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**CREATE
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PAGE 50

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Discover
Houdini
17.5
Page 42



ALUTA ROMA
alutaroma.com

Software SideFX Houdini



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Online orders & enquiries www.myfavouritemagazines.co.uk

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Printed by William Gibbons & Sons Ltd, 26 Planetary Road, Willenhall, West Midlands, WV13 3XB

Distributed by Marketforce, 5 Churchill Place, Canary Wharf, London, E14 5HU www.marketforce.co.uk Tel: 0203 787 9001

Distributed in Australia by Gordon & Gotch Australia Pty Ltd, 26 Rodborough Road, Frenchs Forest, New South Wales 2086 www.gordongotch.com.au Tel: + 61 2 9972 8800

ISSN 1759-9636

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Martin Nebelong shows you how to use EEVEE to render your VR scenes

Welcome



Houdini has come on in leaps and bounds over the last few iterations, with each new version bringing not just new tools, but a better user experience. 17.5, the latest version from SideFX, is the most artist friendly yet, but still manages to offer new

techniques and tools. With this in mind we talked to two Houdini experts who have shared their tips for getting the best out of the software, one from a more technical perspective, the other more art led, so you can set up simulations or create stunning art like our Vampire Cat cover image.

This issue we also start a series of exclusive behind-the-scenes access to MPC, one of the biggest studios around. The first instalment focuses on their character concept work - head back for more next issue!

As always we like to share the latest news from the industry and the community, plus test the latest gear to help you make an informed decision about how to choose the right tool for the job.

We are really excited to see your own images, so be sure to share your work by emailing us at 3dartist@futurenet.com.

Rob Redman, Acting Editor

Sign up, share your art and chat to other artists at www.creativeblog.com

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The Expert Panel

This issue's team of pro artists...



ALUTA ROMA
alutaroma.com



Aluta is an industry expert, with a keen eye on the art as well as the tech. This issue she offers her tips to make the most of Houdini, to recreate our amazing cover image of a Vampire Cat. Turn to page 42.



RAINER DUDA
rd-innovations.de



With a decade of experience, Rainer, who owns a CG studio in Germany, is an industry veteran. In this issue, he shows you how to maximise the mood-invoking ability of volume lighting. Head to page 50.



JONATAN MERCADO
www.jonatanmercado.com



Jonatan Mercado comes to the pages of 3D Artist with a wealth of CG skill and knowledge to share. This issue he shows you how to create a suburban house, step by step. Turn to page 58 to read his tutorial.



MARTIN NEBELONG
artstation.com/martinity



Martin is an artist who has turned his attention to real-time interactive in a big way. Here he shows you how to take your VR creations and render them using Blender's EEVEE. Head over to page 64.



LUCAS FALCÃO
blog.lucasfalcao.com



Lucas is a 3D character artist based in Porto Alegre, Brazil. This issue he takes you step by step through his process of creating Bee, a charming and dynamic character render. You can find his guide on page 74.



DAVID COUSENS
creativebloq.com



Regular Creative Bloq contributor David turns his attention to the latest from XP-Pen, who offer a very appealing-looking alternative to some of the big names in pen displays. Find out more on page 78.



ORESTIS BASTOUNIS
twitter.com/MrBastounis



Orestis is a technology reviewer with a vast knowledge, who can cast his eye over not just benchmarking but usability too, and he does so this issue, looking at one of BenQ's monitors. Turn to page 86.



KERRIE HUGHES
creativebloq.com



Kerrie has worked on *3D World* magazine and is currently the editor of Creative Bloq. Here she turns her attentions to the wonderfully simplistic but emotionally compelling *New Life*. Turn to page 34.



DANIEL GIES
edfilms.net



Sometimes a tool comes along that can change the way we work. Everybody knows Photoshop, so being able to generate 3D using it could revolutionise certain tasks. Head to page 96 to find out more.



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Contents

What's in the magazine and where



“These tips are for artists from beginners to mid-advanced”

Aluta Roma

Aluta gives her tips for fast grooms in Houdini
Page 42

42

News, reviews & features

12 The Gallery

A collection of inspirational artwork

22 The hard sell

3D Artist takes a look at the vital role CG artists play in the advertising industry

28 Sheer force of creative concept

MPC's Leandre Lagrange considers the creative steps in designing a character

34 A mother's love

Fiasco Design's Ben Steers reveals how the beautiful *New Life* came together

40 Technique Focus: Futuristic motorcycle

Playing with 2D paint on a 3D base

42 Get the most out of Houdini 17.5

Get the best results for your projects

72 Technique Focus: A Barn At Dawn

How George Shachnev created cozy lighting

78 Review: Artist 15.6 Pro

We look at a design for a budget tablet

82 Technique Focus: Naruto Uzumaki

SM Bonin talks us through his sculpt

84 Subscribe today!

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86 Review: BenQ SW271

We check out this 4K BenQ monitor

87 Review: Trypogen

We test a generator plugin for Cinema 4D

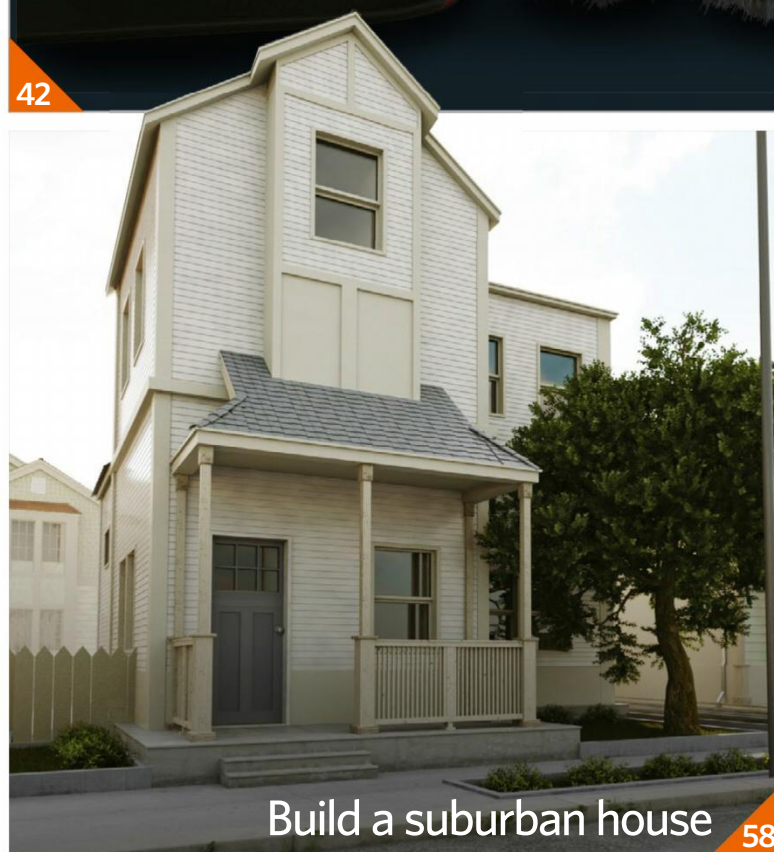
98 Technique Focus: Headless Knight

Nicolas Swijngedau's detailed character



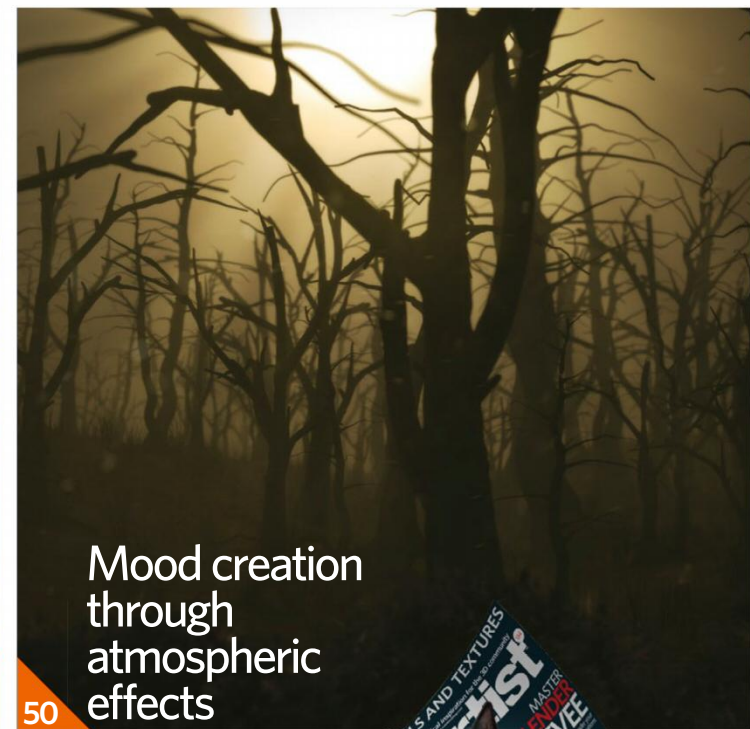
Trypogen for C4D tested

87



Build a suburban house

58



Mood creation through atmospheric effects

50

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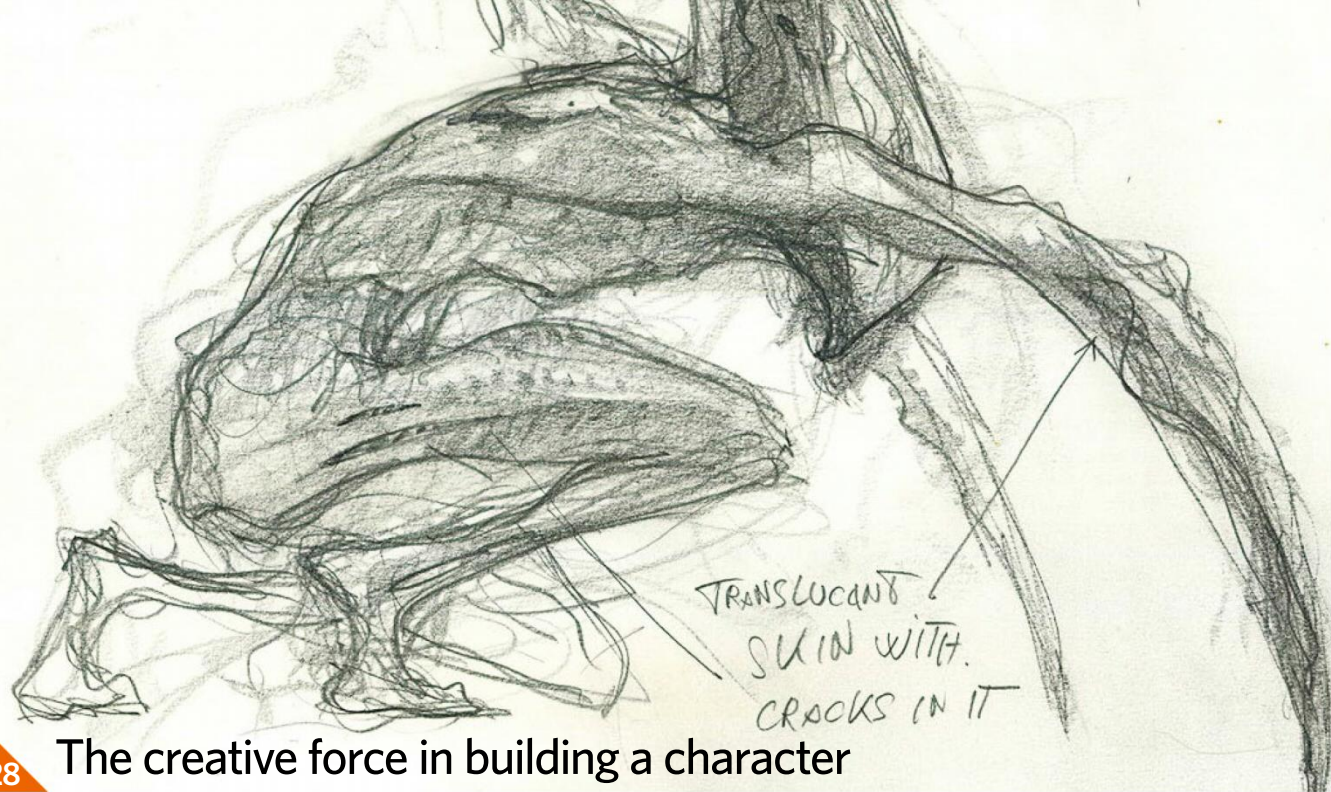
Turn to page 84 for details





Build fantastical cities in Quill

64



The creative force in building a character

28



“CG brings limitless creativity and engaging imagery that can make a product look more enticing”

Design Lad and other experts discuss the role of CG in advertising
Page 22

22

The Pipeline

50 Step By Step: Mood creation through atmospheric effects

Master the use of volume lighting and efficient placement of scene items to set the tone for viewers

58 Step by Step: Create a suburban house with modular principles

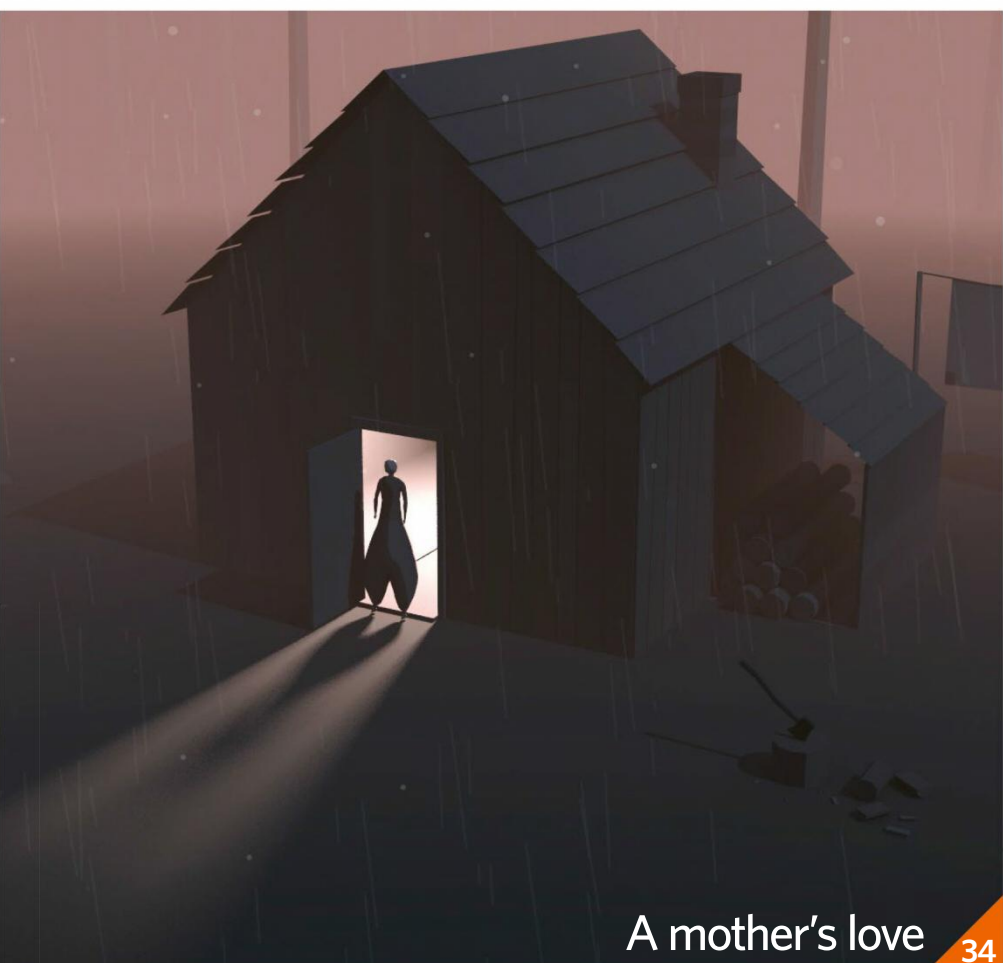
Learn how to create a highly customisable architectural asset from scratch and use it to populate your exterior suburban scenes

64 Step by Step: Build a fantasy city in Quill

Discover some of the most important steps of creating a detailed architectural scene in Quill on an Oculus Rift headset

74 Pipeline Techniques: Fast and delicious pizza with Blender

This tutorial will break down the workflow and techniques used to create 'Bee', using Blender 2.8 beta and Substance Painter



A mother's love

34

ISSUE 135

NEXT MONTH

MASTER MODELLING FOR COLLECTIBLE MINIATURE CREATION!

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The Hub

90 Community News

Chaos is unleashed in Bulgaria as 3D artists and developers convene for the Total Chaos Conference

94 Industry News

Discover the latest industry updates

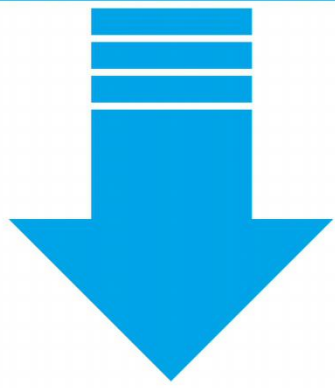
96 Project Focus

Inside the new tool that helps artists create 3D scenes out of Photoshop drawings



Turn Photoshop into 3D

96

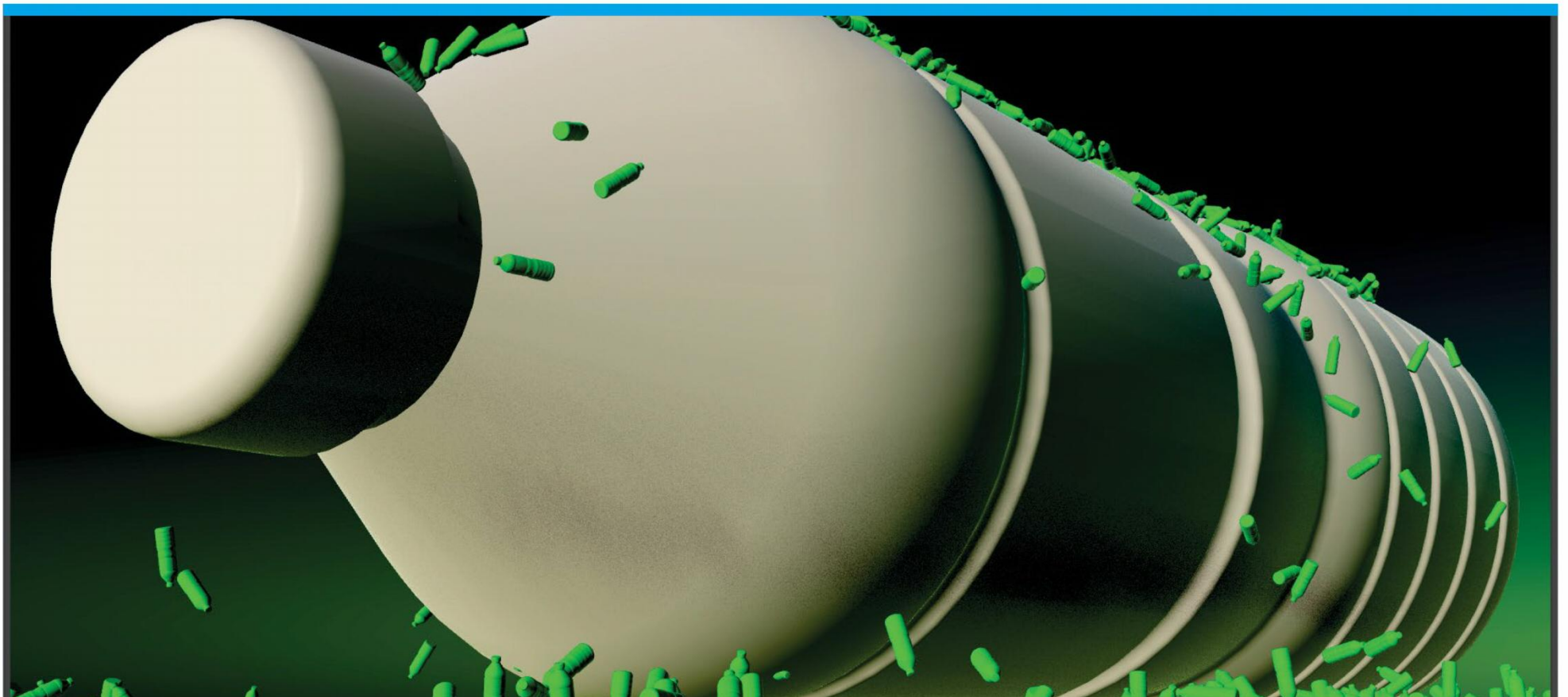


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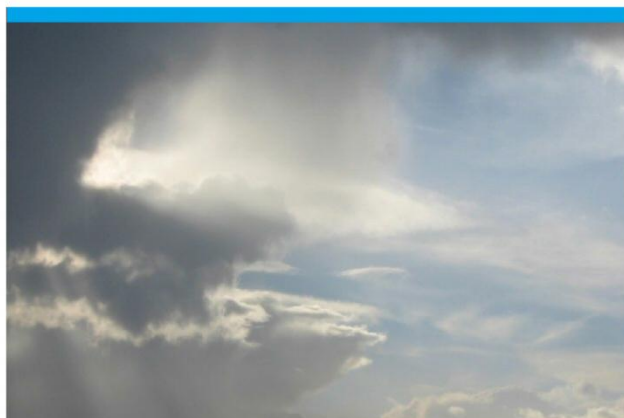
Tips collection

Make the most of your Houdini 17.5 projects with our expert tips, from Greg Barta and Aluta Roma



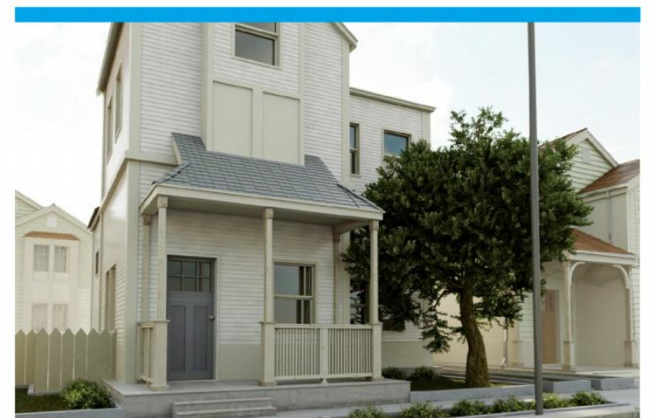
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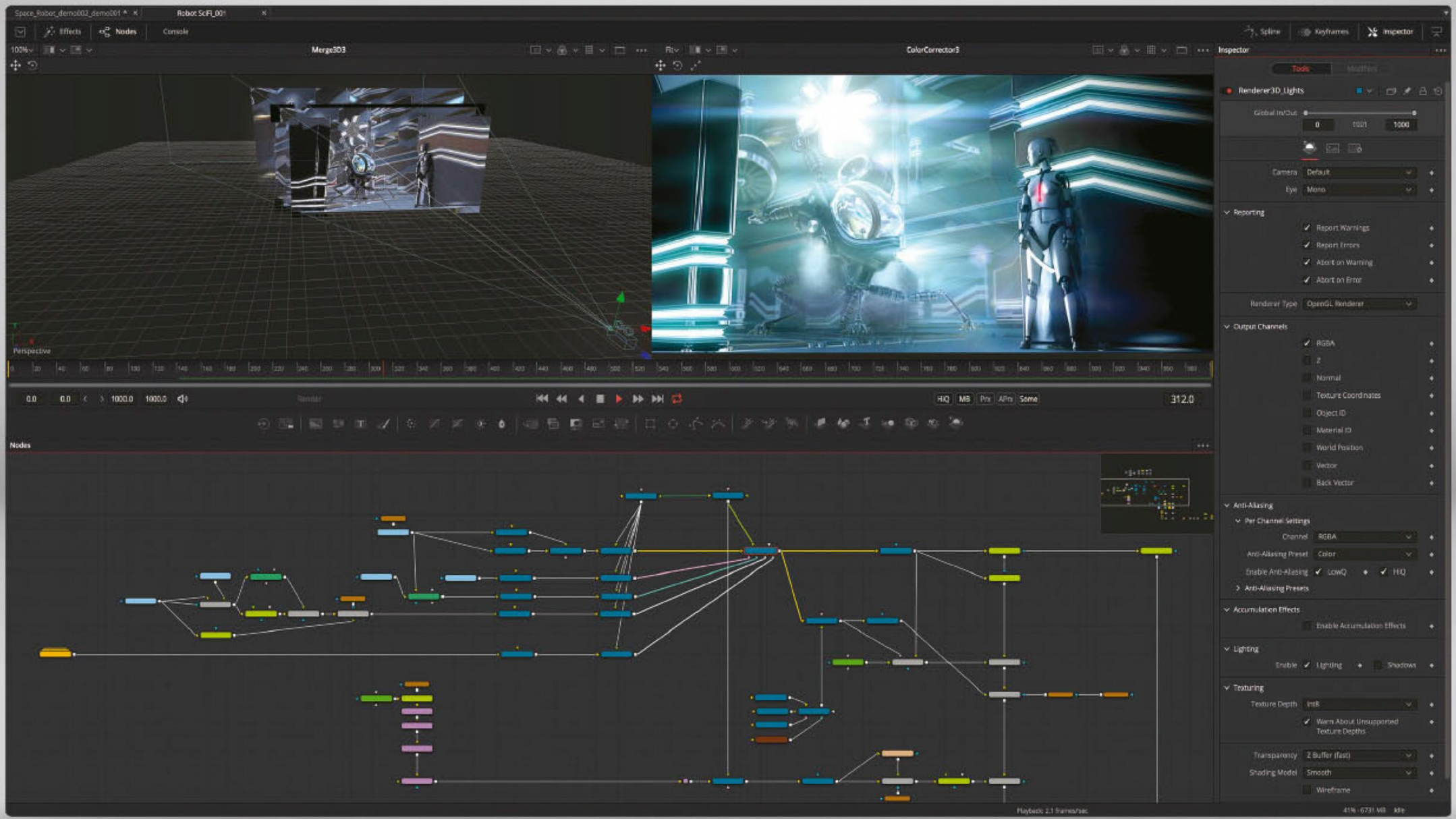
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Fusion has been used to create the visual effects and motion graphics on thousands of Hollywood blockbuster films and television shows. Fusion Studio 16 is a massive update that brings all of the improvements made to Fusion inside DaVinci Resolve to the stand alone version of Fusion. As well as dramatically faster performance, the interface has been completely updated.

New GPU Acceleration

All 3D operations are GPU accelerated, making Fusion much more responsive and interactive. In addition, there are dozens of GPU accelerated tools such as time effects, dissolves, stereo 3D tools, vector motion blur, corner positioning, color tools and more. B-spline and bitmap mask operations are accelerated, as are the planar and camera trackers.

Work Faster with Nodes

Fusion uses nodes to represent effects and filters that can be connected together to easily build up larger and more sophisticated visual effects! Nodes are organized like a flow chart so you can easily visualize complex scenes. Clicking on a node lets you quickly make adjustments, without having to hunt through layers on a timeline!

Cinematic Visual Effects

Fusion has hundreds of tools for compositing, keying, tracking, rotoscoping, paint, animation, and more. You can even import and render 3D models and scenes from other software into your visual effects shots! With Fusion, you can blend different 2D and 3D elements together in a true 3D workspace to create amazing, realistic looking scenes.

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Motion graphic artists and designers use Fusion to create everything from animated broadcast graphics to incredible title sequences and animations. Fusion features 2D and 3D text tools, advanced spline based animation, 3D particles with physics simulations, creative vector paint tools and more to bring your animations to life!

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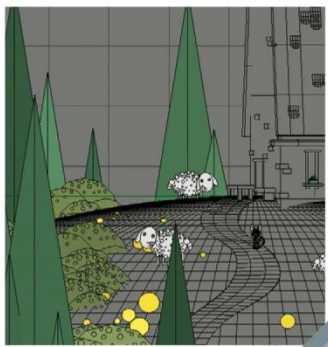


Milan Vasek
milanvasek.com

Milan is a Czech 3D artist and ceramist with several years of experience in VFX and lighting of animated feature films.

Software Softimage, Arnold, ZBrush, Houdini

Work in progress...



“I created this picture as an escape from my everyday commercial work, where I have to make more complex and realistic stuff. I enjoy making things simple, without complex models and textures. Just simple shapes, colours and light. I grew up in the Beskid Mountains, where sheep used to be very common. I also spent a few years in Iceland, that probably influenced my choice of theme”

Milan Vasek,
Shepherd's Island, 2019





“ I make a lot of fan art in my free time. I’m a big fan of *X-Men* and Beast is one of my favourite characters from that universe. I decided to come up with my own version, a bit younger and one that we believe could exist in the real world ”

Muhammad Murtaza Saeed,
Beast, 2019



Muhammad Murtaza Saeed
bit.ly/2MhNiht

Muhammad has been working as a character designer and 3D artist for over three years.

Software ZBrush, Maya, Mari, Photoshop, V-Ray

Work in progress...



“ I created this image because I am a big fan of the *Game Of Thrones* series. My goal was to recreate a White Walker, but in a different climate and context. I decided to do a Sand Walker from the desert with a medieval touch ”

Ludovic Plouffe,
Sand Walker, 2019



Ludovic Plouffe
artstation.com/ludovicplouffe

Ludovic is a character artist. He has just graduated from NAD university and is currently working at Tuque Games studio.

Software ZBrush, Maya, Substance Painter, Marmoset Toolbag, Marvelous Designer, Photoshop

Work in progress...



“ Hunter was developed during my mentorship period with Vinicius Tokue. I used the concept of Guille Rancel as a basis for the creation of the image. I was fascinated by the concept, how that little girl seemed to be so strong. She carries a skull on her head, I was extremely intrigued by her life ”

Nicolas de A. G. Rodrigues,
Hunter, 2019



Nicolas Aquino
artstation.com/nicolasaqno

Nicolas de Aquino Gonçalves Rodrigues is 19 years old. Working hard every single day is his philosophy.

Software ZBrush, Maya, Substance Painter, Photoshop

Work in progress...

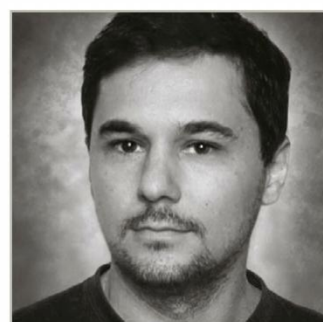




“ Martha was commissioned for a start-up called marTEE.fr. They asked me for a female character, which should be the official blogger for the company. They gave me a description of her personality and some background history, and I tried to translate all this information into an attractive character with a strong personality ”

Ricardo Manso,
Martha, 2016

RH
2016



Ricardo Manso
[behance.net/ricardomanso](https://www.behance.net/ricardomanso)

Ricardo Manso is a freelance 3D artist and CG generalist with a focus on characters.

Software Maya, ZBrush, GMH2 Maya Hair Script, Marvelous Designer, Arnold, Photoshop

Work in progress...





Laura Keuk

artstation.com/laurakeuk

Laura is a student at New3dge art school in Paris. She wants to share with others the fact that we're living in a beautiful world, full of surprises.

Software 3ds Max, ZBrush, Photoshop, After Effects

Work in progress...



“ I added the two little characters, which are a reference to *The Legend Of Zelda: The Minish Cap*, because of one scene that made me dream of my childhood. This scene is when we discover that the Minish are actually helping the shoemaker when he falls asleep. I wanted to recreate the same emotion I had when I was younger, but with ramen ”

Laura Keuk,
Secret Ramen, 2019







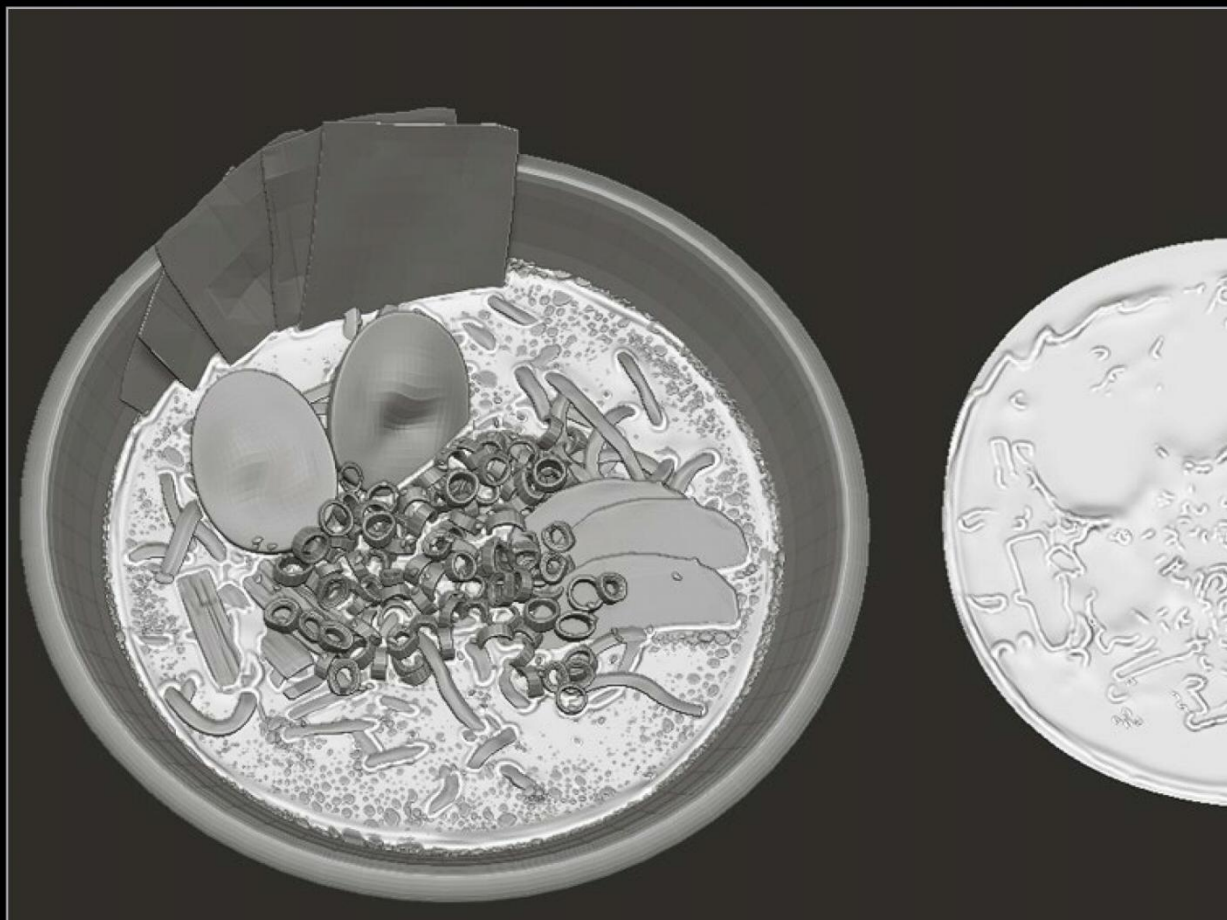
COMPOSITION

I laid out the elements of my scene to start working on the composition of the image. I then placed a camera to find an interesting angle and to discover which elements needed more work. I also started to build my shaders at this stage.



PLACEMENT

I found a more appealing angle on the ramen and changed the placement of the chopsticks to redirect the eye to the elements inside the bowl. This created a separation through contrast.



“I was brought up in a family where meals are synonyms with gatherings, happiness and sharing. It was only a matter of time before I recreated one of my favourite dishes: ramen”

Laura Keuk,
Secret Ramen, 2019

FURTHER DETAIL

I also added the sesame seeds using particles, and then imported all my elements into ZBrush to have more control over their placements. I cleaned all intersecting meshes and added in more detail on the different layers of the soup using the Inflate brush.



SHADERS

I continued to work on the shaders, and in parallel I spread the onion springs using a particle simulation with three different instanced meshes and shaders.

THE HARD SELL

3D Artist explores the role of CG artists in the advertising industry with the help of Design Lad, Smoke & Mirrors and The Mill

3D art has become a vital tool in advertising, opening up a new world of possibilities for agencies that want to promote a product or service. To determine 3D's place in the world of advertising, *3D Artist* spoke to London-based designer Design Lad, as well as several artists from post-production studio Smoke & Mirrors, who have been creating VFX for commercial projects since 1995. Mike Chapman, creative director at VFX powerhouse The Mill, also shares some unique insights.

"CG brings limitless creativity and engaging imagery that can make a product look more enticing than its actual reality," says Design Lad. "It's a great tool for brands as you can produce unique and memorable advertising at a more cost-effective price than building props and having video or photoshoots."

Danny Holden, senior CG artist at Smoke & Mirrors' London studio, feels similarly: "CG has really opened up the creative possibilities that previously would have been too costly to

produce or logistically impossible to create. You can have one person travel to any far-flung corner of the earth, shoot the backplate and HDR, then recreate that environment in an air-conditioned office and place in any CG element, all rendered with photographic realism. There really isn't anything that can't be created. The imagination can expand and explore any possibility without the physical constraints of the real world."

The use of CG in the advertising industry has notable differences to its use in film and games. "I'd say the main difference is the schedule of the jobs," says Mike Chapman, creative director at The Mill, a VFX company that has been serving a broad spectrum of industries since 1990. "A commercial doesn't often run longer than three minutes," he continues, "we have to be flexible in terms of pipelines and new technologies, looking to use anything that will give us time savings. It also means that we often have to accelerate the creative process. We combat this by having a smaller generalist team,

so everyone can be involved in the conversation about how to solve any given problem."

COMMERCIAL CREATIVITY

"Advertising is short form with fast turnaround," explains Willie Torres, head of CG for Smoke & Mirrors' Amsterdam studio. The advertising industry moves at a far more rapid pace than film and video games, but that doesn't stop its 3D artists from finding new ways to problem solve and maximise their creativity.

Design Lad has created a strong visual identity for his commercial work, a colourful and playful style that is instantly recognisable. "Standing out and being more recognisable is certainly the biggest advantage," he tells *3D Artist*. "It gives you a chance to be remembered by art directors, and the opportunity to land really exciting and creative work."

There are, however, things to be considered when building your portfolio around one unique style. "You can certainly be ruled out of certain



A still from Smoke & Mirrors' work on a recent commercial for European telecommunications operator Tele2



This image, entitled Junk Food on the Brain, perfectly demonstrates Design Lad's penchant for fun and colourful advertising



Since its inception in 1995, Smoke & Mirrors has grown into a studio with 350 employees in six offices around the world



Smoke & Mirrors' services include design, animation, shoot supervision, colour grading, visual effects and CGI



The Mill helped to create this television spot for ITV Drama, alongside Uncommon and director James Marsh



Smoke & Mirrors also offer full creative services for content creation and digital execution through sister company, Rock Hound



Audi's recent Synchronised Swim commercial contains elaborate VFX work by The Mill's London studio



“We have to be flexible, looking to use anything that will give us time savings”

Mike Chapman,
creative director, The Mill

jobs if you are so unique that it doesn't match a brand's style," says Design Lad. "So, working on self-initiated projects that can appeal to brands you want to work for is always important."

Design Lad has created advertising material for clients such as Adidas, Sony Music and Virgin, always finding a way to make it fun and playful. "From the start I'll ask as many questions as possible and establish what pieces of my work they love and why," he explains. "Then once I have a good understanding of what they want me to bring to their project, I know just how 'playful' I can get. I'll push that side as much as possible and produce multiple options that will sit well within the brand, while also staying true to my style."

Artists at Smoke & Mirrors find numerous ways to express their creativity in the world of advertising. "Advertising, unlike the other creative industries like film and gaming, is very fast paced, sometimes there are three deadlines in a week," says Mohammad Ali Shakeri, an artist from Smoke & Mirrors' Bangkok studio.

He continues: "It is very important to predict all sorts of problems and solutions along the way and we need to think fast and adapt quickly. Having tight deadlines should never become an excuse for a low-quality outcome, instead an artist needs to think logically and find the smartest solutions."

The fast turnaround also means that artists don't spend large amounts of time creating the same kind of assets, as they would on long-form projects. Holden adds that most 3D artists are driven by a love of creating imagery, "couple that with an advertising message and it adds a whole

new dimension," he explains. "This will involve not only the aesthetic of the final result, but a journey of problem solving by using different methods and software, trial and error, brick walls and further research to finally reach the end goal."

THE BRIEF

While the fast turnaround and problem-solving nature of CG in advertising fosters creativity, it also comes with its fair share of challenges. "The hardest challenge is always time," says Holden. "Advertising works to hard time constraints and the most-asked question is, 'when can I see something?' The advances with software and levels of realism within CG have raised the bar pretty high, so to achieve that award-winning image in a tight time frame requires resilience and determination," he adds.

In fact, the increasing demand for unprecedented visuals makes time an even more precious resource for artists in the advertising sphere. "Often directors expect unique CG or VFX techniques without previous examples or references," explains Torres. "Projects of this kind often require research and development time to create suitable examples. More often than not, that time is incalculable since you are venturing into unknown territory."

CHARGE AHEAD

Mohammad Ali Shakeri breaks down the VFX and design of Red Bull's recent ad campaign

Red Bull's Charge Ahead campaign depicts a climber defiantly scaling a mountain amidst harsh conditions and tough terrain. Realising this incredible feat came with its own challenges for Smoke & Mirrors' Bangkok studio. "We used digital matte painting and 3D compositing to put the main character inside a harsh mountain environment," explains Shakeri.

Making each shot as believable as possible proved particularly demanding for Shakeri and the team. "Many elements needed to be added in," he continues, "each one little by little adding more realism to the picture until it finally became believable." The team then had to prepare each of the elements and combine them into the scene, "matching all the shots to have a believable film was the biggest challenge," Shakeri recalls.

Another huge challenge presented itself in the form of camera movement. "We were heavily using matte paintings," says Shakeri, "it was important to control how much the camera could move in each shot. It was for this reason, and others, we were on set to supervise."



ENGAGE YOUR AUDIENCE

Design Lad shares his top five tips for creating eye-catching art in the world of advertising

■ KEEP IT SIMPLE

Your design needs to look eye catching, but a strong idea is the foundation for all adverts. You want something unique, but clear so that people can understand it in seconds.

■ PUSH THE BRIEF

Produce mock-ups based on the brief, then extra versions that push the creativity further. You can then show ideas the client won't have expected and hopefully will see are stronger.

■ LESS IS MORE WHEN IT COMES TO COLOURS

Using a limited colour palette is often more eye catching, and by keeping it clean with good contrast, you also help the viewer focus on the message.

■ CREATE WITH MULTIPLE PLATFORMS IN MIND

Generally, most adverts will be seen on multiple platforms, and needs to look clear and dynamic at all sizes, so you should always consider how the design can be reworked from the start.

■ STAY INSPIRED

Always take time to go to exhibitions, read, and immerse yourself in art and design, as it will ultimately help inspire your work and trigger ideas when a brief comes in.



Smoke & Mirrors and their sister company Big Buoy recently worked on the Give Me Strength ad campaign for Trebor

Chapman adds that each job presents its own set of obstacles and opportunities for creativity. "One of the parts I enjoy most about working in VFX is that every job comes with its own unique set of challenges," he continues, "We (The Mill) strive to give our teams the space to develop their own solutions to every challenge they face."

Often, what determines the trajectory of a commercial job is the brief laid out by clients at the very beginning of the process. As Holden explains, a strong brief often leads to a stronger end result: "The most effective adverts are the ones that communicate the clearest message. If the creative idea isn't strong and clear, then no matter how good the technical finish and production, it won't be effective. Have a strong idea, and the CG can enhance and elevate it to an award-winning standard."

"Clients are in general pretty collaborative," he continues, "after all they have an investment in any creative idea to promote or sell their campaign. The best clients are ones that allow you to be part of the creative process from the offset. Any idea they have will undoubtedly evolve to some degree in its execution, and it's here that CG can facilitate this. The idea might remain the same but often the final result might have a slight twist or turn as it takes shape through the production process."

Shakeri adds that in advertising the director, production house, agency and product client all form one big chain. "The key to getting a clear

“CG is one industry where you will never stop learning. Never rest on your laurels and always keep pushing forward with new ideas”

brief is to listen carefully and ask any questions that come to mind at the beginning of the project," he explains. "Never be afraid to ask questions. Treat each person involved as part of the team."

The level of collaboration between director and studio is often dependent on the director's background in CG. "The best advice I can give is to get involved as early as possible," says Torres. "If you offer creative solutions to their problems early on and show the director what the possibilities are, they are likely to collaborate directly with you throughout the rest of the process. This has its advantages for all involved and ultimately, the quality of the final piece."

