procedural operators such as bricks, noise and, um, the Mandelbrot set – a very Carrara thing to include. Although it gives you very little control over the way flat, spherical and cylindrical mapping is applied, it does have a surprisingly straightforward layers feature which is ideal for adding decals and the like.

The renderer, while flexible, is definitely geared more towards a stylised graphic look than realism. It's fast, though, in its default hybrid raytracing mode, and anti-aliasing is good, even at the basic level. For good measure you get a 'toon' rendering style thrown in, some cheesy lighting effects including lens flares, and decidedly entry-level depth of field.

But by far the most astonishing thing about the renderer – and indeed the program as a whole – is the new Global Illumination option. It works, it's fast, and it's remarkably simple to

"WELL STOCKED WITH GOODIES, BUT A SHAME ABOUT THE INTERFACE"



04

set up. Indirect lighting is calculated from the standard lighting types, or you can assign a skylight to diffuse the scene. Photon counts for lighting and caustics can be independently

adjusted and displayed as a map. The results are gorgeous; we're not talking *mental ray*, but for a program of this calibre, it's a definite triumph.

The other big new feature, bones and skinning, is more basic, but it does the job. You can quickly create a skeletal structure and assign it to any mesh, and then assign IK constraints as per usual.

Carrara was infamous for its bugs as much as anything else, and it would be fair to say



05

Eovia seems to have squashed most of them. Well, sort of. Carrara Studio 2 never actually crashed as such, but it did exhibit plenty of odd behaviour. There were times when all the menus were greyed out and the Sequencer window became inexplicably blank. Quitting and reloading had no effect. 'Unknown errors' also crop up far too frequently.

The OpenGL display driver (the program also supports DirectX and software rendering) sometimes mis-draws objects, omitting them altogether or mixing up the Z display order. It also crawled to an agonising redraw rate at times, especially when first loading a scene and applying textures; and this with a GLoria4 Quadro4 900 XGL card and latest drivers.

Bottom line: is the newly reborn Carrara worth it? If you're a professional, no. The workflow is just too disjointed, with constant toing and froing between slide-outs, rooms and menus. Besides, Carrara doesn't offer nearly enough flexibility for large projects.

For amateurs and dabblers? Well... you do get a lot for your money; it's finding and using it that's the trouble. With some of the quirks sorted out, Carrara Studio 2 could be great value for money; as it stands, for bashing out the odd Web animation, logo, or home-cooked render, it might just be worthwhile.

3D VERDICT	5
RANGE OF FEATURES	8
VALUE FOR MONEY	9

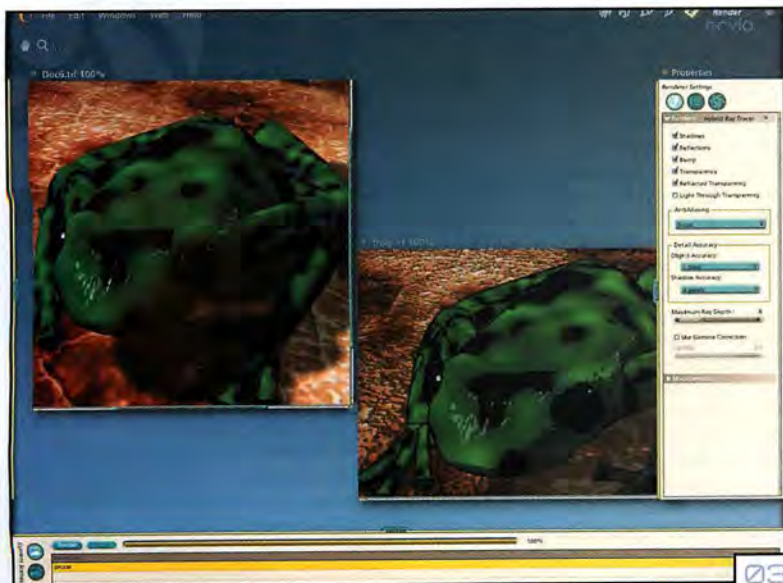
- PROS** >> Lots of features for your dough
 >> It's quick and looks pretty
 >> Fast and effective Global Illumination option

- CONS** >> Modelling is unnecessarily complex
 >> Workflow doesn't flow
 >> Still some bugs

[03] Gripes aside, Carrara's renderer is certainly fast.

[04] Vertex, spline and metaball modelling are all on offer – for NURBS, you need to use *Amapi 3D* (bundled in for free).

[05] Creating a skeletal structure and assigning it to a mesh is a simple matter, and good enough for most general animation needs.



03

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- >> FireWire
- >> Windows XP Pro

Dedicated multi-processor systems are fantastic for rendering complex 3D scenes, but the average 3D PC has to do more than just generate rendered 3D frames – so you'll want a system that is not fixated on rendering to the exclusion of all else.

The VGI Workmaster 2.4 is a very thoughtfully constructed system that excels in a whole range of ways. At its heart is a single Pentium 4 processor running at 2.4 Gigahertz. While this is unarguably less powerful than a dual-processor Athlon MP or Pentium system, it does knock over £500 off the price, and depending upon the destination of your finished work, you may not need that level of extra performance. For instance, if you are using your PC for modelling rather than rendering – especially if you're creating games environments that will be rendered on the fly by each user's graphics card – or if you're creating movie effects that will be shipped off to render farms elsewhere, then this system will suffice.

The processor is hosted on an ASUS i845 motherboard. This would not be our immediate first choice, and we would have preferred a motherboard that supported Intel's RAMBUS memory, which helps to squeeze every last bit of performance from any processor. Having said that, many people would argue that the price/performance ratio does not work out in RAMBUS' favour. (Of course, like so much in computing, memory performance adheres to the law of diminishing returns, where you must pay ever more for ever smaller performance increases.) This system comes with 1GB of 2100 DDR RAM, which is enough for most applications, but the motherboard supports up to 2GB if the standard configuration is not enough for you.

The choice of motherboard also becomes clear when you take into consideration the fact that the graphics card connects via an AGP Pro slot, which outperforms the AGP 4X specification. And the graphics card is one of the key components of this system. It's a Wildcat III 6110 with 208MB of RAM, which is one of the two best PC graphics cards on the planet right now, alongside NVIDIA's Quadro4 900 XGL. Depending on which benchmarks you run, each of them wins on some tests, but to our mind, the Wildcat still comes out head and shoulders above when it comes down to

sheer image quality. This is primarily thanks to its 10-bit sub-pixel accuracy, and its proprietary full-scene anti-aliasing which helps to minimise or entirely eliminate interference patterns.

The 6110 is a real workhorse, designed primarily to operate under OpenGL. It does support DirectX, but 3Diabs has invested minimal effort in creating DirectX drivers. However, under OpenGL using the supplied Windows XP Pro operating system, the card carries certifications for just about every major CAD, CAM, 3D modelling and design program around. Certification is an important attribute because it demonstrates that the drivers have undergone a rigorous testing process by each publisher, and the end result is maximum stability with their software.

MONITOR OPTIONS

The Workmaster comes with a 19-inch Viewsonic LCD panel as standard, although you can opt for a 21-inch CRT monitor if you prefer (bringing the price down to £3,999). We don't generally recommend CRT panels for

graphics because the colours just don't display accurately. However, this is one that we do like, and it was a recent group winner in our sister mag, *Computer Arts*.

It has exceptional brightness and contrast, and wide viewing angle, which provides excellent image quality. Although it will be less important to 3D users, the monitor also rotates 90 degrees on its base, so that you can work on documents in portrait mode.

It's only when you start to look beyond the key components that you begin to appreciate the thoughtfulness of this system's design. It comes with 40 Gigabyte 7200 hard drive. That's pretty fast, but you might think that 40GB is not much for a professional work station nowadays – and you'd be right. That's why VGI has included a further 100GB 7200 RPM drive in a removable caddy. The great thing about this system is that you can easily take your caddy home with you to continue work away from the office. It also means that you can add further storage with minimal effort, perhaps storing work for different clients on different drives.

If that wasn't convenient enough for you, the system also comes with a Pioneer DVR-A04 DVD burner. This is one of the most

flexible burners around, enabling you to write DVDs, DVD-RWs, CDs and CD-RWs. It uses 4.7GB DVD for General discs, and it's ideal for archiving, software delivery and much more besides.

Given the volume of data that a modern graphics work station is capable of generating, the combination of secondary storage in a removable drive, and a DVD writer just goes to show that VGI has really considered how you're going to use this system.

A good back-up regime is essential for any creative professional, but with this system it's easier because the motherboard comes with an optional RAID controller. The controller is already present, and if you connect a second internal hard drive, the system can be set to constantly duplicate all the information on the primary drive, thus protecting you from fatal drive crashes that might otherwise destroy months of work.

The entire system is housed in a full tower case, which is needed for the full-length graphics card. It also comes with a hefty (and expensive) 460 Watt power supply, which is again included primarily to service the graphics card.

All in all, the VGI Workmaster 2.4 is a very nice system that has been designed to handle as wide a variety of 3D tasks as possible. It's not the best rendering option, but its high-quality, super-powerful graphics card is ideal for scene modelling, and even for real-time OpenGL simulations. ■

"VGI HAS REALLY CONSIDERED HOW YOU'RE GOING TO USE THIS SYSTEM."

[RIGHT] We reckon that its removable 100GB drive, DVD burner and top-flight Wildcat graphics card help make the VGI Workmaster 2.4 the most versatile design PC on the market.

3D VERDICT		8
SPEED		9
VALUE FOR MONEY		7

PROS >> Ultimate versatility >> Fast graphics >> Removable hard drive and DVD writer

CONS >> Dull case >> Not as fast at rendering as a dual-processor system



BENCHMARKS

Although SpecView Perf 6 has been the standard by which to measure OpenGL performance, it's recently come under criticism as manufacturers write drivers that give good scores without improving real-world performance. In response, OPC has released version 7 – which eliminates this problem, but, in doing so, creates a whole new set of tests that will be unfamiliar to most people. Therefore, for completeness, we've included scores from both versions. You can find more information at the Standard Performance Evaluation Corporation Web site, www.spec.org.

