

# 3dcreative

125

January 2016 | Issue 125

## LIFE AS A 3D GENERALIST

Tomi Väisänen shares his  
inspiring portfolio and  
insights into his career

### +plus

- Realistic smoke in FumeFX
- **Rendering a spacecraft scene**
- Creatures and characters in ZBrush
- **Create dramatic smoke effects**
- Posing a character model
- **and much more!**



## **3DCREATIVE: 2005 - 2016**

It's with heavy hearts that we're announcing the end of 3dcreative magazine. From 2005 to the present, 3dcreative has aimed to deliver affordable, high quality resources and inspiration for 3D artists of all kinds – but with so many great 3D resources readily available online, and inevitable piracy to contend with, we've decided it's time to draw 3dcreative to a close.

We're very grateful to all the artists and readers who've supported the magazine, whether you've just discovered it or have been following from the early days. It's been a great privilege for us to work with the hundreds of artists who've featured in 3dcreative over the last ten years. It wouldn't have been possible without your kindness and contributions.

Subscriptions to 3dcreative are no longer available to buy. 2015 is our last complete year of twelve issues, with this final January 2016 issue released for free. You'll still be able to find back issues in the 3dtotal shop, as well as our huge collection of eBooks and printed books, and we'll continue to bring you brilliant 3D content and tutorials for free via the 3dtotal website. Our sister magazine, 2dartist, is still ongoing for anyone interested in 2D art and digital painting. With the door closing on one project, we'll use our time to bring you bigger, better content with a renewed energy.

Thank you again to everyone who's supported 3dcreative, whether by buying it or being in it, and we hope you continue to support us as we go forward into exciting new projects. We've got big plans for 2016, and hope you do too. Stay creative!

**The 3dcreative team**

**3dcreative**

# 2dartist.












3dtotal presents the new issue of 2dartist magazine, a downloadable monthly magazine for digital artists for only **£2.99** (approx. \$4.79/€3.69).

Visit [www.2dartistmag.com](http://www.2dartistmag.com) to see a full preview of the latest issue, subscription offers, and to purchase back issues.



# Editor's letter



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**MARISA LEWIS**  
Junior Editor

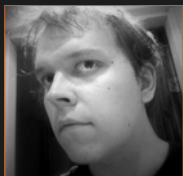
## Welcome to 3dcreative issue 125!

Thanks for picking up this final issue of 3dcreative! We wanted one more issue to wrap everything up and usher in the New Year, and we're releasing it for free as a last thank-you to you all for your readership and support.

This month we get to chat with Tomi Väisänen and Leon Enriquez, as well as learning about posing characters, sculpting animals, rendering spaceships, creating smoke effects, and more.

We hope you enjoy this issue and wish you all a happy, healthy and prosperous 2016 full of art and learning. Thanks for reading 3dcreative!

# Contributors



### TOMI VÄISÄNEN

Tomi Väisänen is from Helsinki, Finland, and creates 3D art as a hobby and also as paid work. He's currently working at Ubisoft RedLynx as a 3D generalist, and is a CGI enthusiast and self-titled nerd.



### VICTORIA PASSARIELLO

Victoria Passariello creates hard-surface models because she loves robots and 3D. She works at Perihelion Interactive making ships for sci-fi videogame *The Mandate*.



### LEON ANTHONY ENRIQUEZ

Leon Enriquez is a 3D modeler, creature artist, digital sculptor and face shape artist. He's currently working at Framestore in London, and has over a decade of experience in TV, video and animation.



### VIKRANT J. DALAL

Vikrant Dalal has nearly a decade of experience in VFX and graphic design, which he's ready to share with people who love VFX. He is based in India and runs Project01 Design Studio.



### RORY BJÖRKMAN

With a background in traditional art and sculpture, Rory Björkman is currently studying Media at the National College of Art and Design in Dublin, with a focus on digital arts.



### ROUMEN FILIPOV

Roumen Filipov is a 3D generalist born in Bulgaria, currently living in Brazil. His specialty is making 3D characters for film and the advertising agency. Here, he sculpts a fun sci-fi character.



### STAVROS FYLLADITIS

Stavros Fylladitis is a 3D generalist based in Athens, Greece. He has worked for IXOR Visual FX and Faust VFX, and has a special interest in modeling and sculpting, proficient in software ranging from ZBrush to 3ds Max.



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**Special thanks** to 3DHype, Hiperia 3D and Veegraph for supporting 3dcreative with banners. Contact Kinnor Wroughton if you would also like to show your support: *kinnor@3dtotal.com*

# Your Magazine.

Get the most out of it!

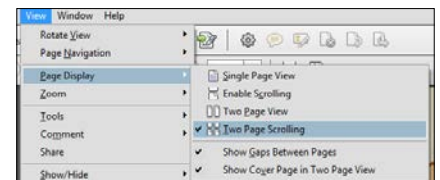
If you're having problems viewing the double-page spreads that we feature within this magazine, then follow this handy little guide on how to set up your PDF reader!

## Top tips for viewing

For optimum viewing of the magazine, it is recommended that you have the latest version of Adobe Acrobat Reader installed. You can download it for free here: **DOWNLOAD**

To view the many double-page spreads featured in 3dcreative magazine, you can set the reader to display "two-up", which will show double-page spreads as one large landscape image:

1. Open the magazine in Reader;
2. Go to the **View** menu, then **Page Display**;
3. Select **Two Page Scrolling**, making sure that **Show Cover Page in Two Page View** is also selected.



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Whenever you see this symbol, be sure to click it to download free resources to accompany that article!



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**040**

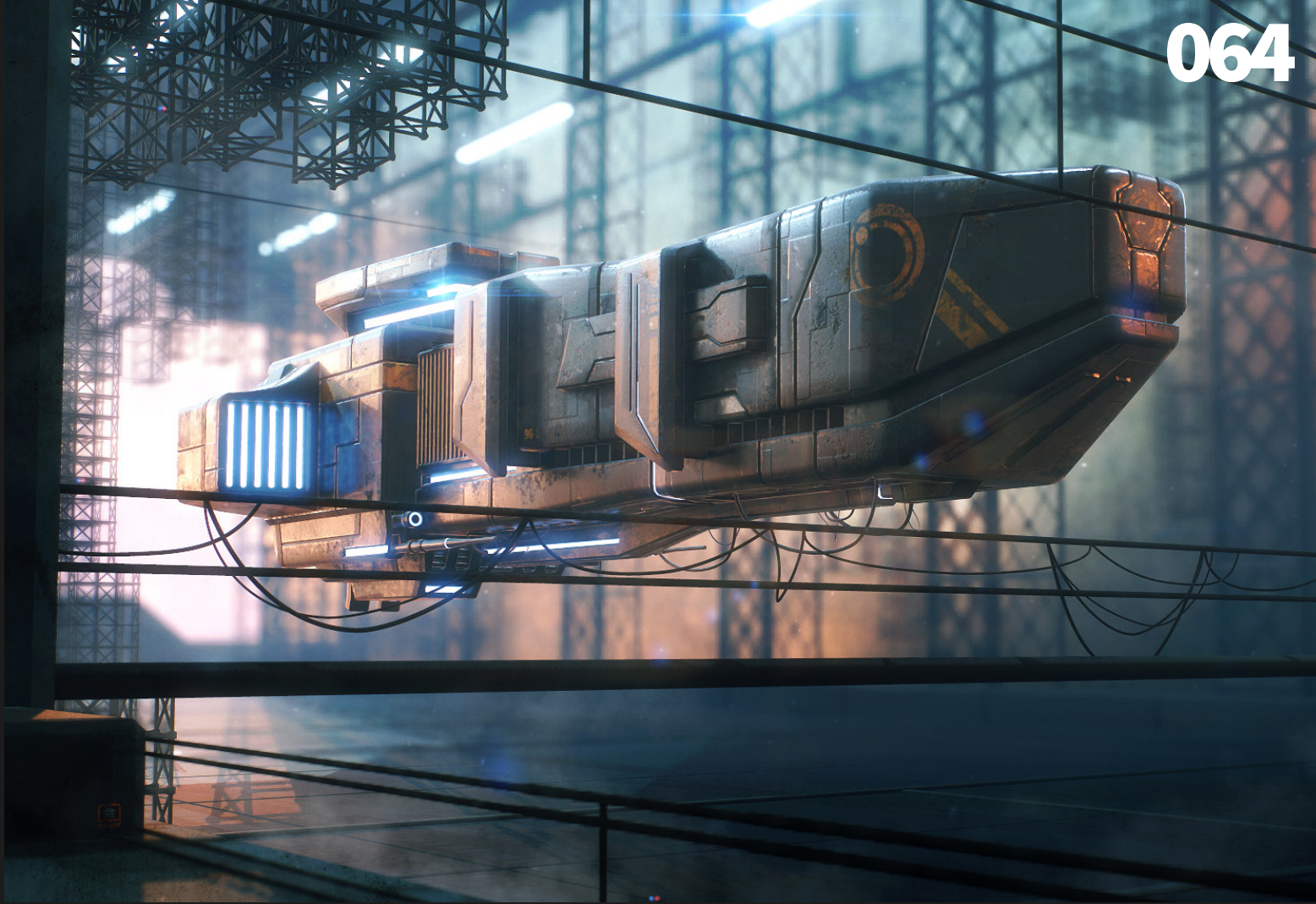


**048**





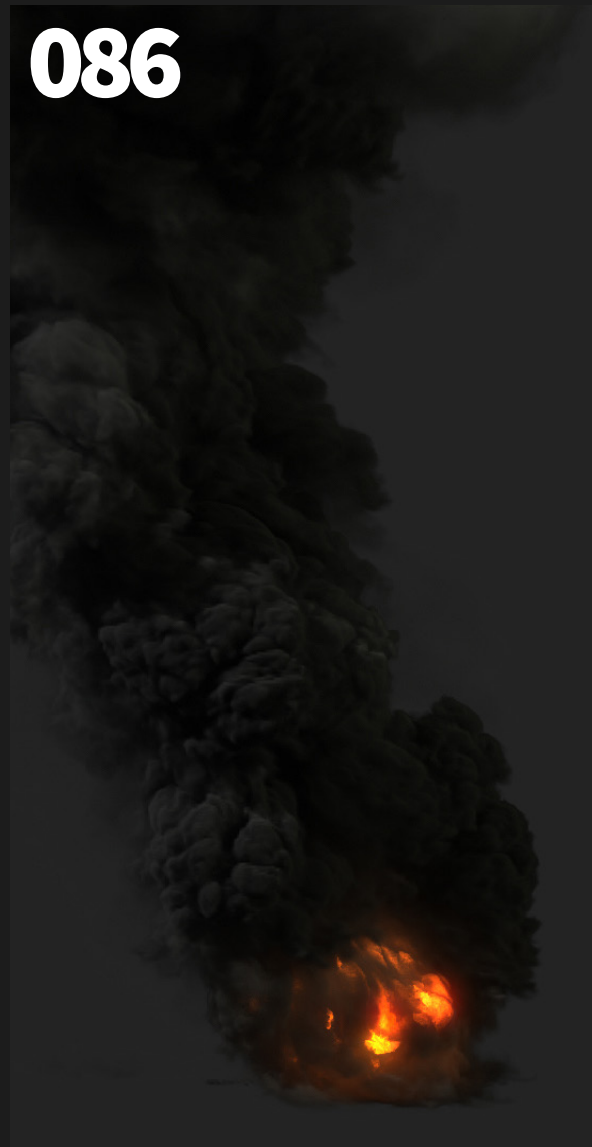
064



006



086



026



# Art Gallery

Each issue the 3dcreative team selects 10 of the best digital images from around the world. Enjoy!







## Obsidian Hauler

Josh Wilkinson

Year created: 2015

Software used:

MODO, Quixel SUITE 2,

Unreal Engine 4, Photoshop

Web: [JoshWilkinson3D.com](http://JoshWilkinson3D.com)





## Deep in the woods

Aron Kamolz

Year created: 2015

Software used:

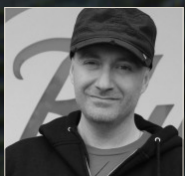
Vue, Photoshop

Web: [artstation.com/artist/aronk](http://artstation.com/artist/aronk)  
[aronkamo.deviantart.com/](http://aronkamo.deviantart.com/)









**Swamp Creature**

Alessandro Baldasseroni

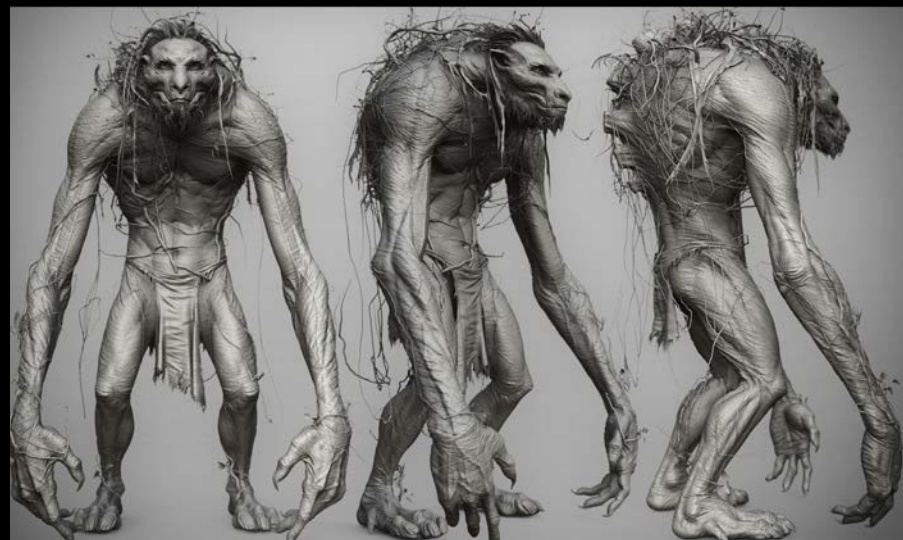
Year created: 2015

Software used:

3ds Max, ZBrush, MARI, Photoshop

Web: [artstation.com/artist/baldasseroni](http://artstation.com/artist/baldasseroni)









**Sevres' Gate**

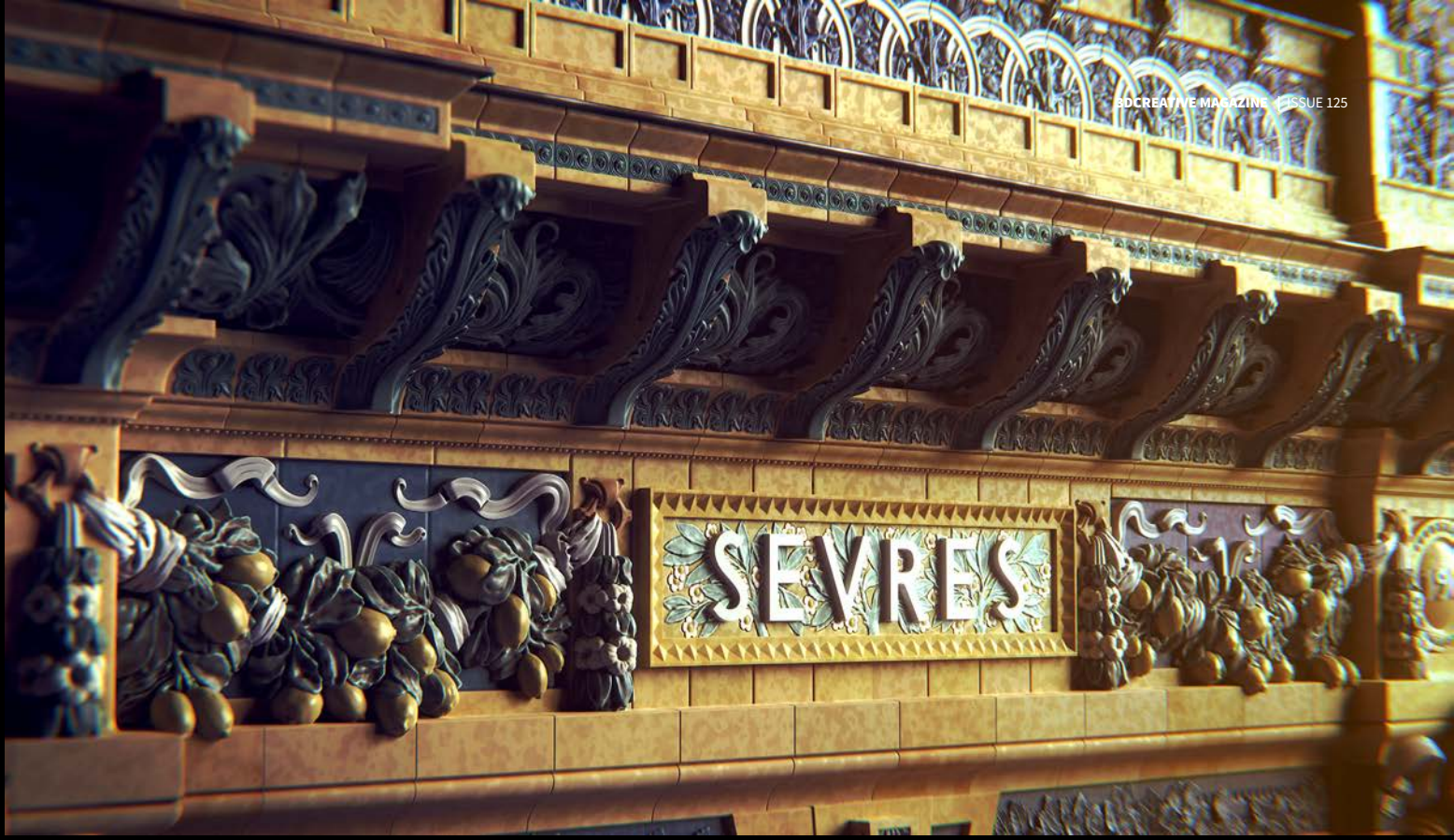
Clément Foucault

Year created: 2015

Software used: Blender, Cycles

Web: [clement-foucault.com](http://clement-foucault.com)









## Creatch

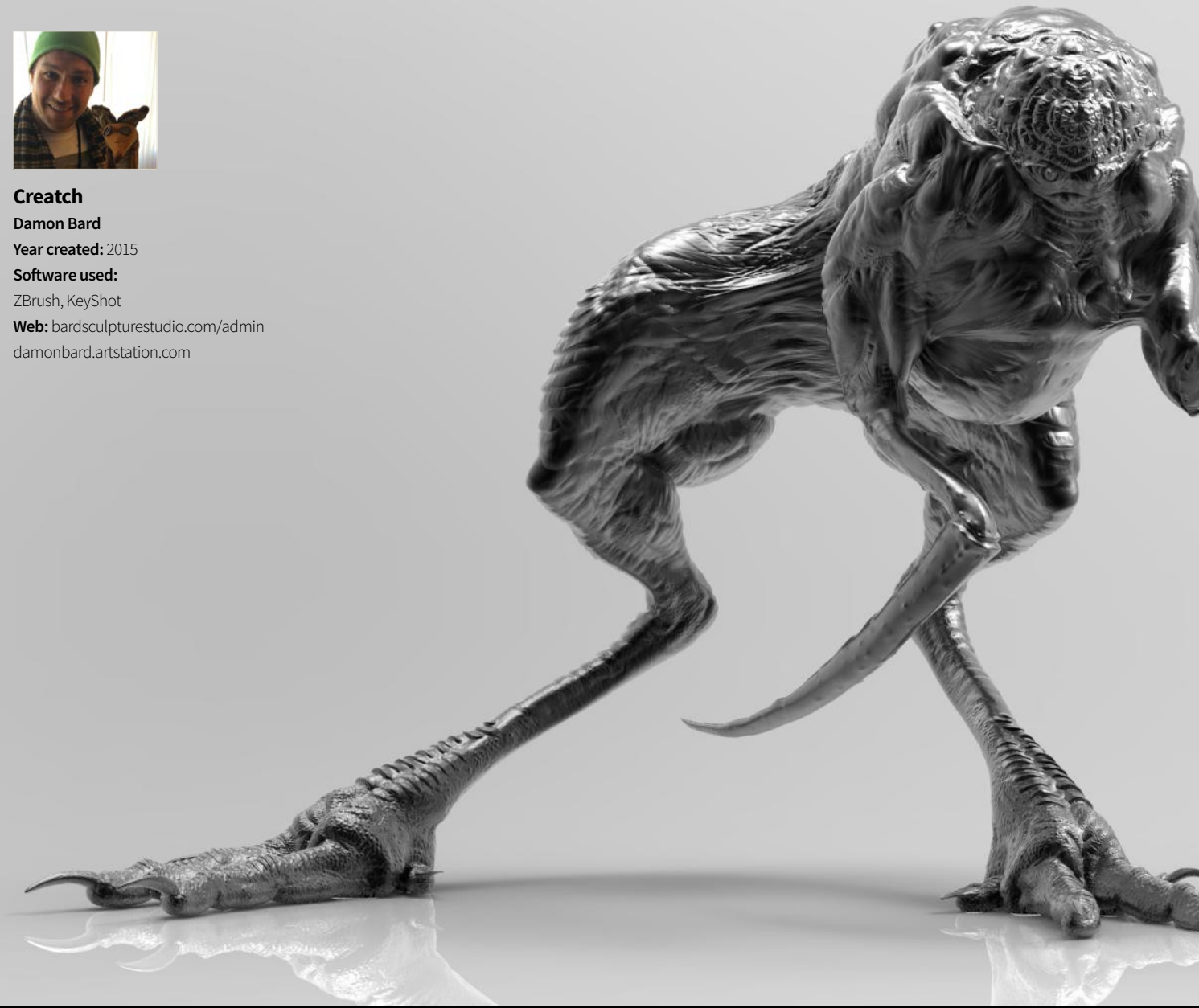
Damon Bard

Year created: 2015

Software used:

ZBrush, KeyShot

Web: [bardsculpturestudio.com/admin](http://bardsculpturestudio.com/admin)  
[damonbard.artstation.com](http://damonbard.artstation.com)











### Fox Tale

Ludovic Lieme

Year created: 2015

Software used:

3ds Max, V-Ray, MARI, Ornatix

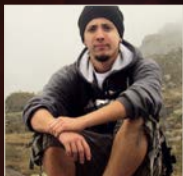
Web: [artstation.com/artist/ludoviclieme](http://artstation.com/artist/ludoviclieme)











**Dragon Book**

Ozani Ferreira

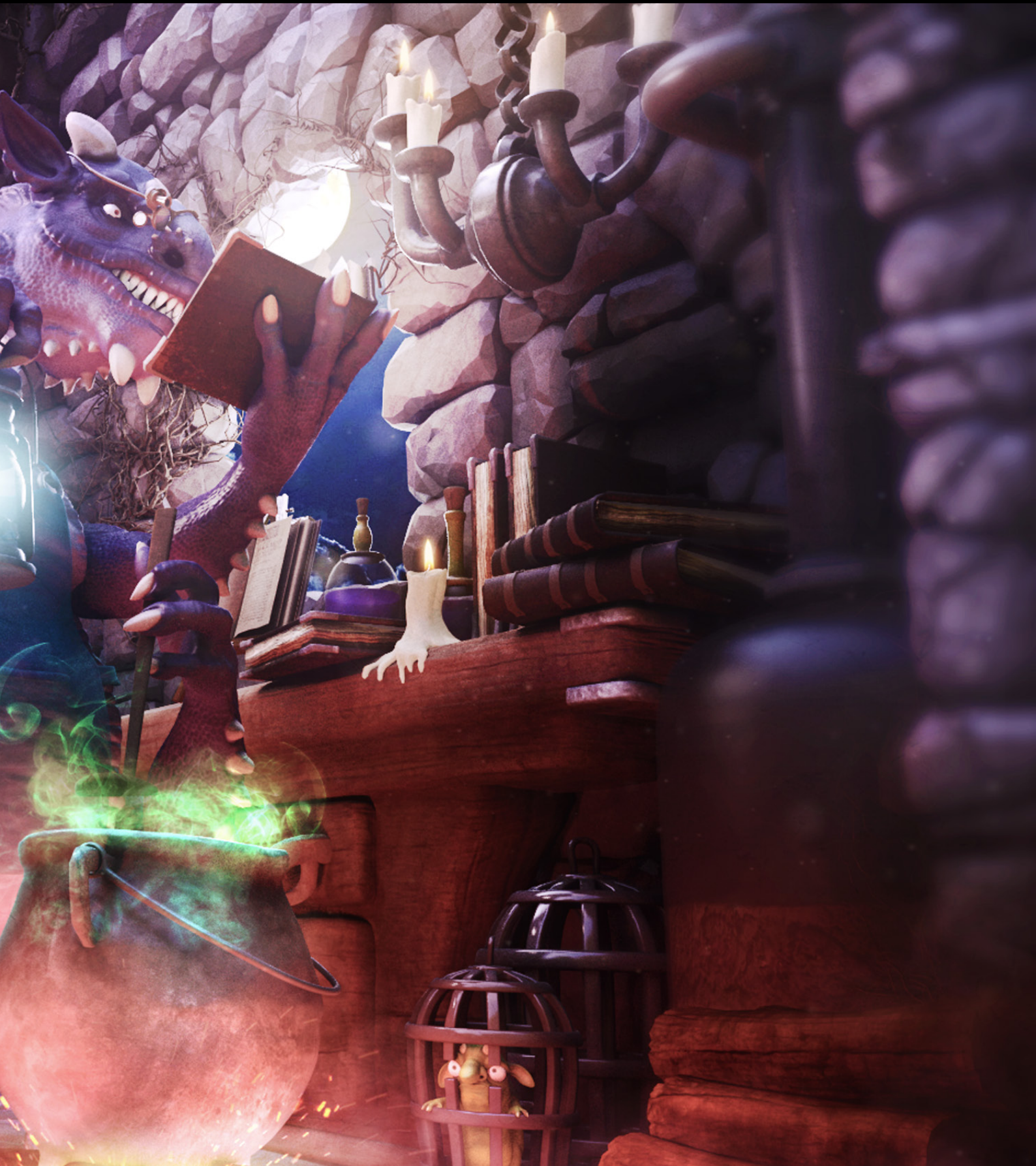
Year created: 2015

Software used:

Maya, ZBrush, MARI and V-Ray

Web: [ozaniferreiraart.com](http://ozaniferreiraart.com)









## Alien Priest

Sebastián Montecinos

Year created: 2015

### Software used:

Maya, ZBrush, Photoshop,  
Substance Designer, V-Ray, After Effects

Web: [artstation.com/artist/postprocess](http://artstation.com/artist/postprocess)







**NOX 001 (Part 1 of 52)**

**Philip Harris-Genois**

**Year created:** 2016

**Software used:**

Mudbox, ZBrush, Softimage,

Arnold, Photoshop

**Web:** [artstation.com/artist/pharrisgenois](http://artstation.com/artist/pharrisgenois)



N O X





## Self Portrait

Jacques Leyreloup

Year created: 2015

Software used:

Maya, ZBrush, Arnold, Yeti

Web: [artstation.com/artist/rudrik](http://artstation.com/artist/rudrik)