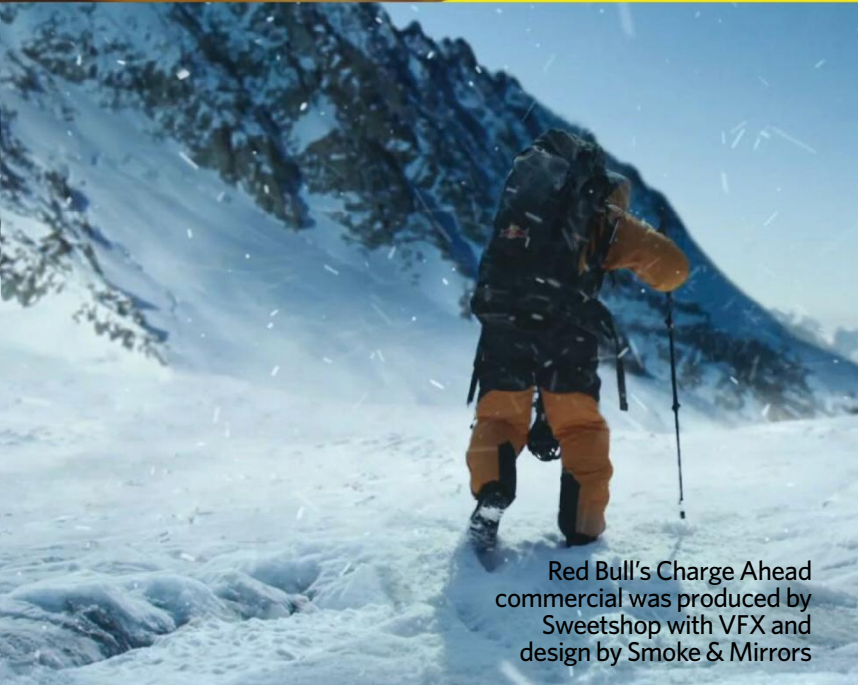
WORDS OF WISDOM

For 3D artists that might want to turn their hand at commercial projects, Design Lad has some

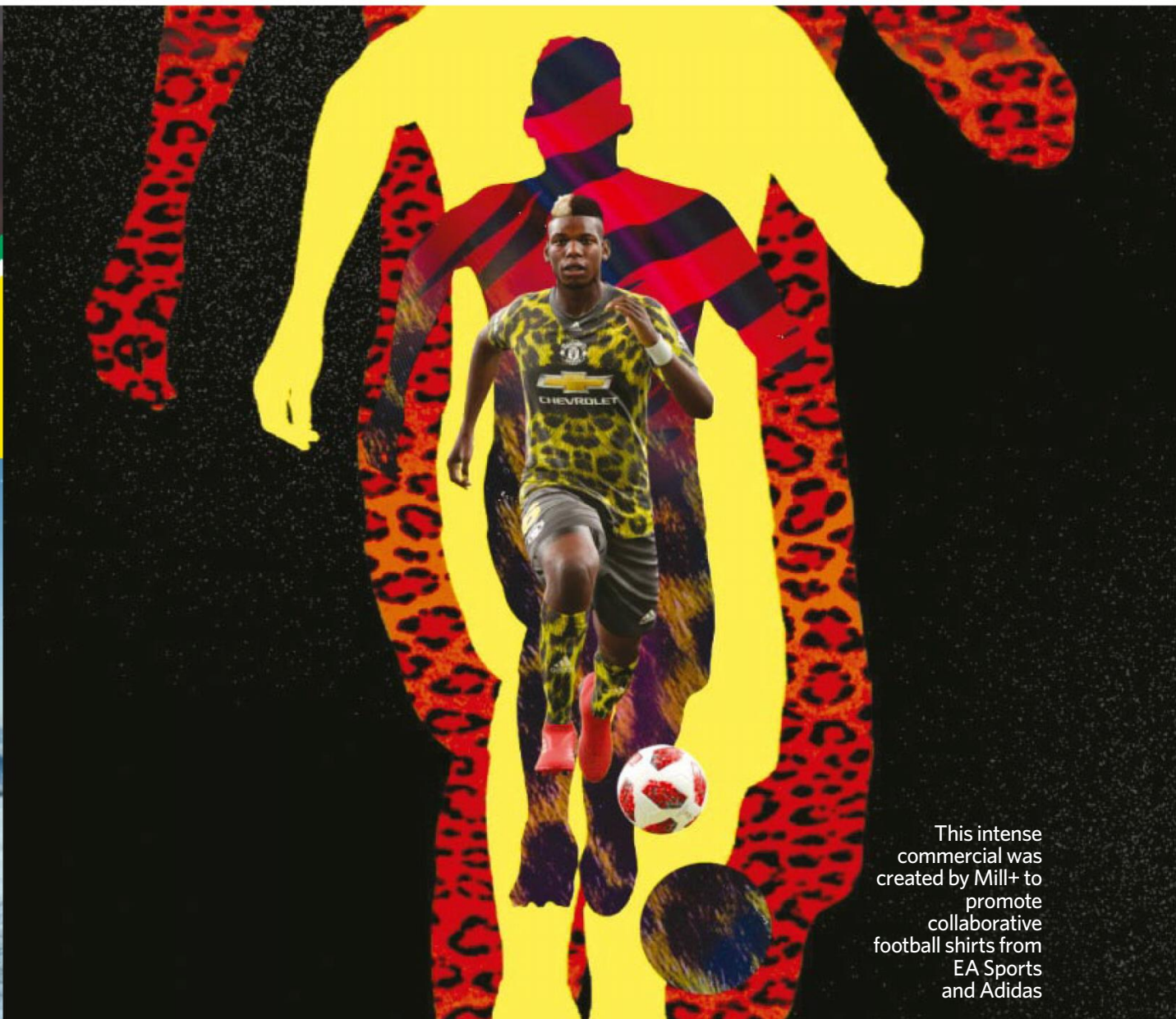


Smoke & Mirrors were responsible for revamping Lemsip's iconic CGI character in this commercial

THERE FOR YOU



Red Bull's Charge Ahead commercial was produced by Sweetshop with VFX and design by Smoke & Mirrors



This intense commercial was created by Mill+ to promote collaborative football shirts from EA Sports and Adidas

advice for getting inspired: "I am really lucky to live in such a vibrant and multicultural city like London," he says. "There is inspiration everywhere you look, from hundreds of museums, street art, plays with incredible set design, and countless galleries that host amazing exhibitions, events and talks. As much as I love the likes of Instagram, going out and seeing art in some form is how I always keep my motivation high."

When applying to work at studios servicing the animation industry, there's one word that is key to everything: "Perseverance!" exclaims Holden. "CG is one industry where you will never stop learning. Never rest on your laurels and always keep pushing forward with new ideas and techniques."

Torres looks for quality of work and flexible skill sets when browsing prospective CVs. "An ability to solve problems and a willingness to push creatively, not just tick boxes," he adds. "This is often difficult to see in a portfolio, but a variety of different technical styles within a portfolio often helps."

A diverse range of skills is a vital attribute for 3D artists in the advertising industry. "Usually in an advertising environment artists with multiple skills are more useful," Shakeri explains. "They can handle a bigger portion of the project and also understand the process of other stages of the production, so they prepare assets more efficiently."



“Going out and seeing art in some form is how I always keep my motivation high”

Design Lad,
freelance 3D illustrator

He also highlights the importance of having a good eye for beauty. "It sounds simple, but it is absolutely rare to find an artist with a creative mind and a good judgment that can make incredible pictures with simple tools." He continues: "Someone can have the best tools, the strongest workstation and lots of technical skills, but completely lack the creativity and understanding of beauty which is imperative to the success of any project." Portfolios for advertising work should demonstrate a good eye and creativity, alongside technical know-how.

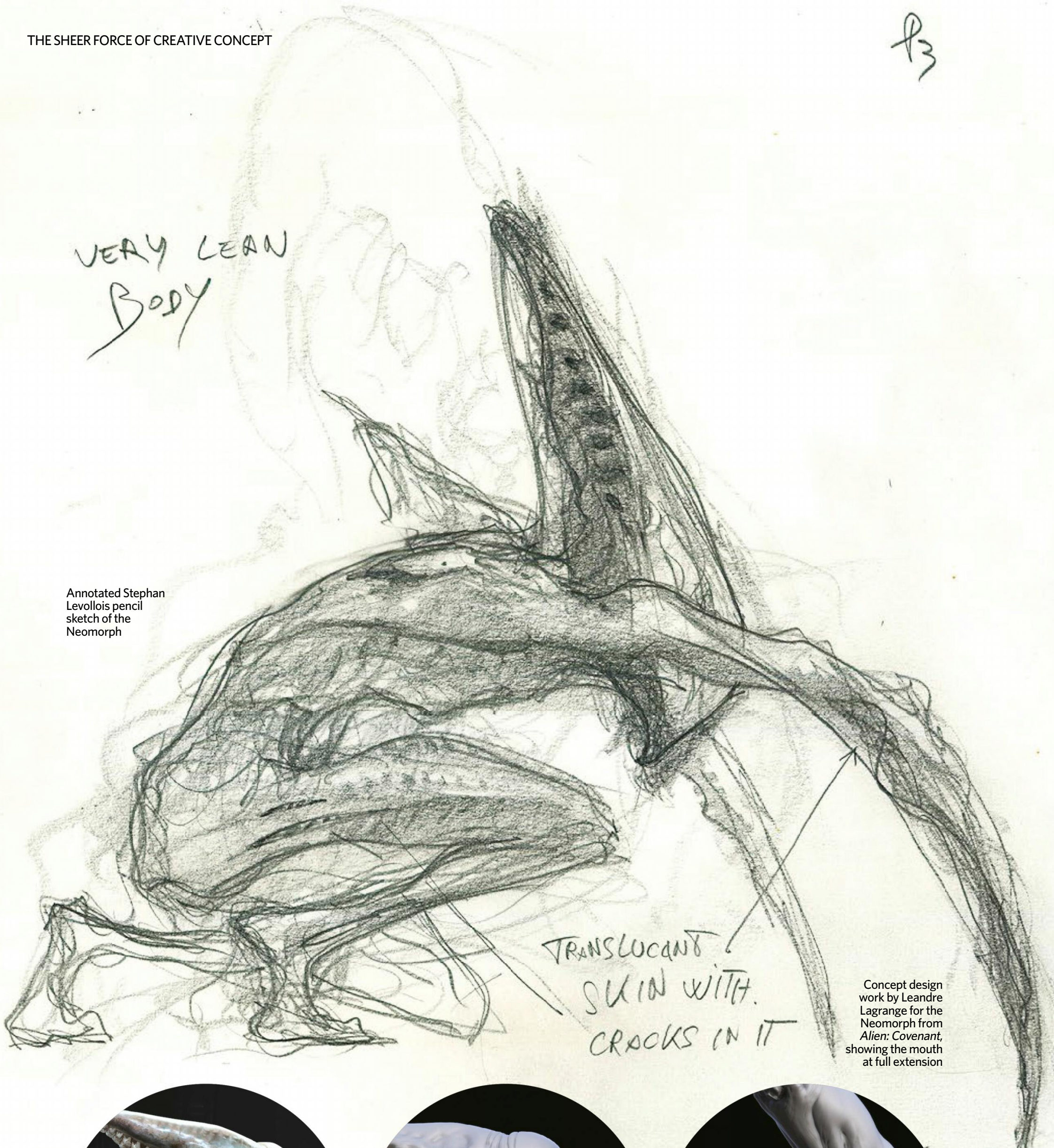
Reels are an excellent way of demonstrating your creativity and skills to studios. "Reels focus on your strongest work," explains Chapman. "Less can be more with this sort of thing. Make sure you try different facets of the software. If you like animation, try and do some simple rigging too; at the very least it will help you appreciate what the person next to you does on the job, and you never know, you might enjoy it."

Holden goes on to stress the importance of diversity and teamwork in the industry. Smoke & Mirrors' studios are comprised of a diverse team of people, each with different backgrounds and routes into the industry. "You need that [variety] to overcome the problems that come up in advertising projects. Demonstrate your willingness to learn and push your limits. Technical skills are important, but techniques advance and software evolves, so a willingness to keep pushing yourself is really important."

P3

VERY LEAN
Body

Annotated Stephan
Levollois pencil
sketch of the
Neomorph



TRANSLUCANT
SKIN WITH
CRACKS IN IT

Concept design
work by Leandre
Lagrange for the
Neomorph from
Alien: Covenant,
showing the mouth
at full extension



STEPHANE LEVOLLOIS





Striking the balance between 'classic' *Alien* facial design with something new was an ongoing challenge

THE SHEER FORCE OF CREATIVE CONCEPT

3D Artist talks to Leandre Lagrange, concept artist at MPC, about the first creative steps in designing a character

Across the years, MPC's legacy has been distinguished by its character work. The studio's legacy of movies includes *Wonder Woman*, *Fantastic Beasts And Where To Find Them*, *Sucker Punch* and *Batman Begins*, right up to recent high-profile projects such as *Dumbo*, *Shazam!*, *Detective Pikachu* and *Godzilla: King Of The Monsters*. Reaching back a little further, MPC's character work for *Alien: Covenant* and *Prometheus* stand as recent benchmarks, and it's *Alien: Covenant* that represents a major project for Leandre Lagrange.

The conceptual stage can inform the visual language of a film far beyond just a specific 'obvious' effect or animated element. Of his



Leandre's designs depict the range of iterations in arriving at design choices

working process, Leandre explains, "I very much use the 3D as a helper, as a tool to help me think fast: what is it that these [designs] are supposed to convey? Is it sheer force, for example? Based on that, I will think about how shapes relate to each other."

Leandre notes that working with ZBrush "allows me to put aside any technical problems". He makes the further comment that ZBrush allows him to work with a real sense of flow that captures speed of creative thought. Leandre adds, "Our art involves lots of designs but also different angles of the same design to show that we are thinking thoroughly about it and not simply in a two-dimensional way." Leandre explains that by putting design into Photoshop and then back into ZBrush he can review his designs in a back-and-forth between 2D and 3D: "I indeed review my design but mainly 'refine' it by working from 3D to 2D and so on. I can either do a 3D render or simply a Print Screen of the 3D viewport before painting over it in

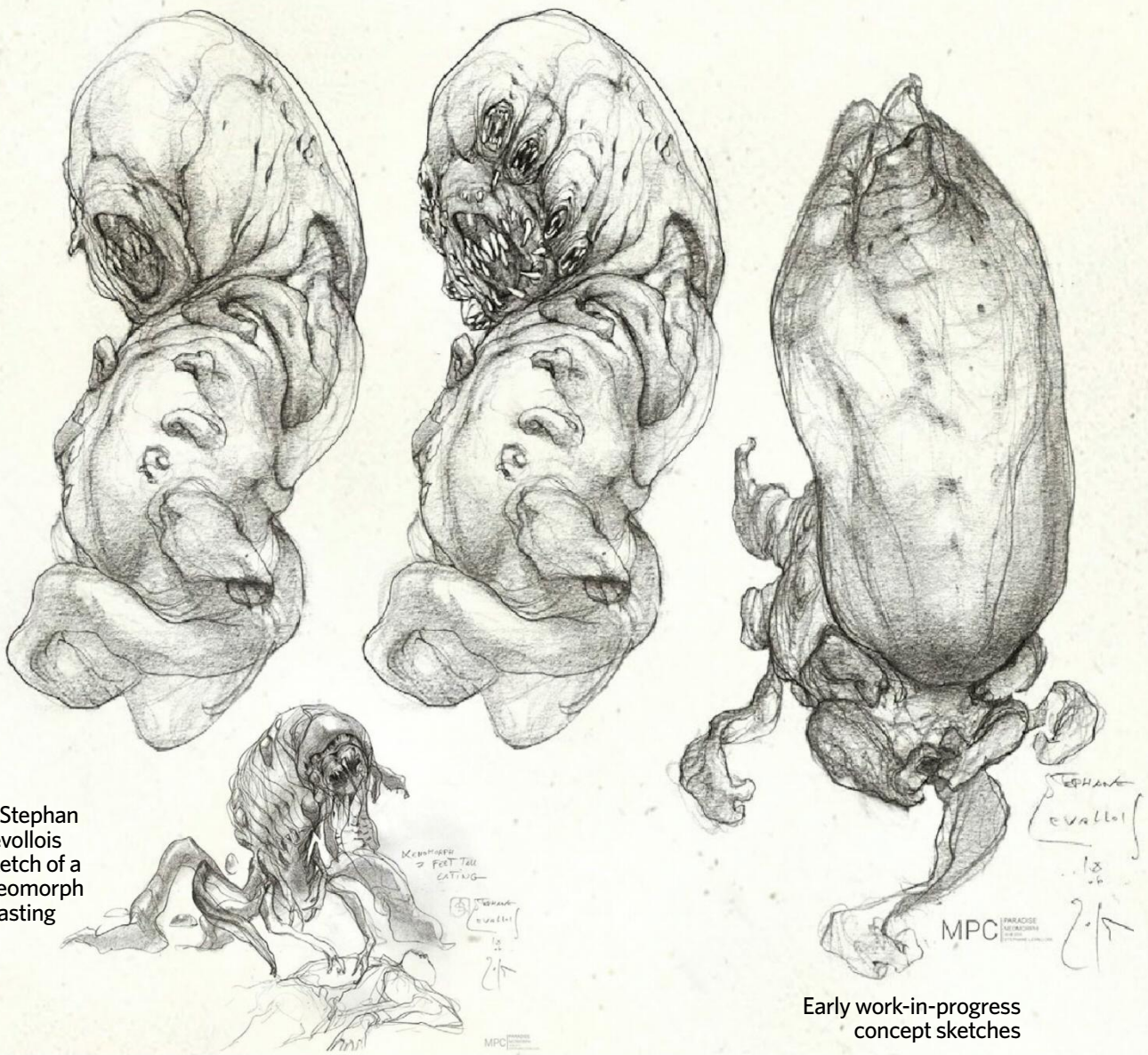
“Our art involves lots of designs but also different angles of the same design to show that we are thinking thoroughly about it”

Photoshop. Using 3D, I can provide a lot of different art, and this is reassuring for directors." Leandre highlights that he can then go to a client and say, "Here is a 6K reference for some characters - with every texture available. There are things I would add and we are trying to provide a little bit more. The iterative process of conceptual design work will certainly echo right across the production pipeline at MPC."

Leandre also acknowledges that the concept design team at MPC might become involved in working with the director of a given project to really define its overarching visual design philosophy. "We have projects where we come in with just a scene and director will say, 'Think about what would happen...'" This was certainly the case with Leandre and his contributions to *King Kong: Skull Island*.

Leandre briefly cites his work on *47 Ronin* in this respect, recalling, "In terms of finding and trying to work with a small team we had that on *47 Ronin*. There's a couple of creatures where we had quite a lot of time and [we had to] test a lot of different directions. We took the model to finished model."

Another of MPC's highest profile projects in recent years has been *Guardians Of The Galaxy*, and Leandre worked on that movie's conceptual

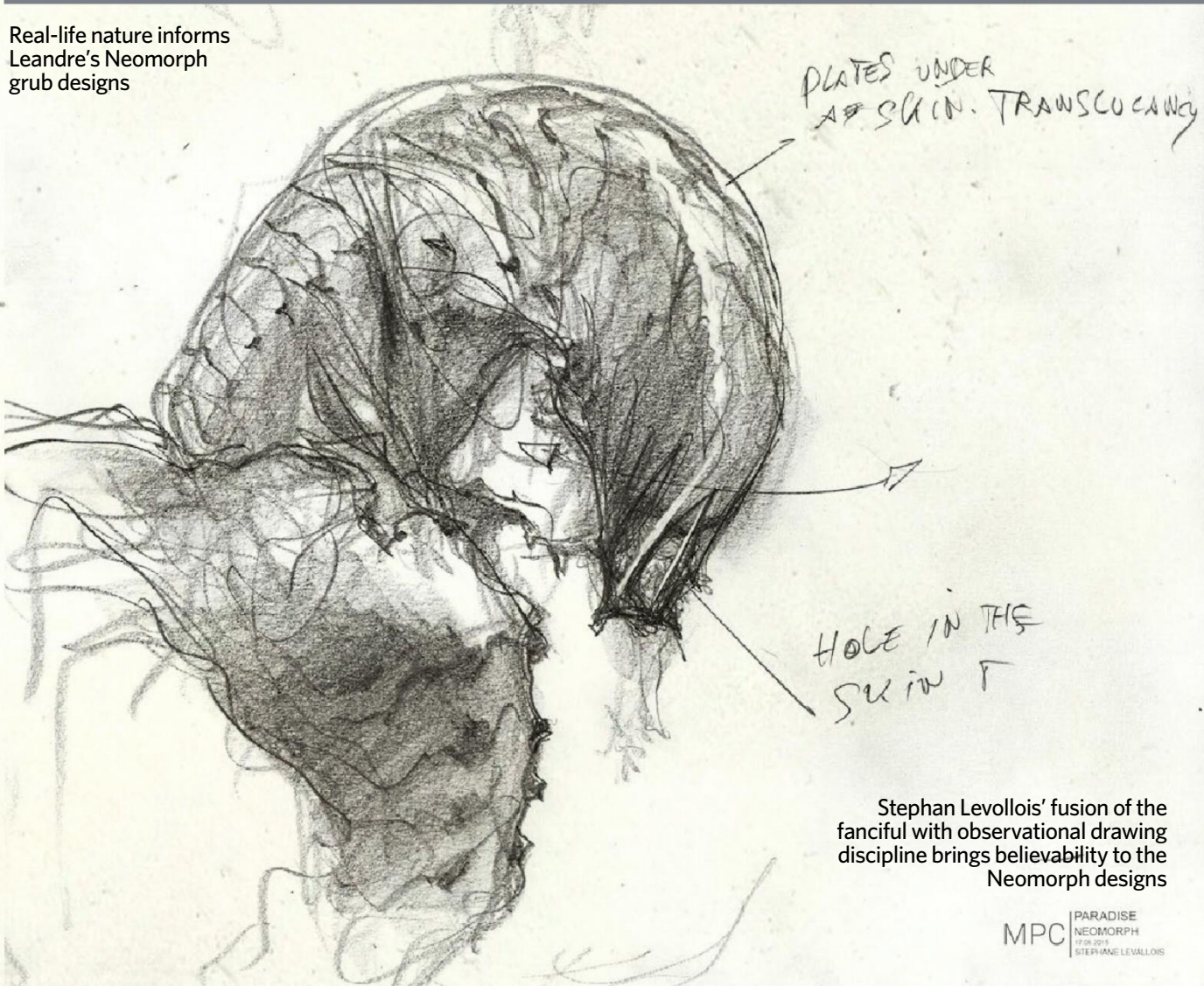


A Stephan Levollois sketch of a Neomorph feasting

Early work-in-progress concept sketches

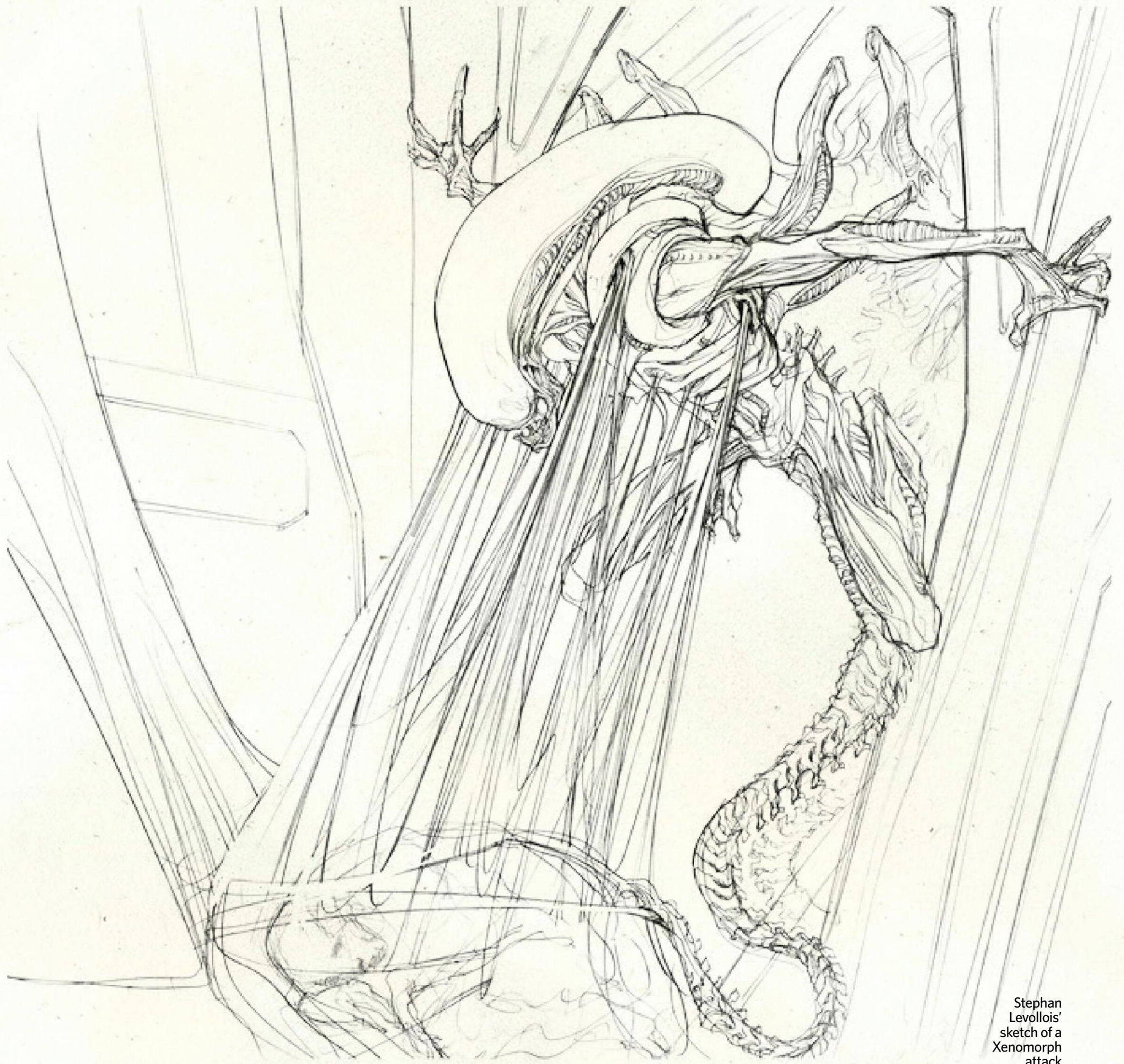


Real-life nature informs Leandre's Neomorph grub designs

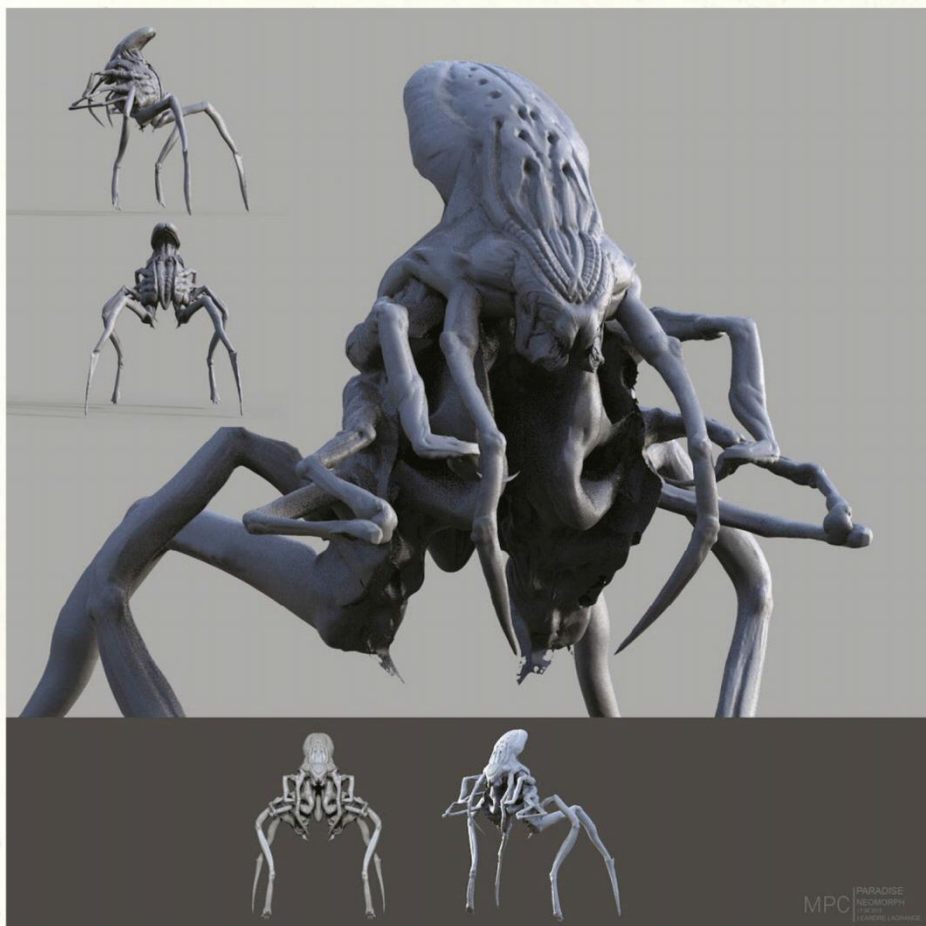


Stephan Levollois' fusion of the fanciful with observational drawing discipline brings believability to the Neomorph designs

MPC PARADISE NEOMORPH BY STEPHANE LEVALLOIS



Stephan
Levollois'
sketch of a
Xenomorph
attack

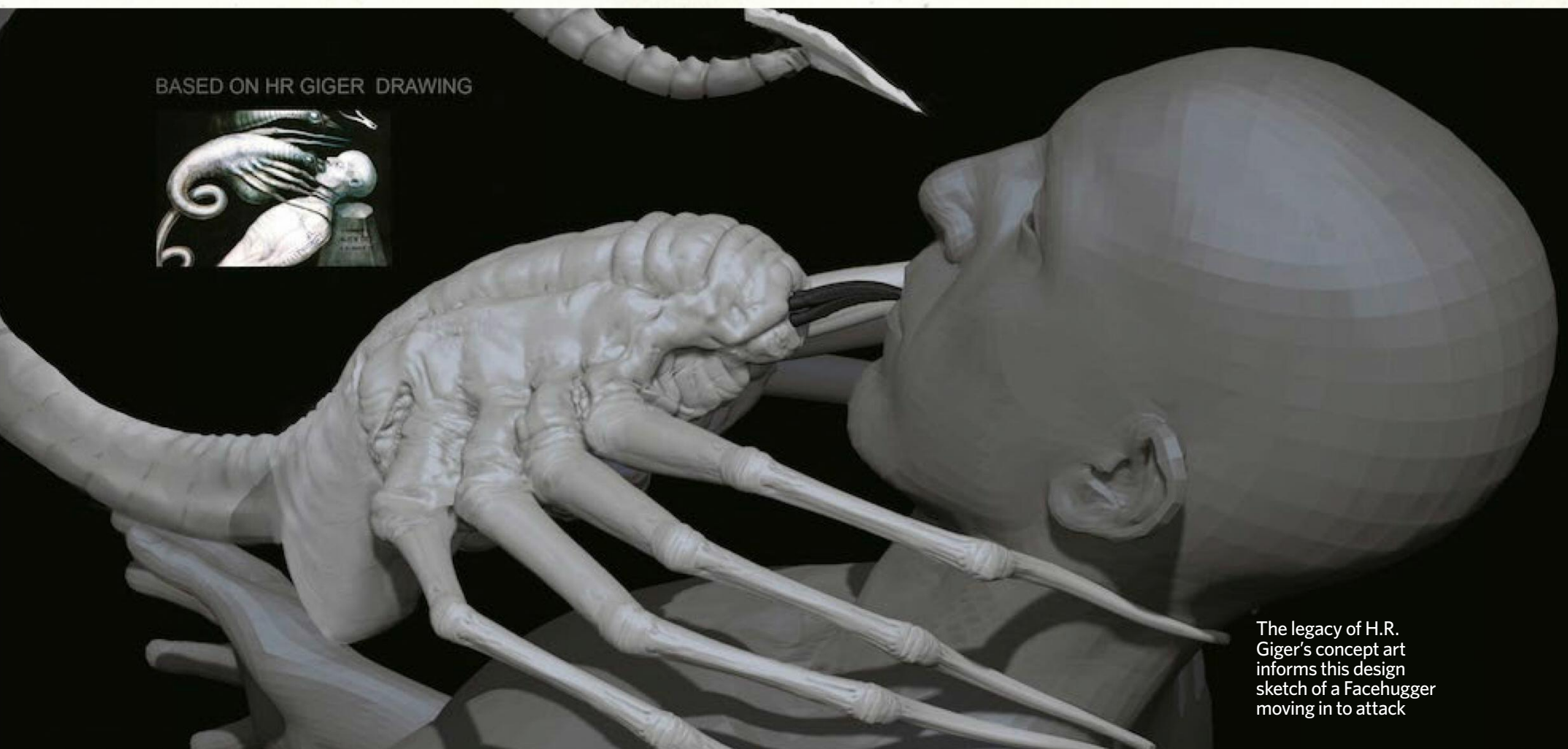


Concept
design art
inspired by
insect anatomy
by Leandre
Lagrange for
the Paradise
Neomorph



The Facehugger in action

BASED ON HR GIGER DRAWING



The legacy of H.R. Giger's concept art informs this design sketch of a Facehugger moving in to attack

design and recalls that "In *Guardians Of The Galaxy*, I was working on Groot. It lasted for eight months to design to final asset."

Of the inspiration that informs his work, Leandre says, "It goes all the way to classical art and the illustration from the golden age of illustration (1880s-1920s) and a filmmaker such as Kurosawa and concept artists like H.R. Giger and Carlos Huante." Haunte had been a key creative force on Ridley Scott's two recent returns to the world of *Alien*, *Prometheus* and also on *Alien: Covenant*.

Alongside *Guardians Of The Galaxy*, Leandre has also worked on another high profile sci-fi movie: *Alien: Covenant* and for this project he found himself looking back to go forward with his conceptual design work for the Neomorph.

"For *Alien: Covenant*, we were involved pretty early in those [concepts]. You'll see a lot of sculpts that are very quick... the original [brief] for the Neomorph was very vague: 'it's going to more organic [rather than biomechanical]'. At that point, we spent a day just exploring and trying things. From there, he [Ridley Scott] was thinking, 'OK, it's going to be an organic biped.'" Leandre also says that working on the movie required that he respond, to some degree, to the design work of Ridley Scott's previous entry in

“The original [brief] for the Neomorph was very vague: 'it's going to more organic [rather than biomechanical]'”

the *Alien* mythology. "For *Prometheus*, Carlos Huante had done a lot of design. That was how he came up with something like the Xenomorph, but for the Neomorph... sort out the mechanics of the mouth and we were back to Carlos' design. I did a lot of sculpture of how the mouth could project out, and in the end I put the image in Maya so that I could review it as [an] animation." Leandre also worked with an example of the iconic H.R. Giger Facehugger design with all of its visceral and horrific qualities and symbolism. From this point, the designs then went to asset building. "I did some sculpts and animation to see how it could attach itself on its prey," Leandre notes. "The thing for Giger is it's got these sexual connotations..."

Leandre says that creating designs for characters involves not just making something look captivating but that it also possesses some kind of internal logic of behaviour and design and that key to this work is that reference to reality. "The easy answer to that is nature. When you start referencing other artists too much... definitely look at other artists to see how they solve problems with lighting, but for design: nature is the way to go."

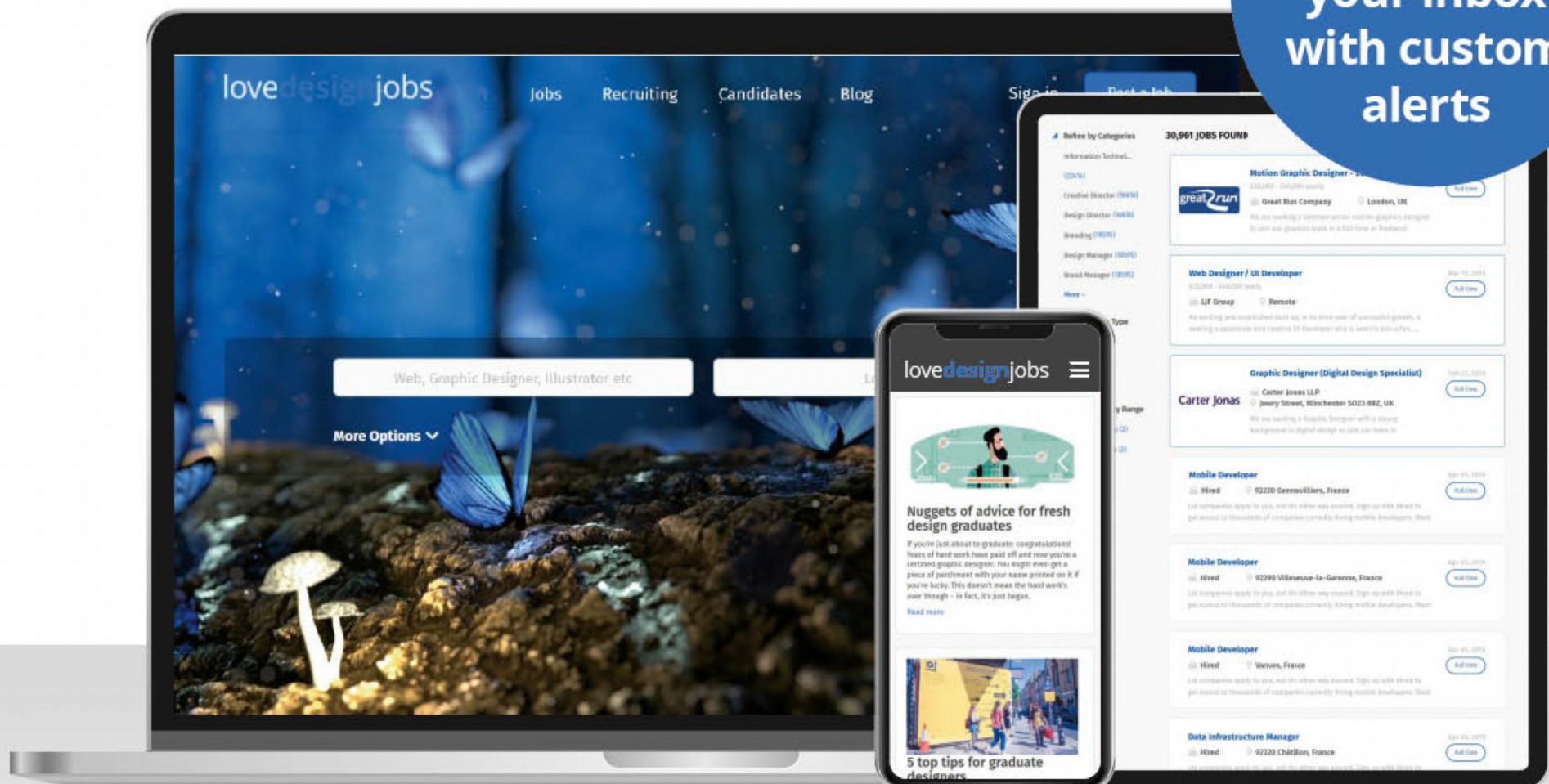
Leandre also explains how a concept designer is also a problem solver and he remembers, "On *X Men: Days Of Future Past*, the main thing was the design of the Sentinels - it was really cool to use 3D to sort out how the plates were moving around. You can get a look in 2D but you need to quickly dive into 3D to sort out problems."

When asked what advice he may have for aspiring concept artists, Leandre offers up the following insight: "What we see are people who are software proficient, and what we tend to lack is the creativity and artistic foundation: they lack that sense of design. That would be because they will copy other artists and its becomes a bit too self-referential. You can tell where people are just drawing (with a pencil and paper) it gives you confidence and you can focus a design and solve problems."

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A MOTHER'S LOVE

Beautiful and poignant, *New Life* is a 3D short about a mother's love and loss. Here Fiasco Design's Ben Steers reveals how the highly polished project came together in just five days

There's nothing quite like a parent's love. Unconditional, raw and powerful, it's provided the basis of many a great tale for centuries. One such tale is *New Life*, a short parable by writer and philosopher Peter Rollins about a mother dealing with the grief of losing her child. Big fans of Rollins' work, the team at award-winning creative studio Fiasco Design recently decided to adapt *New Life* into a short 3D animation. Despite the medium not being their forte, the Fiasco crew wanted to work on something new that would really push their skillset. And so they embarked on what would turn out to be their biggest venture into the world of 3D.

"Our previous 3D side project involved capturing moments from the 2018 World Cup and animating rubbery-looking characters falling over each other," says Fiasco Design's co-founder and creative director Ben Steers. "So we wanted to do something that felt completely different, moving away from trying to make people laugh and to tackle a subject that was more heartfelt, perhaps a little painful and sad. That's when we came across *New Life*. We wanted to challenge ourselves to retell the story with the considered and empathetic approach it deserved."

“We wanted to do something that felt completely different, moving away from trying to make people laugh”

New Life is a poignant and heartfelt portrayal of a mother's grief

Low-poly models were used to speed up the process

SIMPLE BUT VERY EFFECTIVE

And that wasn't the only challenge the team faced. Being a side project meant they could only really afford to lend five days to the idea, so they began by looking for ways to simplify the usually complex 3D pipeline.

Level of detail was one of the first things to be addressed. "The low-poly visual style was driven by the simple need to speed up render times to work within our the five-day deadline, but also a curiosity to see how little we could do in terms of detail and still connect with the viewer on an emotional level," Steers explains.

The film's distinctly 'Stranger Things' feel was inspired by various sources, including Playdead's puzzle platform game *Inside*, as well as designer and 3D artist Heather Penn's work on the survival game *Overland*.

When it came to deciding on 3D software, there was really only ever one option. Steers was the member with the most 3D experience, and Blender was his tool of choice. "I started playing with Blender a few years ago," he says. "It was free, so there was no pressure to empty my

“The low-poly visual style was driven by the simple need to speed up render times to work within our five-day deadline”

wallet when I started learning. I found it interesting and was just doing it for fun really, but it's slowly worked its way into my day-to-day working life.”

Getting to grips with this project certainly pushed Steers and the Fiasco team out of their comfort zone and into another dimension. "I'm still very much a student in 3D and often find myself asking, 'How the heck do I do that?' For this project, it was simply getting the leaves to rustle in the trees and simulate wind. [It's a]

fairly standard aspect of environmental design but was something I'd never tackled before," Steers tells us.

In order to get the trees to behave realistically, Blender's Displace modifier tool provided the solution. "We used a Displace modifier on the leaves, which are then manipulated by a cloud texture controlled by an empty object that sweeps across the scene, with a little noise applied to its z-axis to give some random variation to the movement," Steers says. "It's a pretty simple technique to add subtle movement to your environment and breathe a little life into a scene."

RAPID RIGGING

The 3D pipeline was broken down even further when it came to rigging and animating characters, in order to save precious time. Low-poly characters with minimal detail meant simpler rigs, but this in itself raised unexpected issues. "Blender has a free add-on called Rigify, which saves you building a rig from scratch and makes the whole process super-easy," says

RIGIFY: A RIGGING SHORTCUT

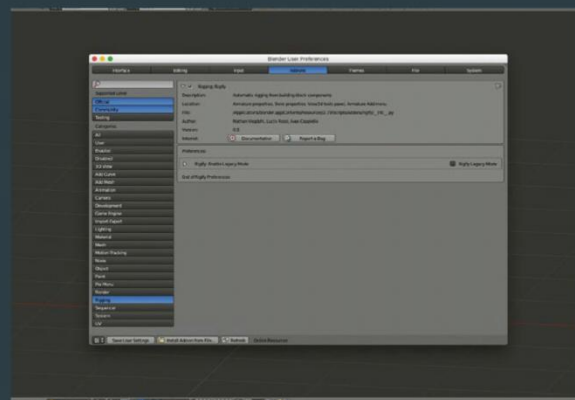
Utilise this powerful tool to help ease the pain of complex rigging

Rigging is one of the most complicated and time-consuming parts of a 3D pipeline. But there are tools that can help, such as Rigify, an automatic rigger and free add-on for Blender that enables you to add and modify a biped rig to a character in minutes.

On a tight deadline, the Fiasco team took full advantage of this free tool to help bring the characters in their heartbreaking short to life. Here's how.



01 Take your model We've modelled our main character. Now let's use the Rigify add-on to speed up the rigging process.



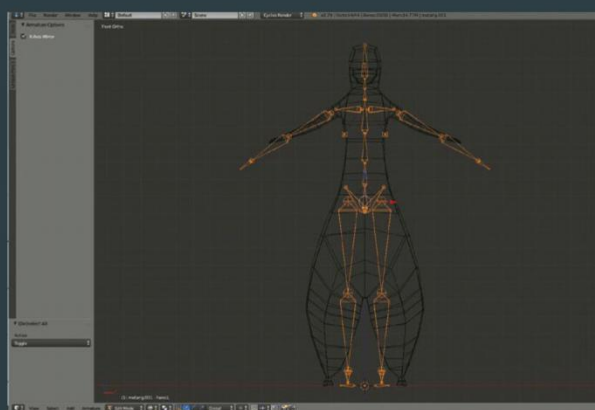
02 Enable and you're good to go It's important to note this add-on has to be enabled in user preferences. But this should come as standard with Blender. There's no need to download anything.



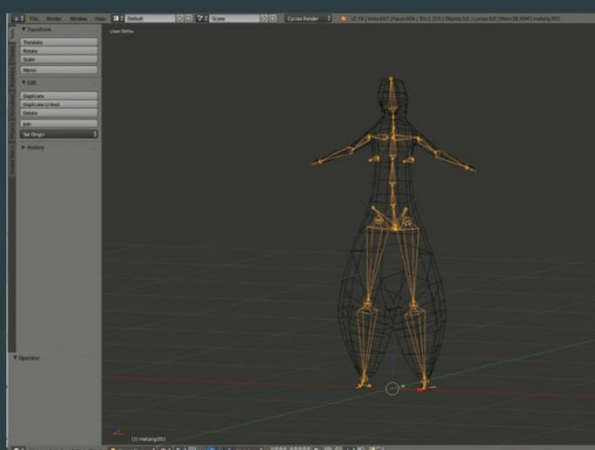
03 Add an armature Hit Shift+A, and add a new armature to the scene. Let's use the human meta-rig.



04 Remove a few fingers This rig is complex. We've got ten fingers and a face that we don't need for this low-poly character. So let's keep things simple and delete them. Simply hit Tab to enter Edit mode, choose the bones you don't want and hit X to delete.



05 Mirror your edits Let's scale up the character to match the size of the rig. Make sure to hit Ctrl+A, and apply this scale. You can hit Z to enter Wireframe mode to see things a little easier. Next, select the rig, hit Tab to enter edit mode and check the X-Axis Mirror box in the Armature Options panel on the left of the screen (open and close this panel by hitting T). This will mirror your edits when you start to manipulate the rig.



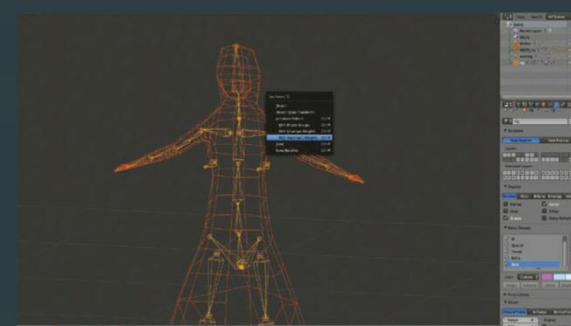
06 Generate the rig In Edit mode, with the rig selected, start to rotate and scale the bones to align with your character. This may take a little time to get right. Once you're all set, enter Object mode with the rig selected and take a look at your Armature panel on the far right of the screen. Scroll to the bottom of this panel to find the 'Generate Rig' button. This will be generating the rig you'll be using to animate. Hit it and wait a few seconds while it does the hard work for you.