SpecOPC ViewPerf 6.12

>> AWadvs-04	266.3
>> DRV-07	48.42
>> DX-06	69.91
>> Light-04	12.14
>> MedMCAD-01	76.49
>> ProCDRS-03	95.17

SpecOPC ViewPerf 7.0

>> 3dsmax-01	10.59
>> drv-08	49.35
>> dx-07	78.11
>> light-05	10.54
>> proe-01	11.26
>> ugs-01	10.34

>> Mad Onion 3D Mark
(DirectX performance):
1271 3D marks

Power Booleans

Boolean operations that don't fail? Do I have to sell my soul?

BY PETE DRAPER

FOR 3ds max

£128 (\$195)

UPGRADE NONE

SUPPLIER DIGIMATION

CONTACT +1 504 468 7898

WEB WWW.DIGIMATION.COM

MINIMUM SYSTEM

>> Any system capable of running 3ds max 3.x+

MAIN FEATURES

- >> Less 'skinny' polygons
- >> Non-failing operation
- >> Cookie Cutter
- >> No excess vertices
- >> No excess polygons

PROS

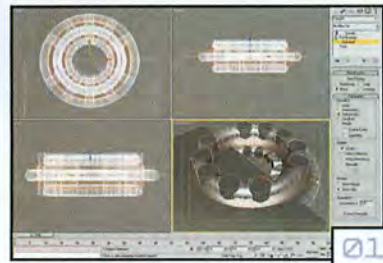
- >> Faster operation
- >> Better mesh quality
- >> Retains instances
- >> Decimation feature

CONS

- >> Extracting operand deletes original
- >> Multiple operand selection not possible in Modifier

My fellow *3D World* writer Chris Ollis once told me, "Never fear the Boolean." And now he's right. *max*'s Boolean system is notoriously shaky, with the simplest operations resulting in excess vertices and 'skinny' polygons. But *Power Booleans* changes all that.

The interface is similar to *max*'s own, so those who have used Booleans before will only skim the manual. The beauty of this plug-in is



01

that you don't have to keep merging meshes or creating multiple compound objects to perform more than one operation: *Power Booleans* enables you to include multiple operands when creating the Compound Object. If you want to perform different operations on specific operands, you'll have to use an additional Compound Object to do this as you can't mix operations, but the resulting clean meshes are astounding and rarely fail. Additional operations have been included in the toolkit, such as Cookie Cutter and Imprint options. The feature set is not overly huge, but doesn't need to be. There are only so many Boolean operations you can do, and this plug-in has them all. It's a shame that extracting an

[01] Here the non-selected operands are to be subtracted from the selected one, all at once.

[02] The resulting object. Note the cleanliness of the geometry – no additional faces or vertices floating around, and it didn't fail at all.



02

operand deletes it from the Compound Object, but that's all we could find wrong with it. Once you've used this Boolean system, it's unlikely you'll go back to *max*'s own. ■

3D VERDICT		7
RANGE OF FEATURES		7
VALUE FOR MONEY		8

SpeedTreeMAX

Create your own jungle with quickly rendered trees. Bring your own loincloth...

BY PETE DRAPER

FOR 3ds max

£260 (\$395)

UPGRADE SEE WEB SITE FOR DETAILS

SUPPLIER DIGIMATION

CONTACT +1 504 468 7898

WEB WWW.DIGIMATION.COM

MINIMUM SYSTEM

>> Any system capable of running 3ds max 4.x

MAIN FEATURES

- >> Multiple seeds
- >> Foresting feature
- >> *SpeedShadow*
- >> Use of *max*'s own Wind SpaceWarp
- >> CAD Designer system

PROS

- >> Ease of use
- >> Changeable textures
- >> Vast library
- >> Use of wind spacewarp

CONS

- >> CAD designer system slightly fiddly
- >> No easy way to switch back to single tree without recalculating
- >> Multiple *SpeedShadows* can cause flickering

Well, as they say, the clue is in the name. *SpeedTreeMAX* does exactly what it says on the tin and renders trees out much faster than any other tree system. This is mainly due to the use of billboard texture mapping for groups of leaves instead of generating each individual leaf as geometry. The trees are initially designed in a CAD system which lets you design your tree right down to branch position, trunk radius and whether the leaves are blossoming or darkening. Ingenious!



01

Having imported the individual tree into *max*, you use a random seed generator create numerous variations of it. Using this seed, you can then export it back into the CAD system and re-edit it to your heart's content. You can also use this tree information and generate an entire forest, attached to a surface you specify and within a boundary constructed with a simple spline – which even supports holes.

SpeedTree's realistic wind takes its info directly from *max*'s wind spacewarp. As other elements in the scene may also be using this spacewarp, the plug-in has a Scalar Strength spinner to increase the wind's strength within *SpeedTree* alone. Finally, *SpeedTree* comes with its own *SpeedShadow* system, which speeds up shadow generation for the

[01] Create forests using a single terrain object and a spline area for the trees to fill.

[02] The final render. The leaves are set to face the camera and with the *SpeedShadow* system are lit and shaded properly at a fraction of the time it would take to use Raytraced shadows.



02

billboards within the trees. It also comes with its own individual billboard so pre-rendered trees can be rendered as facing planes which work with *SpeedShadows*. ■

3D VERDICT		8
RANGE OF FEATURES		8
VALUE FOR MONEY		8

MaxVR.qt 2.0

QuickTime VR made easier than ever before.

BY PETE DRAPER

FOR 3ds max

UPGRADE \$75 (ALSO SEE BELOW)

DEVELOPER CEBAS

CONTACT +1 816 525 0103

WEB WWW.TRINITY3D.COM

£128 (\$195)

MaxVR.qt 2 is built on Cebas' previous VR product, with a free upgrade available if you purchased R1 after February this year. But with version 1's features still included, why upgrade – or buy it? The answer is simple. With the improvements in QuickTime VR, Cebas have taken its existing product, modified it and included all the new features now available.



As before, creating Object and Scene VR is as easy as clicking on a render button! With the addition of hotspots, Cebas have introduced multiple VR environments that can be linked together to create an environment that you can almost walk around. Setting this up is relatively straightforward. Hotspot objects are assigned an ID, which the VR utility then reads and allows you to link with a resulting camera. You can even use hotspots to fire off external HTML pages. The code is generated automatically at render time, and links the .mov file to the HTML. This code can thus be embedded into a Web page.

Object VR creation also remains as simple as it was previously. Some of the the plug-in's

[01] Multiple cameras and hotspots can be utilised within the 3ds max scene to create a virtual walkthrough of an environment.

[02] Full 360-degree object VR can be created in a few mouse clicks.



parameters may look daunting to begin with, but after a quick skim over the online help, you'll be able to create QuickTime VR in a matter of minutes. ■

3D VERDICT	8
RANGE OF FEATURES	8
VALUE FOR MONEY	9

MINIMUM SYSTEM

>> Any system capable of running 3ds max 4.2

MAIN FEATURES

- >> Hotspots using Object IDs
- >> Multi camera support
- >> Pre-rendered anim to Object VR
- >> Smooth Panoramic VR

PROS

- >> Smooth playback
- >> Links to external web pages
- >> Ease of use
- >> Video > VRObj feature

CONS

- >> Object VR can result in high render times
- >> File sizes generated can be too high for the Web

Morph ToolKit

Spending too long setting up your models for morphing? Look no further...

BY PETE DRAPER

FOR 3ds max

UPGRADE N/A

DEVELOPER DI-O-MATIC

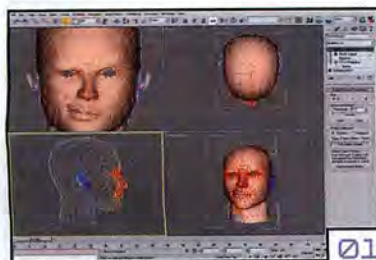
CONTACT INFO@DI-O-MATIC.COM

WEB WWW.DI-O-MATIC.COM

£130 (\$199)

Morph ToolKit is a collection of plug-ins designed to make working with morphs easier. Consisting of *Attach-O-Matic*, *Copy-O-Matic* and *Link-O-Matic*, these tools can be used together to help you save time setting up your models for morphing.

Attach-O-Matic is a Compound Object that allows you to perform additional modelling on top of the morph modifier without affecting the animation and deformations further down in the stack. For example, you can attach and



weld a morphing head to a non-morphing body while still being able to access the modifier stacks of the individual objects. This saves time and memory as you won't need to include the entire body as a morph target.

Copy-O-Matic allows you to copy vertex selections and positions from one object to another, and can mirror these selections so you only need to deform half of an object – the plug-in will automatically transpose this info onto the copied selection area.

Link-O-Matic constrains additional objects to vertices of other objects. It would come in very handy for binding teeth and gums to the chin of your head mesh, or not having to include the eyes in your head's morph targets, therefore cutting down on calculation time.

[01] With *Copy-O-Matic* you can copy and mirror vertex selections across meshes to reduce modelling time when setting up morph targets.

[02] *Link-O-Matic*'s controller lets you link static objects to multiple morphing vertices while using additional vertices as pivot points.



These plug-ins are worthwhile individually, yet the low price tag makes them invaluable, especially as you can use them straight out of the box and not have to re-work your scene to accommodate them. ■

3D VERDICT	9
RANGE OF FEATURES	9
VALUE FOR MONEY	9

MINIMUM SYSTEM

>> Any system capable of running 3ds max 4.2

MAIN FEATURES

- >> Attach static objects to morphing objects
- >> Link objects to morphing objects' vertices
- >> Stack maintenance
- >> Copy and mirror vertex selections across meshes

PROS

- >> Simple to use
- >> Cuts time setting up links and morph targets
- >> Can weld non-morphing to morphing objects

CONS

- >> Some slight instability issues with very high polygon models

Piranesi 3

Why texture when you can paint instead? Meet the peculiar *Piranesi*...