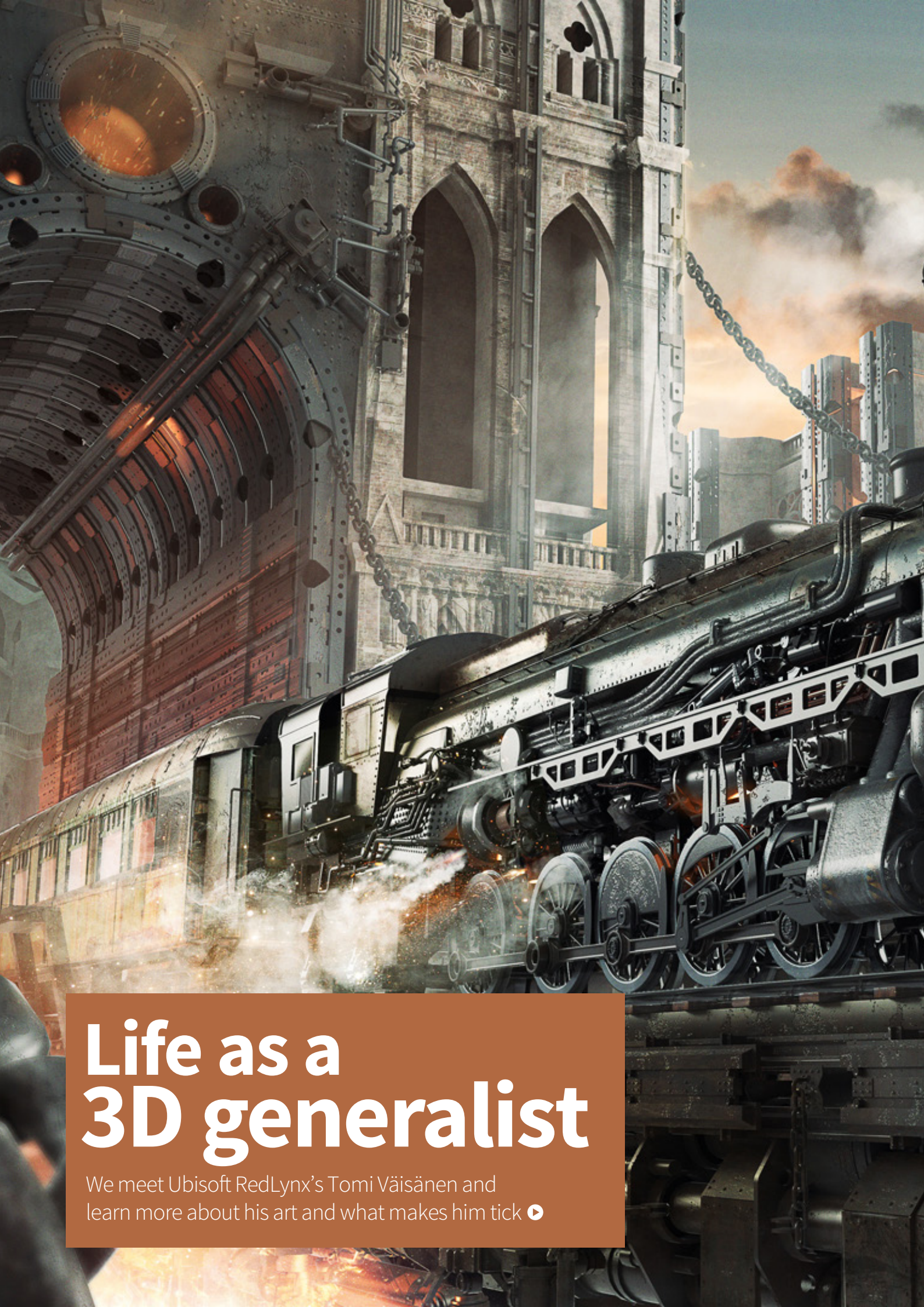
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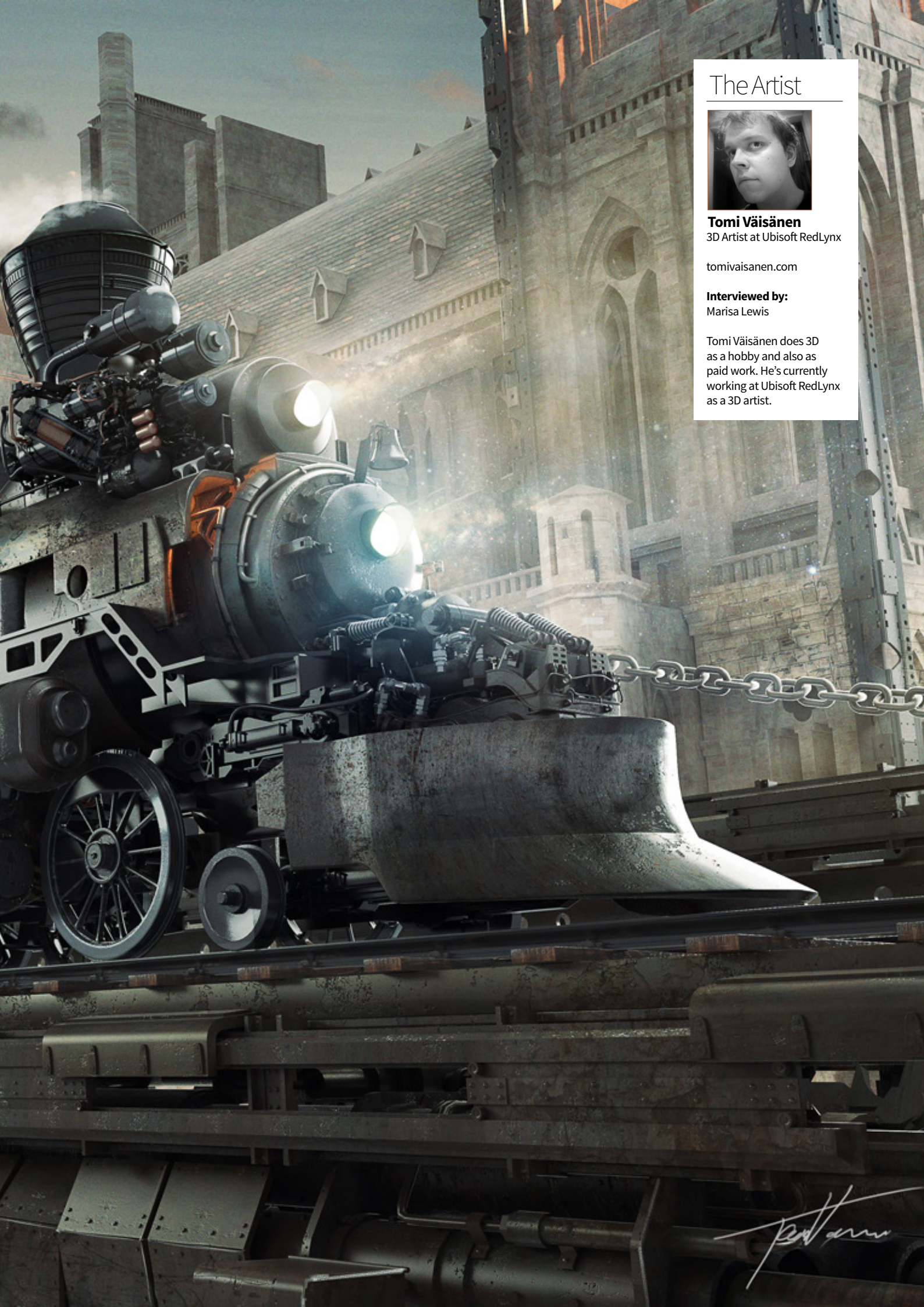




# Life as a 3D generalist

We meet Ubisoft RedLynx's Tomi Väisänen and learn more about his art and what makes him tick ▶





## The Artist



**Tomi Väisänen**  
3D Artist at Ubisoft RedLynx

[tomivaisanen.com](http://tomivaisanen.com)

**Interviewed by:**  
Marisa Lewis

Tomi Väisänen does 3D as a hobby and also as paid work. He's currently working at Ubisoft RedLynx as a 3D artist.

*RedLynx*



**Tomi Väisänen is a 3D generalist based in Finland, where he works at Ubisoft's RedLynx company, with credits including platform racing game *Trials Fusion*.**

**3dcreative:** Hi Tomi, thanks for talking to 3dcreative! Please introduce yourself to our readers with a bit about who you are, where you're based, and what you do.

**Tomi Väisänen:** Hi all. I'm Tomi, and I do 3D because I'm bad at drinking alcohol, unlike the rest of the Finns. I live in Finland, land of saunas, polar bears and mental disorders. It's always dark

outside and if we're not depressed, we're drunk! I was able to escape that fate by going deep inside my mind to pretend that I like doing art for a living. Eventually my hobby became a job. I used to work in the advertisement industry before I went to the game industry. Currently I work at Ubisoft RedLynx as a 3D artist.

**3dc:** What's your creative background? How did you discover 3D?

**TV:** I was that kid who drew dinosaurs shooting lasers at each other and couldn't care less about much more important things. A career in art was

inevitable. Basically I used to draw a lot, edit videos, and did all sorts of motion-graphic things until I discovered that 3D was the correct tool for me. At first I thought that you need to be good at math to be able to produce 3D art, but how wrong I was. I can barely calculate with my fingers but that hasn't stopped me from doing 3D.

Eventually I went to university to study multimedia production, which contained all the things I mentioned earlier, but the quality of teaching was horrible. Eventually I got a full-time job before graduating. I still haven't graduated yet and don't even have an interest to. ▶

● *Hazmat Headgear* – A personal piece created with 3ds Max, V-Ray and Photoshop







● *Heart of Eden* – Personal work for a digital art exhibition in Helsinki, Finland



● *Planetarium* – Personal work made with 3ds Max, Corona Renderer and Photoshop



## ⚡ TOP TIP

### Texture archive

Most of us carry some sort of digital camera with us nowadays, at least in our mobile phone. I'm constantly taking really random-looking pictures of different forms and textures, and use those as part of my works, whether it's as a complete texture or just a reference image.

### Kitbash library

Doing 3D is really time-consuming and modeling is slow. Make it faster by creating your own pre-made kitbash library and remember to update it now and then. Besides the geometry, save all the materials and textures you use. There's no need to make the same thing twice.





*Tomivaisanen*  
www.Tomivaisanen.com



● Shells - Trying out a photorealistic style with 3ds Max and V-Ray



● *Crowd Control Unit* – A helmet design that turned into a full bust, modeled with 3ds Max and Mudbox





● *Freightliner* – Personal work made with 3ds Max, Corona Renderer and Photoshop



● *Precious Cargo* – A personal piece created with 3ds Max, V-Ray, Fusion and Photoshop



**3dc:** Who or what would you say are your biggest artistic inspirations?

**TV:** It's really hard to say, because there are tons of really, exceptionally talented artists out there. Just looking at the front page of ArtStation makes me hate myself! I'm also really happy that I'm constantly surrounded by really talented people in my career.

**3dc:** What software or tools do you usually use?

**TV:** 3ds Max is the most common workhorse I use, as well as others like Photoshop, After Effects, and other common industry-standard tools. I'm constantly trying to learn new softwares and workflows. Currently I'm interested in photostitching and learning how I could use that in my work.

**3dc:** Could you give us an idea of the typical 3D workflow you use?

**TV:** Yes, it's a complete mess. When doing still images, I usually start with really fast and ugly photobashing and doing paintovers, just to get the ideas onto canvas. No one ever sees these fast sketches. After that, I start modeling from whatever seems to be a suitable starting point. ▶



Usually it's some minor detail that doesn't even show on the final image..

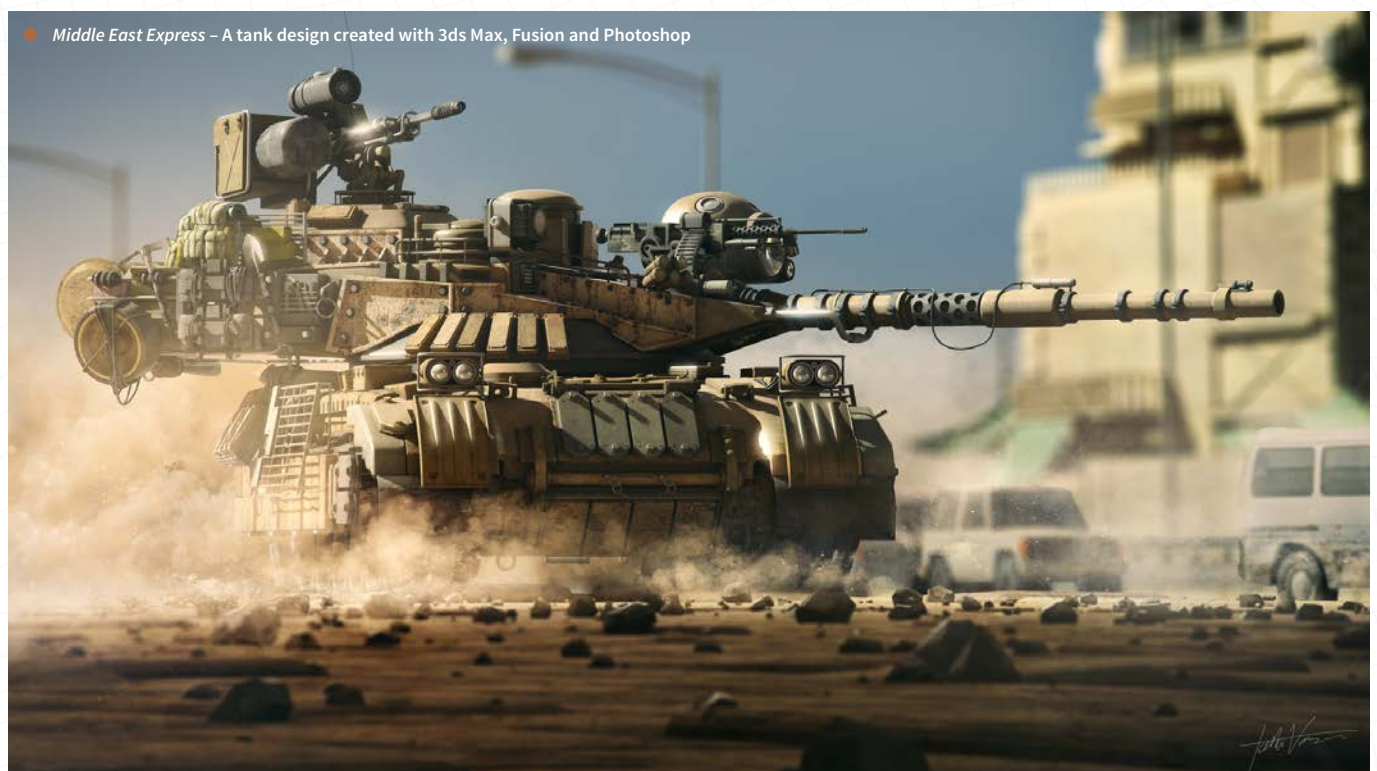
After the modeling reaches a certain stage I start juggling the image between Photoshop and 3ds Max just to get a grip on what the final image might look like. After that, it's just iteration after iteration until I hate it! The image is done when I've had enough. The final image looks good for about 10-15 minutes, but after that it's just garbage, and I have this huge urge to start creating a new, better one – and that's how you get better, eventually.

**3dc:** What's one piece of advice you'd give to artists aspiring to work in the industry?

**TV:** Do more art instead of answering interviews like this! Do what you want, not what the others want. Have a passion for what you do, whatever it is. Post your work on forums and make connections to your fellow artists. And remember to eat broccoli.

**3dc:** What do you feel is your biggest achievement so far, in either your personal or professional work?

**TV:** I have won plenty of graphic competitions and short films in demoscene parties, which is always nice. But the biggest job I had was being responsible for directing the CGI trailer of *Trials Fusion: Awesome Level Max* for E3. It was something completely new, scary, but damn it was fun.







● *Bells & Whistles* – Tomi's first-place entry for the Assembly 2014 graphics competition



● *High Octane Rampage* – Tomi's winning entry in a 2015 graphics competition. It was made with 3ds Max, Corona Renderer and Photoshop

**3dc:** What are you currently working on? Are there any new projects we should look out for soon?

**TV:** I wrote a tutorial describing my creative process which should come out soon. I'm busy with my daily job at Ubisoft RedLynx – it's too bad I can't mention anything because of NDAs. There's always personal works in progress, of course.

**3dc:** Finally, what do you like to do in your spare time (if you have any)?

**TV:** There are a lot of computer games and movies involved in my spare time, just like in every nerd's life, I guess. Of course it's not a healthy habit, to sit in front of the monitor all day long creating art, so I like to keep myself at least

in some sort of fitness. I'm also a really good chef, having mastered the skill of using too much chili in my food.

**3dc:** Thank you very much for speaking to 3dcreative today!

**TV:** Thanks! It was a pleasure. ●







## The Artist



**Tomi Väisänen**  
tomivaisanen.com



*Tomi Väisänen*  
WWW.TOMIVAISANEN.COM



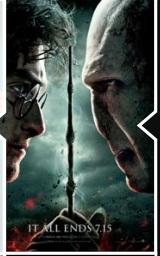


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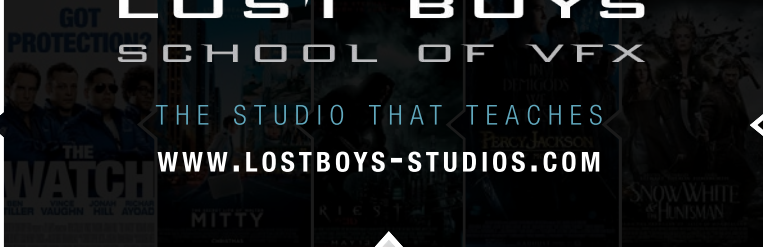
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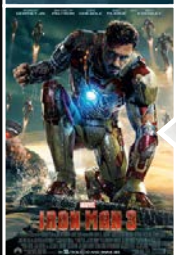
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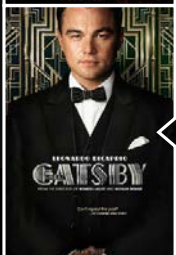
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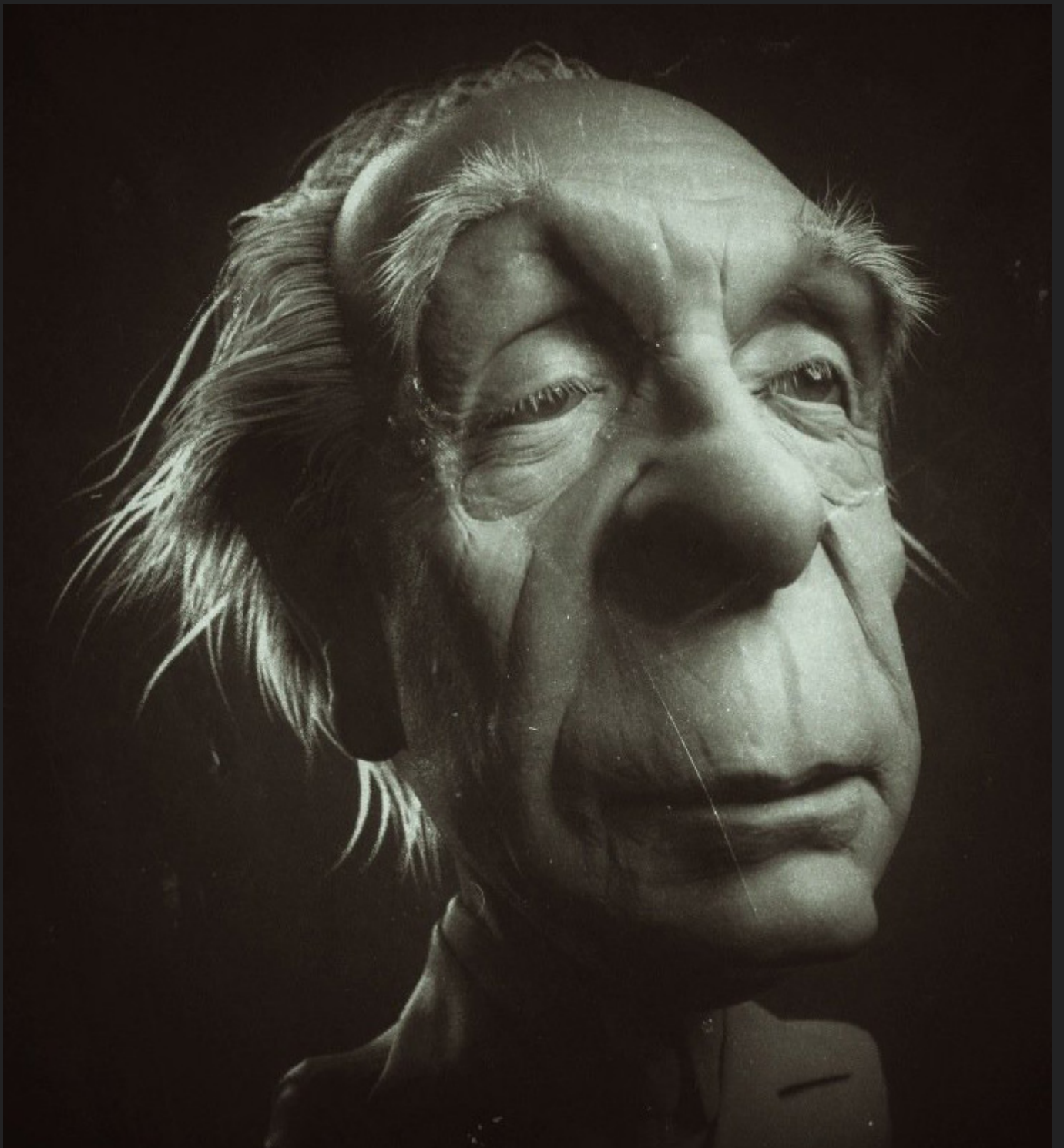


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# The sketchbook of **Leon Enriquez**

Framestore's Leon Enriquez tells us more about his ZBrush work, sculpting process, and finding time to sketch ▶

## The Artist



**Leon Anthony Enriquez**  
[leonenriquez.wix.com/leonenriquez](http://leonenriquez.wix.com/leonenriquez)

**Software used:** ZBrush

Leon Enriquez is a 3D modeller, creature artist, digital sculptor and face shape artist. He's currently working at Framestore in London.



## Take a look through Leon Enriquez' 3D sketchbook...

I usually do my sketches during my free time, and that is after work and after my 3-year-old daughter falls asleep. If my production schedule permits, we sometimes do “lunch crunches”, which are about an hour of sculpting random topics during Friday at work. I like sculpting anatomy in particular, which is why I do my self-study and practice by sketching in 3D. It is the fastest and most effective way for me whenever I practice, as I get to see the whole form and concept from all angles. It's like meditation for me as well, giving me the pleasure and privilege of freedom in my creativity. I am always critical of the form and flow during my studies and I always feel like there is not enough time for my sculpting appetite.

### Inspiration and ideas

Even before I started sculpting anything, even traditionally, I was always in awe of the early FX industry, mainly monsters and odd creatures. There are just too many films that inspired me and it is unfair that I cannot mention them all, but *Labyrinth*, *The Dark Crystal*, and the *Sinbad* films were some that inspired me at a young age. Graphic novel and superhero characters also have a big influence on me creatively. The industry has mutated a lot nowadays, and there are tons of good artists out there to be inspired by.

### Materials

For 3D sketching I use ZBrush, which has some useful and effective brushes like Clay Buildup, Morph, Move Topology and Snake Hook. Other very useful features like DynaMesh, ZRemesher and Group or Panel Loops help me speed up my workflow. Unfortunately I find the MatCaps and camera in ZBrush are unreliable, so I check my forms using KeyShot (which is very fun and easy to use) before I go ahead with working on the primary details.

### Sketching workflow

In ZBrush I often start with a sphere instead of grabbing a pre-made generic man or anything. It's just a personal thing, so I feel like the piece that I am working on was purely crafted by me. I often sculpt in parts, after all: the head, the torso and arms, and the pelvis to foot in the case of a normal two-armed biped. Then I just combine the parts and DynaMesh after the blocking is done. It depends on what I want to practice; sometimes I block in a T-pose, sometimes in a more dynamic pose. I'm not usually content with the first blocking, so I tend to do two or three before moving on to the primary forms. ●

● One of Leon's lunch doodles from 2015





- A sculpt of a bounty hunter character, 2015



- Delilah the were-hyena, a work in progress from 2015





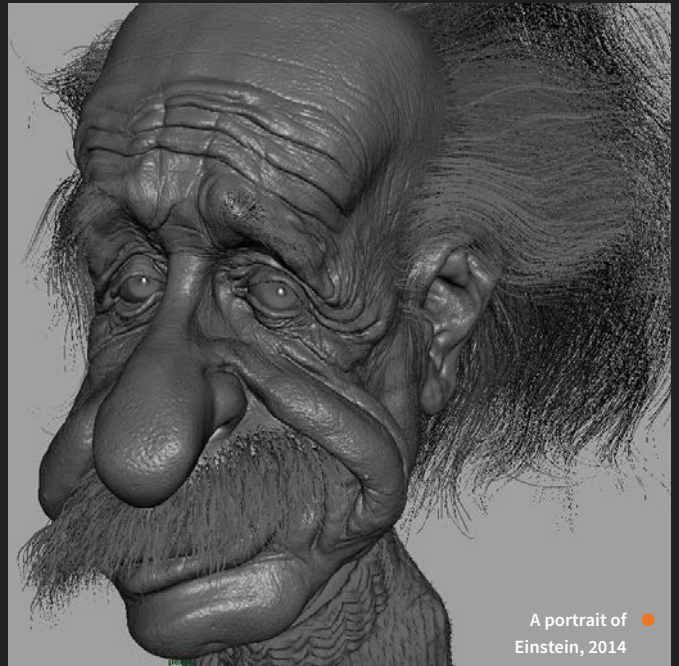
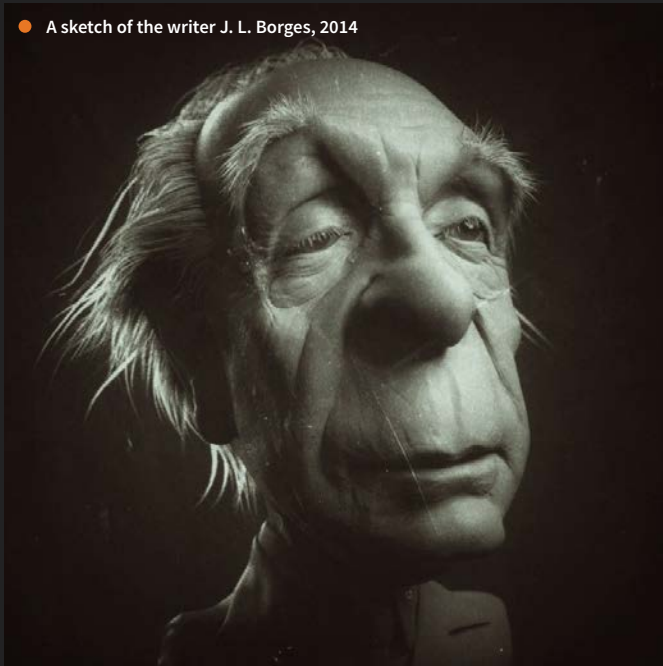


● Leon's version of the Wendigo. This sketch took four days in total, starting out as just a head sculpt