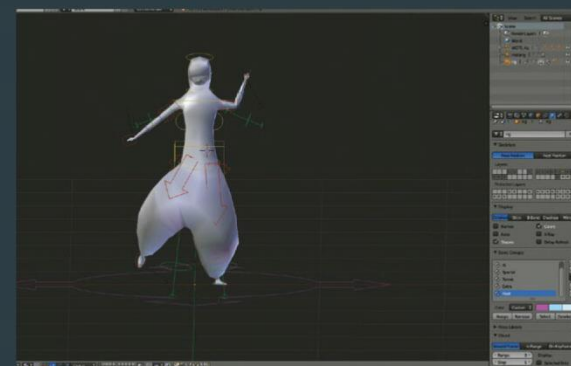
07 Pose mode You can now delete the rig we've been working with, leaving our new shiny rig in place. Ctrl+Tab into Pose mode (you'll see the animation rig turn blue) and hit A to select everything. Now hit H to hide the rig.



08 To the bare bones With the rig hidden, move over to the Armature panel and Shift+click a layer to reveal the bones. There's lots of layers to choose from here, but we are looking specifically at the top right cluster, bottom row, third to the left - pretty tedious I know. Shift-clicking this button will reveal our bones.



09 Parent Ctrl+Tab into Object mode, and click the character and then the bones. Hit Ctrl+P to parent, and select 'With Automatic Weights'.

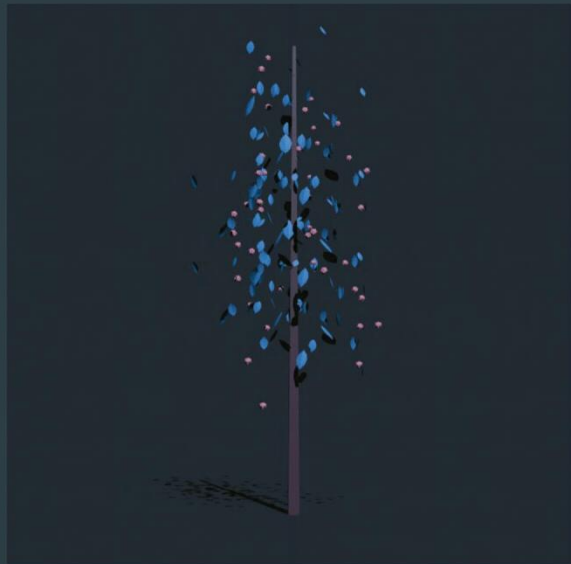


10 Unhide the rig Nearly there. Now let's hide those bones by Shift-clicking on the same button in the Armature panel. Enter Pose mode by tapping Ctrl+Tab, and hit Alt+H to unhide our animation rig.

LUSCIOUS LEAVES

How to make mimicking the natural world a breeze

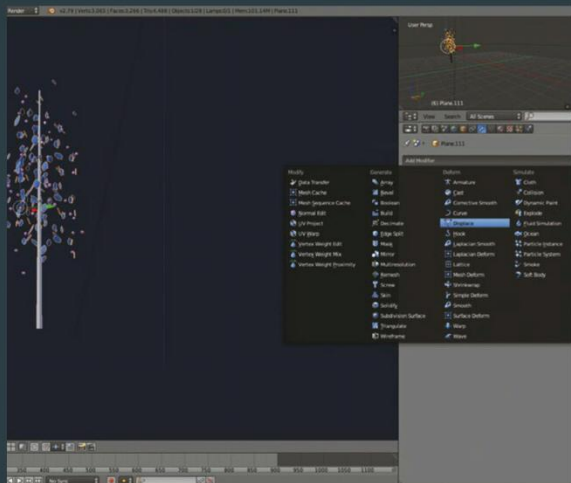
Creating a simulation of rustling leaves might seem like a complicated affair. But, as the Fiasco team discovered, Blender's Displace modifiers makes it a cinch. Here Fiasco co-founder and designer Ben Steers explains how.



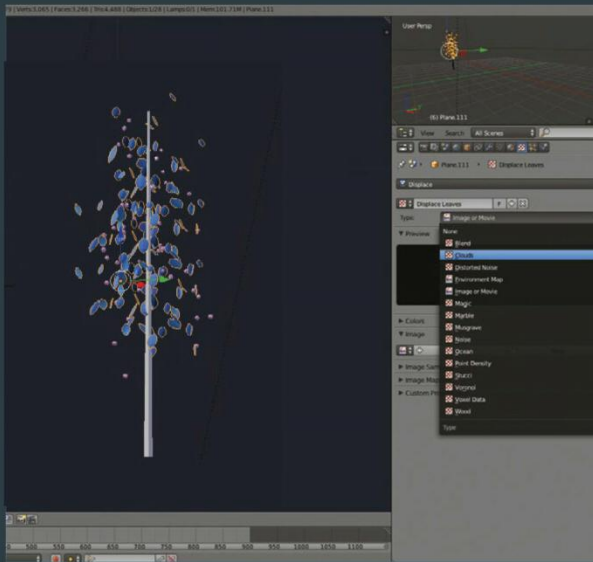
01 Bring the tree to life The tree is modelled and has some leaves. Now to make it move and rustle.



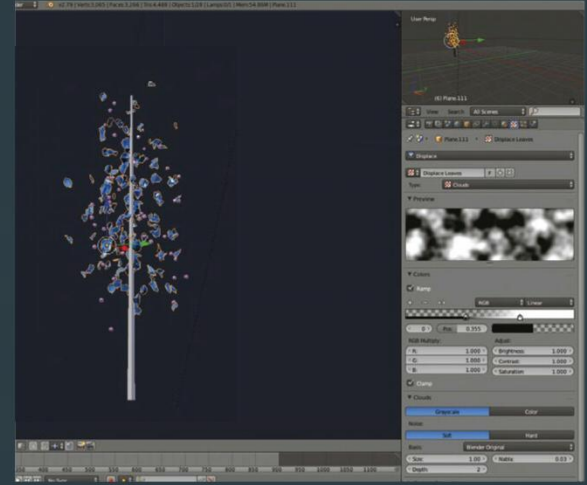
02 Plain axes Create plain axes. This is going to be our controller. We're going to be able to move this around the scene and watch the leaves rustle.



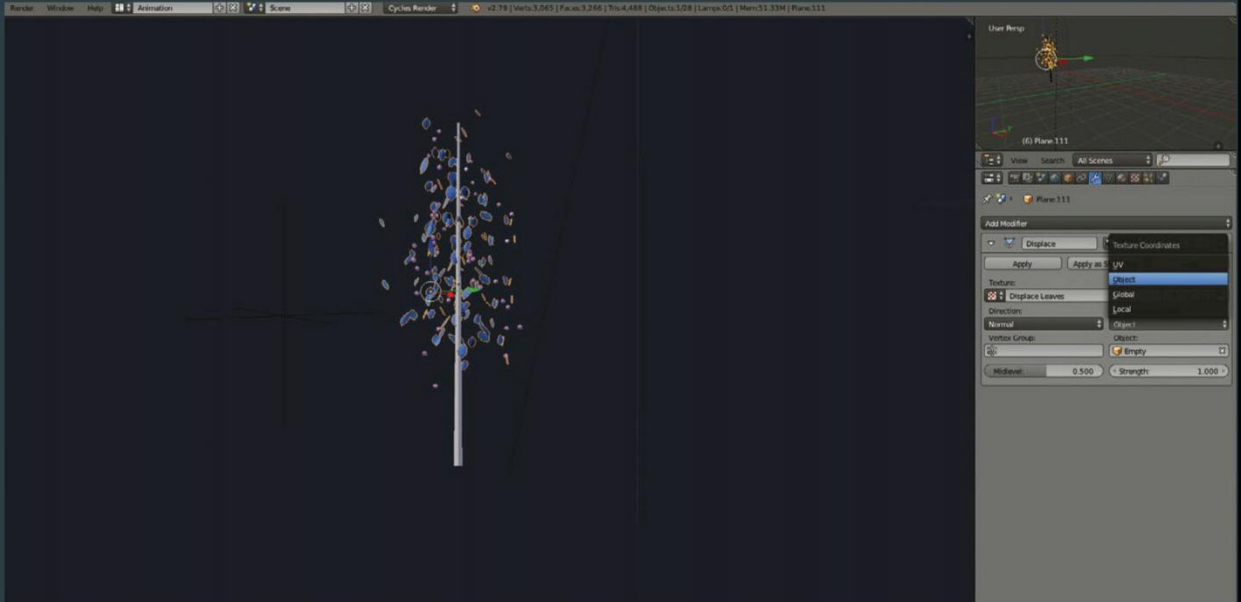
03 Displace modifier Select the leaves and add a Displace modifier, found in the modifiers menu.



04 Name your texture Click New, and name your new texture. Next, click on the button on the far right of the selected feature (circled) and jump over to the Texture tab. Then, select 'Clouds' under type.




06 It's a breeze Jump back to the Modifiers menu and change texture coordinates to 'Object'. Select 'Empty' (the plain axes you created earlier) under the Object drop-down menu and you're done. Move the plain axes around the scene and watch the leaves rustle.



05 Generate the rig Increase the size of the clouds and play with the ramp settings to increase the contrast. Now imagine this texture passing through our tree. Perhaps the leaf moves up as a white area passes over it and moves down as a black area passes over. That's basically how we fake our wind using a cloud texture.





The unusual model design caused problems when trying to make the characters move in a natural way

Steers. "However, our main character was hard to animate at times – and that's all our own doing. We created a fairly stylised-looking 3D model with very short arms and knees that were a little too close to the ground, so from certain angles the walk cycles looked laughable. No one's knees should sit just above their ankles. We had to be particular with the camera angles we chose to hide a few of these choices. If we had time it would have been wise to go back to the drawing board and make edits to the design, but we had to soldier on and make the best of what we had," Steers explains.

To gain as much precision and control over the characters' movements as possible, the team filmed themselves in similar poses and used the footage as reference material. "I find it's the best way to see nuances in the movement,"

Steers comments. From then on it was a case of some careful keyframe animation. "I literally had the footage open on one screen, the animation on the other and slowly copied the movement," he says.

A WELL-EXECUTED ADAPTATION

The efficient workflow implemented to bring this film together resulted in the Fiasco Design team presenting a beautifully emotive and extremely well-executed adaptation of Rollin's heartbreaking story, and is a true testament to the team's talents. Steers is grateful for the 3D community's welcoming arms. "The Blender community is great," he says. "I found getting to grips with 3D modelling fairly difficult at times, and there's still so much I don't know, so having support there when I need it is amazing."



Technique focus

Incredible 3D artists take us behind their artwork

2D PAINT WITH A 3D BASE With this kind of image, where it contains a lot of detail, you have to remember the most important part of it and play with the values that enhance that. I placed some neons on the back of the rider to pop out his silhouette, and I made the motorcycle the brightest thing. Alongside the orange tyre it makes the rider and motorcycle the most important part. Don't forget to lose some detail in the background, because human eyes don't see that much detail so far away.



Karolina Wisniewska
karolawisnia.artstation.com

Karolina is studying graphic design, alongside developing her illustration skills.

Software Photoshop, 3D-Coat, Blender

Futuristic motorcycle, 2019



GET THE MOST OUT OF

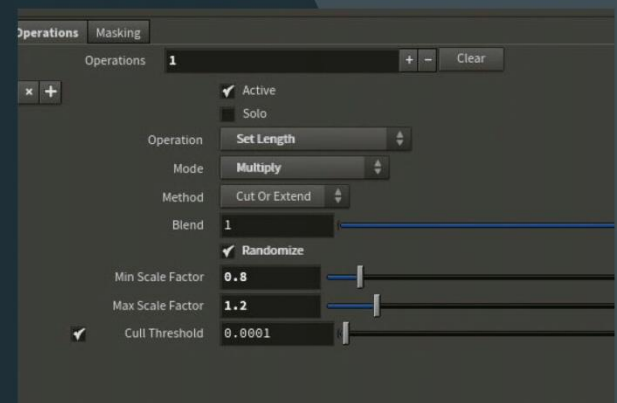
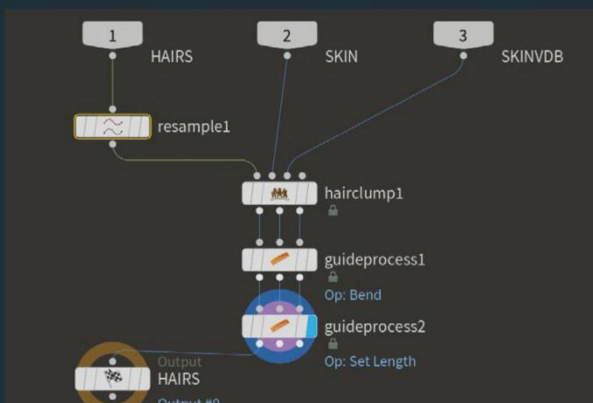
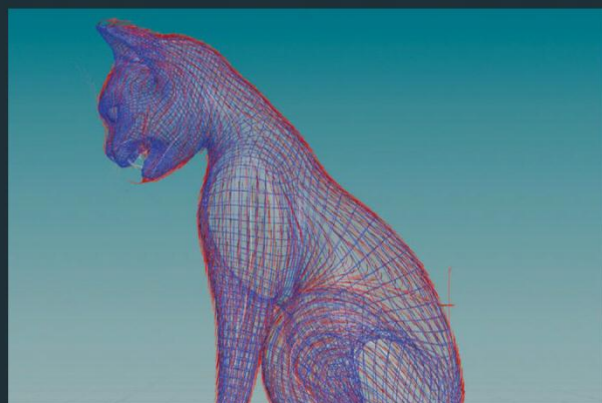
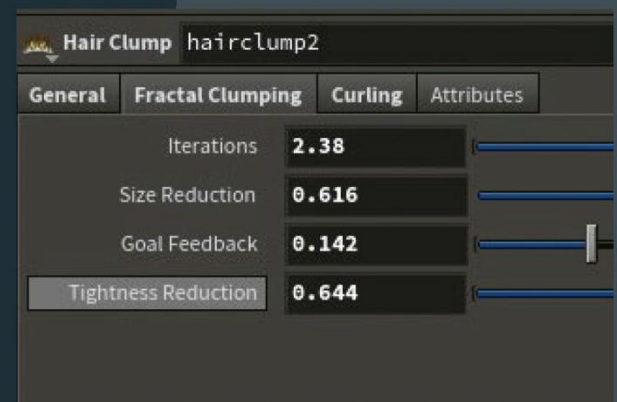
HOUDINI 17.5

SideFX have released a new version of Houdini, so we talked to two expert artists to find out how to get the best results for your projects, including showing you how to groom hair, just like our cover star!

ALUTA ROMA

3D generalist
alutaroma.com

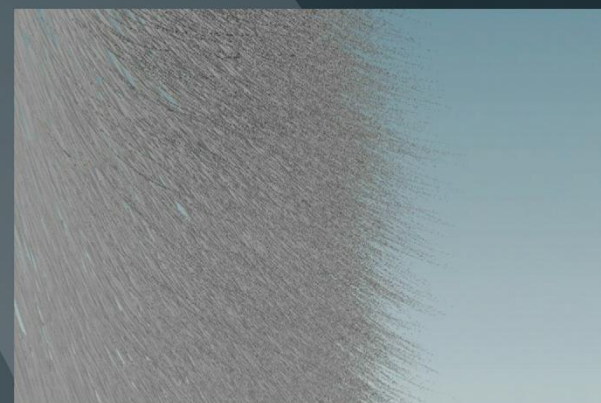
I'd like to present to you the tips I apply in my grooms. They speed up my process and help me get great results fast. I wrote them with fur in mind, but most are all-purpose. These tips are for artists ranging from beginners to mid-advanced in Houdini, but note that this is not the step by step guide. You should know the Houdini interface, basics of creating guides and hair, brushing it and editing. Houdini comes out with three shelves for creating and manipulating hair and fur. The tools from Hair Utils shelf are for set up hair and fur objects, jump between object nodes, set up animation and simulation. The Guide Process shelf contains the procedural tools for styling hair.



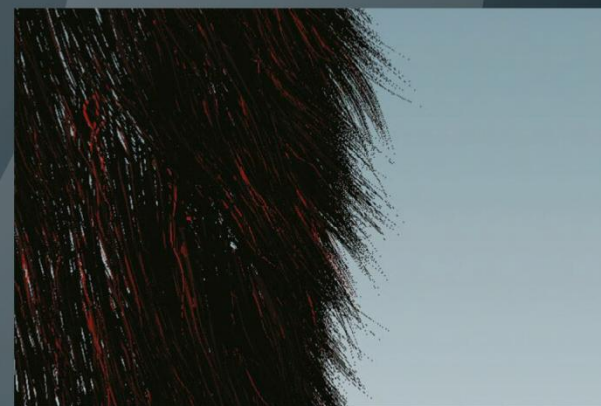
01 Set fur direction with curves Use the Curve Advect tool from the Guide Process shelf to set the direction of the fur. By drawing curves on the surface, you can paint directions for the whole character. Start with a few general curves for each bigger part of the body and then draw a smaller one for a more detailed result. If your creature is short-haired, you may not need to use the grooming brush at all.

03 Resample hair Short hair on the nose doesn't have to have the same amount of segments as the fur on the tail, so generate hair with resampling geometry from the first input (HAIRS) in the Hair Generate object node for saving time and memory. Use the resample node, turn on the Maximum Segment Length option and find the best value for your groom. Turn on points visibility to see the hair points.

05 Playing with length Use the Guide Process node and multiply the length by a random value, minimum of 0.8, and maximum 1.2 or similar values. Sometimes you may get too short on some areas (for example on the nose) by random processing or guide grooming. Here is a simple solution - use another guide process node and then set the minimum hair value you want your hair to be.



06 Bend randomize Another random process that's important if you want to get natural looking fur is hair bending. For most of the animal fur, the proper bend angle is a negative value. The higher random angle will provide more randomization and give a messy look. Paint a skin mask if you want some parts of the body to be less affected by the bending effect. For more precise bending control use a curve mask ramp.



07 Frizz mask Using the frizz mask effect will help get realistic results, no matter the subject. In the Hair Generate object node use Guide Process node with frizz operation and noise mask. Put a higher noise frequency and change the Gain and Bias to get a black result with single red hairs (red ones will be affected). By clicking the plus icon in the Operations tab, you can add another operation for the same mask.

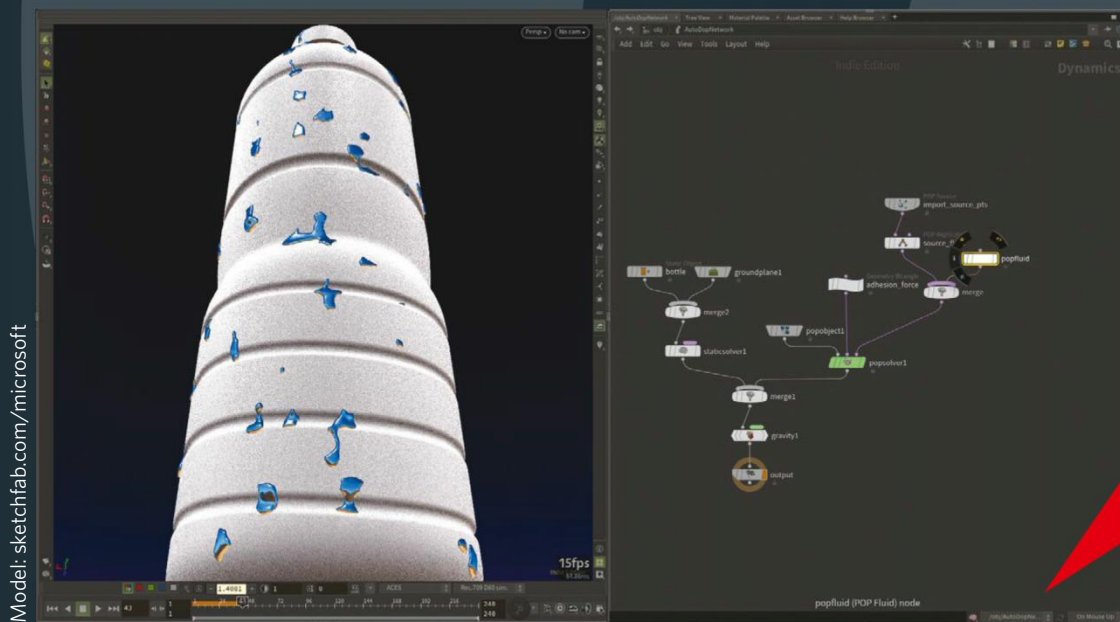


08 Collision You can use vdb not only for guide collision with the skin but also objects like clothes. Ensure object collision is a closed mesh. If not use a polyfill to close holes or polyextrude for clothes without thickness. Create VDB in the same geometry node and use Object Merge node to reference it to the guide or hair node. Put the Guide Collide with VDB node on the end of the tree and plug the VDB to the 4th input.

GREG BARTA

VFX artist
artstation.com/scivfx

NEW IN H17.5



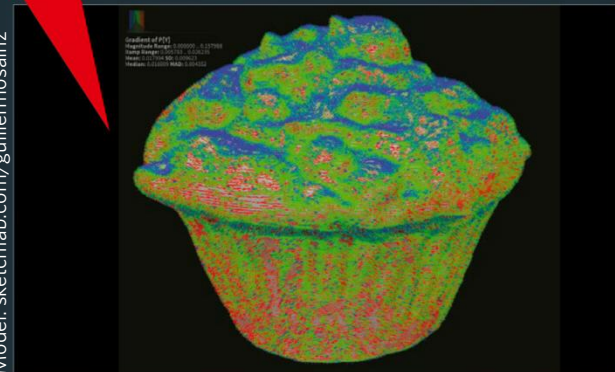
Model: sketchfab.com/microsoft

CONDENSATION TOOL

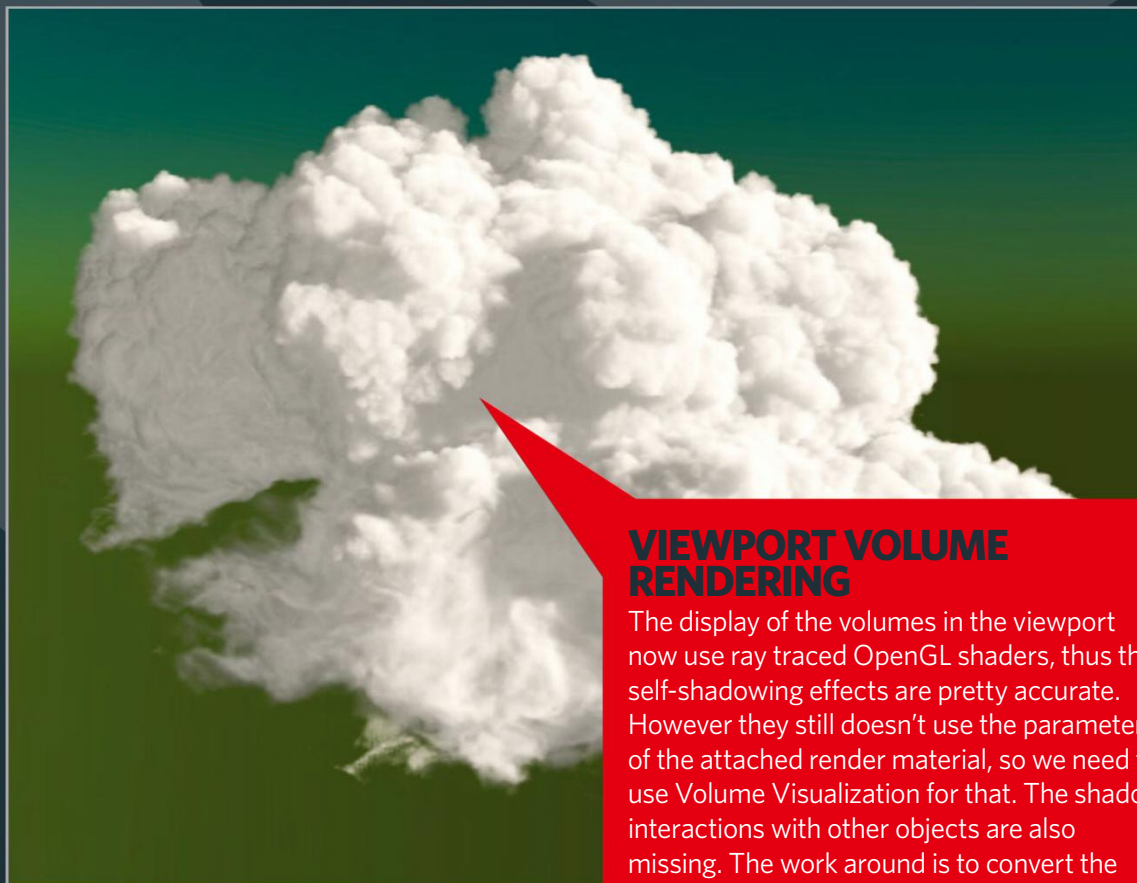
On the Particle Fluids shelf we can find the new Condensation tool. This creates the usual triple geo level node setup, one with the selected geometry which prepares it for the simulation, a DOP network with particle simulation, which uses the new POP fluid solver, introduced in the Whitewater tool in H17, and the output geometry which generates the continuous surface around the particles for rendering. So for now we are just few clicks away to add the usual rolling droplets onto the glass for a beverage ad.

MEASURE 2.0

This is a revamped version of the original. Now we can use it on points, not just on primitives - there's also many variations of measurement modes. It's advised you check the documentation, as there are detailed descriptions and extra notes for every mode. We can use this node to drive shading effects from SOPs, rather than relying on render-time calculations, define selection groups or weights for procedural modelling, or prepare objects for simulations: separate parts, measure the volume of the parts, slope, curvature etc.



Model: sketchfab.com/guillermosainz



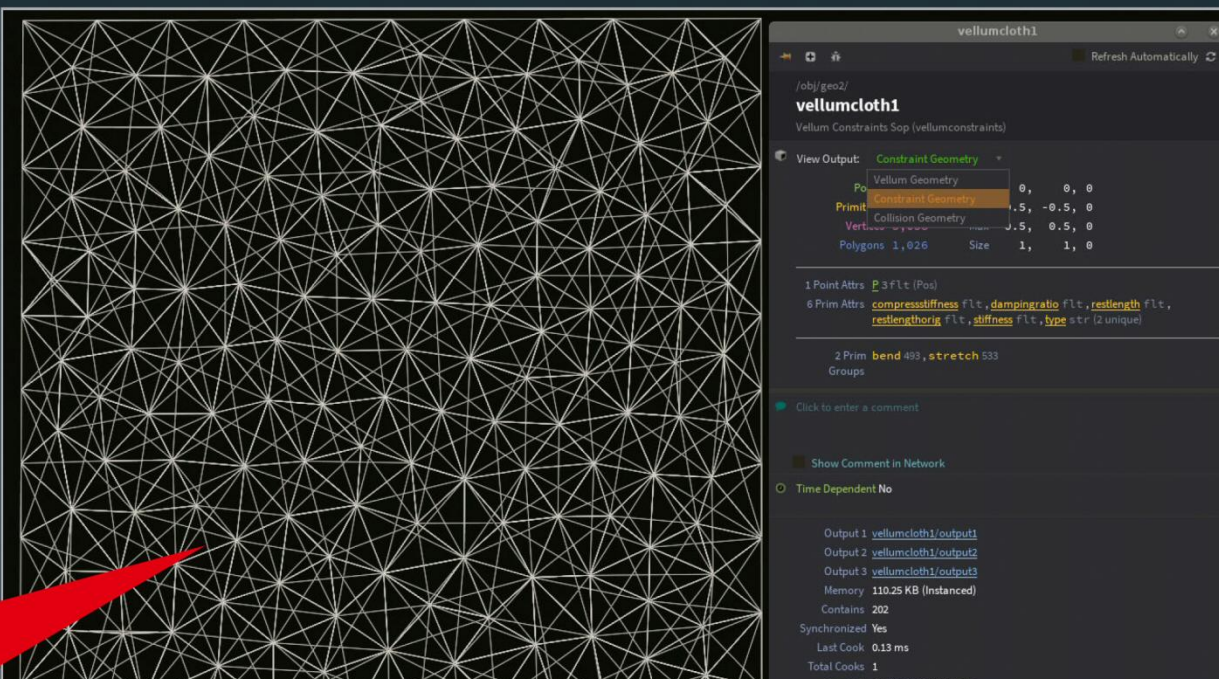
VDB: © 2017 Disney Enterprises, Inc.

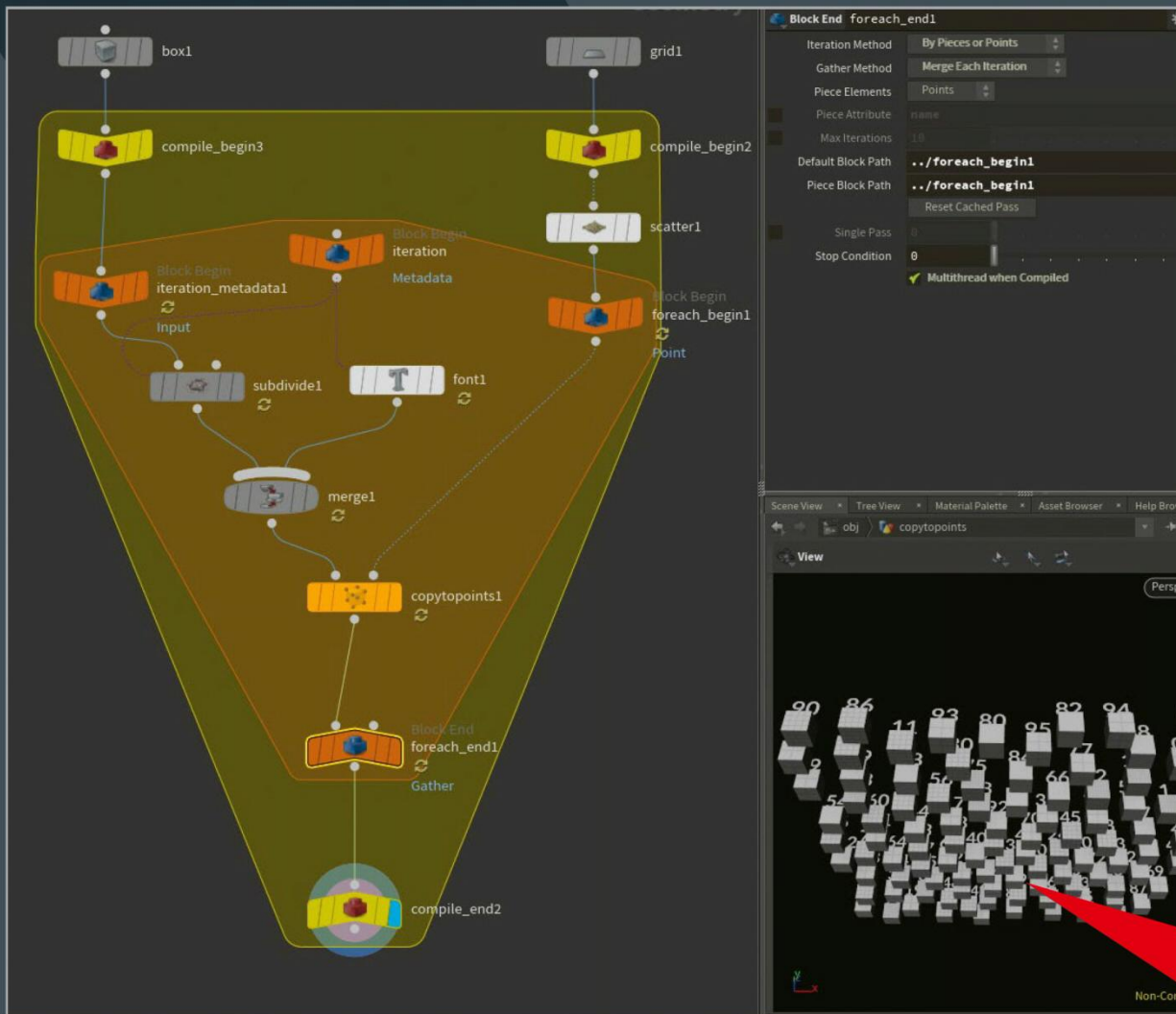
VIEWPORT VOLUME RENDERING

The display of the volumes in the viewport now use ray traced OpenGL shaders, thus the self-shadowing effects are pretty accurate. However they still doesn't use the parameters of the attached render material, so we need to use Volume Visualization for that. The shadow interactions with other objects are also missing. The work around is to convert the other geometry to volume, gain its density and combine with the main volume.

SELECT OUTPUT AND VISUALIZE

Using the middle mouse button on any input or output of a node displays the node info panel with the data related to the specific input or output. Pressing Ctrl while clicking keeps the panel open after release, where we can also choose the desired output. Here a click on any underlined attribute creates a quick scene level visualizer for that in the viewport, however we may tweak its type in the visualizer settings panel. The right-click menu offers all the outputs for viewport display under the Flags / Output for View submenu, but clicking on any of them with the Shift+Ctrl+Alt brings up the items in the Hotkey Manager, so we don't need to navigate to this submenu if we bind hotkeys for these.





SOPS 2.0

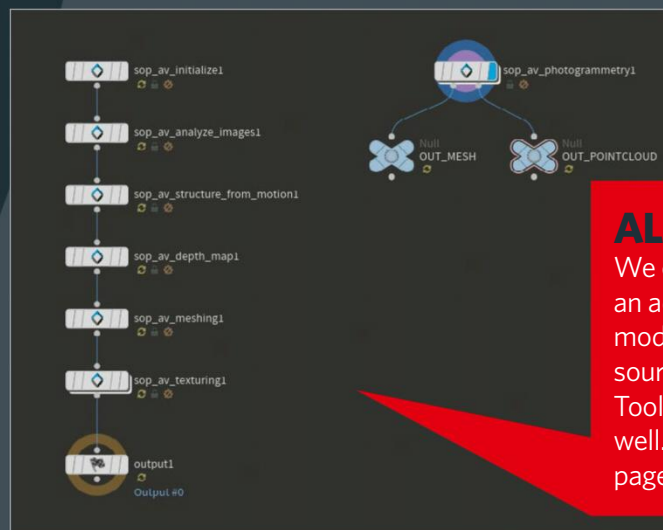
From H16, we can access the optimized and multi-threading based version of the SOP context by using compiled blocks, which is basically the optionally accessible SOP's 2.0 environment. There are some restrictions and nodes which aren't compatible with this yet, that's why we should manually manage it. However in H17.5 there are additional compatible nodes such as File, Volume, and Cloud Light. The most significant speed gain using compiled blocks is with for-each loops, but it's still useful for others, because Houdini handles the nodes in a block as a single node, so the memory use especially with OpenCL nodes is more efficient.

The Compiled Block in the Tab menu creates two nodes and is the easiest way to wire the last node of the original node chain to the bottom one (Block End Compile). It automatically includes all the upstream nodes, so it may fail if there are nodes which aren't compatible with it. The Non-compileable SOP Badge in the Network View Display Options flags all of these nodes with a crossed cog icon, so we can wire the top compile node (Block Begin Compile) below them, and its copies under such nodes in the other branches.

GAME TOOLS

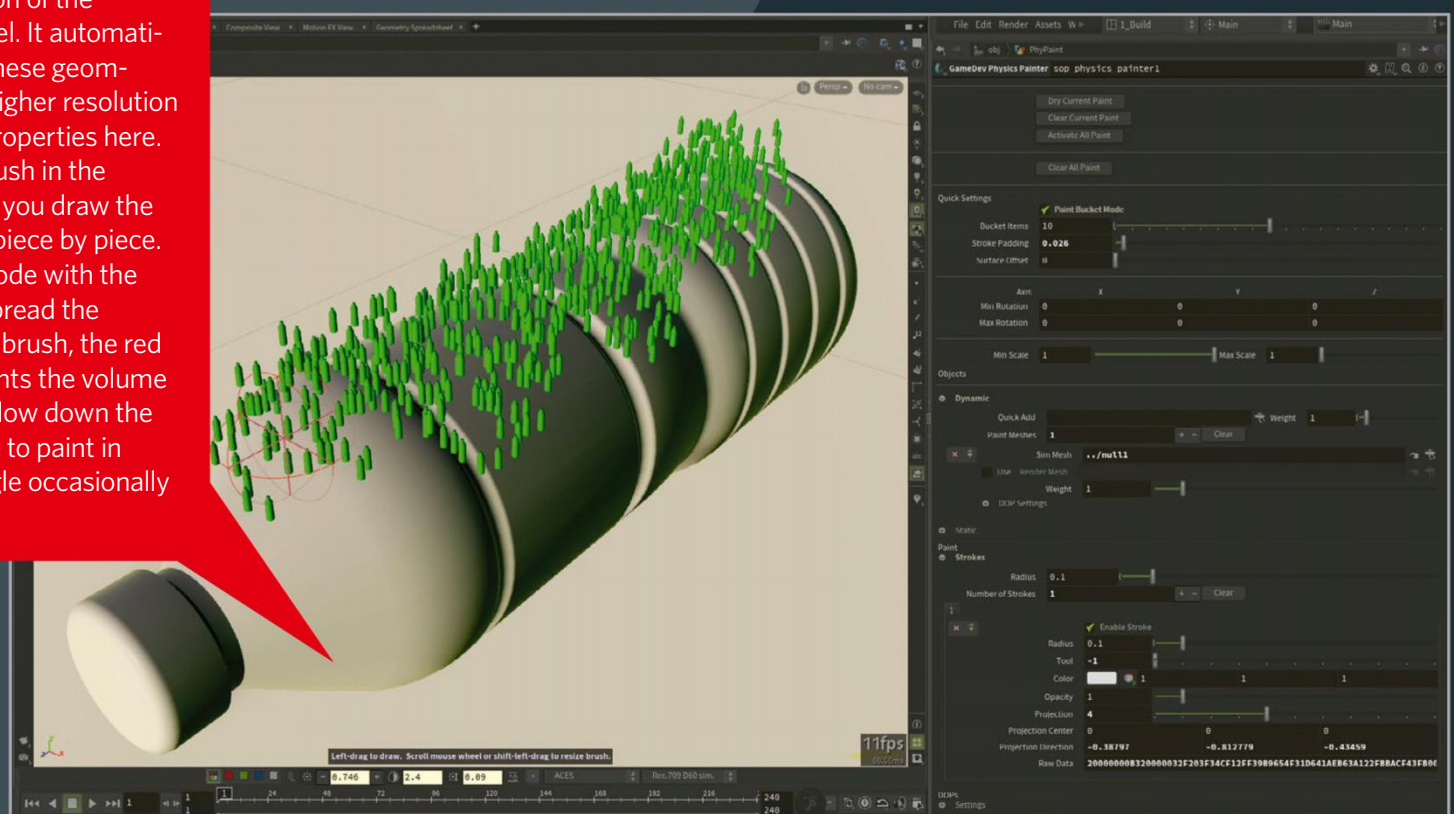
PHYSICS PAINTER

This tool can be very useful for layout artist, even for ones working in film and animation. As a versatile interactive scattering tool, we can populate the scene with arbitrary objects, closer to how set dressers do their job. The input of this node is for the geometry on which we want to paint. The easiest way to pick the objects for the brush is selecting all of these SOP nodes and drag & drop to the Quick Add field in the Dynamic section of the physics painter parameter panel. It automatically creates slots for each of these geometries and we can also define higher resolution render meshes and dynamic properties here. There are two modes of the brush in the viewport, one is the normal: as you draw the curve it lays down the objects piece by piece. We can activate the second mode with the Paint Bucket Mode toggle to spread the objects more rapidly. With our brush, the red sphere in the viewport represents the volume of the scattering. It can easily slow down the interaction, so it's also possible to paint in normal mode and use this toggle occasionally to see the result.



ALICEVISION

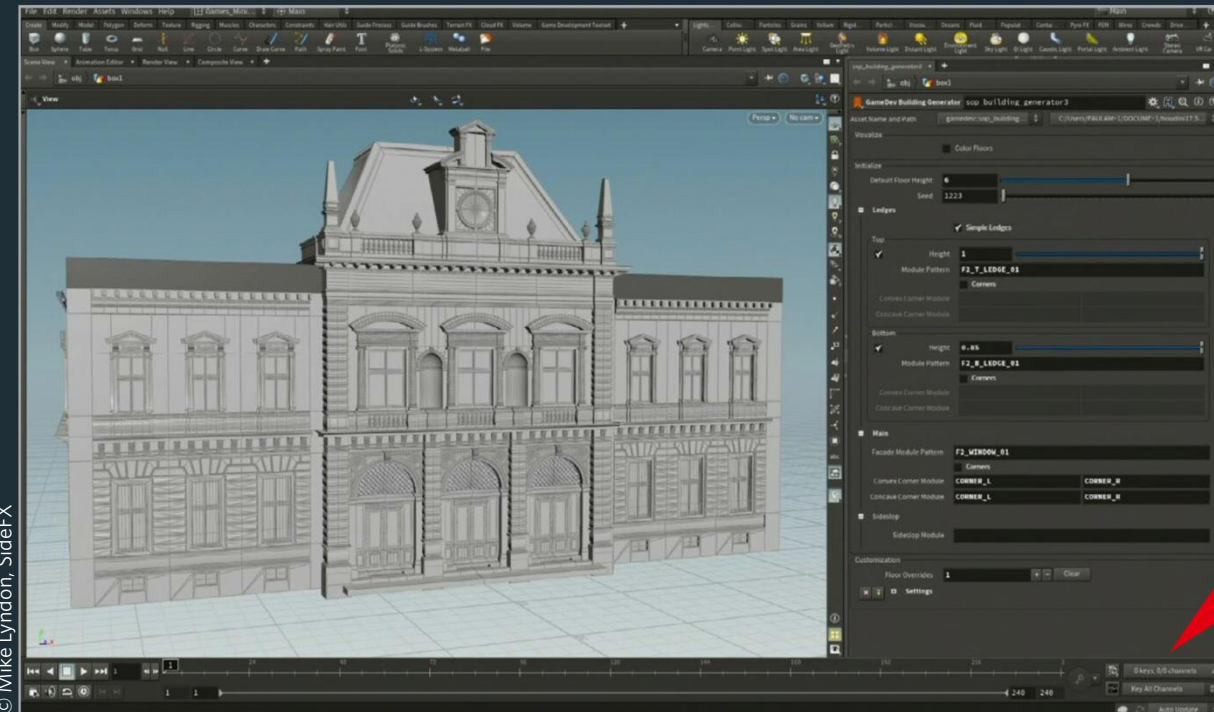
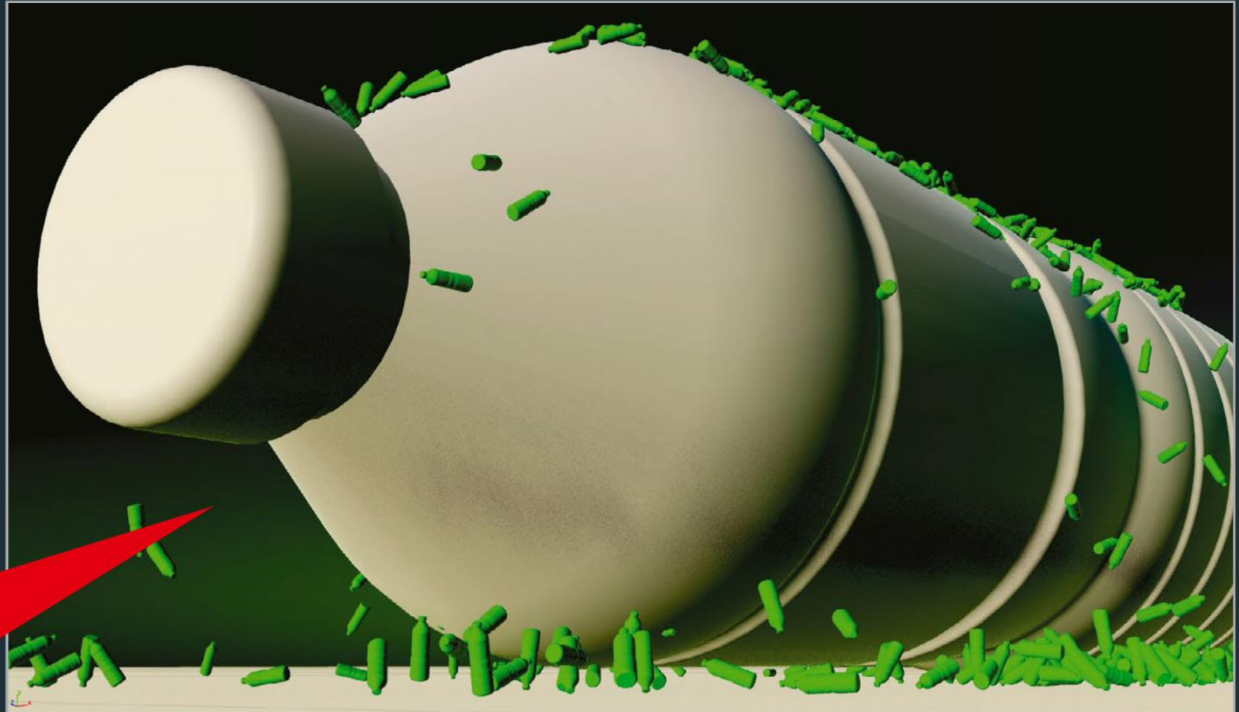
We can say that the price of Houdini includes an advanced and versatile photogrammetry module, as the AliceVision framework is open source and recently the developers of Game Tools implemented it as a toolset, for Linux as well. For further info, check the Resources page on my ArtStation site.



PHYSICS PAINTER IN ACTION

It's important to do the painting on frame 1, otherwise this tool doesn't work. The brush already tries to avoid object intersections, but the real magic happens when we hit the play button. This node has a rigid body simulation sub-network inside, thus all the previously scattered objects fall and roll down to their rest positions. The result probably looks more natural than time-consumingly laying them down piece by piece.