BY ED RICKETTS

£529 (\$792)

SUPPLIER INFORMATIX

CONTACT 01223 363014

WEB WWW.INFORMATIX.CO.UK

FORMAT PC ONLY

MINIMUM SYSTEM

>> 300MHz, 128MB RAM,
Windows 98/NT4/XP

MAIN FEATURES

- >> Paint onto a 3D scene using a 2D bitmap or brush
- >> Conforms to plane, angle and depth using locks
- >> Colours, textures and grains all user-definable
- >> Special effects modes such as Edge and Construct
- >> Place 2D cut-outs which conform to the scene
- >> 2D plans and elevations
- >> Supports cubic panoramas
- >> Supports RPC cut-outs

Although *Piranesi* has been in existence for a few years now (hence version 3), it's not exactly a household name. Which is a shame, because not only is it a wonderful program, it could also save many artists a hell of a lot of time, particularly those in the architectural visualisation field.

Getting your head around what *Piranesi* actually does can be tricky at first. For starters, it's not a 3D application – you can't create geometry within it. But neither is it a standard bitmap editor à la *Photoshop*.

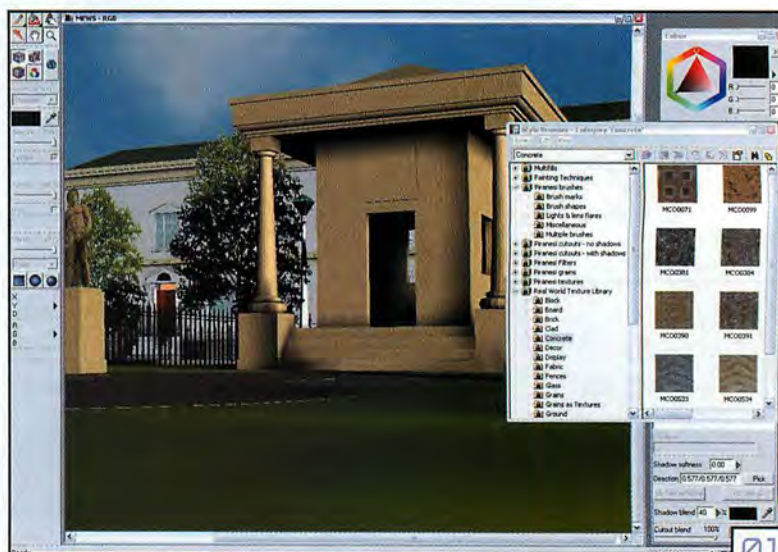
In fact, *Piranesi* is designed specifically for applying 2D textures to rendered 3D scenes. Imagine you have an architectural rendering of a building, complete with light and shadows, but no textures. Using *Piranesi*, you can literally paint on the relevant textures, add cut-outs of trees, people or other objects that cast shadows, and much, much more.

All this is made possible because *Piranesi* stores depth and material information for each scene in its proprietary EPIX format. You can either use the free plug-ins to export directly from your usual 3D app, or load and render a DXF file with the included *Vedute* package.

Once your rendered bitmap is loaded in *Piranesi*, you paint onto it using brush and material styles created with a *Photoshop*-style brush editor. However, you can also lock your strokes to a particular surface, scene material, orientation, or any combination thereof, effectively creating an automatic mask.

What's more, textures are automatically applied with the correct perspective as you paint or fill, just as if you'd mapped them to the object in the first place. A brick wall texture on an angled plane is a good example.

Any cut-outs you add within the program also obey this depth information. *Piranesi* comes with a largish library of 2D images, such as trees, people and fences. As you move



these around in the scene, their scale and perspective is adjusted on the fly, so they match the surroundings perfectly. They can even cast real 3D shadows. *Piranesi* also supports RPC (Rich Photorealistic Content) cut-outs, which store multiple images of a 3D object and choose the correct one for the viewing angle.

The program isn't limited to photorealistic effects though; you can also paint on various 'artistic' styles to give a more natural, hand-drawn appearance. Effects include charcoal, textured paper, watercolours, etching and embossing, and as usual can be painted selectively or applied to the whole image.

None of this would be particularly time-saving if *Piranesi*'s interface was hideously convoluted, but thankfully it's relatively straightforward, along the lines of any other

bitmap editor. Most options are selected from the Style Browser, which contains a vast store of preset textures, cut-outs, fades, blends and so on (and, of course, you can add your own).

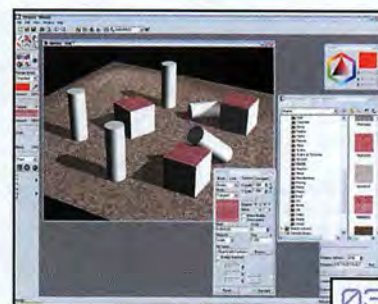
New in version 3, you can now create scenes from a plan or elevation drawing, bypassing the 3D app altogether, although this process isn't quite as flexible as true rendering. *QuickTime* cubic panoramas are also now possible, and a few other tweaks and interface improvements have been implemented.

Frankly, *Piranesi* should be *de rigueur* for any architectural rendering. Sure, it's never going to replace carefully-constructed, multi-layer textures within your own 3D program, but for simpler scenes it's a real time-saver – and also a lot of creative fun, obviating the need for fiddly texture work. *Piranesi* puts the soul back into 3D, and for that it should be applauded. ■

[01] With *Piranesi*, you can add colour, textures, grains and more to an untextured 3D scene. It's all really rather clever.

[02] Stylistic effects are also possible, such as this engraved, hand-drawn look. You can apply them selectively or globally.

[03] The program gives you plenty of control over where and how the textures should be applied, although most of the time it's automatic.



3D VERDICT	
RANGE OF FEATURES	8
VALUE FOR MONEY	7
	9

PROS >> One of a kind >> A real time-saver for certain scenes >> Reasonably simple and friendly interface

CONS >> Not suitable for more complex texturing requirements >> Renderer output support is quite limited

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HARDWARE

PRODUCT	SUPPLIER	CONTACT	PRICE	WORKSTATION	STORAGE DEVICE	INPUT DEVICE	RENDERING HARDWARE	GRAPHICS CARD	SCANNER	VERDICT	ISSUE
3DBOX S2	Reality Computing	+44 (0) 1483 202 051	£4,694	•						7	21
Armari RX860HT	Armari	+44 (0) 20 8993 4111	£4,700	•						8	24
ATI Radeon 64MBDDR VIVO	ATI Technologies	+49 89 665 15 0	£160					•		8	11
Dell Precision M40 3D laptop	Dell	+44 (0) 870 152 4699	£2,184	•						9	23
ELSA Gladiac 920	ELSA	+44 (0) 800 563 445	£298					•		9	15
ELSA Gloria DCC	ELSA	+44 (0) 800 563 445	£800					•		7	18
ELSA Gloria III	ELSA	+44 (0) 800 563 445	£799					•		9	16
ELSA Synergy 2000	ELSA	+44 (0) 800 563 445	£180					•		8	19
Freeform	SensAble Technologies	+1 781 937 8315	\$21,450	•						9	02
Fuji Finescan 2750	Creative Publishing Solutions	+44 (0) 1242 285 100	£6,500						•	9	17
Gateway Solo 9300 XL	Gateway	+44 (0) 800 973 132	£2,399	•						8	08
GeForce 2 GTS	NVIDIA	+44 (0) 118 903 3000	\$300					•		8	04
IBM Spaceball 4000	IBM	+44 (0) 800 169 1460	£360			•				7	15
lomega MO 1.3	lomega	+ 41 22 879 7000	£206 (Atapi) £217 (SCSI)		•					4	12
lomega Peerless	lomega	+ 41 22 879 7000	£117 (10GB USB bundle), £308.33 (20GB USB bundle)		•					6	17
lomega Predator CD/RW	lomega	+ 41 22 879 7000	£192 (USB)		•					7	17
lomega Jaz 2GB	lomega	+ 41 22 879 7000	£229		•					7	12
Max Black Storm3 K7 MP	Max Black	+44 (0) 1763 245 757	£4,224	•						9	18
MaxPac 6000	MaxVision Corporation	+1 256 772 3058	£4,825	•						8	13
Medea Video Raid RT	Medea Corp	+44 (0) 1494 442 202	£1,560		•					8	01
Minolta Vi-700	Minolta	+44 (0) 1908 200 400	£16,500 + VAT (Scanner) £2,500 + VAT (Platter)						•	6	05
Oxygen 420	3Dlabs	+44 (0) 1784 470 555	\$2,099					•		8	09
PURE	Advanced Rendering Technology	+44 (0) 1223 563 854	£2,499				•			10	20
Silicon Graphics 230	SGI	+44 (0) 118 925 7500	£3,750	•						8	03
Wacom Intuos Tablet	Wacom	+49 (0) 2151 36 14 0	£609 (A3) £365 (A4)			•				8	06
Wacom Intuos 2 Tablet	Wacom	+49 (0) 2151 36 14 0	£354			•				9	22
Wacom PL500 Interactive Display	Wacom	+49 (0) 2151 36 14 0	£2,190			•				4	11
Wildcat II 5000	3Dlabs	+44 (0) 1784 470 555	£1,028					•		7	20
Wildcat II 5110	3Dlabs	+44 (0) 1784 470 555	\$2,530					•		8	13