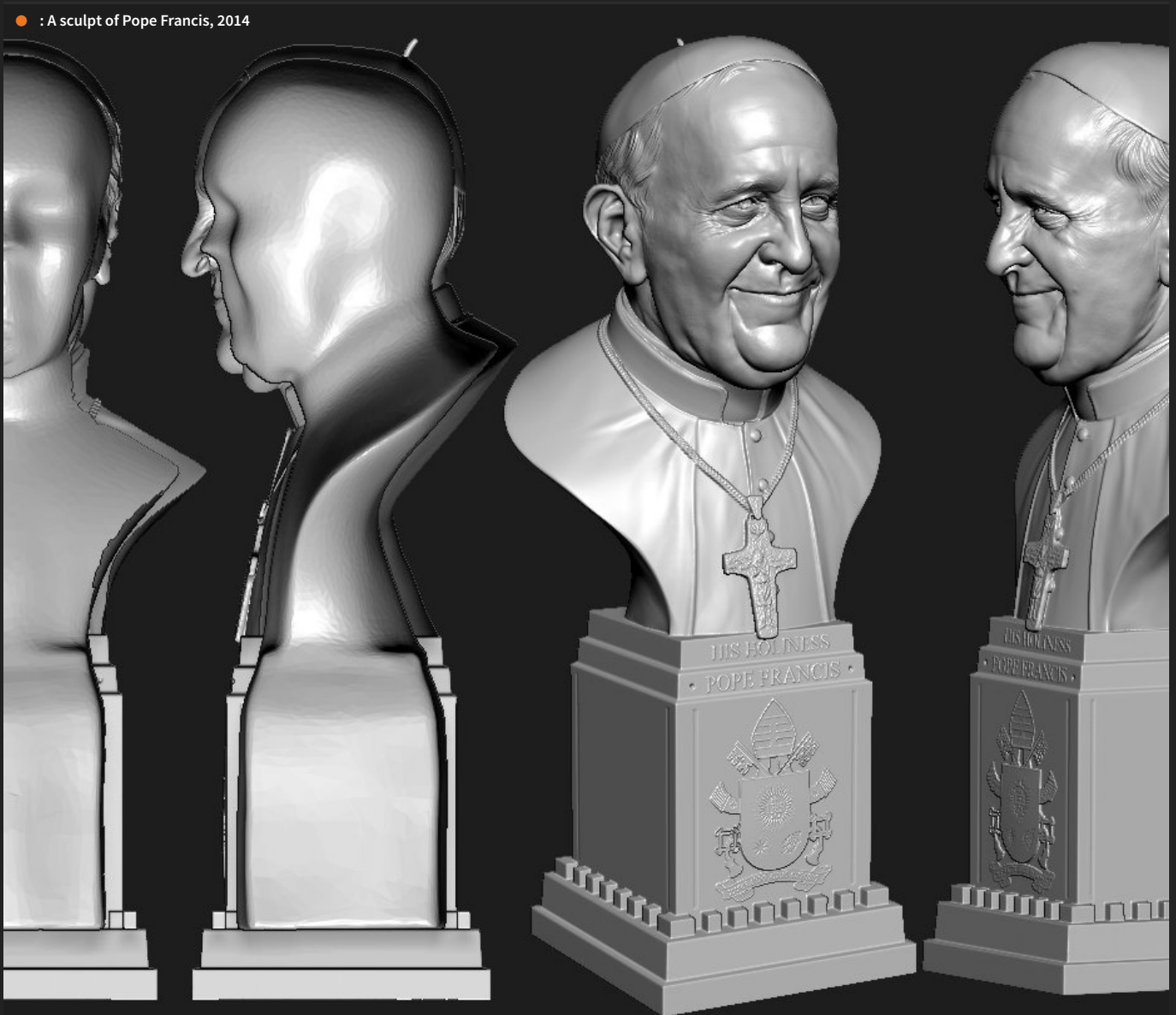


● A sketch of the writer J. L. Borges, 2014



● A portrait of Einstein, 2014

● : A sculpt of Pope Francis, 2014





A likeness sculpt of actor Ed Harris, 2014 ●



## The Artist



**Leon Anthony Enriquez**  
[leonenriquez.wix.com/leonenriquez](http://leonenriquez.wix.com/leonenriquez)



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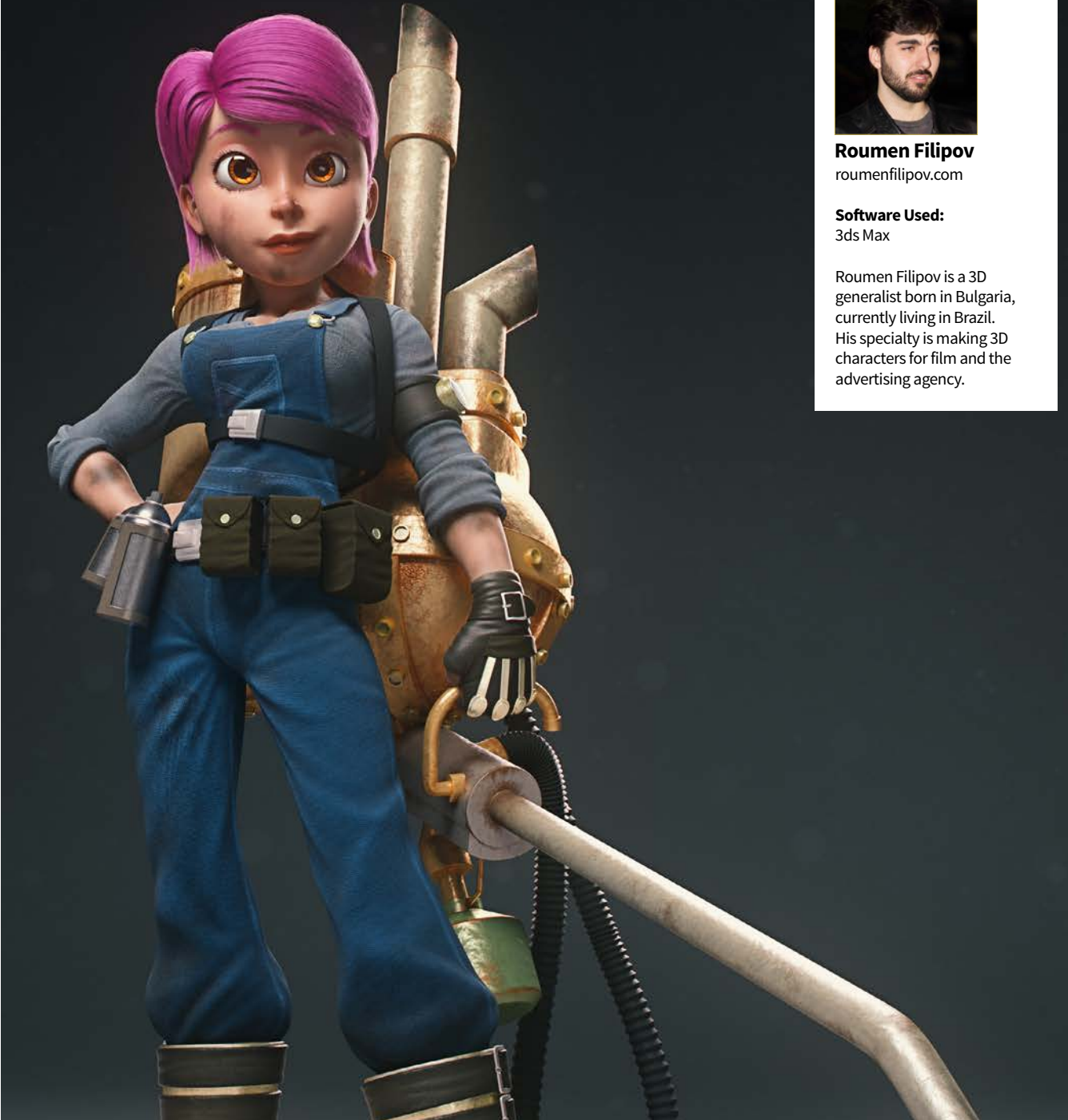




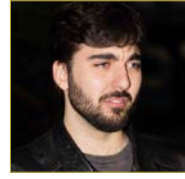


## FREE RESOURCES

Model, Maps & Texture files



## The Artist



### Roumen Filipov

[roumenfilipov.com](http://roumenfilipov.com)

#### Software Used:

3ds Max

Roumen Filipov is a 3D generalist born in Bulgaria, currently living in Brazil. His specialty is making 3D characters for film and the advertising agency.

# Posing a character model

## by Roumen Filipov

In this final stage of his workflow, Roumen Filipov uses the Super Simple Rig script and V-Ray to pose and render his fun steampunk character [▶](#)



## Roumen Filipov shows us how to bring characters to life with a simple pose...

This is the last of a series of four tutorials covering the production of a stylized 3D character – a steampunk pest exterminator girl – using ZBrush and 3ds Max, which was made since the initial blocking until the final render and post-production. In this fourth phase, we will learn how to achieve our desired hairstyle using 3ds Max's native tools, and how to set up the render and lighting in V-Ray. Finally, I'll mention some quick post-production tips in Photoshop.

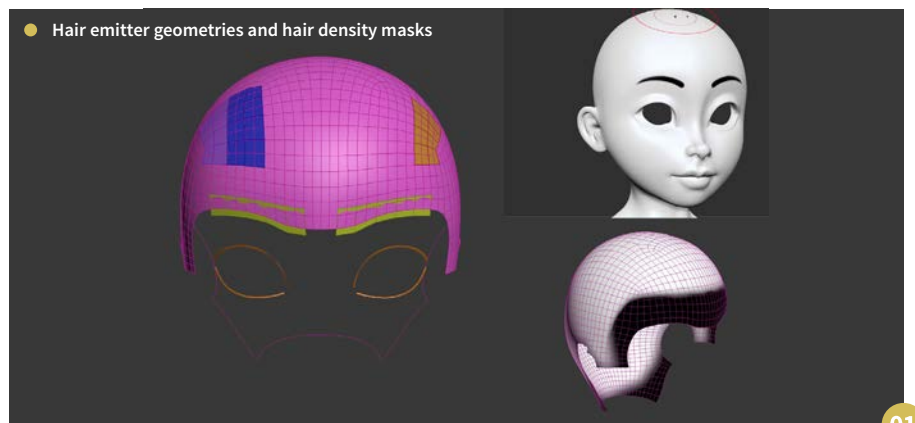
During the process, I'll be showing how to use the Hair and Fur modifier in 3ds Max, taking different approaches depending on how the hair behaves, and also some render techniques with V-RayHairMtl. This tutorial will also show how to properly pose and render your character, making it look interesting and with personality, even in front of a simple neutral background. I'll also show how a simple light rig can achieve great results with a very small render time even for a 4k image, and what render elements and tricks I use to enhance the final look in Photoshop. In this project I also use [Super Simple Rig script](#), freely provided by superrune on his website.

Now let's have some fun!

**01 Preparing the hair emitters:** We have finished some good work on the look development of the character, but here comes the hard stuff: hair. I'll use the Hair and Fur modifier along with V-RayHairMtl to achieve the desired look, but first we need to prepare the mesh that will serve as a hair emitter. If we apply the Hair and Fur modifier to a very dense mesh, we will likely make 3ds Max crash immediately or, when it comes to combing, the number of guides will make your life a nightmare.

First I paint the hair density mask as a black and white map inside ZBrush, then I apply it to a copy of the character's head mesh and delete all the polygons that are displayed completely black. This avoids creating useless guides that would probably make the combing process difficult. I also detach some specific polygons that can be used to generate separated parts, such as the fringe of the hair.

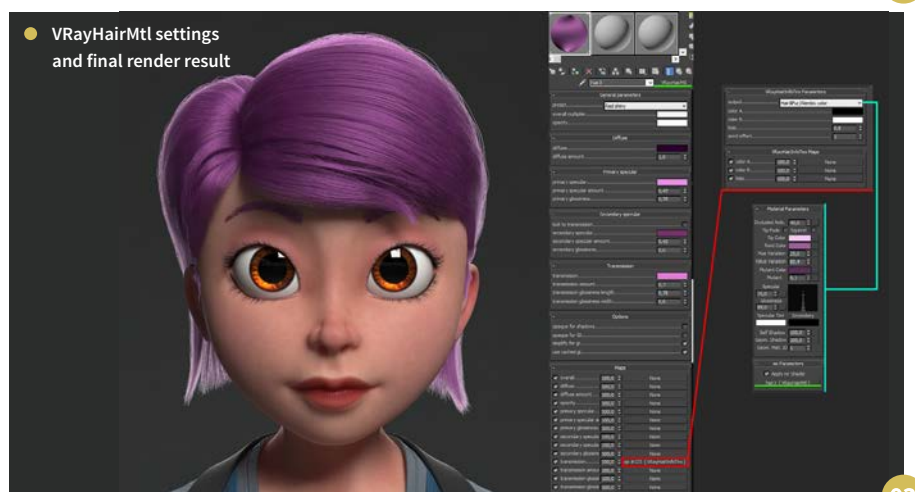
**02 Combing the hair:** Now that our meshes and masks are ready, it's time to begin hairstyling. Before we start, it's good to import the sculpted mesh of the hair to use as



01



02



03

a reference for the overall volume. The Hair and Fur modifier works by creating a guide for each vertex of the base mesh and then creating hair strands interpolated between these guides. There are two ways to manipulate the guides: you can model splines and use the 'Recomb from splines' option under the Tools rollout, or you can go to the Styling rollout and click the 'Style Hair' option to enable the styling brush. For this project, I use

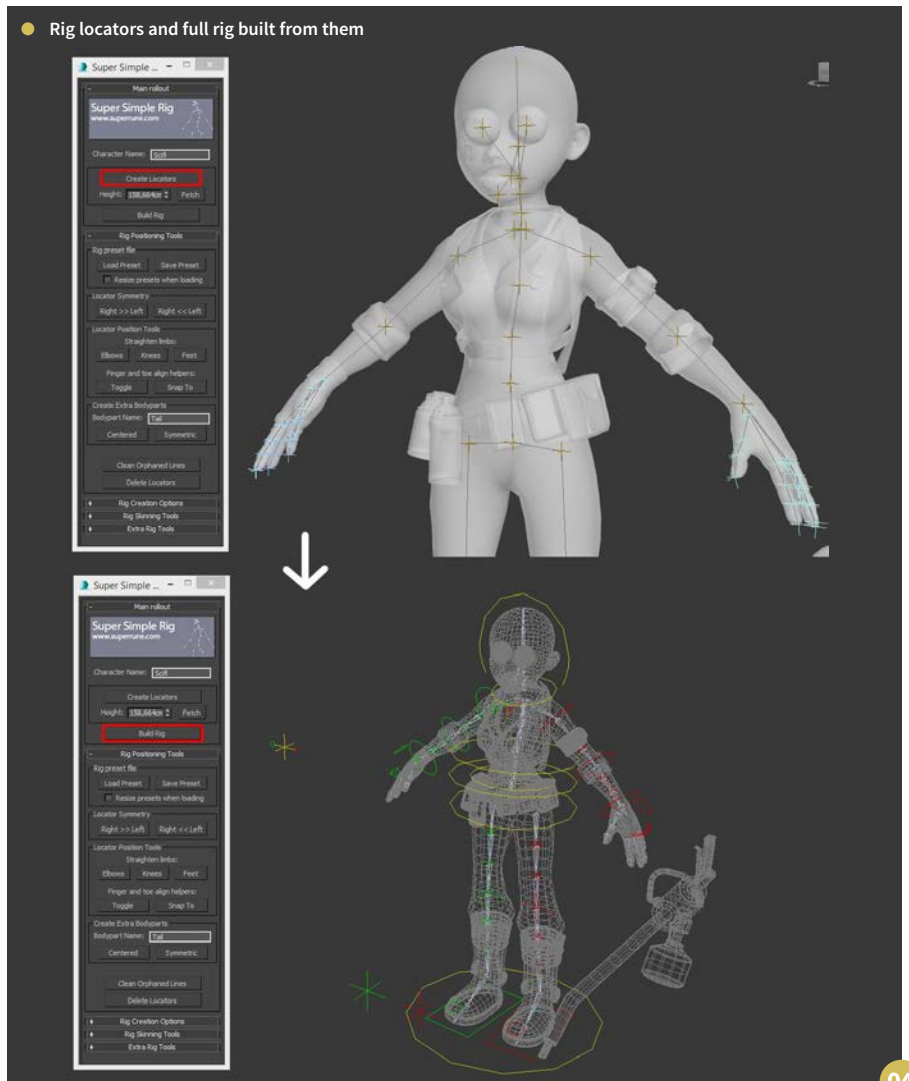
only the second option, and to make it easier, I divide the hair into a lot of different meshes with modifiers which I edit separately in order to find the perfect shape.

**03 Rendering the hair:** This step happens simultaneously with the previous step, due to the necessity of rendering the hair in order to have real feedback on the hairstyle. ▶



First, you should look for the 'mr Parameters' tab in the Hair and Fur modifier and apply a VrayHairMtl in the slot. This material is made especially for hair rendering but can be applied to any geometry as well. You can customize how the hair looks by changing the colors of overall, diffuse, specular and transmission but I usually use the VrayHairInfoTex shader in order to change the behavior of the strands from root to tip. As an easy setup for realistic color variation, I use the 'Hair&Fur/Alembic Color' mode in the output; this makes the material use the built-in configurations of the Hair and Fur colors. As a final touch, you can play with the frizz, kink and flyaway settings in the modifier to get even better behavior of the hair.

**04 Rig basic setup for posing:** With all the look development done, we now need to pose the character. I usually prefer to do this using a simple rig solution inside 3ds Max. You can do it using the Biped system, CAT (Custom Animation Toolkit) or even custom rigs, but the best for me is the **Super Simple Rig by superrune**. It's a free rig system and very fast to set up. All you need to do is open the rig-building tools, create the rig locators, move them to the positions of the body joints, and finally just click the 'Build Rig' button to create a fully functional rig ready for animation. The rig even has a similar parameters system to those you find in Maya controllers. It's important that before you build the rig, you get the scale of the locators right in the rigging tools, this helps to create control shapes and bones in a good size to begin with.

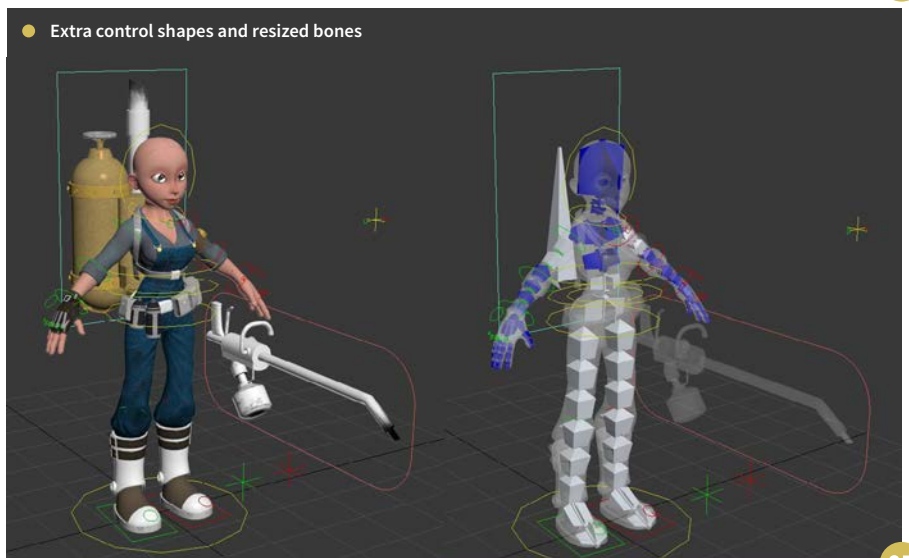


04

**05 Optimizing the rig:** The Super Simple Rig is great but it don't do all the work by itself – some minor adjustments must be done before skinning the model, especially if you use the Bones Pro plugin for it. First of all, there are some control shapes that are hard to select in the viewport, so you may want to scale them a little bit or even create new ones, attaching them to the originals and deleting the old shape inside the Edit Spline modifier.

Lastly we need to keep in mind that Bones Pro uses the bones' size and shape to determine the initial vertex influence of each one, so go to the Animation tab in 3ds Max and open the 'Bone Tools' in order to change the size and add side fins. You can always add extra bones to the rig as well as controllers; all you need to do is link them to the original rig.

**06 Skinning the character:** The skin modifier inside 3ds Max is really messy and although you can get really nice results by painting weights, the initial distribution of bone



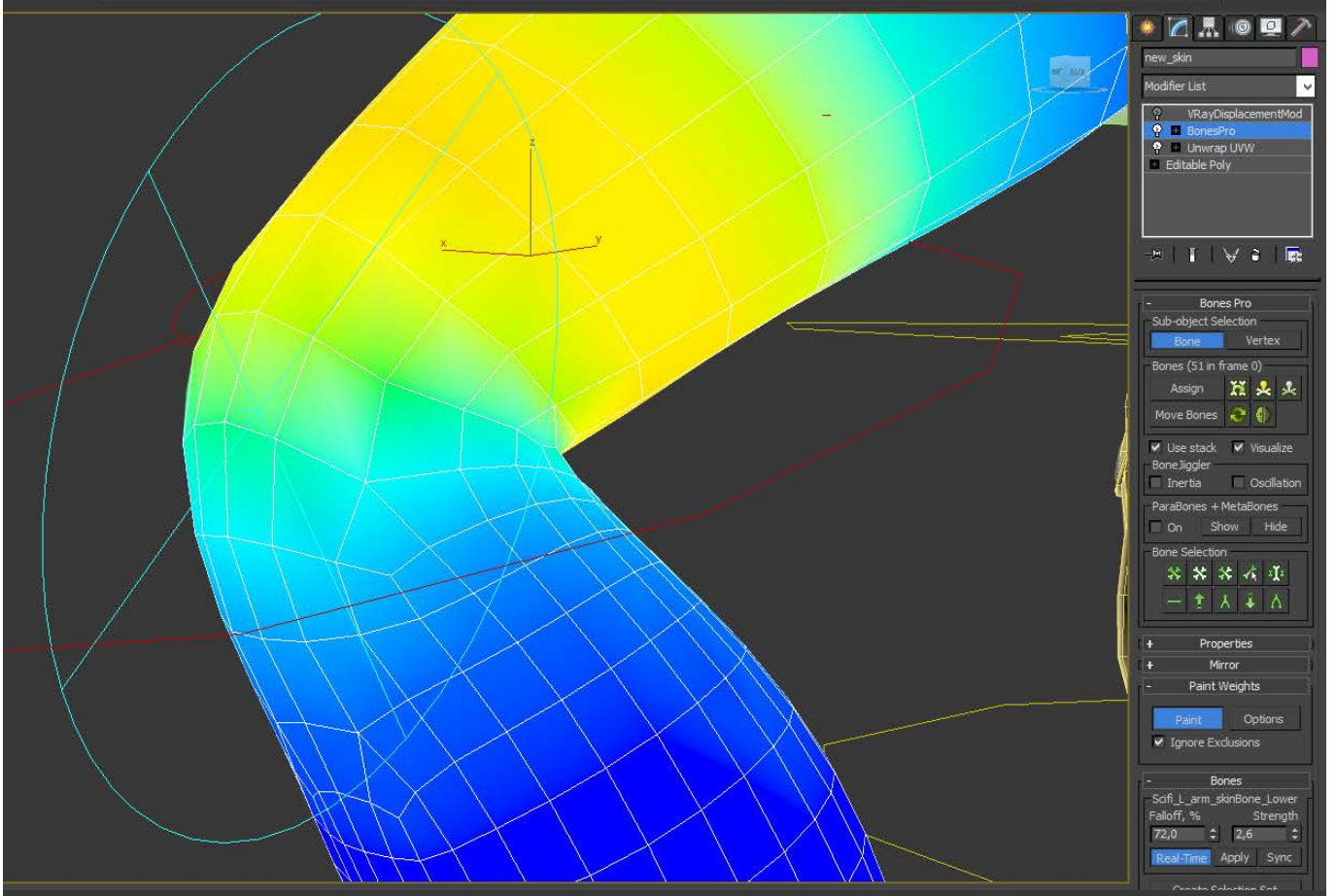
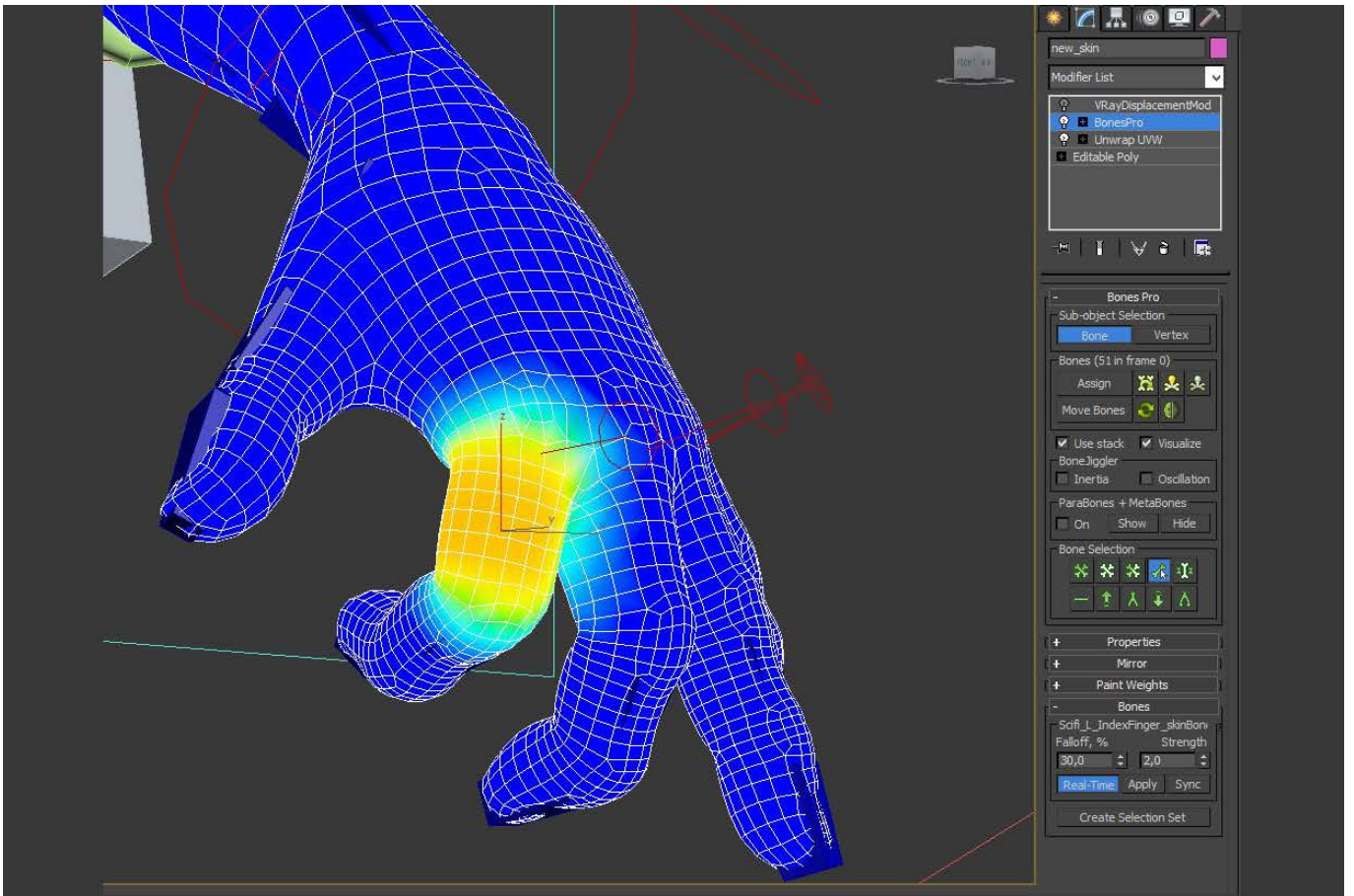
05

influences is usually very bad. For this reason, I use the Bones Pro plugin, which replaces the Skin modifier with a much smoother and quicker workflow. If you apply the modifier and assign the bones, you'll see that the result is almost perfect, especially if you adjusted the bones as shown in the previous step. After that, you can edit each

bone influence by the falloff and strength, and if you would like to make some fine adjustments, there is a weight-painting tool as well.