The Dry Current Paint button on the top could easily be our best friend regarding this tool, as it bakes the scattered and simulated objects onto the input geometry, so the next brushstroke will apply on top of them.



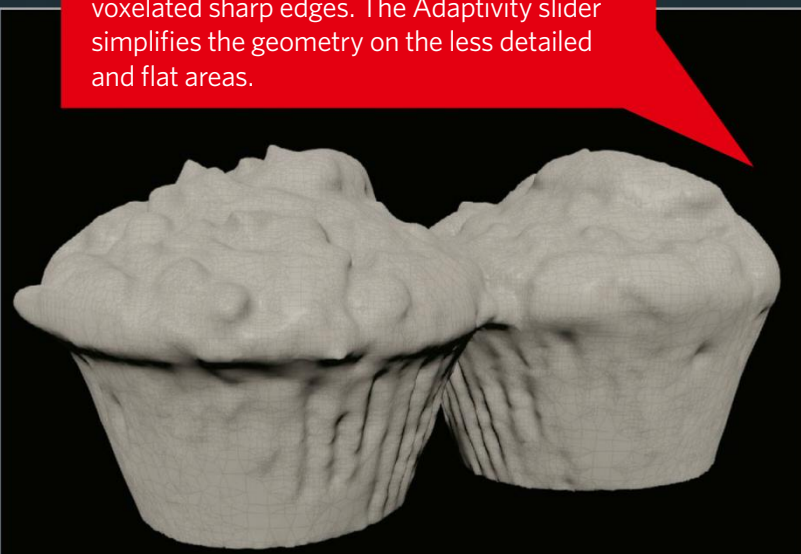
BUILDING GENERATOR

Luckily the developers of Game Tools added this very complex and much requested node to the toolset. It is a rule-based module system, we can feed our building part assets into it and use a base mesh as the floor plan of the building. Additionally with the Mapbox and OSM tools we can generate real world data based cities. Check the Resources page on my ArtStation site for further info.

© Mike Lyndon, SideFX

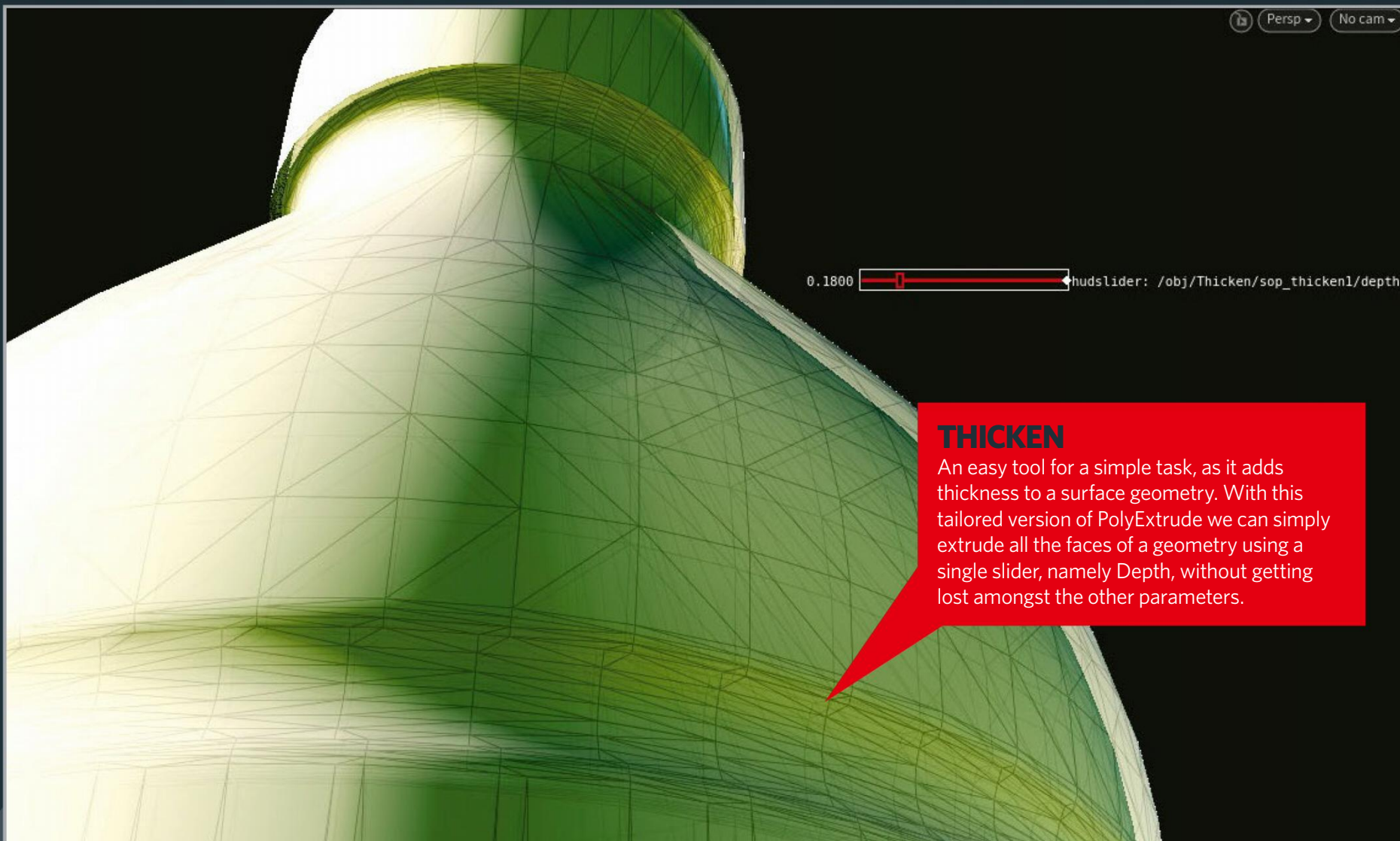
DIRT SKIRT & VOXEL MESH

We can use any of these tools to melt together interpenetrating geometries. The Dirt Skirt node generates a connectivity geometry between the two input geometries. The Voxel Mesh node is a single node tool for the common VDB from Polygons>Convert VDB workflow, thus it is more versatile, an alternative to the boolean union tool and a good remesher. Switching on the Sharpen Features allows us to use this tool for hard surface modelling, as it avoids the otherwise voxelated sharp edges. The Adaptivity slider simplifies the geometry on the less detailed and flat areas.



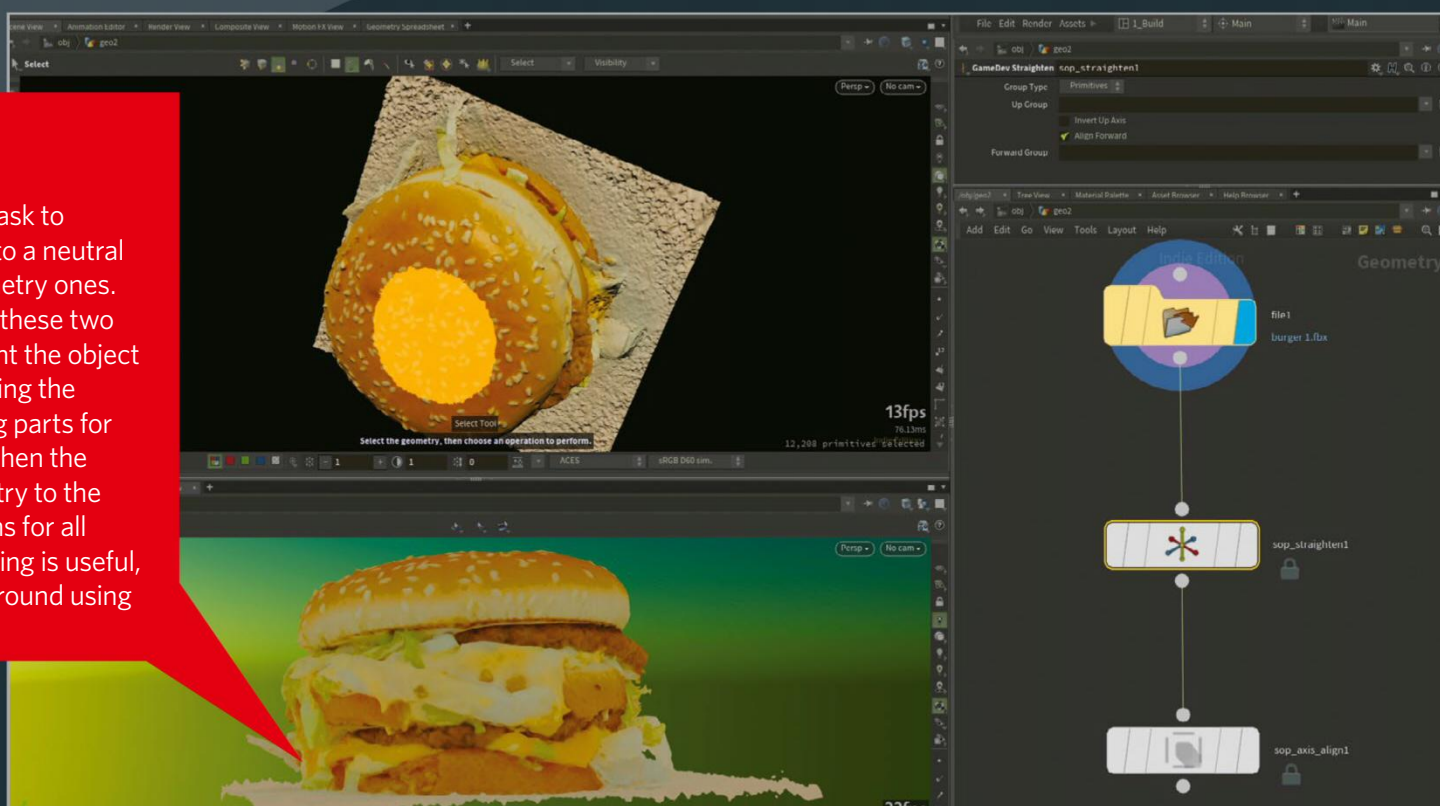
CURVE BRANCHES

This node feels like a first attempt for a tool similar to Maya Paint Effects. Not at that complexity, but if we chain together multiple copies of this node, each representing a level of the structure, we can even achieve tree like geometries.

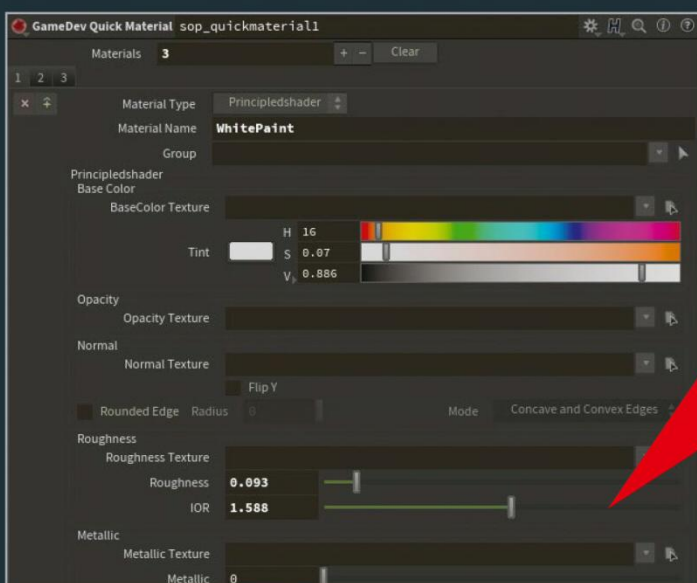


THICKEN
 An easy tool for a simple task, as it adds thickness to a surface geometry. With this tailored version of PolyExtrude we can simply extrude all the faces of a geometry using a single slider, namely Depth, without getting lost amongst the other parameters.

STRAIGHTEN AND AXIS ALIGN
 It's a boring and time consuming task to manually align and rotate objects to a neutral pose, especially with photogrammetry ones. Luckily this task can be quick with these two Game Tools nodes. Firstly we orient the object with the Straighten node by selecting the desired upward and forward facing parts for the two input fields respectively. Then the Axis Align node brings the geometry to the origin and we can chose the actions for all three dimensions. The default setting is useful, as it lays down the object on the ground using its lowest part.



Model: sketchfab.com/theesfeld

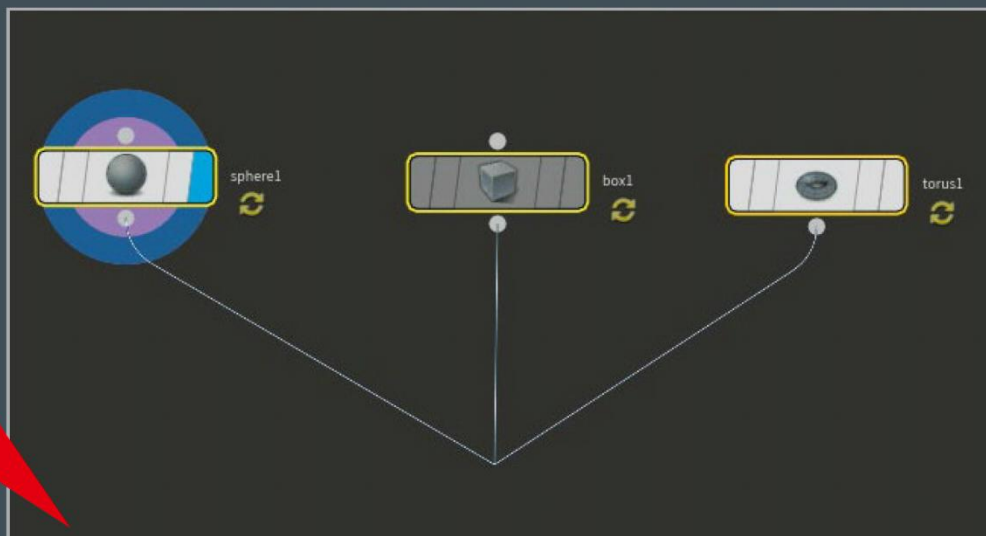


QUICK MATERIAL
 The advanced version of the original QuickShade node. We can quickly and effectively create and assign materials to objects or groups without leaving the SOP context, and access the basic parameters and texture inputs of the available material types: Principled Shader, GameDev PBR and Matcap.

EFFICIENT INTERACTIONS

QUICK MERGE

Select the nodes you want to merge, then Alt+drag down the output of any of them. If you press Ctrl rather than Alt, or just simply click with RMB, it will popup the tab menu, and you can chose other nodes with bulk input like Switch.



VIEWPORT HOTKEYS

It's worth opening the Hotkey Manager and checking the available actions under Houdini / Panes / Geometry Viewers / Operations / View Operation context. This is the secret place where we can add or modify all the Space+something keystrokes for the viewports, like Frame Selected (default shortcut: Space+F). So all the shortcuts here work just by holding Spacebar, or with the active View tool (left toolbar). Actually, we can change the Space to anything else, or add alternatives, which is the Volatile View Operation, directly in the Operations context. There are some really useful shortcuts like the Cycle View Context and Toggle Local/World View Context. They affect the state of the view context switch, the second button from the right on the network controls bar above the viewport, so we can quickly hide/unhide/ghost all other geometries except the ones in the active SOP context. The Move Camera to Geometry shortcut is also useful, as a kind of teleport function - the viewport camera jumps to the geometry element under the cursor.

Context

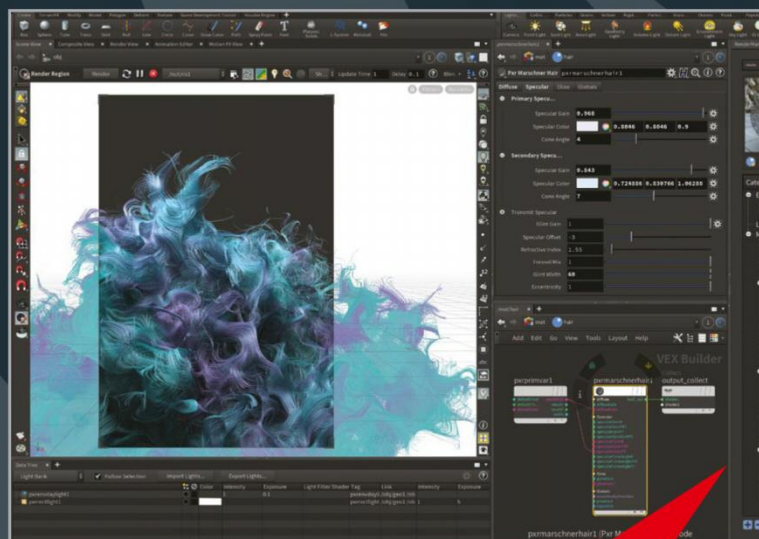
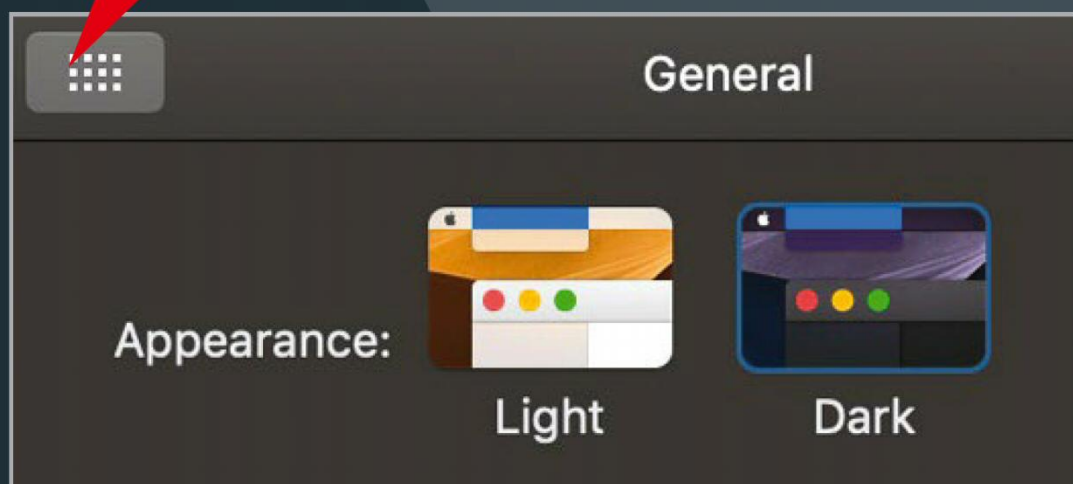
- Scene Graph View
- Modeling Viewer
- Particle Selectors
- Selection modes
- Operations
 - Dynamics (DOP) Operations
 - Construction Plane Operation
 - Lightning (LOP) Operations
 - World (OBJ) Tools
 - Particle (POP) Operations
 - Select
 - Select And Transform Operation
 - Modeling (SOP) Operations
 - View Operation
- World Viewer

Action

- Load Quickview 1
- Load Quickview 2
- Load Quickview 3
- Load Quickview 4
- Load Quickview 5
- Load Previous Quickview
- Allow Ghosted Objects
- Allow Templated Objects
- Set Quickview 1
- Set Quickview 2
- Set Quickview 3
- Set Quickview 4
- Set Quickview 5
- Select Viewport
- Move Camera to Geometry

FULLSCREEN MODE

Usually a work session in Houdini takes a while, so most of the time we don't need the interface elements of the operating system. On Linux it's easy to go fullscreen, the KDE environment offers it in the titlebar's right click menu. In the System Settings we can also bind shortcuts to any UI actions like this. In comparison customizing the other two OS feel extremely restrictive, but at least after decades of user requests macOS finally ships with an optional Dark Mode. It matches with Houdini's native colour scheme, thus the menubar at the top doesn't feel like an interrogation lamp.



NEXTGEN RENDERMAN FOR HOUDINI

You may find Mantra slow, laggy and memory consuming, it's worth to try the new Renderman for Houdini (22.5+). It feels more cosily integrated with its state of the art interactivity. Do we need dedicated lighting/rendering softwares anymore?

The Unsuited by Dylan Sisson © Disney/Pixar

Pulldownit 4

destruction plugin



www.pulldownit.com

Pulldownit plugin for 3ds Max and Maya is an advanced **dynamics & fracture** tool, by using it you can **shatter** your 3D models seamlessly, make them **crumble and break**



THINKINETIC

Mood creation through atmospheric effects

Master the use of volume lighting and efficient placement of scene items to create a moody project that will set the tone for your viewers and can be done in any software

This tutorial covers the creation of a haunted forest scene with strong focus on the global atmosphere to drive the viewers mood instead of focusing on highly detailed individual objects.

At first, we will learn how to properly populate a small-scale scene with around 100 square-metres in 3DS Max without buying expensive plugins nor using outdated scripts from the internet – simply with the available built-in tools like the particle flow particle system which will be used as scattering system. In the beginning the scene is empty and requires a few handmade visual enhancements, like sculpting some interesting shapes on the forest ground to partially guide the viewer. Using this we imply two indirect paths covered by small hills.

Afterwards we need to take care of the overall image composition. It is not about using as many highly detailed

objects as possible, but to choose wisely what kind of assets we place where. To make it a bit more interesting we are using just a handful of mid poly objects. Neil Blevins is using an interesting approach regarding image compositions based on a well-balanced mixture of primary, secondary and tertiary shapes to create zones of interest which are in balance with areas of rest – basically zones with almost no detail are used as a rest area for the viewers eyes. The overall energy of the image should be consistent to get a render output which is pleasing to the viewers eye.

From the camera perspective we paint primary and secondary shapes onto the almost blank view – the ground is still there – and try to find a nice composition. We take one example and place haunted (dead) trees on the grid but not by placing them manually by hand, we use the distribution of particles with different attributes (scaling,



rotation, ...) over the forest ground. We distribute two trees, each with its own particle source and event system to individually change the rotation and size.

We also investigate some areas in the image which need to be adjusted like areas containing straight/sharp edges. We break many of them, especially at the forest ground by adding tertiary shapes – dead/dry branches on the ground. The detail of the objects isn't the driving factor in the image, but the silhouette which is responsible for volumetric shadows which have a much higher visual impact as high end photo realistic PBR materials.

The forest ground will be the only object which will get a decent looking surface by using a high-quality deck of PBR textures. The painted deformation will be enhanced by assigning a proper displacement map, because the forest ground has some spots which are visible to the camera.

There are more knobs we can use to increase the depth perception instead of adjusting the density and attenuation of the atmospheric volume material. For example, we can make use of depth of field to blur out the background for a soft cut-out effect in combination with fake lens diffusion and artistic overlays based on the same principles with primary, secondary and tertiary shapes.

What is a haunted forest with a clean lens? Within the artistic overlays we make sure to add lens dirt, forest dust and some small lens scratches to the image next to sensor noise. The whole combination of all steps bridges the gap from 3D-ish looking renderings to a piece of CGI art where the flavour of individuals drive the outcome of the image.

After following this tutorial, you'll find it a lot easier to create mood boards for game concept art and or shots in the feature film division with a dull ambience.



RAINER DUDA
Give me hope, 2019

Bio

Rainer Duda has over a decade professional experiences and owns a VFX studio in south-west germany, besides his professional work career he is lecturing real-time cgi and vfx at the famous Hochschule Furtwangen University

Software

3DS Max, Arnold Renderer, Affinity Photo

Learn how to

- Place hero objects based on composition rules
- How to utilize a particle system to distribute objects
- Setup and drive atmospheric effects
- Mimic typical cine lens effects.
- Create overalys for final touches

Concept

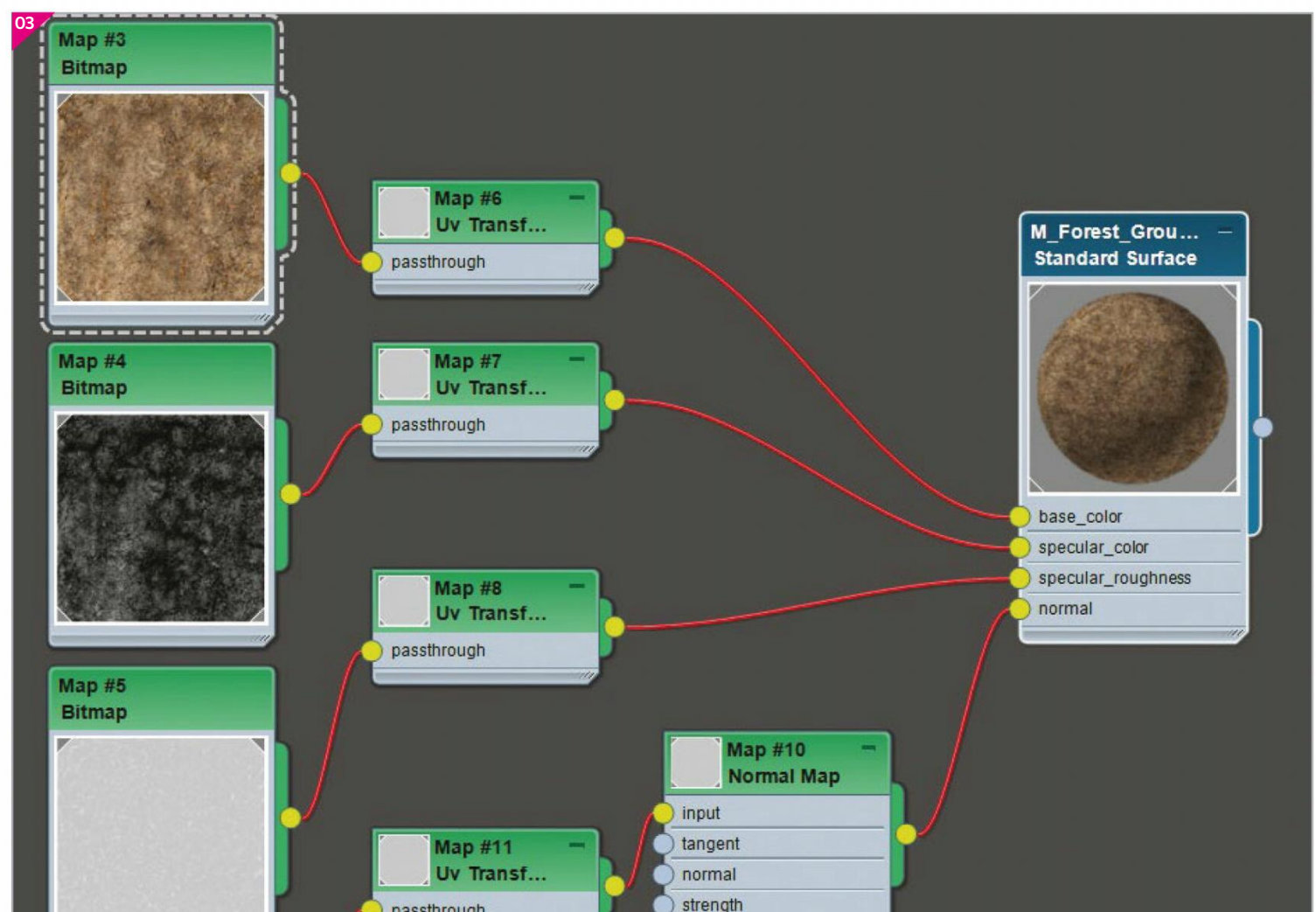
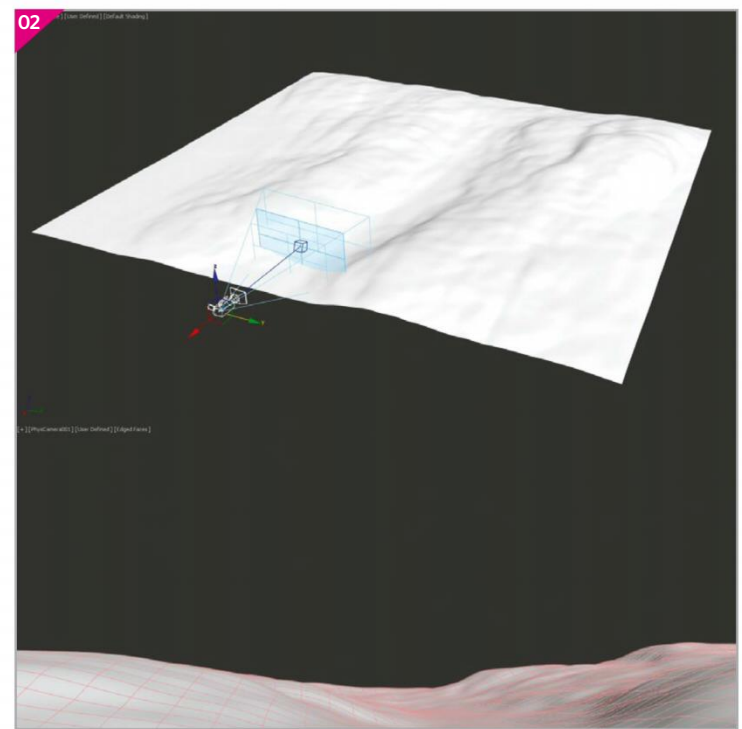
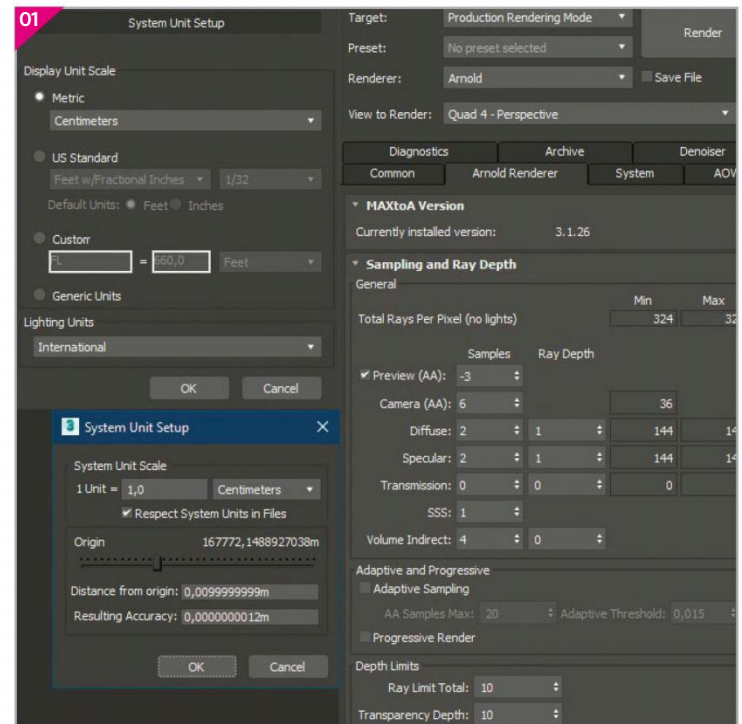
The creation of atmospheric sceners for cinematic animated movies.



01 Ensuring proper scene scale At first it is necessary to prepare a working scene setup in 3DS Max which consists of proper scene units. This tutorial was made by keeping the system units in centimetres. The starting point will be a polygonal grid with the size of ten square-metres and a resolution of hundred subdivisions per axis. That gives us enough detail for shaping the initial forest ground. Afterwards Arnold must be chosen as main renderer for production rendering and the Active Shade view (IPR). Time so search for a nice camera position. A new perspective advanced camera must be then created via the shortcut CTRL+C.

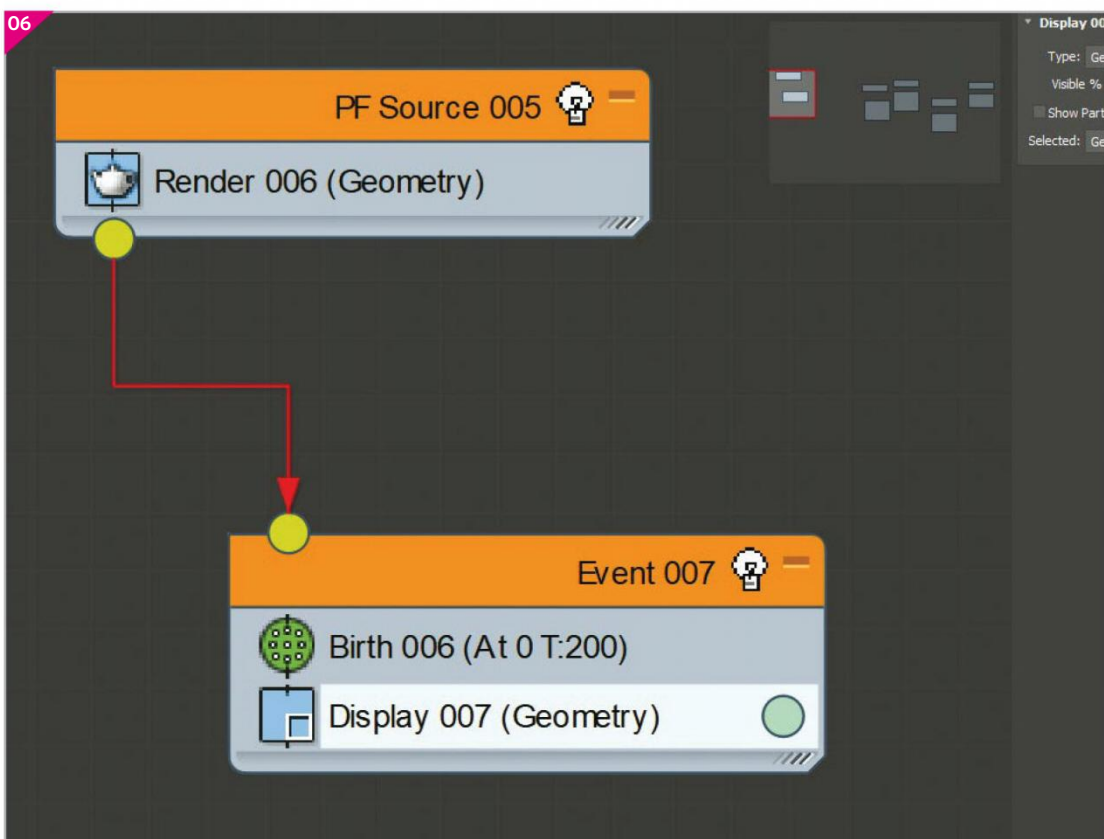
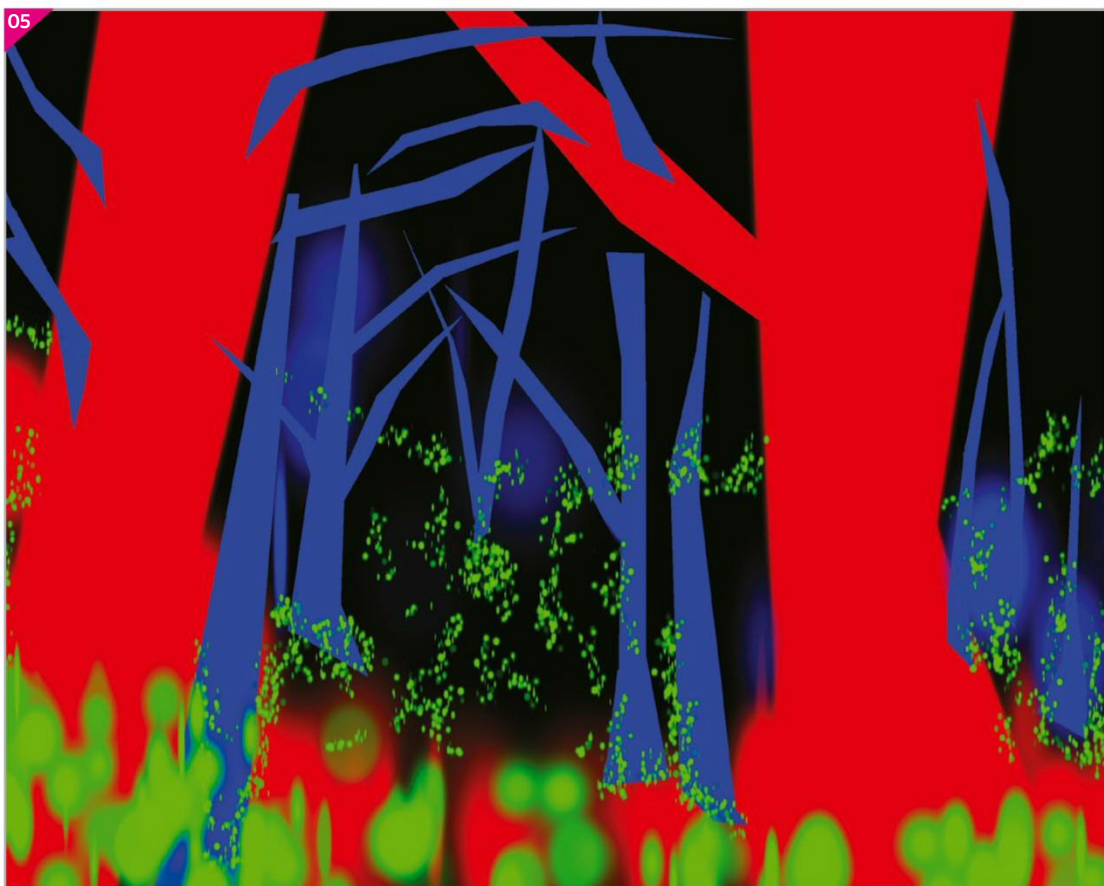
02 Sculpting the haunted forest ground Its wise to use, at this stage, a two-view setup where one viewer will be in the Free Perspective mode where we can work on the grid, the second viewer will cover the camera view. Pressing SHIFT+S will activate the safe frames of the camera. A proper resolution like 1080p can be adjusted in the Common Render settings. The grid must be converted into an editable poly. Within the Edit panel we use the paint deformation tools to sculpt nice details. The camera lies almost on the ground and from the left and right side arise hills with a small path in between.

03 A question of detail density Using atmospheric effects lets us think about detail density in terms of how many details in the scene must be preserved or can be neglected - as the majority of detail will come from atmospheric fog and lights. In terms of the ground, which is right in front of the camera it is wise to allow for more detail with a proper set of PBR textures. The site Texture Haven (www.texturehaven.com) offers fantastic free large scale PBR texture sets. The set called forrest_sand_01_4k_png will do the job for the forest ground. The tiling should be set 4 by 4 via an Arnold UV transform node.



YOUR FREE DOWNLOADS
from bit.ly/3DA-134

- Tutorial screenshots



“Tertiary shapes are small shapes which support areas of interest with small scale details”

04 Composition rules for placing objects The forest ground must be filled with objects. Before we actually know what kind of assets we want to place, it is recommended that you make 2D shape studies in Photoshop or Affinity Photo to find a visually pleasing energy. One great composition guideline comes from Neil Blevins who is working with primary, secondary and tertiary shapes to control the energy in the image (<https://bit.ly/1Deuh4J>). We need working shapes and areas where the viewers eye can rest. Primary shapes are a collection of big shapes which will be filled with secondary shapes to create areas of interest.

05 Tertiary shapes to break silhouettes Tertiary shapes are small shapes which support areas of interest with small scale details. For our example with the haunted forest these kind of details are perfect to break the visible partially straight silhouette of the forest ground in the back. Rule number one is to avoid sharp straight edges, no matter what kind of mid poly asset we use. There are areas in the air where the eyes can rest, whereas the forest itself is where most of the energy is concentrated. But the silhouette of the ground must be covered with small details to keep the viewer immersed.

06 Automatic object placement with particles Large dead trees will fit perfectly as primary shapes. Instead of placing tree instances individually we make use of a 3DS Max particle system called PFlow to scatter objects. As such, a new particle system must be created within the scene. The standard graph holds a few operators we can delete - we need at first only the birth and display ones. At the birth operator we only need a fixed number of particles like 200 (amount) with zero particles for start and stop. At the display type we must use geometry instead of ticks as display type - same counts for the parameter called selected.

07 Distributing particles on the ground To distribute the particles over the forest ground mesh you need to add an operator called 'position object'. In the parameter view we can assign the deformed grid as placement object – which offers us the possibility to define an object separation, which we will set to around seven metres intersection between trees. Afterwards we need another operator called shape instance – which will be placed after the position object. In there we define the dead tree as a source which will be instanced to each point. The parameter called variation should get at least a value of 50% so that the instances have different sizes.

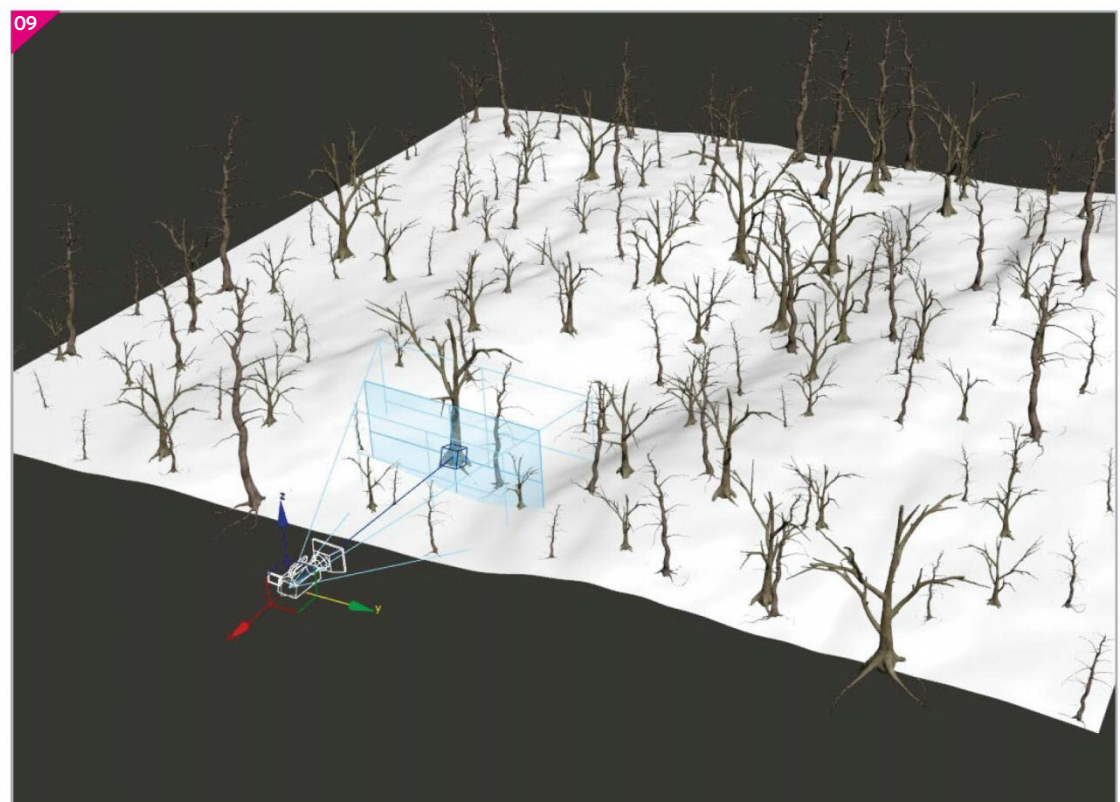
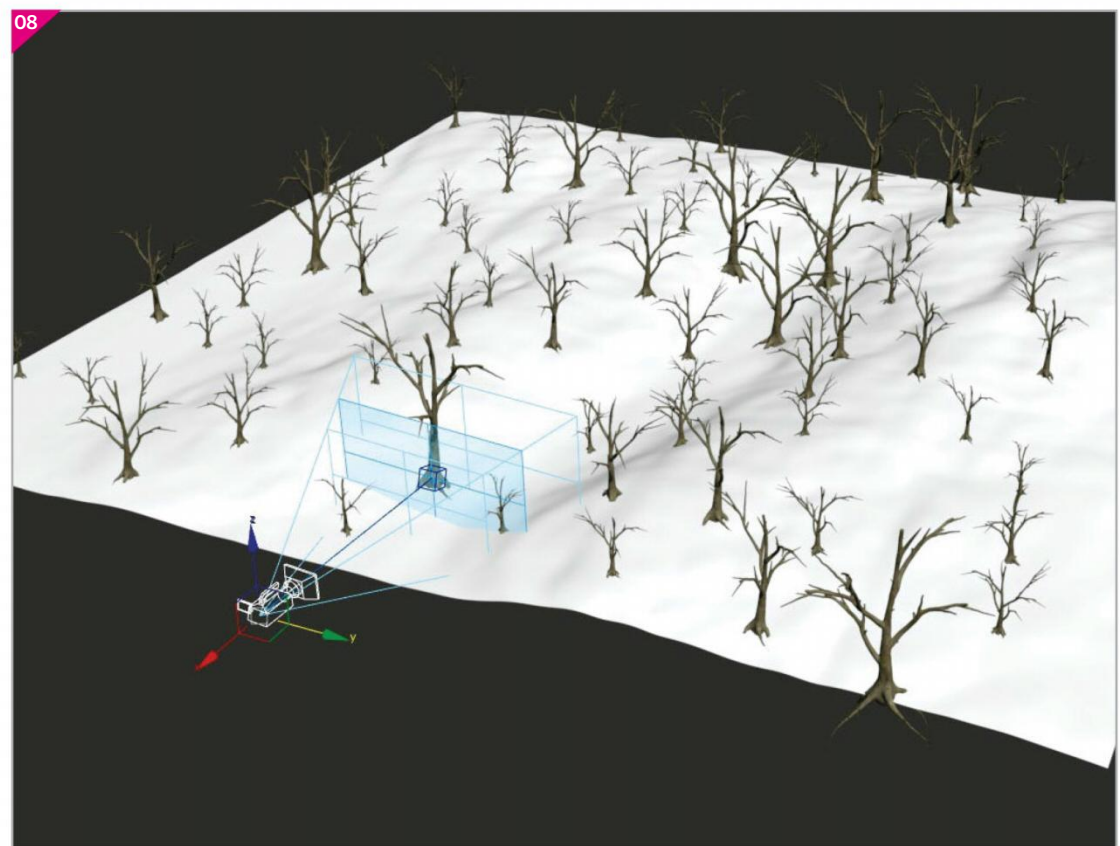
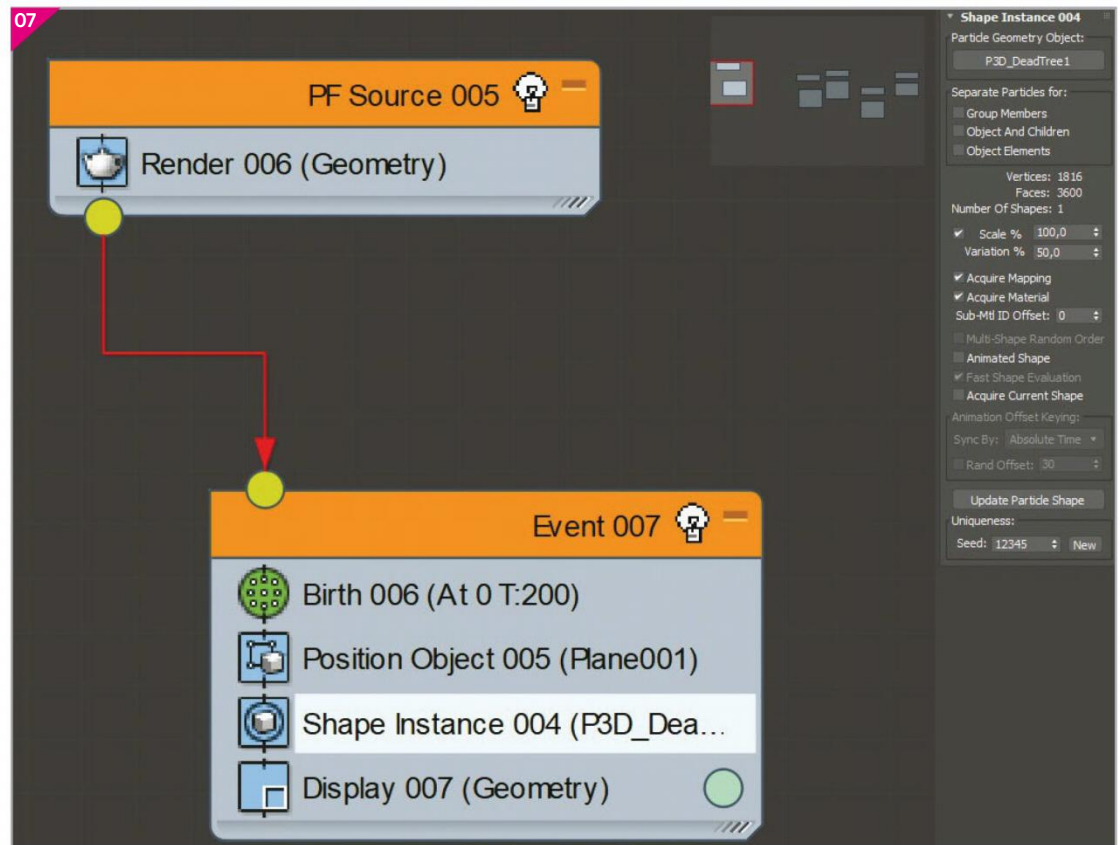
08 Proper positioning of scattered instances All trees have the same orientation. There are two ways we can improve the orientation. The easiest solution is the addition of a rotation operator. By default, this operator rotates in all directions, so we must change it to the mode called random horizontal. By now all trees face upwards but we can plug in another node before the rotation called speed by surface with an absolute minimum as speed value – not zero. All other parameters stay with their defaults. Within the rotation node we must change the mode to speed space follow. This way all trees are placed according to the surface normal of the forest ground.