SOFTWARE

PRODUCT	SUPPLIER	CONTACT	PRICE	MODELLING	ANIMATION	TEXTURING	RENDERING	TERRAIN GENERATION	OTHER	VERDICT	ISSUE
3ds max 4.0	Discreet	+44 (0) 20 7851 8000	£2,695	•	•	•	•			9	10
Adobe Photoshop 6.0	Adobe Direct	+44 (0) 131 458 6842	£409 + VAT						•	9	05
After Effects 5.5	Adobe Direct	+44 (0) 131 458 6842	£525 + VAT (Standard) £1,225 + VAT (Production bundle)						•	8	24
AiST Movie3D	AiST	+49 86 36 98 350	£299	•	•	•	•			7	18
Amapi 3D 6.0	Computers Unlimited	+44 (0) 20 8358 6665	\$399	•						7	14
Art*lantis 4.0	Computers Unlimited	+44 (0) 20 8358 6665	£384				•			7	13
Aura 2.0	Graphics Domain	+44 (0) 1494 515 500	£510						•	9	10
Avatar Lab	Curious Labs	+1 831 462 8901	\$69						•	6	22
AXEL 1.0	Computers Unlimited	+44 (0) 20 8358 6665	£1,167						•	9	18
AXELedge 1.5	Computers Unlimited	+44 (0) 20 8358 6665	£720						•	9	23
BodyPaint 3D	HiSoft	+44 (0) 1525 718 181	£479			•				9	08
Boujou 1.2	2d3 Ltd	+44 (0) 1865 811 060	\$10,000						•	9	17
Bryce 5.0	Computers Unlimited	+44 (0) 20 8358 6665	£195					•		8	16
Character Studio 3.0	Discreet	+44 (0) 20 7851 8000	£995		•					9	08
Cinema 4D ART 7.0	HiSoft	+44 (0) 1525 718 181	£549	•		•	•			9	25
Cinema 4D NET	HiSoft	+44 (0) 1525 718 181	£88 (Three licences) £629 (Ten licences) £1,497 (Unlimited)				•			8	06
Cinema 4D XL6	HiSoft	+44 (0) 1525 718 181	£1,188	•	•	•	•			9	01
Cinema 4D XL7	HiSoft	+44 (0) 1525 718 181	£1,188	•	•	•	•			9	14
combustion	Discreet	+44 (0) 20 7851 8000	£3,835 + VAT						•	8	04
Cult3D	Cycore	+44 (0) 20 8883 9330	\$500 p.a.						•	7	12
D Joiner	D Vision Works	+44 (0) 1235 437 109	£300						•	7	20
D Sculptor	D Vision Works	+44 (0) 1235 437 109	£500						•	8	11
DFX+	Zen Computer Services	+44 (0) 905 94 4280	£695						•	9	10
Deep Paint 3D	Keoti	+44 (0) 20 7482 4858	£675 + VAT (£995 + VAT with Texture Weapons)			•				8	05

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#081

SOFTWARE continued



PRODUCT	SUPPLIER	CONTACT	PRICE	MODELLING	ANIMATION	TEXTURING	RENDERING	TERRAIN GENERATION	OTHER	VERDICT	ISSUE
Deep Paint 3D 2.0	Keoti	+44 (0) 20 7482 4858	£599							8	26
Director Shockwave Studio 8.5	Computers Unlimited	+44 (0) 20 8358 6665	£899							9	17
Electric Image Universe 3.01	Computers Unlimited	+44 (0) 20 8358 6665	\$995							8	15
ETShade Pro R4/E	Expression Tools	+81 92 722 4540	\$1,399							6	16
FILMBOX Studio 2.7	Kaydara	+1 514 842 8446	\$5,000 - \$30,000							9	11
FILMBOX 3.0	Kaydara	+1 514 842 8446	£3,382							9	19
Hash Animation:Master 8.5	Hash, Inc.	+1 360 750 0042	\$299							8	12
Houdini 4.0	Techimage	+44 (0) 1367 253 868	£10,950							9	02
Houdini 5.0	Techimage	+44 (0) 1367 253 868	£14,500							9	25
Houdini Select	Techimage	+44 (0) 1367 253 868	£1,999							7	25
Illusion	Impulse, Inc.	+1 702 948 1100	\$299							8	12
iSpace	Caligari	+1 650 390 9600	\$99							8	03
LightWave 6.0	Computers Unlimited	+44 (0) 20 8358 6665	£1,595							9	01
LightWave 6.5	Computers Unlimited	+44 (0) 20 8358 6665	£1,599							9	07
LightWave 7.0	Computers Unlimited	+44 (0) 20 8358 6665	£1,100							8	19
LightWave 7.5	Computers Unlimited	+44 (0) 20 8358 6665	£1,100							8	26
MatchMover Pro 2.2	REALVIZ	+44 (0) 1727 810 203	\$4,999							8	24
Maya 3.0	Alias Wavefront	+44 (0) 1494 441 273	£12,590 (Unlimited) £5,950 (Complete) £1,850 (Builder)							9	01
Maya 3.0 for Linux	Alias Wavefront	+44 (0) 1494 441 273	£12,590 (Unlimited) £5,950 (Complete) £1,850 (Builder)							7	17
Maya 3.5 for Mac	Alias Wavefront	+44 (0) 1494 441 273	£6,360 (Complete)							8	20
Maya 4.0	Alias Wavefront	+44 (0) 1494 441 273	£4,899 (Unlimited) £1,449 (Complete)							8	15
mental ray for 3ds max	Discreet	+44 (0) 20 7851 8000	£1,945 (Two processors) £3,545 (Four processors)							8	05
mental ray for Maya	Alias Wavefront	+44 (0) 1494 441 273	Varies							8	23
Merlin 3D	Digital Immersion Software	+1 705 522 7991	\$595							7	14
MojoWorld Generator	Pandromeda	www.pandromeda.com	\$189							8	19
NuGraf 4.0	Okino	+1 905 672 9328	\$495							8	21
PIXELS 3D 4.0	PIXELS 3D	www.pixels.net	\$599							9	22
plasma	Discreet	+44 (0) 20 7851 8000	\$650 (£525)							9	27
PolyTrans	DCP	+49 (40) 254 0850	\$395							7	02
Poser Pro Pack	Computers Unlimited	+44 (0) 20 8358 6665	£200							8	09
Quest3D	Act-3D	+31 71 514 77 99	£174							9	20
REALVIZ Image Processing Factory	REALVIZ	+44 (0) 1727 810 203	\$12,000 (MatchMover, ImageModeller, ReTimer, Stitcher)							9	04
REALVIZ Interactive Studio	REALVIZ	+44 (0) 1727 810 203	£1,450 (Stitcher, ImageModeller, SceneWe@ver)							8	27
RealFlow 1.3	Next Limit	+34 915 102 202	\$645							8	02
RealWave	Next Limit	+34 915 102 202	\$535							8	02
RealSoft 3D 4	Realsoft Graphics	+358 3 471 8390	£432							8	07
ReelMotion 1.0.4	Motional Realms	+1 602 230 1300	\$795							9	03
Rhinoceros 2	Aztec CAD Ltd	+44 (0) 20 7837 7377	£610							8	17
SCS2	Cryonetworks	+33 1 49 48 69 00	£266							7	11
Softimage3D 4.0	Tyrell	+44 (0) 20 7343 5500	£1,025							8	27
SoftimageXSI 1.0	Tyrell	+44 (0) 20 7343 5500	£11,995 (Advanced) £7,995 (Essentials)							9	01
SoftimageXSI 1.5	Tyrell	+44 (0) 20 7343 5500	£11,995 (Advanced) £7,995 (Essentials)							9	09
SoftimageXSI 2.0	Tyrell	+44 (0) 20 7343 5500	\$12,300 (Advanced) \$8,200 (Essentials)							9	19
solidThinking 4.1	Computers Unlimited	+44 (0) 20 8358 6665	£1,737							7	09
Stitcher 3.0	REALVIZ	+44 (0) 1727 810 203	£300							7	17
Swift 3D 2	Electric Rain	+1 303 543 8230	\$159							9	24
Strata 3Dpro RME	Computers Unlimited	+44 (0) 20 8358 6665	\$895							8	23
trueSpace 5.0	Guildsoft	+44 (0) 800 289 041	£300							8	11
Video Toaster	Graphics Domain	+44 (0) 1494 515 500	£1,995							7	07
VR4MAX	Tree C Technology	+31 (0) 30 656 9600	E2,200 (Generator, including 3ds max interface)							9	21
Vue d'Esprit 4.0 for Mac	e-on software	www.e-onsoftware.com	£164							4	23
World Builder 3.0	Digital Element	+1 415 407 5577	\$999 (Pro) \$399 (Standard)							8	20
World Construction Set 5.0	3DNature	+1 303 659 4028	\$995							8	13
ZBrush	Pixologic	+1 888 748 5967	\$585							7	05
ZBrush 1.23	Pixologic	+1 888 748 5967	\$292.50							8	16

Changes in pricing

All information in this Buyers' Guide was correct when the original review went to press. For current pricing information, always check with the named supplier before purchasing.

UPDATE

Buyouts, contacts and big contracts: Movers & Shakers is your window on the 3D jobs market. And once you've read it, why not get a job of your own – with the help of our classified section?

MOVERS

Turbo Squid has hired industry veteran **DAN LION** as its new Vice President, Sales and Marketing. Lion brings nearly two decades of sales and marketing experience to the table, including stints at companies such as Cinesite, Discreet and Cineon Systems. A New Orleans-based 'online digital marketplace', Turbo Squid hosts the largest collection of 3D models, motion capture files, textures and shaders ever assembled. www.turbosquid.com

Numerical Design Ltd (NDL), creator of the NetImmerse graphics engine and game development toolkit, has hired **DAVID BRAME** as chief operating officer. He will be in charge of sales and administration for the company. Brame joins NDL from Internet security company NetOctave, where he was senior vice president of operations. Before NetOctave, he worked for Ganymede Software and Wandel & Goltermann Technologies. www.ndl.com

Alias|Wavefront veteran **ROBERT MAGEE** has joined Side Effects Software in the newly-created position of Customer Experience Specialist. Magee, who co-authored both the *Learning Maya* and *Art of Maya* books during his time at Alias, will now be responsible for developing video, print and interactive multimedia-based training solutions for Side Effects' *Houdini* community of computer animators. www.sidefx.com

WHAT DO YOU DO, THEN?



PAUL MCLAUGHLIN

AGE: 37

JOB TITLE: Head of Art

AT: Lionhead Studios

URL: www.lionhead.co.uk

WHAT DOES YOUR JOB INVOLVE? GIVE US A TEN-WORD SYNOPSIS.
Managing art team. Creating game content. Co-ordinating visual style. *Wolfenstein*.