You can convert to a standard skin modifier with one click inside the Bones Pro preferences and the skinning will still behave the same way. ▶





● Bone influence and settings in Bones Pro



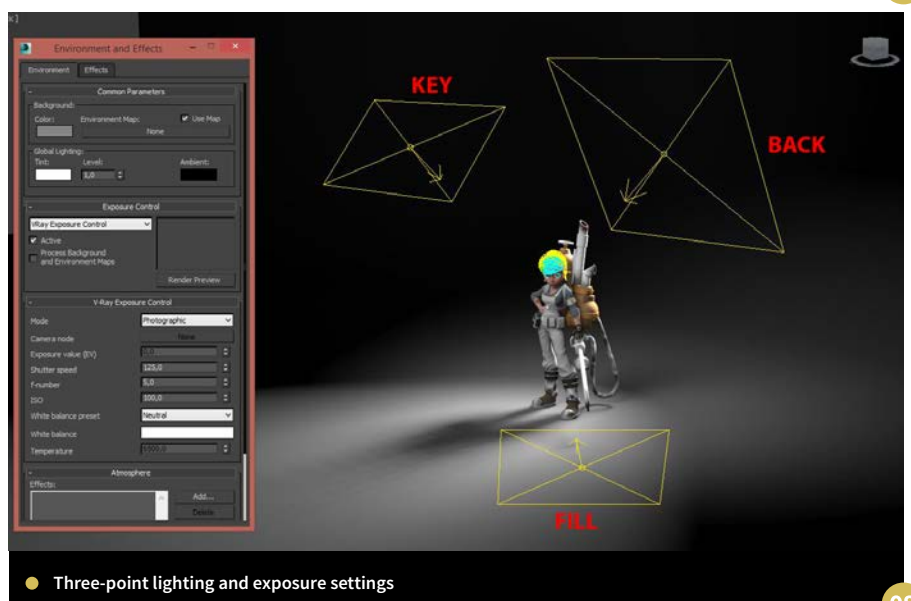
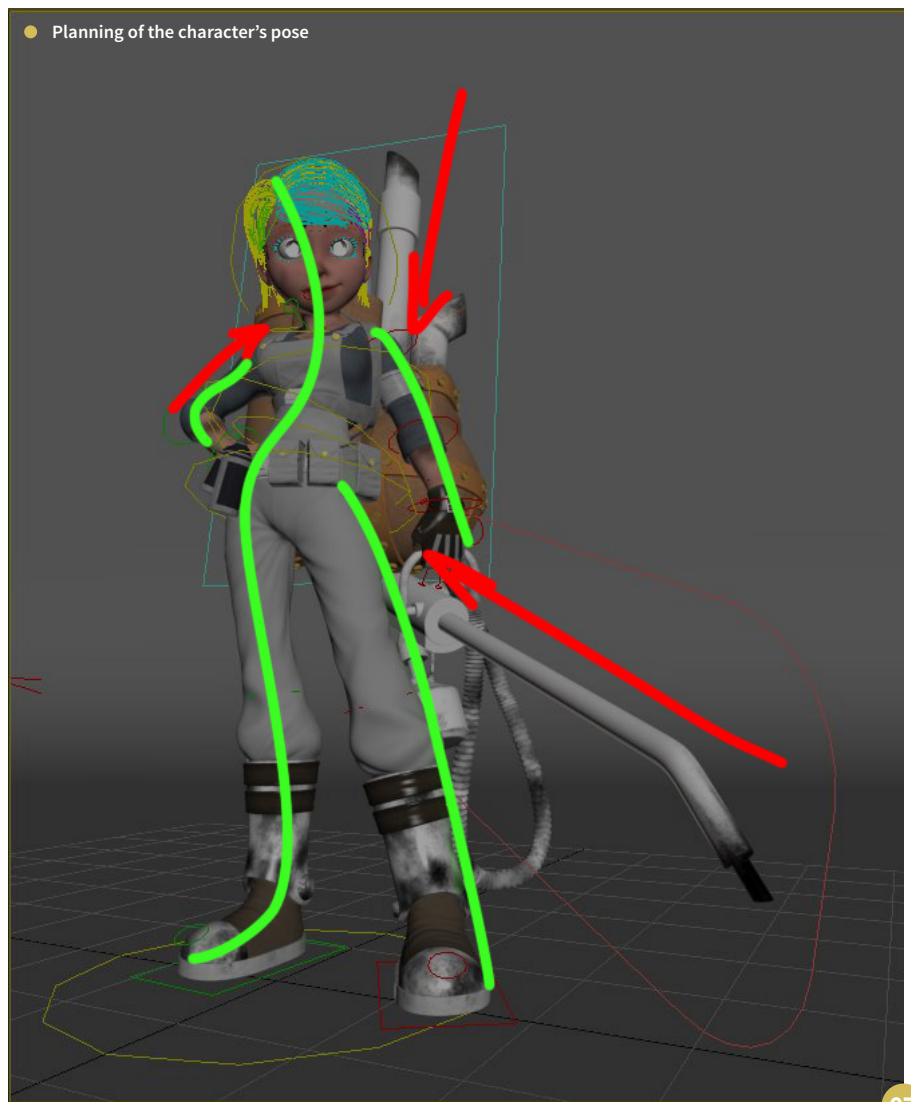
**07 Posing the character:** Now that we have finished all the hard work, it's time to put the rig in action. Posing the character with a nice and functional rig is often very easy and lets you test many poses, but you need to have in mind some concepts of body mechanics and follow some composition rules if you want to get a nice result. She is a strong and competent girl that has to fight with some big bugs in her everyday job, so I choose to put her in a confident pose, but still showing that holding all that heavy gear is not an easy task. To make the final image more interesting, I look at slightly reinforced line of action, but also use some straight lines to help guide the eye towards her. Some things I have to model just for the pose, like the hose connecting the tank and the spray gun.

**08 Lighting setup:** Lighting is something that can give life to the image, or kill it. I see a lot of renders of incredible models on the internet, but sometimes they are completely ruined due the fact that the lights and exposure are not doing the job. Always think of how you want a surface to behave in the render: for example, a metallic object may look completely bright if you use a light that's too large for the specular you want.

For this character, I use a simple three-point lighting setup, which consists of a key light with slightly sharp shadows, a big and strong backlight to make the character pop in front of the dark background, and a fill light just to lift the black areas. I always use V-Ray Exposure Control in the Environment tab so that my renders are not dependent on the settings of the physical camera.

**09 Render setup:** What I love about V-Ray is definitely its speed and ability to render nice and smooth images without pushing the hardware too far. Keep an eye for low reflection/refraction samples on the materials and samples in V-RayLights. These can add a lot of noise to the render and actually make it slower. You should always have a V-RaySampleRate element selected so you can monitor where the DMC sampler is having trouble.

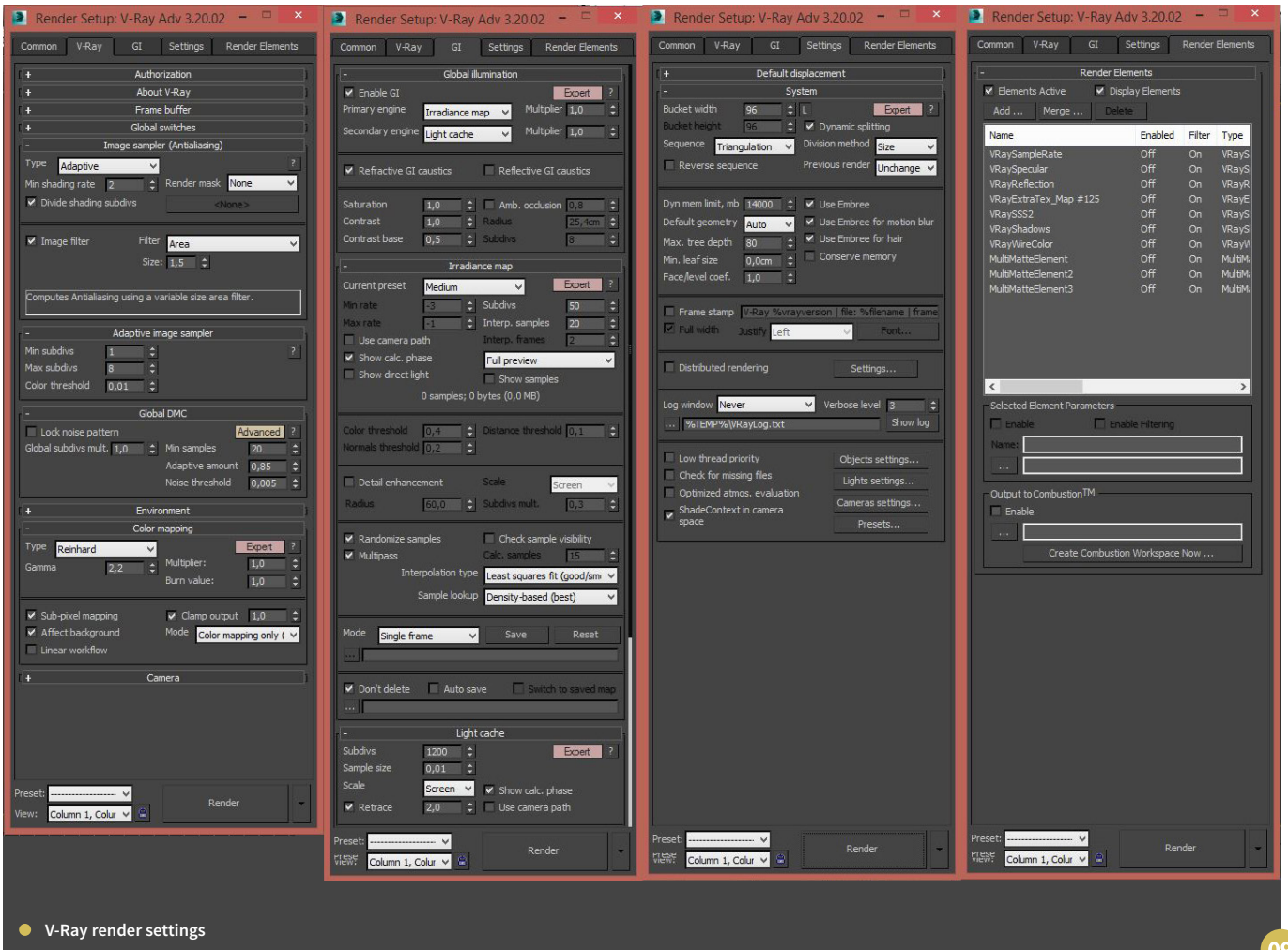
For primary and secondary GI solutions, I use Irradiance and Light Cache with simple presets, but you can get smooth results with even lower settings. The 'Embree' option really speeds up the render with no quality loss, especially for hair, but always remember to set your dynamic memory high enough. Lastly, the render elements I use are just some basic ones like reflection, refraction, V-RayExtraTex with a V-RayDirt map for the occlusion, and some masks for easy selection of different parts of the body in Photoshop.



**10 Post-production:** Render your images in at least 16-bit TIFF format if you want to have good control over color and brightness. I usually do the post-production by using the extra elements to increment my beauty pass.

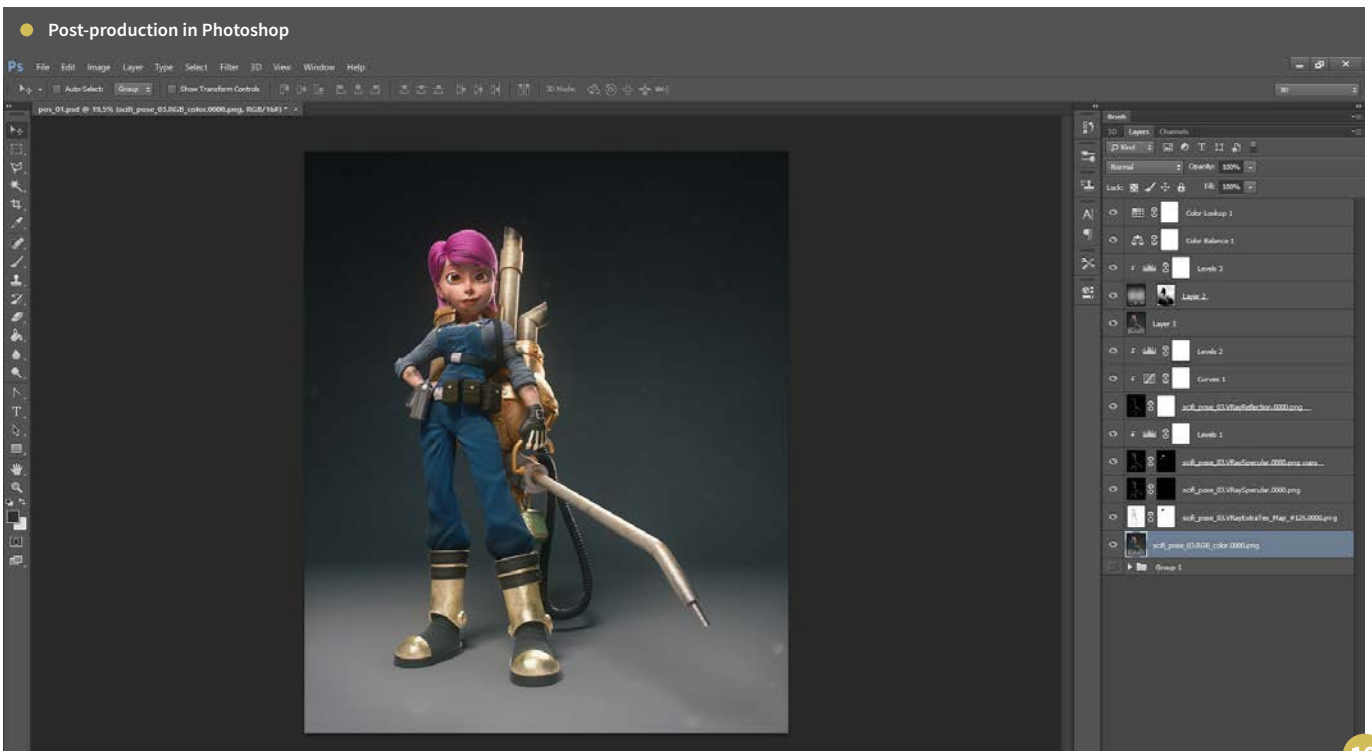
For this project, I start by adding the ambient occlusion element as a Multiply layer over the beauty pass. This will increase the overall contact area within the image, and cover some light leaks in the model.





● V-Ray render settings

09



● Post-production in Photoshop

10

After this, I play with local specular and reflection elements to increase and even change the color and intensity of the metallic objects. I add some

adjustment layers to correct some colors and values, like Color Balance, Curves and Levels. You can add some subtle effects like lens dirt and

chromatic aberration, but always take care to not add too much distraction around your subject, the character. ●



## The Artist



**Roumen Filipov**  
roumenfilipov.com



## ⚡ TOP TIP

### Super Simple Rig

You can find all you need to know about the rig I used in the tutorial at [this link](#). It's totally free, and at the bottom of the page you can find instructions about installation, building the rig and animating with it. You will also need the Pen Attribute Holder modifier from [this link](#).



# SKETCH JOURNAL

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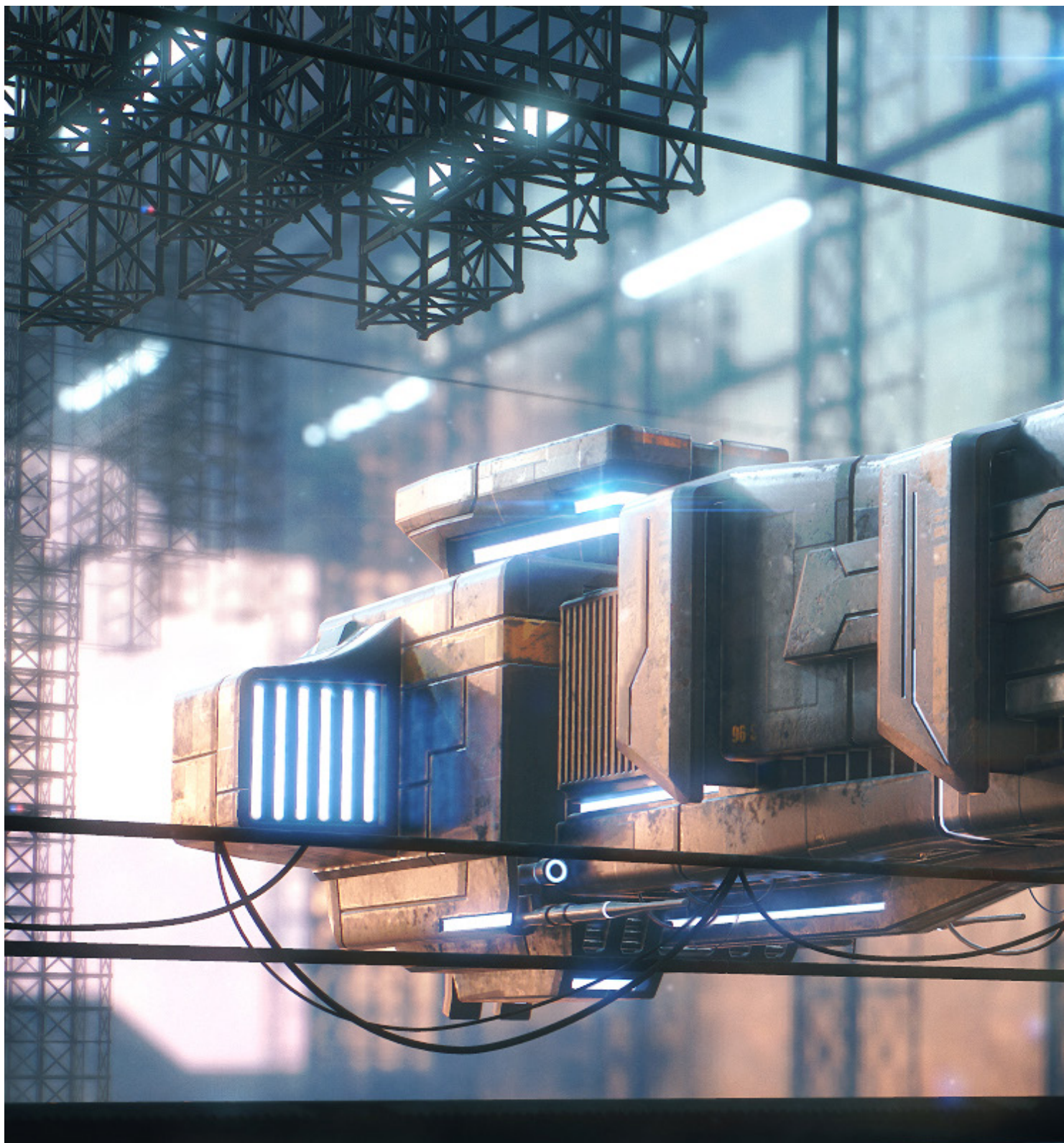


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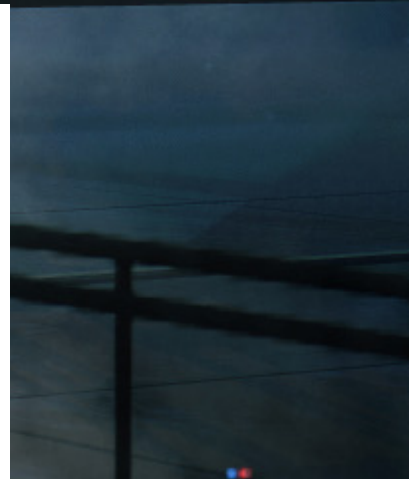




# Rendering a spacecraft scene

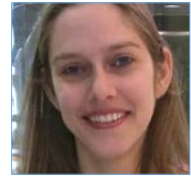
by Victoria Passariello

Learn how Victoria Passariello uses Marmoset Toolbag 2 and Photoshop to add the final touches to her impressive spaceship [▶](#)





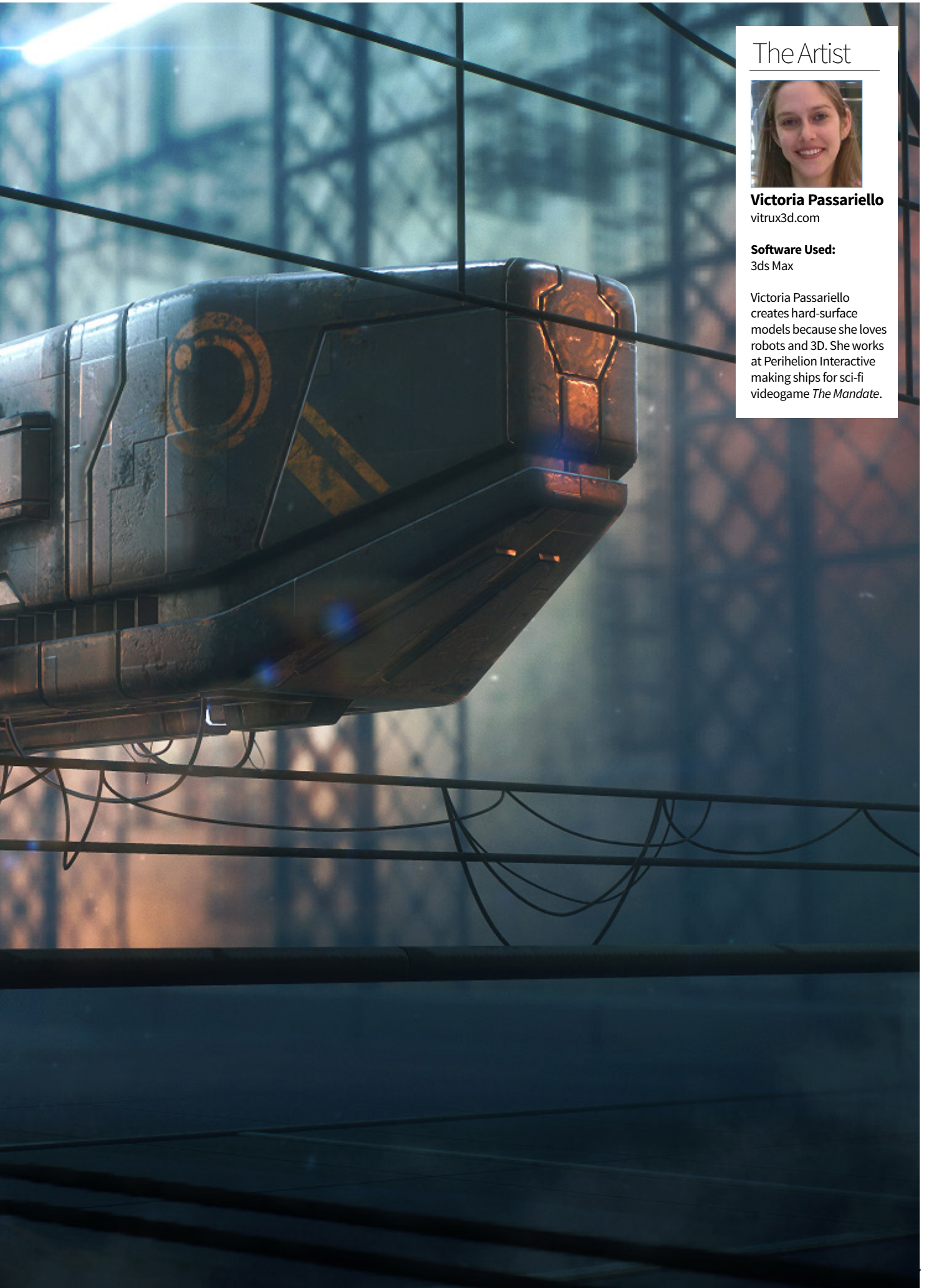
## The Artist



**Victoria Passariello**  
vitrux3d.com

**Software Used:**  
3ds Max

Victoria Passariello creates hard-surface models because she loves robots and 3D. She works at Perihelion Interactive making ships for sci-fi videogame *The Mandate*.

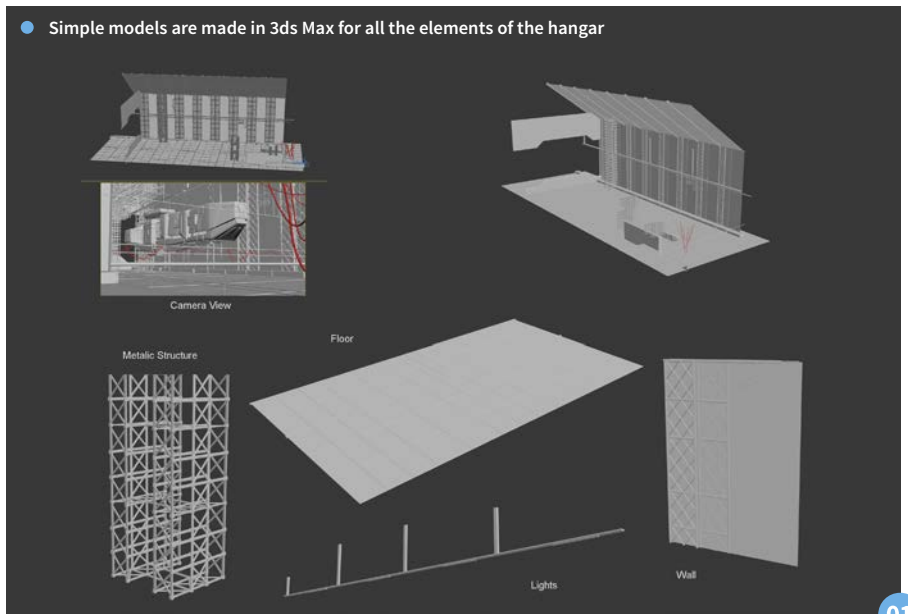




## Pick up some useful post-production techniques from Victoria Passariello...

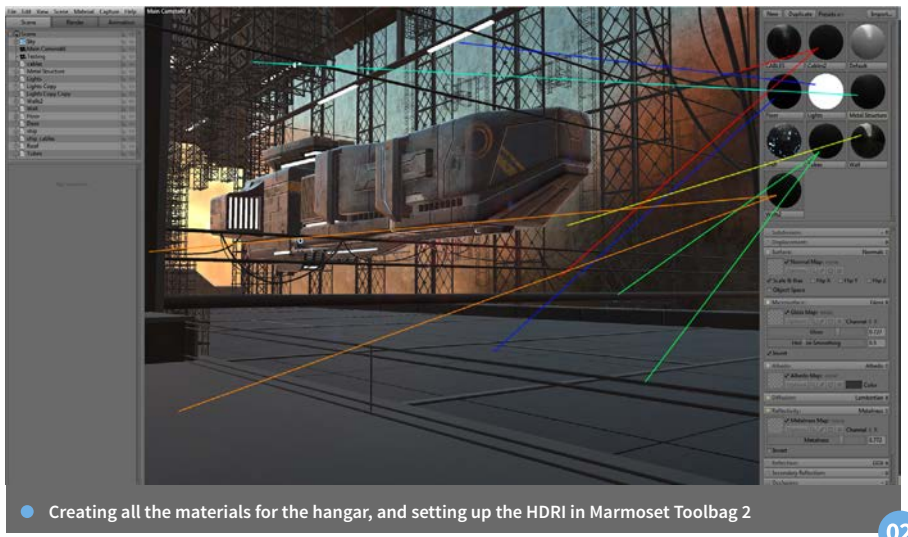
In this, the last article of the series, we're going to cover creating an environment for our ship, and modeling a hangar with simple elements. Then we'll set up the final render in Marmoset Toolbag 2, adding secondary sky lights on the HDR to obtain nice specular reflections on the ship and interesting shadows on the floor, as well as adding fog and depth of field to make a more realistic scene. Finally we'll cover every layering step in Photoshop for the post-production of the final image, from the addition of dust, smoke and other effects, to the final adjustments in terms of contrast and color balance to give more drama to the image.

**01** **Modeling the environment:** For the final image I need to create an environment for the ship. In the original concept, the ship was located in a space hangar. Inside 3ds Max, I model every single object that composes the hangar: the floor, wall, roof, tubes, cables, metal structures and so on. I place a camera and start to build the scene as similarly as possible as the concept. I use very simple meshes for the elements of the environment. Most of them will be very blurred in the final image due to the camera's depth of field, so I don't make any detail on them, only adding little chamfers on the borders. Keep in mind that the ship is very big, so be careful with the proportions of the elements. Focus on the elements you can see in the image; it's not necessary to model a complete hangar as



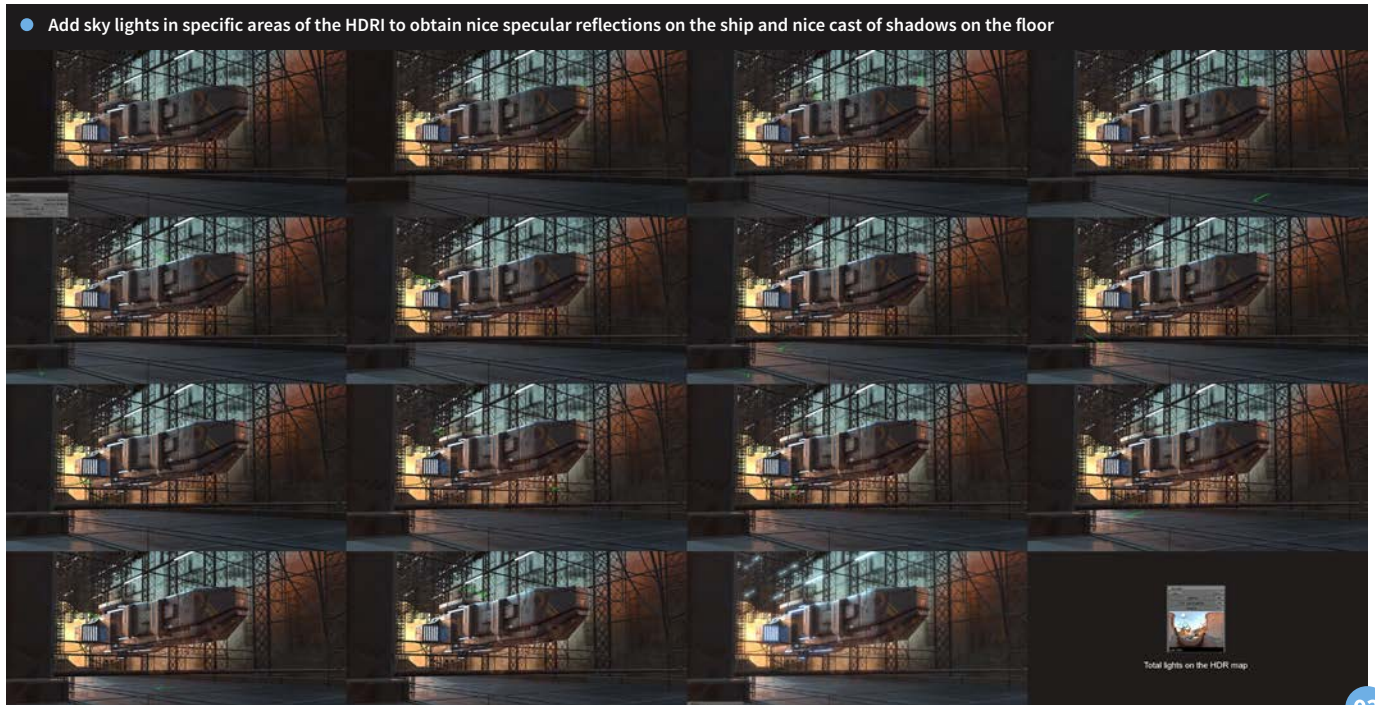
● Simple models are made in 3ds Max for all the elements of the hangar

01



● Creating all the materials for the hangar, and setting up the HDRI in Marmoset Toolbag 2

02



● Add sky lights in specific areas of the HDRI to obtain nice specular reflections on the ship and nice cast of shadows on the floor

03



long as the final image looks correct and good. I don't make any UVs for these elements – I only apply a UV map modifier.