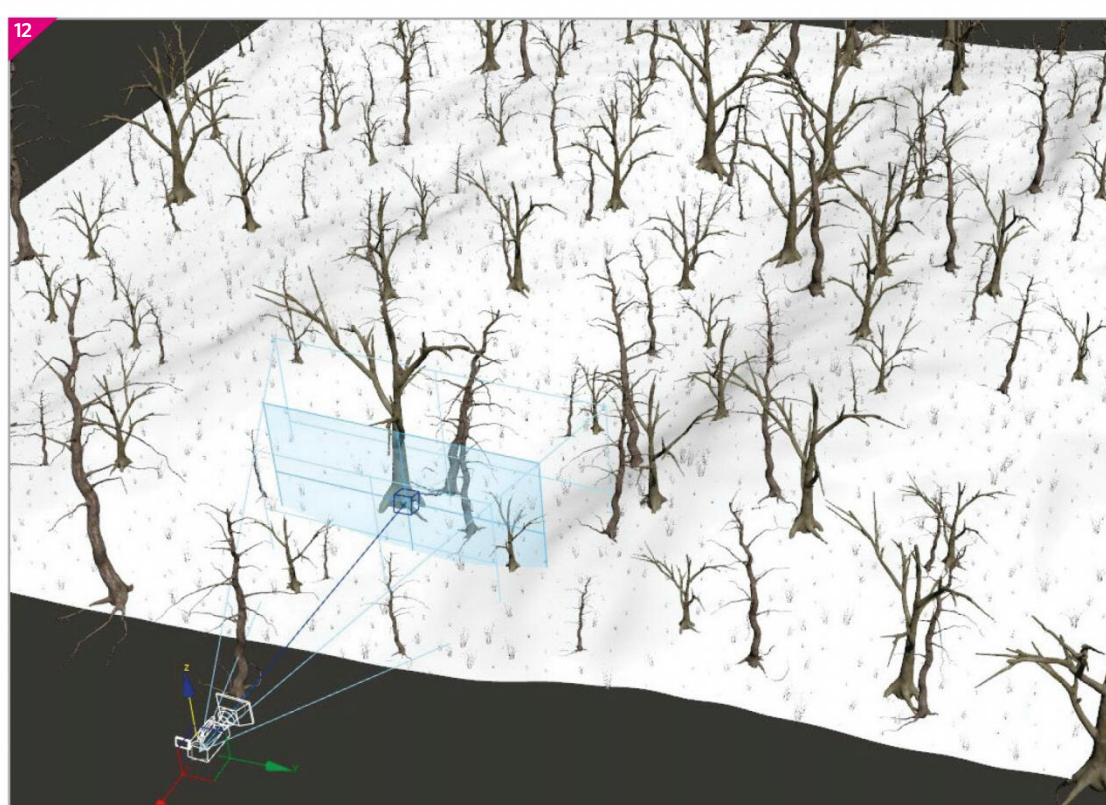
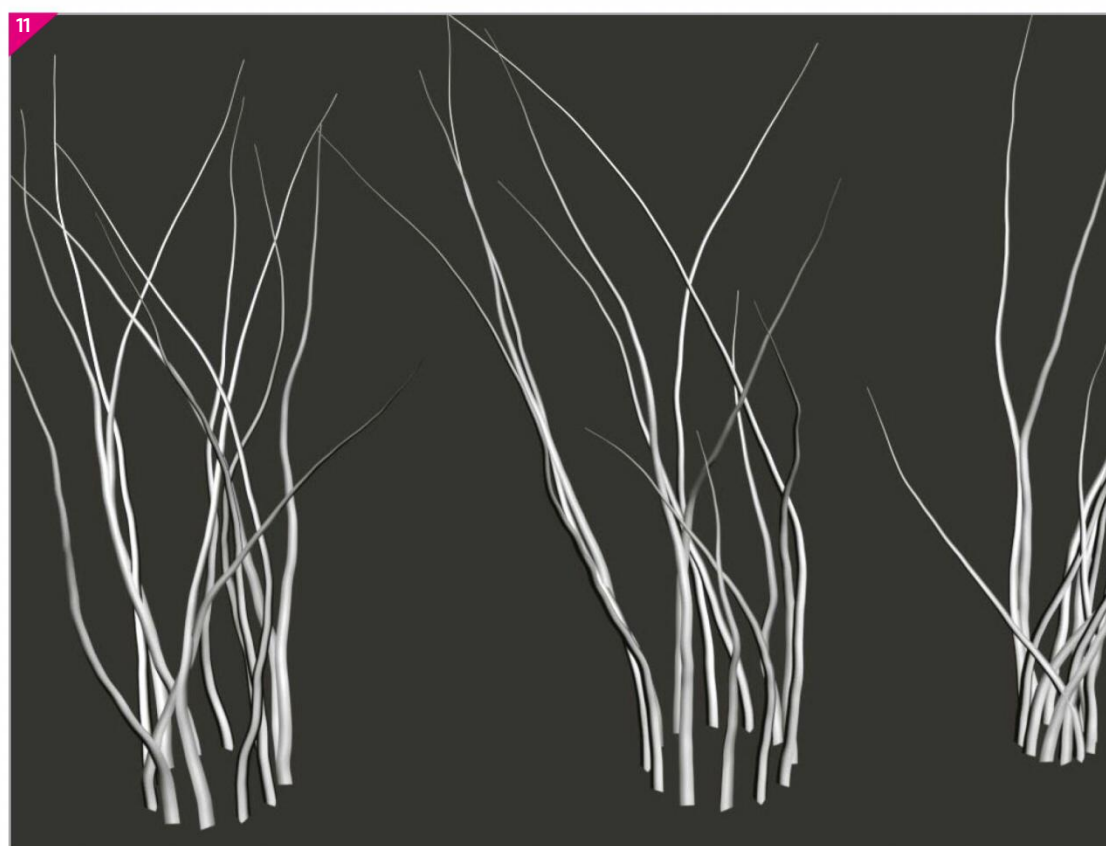
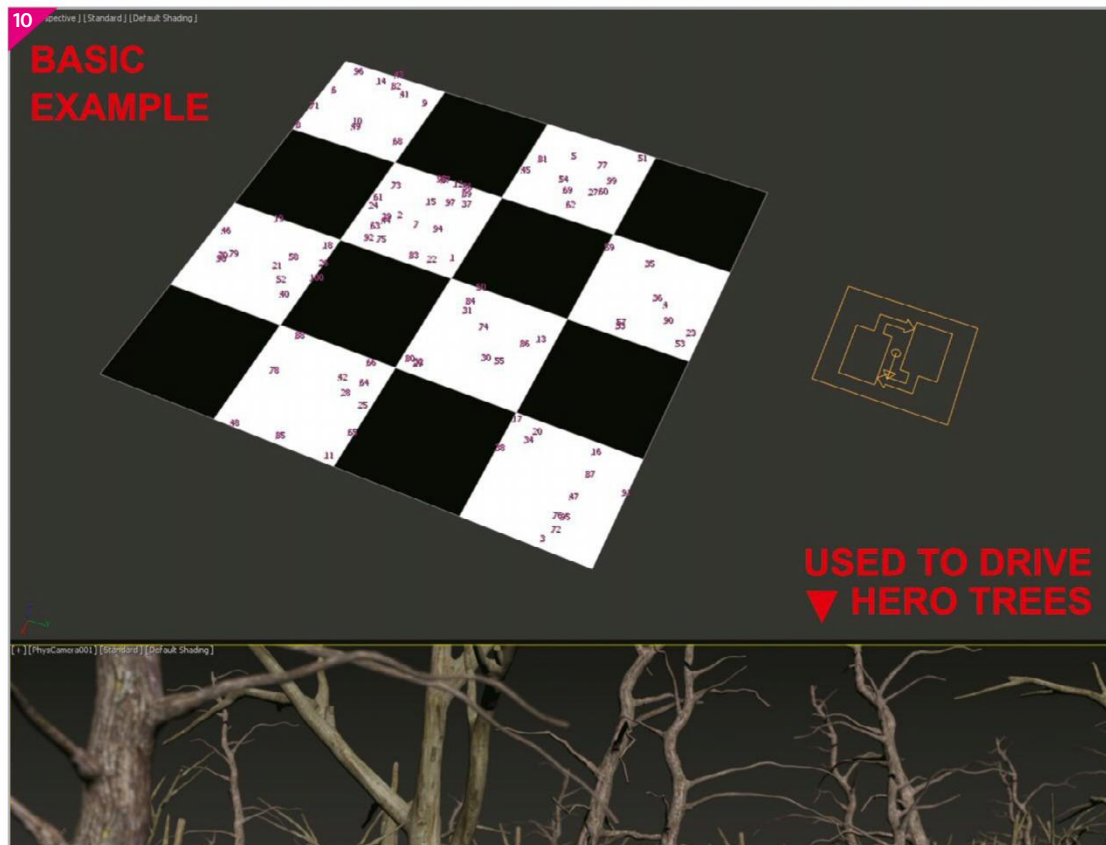
09 Detailed tree as secondary shapes We need another dead tree with a bit more detail – more dead branches and a bit thinner than our main tree. The distribution of the new tree will follow how we distributed our first tree. We need another event graph including PFlow source with the same setup but different values – especially at the placement object node. Otherwise the second batch of trees will have the same position as the primary trees. There is a uniqueness parameter field in the placement object parameter sheet. Just use the seed button to get quickly a new distribution of trees.

“ We need another dead tree with a bit more detail – more dead branches and a bit thinner than our main tree ”

Further visual enhancement with overlays

The principles (primary, secondary, tertiary shapes) we used to build an image composition for the haunted forest can be applied to image overlays as well. Just remember the intro of the famous show, *The Walking Dead*, where haunted rooms were covered with dust overlays. We can use the overlay to help the viewer see the two possible paths between the big trees in the front. On the opposite side we can cover the dark spots with some lens dirt and dust from dry air. Those studies can be made in Photoshop or Affinity Photo as well.





Increasing depth perception with DOF

The depth perception of the final frame rendering can be quickly increased by activating depth of field within the focus parameter field of the perspective advanced camera. Simply activate the Enable Depth of Field option and choose a good target distance of the camera. Remember - everything behind the target distance will be blurred out - at least a little regarding to the visual effect we like. The ideal position will be at least 15 meters away. Let's decrease the aperture to a very small value. In this tutorial the value is below one, almost 0.5 for a slightly blurred background.

“ The three bunches can be put together to one mesh, that we have three meshes in total. Afterwards we group those three meshes together ”

10 Artistically placed objects with textures It can sometimes be the case that the tree placement looks too generic. To solve this problem artists can paint black and white textures which will drive the object placement. There is just one side note... PFlow isn't working with Arnold node, so we have to use a 3DS Max standard material and append a noise texture, black and white texture or painted vertex colour to it. After, in the PFlow view within the position object operator, we can decide to place the objects with a density which is derived from a texture. Then we can use the Mesher compound object to bake the particle system.

11 Preparing tertiary shapes groups We now need our tertiary shapes to break the silhouette of the forest and to add some details with volumetric shadows. So, let's make some cylinders and bend them individually. We need three bunches of bent cylinders with taper effects - making the tops smaller than the root areas. The three bunches can be put together to one mesh, then we have three meshes in total. Afterwards we group those three together. We don't need lots of detail for the tertiary shapes, so a dark Arnold surface material will simply do the job. Remember, we create visual detail through their volumetric shadows.

12 Distributing groups of objects Our self-made scattering system through PFlow offers us an easy way to distribute objects within groups. The only thing we must do is adding the group containing all tertiary shapes as source in the shape instance operator. Furthermore, we need to tick the flag at separate particles for group members - and children if we have some. Which means that PFlow is taking all members in the group as separate objects and distribute them individually with a probability on the forest ground. The scale variation can be set to around 50% to get a decent look in the scenery.

13 Adding the basic global atmosphere There are two parts we must do until we can see the atmosphere in action. The first thing lies in the material editor. We must create an Arnold atmosphere material - under Materials, Arnold, Atmosphere. This material must be instantiated to the Atmosphere Volume tab in the Arnold Render-settings. Open the Render-settings, jump to the tab Arnold Renderer and search for the field called environment, background and atmosphere. Now assign the instance via holding the small output dot of the atmosphere material and connecting it with the slot for the atmosphere volume material in the render-settings atmosphere field.

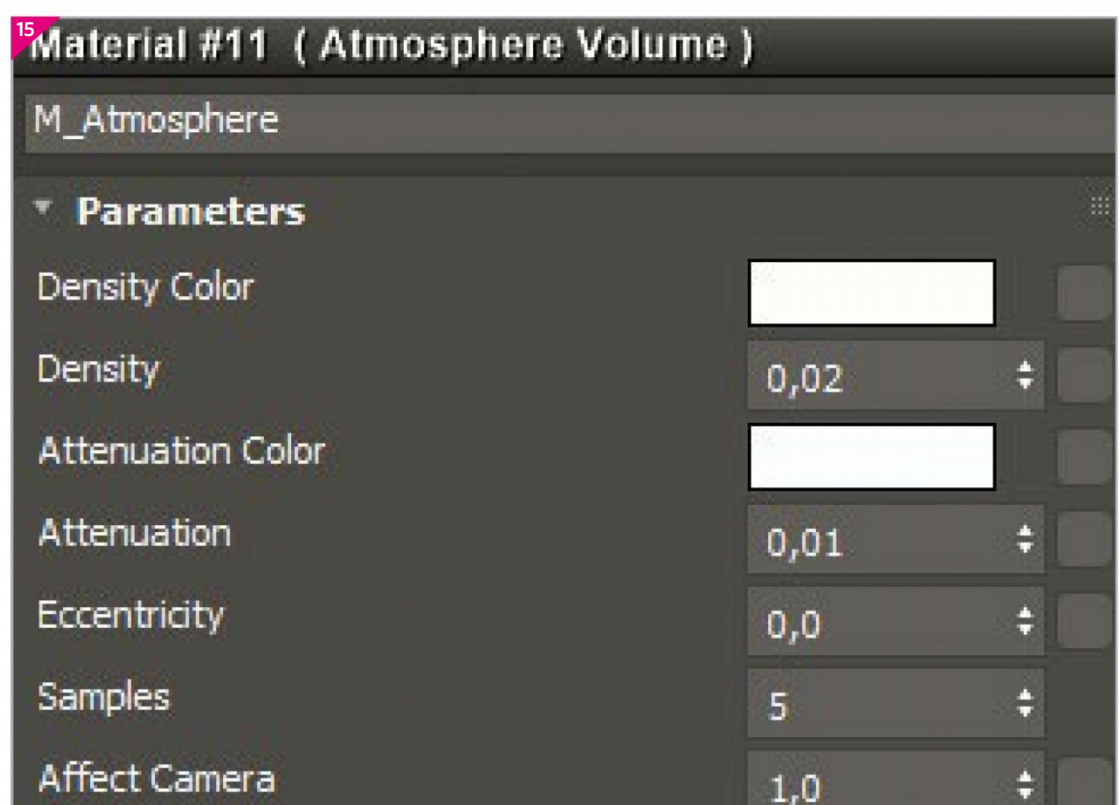
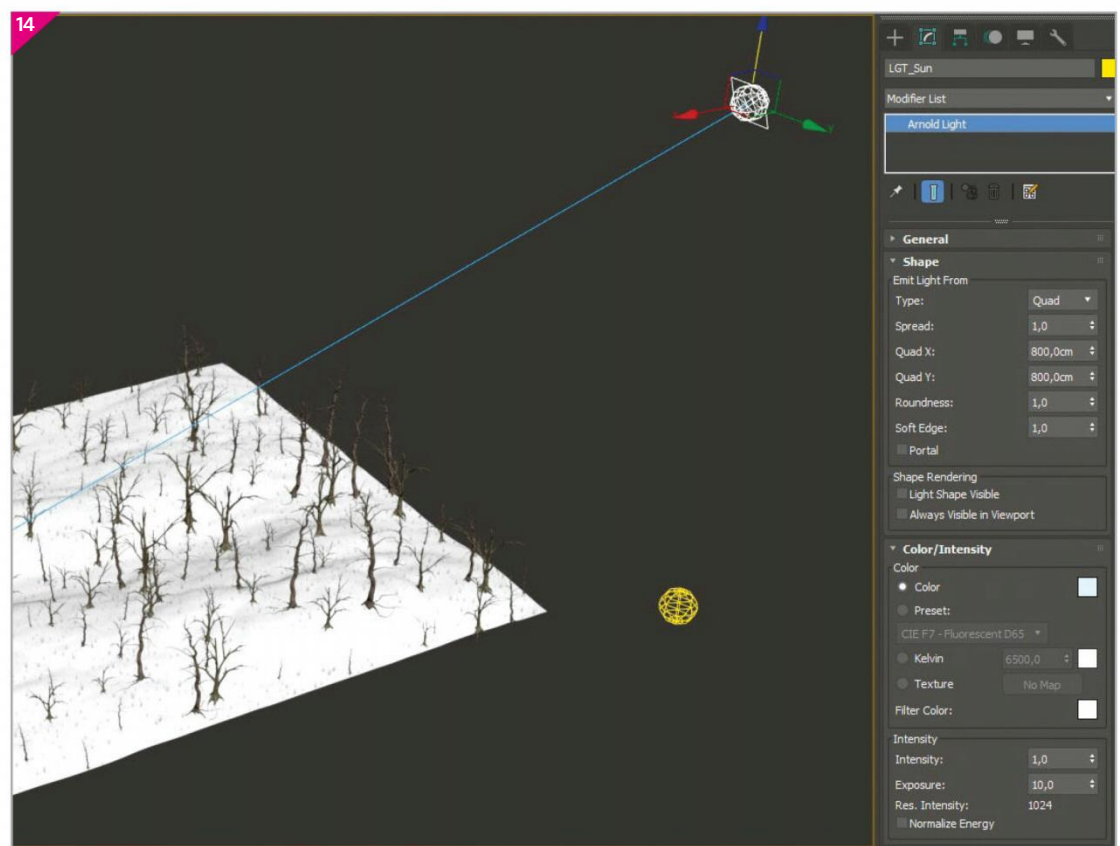
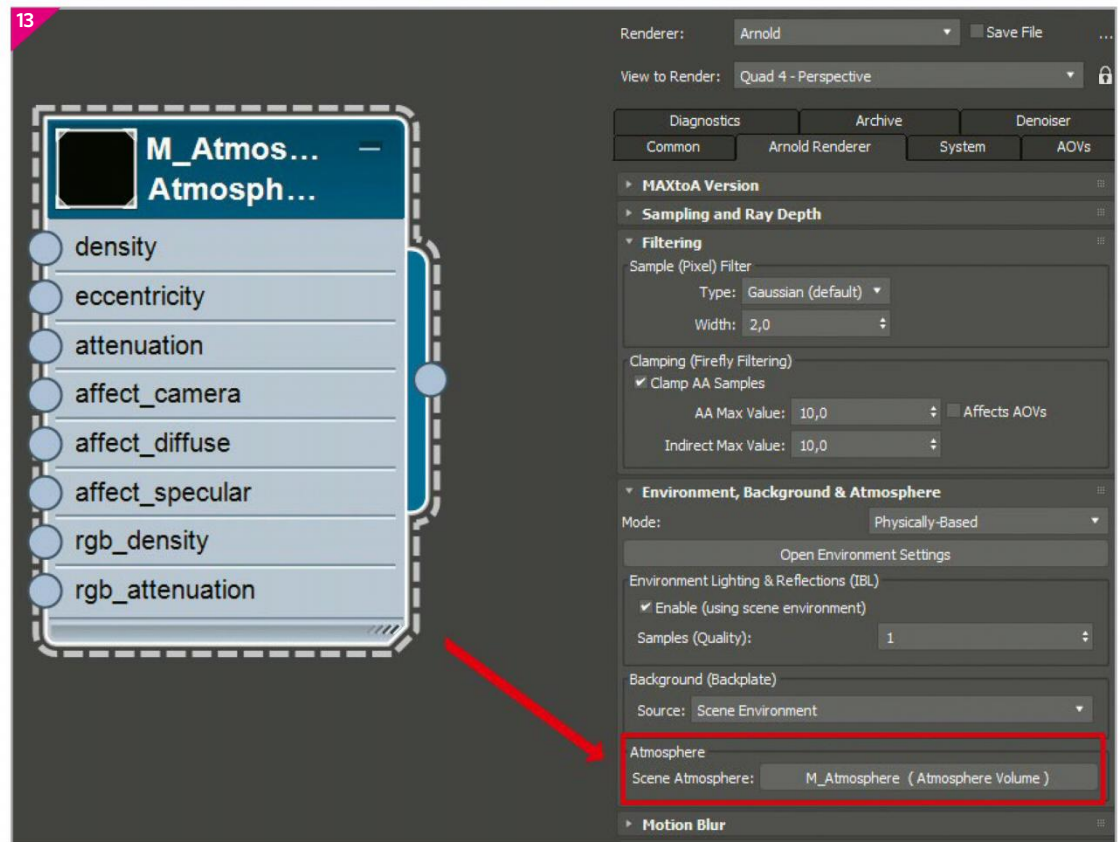
14 Lets add some lights Let's create two Arnold light sources. We need one skydome light and one area light - ladder will be our disappearing sun. Arnold offers artists a light builder which holds a field called 'type'. In there we can use quad for the area light. We increase the size up to 8 meters for each axis, adjust the exposure to a value of 9 without normalizing the energy. We need the full roundness and a position where the light hits the camera from above. The skydome light will have an exposure of zero and a dark colour to avoid too much blacks in the image.

15 Adjusting the atmosphere behaviour What's left to do is the adjustment of the atmosphere volume material to achieve the desired haunted forest look. We open the material editor and dive into the parameters of the corresponding node. At first, we need to decrease the density to a very low value like 0.02. Afterwards we set an attenuation value of 0.01. As smaller as this value will be, the faster the light from the area light will travel through the atmosphere. Additionally, we activated the effect diffuse parameter by setting it to 1.0. We want a haunted dark look but without blacks that we have enough freedom in the post-production.

“What's left to do is the adjustment of the atmosphere volume material to achieve the desired haunted forest look. We dive into the parameters of the corresponding node”

Visual fidelity through lens diffusion

Sharp edges on all our edges, straight sharp lines both cases that we want to avoid in the final frame. An easy way to fix this without expensive compositing software is the use of Photoshop or Affinity Photo to fake lens diffusion. Simply load in the frames, colour correct them and duplicate them onto a new layer. The new layer will get a filter effect like gaussian blur with a larger filter size. The image should be heavily blurred. Now simply reduce the visibility to a value of 20 per cent. The image will become softer.



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JONATAN MERCADO

Suburban house, 2019

Bio

I'm a self-taught CG artist and currently developing myself as a full-time freelancer, working with four clients on a regular basis. I'm a Blender user and educational content creator on VR.

Software

Blender

Learn how to

- Model non-destructively
- Texture with cycles nodes
- Use Booleans smartly
- Instance meshes to economise polys
- Use array modifiers

Concept

This set of houses was done for a book trailer. The client needed a stylised look of a suburban neighbourhood, so I did a lot of research of suburban houses and ended up sketching shapes from a few to end up with this model.



Create a house with modular principles

Learn how to create a highly customisable architectural asset from scratch and use it to populate your exterior suburban scenes

In this feature, we will see some essential tips on how to model a suburban house using a modular approach. The general idea of the lesson is to know the tools needed to create a house, and be able to modify easily and without too much rework on the model.

We will be using Blender for basically everything. The modular approach can be used on other models, scenes and software, thanks to its reusability power on an absolute level.

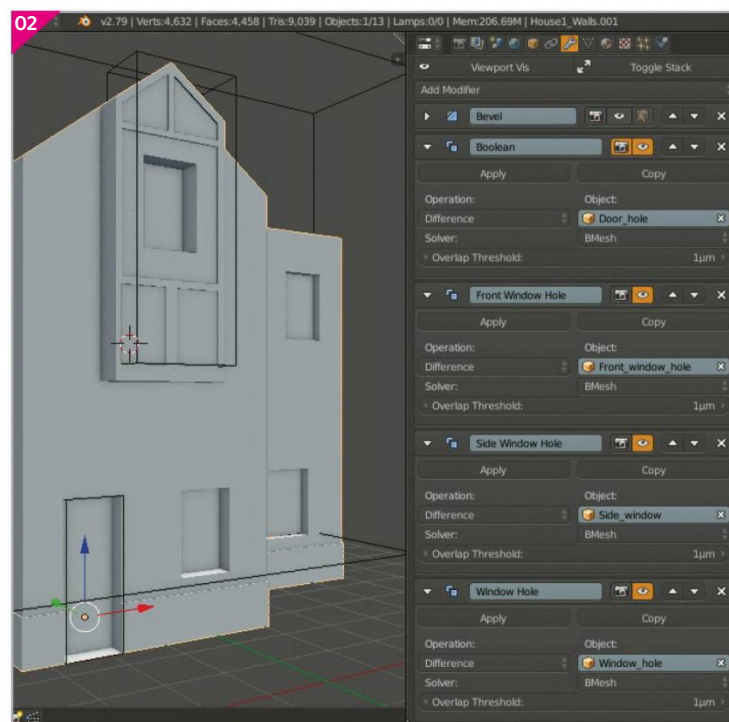
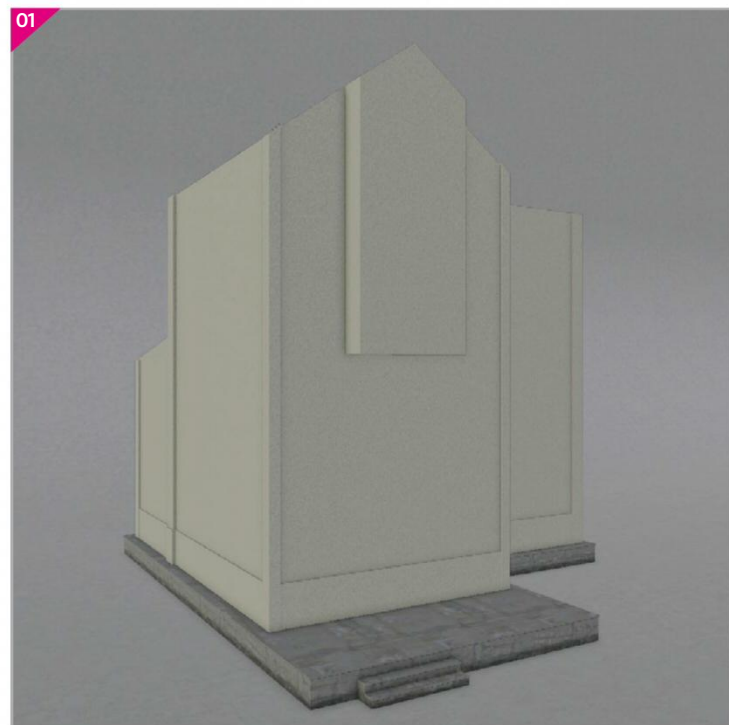
We will also cover the non-destructive way to add window holes and wood cuts.

Last, but not least, we'll look at the instances of repeated meshes which will greatly decrease your render times.

01 Basic geometry Gathering references is a very important step you need to do before you start working on the actual model. I use the awesome free software called PureRef to throw all the references in there and pick different shapes of different houses. So once we're full of references, we can open Blender and start creating just a basic geometry by extruding the default cube based on your references.

02 Model with Booleans Now that you have the basic geometry, you need to start thinking of the doors and the windows. The Boolean Modifier performs operations on meshes that are otherwise too complex to achieve with as few steps by editing meshes manually. Adding geometry and cuts to the mesh will let you open some holes for those, but it's easier and highly customisable to create those holes with Booleans.

03 Boolean modifier Let's find out how to use it by creating a new cube that will open the hole for the door and call it "door hole". Position it where the door will be placed, then, from the original mesh, you need to add a new Boolean modifier and use the "door hole" as the object and set the operation as Difference. Once you've done that for every hole you'll be ready for the next step.



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Parenting the Booleans

We are going to see further in the lesson how to instance meshes as the windows or roof tiles that repeat a lot along the model, and it's efficient to use instances to avoid going over the top with the polycount. But you can also parent an individual Boolean to each window to be even more flexible on the hole creation.

04 Modelling the windows You can start from a cube and use the Inset tool in Blender to achieve the final look of this window. As this model will be used as a part of an environment in a suburban neighbourhood, there is no need for micro details. But it's a good idea to model the little details which can be spotted from the distance due to their reaction against the light.

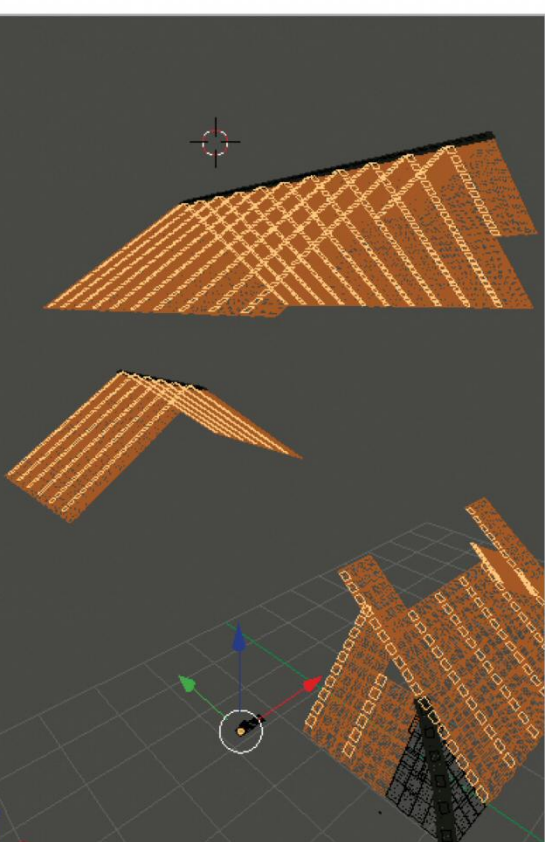
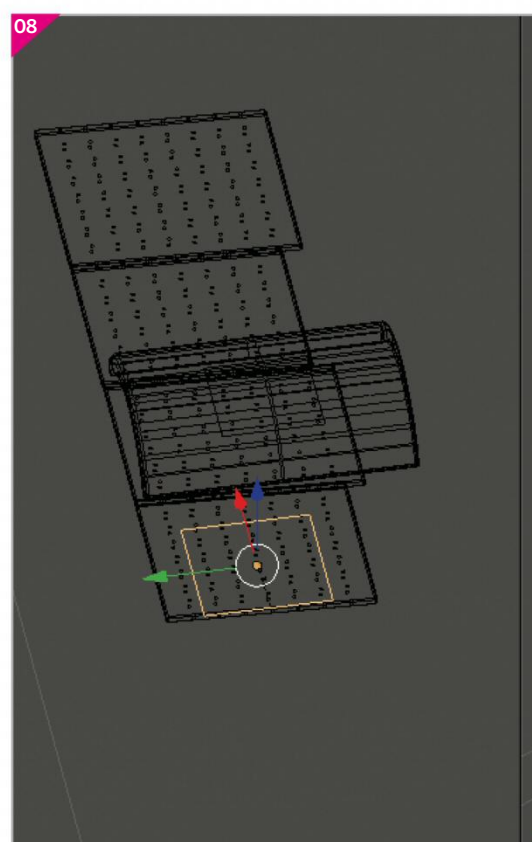
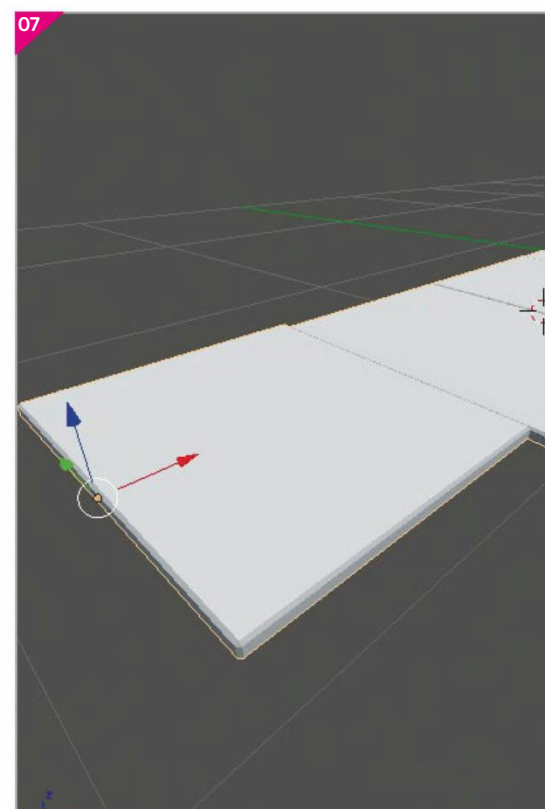
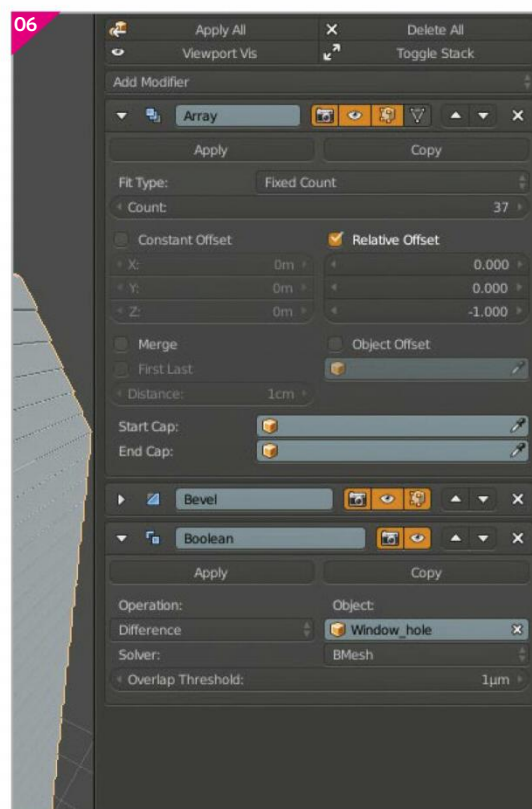
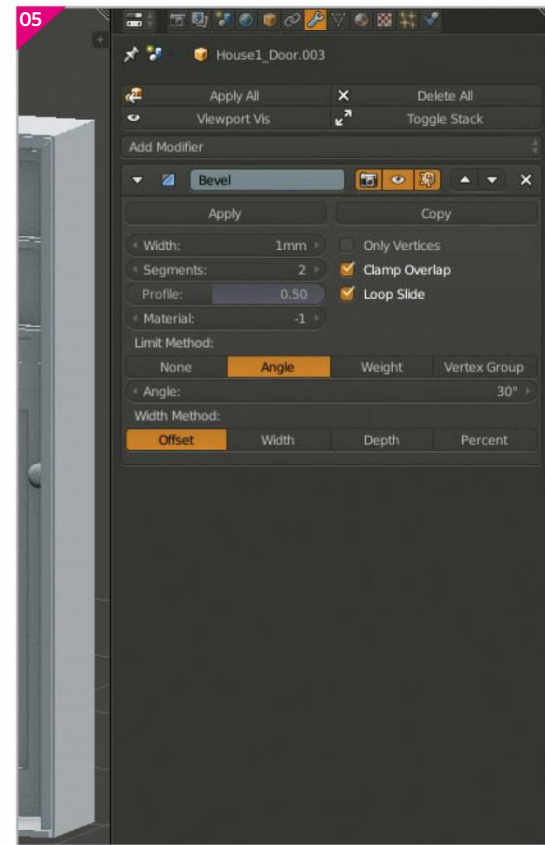
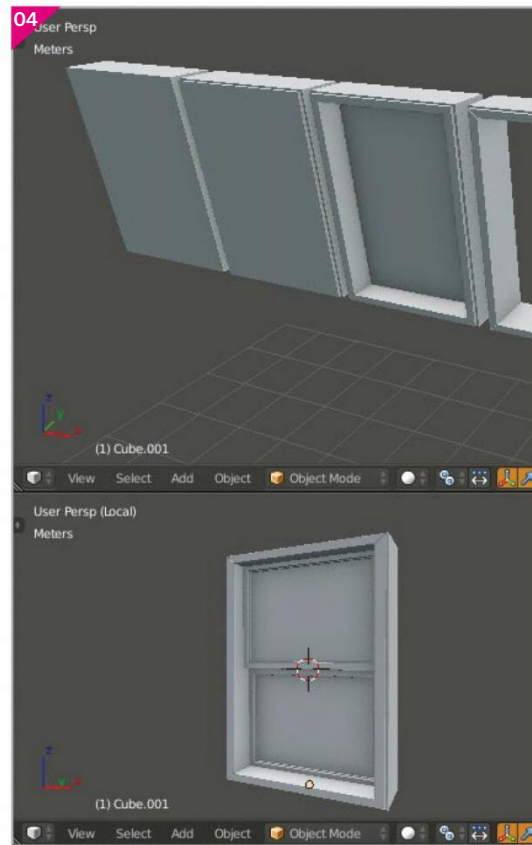
05 Modelling the door For the frame, we can use the same concept as the window frames and extrude the corners inside to present a junction effect. For the door per se, the idea is to base our model on central parts. In this model, I decided to go for a single panel door with six small glass panels in the upper part and three mouldings below the glasses: two should go inwards and one small horizontal should go outwards. The reason for these mouldings is that it makes the door more interesting because it adds light and dark edges.

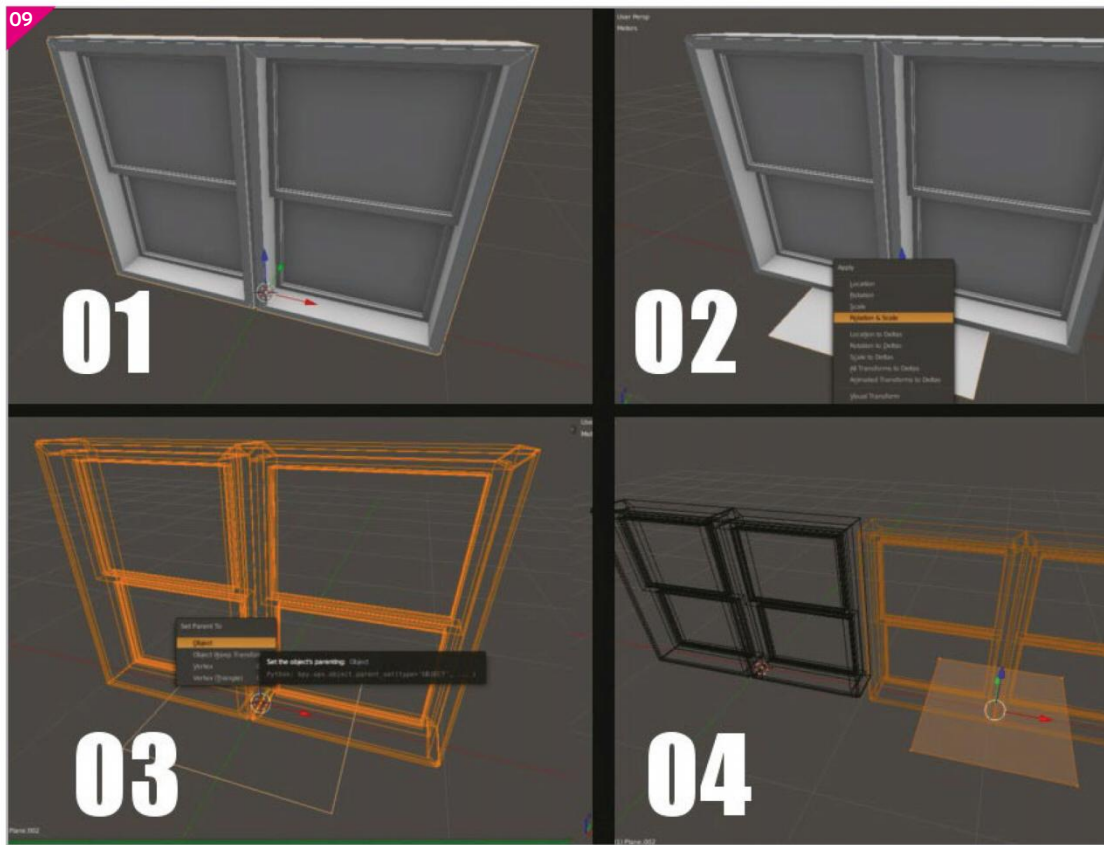
06 Wood planks There are several ways to achieve wood planks. I decided to create a single wood plank and then use the array modifier and Booleans to shape it as the front of the house. We can achieve variation in texture mode with some Camera Texture coordinates to avoid the repetition from the Array modifier.

07 Roof tiles Here, I used the same technique that we saw in the previous step but with one single but vital difference. We have to create one tile and then we have to populate the roof with instances. If you need more variation you should create more original tiles and instance those.

08 Dupli Faces According to the Blender manual, the Duplication Faces, or DupliFaces, is the capability to replicate an object on each face of a parent object. We will use this technique to duplicate a tile to fill the entire roof. But we won't duplicate the original mesh we created as a tile, we will use instances instead.

“I searched a lot of references for this project: I had to create nine different but original houses based on references from the concept artist and from images of real houses”

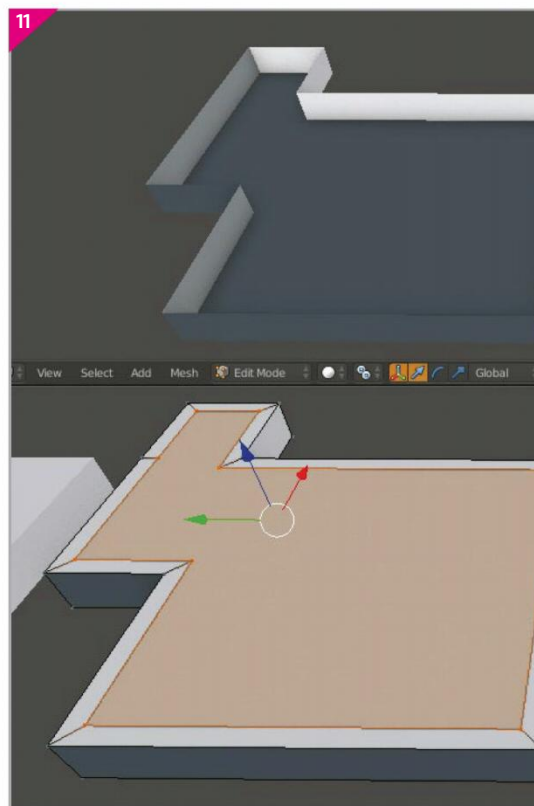




09 Instances This is a great way to optimise both the size of the model and the future memory usage when we render the complete model. In order to create the instance, we need to apply the scale, rotation and location of our original tile, locate the cursor in the same position as the tile model origin, and then add a brand new single plane. If we need to make the plane smaller than our original tile model (recommended) we need to apply the scale of our plane afterwards. Then we need to parent both models and use DupliFaces.