CARE TO ELABORATE?

What, about *Wolfenstein*? At the moment, we're looking for a new character animator, so most of my time is taken up sifting through showreels. But more usually, I work on the environment for our current title *Dimitri* – both in 'art' terms and working with the programmers of the game engine.

HOW DID YOU GET INTO THE MARKET?

Originally, I studied Fine Art, and then kind of moved sideways. After graduating, I was working in the art college when some chaps came in looking for talent to set up a new games development house in Ireland. CG work was just becoming interesting at a games level, and the 3D side of it enabled me to explore a lot of my sculptural ideas without getting my hands dirty. Of course, '3D' then meant *Sculpt 3D* on the Amiga, so it was a long way from *max* or *Maya*.

DOES GAMES WORK PAY WELL?

These days, yes – although there is a broad range of salaries based on experience, role and talent. For artists, this typically starts at £20,000 a year and tops out at £50,000. To go beyond that, you really have to bring something very special to the company.

HOW ABOUT THE HOURS? IS IT AS HECTIC AS FILM WORK?

We put in a 40-hour week. But we're very aware that people have home lives, families and, God forbid, other interests than graphics and games. For much of a project, working hours are pretty loose; it's only the last weeks that demand real 24-seven input. Artists get off lighter than most, because most of their work is done by then.

AND ARE THERE ANY OTHER PERKS?

I try to have our artists travel as much as possible – SIGGRAPH, E3, awards ceremonies... It really does expand the mind, and makes you feel a part of the global graphics community. Other than that, there are numerous free T-shirts and squeeze stress balls from the ever-generous software manufacturers.

AND CROWDS OF ADORING FANS?

They follow us everywhere, naturally, but we've learned how to avoid them by leaving through the windows...

SHAKERS

Digital Muse's Rony Soussan and Brian Fisher have opened **REALM PRODUCTIONS**, a VFX, animation and motion graphics design studio located in Santa Monica, CG Channel reports. The pair previously collaborated on such high-profile projects as *Minority Report* and *Star Trek: Voyager*. Realm has just completed its first commercial assignment in the form of a US TV ad for Twix. www.realmproductions.com

Husband-and-wife team Niel and Diane Bushnell have launched **QUIRIOS**, a new independent animation studio, based in Hartlepool, UK. A veteran of the 2D industry, Niel has worked for clients including Disney, Warner Brothers and the BBC, before moving into 3D. The new company, which also specialises in illustration, storyboarding and character design, is currently accepting applications for staff. www.quorios.com

BLACK LOGIC, the visual effects and animation division of the Tape House Companies, has extensively restructured its staff. Former head of sales Ivan Molomut has been named executive producer, while new talent joining the team includes veteran CG director Doug Johnson, head of production Julie Shevach, former MTV Networks/Commercials producer Angela Cacchione and computer graphics art director Irene Kim, who previously worked for Blue Sky Studios. www.blacklogic.com



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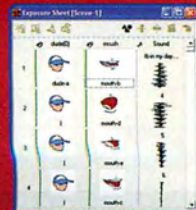
Animate

Breathe life into even your wackiest designs and characters with specialized animation tools that offer endless expression.



Lip-sync

Precision sound editing tools and a lip-sync generator let you match action to sound effortlessly and automap mouth drawings to voice tracks in any language.



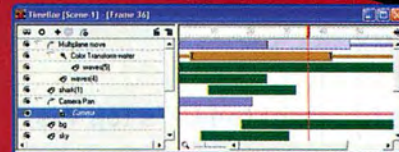
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The multipane camera lets you move among your characters on a 3D stage to integrate stunning cinematic effects.



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The timeline window gives you precise control over the timing of each element and multi-dimensional tweening effects while visualizing the progress of an entire scene.



Reuse

The visual library lets you reuse or share your work to build collaborative projects.



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THE IDTV ISSUE



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THE FLASH ISSUE



ISSUE 25
THE GAMES ISSUE



ISSUE 26
THE USABILITY ISSUE



ISSUE 27
THE TYPOGRAPHY ISSUE

THIS MONTH:

THE NEW TALENT ISSUE

- ↘ **FAST FORWARD**
We talk to this year's batch of award-winning new designers, and find out their views on the future of online design
- ↘ **BYE BYE DJ - HELLO VJ**
Web designers turn their creative talents to VJing
- ↘ **BIG ISSUE:**
We discuss the state of new media training in the UK
- ↘ **HILLMAN CURTIS**
Talks about his new book, his rekindled love for Flash and what he looks for in new recruits.
- ↘ **iMode**
Will it work in Europe, and who's designing for it?

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3D Computer Artist TCS

Midlands

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Ref: 8727

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Tel: 0121 331 6693/5568/6273 or e-mail: cordell.lane@uce.ac.uk
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EXHIBITION

FOR MORE IMAGES, SEE THE COVER CD

EXHIBIT YOUR CREATIONS

If you're an up-and-coming 3D artist, our *Exhibition* section is the place to showcase your work. Each issue, we display the best illustrations and animation stills to have been produced outside of the major design houses. To get your own images included, just follow the submission guidelines below.

Please note that contributions must be submitted on the basis of a non-exclusive worldwide licence to publish, both in printed and electronic form, by *3D World*.

We also regret that we cannot reply to every letter or email we receive in person. Selecting and assembling the images does take time, so if your work has not yet been published, please be patient. If we feel your contribution is suitable, it will appear eventually: either in the magazine, on the cover CD, or on our Web site.

SUBMISSION GUIDELINES

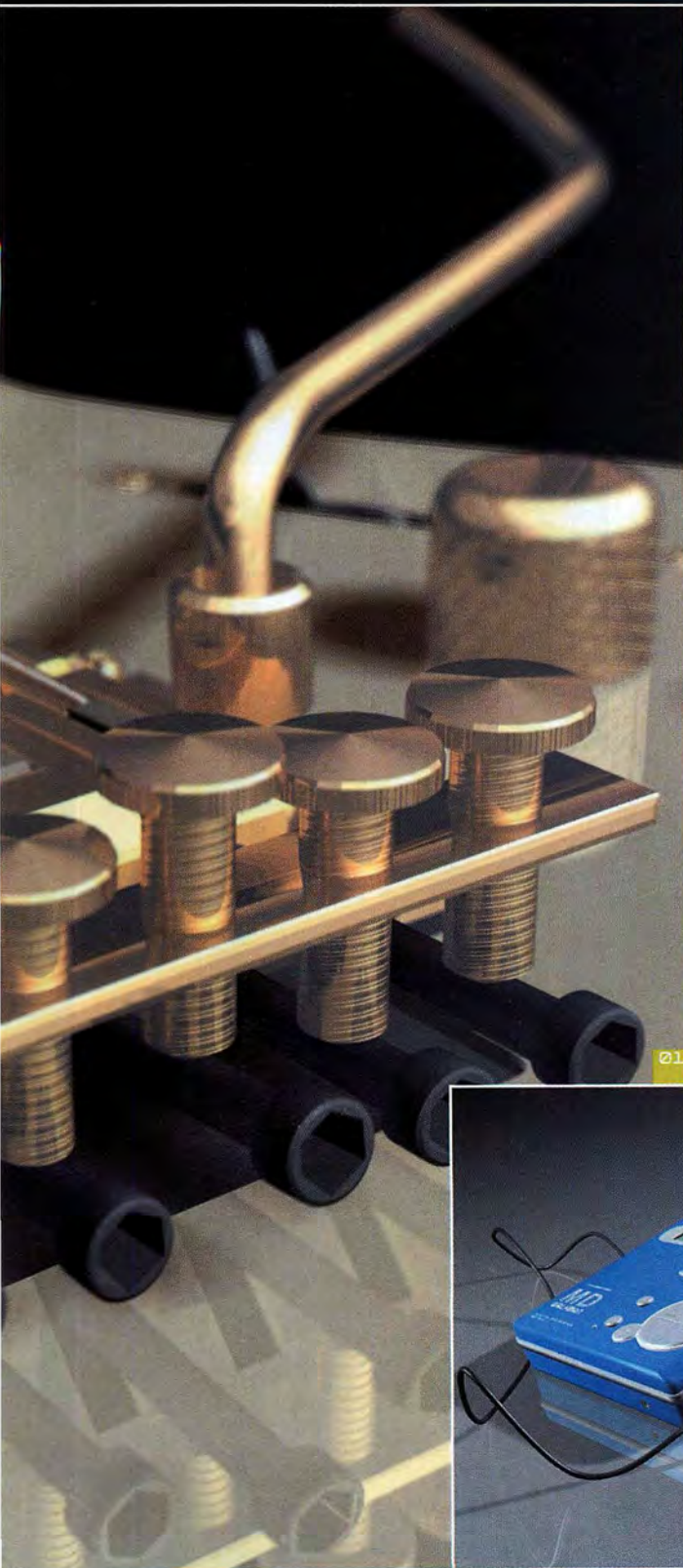
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ON THE CD
More Exhibition images.



#089



01 NAZIR A SHEIKH
GUITAR, MINIDISC PLAYER

USING: 3ds max 4, Photoshop

"After graduating from Westminster with a degree in illustration, I started out designing book covers, then got into computer graphics here in Wolverhampton. I signed up for a 3D course at Lighthouse Media Centre and eventually ended up teaching there, as well as at the Uni. I also do a bit of freelancing. My work is mainly inspired by *Star Wars* and fantasy art, that sort of thing, but I got a bit technical with these images. The guitar is loosely based on my own, so at least I had a reference point for the workings. I'll probably carry on teaching, and hope to expand the freelance side. Whatever, I just love getting into it - it's a great experience."