**02 Scene setup in Marmoset Toolbag 2:** Inside 3ds Max, I organize all the elements in different layers and export them in groups; for example, all the element of the wall, the elements of the floor, all the tubes, cables, and so on. This way it's going to be easy to manipulate them in Marmoset Toolbag 2.

I import all the OBJ files into Marmoset Toolbag 2 and start to create different materials for them. I don't use any textures, only playing with the glossiness, albedo and metallic values for each material. I only used a simple concrete map for the wall and floor materials. Notice that I don't add too much reflection to the materials because I want to be faithful to the style of the concept and keep all the elements dark.

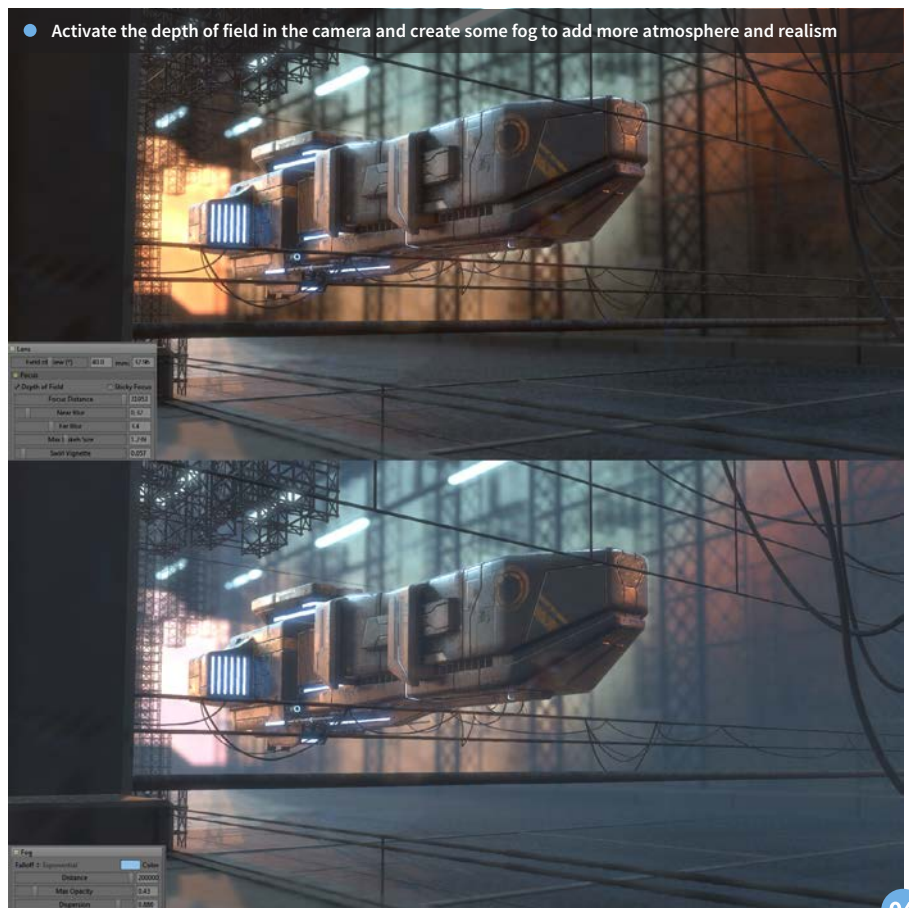
After this, I start to play with different HDRIs, choosing 'Castle Sunset'. I also set up the camera with a 33mm focal length and add a flare effect.

**03 Adding secondary lights:** Once I have the scene with the selected HDRI and all the materials applied to each element, I start to add more sky lights around specific areas to obtain nice shadows on the floor, visual interest points and the main focus on the middle-back area of the ship. Before starting to add the lights, I check the 'Local reflections' and 'Ambient occlusion' options under the Render tab.

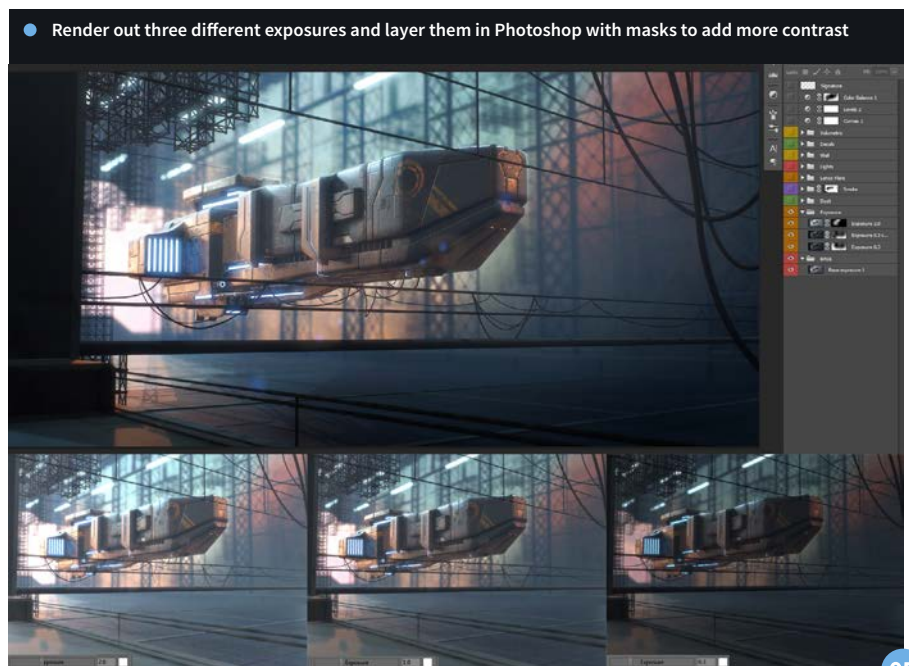
In the image you can see each light I create, adding them one by one (I've marked them with a green arrow) so you can see the progress in the illumination. When you add a sky light into the Light Editor, it automatically assigns a color to that light depending on its position on the HDR map. I didn't change any colors, but kept all the lights with their default color. After this I also add a subtle bloom effect.

**04 Adding depth of field and fog:** With all the illumination done, it's time to activate the depth of field to give the image a more realistic feeling. I play a bit with the near blur, far blur and bokeh size, trying to find a balance where nothing looks too blurred, with a nice and smooth transition from the focal point (the ship) to the very back.

At this point the image looks quite good but it's missing some atmosphere, so I add a fog effect. The fog is very useful to separate the elements in the foreground and background, and again it gives a very realistic feeling to the scene.



04



05

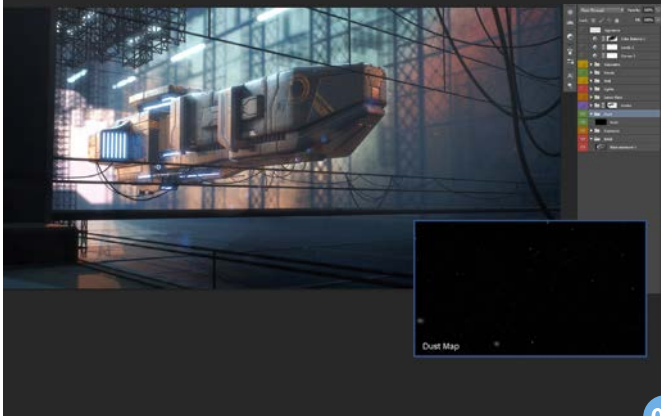
**05 Layering different exposures:** At this point I've finished the scene's 3D stage, so let's go to Photoshop to post-produce the final image. I use Marmoset Toolbag 2 to render out three images at different exposures: 1, 2 and 0.3.

The base image in Photoshop is the one at exposure 1. This image has very flat colors, with everything looking too homogeneous; I

want to add some more contrast and a more dramatic feeling to it, and to do so I use the image at exposure 2 (at around 30% Color Dodge blending mode) to mask the lightest of the areas; and the image at exposure 0.3 (in Soft Light blending mode) to mask the darkest of the areas. Using this technique here, I can therefore start creating some Vignette effects but with the real illumination of the scene. ▶



- Adding a very subtle dust particle effect in Color Dodge blending mode



06

- Use an image of smoke or clouds to add some smoke to the image. You can separate the white smoke from the background using Color Range selection



07

**06 Adding dust particles:** I search over the internet for dust particle images and test a few of them. I finally choose one with very small particles, remembering to always be consistent with the proportions of the elements, even with the dust. The inside of the hangar is a huge place and the small dust particles will help to create that sensation. I use the image in 60% Color Dodge blending mode.

**07 Adding smoke:** For the smoke I use an image from [textures.com](http://textures.com).

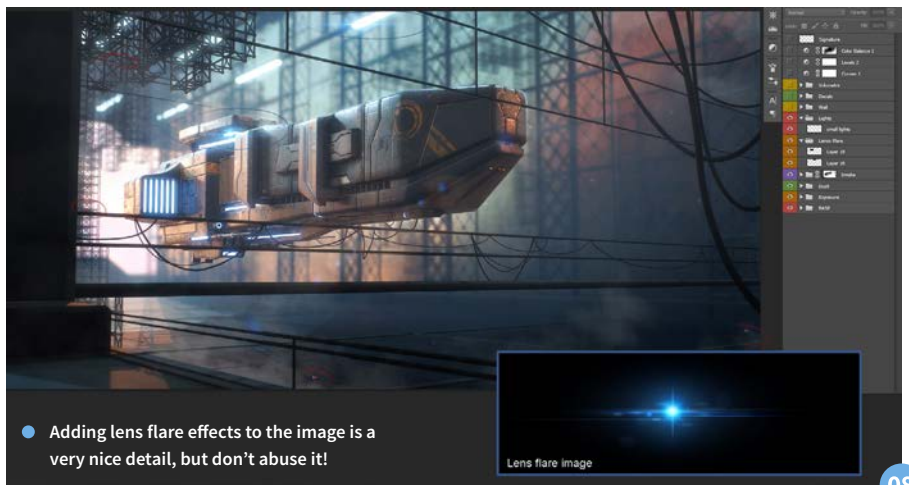
In Photoshop I select the white areas of the smoke with Color Range to get rid of the blue background. I make several duplications of it and put them around the image, always rotating and flipping them to avoid any evident repetitions, and masking some regions to hide or show different areas of the smoke.

I usually use them in Pin Light blending mode at low opacity, but this depends on the result you want to achieve. Previously in Marmoset Toolbag 2, I rendered an image with a transparent background to use as a mask for the smoke, turning off all the elements except the ones in the foreground (ship, tubes, cables, and so on.).

I use this image to create a mask in the smoke folder, so these elements will be in front of the smoke. You can always manually paint out any areas of the mask as you wish, to bring the smoke to the front or back.

**08 Lens flare effect:** I always like to add some lens flare effects in the shiniest areas of the image, to give a really nice sci-fi look.

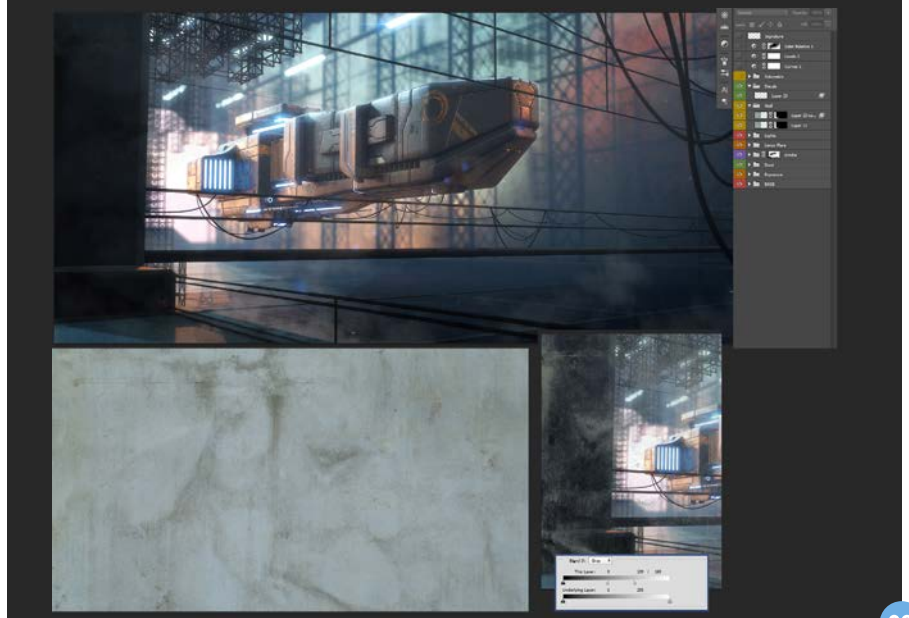
Be careful to not add too many, otherwise they will look too redundant. Just choose some areas to place them as a final detail in the image – usually one or two is enough. This time I choose a lens flare image from the psdbox and use it in



- Adding lens flare effects to the image is a very nice detail, but don't abuse it!

08

- I add a texture to the left wall. Keep the darkest areas by modifying the blending options



09

Screen blending mode; one in the main cabin to help the focal point and the second in one of the roof lights. Another detail I add to the image is some small dots with a simple brush to suggest some lights; again, two or three is more than enough here.

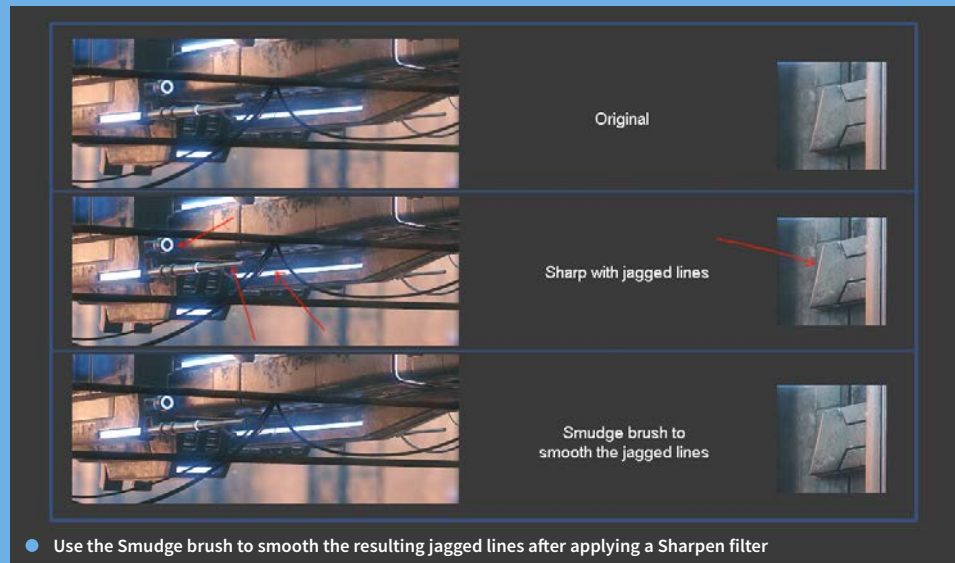
**09 Adding texture to the wall:** The wall on the left looks too flat, so I add a texture to it to make it look better. This time I use an image from 'Total Textures V07:R2 – Sci-fi'. First of all I play with the arrows of the blending options inside the Layer Style window. This way I remove



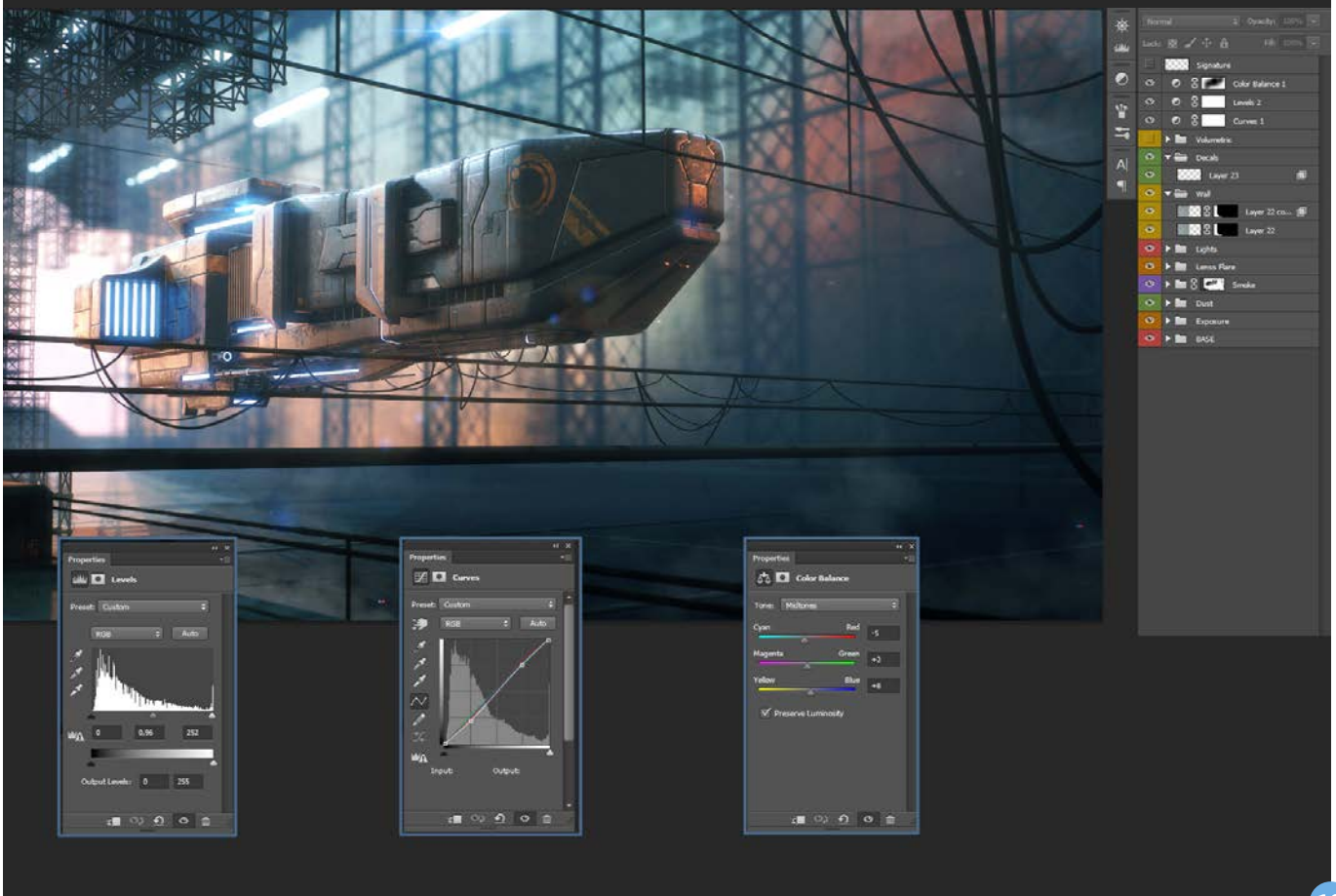
## ⚡ TOP TIP

### The Sharpen filter and Smudge brush

At the end of the composition, applying a Sharpen filter to the image will make it look clearer. Don't use it at 100% or it will look extremely sharp (I usually use it at 30%-40%). Once you've applied the Sharpen filter, you may encounter some specific high-contrast areas that have unwanted jagged lines. This inconvenience is very easy to fix – just use the Smudge brush in a very small size and pass it in one direction to smooth over the jagged edges and the neck.



- To finalize the image, make some adjustments in the Curves, Levels and Color Balance to add more contrast and drama



some of the lightest areas of the image. I apply the image in Overlay blending mode and make a duplication set to 50% Multiply to intensify it a bit. I also paint a mask over the region of the wall, and finally I add a small decal in the corner of the wall.

**10 Adjusting Curves and Levels:** The final step to complete the post-production is to add even more contrast and drama to the image. To do so, I make some adjustments to the Curves, Levels and Color Balance.

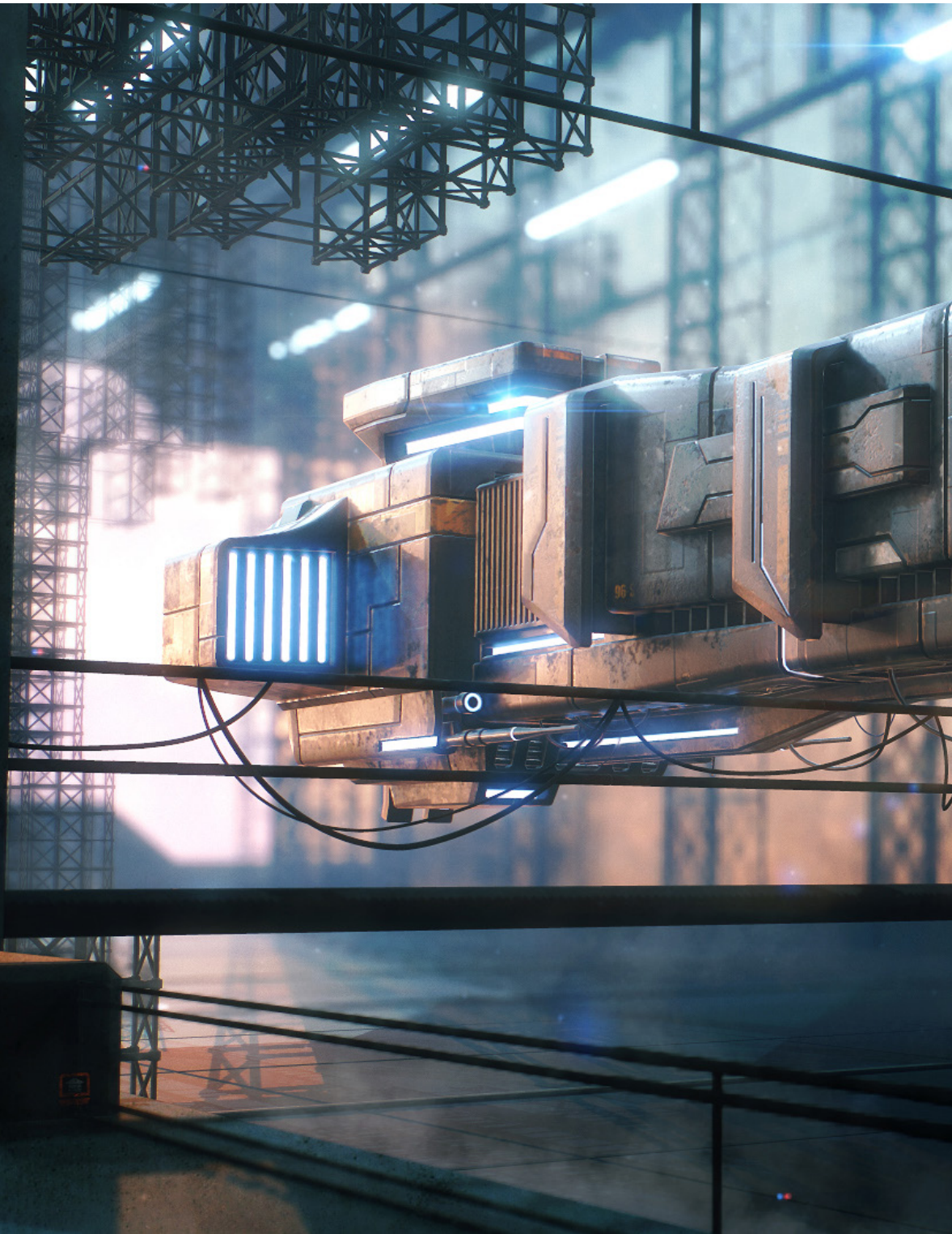
Once you've finished all your adjustments, you can make a copy of the merged image and add a bit of Sharpen filter (at around 30-40%) to make it look more defined. At this point we can say the image is done! ●



## The Artist



**Victoria Passariello**  
vitruX3d.com



*VictoriaPassariello*



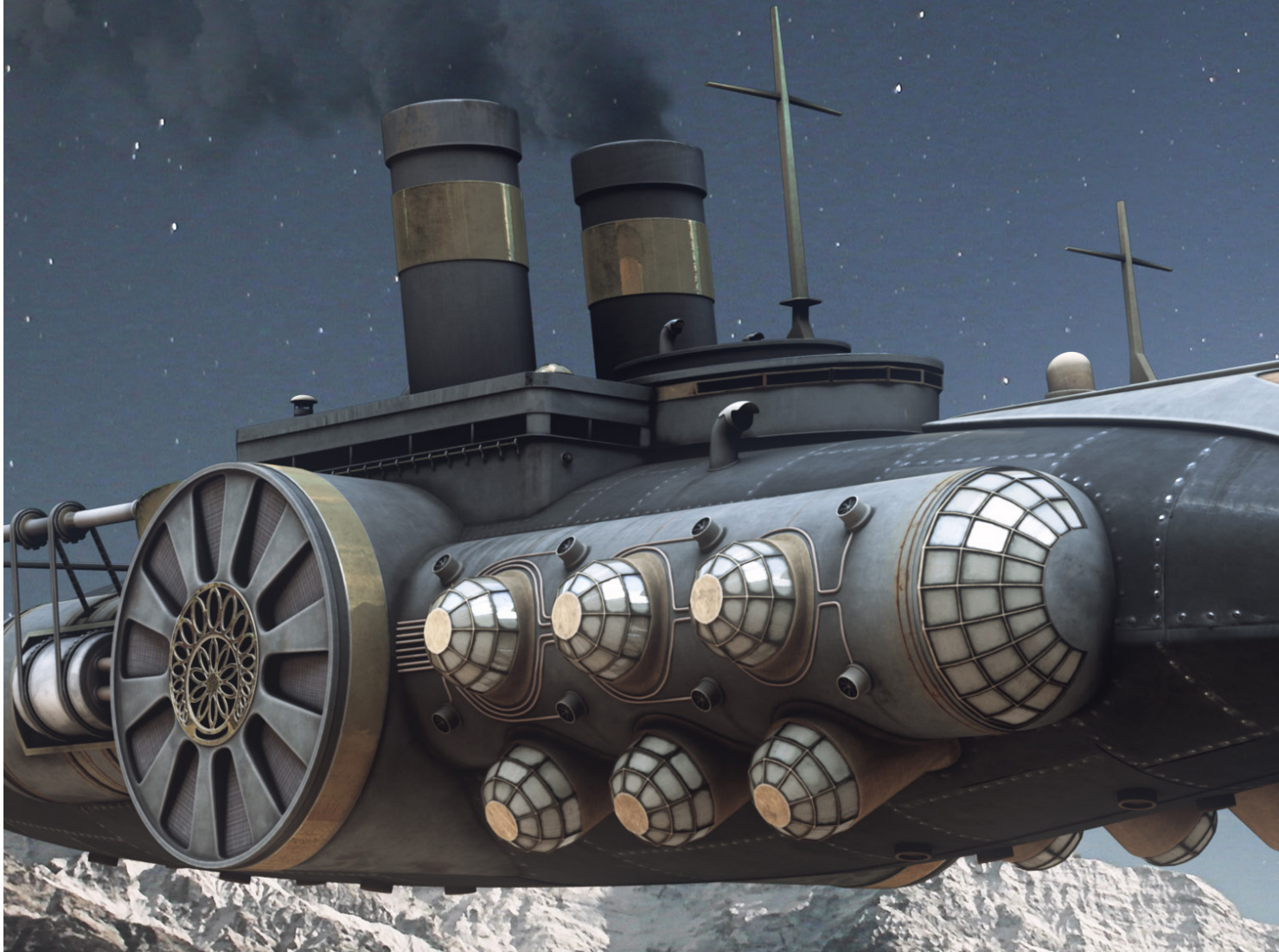






## FREE RESOURCES

Ship assets and backgrounds



# Sci-fi ships in mental ray

by Rory Björkman

Rory Björkman guides us through rendering a steampunk ship in mental ray for Maya and compositing the final image in Photoshop [▶](#)



## The Artist

---



**Rory Björkman**

[artstation.com/artist/bjorkman](http://artstation.com/artist/bjorkman)

**Software Used:**

Maya, MARI

With a background in traditional art and sculpture, Rory Björkman is currently studying Media at the National College of Art and Design in Dublin, with a focus on digital arts.