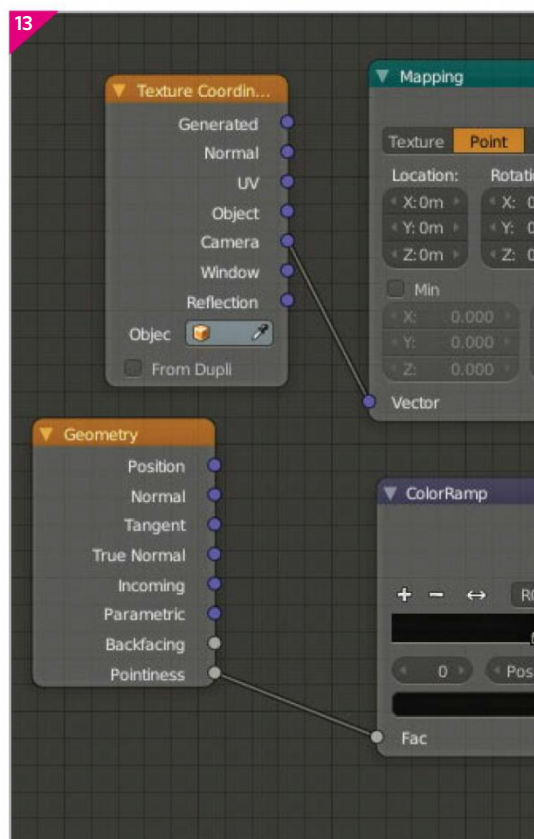
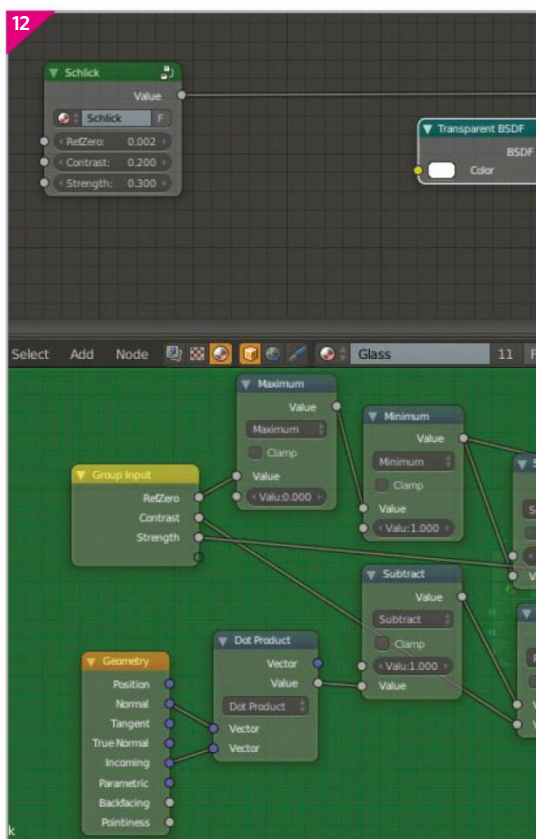
10 Porch modelling I use box modelling for my models. I searched a lot of references for this project: I had to create nine different but original houses based on references from the concept artist and from images of real houses. Then I decided to start extruding a cube to create the basic pillars, and used the Ctrl-R to repeat the last action when I was creating the small bars inside the fence.

11 Roof modelling I wanted to write about the way I model cornices. You might need to scale edges following the shape of the structure, but it often becomes complicated to scale the extrusion from the shape of the model towards the center. I found a simple way to create uniformly thick face loops — you need to create a big n-gon and then inset it towards the center, extruding it down as in this case.



12 Glass material I found that the best way to represent real glass material is mixing a Glossy BSDF shader with zero roughness and a Transparent BSDF shader. The mix shader is fed with some vector math magic where we basically use the Normal and Incoming Vectors converted to values by a dot product operation to modify the contrast of our glass.

13 Roof tiles texture with camera coordinates The roof tiles were textured based on a PBR workflow using the Camera Texture coordinates to give colour variation. There are multiple ways to texture a single tile, but I found only the camera coordinates add variation to the entire array system. This step shows the node tree focusing on that single tip.



“The mix shader is fed with some vector math magic to modify the glass”

Camera coordinate

There's a downside when you work with arrays in CG, and that's the repetition of the texture. Of course, the array will repeat the same texture of the original mesh, so that will bring down the model in terms of realism or aesthetic. The camera texture coordinate works for stills and is often used to add variation to objects with array modifiers. The idea behind this coordinate is to map the texture based on the camera forehead, and this is why you can only use it for stills because when you move the camera, the texture will move with it.



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MARTIN NEBELONG

Fantasy city, 2019

Bio

Martin Nebelong works as a freelance artist and as artistic director at MasterpieceVR. He lives in the small Scandinavian country of Denmark, but works with clients all over the world.

Software

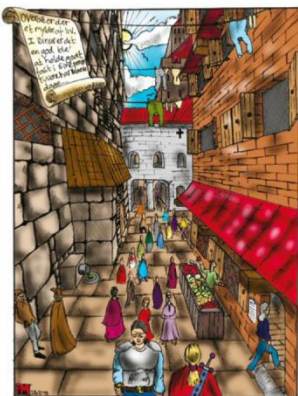
Quill, Blender 2.8

Learn how to

- Set up Quill for more precise work
- Construct a modular set of building blocks
- Build a city using modular blocks
- Export for further work outside of VR
- Import and setup the scene in Blender and EEVEE

Concept

I didn't have a concept for the scene, but here's a drawing I did back in 98, which might have paved the way for this artwork... Luckily my skills have improved since then!



Build a fantasy city in Quill

I wanted to keep the style of the image very clean and simple, especially during the initial VR creation phase

In the first part of this tutorial you'll be shown the most important steps of creating a detailed, architectural scene in Quill on an Oculus Rift headset. Quill is officially Oculus VR only, but can also be used through "Revive" on a Vive headset.

The main thing you should take away from this walkthrough of the Quill process, is how to draw precise, controlled shapes, and how to move elements around using angle snapping and constraints.

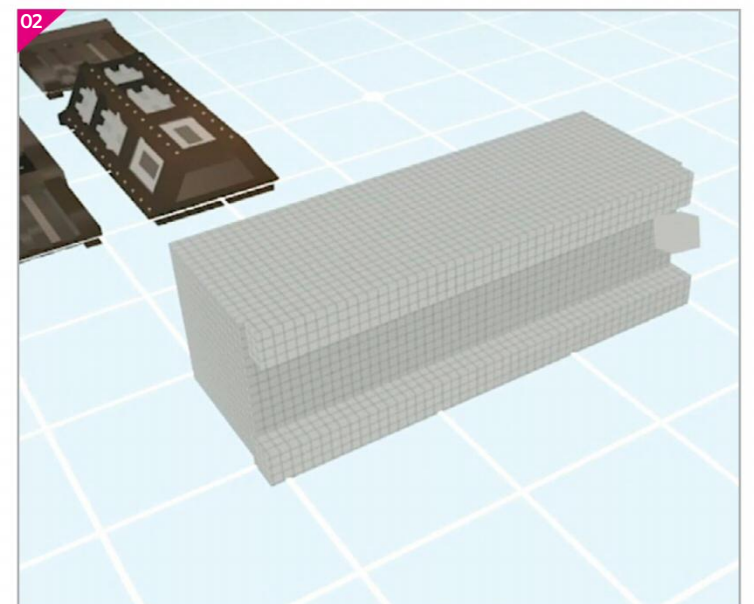
The second part of the tutorial will outline how to take the scene from VR, and set it up in Blender 2.8 and Blender's new real-time renderer, EEVEE. We'll also briefly go over how to set up shaders for the elements from Quill, to use the vertex colours that come with the models we export from there. And we'll talk about the node system in the shader editor in Blender, and about how you can tweak your materials further there.

01 Understanding how Quill works Before you dive into making a scene in Quill, it's important that you understand how Quill works under the hood. When you draw in Quill, you're basically dragging out or extruding low-poly geometric shapes. These are very well suited for export and refinement outside of VR in any major 3D package. This is, if you keep the number of strokes in your scene at a reasonable level. Quill can handle a very large amount of detail, which other programs might struggle with! Plan your strokes and use as little strokes as possible to construct your shapes, without compromising the quality of your work.

02 Set up Quill for precision When making architectural elements, it's imperative that you get acquainted with the various ways of working more precisely in Quill. The most obvious tool to start out with is the Line tool. That can be combined with any of the brush shapes in Quill, but it isn't much use without a way of snapping strokes to certain angles. Fear not, by holding down the left trigger while drawing, the line snaps to a horizontal or vertical orientation. Toggle the "brush grid" helper that you find under the tool category of your tool palette. Right next to this, you'll find the floor grid which I recommend using as a guide.

03 The line tool A good way for us to get comfortable with using the Line tool and the angle snapping, is to begin making our first modular piece for the city scene. Ensure the floor grid is turned on and select the Line tool and the Ribbon brush. Choose a brush size that corresponds to a size of 2x2 grid squares. Hold down the left trigger and draw in a flat plane like the one in the

example. Choose a smaller brush size and fitting colour, and then draw in a few stones in the wall for a bit of variation. Make sure that you hold down the left-hand trigger while drawing.



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Quill alternative

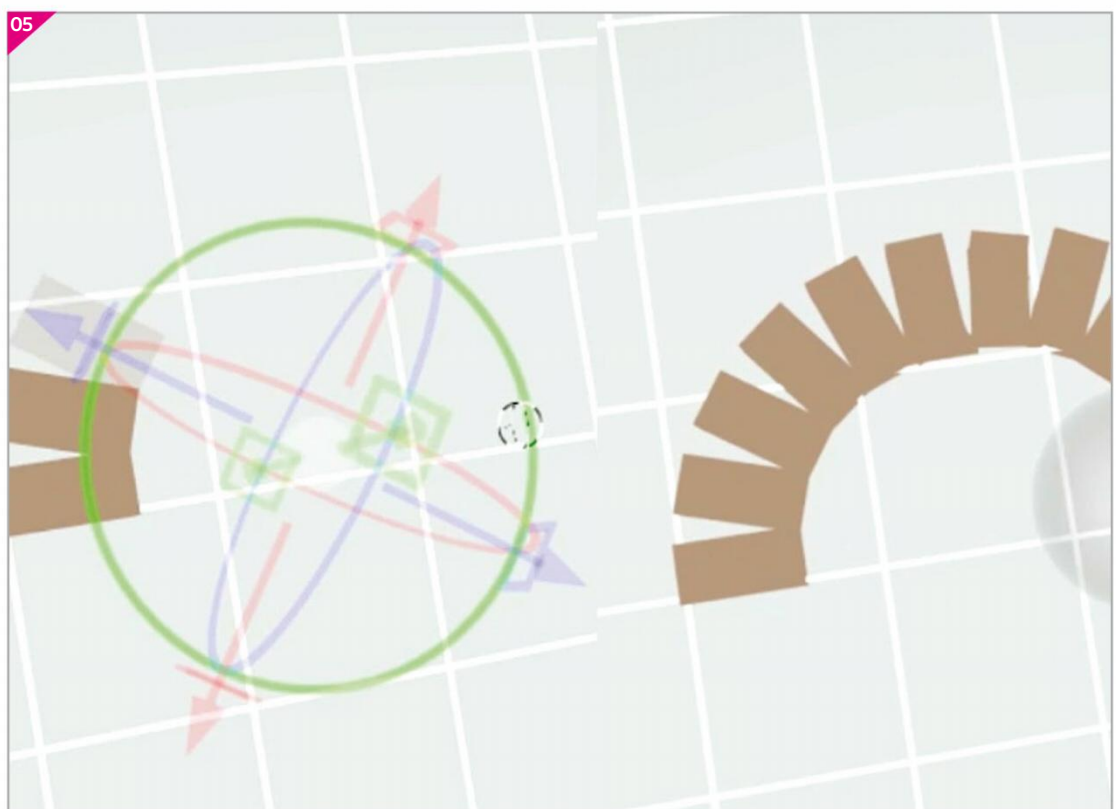
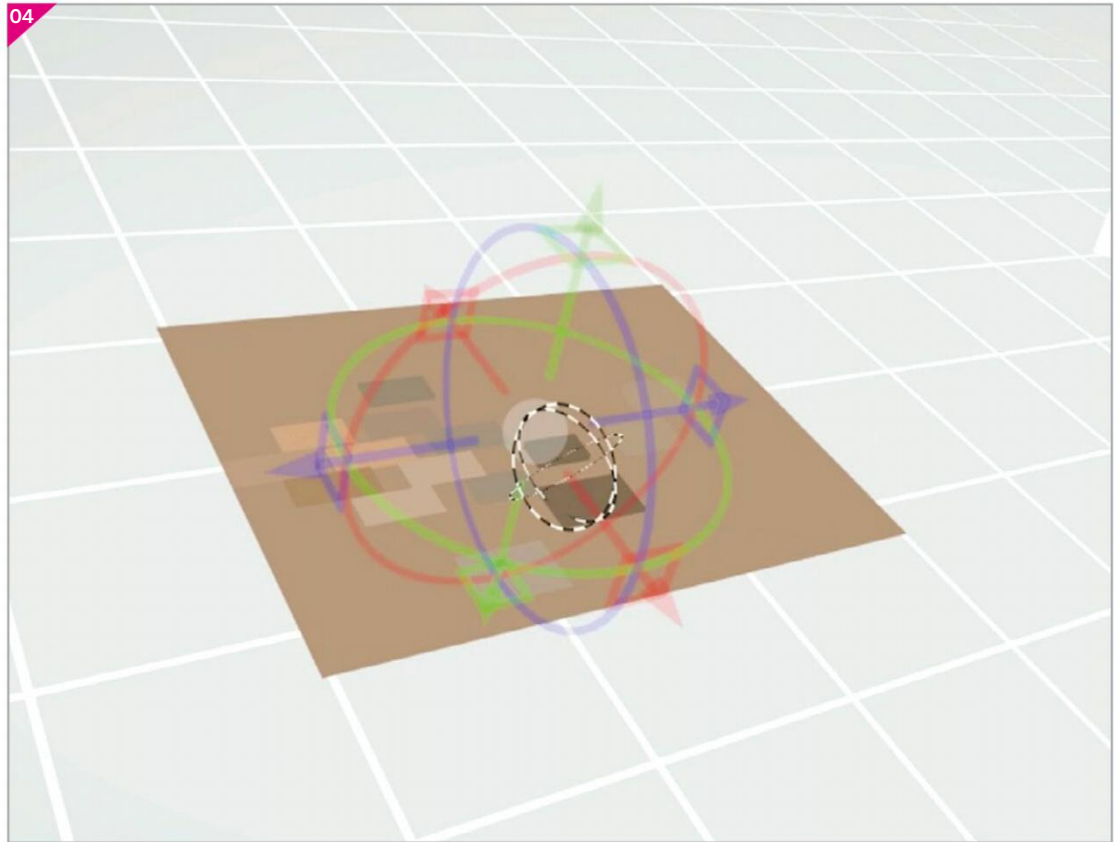
If you don't have an Oculus headset, or if you don't like working in Quill, I highly recommend that you check out AnimVR which in a lot of ways bears resemblance to Quill. Quill is superior when it comes to drawing with precision, but AnimVR excels in a more versatile timeline and better export options overall. So for larger animation projects consider working with AnimVR which among a lot of other compelling features, offer 360 video export. The development of AnimVR has slowed to a halt recently though (hopefully temporarily), since the developers of it has been helping Media Molecule with their PS4 game engine "Dreams".

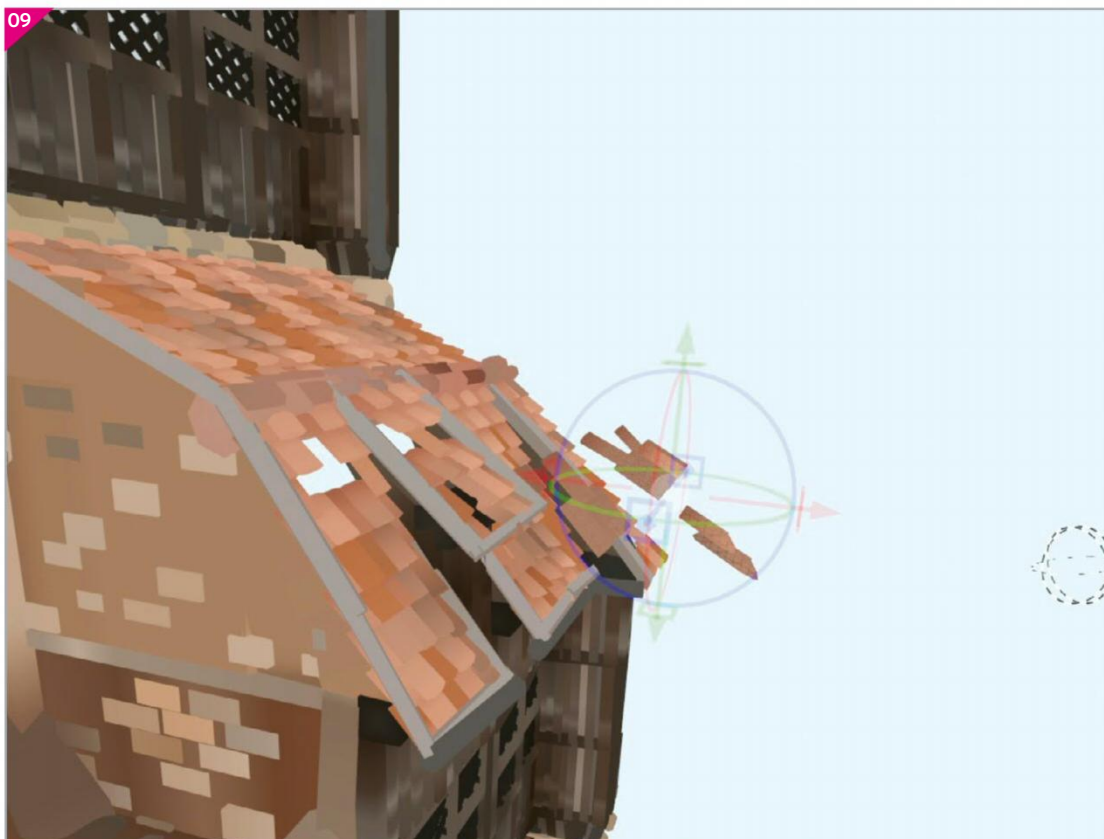
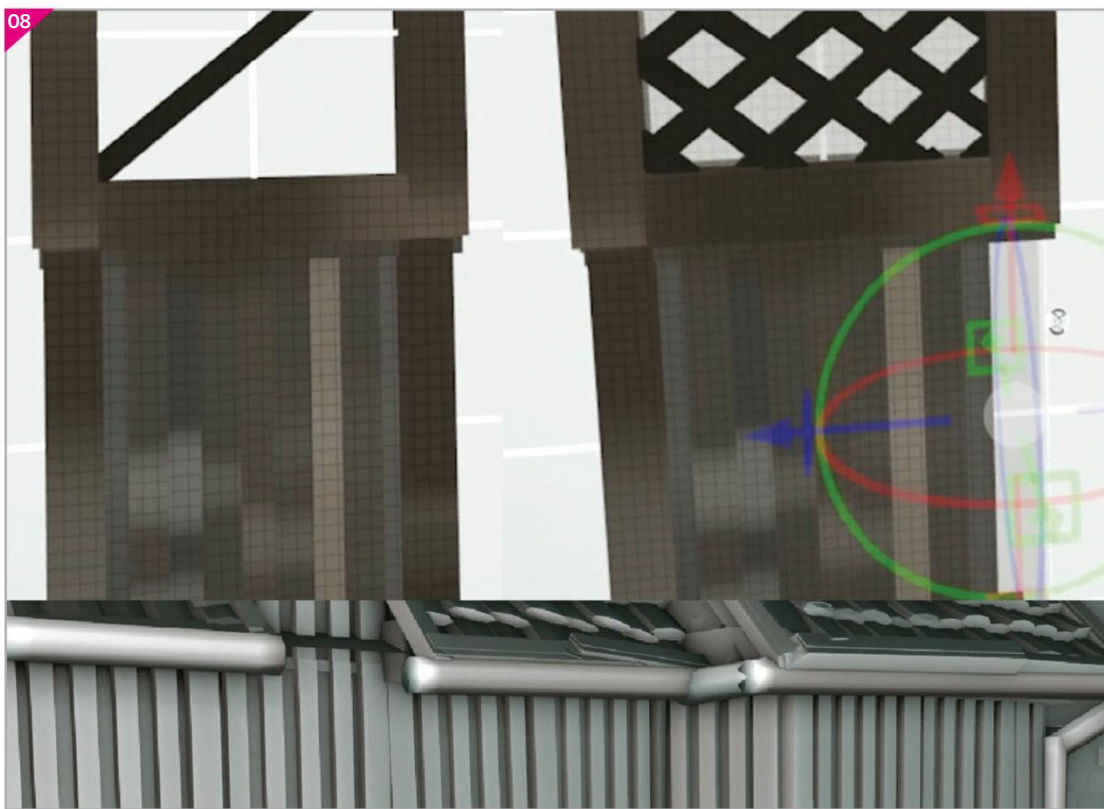
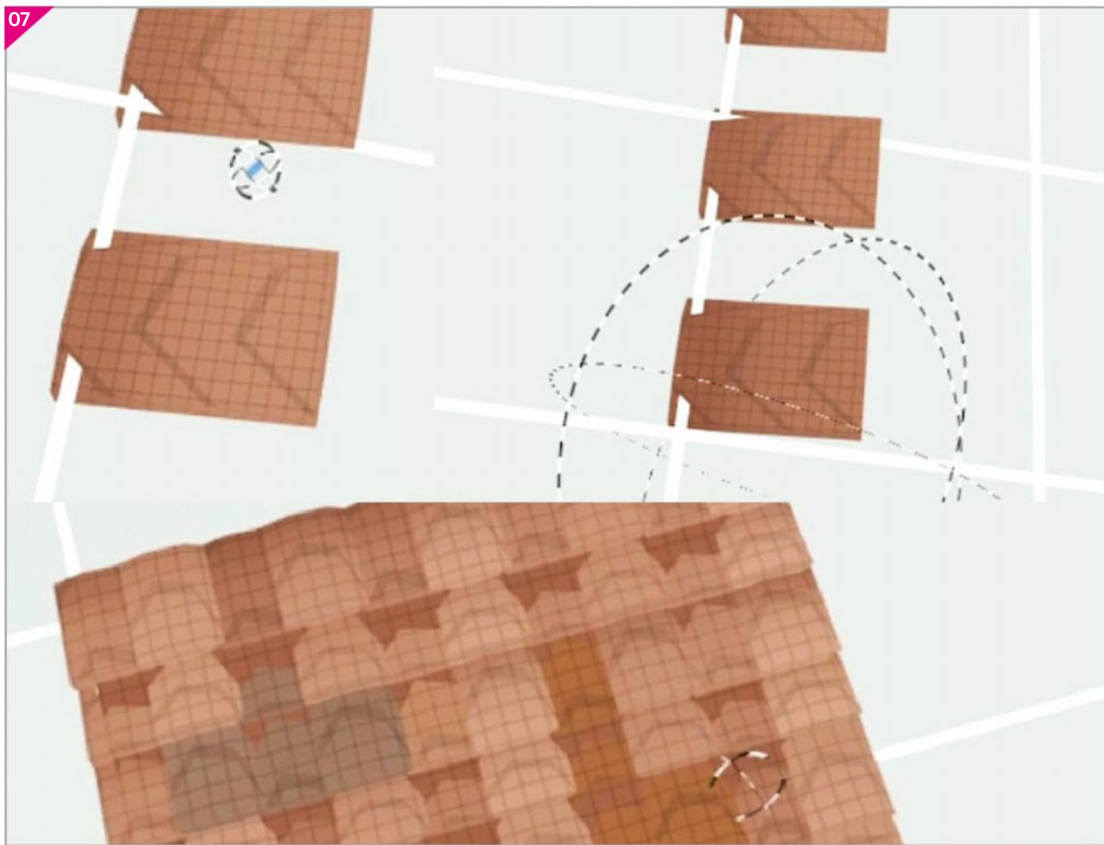
04 Reposition using the Gizmo You'll most likely need to precisely reposition elements at some point in this early stage of the scene construction, and the easiest way to do this is by using the transform Gizmo in Quill. You do this by making a selection with the "A" button on your right-hand, and then pressing the left-hand thumb stick into the controller until you feel a click. By then hovering over the arrows or the circles of the Gizmo, and dragging with the grip-button on your right hand, you'll constrain the movement to the direction or angle you hover over. The Transform Gizmo is a powerful tool and we'll be going into more detail about that later in the tutorial.

05 Make an arch Speaking of the Transform Gizmo, let's see what else you can use it for! To make an arch of bricks that you can use over a door for example, draw a brick using the Line tool and the cube brush, then select that brick. Offset the pivot point of the selection by holding down the right trigger, while dragging on the relevant axis of the Gizmo. As you can see in the example, we drag the pivot point away from the brick, and then rotate/clone the brick by holding down the left-hand trigger while we grip button drag on the rotation axis - to rotate in increments, use the trigger button instead of the grip button. Once the brick is in the right position, we push right on the left-hand thumb stick, to repeat the action.

06 Finish the arch To finish off the arch module, we select a few of the blocks and add some colour variation to them. You can switch Blending modes for the colour, just as you're used to in Photoshop. You won't be able to paint colours like you'd expect, but instead Quill applies colour along the mesh you drew originally. So, you must plan your strokes in Quill according to what way you want your colour to flow, so to speak. We'll also add a "frame" around the arch, so that it'll fit well together with the other blocks. This frame is made using the cube brush, angle constraint and Line tool. Here's an example of what can be done with this simple technique.

“ You'll most likely need to precisely reposition elements at some point in this early stage ”





“It’s a good idea to start small in Quill, and then gradually increase the complexity of your scenes. Once you’re comfortable with drawing in Quill, you can start experimenting with animation too”

07 Roof tiles To make a roof tile module, we’ll use the brush type called “ellipse brush”. Draw the first tile and constrain it to the horizontal plane by holding down the left trigger while drawing. After that, use the Gizmo to rotate the tile slightly so the bottom of it is raised a bit and will lay on top of subsequent clones. Drag a clone of to the side, and push right on your left thumbstick to repeat the Transform and Clone action. Do this multiple times, until the bricks piece take up enough floor grid squares. Then select all of these, and copy them until you have a full modular roof piece.

08 Windows Next up we need to build a window module along with some surrounding tree walls. The wall and window frame are built using the Line tool and the cube brush, and we change the colour a bit as we go along to add some variation. The window glass should be on its own layer, and you can add a new layer either through the layer menu or by pushing up on the right hand thumb stick while the tool palette is closed. The reason for this is that we can then give the glass its own material in blender. Generally, you should try and divide your scene into layers for different material groups.

09 Master selections Once our scene starts to take shape, an important tool to master is the Selection tool. We’ll use this to go in and move stones around in walls, to colour individual roof tiles and to generally just help us avoid a repetitive look. To toggle the Selection tool hit the X button on your left hand. By default, the Selection tool only selects from your current layer, but this can be changed under the tool options. To add to your selection, hold the left trigger halfway down, and select with the main trigger. To subtract, hold the left trigger all the way down, and use the main trigger to subtract.

Stick with it

For the first time after getting my VR headset, I didn’t use Quill much, but instead used Oculus Medium. Quill felt difficult to get started with, and Medium was initially more compelling to me. Luckily, I didn’t give up on Quill, mostly because of the great work I was seeing other artists do with it. It’s a good idea to start small in Quill, and then gradually increase the complexity of your scenes. Once you’re comfortable with drawing in Quill, you can start experimenting with animation too.

“If you don't feel like using Blender for your scene, the exports from Quill luckily work well in a lot of other programs too. Even Unity can handle both files and animation from Quill”

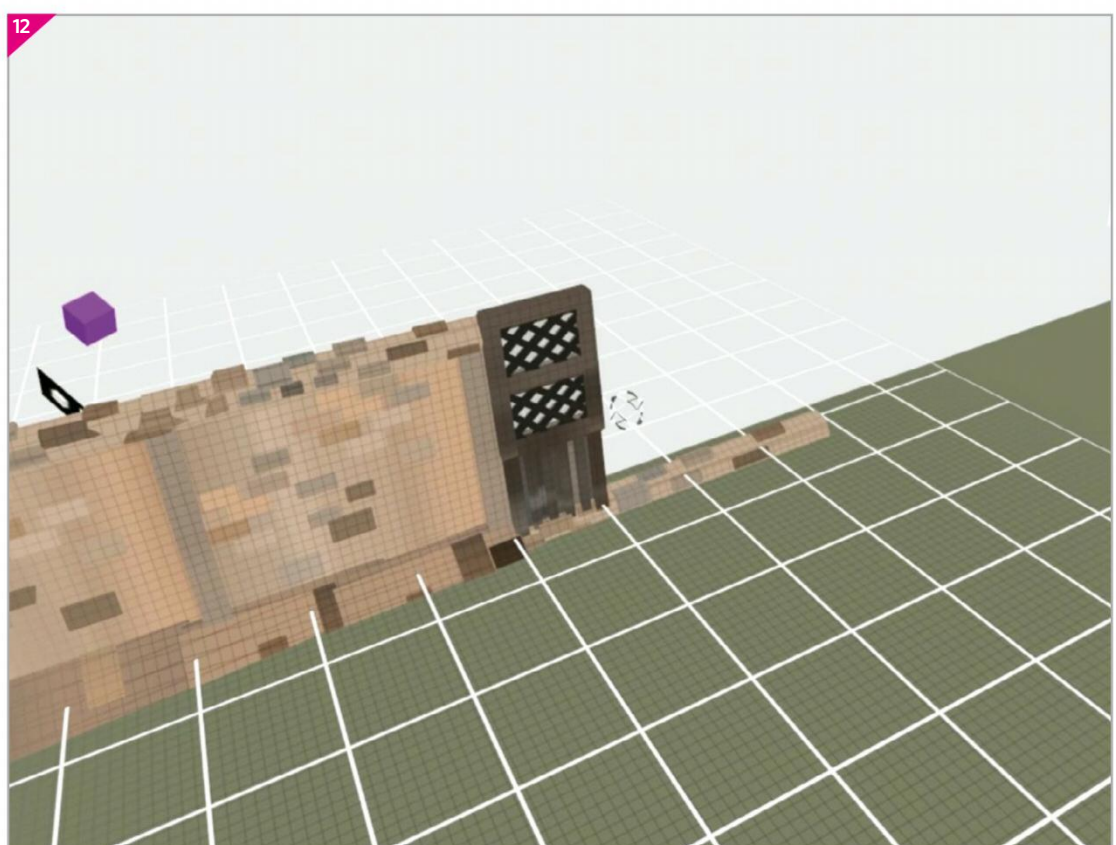
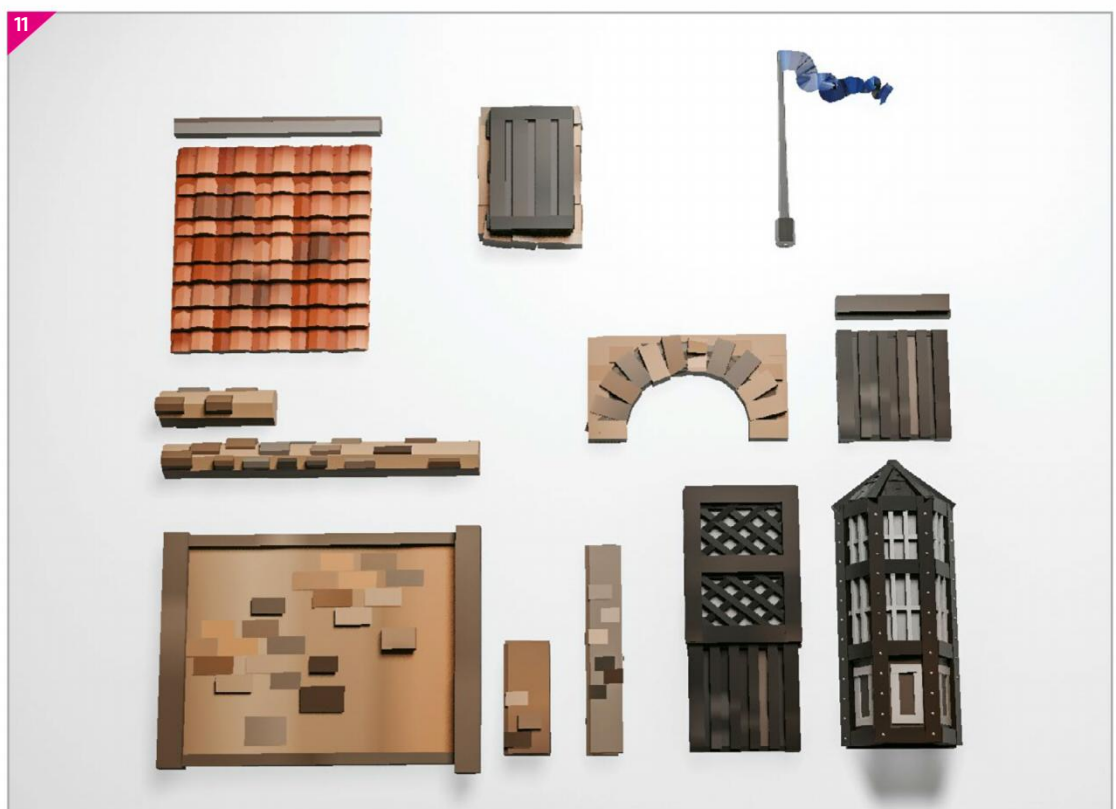
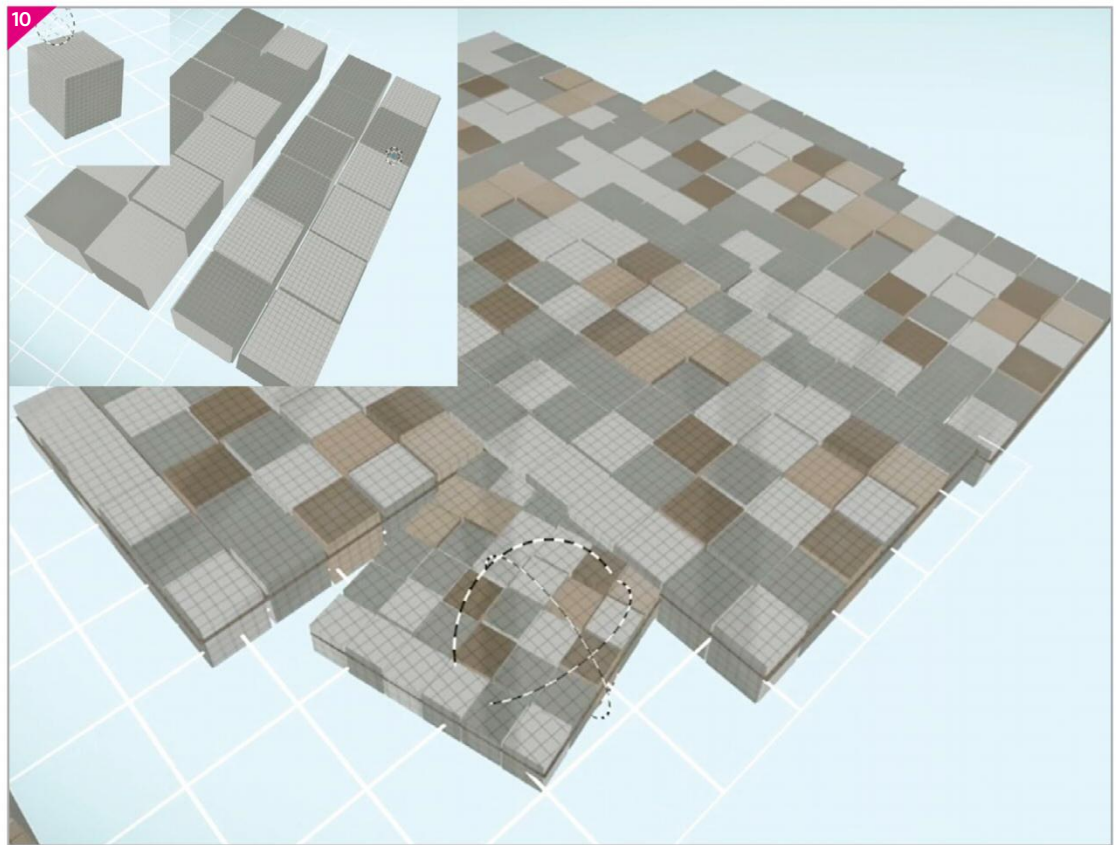
10 Thoughts on cloning As you've already seen, cloning in Quill is a very powerful and useful feature. It can greatly speed up the way you're creating scenes, and it's intuitive and quick to use once you get the hang of it. You can select elements across multiple layers, so in the example with the windows above, you can set your Selection tool to select from all layers, and then select both window frame and glass. Hold down the left hand trigger and drag with the right-hand grip button to clone from both layers. Remember that you can move the pivot point of your selection before cloning if you need to clone/rotate around something else than your selection centre.

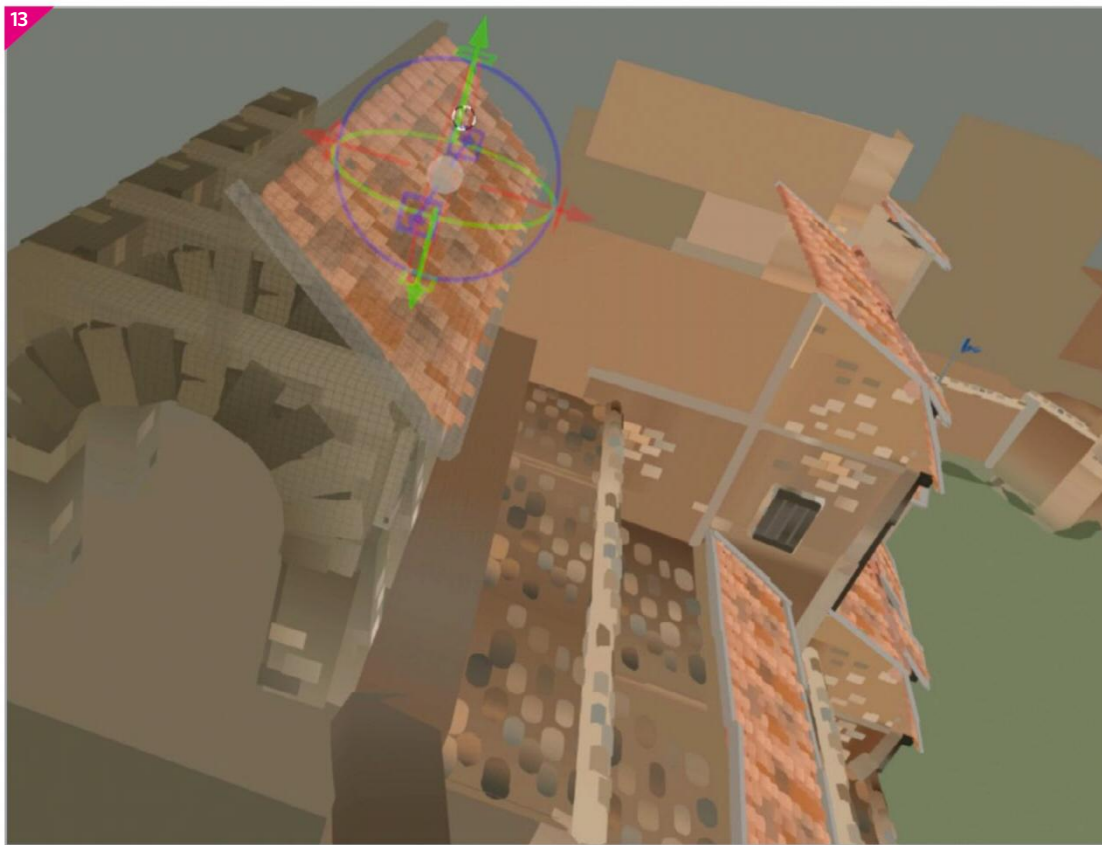
11 Global multipliers One more useful trick - on the Yeti Shape Node you can find two sets of global multipliers: viewport and render density/length/width. They are very useful to increase the density of fibres in rendering, but keep the viewport light - or to increase the width in the viewport, just to see the result better, without affecting the final result. You can also disable the calculation of Yeti in the viewport by turning off Display Output, or hide all of them by disabling Plugin Shapes in the viewport Show menu.

12 Build the scene Now that the building blocks are completed, it's just a matter of picking, moving, and cloning objects. The Gizmo tool certainly comes in handy here, so make sure it's turned on and use it both for moving and rotating objects. You can always go in after the fact and add a little bit of random rotation and movement to the element you cloned. We start out by building a piece of wall, and we add a flat surface, that will serve as a river running through the city. We make sure to keep the river on a layer for itself, as we know we will want a unique material for this surface.

Blender alternatives

If you don't feel like using Blender for your scene, the exports from Quill luckily work well in a lot of other programs too. Even Unity can handle both files and animation from Quill, and I've seen some great examples of using Quill to quickly build assets for games. I've also seen it put to great use in Maya and have played with Quill files in Cinema 4D myself. For scenes without animation, I highly recommend Marmoset Toolbag which might be just about the easiest way to make your Quill scenes look good outside of VR.





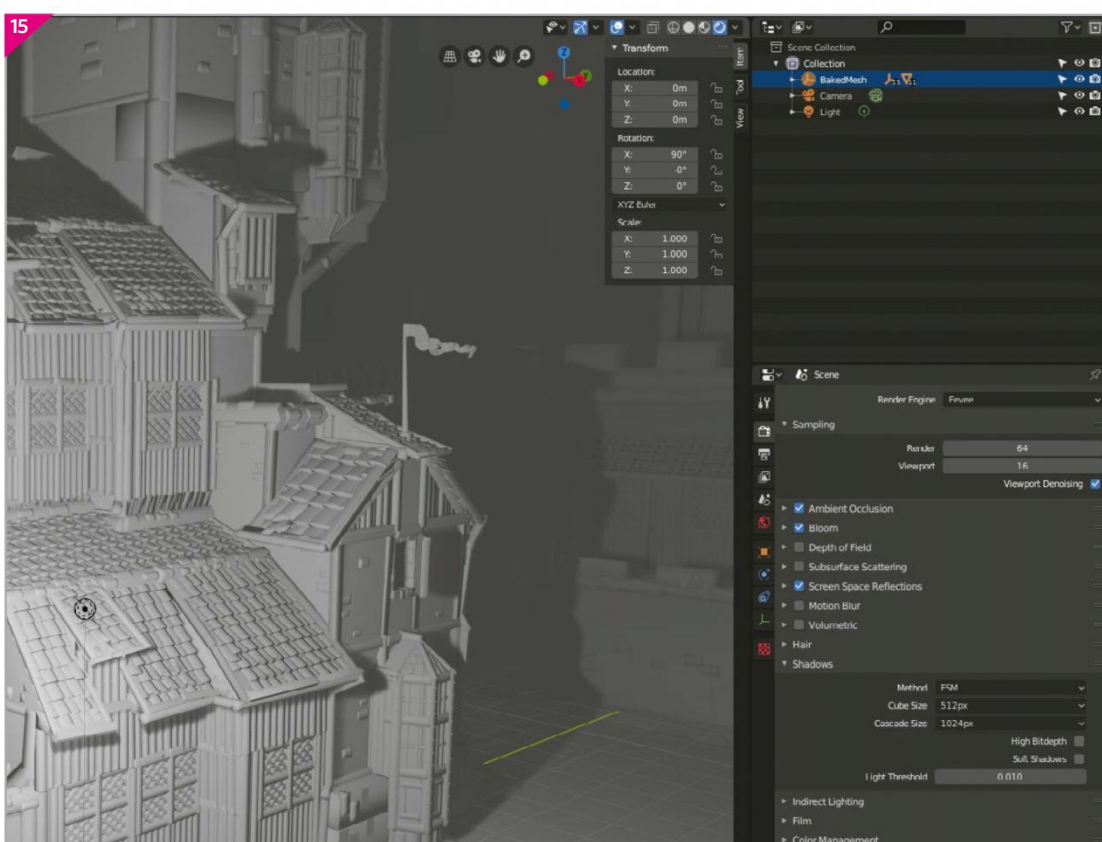
The power of nodes!

Now that you know how to get objects over from Quill, its time to experiment! Try to hit Shift+A and search for "texture coordinate", link the "object" tag from this to the vector input of a "noise" texture. Link the "color" tag of the noise texture to the "fac" input of a "color ramp", and finally the "color" tag of the color ramp to the roughness input of your Principled BSDF shader. Tweak the noise size and color ramp settings, until you get a result you like. Here I've used it for the water, and also linked the color ramp output to a bump node that was then linked to the normal input tag.



13 Detail As the scene is taking shape we should constantly try and shake things up by adding in combination of modular pieces and custom-built elements. In this example, a walkway with a combination of the arches from the earlier step, a flight of stairs and various strokes that combine the elements. I also tweak the colour of the archway and the new strokes, to make it look more unique. I also add a new layer and paint in some landscape elements to break up the hard look of the scene. Painting like this in VR is a lot of fun once you get over the initial learning curve.