[t]: 01902 352 208
[e]: ibenez@aol.com

02 ANDREW STEPHENS
BEAST

USING: 3d max 3

"At 14 I discovered *Paint* on the Commodore Amiga, and that started my interest in digital art. I discovered 3ds max while studying graphic design in Suffolk and realised that with that I could create the weird and wonderful imagery that's inside my head, which wasn't possible in any other medium. I experimented with TV graphics, animation and model-making. I'm dyslexic, plus my college didn't have a clue about 3d max - I'm self-taught. But a good tutor helped me through. I'm inspired by psychedelia like *Monty Python* and *Yellow Submarine*, and painters like Turner and Salvador Dali. And natural textures: rocks, clouds, bone, trees, water..."

[e]: andy_30@hotmail.com



03 FAHD OULAD ABDELKRIM
FANTASY DINOSAUR

USING: Maya, Photoshop, Deep Paint

"I'm 19 and quite new to 3D animation, having worked more with 2D and sketching. I got into 3D after seeing movies like *Jurassic Park*, *Twister* and *Dragonheart*; I knew that this is what I wanted to do. So I did a multimedia course at the Grafische Lyceum in Utrecht. So far I'm doing 3D just for fun, but definitely want to make a career from it. I hope to do animation for commercials and film, though I also still love 2D work like matte paintings, concept drawing and DTP."

[e]: tetouany82@hotmail.com



EXHIBITION

01 CRISTOBAL VILA
(L-R AND TOP-BOTTOM)
ESCARAB JOYA, DETALLE
LAVABO2, ALMUERZO JAMON,
TUTANKI-HAMON, ALMUERZO PAN,
HORMIGAS DETALLE

USING: *Electric Image Universe,*
Illustrator, Photoshop, Mac G4

"I live in Zaragoza in Spain, and originally studied at the Fine Arts School of Sant Jordi in Barcelona, where I specialised in graphic and industrial design. I have since worked in graphic studios and ad agencies in Barcelona and Zaragoza, and also as an advertising graphics freelancer under the name of Vila Design, which I later changed to Eterea. I taught myself everything I know about 3D design, and through Eterea I offer exclusively 3D services to businesses. At the moments I'm working mornings in a communications agency and afternoons as Eterea. I'm influenced by nature, music and the old masters - da Vinci, Cezanne, Velazquez, Monet and Manet. I also like the feel of films such as *Blade Runner*, *Amelie* and *Alien*. Most of these images are inspired by everyday things that actually look pretty good up close."

[e]: cristobal@etereaestudios.com
[w]: www.etereaestudios.com



#091



03 RENE K
ICE HOME

USING: 3d max 4.2, finalRender

"The most difficult thing about creating this Ice Home image was to figure out the snow and ice material. I tried many different texture maps but they didn't seem right. For the final version I used the noise material for diffuse and bump map, and adjusted the colour from black to very light blue. There is one light in the scene and one environment map. The crazy thing is that the image looked better with a low quality GI-solution than with a higher one. The roughness of the solution actually added some more detail.

[w]: www.renderosity.com/gallery.ez?ByArtist=Yes&Artist=Rhino02

DOUG STERN
SPIDER

04 USING: Strata Studio Pro,
Photoshop, Amorphium

"I'm a professional illustrator based in Washington, DC. After graduating with a BFA, I pursued, and landed, a job on *National Geographic's* cartographic division, because I'd heard they were getting a powerful *Scitex* system – then state-of-the-art. That led to 10 years on various *Scitex* systems, which stood me in good stead when *Photoshop* came out. On my first copy of *Photoshop* the splash screen was still black and white! No-one really knew what it did back then, but it was the beginning of the end for high-end workstations. After discovering it was better than *Scitex*, I started work on Macs. I've used *Photoshop* ever since, and continue to be amazed at what it's capable of. When the first *Myst* game came out, I got hooked on 3D. They'd used *Strata Studio Pro*, so I bought a copy and wrangled a week's work experience at Strata, learning the program from *Myst's* creators. Since then I've been doing 3D illustrations for many mags and websites including *Men's Journal*, *Technology Review*, *Washington Post* and *US News & World Report*, where I am currently Imaging Director. I regularly use *Photoshop*, *Illustrator*, *Freehand*, *Strata*, *Bryce*, *Painter*, *Poser* and *Amorphium* and have just started using *LightWave 7.5*."

[e]: probablydoug@yahoo.com
[w]: <http://altpick.com/dougstern>



EXHIBITION

01 BENEDICT CAMBELL REAL-FIN

USING: Power, Cinema 4D,
Photoshop

"I'm a photographer by trade, and have been working in advertising since I left school 17 years ago. But now I do a lot of CG work, stills rather than animation. I haven't had time to properly get into animation, but I do like to play around with it when I can. I got into CG about five years ago with Bryce and am pretty much at a crossroads with where I'm going to go with it - to high-profile ad work only, or more of a mix. I have an exhibition at the end of this year which will be the deciding point. I'm into futurism, though I'm not a Trekkie - I don't do space or aliens. My stuff is more domestic, like designing futuristic sets, interiors and worlds. I've built up a reputation for that. I'm lucky enough to be able to pick and choose my commissions, and I'm hoping to narrow my market even more; I'll turn down things that don't excite me."

[e]: info@benedict1.com
[w]: www.benedict1.com

02 MATT BELL RED DRAGON

USING: 3ds max 4.0

"I'm a freelance digital artist, based in West London, and I'm always looking for interesting commissions. I've been producing 3D work for games and broadcast for nearly 10 years now, my most recent big project being the environment design for Confounder Factor's forthcoming Xbox game *Galleon: Islands Of Mystery*. I progressed into digital 3D work from photography. I remember being very attracted to the idea that I was no longer limited to 'real' props and lighting; I could now just design whatever the client needed without running into a huge budget. I'm inspired these days by artwork that displays elegance and simplicity; often the simpler an image is, the greater the impact."

[e]: mattjbell@btinternet.com
[w]: www.mattjbell.co.uk



#093

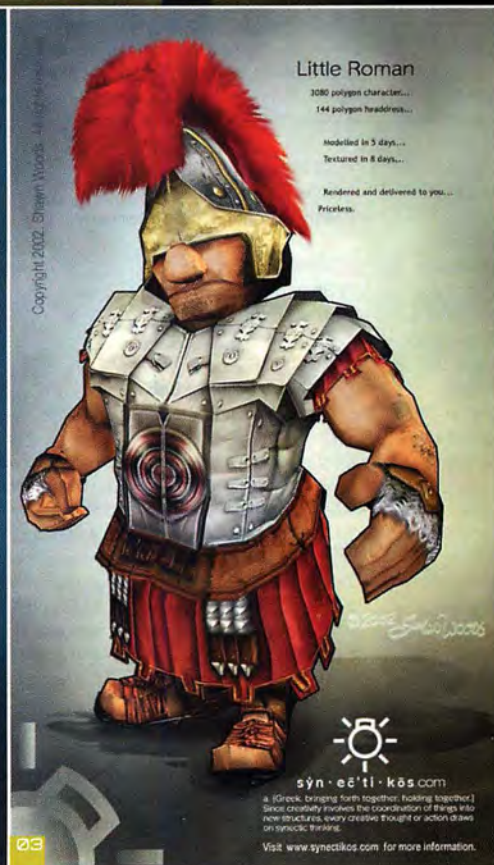


03 SHAWN WOODS
(L-R) GOLDBLOCKS, GOALIE,
RAVEN, IROQUOIS, ROMAN

USING: *Maya 4*, rigged and animated with *Softimage*, textured with *Photoshop* and *Painter*

"I'm a recent graduate of Capilano College, Canada. Before that I was a New Media Specialist, until I decided to focus on Computer Animation. Exporting OBJ files from *Maya* to *Softimage* allowed me to work seamlessly between the two packages. To create these images, I began with *Maya's* 3D Paint Tool. I quickly roughed in lines for texturing to use as a template in *Photoshop*. I used the Iroquois character in my final project – it's complete with facial animation and custom-linked parameters. My influence for these characters mostly came from the book *The Art of Final Fantasy 9*. I've always thought computer animation shouldn't look like it's been made on a computer, so I was trying to achieve a more painterly feel to the characters. I hope to land an entry-level job either in Canada or working abroad as a modeller or texture artist, eventually leading into character animation."

[e]: shawn@synectikos.com
[w]: www.synectikos.com



CORRECTION: ISSUE 27



CEMRE OZKURT
HUSO

USING: *3ds max 4.2*, *Character Studio*, *After Effects*, *Premiere*, *Photoshop*

In issue 27, we attributed the image above to Curtis Hawkins. Unfortunately, as several people pointed out, it's actually by Cemre Ozkurt. Cemre writes: "I went to the Mimar Sinan University in Istanbul, but am now living in Los Angeles and working with Check Six Studios. Huso, my character, is half-gremlin and half-Yoda family. He is an amateur character actor, and is a coward – but also a little foxy. He would also like to star in any PDI, Pixar or ILM movie..."

[e]: cemre@3dlivr.com
[w]: http://www.deluxepaint.net/



CURTIS HAWKINS
ALIEN

USING: *3ds max*, *ZBrush*, *Photoshop 6.0*

And here's Curtis' real image. Apologies to both Cemre and Curtis for the confusion caused.

[e]: cosm.inc@mindspring.com
[w]: www.renderosity.com/gallery_ez?ByArtist=Yes&Artist=Rembrandt



COMPETITION

WINNERS OF OUR PER-PIXEL SHADING ART CONTEST

The results are in for the first-ever *3D World/Act-3D/NVIDIA* Per-Pixel Shading Contest. And the winning entries are, quite frankly, staggering...

Visitors to *3D World* headquarters in recent days could be forgiven for being startled by the strange noises emerging from our inner sanctum. In addition to the familiar click of computer keys, and the low, moaning noise that signals that the sub-editor has just realised that yet another freelancer is preparing to submit their copy a week late, an attentive listener would have been able to hear such mysterious cries as, "I've found the Lava Monster!" and "What the hell is this bubbly thing?"

The reason for this is simple: we haven't gone mad, and nor, sadly, are we banged out of our minds on psychedelic drugs. No, we've just been judging the results of the *3D World/Act-3D/NVIDIA* Art Contest.