## Get your sci-fi vehicles shipshape with Rory Björkman's assistance...

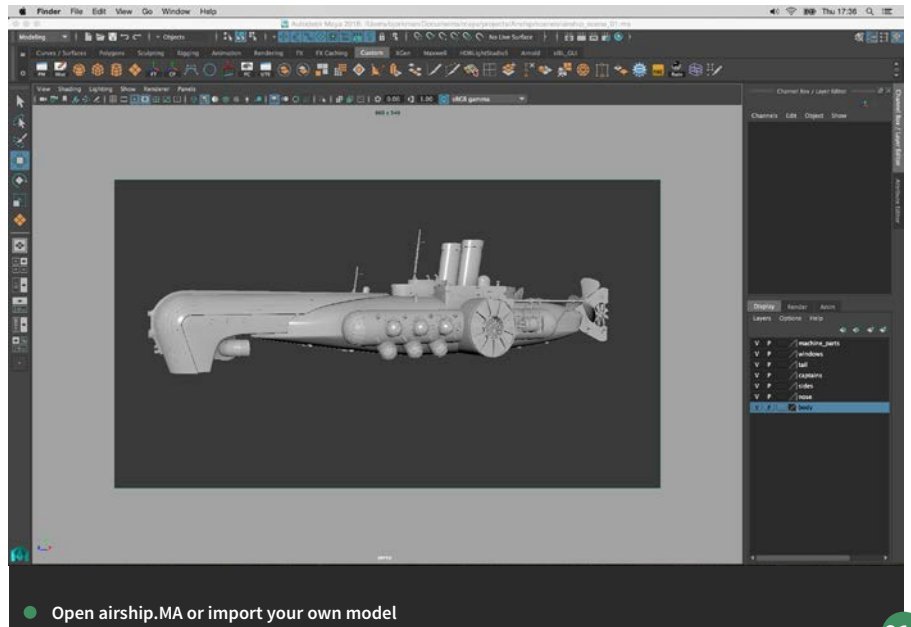
In this section of the tutorial, we'll be looking at how to render and finish our sci-fi airship model using mental ray and Photoshop.

**01 Scene setup:** First let's start by opening the scene 'airship.MA', or import your own model if you'd prefer to use that. In the Windows menu, access Settings and Preferences, then open the Plug-in Manager. In here, enable the 'mayatomr.bundle'. Next, under the Display Render Settings tab, we need to enable mental ray. In this tab, under Common, scroll down to Render Options and uncheck the Enable Default Light box.

**02 Preparing the background image:** When choosing a background image, it's important that our airship will fit into it compositionally. In order to create more width and landscape, we can easily widen the image in Photoshop with the Crop tool. In the assets folder you'll also find a tower. Place the tower on top of the image and flip it horizontally. By adjusting the color settings, you can off-set the colors to add more of a blue tint to it until you're happy it matches the environment of the background image. Save and close.

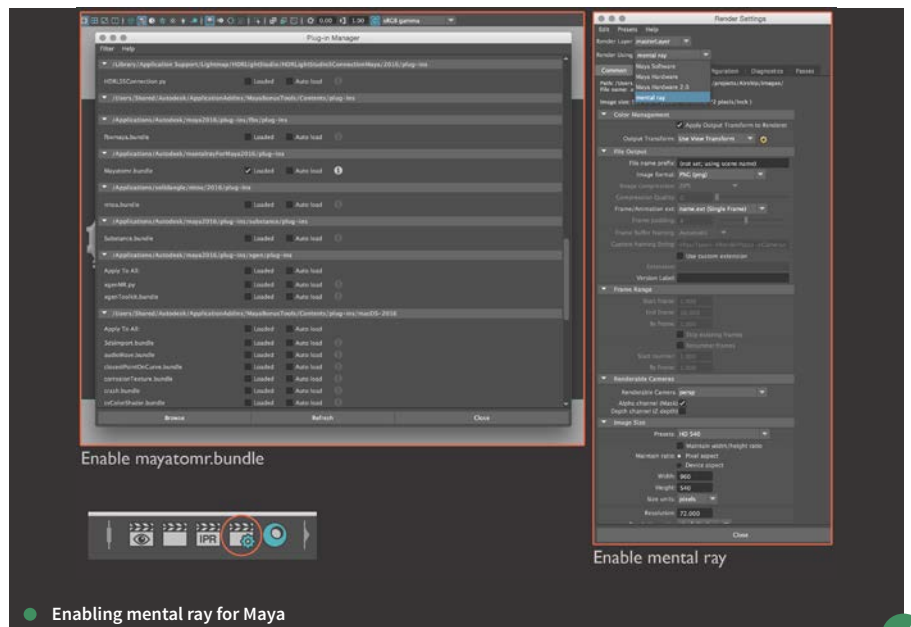
**03 Importing our background image:** To import the background image, we first need to access the camera settings. Under the Environment tab, press Create and plug in our prepared background image. At present our image will cover the ship, so in order to offset it behind the ship, we can adjust the depth under the Placement settings. Finally, let's select the Image Plane in the viewport and assign it to a new layer. This way we can view or hide it easily.

**04 Material overview:** For this project we shall use the Mia\_Material\_x. To understand how this works, I have laid out a quick illustration of the parameters of this material. In the Color node we can place our Diffuse textures. In the Reflection Color we can tint the Glossiness output. It's important to note that the grayscale maps in Color will also drive the Reflection output, where black is matte and white is shiny. This is the same for the Reflectivity, where I've plugged in a black-and-white checker to demonstrate the difference. The gloss works the same way, where black will drive a noisier output to super shiny glaze. Finally we can make chromium or metallic finishes by adjusting the BRDF in a similar manner, where black with full gloss creates a perfect mirror. ▶



● Open airship.MA or import your own model

01a

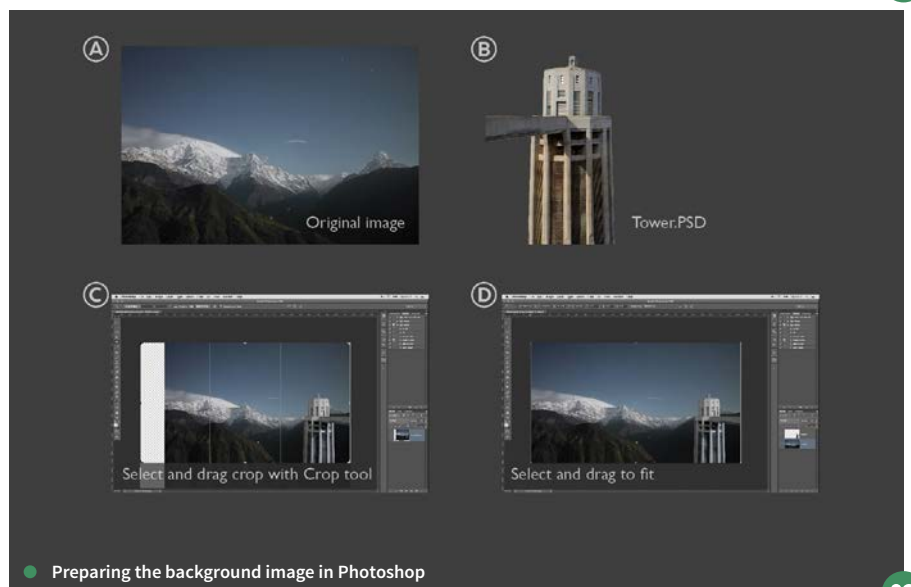


Enable mayatomr.bundle

Enable mental ray

● Enabling mental ray for Maya

01b



● Preparing the background image in Photoshop

02



- Importing the background image we made previously

**A** Select the camera settings

**B** Environment tab > Create

**C** Image plane is created

**D** Change the depth settings

**E** Image in viewport

**F** Put in separate layer.

03

- An overview of mental ray's materials

Basic Mia\_x

Reflective Colour

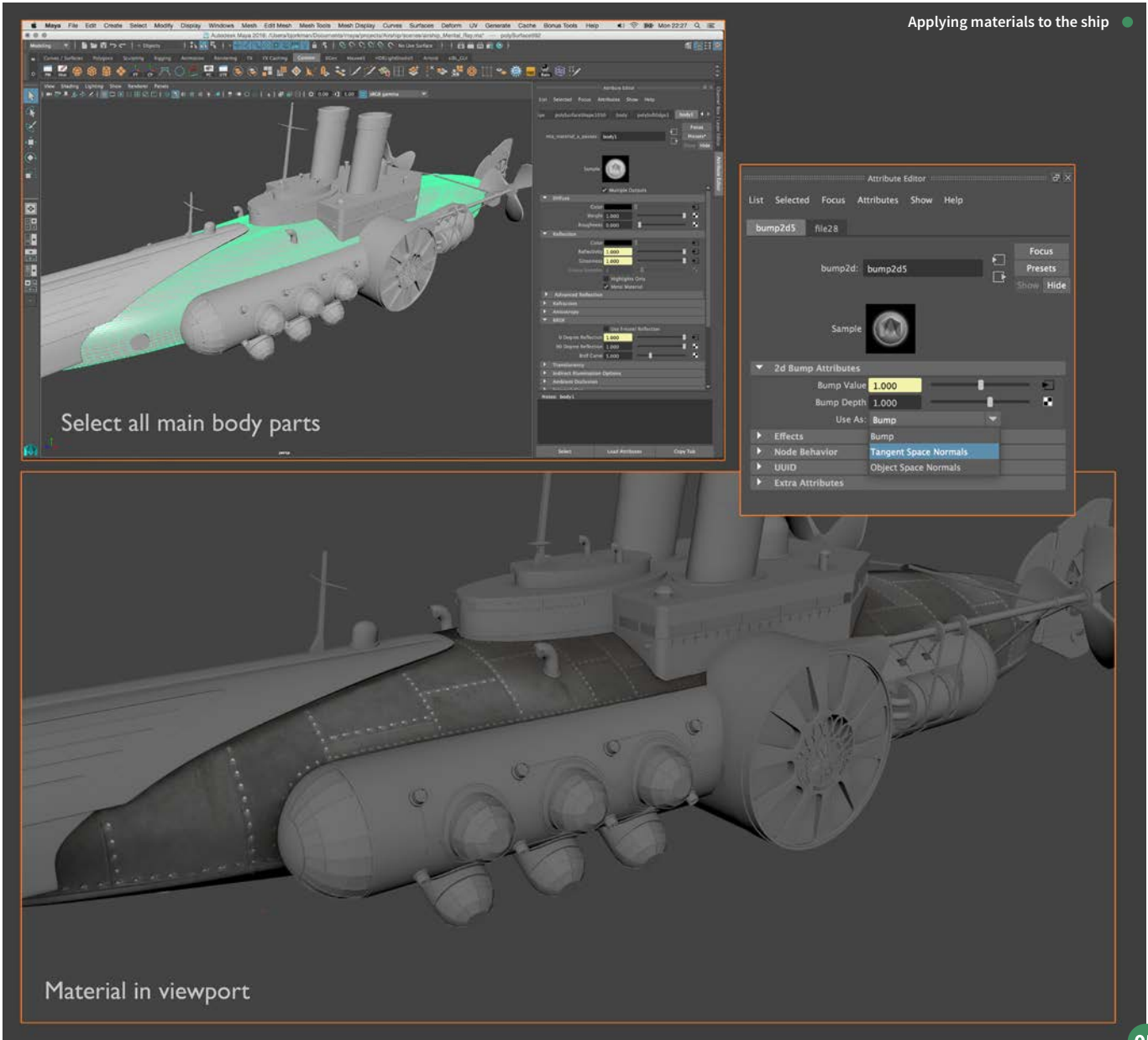
Reflectivity

Gloss

BRDF

04





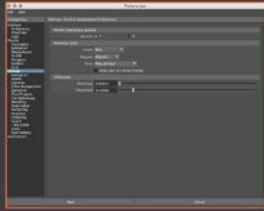
## TOP TIP

### Using realistic scale


mental ray materials and most physically based rendering engine materials work best when the object being rendered is real scale or close. This is because mental ray uses algorithms which are generated by real-world physics like reflectivity and attenuation. I usually start by opening the Maya Preferences, then settings and change the value from Centimeters to Feet. Next under the Create menu, access the Measure Tool and then Distance Tool. By plotting two points from tip to tip you can scale your vehicle as close to real size.

Note: when you scale a large object, it may be clipped out of the scene by the camera. To rectify this, open the camera settings and increase the Far Clip Plane by adding one 0; in some cases, setting the Near Clip Plane to a value of 1 is also good.


● Rescale the ship to the correct size



Set the scene scale to feet



Rescale the ship to actual life size







● Applying the glass material works slightly differently

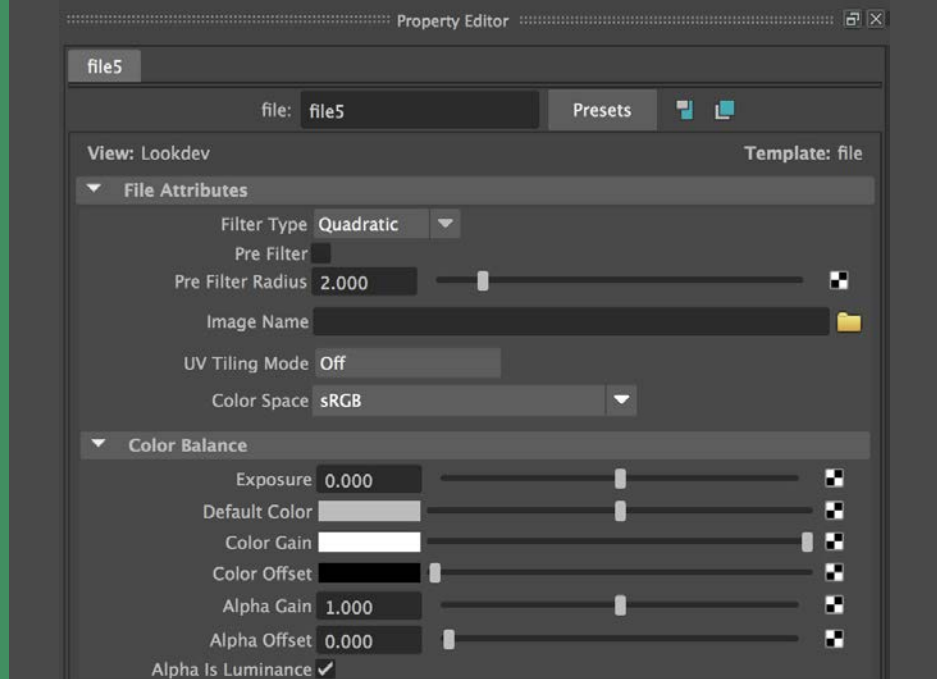
06

## ⚡ TOP TIP

### Alpha is Luminance

It is very important when using grayscale maps/images to drive the reflectivity, gloss or BRDF that 'Alpha is Luminance' is enabled. Also, if you find that your maps are not quite giving to the desired strength output, adjust the Alpha Gain slider under Color Balance to brighten or darken the maps' output and affecting the selected node (e.g. gloss, reflectivity, etc.) Increasing the Alpha will intensify shine and decreasing it will produce matte finishes.

● Don't forget to enable 'Alpha is Luminance'



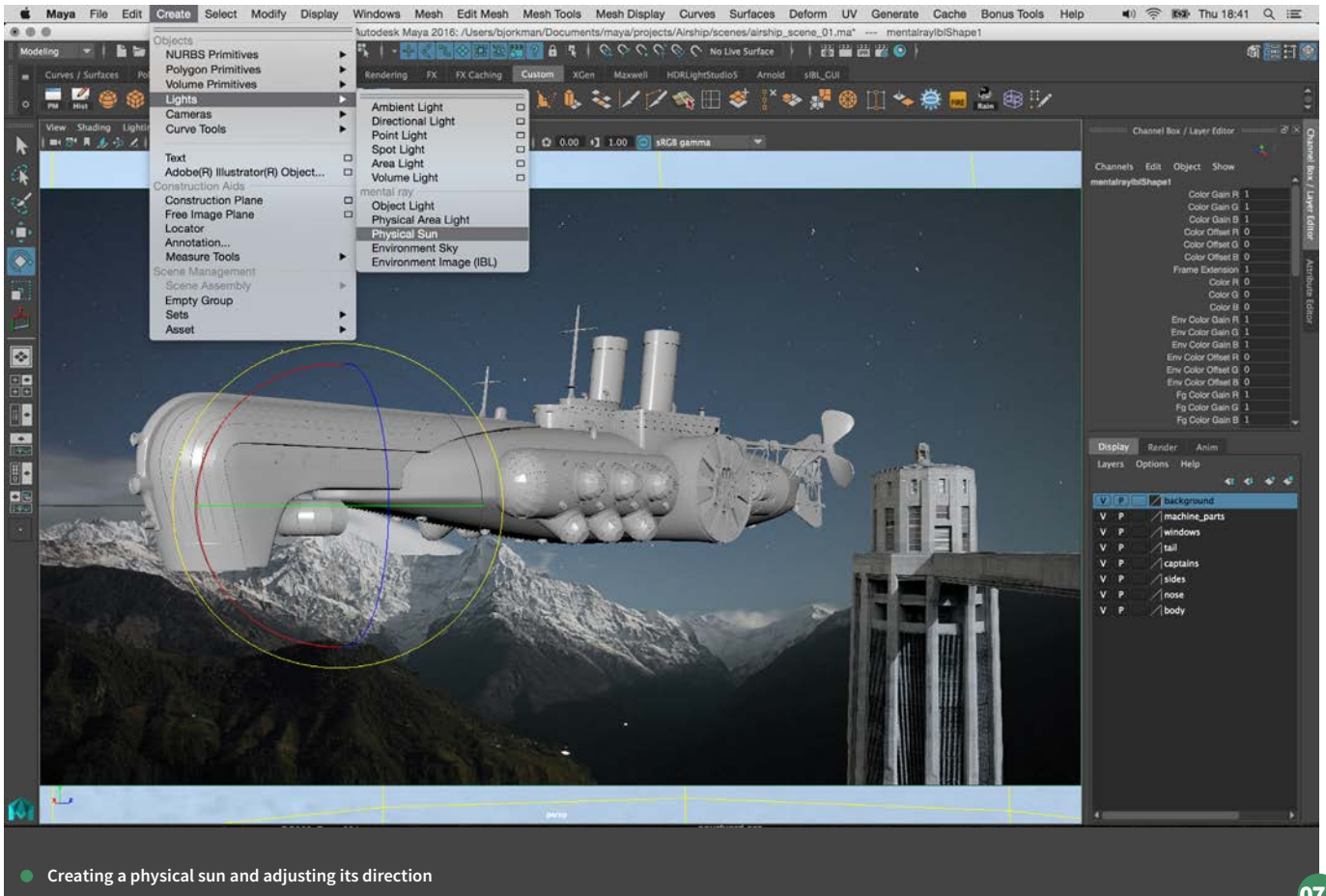
**05 Applying materials:** All of the metals on the body are applied in the same manner as above. For the normal map, open up the Bump node and plug the normal map into the Standard Bump node.

When this node opens, select Tangent Space Normals. You can preview materials in the

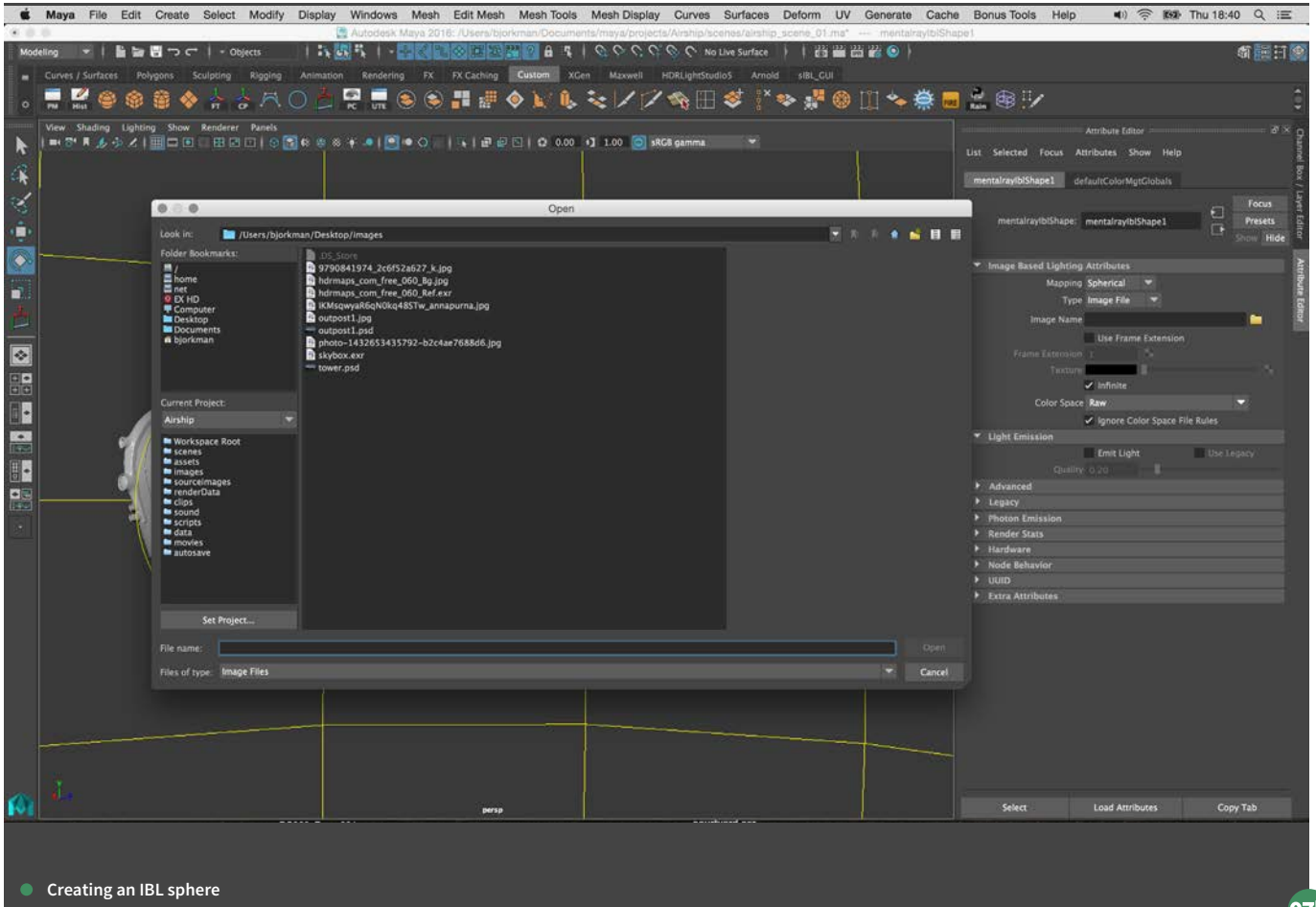
viewport by pressing 6. Press 5 to revert back to the smooth shaded mode. Apply the main body diffuse to the Color tab and the Reflection Color tab. The specular map can then be used in both the Reflective node and the Glossiness node. Also, input the specular map to the '0 Degree Reflection'. Remember to enable the 'Alpha is Luminance' option.

**06 Applying the glass material:** The glass material is different to the metal in that we do not apply a map to the BRDF. First apply your specular map to the glossiness, and leave the reflectivity at a standard. The diffuse can be plugged into the reflective color if you wish. Lastly apply our diffuse map to the color tab. As well as using the 6 key to see textures in real time, it ►





07a



07b

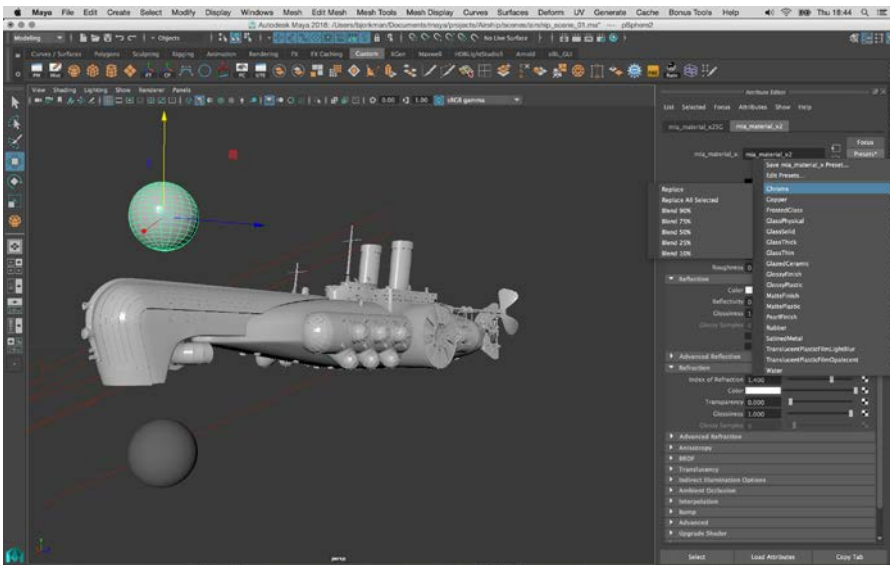


## TOP TIP

### Leave the diffuse map for last

A good way to ensure that the specular and gloss values (as well as the normal maps) are applied correctly and the desired result will be achieved, is to not apply the diffuse map until last. This way you can clearly see how well the maps are working, as the diffuse color can often make errors much harder to see. Remember you can adjust map intensity by adjusting the Alpha color in the Color attributes of the map file.

- Applying the diffuse map too soon can distract from errors



- Creating two test spheres and applying a chrome material

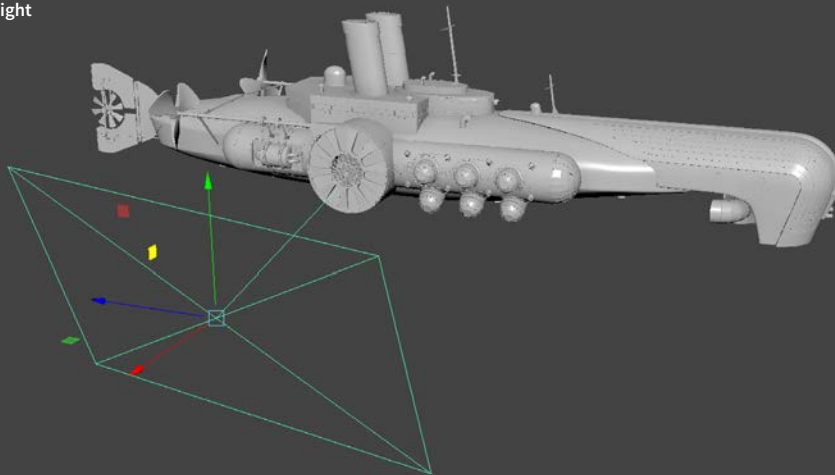
07c

may be a good idea to make some quick preview renders as you go, using a basic physical sky light under the Scene menu in the Render Settings Window.

**07 Lighting setup:** First create a physical sun and use the scale to enlarge the sun direction arrows. Then rotate the sun direction of the shadows on the background image. Next create an image-based light sphere and import an HDR image to this. I will use the glacier.HDR supplied. The HDR intensity can also be tuned with the alpha color settings in the HDR plug-in menu, but usually the standard setting is apt.