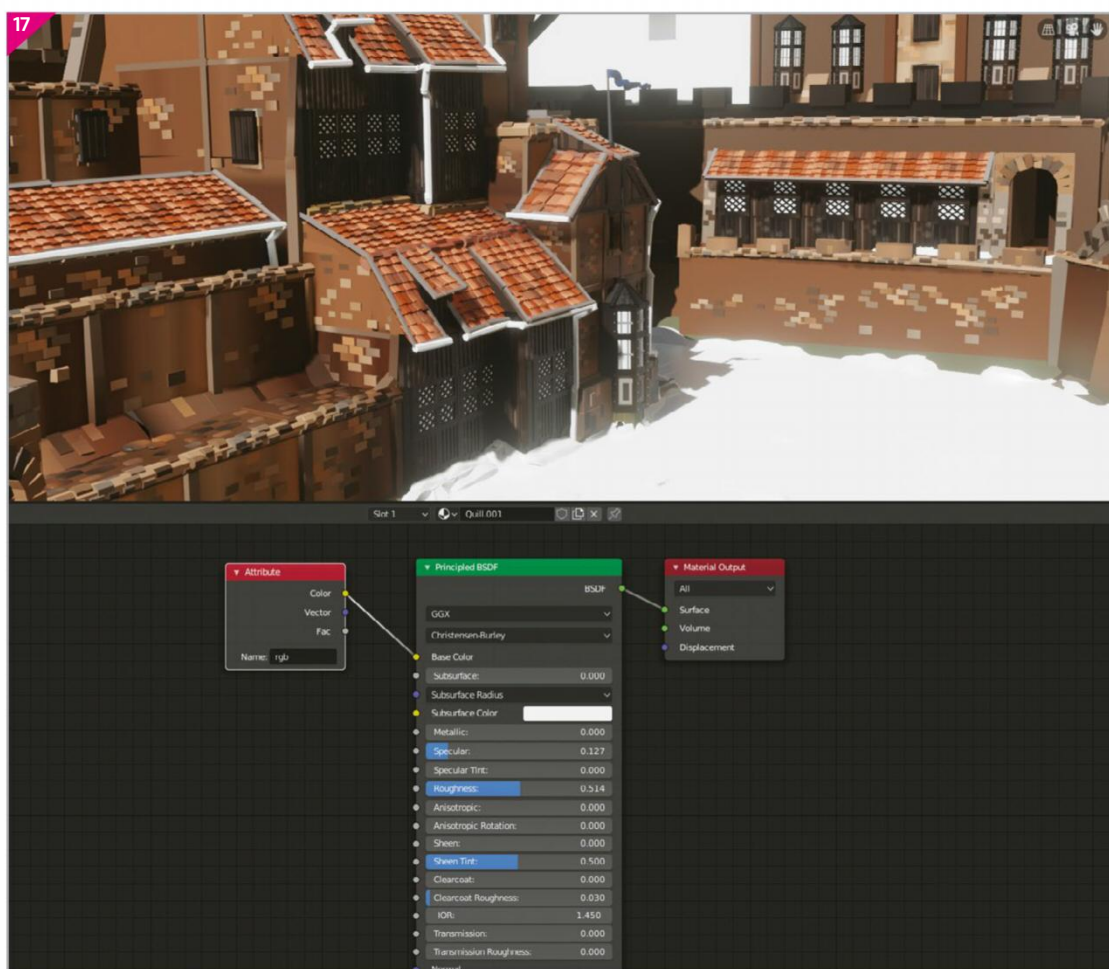
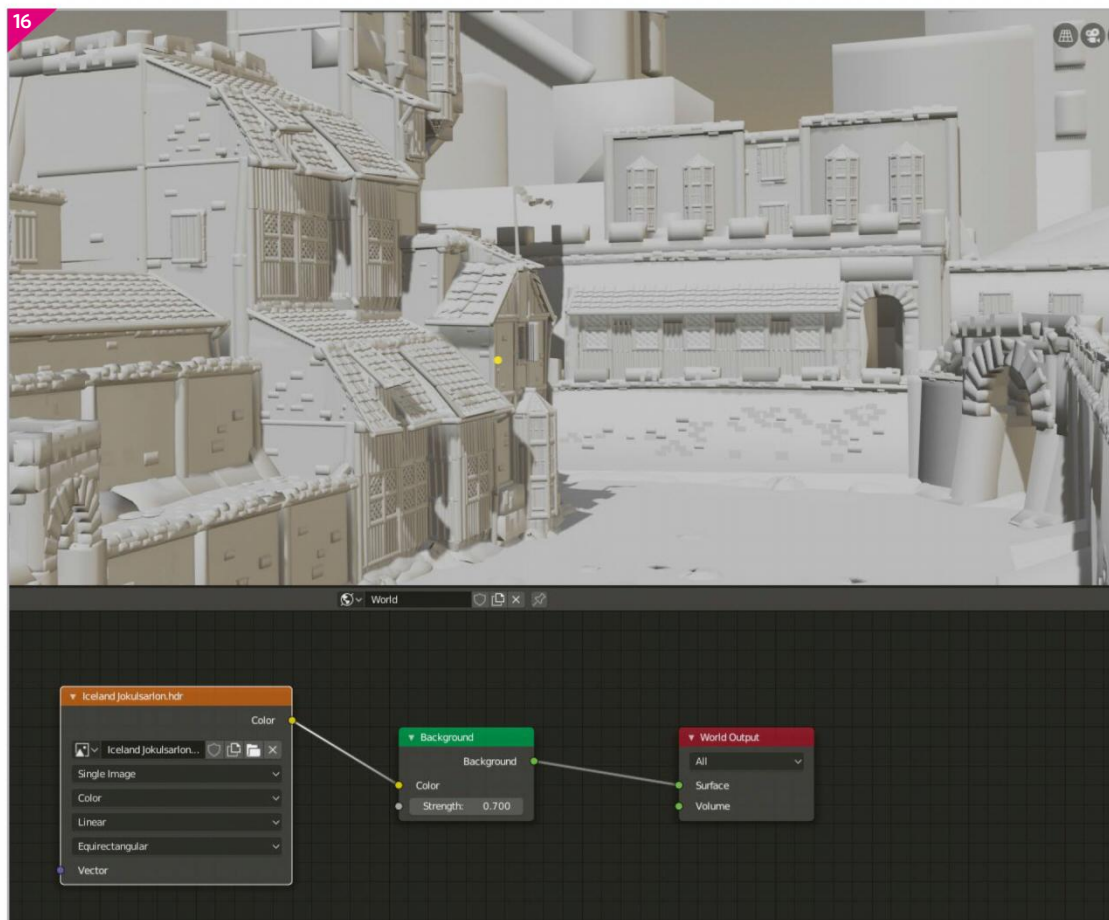
14 Finish up the scene The construction of the rest of the scene is basically the same process of cloning, transformer, tweaking and recolouring. Using this, we manage to get a few building blocks to look like many. If you find that detail levels and polygon counts on your exports become a problem, use the Optimize tool in the tool palette to optimize your scene before exporting it. Time has come to export the scene, and we do this from the file menu in Quill. We chose "Alembic" as the export format.



15 Import to Blender Let's fire up Blender 2.8 and import our scene from the import alembic dialog in Blender. Leave the settings at default here. If your scene is too small, expand the "item" tap in the upper right corner of your viewport and scale through "size". Switch to the "Render preview" display mode in the upper right corner of your viewport and then open the "render" tab in the lower right part of your screen. Make sure Eevee is selected here. Turn on "ambient occlusion" and "screen space reflection". If you ever have trouble with imports from Quill having flipped normals, make sure "Backface culling" is turned off in the viewport shading tab (right corner of your 3D viewport).

“The construction of the rest of the scene is basically the same process of cloning, transformer, tweaking and recolouring. Using this, we manage to get a few building blocks to look like many”

16 Lights and environment By default, you'll have a point light in your scene collection. Select this, and open the light tab in the list below the layer stack. Switch your light from "pointlight" to "sunlight". Enable "contact shadows". Tweak the strength of the light. Let's add a HDRI map to the scene. Click the little clock symbol in the lower left part of your screen and switch from "timeline" to "shader editor". Switch from "object" to "world". Click add/texture/environment texture and locate the HDRI you want to use. Find a free one on Google if you don't have any. Link the HDRI color to the background node.



17 Set up the vertex colour shader Now to get the color from our Quill file to show in the scene, select a scene element, switch from "world" to "object" in the shader editor. Click "New". Now click add/input/attribute and type "rgb" in the "Name" tag. Link this nodes color output to the color input of the BSDF shader. And voila, we now have colour in the scene. Do the same for all elements, reuse or make new materials as you see fit. Tweak the "specular", "roughness" and "metallic" properties of the principled shader if you find that the materials look too reflective.

Showcase

Martin Nebelong

Martin is a freelance illustrator and part time artistic director at MasterpieceVR. For the last few years, he has spent enough time in VR, to be among the forefront of a new breed of artists who create art in this new medium. When he is not in VR, he is probably building LEGO with his two kids.



A galaxy of imagination, 2018

MasterpieceVR, Substance Painter, Marmoset Toolbag
I made this image as part of my work for MasterpieceVR. All the elements was sculpted in that program on a Oculus Rift, then textured and rendered outside of VR.



The Museum, 2018

Maya, Arnold, Nuke

This image was made for a tutorial in 3D World magazine and the model itself was built from the ground up in VR. Texturing and rendering was done outside of VR.



Calm scenery, 2019

Maya, Arnold, Nuke

This image was created from the comfort of my couch, using nothing but a PS4, move controllers and "Dreams".

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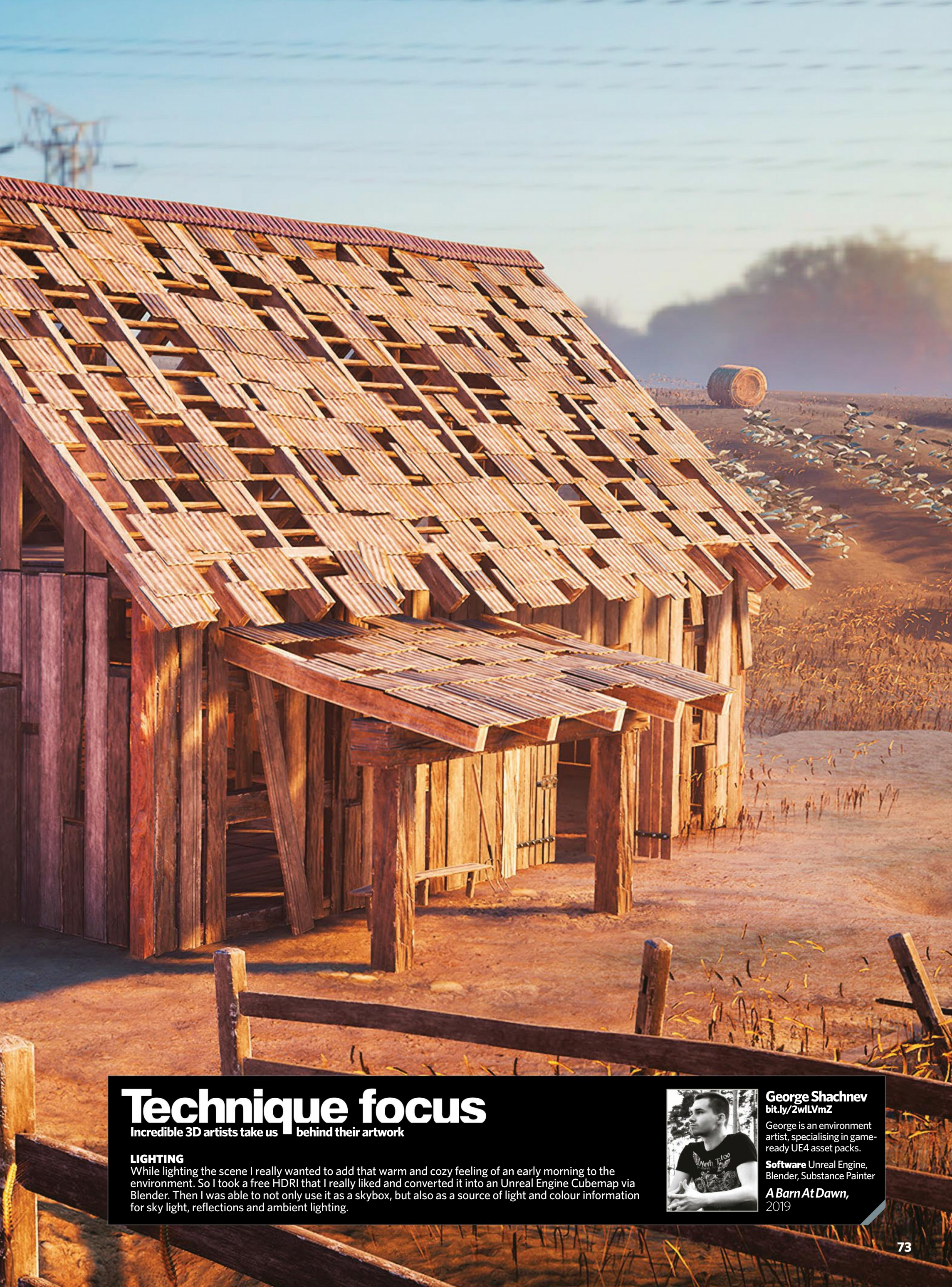
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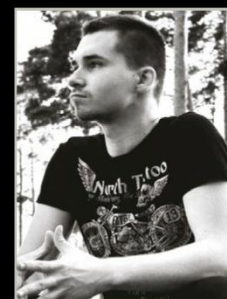


Technique focus

Incredible 3D artists take us behind their artwork

LIGHTING

While lighting the scene I really wanted to add that warm and cozy feeling of an early morning to the environment. So I took a free HDRI that I really liked and converted it into an Unreal Engine Cubemap via Blender. Then I was able to not only use it as a skybox, but also as a source of light and colour information for sky light, reflections and ambient lighting.



George Shachnev
bit.ly/2wllVmZ

George is an environment artist, specialising in game-ready UE4 asset packs.

Software Unreal Engine, Blender, Substance Painter

A Barn At Dawn,
2019



LUCAS FALCÃO
blog.lucasfalcao.com

Bio

Lucas is a 3D character artist based in Porto Alegre, Brazil. He works as a full-time freelancer doing character modelling, UVs and blend shapes for 3D animations.

BLENDER, SUBSTANCE PAINTER

Fast and delicious pizza with Blender

In this tutorial I will break down the workflow I used to create my image 'Bee'. We will talk about the techniques I've been using in my daily life as a freelance 3D character artist using Blender 2.8 Beta and Substance Painter. 'Bee' is a personal work that I've created and it came to my mind after being inspired by two things I really like: fixed-gear bicycles and vegan pizza.

Through this tutorial I'm going to talk a little about the process I used to create this image, step by step, and will provide some tips that I've learned in the process. First we will talk about how to block a character using simple form and create a very simple rig to make an interesting pose. As we go forward I will discuss how I've sculpted the character and what tools I've used to help me on the retopology, sharing some techniques.

Next we will take a look at how to prepare the model for import in Substance Painter and what workflow setup we should use so all the maps exported work as expected in Cycles. Lastly, we are going to see what features I used for the skin material, how to use Curve Guides to control the hair comb, what lighting setup was used and finally how to put together all the render layers.

01 Block out main shapes The goal of this first step is to block out the main shapes using primitive meshes (I like to use poly spheres) and make the character's pose. Keep things low poly for easy tweaking, and start building a basic anatomy with the primitives to visualise the structure of the character. You can enter into the Sculpt mode and adjust the silhouette with the Grab brush. After we have everything in place we can parent the parts hierarchically and make a 'rig'. My goal for the pose was to express speed and motion, so I used more diagonal lines on the character's body.

02 Start sculpting After we are satisfied with the pose we can start to Boolean the parts, and for that I used the add-on BoolTool - just select the parts you want and click union. Now we can enter into Sculpt mode and start using DynTope for sculpting the details. I like to use the Constant Detail and Subdivide Collapse options. I prefer to manually set up the brush resolution, and you can also use the picker to pick the resolution from parts of the mesh. The upper parts of the body I did symmetrically and for the legs I kept a separate mesh.

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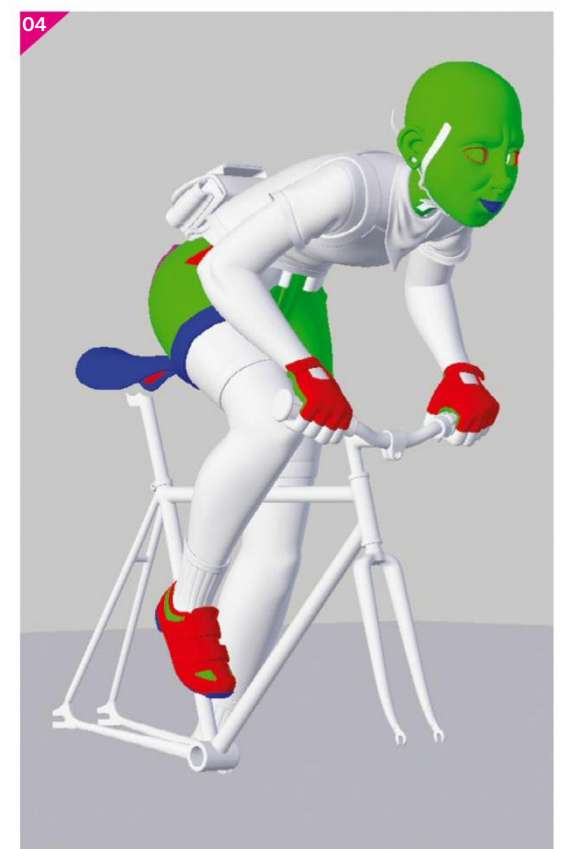
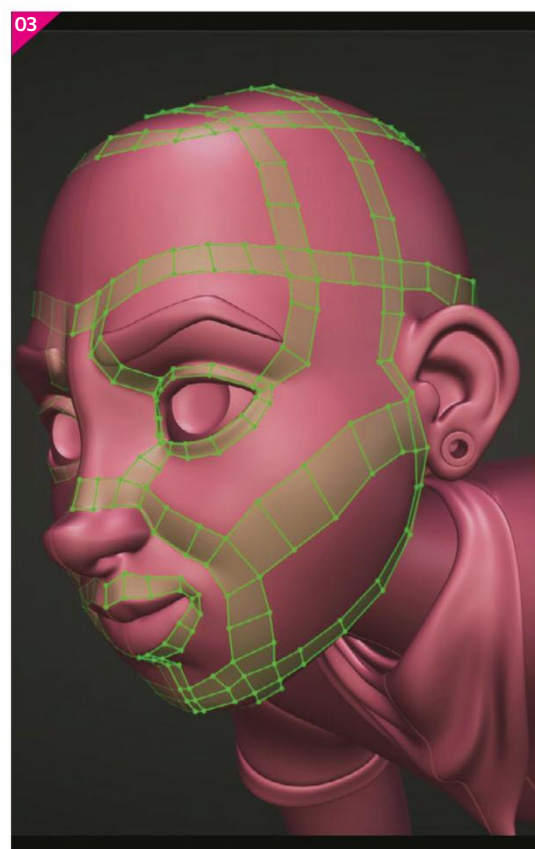
• Tutorial screenshots



03 Retopologise When we have enough details we can start the retopology. A lot of the parts I just did with normal poly modelling, but the body and clothes I sculpted using Dyntopo, so the mesh was pretty messy. To help me in this task I always use RetopoFlow, a paid add-on for Blender featuring a lot of tools that make retopology much more enjoyable. I like to define the main loops with PolyStrips and PolyPen to build more complex parts like the nose, ears and hands. Try to work with big polygons to cover big areas and then add details as needed.

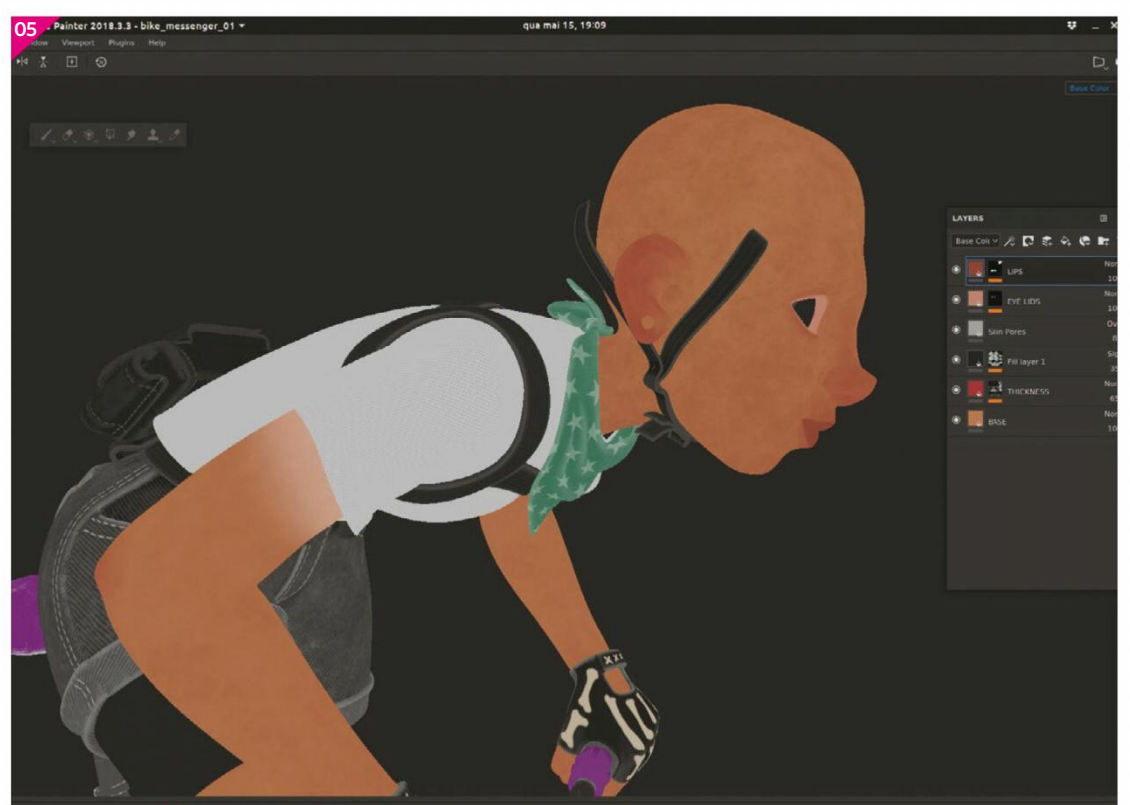
04 UVs and IDs So it's time to unwrap everything, fortunately UVs in Blender are very simple to do. You basically enter into Edit mode, select the edges, mark the seams and hit unwrap. Selection tip, hold Ctrl and click in the direction you want to build the loop selection. I use the add-on UVPackmaster, because it's much more optimised than Blender's default pack. Before exporting to Substance Painter we need to set up some ID masks for easy selection. We can create those using Vertex Paint, use full Red, Green or Blue values - if you need more than three ID masks, use the combination of two channels.

05 Texture The key to texturing in my opinion is to think about the weather conditions that a character or an object is exposed to. For example, this girl delivers pizza during the day, so she is exposed to the sun for long periods. That's why I created a more tanned skin, and closer to the sleeve I painted a less tanned skin colour, being less exposed to the sun. Here is a trick for the stitches: paint the colour with positive bump, then duplicate the layer, change the colour to black and blend mode to Multiply with a negative bump and a little bit of blur.



More hair tips

Keep in mind when using Curve Guides to control the hair particle system, you will need to create one particle system for the curve you want to use. Also for each hair system using Curve Guides, you need to create a Collection for each curve; in the particle settings on the Field Weights tab, choose the corresponding Collection for each curve in the Effector Collection box. Keep things very organised, named correct and you won't have issues. It's not very intuitive at the start, but once you have all the particle systems and curves set up you will have full control.



06 Materials All the materials were made using the Principled BSDF node for Cycles, so it's important when you create your project in Substance Painter to choose the PBR - Metallic Roughness workflow; you just need to plug your maps and it will work like the SP viewport. For the skin shader I used the new Random Walk distribution method, available in Blender 2.8 Beta. I used the Subsurface Factor at 0.25 and for the Subsurface Color, I plugged my colour map into an HSV node with the Hue setting at 0.475 and the Saturation at 1.2 - this basically made the colour map more reddish.

07 Hair The hair was created using Blender's particle system; I like to create a separate mesh for the hair scalp. On the first particle system, I just filled the scalp with 1,000 hair strands, 25 simple children, and in the Particle Edit mode I combed everything to the back of the head in the direction of the ponytail. For the fringe and ponytail I used Curve Guides, and for this we need to add a plane with the hair particle system and a Bezier curve. For the hair to follow the curve, we need to select the curve and add a Force Field with Curve Guides.

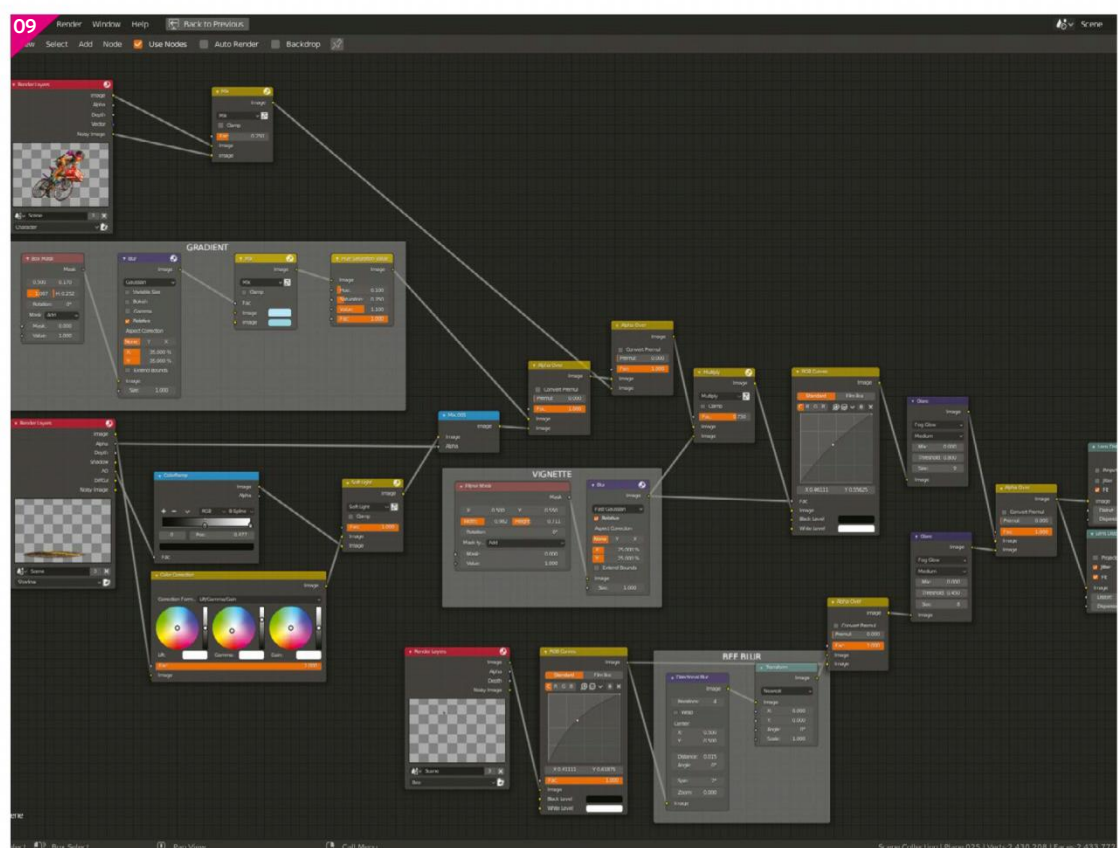
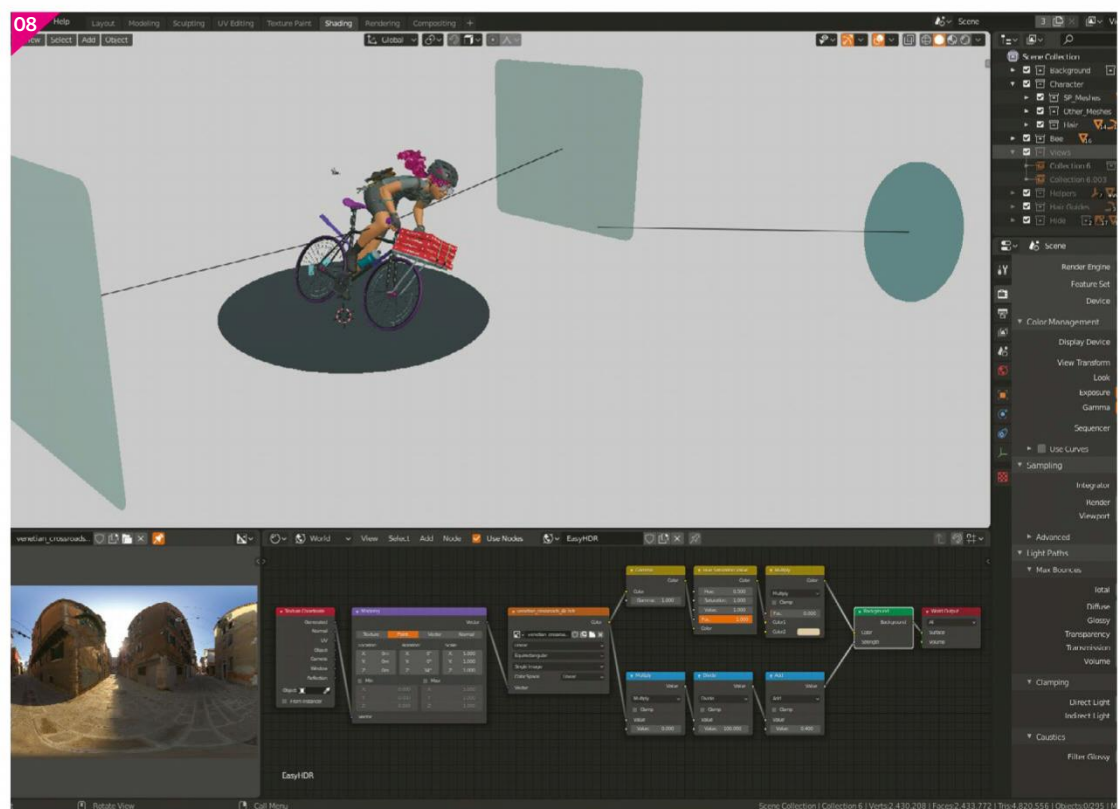
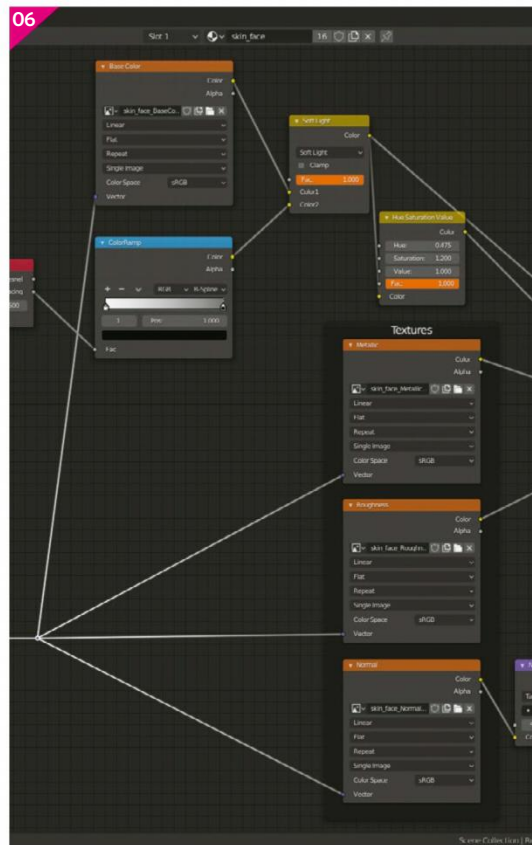
08 Lighting For the lighting I used an HDR from the site HDRI Haven - I chose the one called Venetian Crossroads. I also used three more lights, two areas from the side to fill the shadows a little more and another with a circular shape coming from the front to give that white specular circle on the eyes. The sun of the HDRI is positioned around 45 degrees from the left side of the character, giving us a nice shadow on the opposite side. To fast test other HDRs I used an add-on called Easy HDRI, made by Monaime.

09 Compositing The post-production was done in Blender's Compositor. First I separated the elements into three View Layers: girl, bee and the ground. I combined the View Layers using the Alpha Over node, the background gradient I created using a Box Mask and a Blur node. On the ground layer I used a Color Correction node. On top of all View Layers I created a vignette using an Ellipse Mask and Blur node, blended using Multiply 0.75, and after that I added a Glare node. On the bee layer I've added a Direction Blur node to create a speed effect.

It's important when you create your project in Substance Painter to choose the PBR - Metallic Roughness workflow

Node Wrangler add-on

This is an indispensable add-on for me, it's really hard to work without it. For example to set up a Principled BSDF with all the PBR maps you just hit the hotkey Ctrl+Shift+T, select the maps on the file browser and it's done. The Node Wrangler will create all the Image Texture, Mapping nodes and even set up the correct Color Space for each map. The most common hotkey that I use for this add-on is Ctrl+Shift+Click on a node, to have a preview of that node and all the nodes behind it on the node tree.





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Artist 15.6 Pro

XP-Pen wants to sit at the top table, next to Apple and Wacom. Should the budget tablet manufacturer be given a menu?

The big question with any new graphics tablet is 'how does it compare to the current market?' Every new contender can boast improved features and specs, but ultimately what we want to know is how it stands up against the big guns - Wacom and Apple in this instance.

With its lightweight screen and pressure and tilt-sensitive, battery-free pen, the XP-Pen Artist 15.6 Pro is arguably the best non-Wacom/Apple competitor so far. But it does have certain limitations that hold it back from dethroning its competitors. However, the price point/quality level trade-off will be good enough to sway some artists, depending on their particular requirements.

The Artist 15.6 Pro has an active drawing area of 15.6 inches diagonally, which gives it a full HD resolution of 1,920 x 1,080. The display has an impressive gamut of 84 per cent of Adobe RGB. That's higher than the Cintiq 16, which has a gamut of around 75 per cent RGB. However, the colour accuracy, while good, isn't perfect and you'll need to use a colour calibrator to avoid your artwork's colours looking inaccurate if you print it. You can ramp up the brightness of the screen and turn it down just as easily, thanks to handy buttons on the side of the tablet.

REDUCTION IN PARALLAX

The screen's surface is laminated and bonded. This reduces the parallax effect to low levels. Yes, it's noticeable, but you'll soon become accustomed to it in your painting sessions.

The pre-applied and replaceable film cover's anti-glare properties reduce reflections

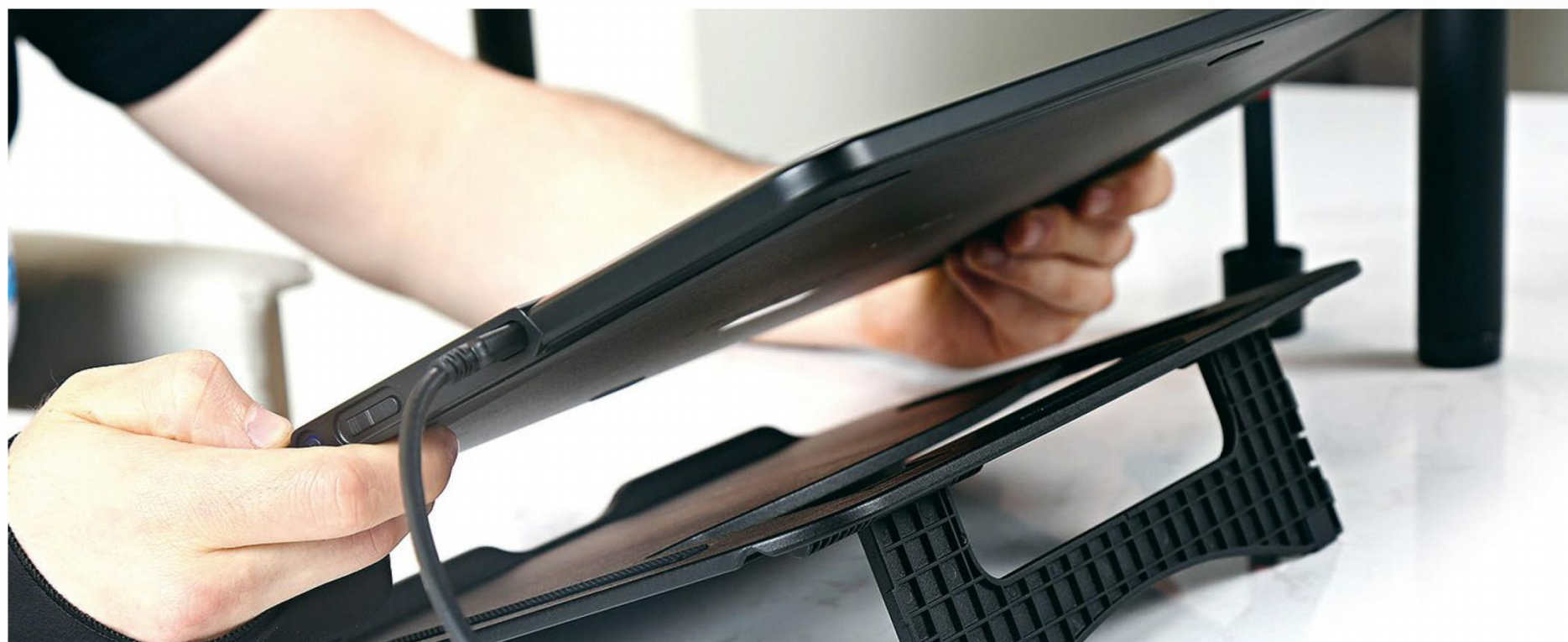
considerably. However, the trade-off is that the tablet surface is slippery, feeling more like a smartphone's screen than paper (the screen, sans film, lacks any tooth). The Artist 15.6 Pro comes with a free anti-fouling glove to minimise marks being generated accidentally.

The stylus is battery-free and boasts 8,192 levels of pressure sensitivity, as well as 60 degrees of tilt functionality. There are some caveats here. The tilt function doesn't feel as sensitive as the Cintiq's Pro Pen 2, and when it's tilted the alignment of the cursor goes askew, frustratingly offsetting the cursor from the nib of the stylus.

The pressure sensitivity feels a little unresponsive too, with more initial activation force required than you'd expect to produce light brushstrokes. Even if you experiment with the Pressure Curve settings, it doesn't feel as natural and fluid as the Cintiq 16. This may not be a deal-breaker to all artists; it depends on your drawing and painting techniques and style. But if you want to maintain consistent line width or smooth transitions between low and high opacity, it can become grating.

Similarly, there's a noticeable amount of line jitter present, as well as line lag, which makes drawing smooth lines somewhat trickier. Again, these aren't enormous drawbacks for some people, but busy artists and/or perfectionists will be frustrated having to correct brush strokes repeatedly.

The stylus comes with a hefty plastic pen holder that houses eight replacement nibs and will definitely keep your stylus safe while travelling, while the holder opens to become a





MAIN Removable and replaceable film covers help to minimise screen glare when working directly under a light source

BOTTOM LEFT The device connects to your computer and is powered by just one cable, reducing desktop clutter

BOTTOM RIGHT Don't want to rest the Artist 15.6 Pro on your lap? No problem - just use the included stand

BELOW The supplied anti-fouling glove will help to improve the drawing experience when using the Artist 15.6 Pro



“ There are eight built-in shortcut keys down the side of the tablet ”





The stylus features 8,192 levels of pressure sensitivity, and comes with eight replaceable nibs that can be stored in a study container

pen stand. There's no way of attaching the stand to your tablet, though.

At the time of writing, the XP-Pen Artist 15.6 Pro is available for a very reasonable £370, making it cheaper than the Cintiq 16, currently £515, and considerably cheaper than the latest iPad Pro, which starts at £769 for the 11-inch display, plus £119 for the second-generation Apple Pencil. Considering that the Artist 15.6 Pro comes with a built-in stand, replaceable screen covers, an anti-fouling glove and a considerable number of spare nibs – all of which would cost extra with a Cintiq – the price is an attractive selling point.

POWER OPTIONS

The tablet's USB connection cable enables you to both connect the display and draw power with the same cable. You don't need to attach it to an AC adaptor. It can even be run from an external power bank, which adds to its portability. Durability-wise the Artist 15.6 feels lighter than the Cintiq 16, which is a plus, but it also feels slightly less durable than Wacom's device. Heavy-handed artists may find that the screen distorts both when pressing down on the screen and on the edges if you're near them, but the majority of people will be fine. The tablet runs silently.

There are eight built-in shortcut keys positioned down the side of the tablet, alongside the new red dial, which can be programmed to zoom in and out, alter brush sizes and so on. The Artist 15.6 Pro also comes with a stand that provides a similar angle to the Cintiq 16's foldout legs. The stand works, but the plastic feels slightly flimsy and rather than attaching to the tablet, it simply rests on it. We leant down too heavily on the screen once, and it did tip sideways, but that was a one-off. There are no mounting holes for mounting to a stand or a VESA mount.

LIGHTWEIGHT AND COMPACT

Even taking the criticisms mentioned into account, the Artist 15.6 Pro is a great bit of kit. It's conveniently sized, and so lightweight that it's very portable and easy to set up, even when working on a narrow desk.

The price/quality ratio is brilliant, too. Long gone are the days where only professionals

could justify paying for a decent quality screen tablet. The Artist 15.6 Pro is superb value for money, and is a great introductory tablet for hobbyists, students and junior artists.

But while the Artist 15.6 Pro has a lot of strengths, it's hard not to overlook the lack of sensitivity with the stylus. Furthermore, drawing and painting with it will feel slightly off to artists who work spend a lot of time working with finer details.

XP-Pen's device is the best screen tablet alternative to the Cintiq 16, if your budget is tight. It offers a good-quality screen, with low parallax, useful shortcut keys and limited tilt functionality. However, when comparing its colour accuracy, overall build quality, feel of the surface and line drawing quality to Wacom's offering, the Artist 15.6 Pro falls short. If you don't want to make these sacrifices, you're better off spending the extra £145 on the Cintiq 16.

Speaking of money, the price difference between the Artist 15.6 Pro and the iPad Pro is huge. If all you want is a display tablet, this is a sensible way to save money. And if you needed any more convincing, we expect the iPad Pro to be rendered technologically obsolete years before XP-Pen's device is put out to pasture.

Essential info

Price	£369.99
Website	xp pen.com
Screen	1,920 x 1,080 pixels, full HD
Display colour gamut	88 per cent NTSC; 120 per cent sRGB
OS	Windows 10/8/7 (32- or 64-bit); MAC OS X version 10.10 or later

Summary

- ★★★★★ Features
- ★★★★★ Performance
- ★★★★★ Design
- ★★★★★ Value for money

Verdict ★★★★★

Artist 15.6 Pro is superb value for money, and is a great starter tablet for hobbyists, students and junior artists

ALTERNATIVE TABLETS

A snapshot of three screen drawing tablets to suit all budgets

Kamvas Pro 13

Web www.huiontablet.com

Price £269



A good-quality, cheap display tablet that's let down by an unreliable pen when it comes to line jitter. Its power button sits next to the shortcut keys, so you'll have to be careful that you don't turn it off while painting!

iPad Pro 11-inch

Web www.apple.com

Price £769



If you're not just after something to hook up to a computer to draw on, but a whole system, the iPad Pro is a lovely, albeit expensive, all-in-one solution. You'll need to buy an Apple Pencil to make the most of its painting capabilities.

Cintiq 16

Web www.wacom.com

Price £515



The gold standard for a budget display tablet. It's on the pricier end of the scale, but the quality and performance of the Cintiq is superb. It supports all desktop painting programs and comes colour-calibrated out of the box.

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Technique focus

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SCULPTING I started sculpting with DynaMesh, producing a rough sculpt. ZRemesher was used for the clothes to make nice and clean topology. Next I used the ZModeler brush to develop more sculptural detail. The symbols were made in Photoshop and imported into ZBrush for alpha masking. I created a basic alpha mask of that symbol on append plane 3D, used Extract to make it a 3D shape and then used Live Boolean to create an inner cut of the forehead metal piece. I used Sculpttris Pro for the hair detail.



SM Bonin
bony.artstation.com

SM Bonin is a freelance character artist. His specialities are modelling, sculpting, texturing and shading of characters.

Software ZBrush, KeyShot
Naruto Uzumaki, 2019





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The wire remote sits in the base and lets you flick through settings without reaching for the screen

BenQ SW271

BenQ are making big strides into high end monitors

Although BenQ may once have not been a name traditionally associated with high-end displays, it is something that is deservedly changing in the 4K generation. Its current range of gaming, ultra-wide and colour-accurate screens absolutely scream with performance, slick design and brilliant image quality that positions BenQ as a smart choice for a quality display. And the 27-inch, 10-bit HDR SW271 is another top-quality BenQ product that can be added to the list.

The design is a good place to start. It's the small touches that add a lot, such as big and bold on-screen menus that are dead simple to navigate, and big physical buttons that are laid out at the front so you won't accidentally select the wrong setting. And best of all, with the SW271, BenQ has included its proprietary wired remote, giving ultra-quick access to settings and shortcuts - perhaps the easiest possible way to change settings on any display.

Colour presets include a Rec.709 mode in addition to Adobe RGB, sRGB and DCI-P3. There's a massive range of settings to tweak the colour, including a selection of three white points from 5000K to 9300K and a gamma range from 1.6 to 2.6.

Our testing at default factory calibration showed image results that were slightly lacking, with just over 300 nit brightness and 660:1 measured contrast, which is lower than other displays on test.

And in initial testing, the default Adobe RGB preset weirdly couldn't meet the claim of full coverage. Only when switching that preset to HDR did we actually get the stated 99% result.

Despite these lower results, the BenQ SW271 delivered a fantastic image that was great on both the desktop and in all design software. You will not be disappointed by the SW271's picture quality, with fidelity and extra-vivid colours rivalling the more expensive EIZO and Asus screens on the market.

Sitting at a halfway price point between the ultra-high-end colour-accurate screens and general-purpose displays, BenQ has delivered the goods here, with a colour-accurate monitor that is worth the additional expenditure over a standard display.