As you may recall, back in issue 25, we challenged you to produce short interactive animations with the help of the special version of *Quest 3D*, Act-3D's multimedia authoring package, we gave away on the cover disc. These animations were intended to show off the real-time shading capabilities of co-sponsor NVIDIA's range of high-end graphics cards.

It wasn't an easy challenge, we thought. Not only did you have to master an unfamiliar piece of software, but you had to create something that was stylish, interactive, made use of several specific features of the hardware and software, and – most importantly of all – was fun to use.

But the results were astonishing. In a short space of time (little more than a week, in the case of some of our overseas readers) you produced a staggering

variety of interactive artwork: from level designs, to character animations, to complete mini-videogames.

When we'd got over our shock, a team of experts from the three sponsor companies set about judging the entries, marking them for quality, originality, and the use of real-time shading and positional audio. The scoring was very close, but there had to be winners, and those winners are as follows:

FIRST PRIZE

1 Q-Demo
Morten Schönau Fog, Germany

SECOND PRIZE

2 Shoe Size
Konrad Shenton, UK

THIRD PRIZE

3 Dr. Morbius in the Lab
Christian King, Australia

Congratulations to everyone who entered, particularly Morten, Konrad and Christian. You can see their entries, plus those of our four runners up, on this month's cover CD. They're saved as executables, so you shouldn't need any special software to view them – but if you are having problems, you can download the *Quest3D* viewer from www.quest3d.com.

Be warned, though: given the nature of the competition, you will need a high-end graphics card (a GeForce 3+ or equivalent) if you're going to see everything properly. Have fun!

■ We'll be running more competitions in future issues of *3D World*. Be warned: next time round, we'll be expecting *all* the entries to be this good...

OVERALL WINNER



TITLE Q-Demo
BY Morten Schönau Fog

WHAT IT IS

A complete miniature videogame, in which the user pilots a jet scooter around a mountainous landscape, scanning the DNA of the various strange creatures that inhabit it. Stunning rendered snow, rock and water, plus several subtle atmospheric effects, made this the most professional-looking of all the entries we received. What really impressed the judges, though, was not its graphical sophistication, but the high degree of finish that Morten has brought to the project in such a short space of time. Q-Demo is not merely an animation, but a complete videogame, and one that many commercial companies would once have been proud to have produced.

WHAT THE JUDGES SAID

"Great landscape – and great use of shaders in an actual working game."

LOOK OUT FOR

The Lava Monster. Obviously.

CONTACT

mortensfog@yahoo.com



ON THE CD

Our three winning entries,
and all four runners up

ALSO MENTIONED IN DISPATCHES

Now that you've seen the winner, why not check out our six almost-as-fabulous runners up?

SECOND PRIZE



TITLE Shoe Size
BY Konrad Shenton

WHAT IT IS

A surreal and wildly inventive interactive environment through which the viewer can move in three dimensions, interacting with the many bizarre and thought-provoking virtual objects.

WHAT THE JUDGES SAID

"Some nice 3D tricks used – and very interactive."

LOOK OUT FOR

The surprise behind the doorway...

CONTACT

darnok.fx@freeuk.com

THIRD PRIZE



TITLE Dr. Morbius In The Lab
BY Christian King

WHAT IT IS

A complete five-minute character animation in which the user plays the part of laboratory assistant to the mad Dr. Morbius, helping him to complete two of his more nefarious experiments...

WHAT THE JUDGES SAID

"Great idea to create an interactive movie."

LOOK OUT FOR

What happens when Dr. Morbius drinks the blue potion.

CONTACT

beyondtool@counter-strike.org

HIGHLY COMMENDED



TITLE Eelark
BY David Dickerson

WHAT IT IS

An interactive aquatic environment, in which the viewer guides the eel of the title around sunken galleons, caverns, stone circles and other beautifully rendered environmental features.

WHAT THE JUDGES SAID

"Nice character animation, and convincing underwater scenery."

LOOK OUT FOR

The tunnel in the centre of the stone circle.

CONTACT

morgon9@gmx.net

HIGHLY COMMENDED



TITLE Shoot It!
BY Dave C. Polcino

WHAT IT IS

A 3D twist on the carnival shooting gallery, which speeds up as the player progresses. Blast the jellyfish, sea monsters and sharks with your virtual shotgun – but avoid hitting the motorboats!

WHAT THE JUDGES SAID

"Good 3D version of an old-school shooter."

LOOK OUT FOR

Those pesky jellyfish.

CONTACT

dave@digitalcomplete.com

HIGHLY COMMENDED



TITLE The Barber Shop
BY Dave C. Polcino

WHAT IT IS

An interactive... er, barber shop. Give your victim a shampoo and set, then style his facial hair in various gruesome ways. Any similarities to the editor of *3D World* are purely coincidental...

WHAT THE JUDGES SAID

"A humorous interactive demo."

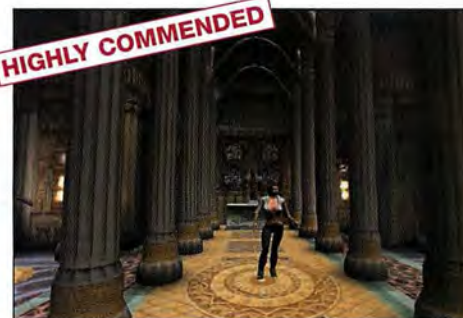
LOOK OUT FOR

That amazing goatee.

CONTACT

dave@digitalcomplete.com

HIGHLY COMMENDED



TITLE No title
BY Andrew Seyderhelm

WHAT IT IS

A complete environment design for a 3D game. Time constraints prevented Andrew from completing the character animation, but check out the unusual use of shaders on the rest of the level.

WHAT THE JUDGES SAID

"Nice 3D models and good use of the water pixel shader."

LOOK OUT FOR

The textures on the church.

CONTACT

andjen@seyderhelm.freeserve.co.uk

SPECIAL ISSUE
TOON
INTO 3D
MIXING 2D AND 3D
TECHNIQUES

KEY FRAMES



ABOVE The three fart-propelled protagonists of *Gas Planet*, the pencil sketch-styled CG animation created by PDI's Eric Darnell and Michael Colliery in 1992. As with other PDI work, the animation was created using in-house animation and rendering tools.

GAS PLANET

This month's retrospective continues our 2D/3D theme, with a look at the pencil shading and gastric explosions of this ground-breaking short from PDI's Eric Darnell.

BY MARK RAMSHAW

It's always a surprise when I meet somebody for the first time and they say they really enjoyed the film," says *Gas Planet* creator Eric Darnell. "It just started as a personal side project for me, but I guess it captured people's imagination. Of course there's always the cachet that comes with a fart joke.

"It's funny how, while I didn't have any grand construct driving me, I've had people confide that they really enjoyed the more sophisticated themes running underneath the surface. I'm never quite sure what those themes actually are."

The three-minute short, created back in 1992, features three alien creatures dealing with gastric emissions in a comically cartoonish fashion. Although completely computer generated, the short exhibits one of the earliest and most influential examples of stylised non-photoreal rendering, utilising a technique influenced by the organic look of pencil-shaded cel animation.

Eric first began harnessing his talents while on the Experimental Animation course at the California Institute of the Arts. "In the late '80s Cal Arts had the classic and experimental divisions, with the two often blurring," explains Eric. "At that time computer animation was considered experimental, for example. There were only a couple of machines, though, so I tended to avoid the queues by working with other forms of animation. A lot of it was abstract filmmaking and collage work, inspired by Stan Brakhage; very different from the work I do now."

Eric's work caught the eye of execs over at Warner Brothers, who hooked him up with REM's Michael Stipe. "He loved the technique, and thought it would be great for a video for a song from the *Green* album. Again it was inspired by Stan Brakhage's work. I took film splicing tape, cut 8mm and 16mm film and stuck that onto it, overlaid it with film to make a sort of collage sandwich, and then ran it through an optical printer to make a negative. It was a very slow, microscopic process." With the kudos of an REM video, a portfolio of experimental work, and some experience in character animation, Eric was taken on by PDI, who were then actively looking to broaden the scope of their computer

animation. "Technology had reached a place when they could finally bring people in with little computer experience," adds Eric.

"The first thing I worked on at PDI was a Halloween TV special for Hanna Barbera, and from there a lot of TV commercials. Morphing was really big then, though we were always trying to bring more character animation into the work."

CREATIVE FREEDOM

Keen to push that character animation and the individual talents of its artists and animators, PDI encouraged and supported employees' side projects, giving them complete freedom to spend spare time designing and working on any projects that took their interest. "It was very liberating and helped to make people feel appreciated as artists, not just part of a factory."

In this creative breeding ground *Gas Planet*, which Eric had first conceived a couple of years earlier, was able to flourish. The original story about a herd of cattle (Eric's grandfather was a cattle rancher) was transplanted to an alien world, and the idea of including a wide variety of different life forms gradually edited down into a tighter, more focused tale of three gas-filled creatures.

"I didn't have a medium picked out for it, and didn't really have a look in mind," says Eric. "I was just interested in finding something that people hadn't necessarily seen before. Fortunately [art director] Michael Colliery took an interest in the project. Even back then he had ten years of experience in the computer animation industry, and he helped a lot, working out the mechanism to accomplish it. What he came up with isn't really high-tech, but it's the sort of elegant solution that only somebody who knows what they're doing could devise."

"What Michael did was to create take the computer images, with all their mathematical precision, and then layer a 2D texture over the top, in much the same way that traditional animation uses cel layers to add disparate elements," continues Eric.

The texture itself is simply created using randomly-generated noise for each frame, which is projected at an angle to resemble pencil lines.



LEFT, CENTRE Although the texturing technique was cutting edge in its day, *Gas Planet* adheres to a less-is-more philosophy in the way it uses the technology. "There aren't too many ingredients in the soup," says Eric. "I didn't want it so complex that it could get out of control."