**08 mental ray portal lights:** mental ray portal lights are powered by the environment IBL we plugged in earlier. The difference is that we can now more accurately boost the IBL in certain places using the portal ▶

- Creating a standard area light



Create an area light

08a



lights. To create a portal light, we must first create a standard area light, scale it up and point in the direction of our airship. Under the Custom Shaders menu in the area light's attributes, select the Light Shader tab and input a mia\_portal\_light. If you wish to increase or decrease the intensity, this can be done by manipulating the Intensity Multiplier.

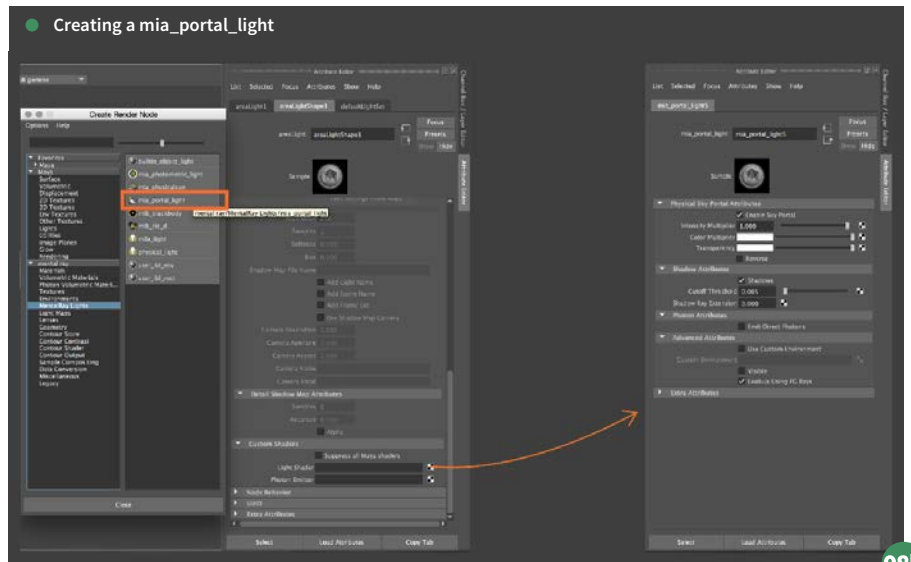
### 09 Optional: Geometry as a light

**source:** This is an optional method for creating a light source. I've set up a quick little scene to demonstrate. By selecting any piece of geometry and assigning a new mia\_material, we can then assign a mia\_light\_surface node to the additional color under the Advanced tab. In order for the lit object to disperse light to surrounding geometry, we first need to bump up the fg\_contribution under the Parameters tabs. The higher the fg\_contribution, the more the light will spread. To eliminate blotchy light gradients, open the Render Settings window and enable Final Gather. By increasing the accuracy and point interpolation, you will improve the quality but increase render times.

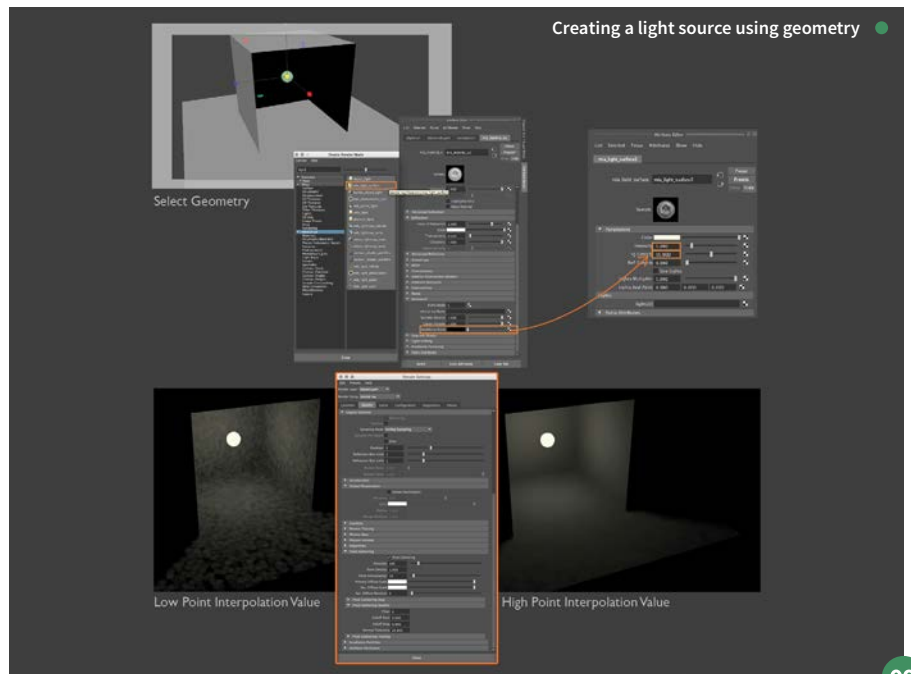
**10 Optional: Spot lights:** In conjunction with object lights, spot lights can be used to cheat object light direction. By setting the fg\_contribution value to 0 in the object light settings. We can then place a spot light in the scene. A great way to see where your spot light is shining is to select it, and then under the Panels menu in the viewport, select 'Look Through Selected'. This way the spot light acts as a temporary camera enabling you to accurately place its path of projection.

**11 Final render settings:** Now we are ready to render our final image. Let's first select the mentalrayIbl (IBL sphere) and turn off its primary visibility in the attribute editor. This can be found under the mentalrayIblShape1 Render Stats tab. Next make sure your background image is also turned off. In the Render Settings window, set the file type to PNG or TIF, whichever you prefer. Set the image size you desire and make sure Final Gather is enabled under the quality settings. This will be in the legacy options.

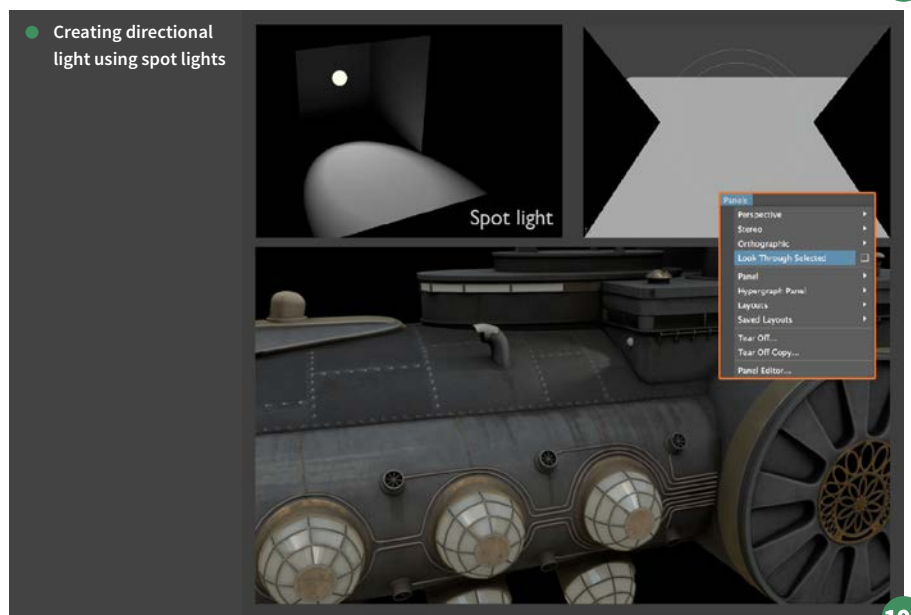
**12 Adding steam in Photoshop:** If we bring our final render into Photoshop and place it on front of our background image, we may need to slightly tweak the import or background to fine tune blend the color. This can be done using the Color Balance under the Image > Adjustments menu. I've also supplied a steam.psd which you can use to add some life to the scene. But decreasing the exposure value and



08b



09



10a

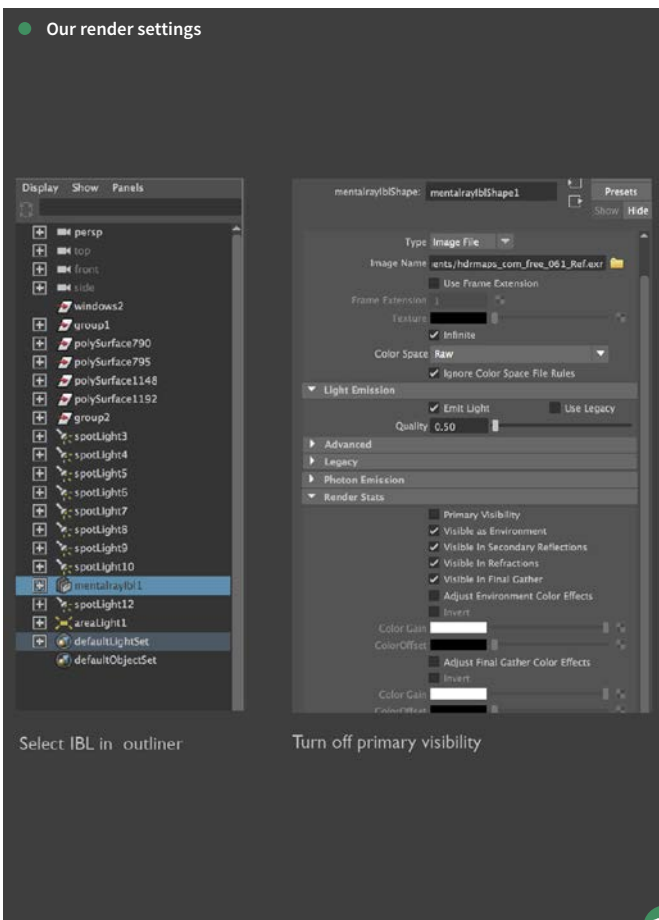


- The airship with windows being used as object light emitters and spot lights



10b

- Our render settings

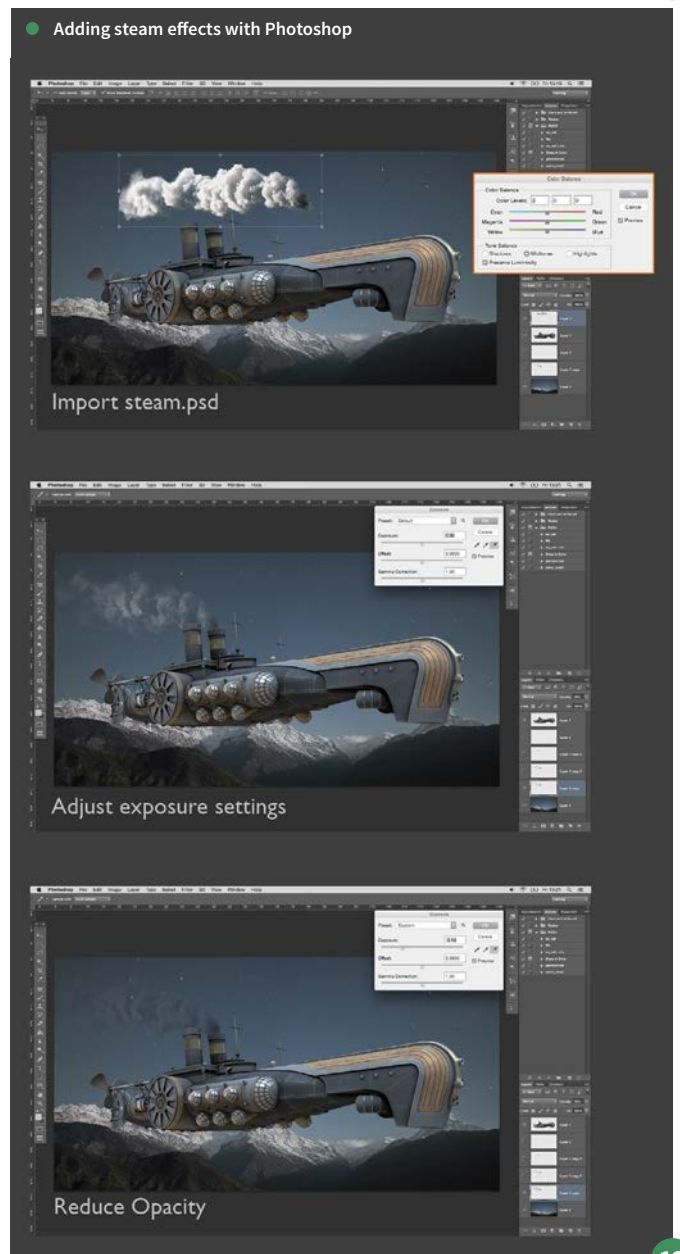


11

opacity of this layer we can help blend it to look more like a dark smoke in the sky.

**13 Quick iterations:** It's very easy to completely change our scene because once you change the IBL image it will also drive the color from the portal lights. By rotating the IBL and the sun, we can drop an array of images behind our ship and match the lighting pretty quickly. There are also tons of free Photoshop plug-ins and free background images online to use. For free filters, many good ones can be found [here](#) and lots of beautiful background images can be found on [www.textures.com](http://www.textures.com). Go have fun! ●

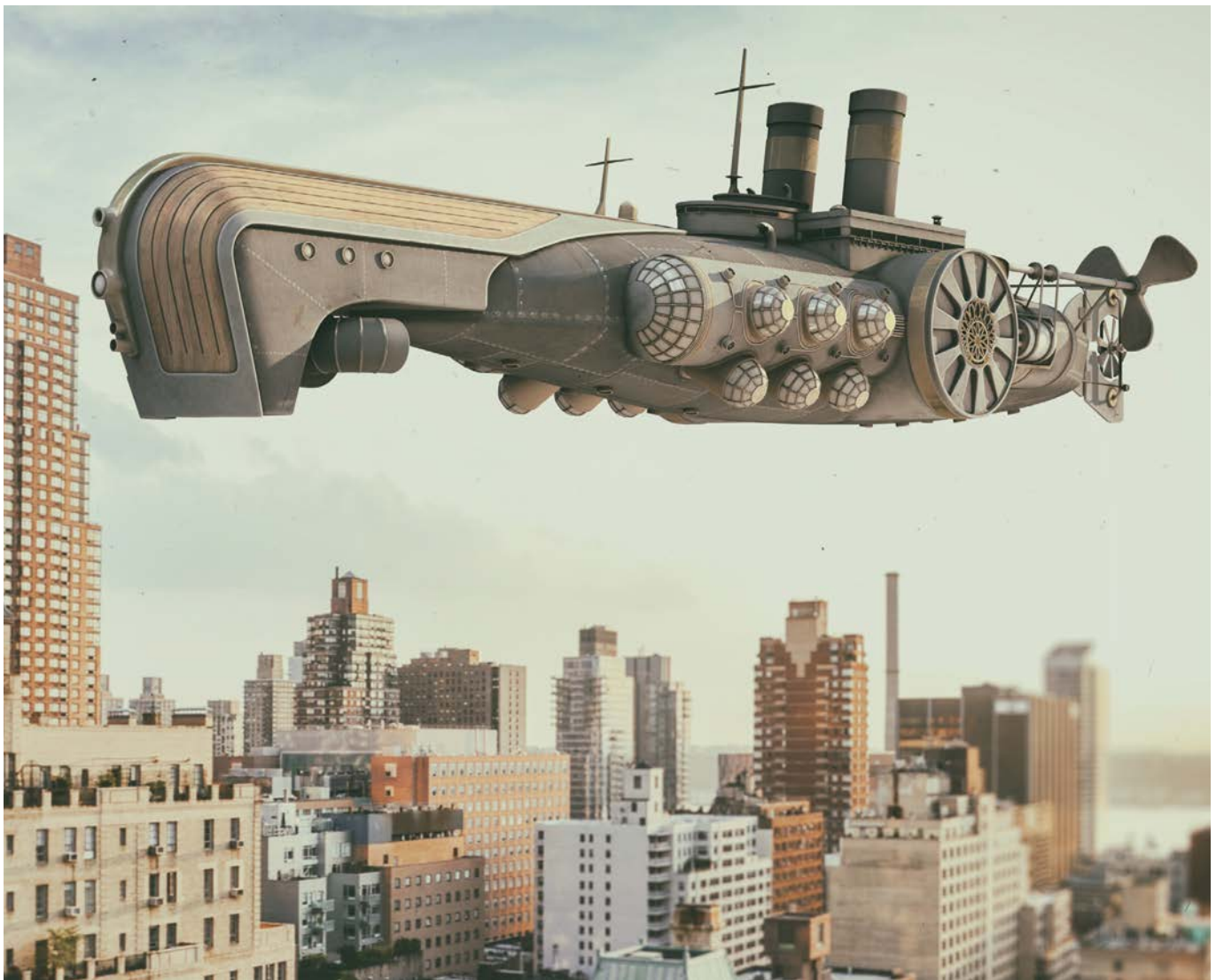
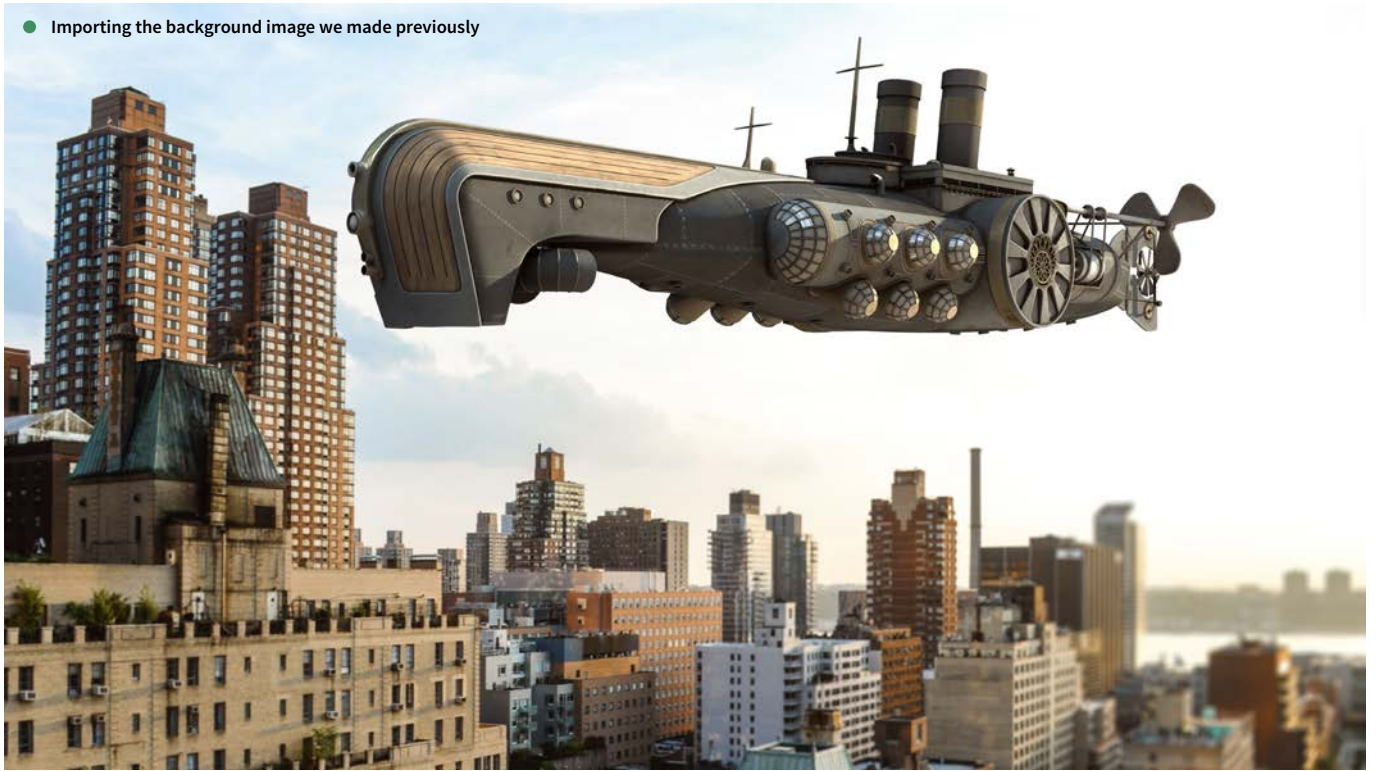
- Adding steam effects with Photoshop



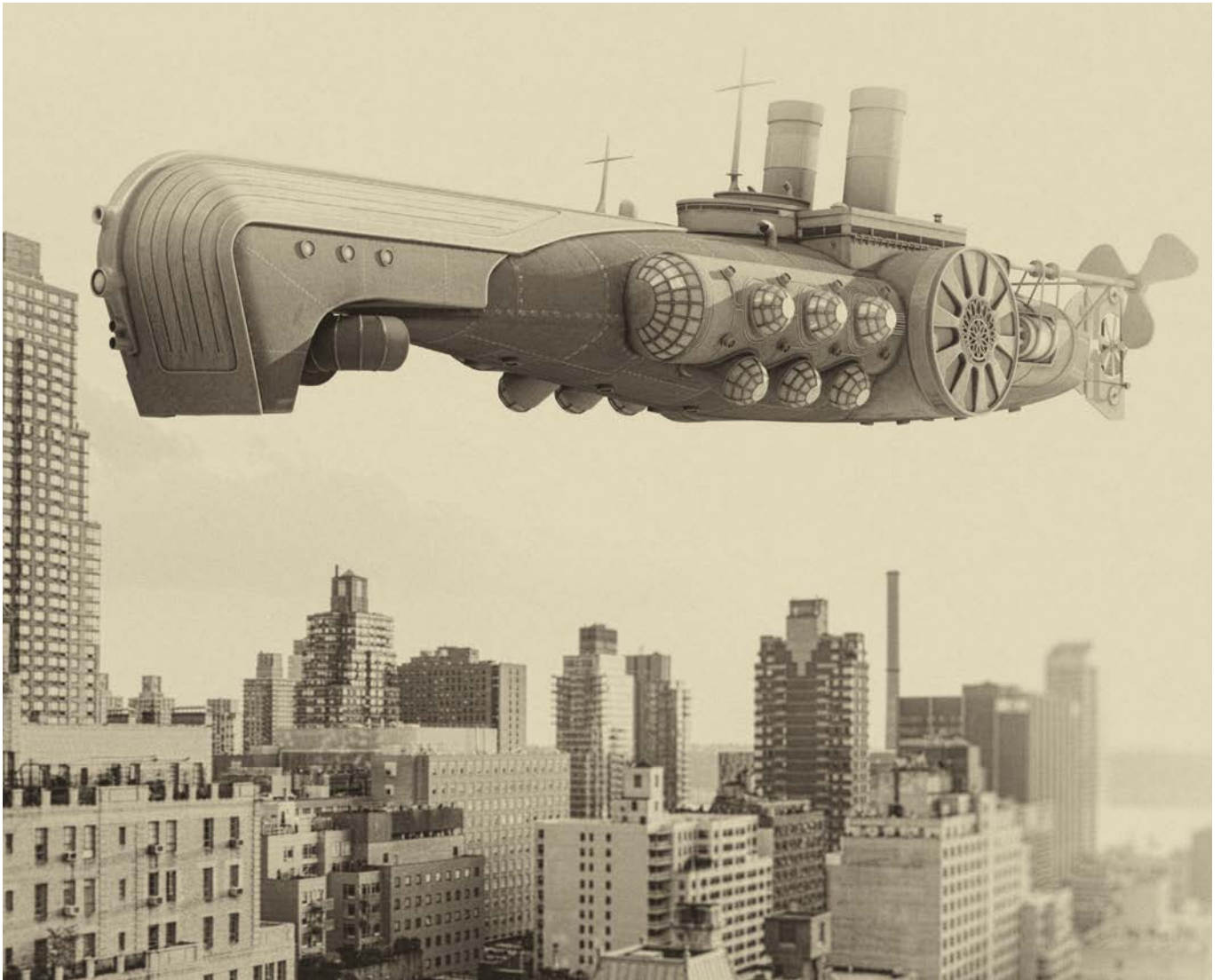
12



- Importing the background image we made previously





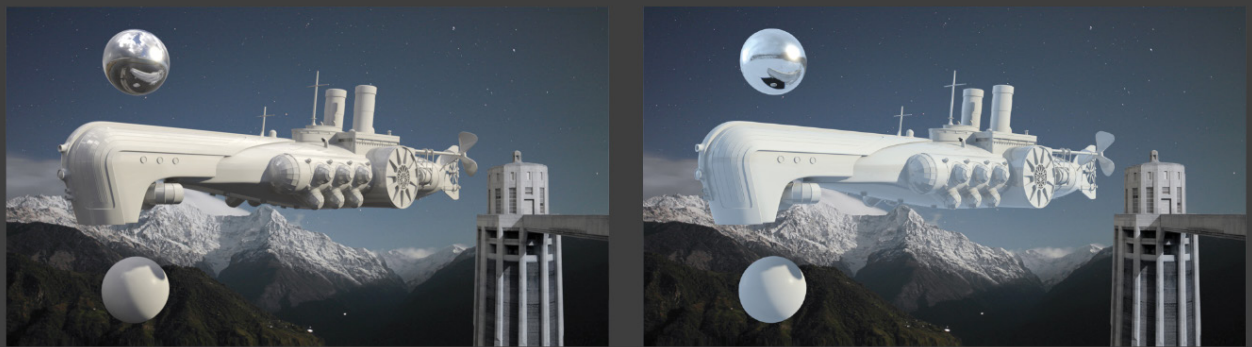


## ⚡ TOP TIP

### Testing on neutral materials

As for materials, it's a good idea to test your light on color-neutral objects. By inserting two spheres into our scene and applying a standard mia\_material\_x to one and a mia\_material\_x preset of chrome to the other, we can get a good representation of light shadow and intensity as well as atmospheric hue. To go a step further you can even apply a flat gray to your vehicle to check for shadow lines. Import different HDR images to test the outcome.

#### ● Testing HDR lighting on neutral-colored materials









## The Artist



**Rory Björkman**  
[artstation.com/artist/bjorkman](http://artstation.com/artist/bjorkman)







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**Vikrant J. Dalal**

[project01studio.blogspot.com](http://project01studio.blogspot.com)

**Software Used:**

3ds Max

Vikrant Dalal has nearly a decade of experience in VFX and graphic design, which he's ready to share with people who love VFX. He is based in India and runs Project01 Design Studio.

# Realistic smoke in FumeFX

by Vikrant J. Dalal

Vikrant Dalal takes a look at the powerful FumeFX plugin for 3ds Max and how it can be used to create a lifelike smoke effect [▶](#)



## Try your hand at FumeFX with Vikrant Dalal's guidance...

Hello everyone! In this tutorial we are going to take a look at how you can use FumeFX for 3ds Max to make a thin white smoke effect which could be used for candles, matchsticks, cigarettes, incense, and so on. To start, I will introduce the idea of thin smoke, which you may have seen many times in your daily life.

There are number of software packages and plugins with which you can create fire and smoke effects, such as FumeFX and Phoenix FD for 3ds Max and Maya, Houdini, Cinema 4D, but many big VFX and animation studios use FumeFX in their pipeline as it's well-established, trustworthy and most importantly user-friendly.

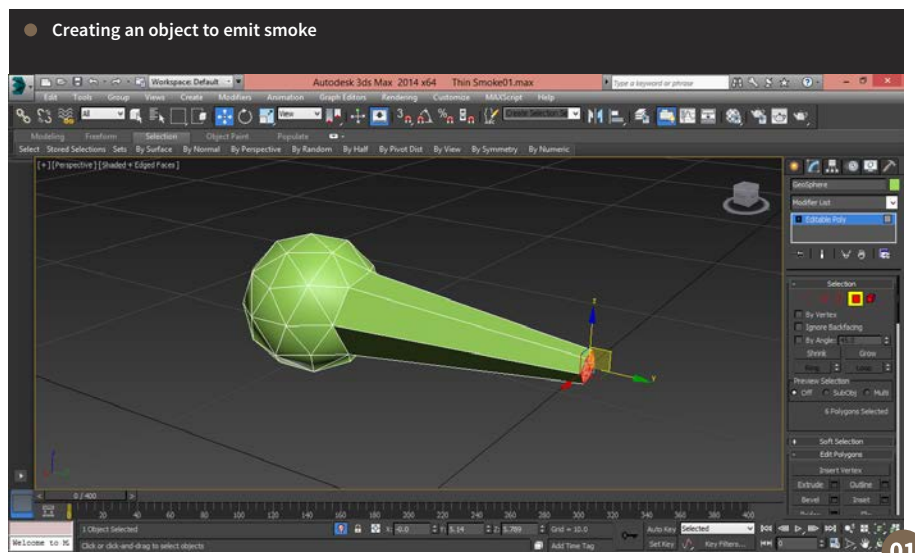
There are different techniques you can use to make this effect in FumeFX, such as Simple Source, Object Source and Particle Source, but we are going to use Object Source.