Essential info

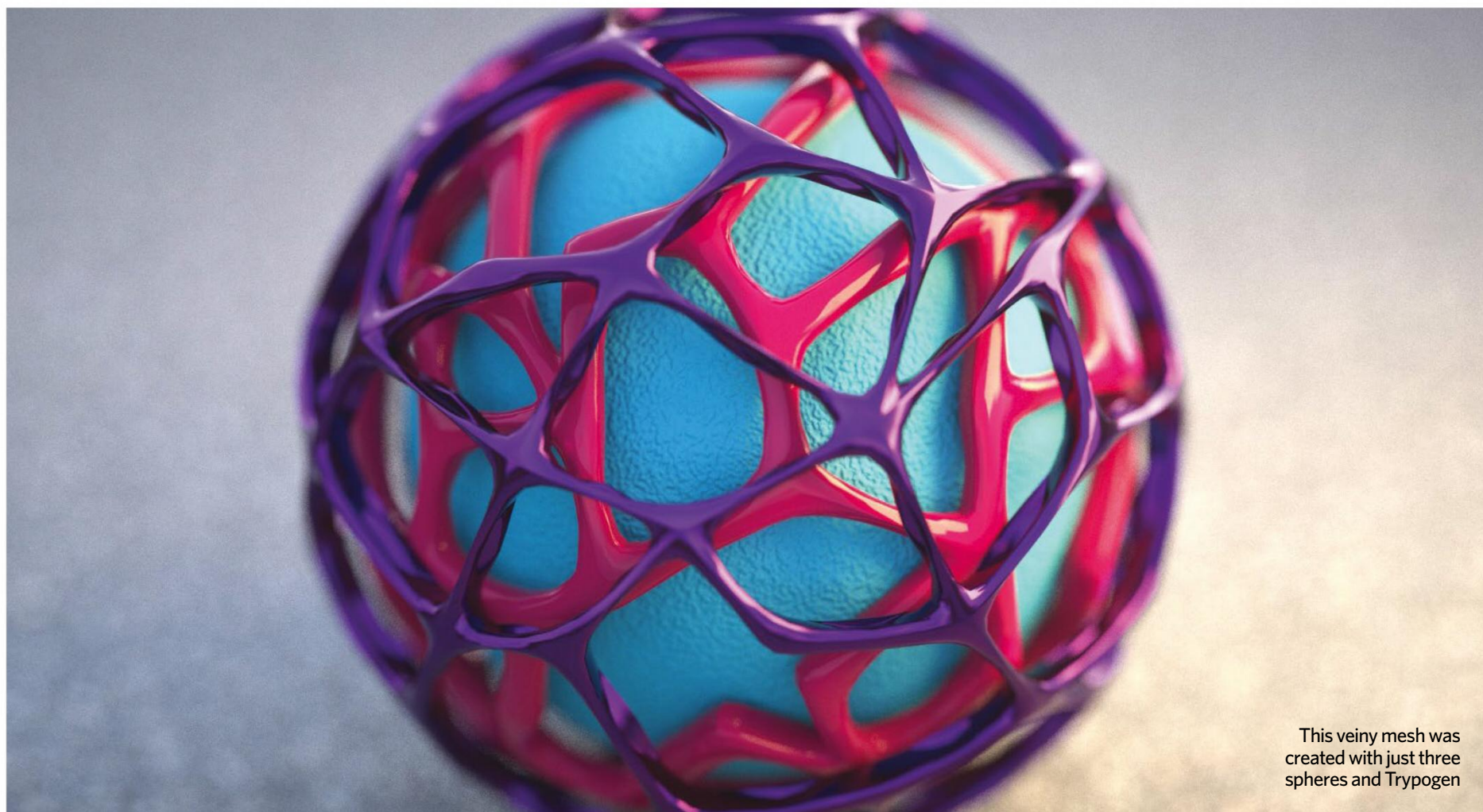
Price	£969.00
Website	www.benq.com
Monitor	4K resolution (3,840 x 2,160)
Response time	5ms
Connections	2 x DisplayPort, 1 x HDMI
Other features	Versatile base mount

Summary

- ★★★★★ Features
- ★★★★☆ Performance
- ★★★★★ Design
- ★★★★☆ Value for money

Verdict ★★★★★

BenQ have produced a solid performer, with the SW271, that balances features and cost well.



This veiny mesh was created with just three spheres and Trypogen

Trypogen

We test a new generator plugin for Cinema 4D users

Sometimes a product comes along that doesn't, on the face of it, offer a means to a particular end, but inspires you to investigate further nonetheless. Trypogen is one such plugin and will suit many Cinema 4D users very well. Its implementation is such that any user will be up and running in seconds, as it is attribute based for controls and uses the standard object hierarchy to define what geometry is affected.

There are a number of different controls, and these vary from subdivision controls and methods, to controls for angle tolerances, which for many I expect will be the biggest area of enjoyment. You can smooth and reduce the child geometry using the angle controls and generate new topologies from the simple to the very complex, refining the results with the subdivision settings.

The core principle behind Trypogen is to take a simple object and create something that combines the best of mathematical-based processes with the random and organic nature of the more playful side of 3D. At its most basic, you add it to a scene, make an object a child then play with sliders to tweak the resulting geometry. Sounds a bit lacklustre, but in practice it's very easy to spend considerable time tweaking things and creating some truly beautiful results, from the simplest of inputs.

It's a little unfair to say that this doesn't really offer a use, as it could very well find itself a

home in the hands of prop modellers, jewellers, motion graphics artists and more. These people will spend some time in playful exploration of a broad brief, and that's no bad thing. Trypogen upholds one of the main benefits that call to C4D users and that is one of ease of use, unexpected combinations of tools and, at its very heart, fun.

While the fun is definitely there to be had, it's sensible to take a look at the actual performance of the software, to see if it can be used for production work. It's fair to say the plugin may not have the most exciting interface, using standard Cinema 4D buttons and fields, but it really works well with the host application and under testing no lag or slowdown was noticeable. This is true for working with any type of base object, from primitive or parametric options through to more complex, denser polygon objects.

Sometimes Cinema 4D will work better with multiple nested objects, others with objects combined, but working with Trypogen didn't appear to slow things in either method, so expect it to play well no matter how you like to manage your scenes.

Although it's quite a niche product, Trypogen encourages playful experimentation and can actually yield beautiful, if unexpected, results in very little time. Combine that with its compatibility with MoGraph, and you have a very useful tool for little cost.



Essential info

Website	www.pixellab.net
Price	£24.99
UI	Native interface
Works with	Primitive objects, polygonal geometry MoGraph

Summary

★★★★★ **Features**
 ★★★★★ **Performance**
 ★★★★★ **Design**
 ★★★★★ **Value for money**

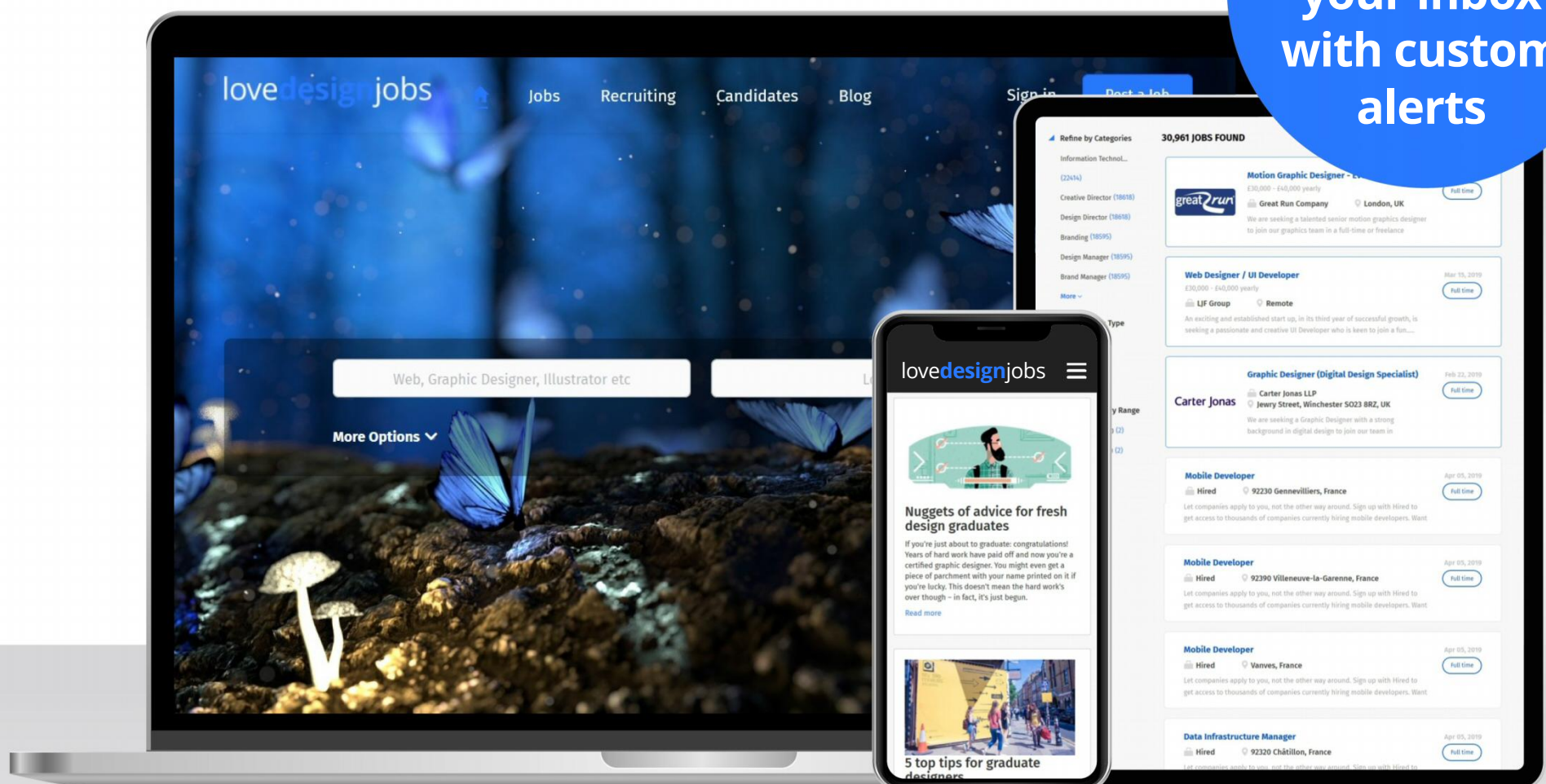
Verdict ★★★★★

The latest in a growing line of popular plugins from The Pixel Lab, Trypogen is both fun and useful

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The Hub

The inside guide to industry news,
VFX studios, expert opinions
and the 3D community



“I’m delighted
to be joining
such a
hardworking
team, led by
Tom Jacomb”

Andrew Gordon,
head of character animation

090 Community News

Total Chaos 2019

Chaos Group hosted the popular and successful user conference in Bulgaria

094 Industry News

Andrew Gordon joins DNEG

DNEG have hired a new head of character animation: Andrew Gordon

096 Project Focus

PSD to 3D

Ed Films showcases a new tool to ease the change from 2D to 3D

94



Falk Boje and David Wortley from ILM, who delivered a talk on the technical and aesthetic challenges of creating worlds with V-Ray

Chaos Group unleashes Total Chaos in Bulgaria

3D artists, designers and developers from throughout the industry convene in Sofia, Bulgaria for Chaos Group's latest Total Chaos conference

Hundreds of artists and industry insiders gathered in Sofia, Bulgaria from 16 to 18 May for Total Chaos 2019. Across the weekend Chaos Group hosted a whole host of inspiring talks, practical workshops and certification opportunities for attendees. "We wanted Total Chaos 2019 to build on the success of 2018," says Lon Grohs, Chaos Group's global head of creative. "More speakers, from a more diverse range of industries and backgrounds, were invited to present and share. It's become a community event where you can learn, get inspired and forge a path for the future."

The event launched with a keynote that saw the creators of V-Ray and Corona discuss their commitment to researching and innovating within the community, as well as plans to introduce V-Ray to a diverse range of creative industries. Chaos Group's

cofounder and CEO, Peter Mitev looked back across the last 12 months. Corona's research and development partner, Jaroslav Křivánek, announced Chaos Research, a new laboratory that aims to combine resources and experiment with new rendering technologies.

Founding partner and main developer of Corona,

Ondřej Karlík, took to the stage to celebrate the rendering software's tenth birthday with a rundown of some new features. Finally, Chaos Group cofounder and CTO, Vlado Koylazov, took the audience through some of the exciting new features planned for V-Ray Next and officially launched V-Ray for Houdini. He was joined on stage by Phil Miller, Chaos Group's VP of product management, to treat the audience to a preview of V-Ray's new real-time iteration, Project Lavina.

After the keynote presentation a variety of different talks followed, spread out across an art track, code

“We wanted Total Chaos 2019 to build on the success of 2018... It's become a community event where you can learn, get inspired and forge a path for the future”

Lon Grohs,
Head of creative at Chaos Group



Sonja Christoph discussing her exciting career path from assistant director to generalist and then environment artist

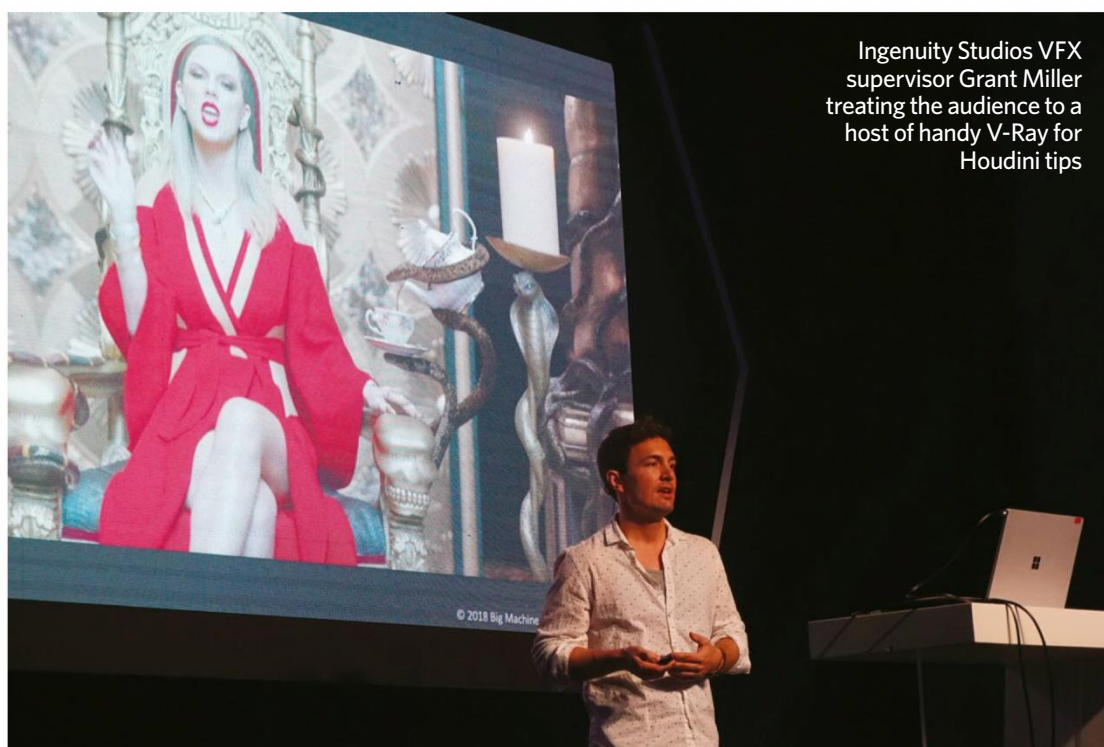
track and craft track. The art track kicked off by presenting audiences with an arch viz and interior design masterclass workshop, courtesy of Gregory Rogers, WeWork's head of visualisation, and Kengo Kuma And Associates's Tomohiro Matsunaga. The pair revealed how they utilise V-Ray in their workflows when creating world-class visuals.

Veteran environment artist Sonja Christoph followed up with a rousing talk that looked back across her work in the film industry and revealed some of her recent environment work for game studio Massive Entertainment, which recently launched *Tom Clancy's The Division 2* for Ubisoft.

Later that day, photorealistic character connoisseur Ian Spriggs revealed his latest work and delved into the techniques that created it. Spriggs presented alongside Victor Hugo who discussed his approach to heavily stylised and charming characters. Meanwhile Scott Eaton shared his extensive knowledge of anatomy and revealed how he's applying it to the world of AI.

Elsewhere, Total Chaos presented show attendees with 12 unique masterclasses, all delivered by industry professionals at the top of their fields. Track one saw a wealth of design knowledge from the likes of McNeel Europe, Rhino, Zaha Hadid Design and Wild Design Studio. FX masterclasses came courtesy of IDEA Academy cofounder and ex-Pixar art director Anthony Christov, and Victor Hugo.

Factory Fifteen got the third track started by teaching the secrets behind its 360-degree Nissan experience. WeWork and ERA Urban Planning Architecture also broke down some of their work for eager learners, meanwhile Karim Moussa closed the workshops out by sharing an insightful behind-the-scenes process of his latest short film, *Twosret*.



Ingenuity Studios VFX supervisor Grant Miller treating the audience to a host of handy V-Ray for Houdini tips



Total Chaos returned to Sofia Tech Park for its 2019 event. The venue was created especially as a platform for science and technology gatherings

Total Chaos' second day fully embraced the diverse world of 3D art, with a total of 34 talks taking place across four stages. Things kicked off with a guide to creating the ideal work building, courtesy of Gensler's codirector of visualisation platforms, Scott de Woody. Architectural visualisation firm KPF demonstrated how they use tools such as V-Ray for Unreal and Project Lavina, whilst Zaha Hadid Architects and Factory Fifteen showcased their own advances in VR.

Madrid-based creative collective The Beauty And The Bit showed off its cinematic short film, *Landmark*. The in-house, noncommercial project was intended to bring a filmic, cinematic quality to the world of arch viz. Art director Victor Bonafonte Morales then outlined the behind the scenes processes that brought the film to life.

There was plenty of VFX innovation on display, too, as the creative director of Ingenuity Studios, Grant Miller, talked the audience through the studio's use of Houdini when working on mass crowds and zombie hordes. David Wortley and Falk Boje from ILM discussed the ways in

“Groundbreaking technology, new workflows, creative ideas, and incredibly talented speakers. All in one beautiful city”

Lee Carlton,
CG supervisor at Method Studios

which V-Ray for 3ds Max allows them to create extravagant environments for a host of blockbuster films, from *Black Panther* to *Star Wars*.

Yavor Yakovliev, technical art director for Ubisoft Sofia, broke down the studio's procedural approach to recreating Ancient Egypt for *Assassin's Creed Origins*. Meanwhile, Slashcube presented a deep dive into Moon Village. The short film, developed alongside the European Space Agency and the Massachusetts Institute Of Technology, utilised Corona and Cinema 4D to push the boundaries of architectural design and visualise a human colony on the moon.

Next, Alex Coulombe of Agile Lens explored the ways in which VR is changing the architecture game in an entertaining and thought-provoking talk. Closing out the day's talks was two VFX titans, firstly Digital Domain delivered a breakdown of its digital human work, with particular attention paid to creation of the Avengers' nemesis Thanos.

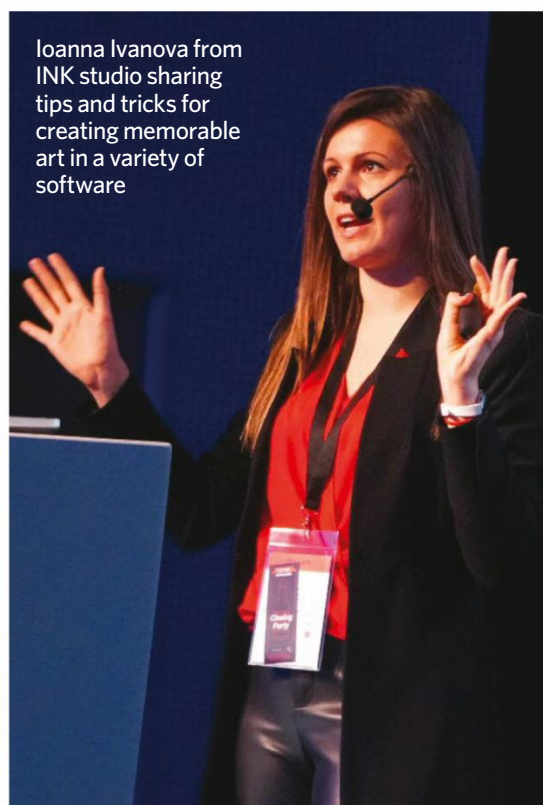
Then Method Studios discussed the unique proposition of working with digital children, as CG supervisor Lee Carlton discussed the challenges of 3D scanning a toddler for a commercial project. "Total Chaos 2019: Groundbreaking technology, new workflows, creative ideas, and incredibly talented and brilliant speakers," Carlton tells **3D Artist**. "All in one beautiful city. An experience not to be missed."



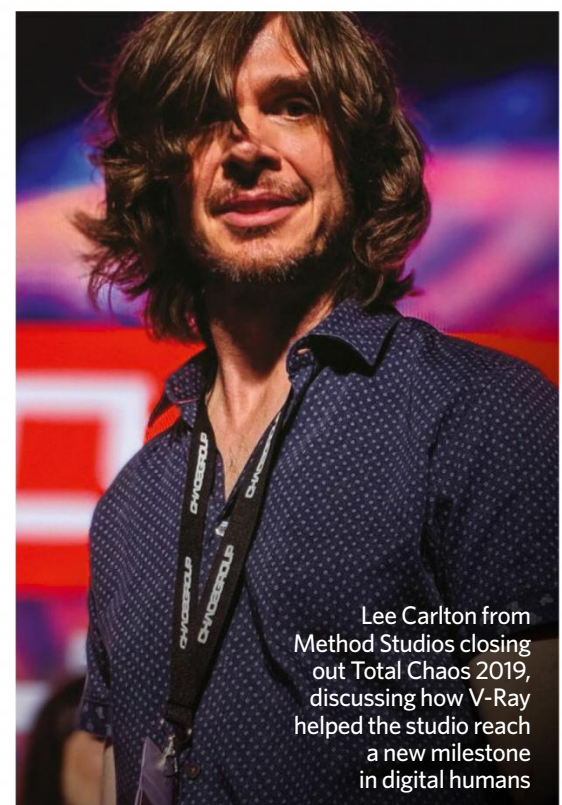
Total Chaos 2019's opening keynote touched on research, community and technological advances



Character artists Victor Hugo, Chris Nichols and Ian Spriggs embracing the community spirit during their talk



Ioanna Ivanova from INK studio sharing tips and tricks for creating memorable art in a variety of software



Lee Carlton from Method Studios closing out Total Chaos 2019, discussing how V-Ray helped the studio reach a new milestone in digital humans



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Gordon is also known for creating the 'Lucky 7 Lounge' at Pixar: a room accessible through a small hatch in his office

Andrew Gordon joins DNEG

The industry veteran joins DNEG's Feature Animation team as head of character animation

VFX, animation and stereo conversion company, DNEG has appointed industry guru Andrew Gordon as head of character animation for its Feature Animation team. He will be based at the company's headquarters in London.

Gordon joins managing director of feature animation Tom Jacomb, animation director Troy Saliba and VFX supervisor Philippe Denis in leading DNEG's rapidly growing Feature Animation team, and is helping to foster a culture of creativity and innovation at the studio.

DNEG launches ReDefine

ReDefine, a new offering from DNEG, aims to bridge the gap between the East and the West in creative services for film and over the top content for streaming. ReDefine will operate alongside DNEG, offering creative visual effects and animation services to expanding international markets such as China and India, as well as other global independent productions.

With more than two decades of experience in feature animation at Pixar and Warner Bros., Gordon has an impressive credit list that includes the likes of *Ratatouille*, *Monsters University*, *Toy Story*, *Finding Nemo*, *Cars*, and *The Incredibles* and *The Incredibles 2*.

Jacomb, says: "[Andrew's] natural and inspirational leadership style, combined with his knowledge and creativity, particularly when it comes to creating characters that audiences really connect with, are invaluable assets that will strengthen our capabilities and play a crucial role in the future growth of the team."

Gordon adds: "I am delighted to be joining such a hardworking team, led by the amazing Tom Jacomb, at an exciting stage in its journey. Together we are creating an environment where each film is not just treated as a task, but rather as a collaboration [...]. I'm excited to be here in London, which is one of the most diverse capital cities in the world. I believe that London's rich history provides the perfect environment for our team - a melting pot of creativity that lends itself perfectly to feature animation."

Jellyfish Pictures expands

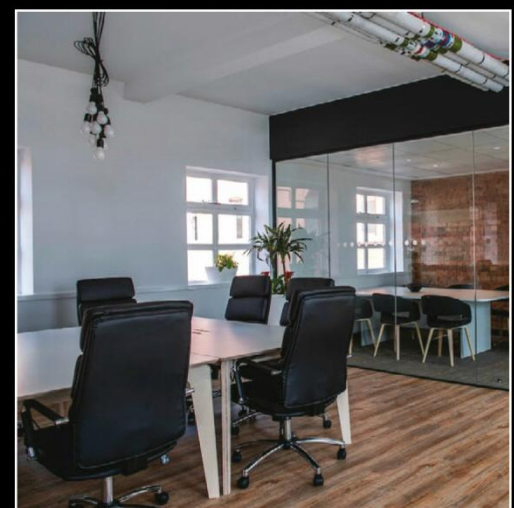
A new Sheffield-based studio will see the appointment of industry veteran Kevin Spruce

VFX and animation studio Jellyfish Pictures has announced the opening of a new virtual animation facility in Sheffield. The new site is the company's fifth studio in the UK and joins established studios in Fitzrovia, Central London, Brixton, South London and Oval, South London.

The studio will operate in a completely 'PC over IP' environment with no hardware housed on-site. Instead, technology will be housed in a centrally based co-location, meaning the studio can virtualise its distributed workstations through Teradici's remote visualisation solution, allowing for total flexibility and scalability.

Phil Dobree, CEO of Jellyfish Pictures, says: "We have multiple projects coming up that will demand crewing up with the very best talent very quickly. Casting off the constraints of infrastructure, which traditionally has been the industry's way of working, means we are not limited to the London talent pool and can easily scale up in a more efficient and economical way than ever before."

The innovative new location will be headed up by animation director, Kevin Spruce, who has an impressive CV spanning over 30 years of animation.



Jellyfish Pictures' Sheffield studio is situated in the city centre within the Cooper Project Complex

HAVE YOU HEARD? A new Terrain Tools package has been released for Unity 2019. More info at blogs.unity3d.com

Looking Glass Pro debuts

The creator of the world's first desktop holographic display reveals its new 3D visualisation solution

Looking Glass Factory has announced the Looking Glass Pro, an all-in-one 3D visualisation solution. The Looking Glass Pro is designed specifically for enterprise customers seeking a turnkey holographic display solution without the need for virtual reality or augmented reality headsets.

The general purpose holographic interface comes with a suite of software tools licensed for commercial use, including the HoloPlay Unity SDK and HoloPlay Plugin for Unreal. The Looking Glass library also enables companies to generate holographic applications in the fields of 3D design and simulation. The Looking Glass Pro Workstation lists at \$6,000 and units will begin shipping in mid-July 2019.

More information on Looking Glass Factory and its products can be found at lookingglassfactory.com



New Substance Source collection

Making digital characters is easier than ever with drag-and-drop skin materials and infinite customisable options

Substance's new Substance Source Skin Micro Details Collection is designed to aid in the rapid creation and customisation of 3D characters. It introduces 32 original materials, each offering artists a way to quickly bring fully realised characters to life.

The collection launched with two free materials for Substance Live subscribers to experiment with. Both "Arch Fingerprint" and "Skin Freckles" can be downloaded directly through the Substance Source library.

IKINEMA delivers digital human

VFX studio Digital Domain utilised IKINEMA to deliver a believable digital human TED Talk 2019

For TED Talk 2019, Digital Domain's head of software R&D, Doug Roble took up the challenge of developing digital humans that move, interact and respond as humanly as possible. Digital Domain utilised real-time production solution IKINEMA LiveAction, which enabled accurate transferral of Roble's movements on to his digital self.

LiveAction retargeted Roble's movements directly onto digital avatars in real-time. Issues such as foot penetration and sliding were automatically fixed by LiveAction along with self-penetration and jitters during the data-stream to deliver a seamless setpiece.



Characters captured with LiveAction can exhibit authentic behaviours and interact with props in their environment

Software shorts

Bringing you the lowdown on product updates and launches



V-Ray for Unreal Update 1

New support for native Unreal materials allows designers to ray trace every part of their scene from their existing Unreal projects. Viewport rendering has also been added, making it easier to produce photorealistic beauty shots and reference checks from within Unreal. V-Ray for Unreal Update 1 is free for current customers. chaosgroup.com/vray/unreal



Maya 2019.1

Render Setup and Light Editor improvements mean users can now easily add or disable lights, as well as override light attributes in a render layer. There's also the added ability to flush the cache directly from the Time Slider and support for Smooth Mesh Preview. Maya 2019 is available for £222 monthly or £1,782 annually. autodesk.com/products/maya/features



ZBrush 2019.1

The update brings in a brand-new split-screen mode, which enables artists to separately work on an individual SubTool. There's also support for importing or exporting up to 64 cameras via the FBX file format, and a new Groups Intersection mode for the Smooth Brush Modifiers. ZBrush 2019.1 is available as a free update for users. pixologic.com

DID YOU KNOW? SpeedTree 8.4 is now available, with the new updates, bug fixes and additional features

e → d *

films → tutorials → tools

Website

edfilms.net

Location Canada

Project PSD to 3D

Project description PSD to 3D allows artists with no 3D experience to turn Photoshop sketches (or paintings) into 3D models, ready for animation.

Studio e.d. films

Company bio e.d. films in an award-winning animation house, digital tools lab and full-service studio based in Montreal. Founded in 2007, it has become an industry favourite thanks to its unique style and commitment to sharing knowledge. In 2018, e.d. films launched a store to provide access to the tools it creates during production.

Contributors

- Emily Paige - Creative producer
- Archita Ghosh - Executive producer
- Daniel Gies - Creative and tech lead

PSD to 3D

Inside the new tool that helps artists create 3D scenes out of Photoshop drawings

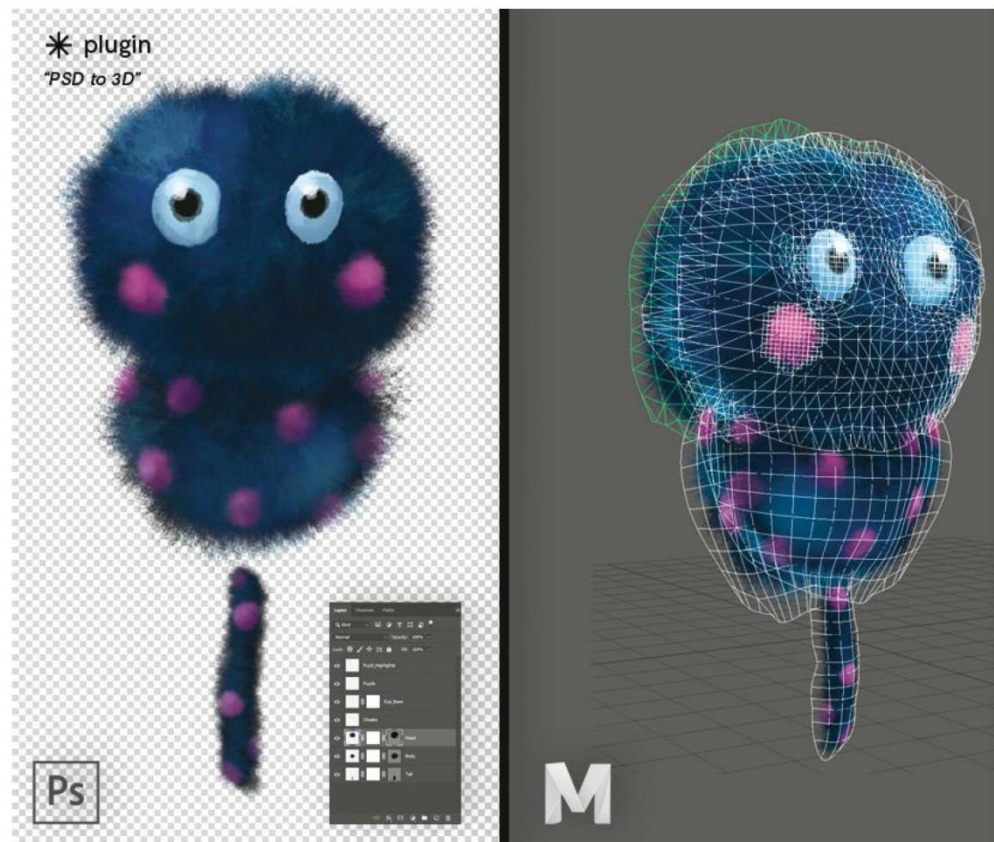
PSD to 3D, the latest plugin released by e.d. films, aims to bypass the 3D modelling phase of production and help artists with little to no 3D experience turn their Photoshop sketches into moldable, animation-ready, scenes and characters. “An illustrated look is hard to replicate in 3D, even if you know the software,” says Daniel Gies, art and tech director at e.d. films. “With PSD to 3D, every line and brush stroke is passed onto the 3D meshes, so artists can bring a unique look to their animations.”

The tool was produced in-house at e.d. films’ Montreal studio, an establishment that has actively avoided fully 3D productions and characters in favour of capturing an illustrative, handmade style. “As our projects became more ambitious, we found that After Effects could no longer support the style we were doing without slowing us down,” Gies continues. As the studio began incorporating Maya and game engine technology into their work, they had to resist the urge to fully embrace 3D, doing so would increase their workload and necessitate a higher level of expertise than they had. “We found that, in many cases, it was faster just to paint a new 2D asset, bring it into Maya and deform it a little, than it was to make a fully 3D prop,” adds Gies.

Although PSD to 3D’s conversion technology is production-grade, it is designed to be simple enough for a 3D novice to start converting Photoshop drawings and paintings within mere minutes. “We’ve been working with Maya for over 15 years and recognise how daunting that program can be,” says Gies, “we also see where other programs, like After Effects, have done a really good job at being accessible to Photoshop users by making the entry point really easy. This became an important reference point for us.”

e.d. films ultimately landed on a two-tier approach, one method was to automate the process, meaning a Photoshop artist could export their painting and have the whole thing modeled and textured in Maya within a few minutes. This approach, however, was deemed limiting for more advanced users. “We added another export method that would enable a Photoshop artist to create the exact geometry they want,” Gies explains, “by using the Pen tool they can draw a mesh in Photoshop that will then be regenerated in Maya, point for point.” Not only have Gies and the team delivered a tool for quickly creating meshes for 3D geometry, they’ve presented users with a new way to learn Maya.

“There is so much coming up at the studio in the next two years,” says Gies, looking towards the future of e.d. films. First up is a short entitled *Giant Bear*, which premieres at Annecy 2019. “We’re wrapping up another internal short film that is actually using PSD to 3D and a bunch of our store assets extensively,” adds Gies. The studio also has a roadmap for the next PSD to 3D release, which will include OSX support, more robust mesh generation options, faster import, better texture management and interactive mesh tweaking that won’t stretch UV’s.



COMMUNITY SERVICE

Daniel Gies discusses the range of tools and assets that e.d. films has made available to the community

“We want to help remove barriers and share what we have made and learned so that other makers can skip steps and make new discoveries that we can then learn from,” enthusiastically explains creative and tech lead, Daniel Gies.

With professional tools and assets often remaining in-house and held as a competitive advantage for the studios that create them, e.d. films has structured the business in a way that gives them more chances to be generous with their creative tools. “We see more and more studios doing similar things these days,” says Gies. “It’s a great way to bring extra value to what we create and it helps create future partners, staff and makers.”

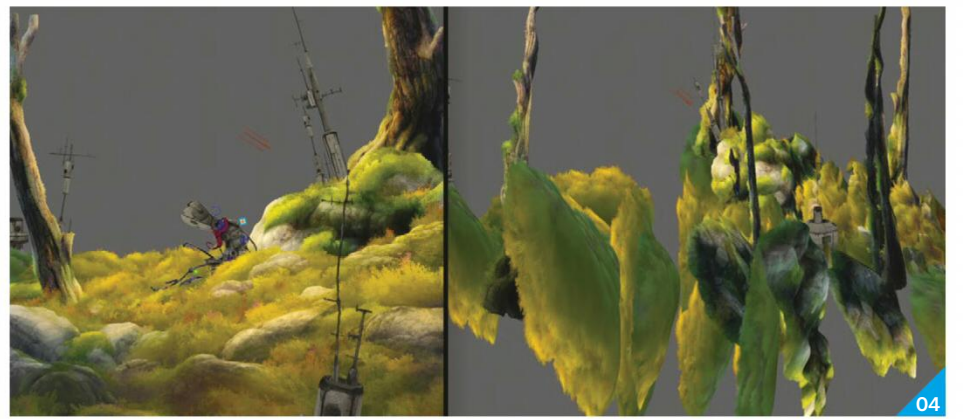




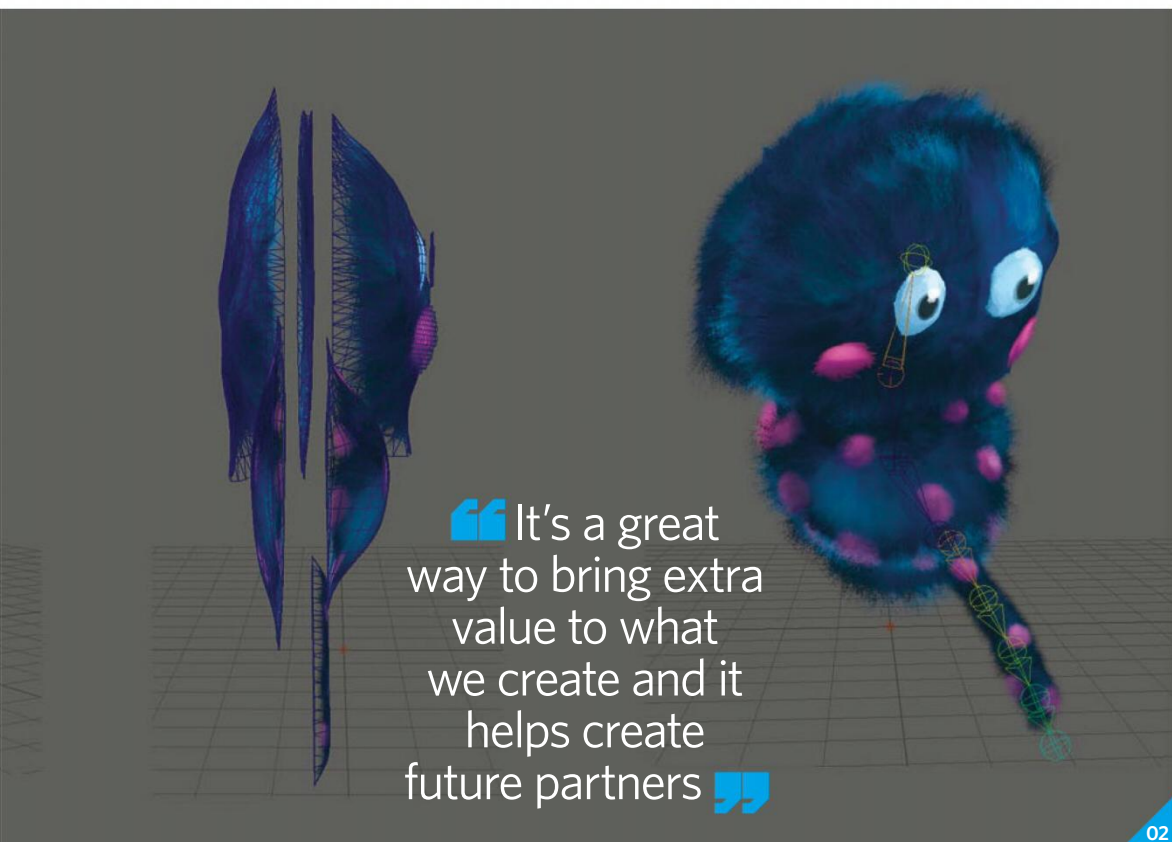
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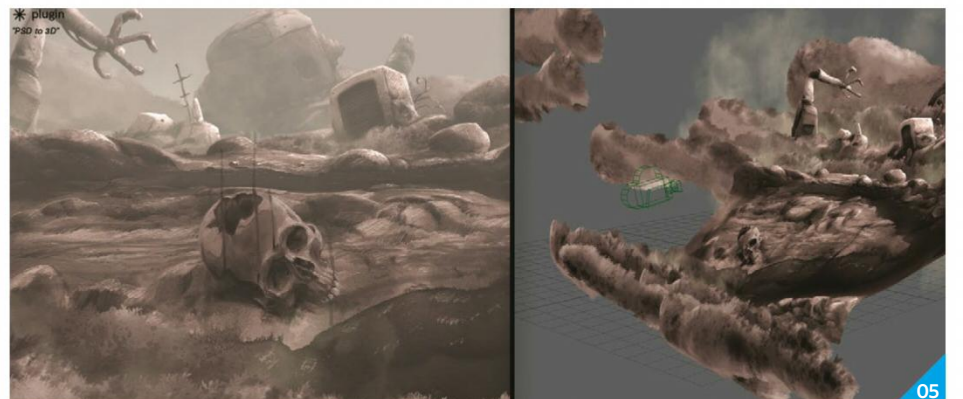
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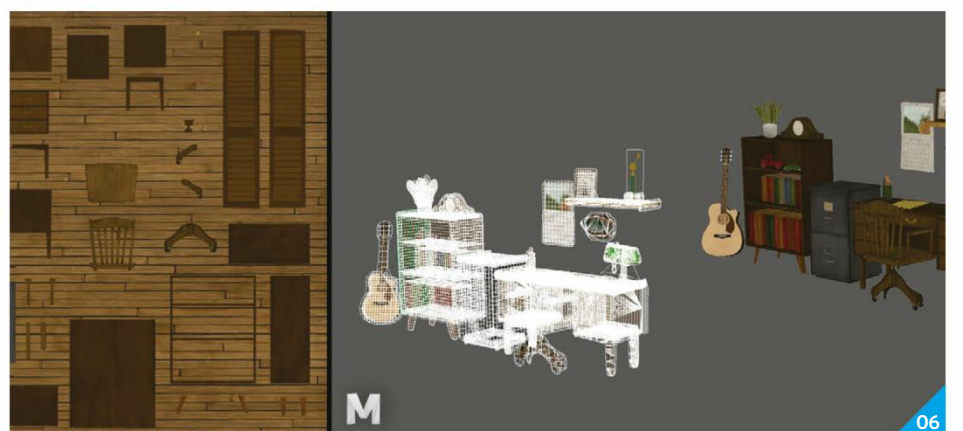
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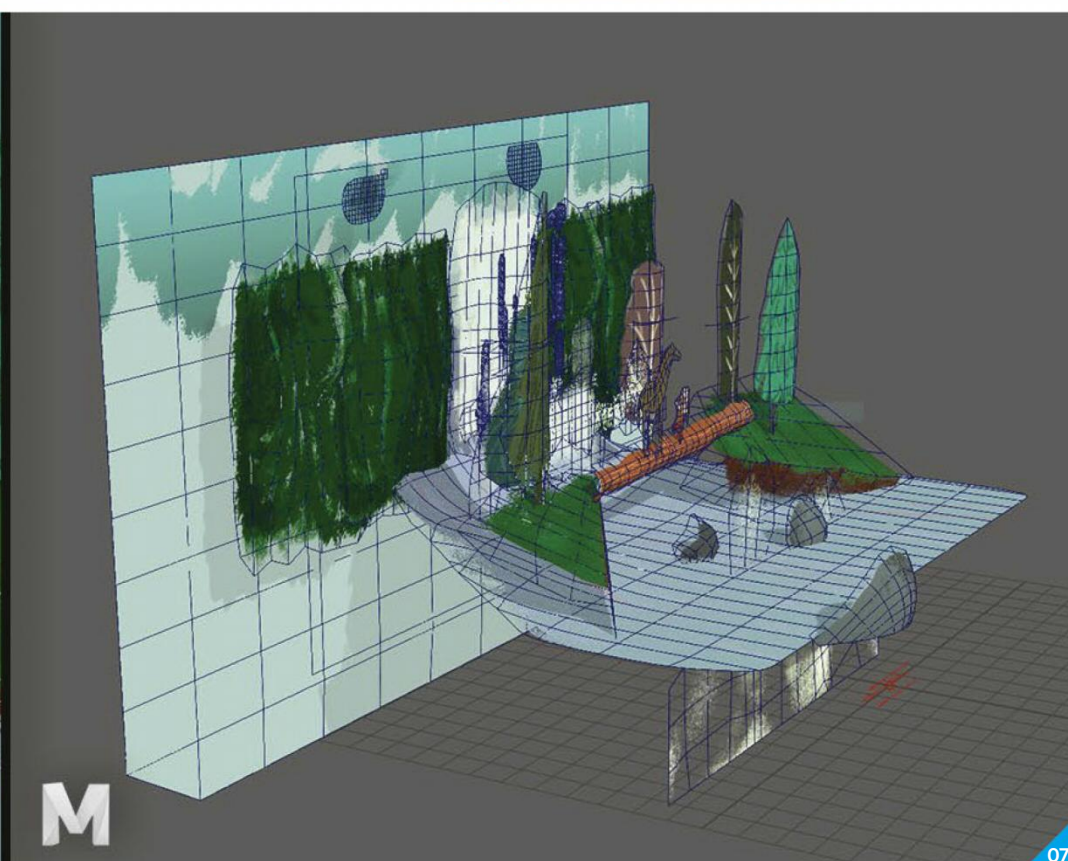
02



05



06



07

- 01 A still of the asset used to demonstrate the results of PSD to 3D beta testing
- 02 This Blue Monster shows off the conversion capabilities of the PSD to 3D software
- 03 e.d. films worked primarily with Centre de développement et de recherche en imagerie numérique (CDRIN) on the first iteration of PSD to 3D
- 04 In the past e.d. films used After Effects, Photoshop, and TVPaint to create their hand-drawn, 2D aesthetic
- 05 e.d. films have a range of brushes, plugins, and more for sale at edfilms.net/shop
- 06 A library of e.d. films' tutorials can be found at edfilms.net/learn, covering everything from animation to lighting
- 07 A still from animated content developer Together's own test of PSD to 3D's capabilities



Technique focus

Incredible 3D artists take us behind their artwork

DETAILING For this character, the concept was a rugged, battle-wary undead knight who had been on the battlefield for thousands of years. So I knew the armour would need a fair amount of destruction. To achieve this result, I created a custom VDM brush comprised of various hand-sculpted cuts, holes and general surface damages. As opposed to alpha maps, VDM brushes capture depth and thickness, which helps a lot when creating armour. The brush can also be reused for future projects.

Nicolas Swijngedau
bit.ly/2X1S71K

I'm a 3D character artist
working in Tokyo.

Software ZBrush,
Marvelous Designer,
KeyShot, Photoshop

Headless Knight,
2019



Charlie Wheate | BSc (Hons) Computer Games Design

our partners