LEFT "The sound for the aliens was created using a plunger on a glass table, with atmospheric noises from me just blowing into a microphone," laughs Eric. "PDI took the animation to a sound house to get a professional audio track done, but we liked our in-house one better."

"I DIDN'T HAVE A LOOK IN MIND. I WAS JUST INTERESTED IN FINDING SOMETHING PEOPLE HADN'T SEEN BEFORE WHICH IS HOW I CAME TO FIND THAT HAND-MADE, ROUGH-HEWN LOOK." ERIC DARNELL, DIRECTOR

"The other thing Michael did, which makes all the difference, is to shift the edges of the noise so you don't have clean lines around the models. Depending on the relative lightness or darkness they're shifting in one direction or another. So with a texture composed of a whole range of greys you lose that cold computer precision and instead have a very organic look with straggly edges. It really brought these little guys to life."

After working on *Gas Planet* Eric moved to DreamWorks, where he became involved in the early production stages of *The Prince Of Egypt*, before returning to PDI/DreamWorks (as it became after a merger) to direct *Antz*.

"Moving into feature film-making over the last few years, I've gotten further and further away from animation. I do miss it, though. There are days that go by when I wish I could still come into work in the morning, put on the headphones and spend the day animating. It's so gratifying, watching these characters come to life through your effort. I think male animators like doing animation because it's the closest thing to giving birth that we can imagine!"

Eric's next project is the eagerly-awaited comedy *Madagascar*, which will be co-directed with Conrad Vernon (one of the writers on *Shrek*). Another completely CG feature-length movie, it will follow the exploits of four animals – a giraffe, hippo, lion and zebra – from the New York zoo, who are liberated by animal rights activists only to wind up washed ashore on the coast of the eponymous country.

"Once there they have to learn to work to survive the environment and each other. Back in the zoo the lion and zebra are best friends, for example, but of course out in the wild the lion suddenly has all these natural instincts he has to deal with. We're currently in the story stage. It's been going for around a year now, with about three to go. It's a longer project than *Antz*, though part of that is just down to fitting it into DreamWorks' current pipeline." ■



ABOVE PDI's *Bric-A-Brac* continued the studio's experiments with hand-drawn influenced CG. Animator and director Cassidy Curtis's technique transforms 3D models into pen and ink outlines.

PDI'S SHORTS WEAR WELL

From gems like *Fishing* to blockbusters like *Shrek*, it seems there's nothing PDI/DreamWorks can't handle

Although now primarily known for its CG movies *Antz* and *Shrek* and large-scale effects on films such as *A.I.* and *Evolution*, PDI/DreamWorks has been steadily working on a whole range of smaller projects since its foundation in 1980. Prior to the merger with DreamWorks the studio was, much like Pixar, best known for its ad spots and animation shorts.

Along with *Gas Planet* the studio has produced *Bric-A-Brac*, *Fishing*, *Gabola The Great*, *Metropolitopolis*, *Millennium Bug*, and *Sleepy Guy* over the last decade.

Bric-A-Brac (1995) and *Fishing* (1999) continue the experimentation with

stylised, hand drawn-influenced rendering styles. The first, animated and directed by Cassidy Curtis, uses 3D models to mimic pen art, complete with scratched effects and ink blots. Directed by David Gainey, *Fishing* makes use of a watercolour rendering technique developed by Curtis to depict a fisherman's dream sequence with a suitably aquatic flourish.

For more on PDI/DreamWorks' shorts visit www.pdi.com/shorts/shorts.htm. Curtis Cassidy continues to experiment with stylised rendering techniques. His home page is www.cs.washington.edu/homes/cassidy.



Another organically-styled short from PDI, *Fishing* utilises the same fluid simulation system seen in *Antz* and *Shrek*, along with a watercolour rendering technique developed by Cassidy Curtis.

FACTFILE

NAME: Gas Planet

PREMIERED: 1992

WEB: www.pdi.com/shorts/gasplnt.htm

BY: PDI/DreamWorks

DIRECTOR: Eric Darnell

ART DIRECTION: Michael Coltery

DURATION: Three minutes

AWARDS:

Special Jury prize at Ottawa International Animation Festival, Nicograph Special Prize for Computer Animation (1992) Sundance Film Festival Screening (1993)

OTHER CREDITS: Director, *Antz*

FUTURE PROJECTS: *Madagascar*

“BACK CHAT”

Dean Devlin

After *Godzilla* and *Independence Day*, producer Dean Devlin has gone back to the 'B's for his latest project: cult creature flick *Eight Legged Freaks*. *3D World* talked to him about digital effects, digital actors... and how to put the 'ooh' back into spider goo

YOU'RE OFTEN SAID TO BE A FAN OF '50s B-MOVIES. IS THAT WHY *EIGHT LEGGED FREAKS* FIRST SAW THE LIGHT?

Absolutely. A few years ago [*Godzilla* director] Roland Emmerich came into my office and said: "You know, I really miss movies like *Them* and *Tarantula*." Today, if we try to do a monster movie it has to be this \$150 million epic. The problem with that is that if you do a movie that expensive you have to please a lot of people, and it's hard to be pure. So we said: a lot of people won't want to see a movie about giant spiders, so if we make one, let's just do it for the people who really do.

DOESN'T THAT MAKE IT TOUGH WHEN YOU'RE UP AGAINST *SPIDER-MAN*?

When you make a movie that costs \$150 million, a lot of people have invested in you, and there's a huge machine to make sure that it makes money. We don't have that machine. We don't have all the promotional tie-ins. We don't have the big MTV rock video. We're the underdog.

TELL US ABOUT THE EFFECTS ON *EIGHT LEGGED FREAKS*. HOW LONG DID THEY TAKE TO CREATE?

We had six months to develop the spiders before we started shooting the movie, and we took a whole year after we had finished to put them into the film. It was a very long process because we wanted such a high quality for the effects.

HOW MANY PEOPLE WORKED ON THEM?

Oh, hundreds, between the animators, the composers, the colour and lighting people – and the people who created the goo that oozes everywhere when a spider gets shot.

AH YES, THE GOO. WAS GETTING GOOD GOO THE BIGGEST CHALLENGE YOU FACED IN THIS PROJECT?

No, I think it was that people know what spiders look like. They've seen them all their lives. So we wanted the spiders to be absolutely realistic, but at the same time they had to be characters. Sometimes they have to be funny, sometimes they have to be scary, and – unlike when we did the cats in *Stuart Little* – they don't have eyes and a nose and a mouth that you can articulate. So you have to tell their emotions through their body language and their behaviour. I think the biggest challenge was actually creating the performances out of the spiders.

STILL, AT LEAST THEY NEVER ANSWER BACK. IS MANAGING PEOPLE A KEY SKILL FOR A PRODUCER?

[As a producer] you have to be a politician, a psychiatrist and to have a lot of patience. If you are willing to go through a lot of egos and a lot of arguments and huge wars because you love movies, then it's worth it. But if you don't love movies there are other places to make a dollar.

HOW DO YOU SOLVE THOSE EGO PROBLEMS?

There are two kinds of problems. If there's a problem where people disagree creatively and that's great because then you have an honest argument; it's all about passion and discussion. When it's just about ego – "my trailer is not as big as his trailer, and he got three eggs for breakfast and I only got two" – then it's like dealing with a petulant child. I've been very fortunate because I haven't had many actors with giant egos but every once in a while you get someone and it's difficult. It makes the day very long.

WHICH IS NOT A PROBLEM YOU GET WITH CG EFFECTS. WHAT'S YOUR TAKE ON SYNTHESPIANS?

Well, I think there will eventually be digital actors in the way that there are digitally-animated movies; I don't think you'll ever replace live actors entirely. We can do a lot with computers but what we can't do is create a soul – and ultimately that's what we respond to when we watch movies. A few years back they started reproducing musical instruments digitally, and it's great, but you're still never going to replace an entire orchestra.

SO WHAT ARE DIGITAL ACTORS GOING TO BE GOOD FOR?

Creating a digital actor will create safer working environments. I won't have to put my actor up on the wing of a plane to have a cool fight sequence. I can digitally put them up there. But when it comes to delivering a great performance, that great movie kiss, that great hilarious line of dialogue, nothing beats a live actor.

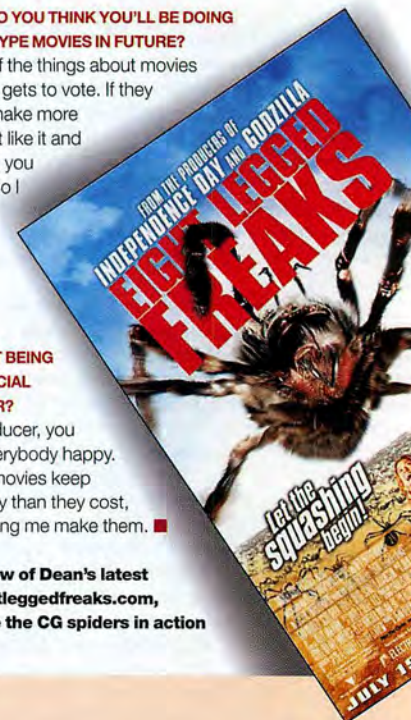
BACK TO *FREAKS*. DO YOU THINK YOU'LL BE DOING MORE OF THESE B-TYPE MOVIES IN FUTURE?

I don't know. One of the things about movies is that the audience gets to vote. If they go and see it, you make more movies. If they don't like it and don't want to see it, you don't make more. So I guess that there will soon be a lot more *Spider-Man* about [laughs.]

AND ARE YOU CONCERNED ABOUT BEING LABELLED AS A SPECIAL EFFECTS PRODUCER?

Not really. As a producer, you can never make everybody happy. But as long as my movies keep making more money than they cost, people keep on letting me make them. ■

Get a sneak preview of Dean's latest work at www.eightleggedfreaks.com, where you can see the CG spiders in action



Dean checks up on 'live actor' Scarlett Johansson (of *The Horse Whisperer* fame) on the set of *Freaks*



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