Before you start working on this kind of effect, it helps to have good knowledge of smoke properties, such as Turbulence, Velocity and Buoyancy. There are different types of smoke, from thin smoke for incense and cigarettes, to thick oil smoke or explosion smoke, and each one has different properties.

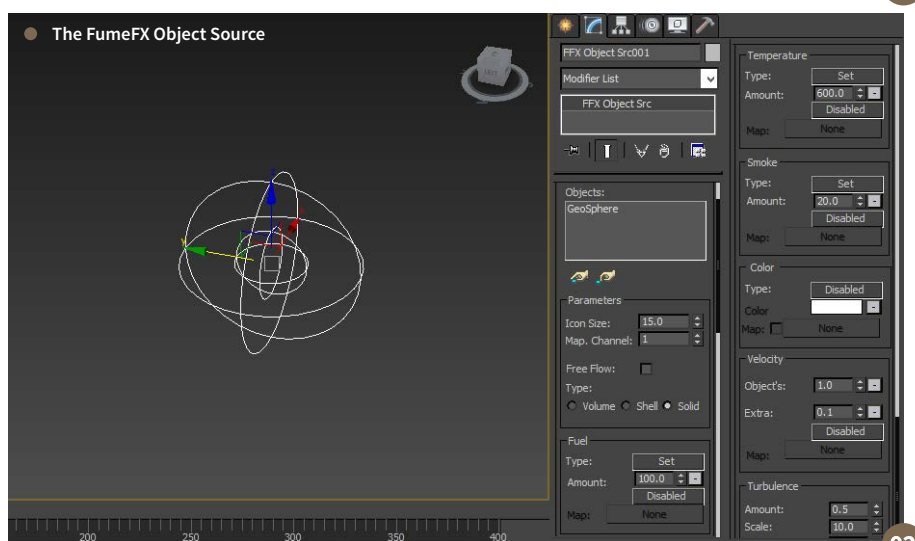
I can't teach you each and every parameter of this plugin and software, as they're very vast and need a lot of time to go through, but this particular tutorial will cover as much as required to create this thin smoke effect. This is a very interesting subject, because you can't define one certain process to create this effect. As much as you will use your creativity and tools, you will find different types of effects every time. So it very much depends on your own understanding of using the different tools and techniques.

**01 Create and modify object:** Open 3ds Max. Before we start working on our scene, remember that we are going to use the Object Source technique in FumeFX. This means we are going to use an object to emit smoke, so for that purpose we'll start by creating an object (in this case, a GeoSphere).

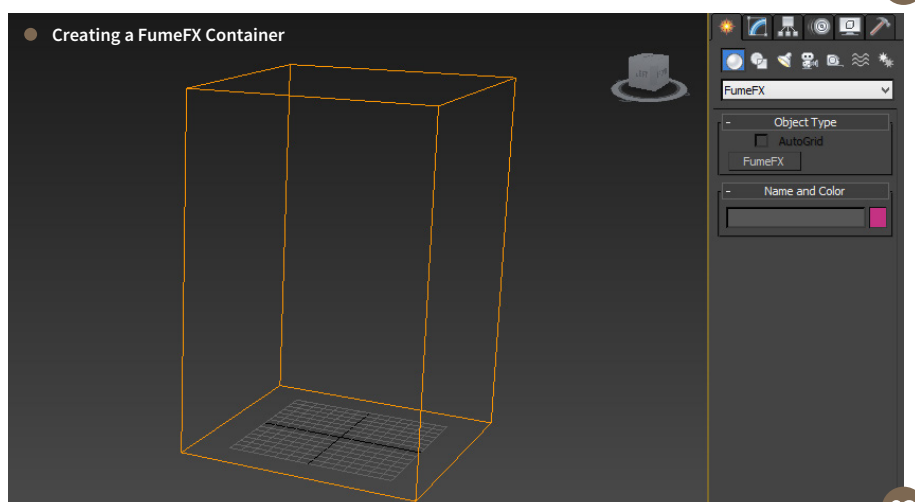
Go to the Create panel and select Geometry > Standard Primitives > GeoSphere. Now change the Radius to 2 and Segments to 2, and set the Position to X: 00, Y: 00 and Z: 5.75. Then convert this GeoSphere into an Editable Poly and modify it as shown in the image.



01



02



03

**02 Create a FumeFX Object Source:** After finishing the modeling of our object, it's time to proceed to the FumeFX plugin. So first of all we will create the FumeFX Object Source where we will add our Object. To create a FumeFX Object Source, go to Create Panel > Helpers > FumeFX > Object Src. Click on this button and drag it into the viewport. Now go to the Modify panel to make

some changes in the Parameters. Change the Object Src Type to Solid. Set the Temperature: 600.0, Smoke: 20.0 and keep the other parameters as they are.

**03 Create a FumeFX Container:** We are going to use FumeFX here, as it's very simple, but still has many options and ▶



parameters. We'll cover as much as is required for this particular tutorial.

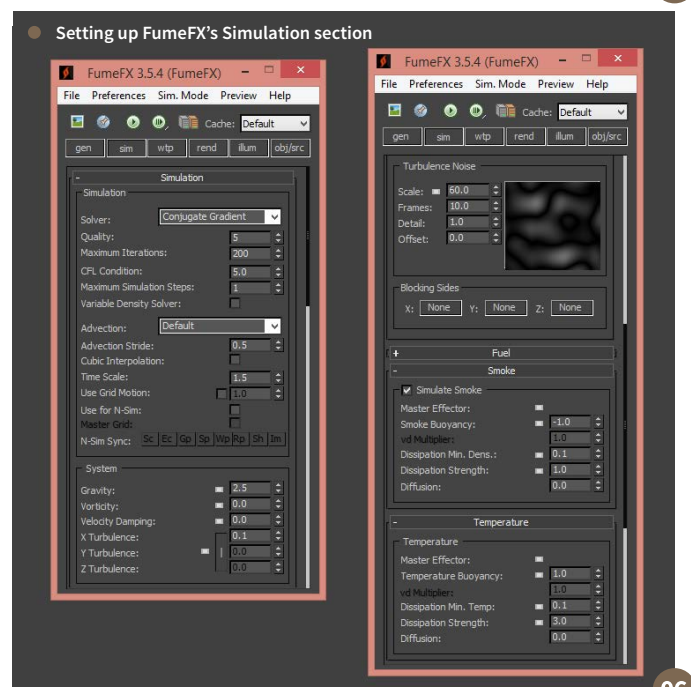
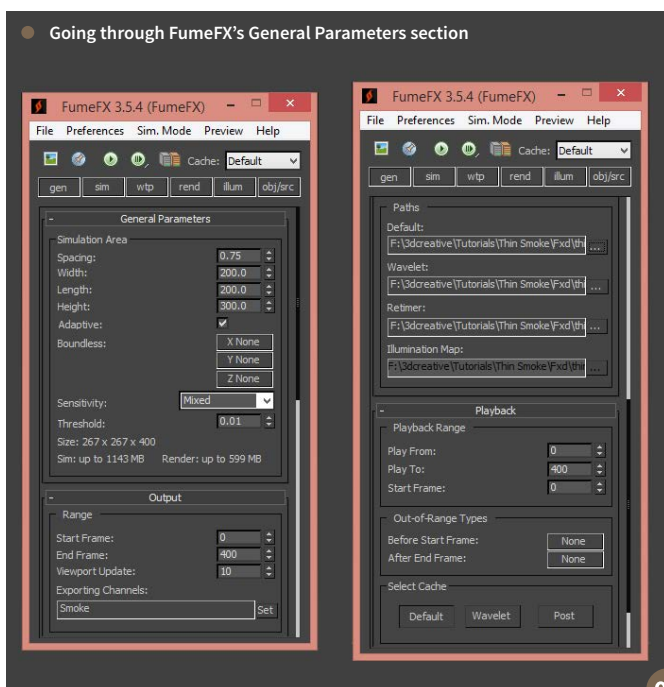
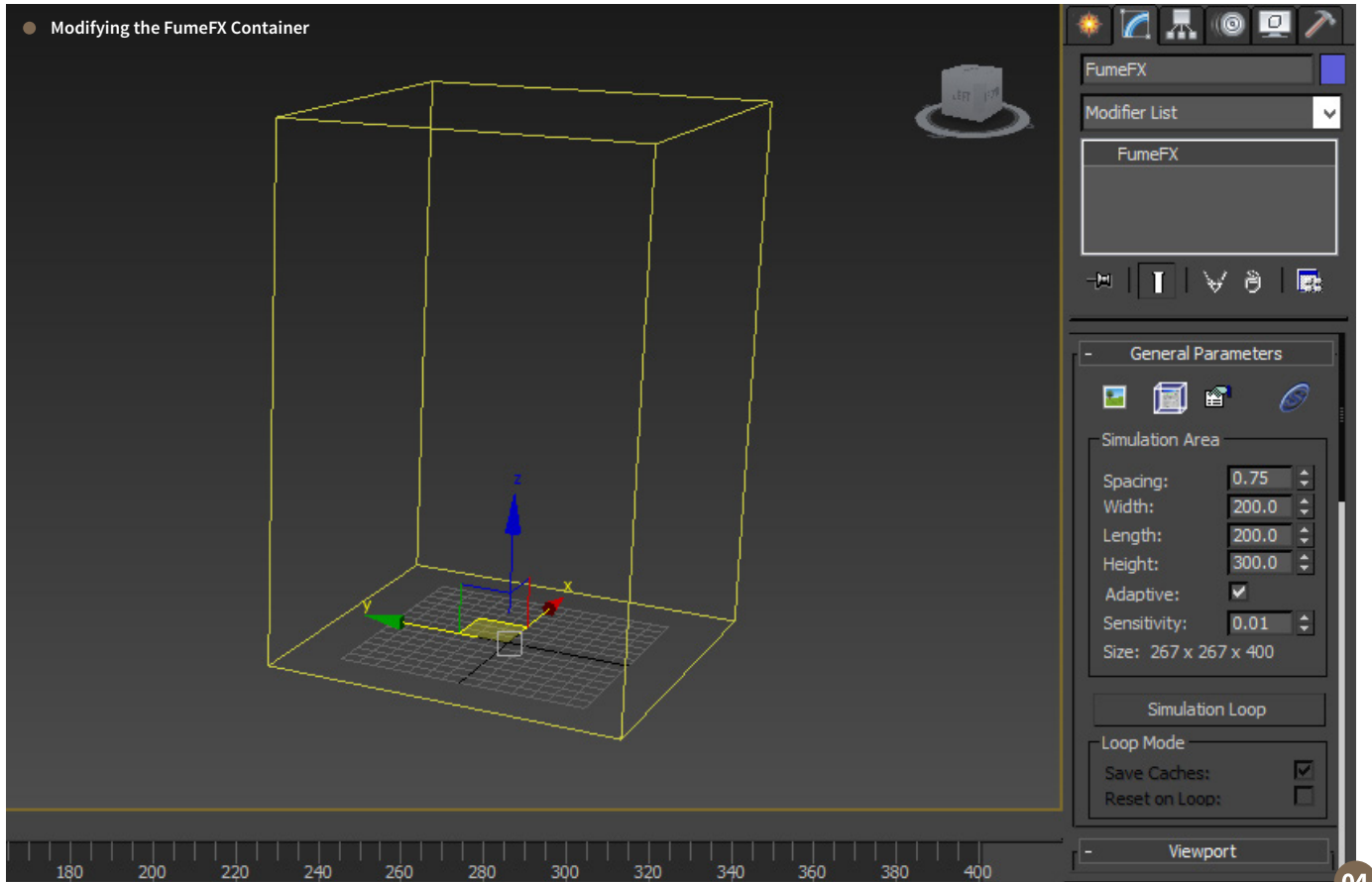
So let's start with the FumeFX Container. Go to the Create panel and select Geometry > FumeFX > FumeFX. Click on the FumeFX button and drag it into the viewport, then go to the Modify panel and set the Size and Spacing as follows. Width: 200, Length: 200, Height: 300 and Spacing: 0.75.

Now set the Position of FumeFX to the following: X: 00, Y: 00, Z: 00.

**04 Modify the FumeFX Container:** After setting up the FumeFX Container, it's time to modify the parameters. So select the Container and go to the Modify panel. Now click on the 'Open FumeFX' UI button and a new window will appear. As you can see, there are six sections in

this FumeFX interface and we will modify them one by one. So let's start with the Obj/Src section. In this section you just have to add the FumeFX Object Source which we generated earlier. So go to the Obj/Src section and click on the Pick Object button, then select the FumeFX Object Source.

**05 FumeFX – General Parameters:** After finishing the setup of the Obj/Src section,





let's set up the General Parameters section. We have already the set General Parameters to Spacing: 0.75, Width: 200, Length: 200 and Height: 300. Now we'll move ahead to the Output Range, set the Start Frame: 0, End Frame: 400, then go to Paths, where we set the FXD Files (Cache Files) path. So click on the button which is next to the Default Path and set the path as per your Folder Structure. Now move ahead to Playback Range & set the Play From: 0 & Play To: 400. So these are simple modifications in General Section.

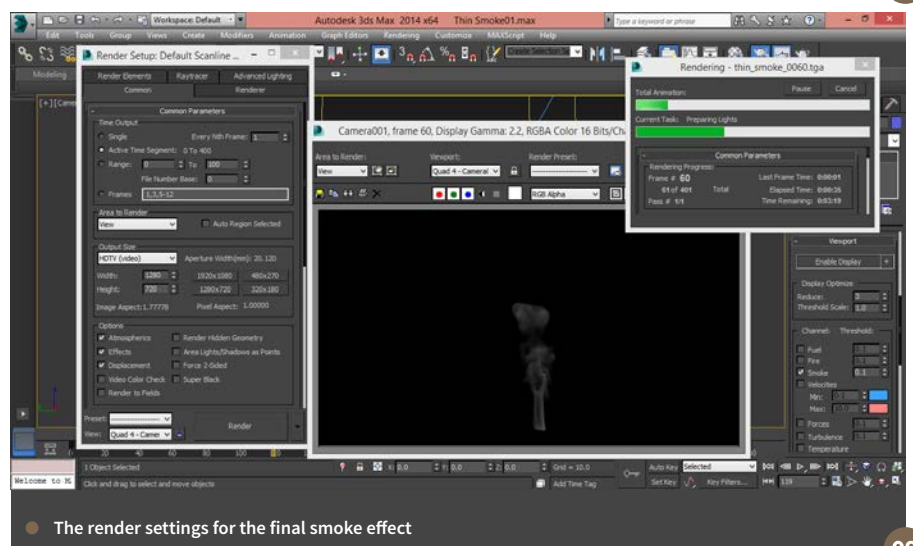
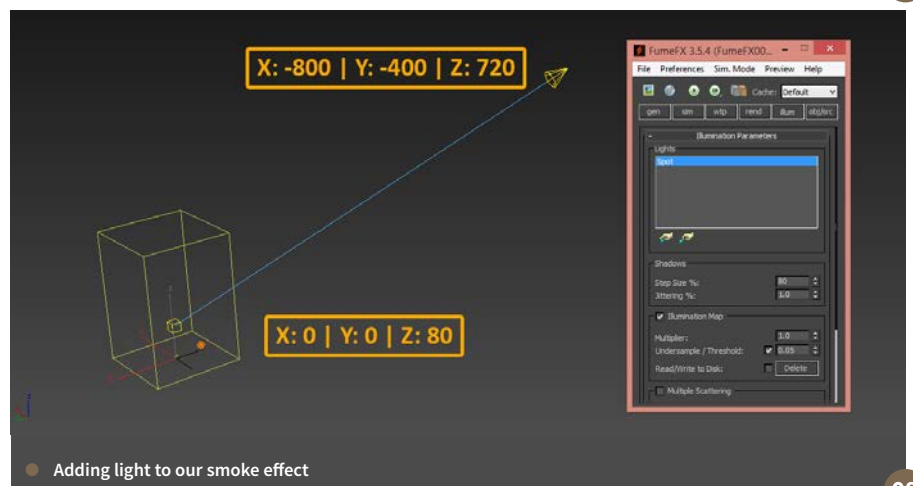
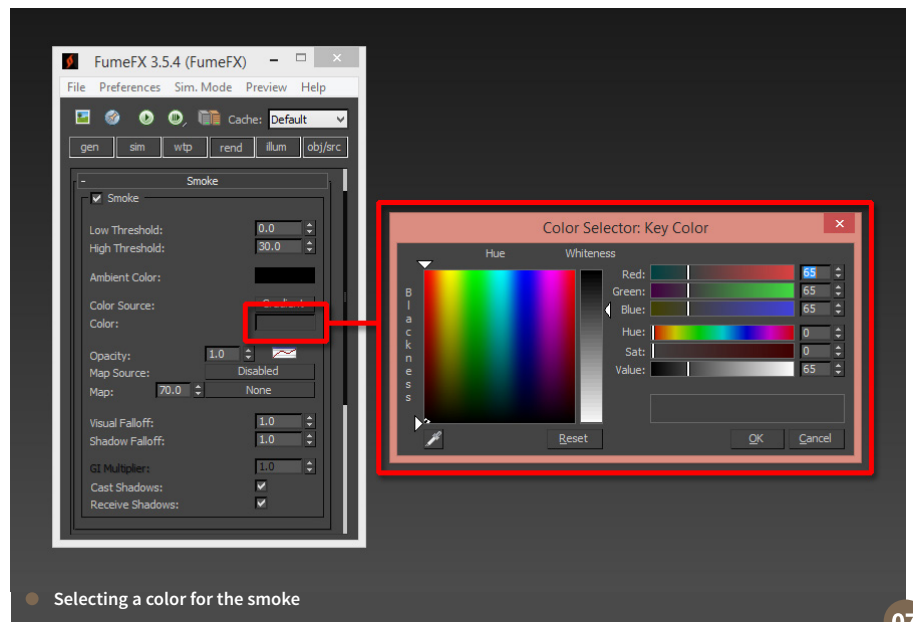
**06 FumeFX – Simulation:** After finishing the setup of General Parameters, let's modify the Simulation section. Go to the Simulation tab and apply the following settings:

- Time Scale to 1.5 to increase the overall speed of scene
- Gravity to 2.5
- Vorticity to 0.0 to reduce the internal motion in the smoke
- X Turbulence to 0.1

Now go to Turbulence Noise and set the Scale to 60.0, Frames to 10.0 and Details to 1.0. Go to Fuel and turn it off, because we don't need fuel or fire to emit smoke; this way we can reduce the simulation time. Then go to Smoke and set 'Dissipation Min. Dens.' to 0.1 and Dissipation Strength to 1.0 to dissipate the smoke fast. Keep the other parameters as they are and hit the Simulation button. It will take around 2-3 hours to finish.

**07 FumeFX – Rendering:** After finishing the simulation, just make sure that everything is as per your requirements. Now let's make some simple modifications, starting with setting the color of the smoke. Go to the Rendering section and then Smoke parameters. Set the smoke color to gray, then turn on the Cast Shadows and Receive Shadows options, so we'll see the smoke's shadow when we add light.

**08 FumeFX – Illumination:** After finishing the Color settings, it's time to add light to the scene. Go to the Create panel and select Lights > Standard > Target Spot. Click on Target Spot light and create in viewport. Now set the light position to X: -800, Y: -400, Z: 720. Set its Target Position to X: 0.0, Y: 0.0, Z: 80.0. Now select the light, go to the Modify Panel, turn on the shadow and set it to Ray Traced Shadows. Then go to the Shadow Parameters and turn on the Atmosphere Shadows. When you're done with these settings, return to the FumeFX Container, then go to the Illumination section, and add this light into the Lights section by clicking the 'Pick light' button.



**09 Rendering and post-process:** After finishing the light setup, now it's time for rendering. Go to Render Setup, set an Output Range, Output Resolution and Output Path, then hit the Render button. It will take around two hours to finish the rendering.

Afterwards, you can import all the renders into After Effects, or any compositing software which is convenient for you, and make some changes in the color or brightness of the image, then render out the final output. And now you will have some thin smoke! ●



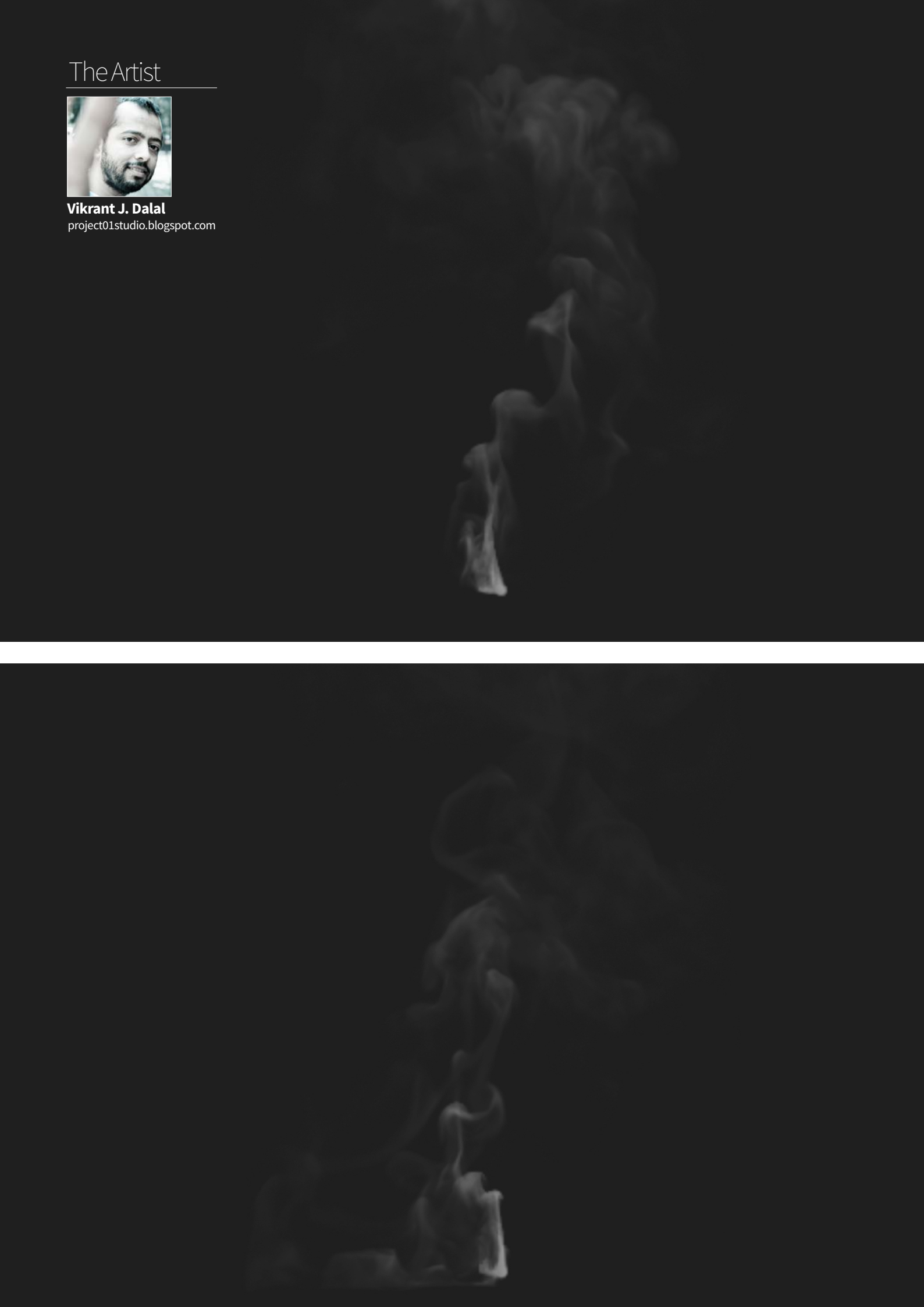
# The Artist

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**Vikrant J. Dalal**

[project01studio.blogspot.com](http://project01studio.blogspot.com)





## TOP TIP

### **Try Simple Source and Particle Source**

We have achieved this effect using FumeFX's Object Source technique, but you can also try Simple Source and Particle Source. Simple Source doesn't need any object to emit smoke – it has its own simple shapes, like Sphere, Cube and Cylinder. But if you want to work with Particle Source, then you should have at least basic knowledge of 3ds Max Particles. It's totally fun to try different things.

### **Try to create a live action shot**

Always try to shoot real footage and then add your CG work into that footage to make complete shot. This way you will learn about camera tracking, lighting and compositing too.

### **Always watch references**

Always watch real examples for a better understanding. It helps a lot to know the behavior and appearance of smoke, and its interaction with solid objects or with wind. You should use this tip for other things as well. I suggest doing maximum 'research and development', so good luck!

### **Use different parameters**

As you can see, there are many parameters in FumeFX. You should try different parameters and simulate the scene, so you get a feel for the specific use of parameters and how they work, specially Turbulence and its scale, then Vorticity and Velocity Damping. Try creating the smoke using Fuel, or you can use Wind Force as well to make it more realistic.



## **CHECKOUT CHAPTER 02 ON PAGE 086**

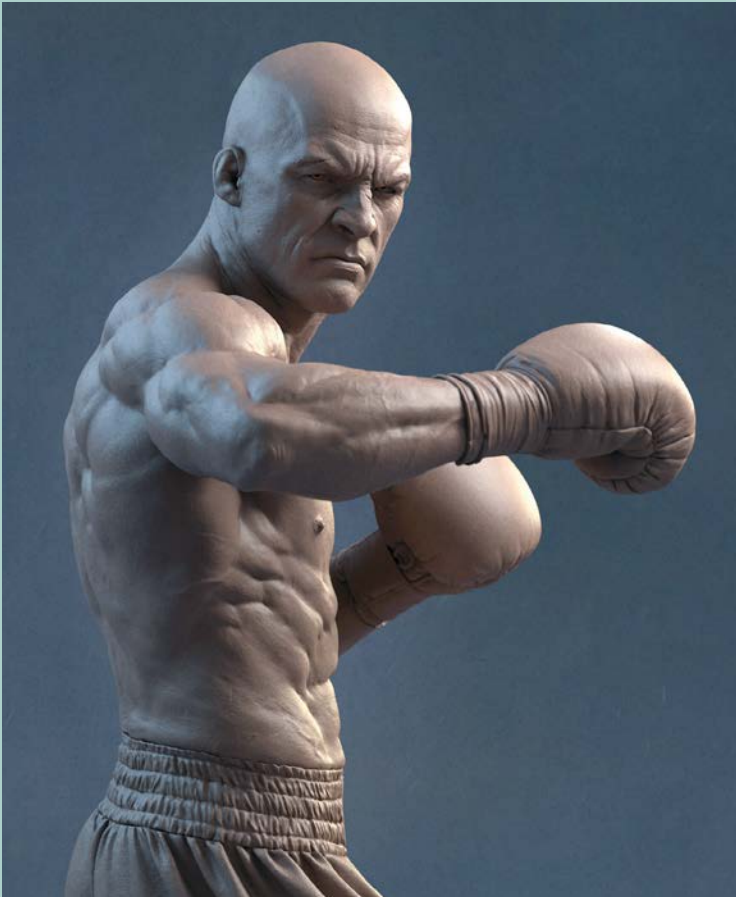
**Creating dramatic  
smoke effects...**





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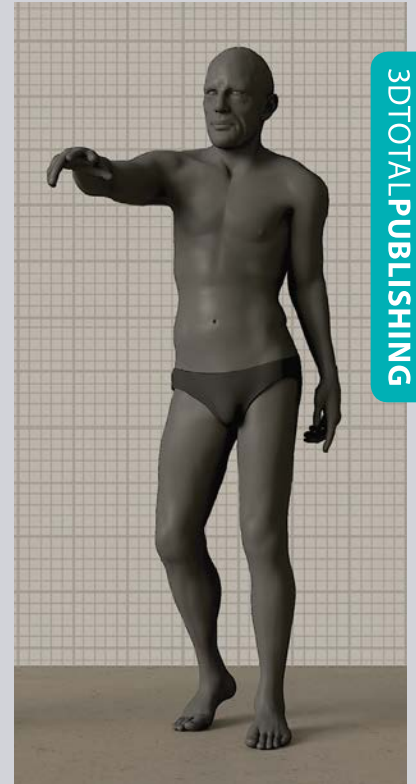
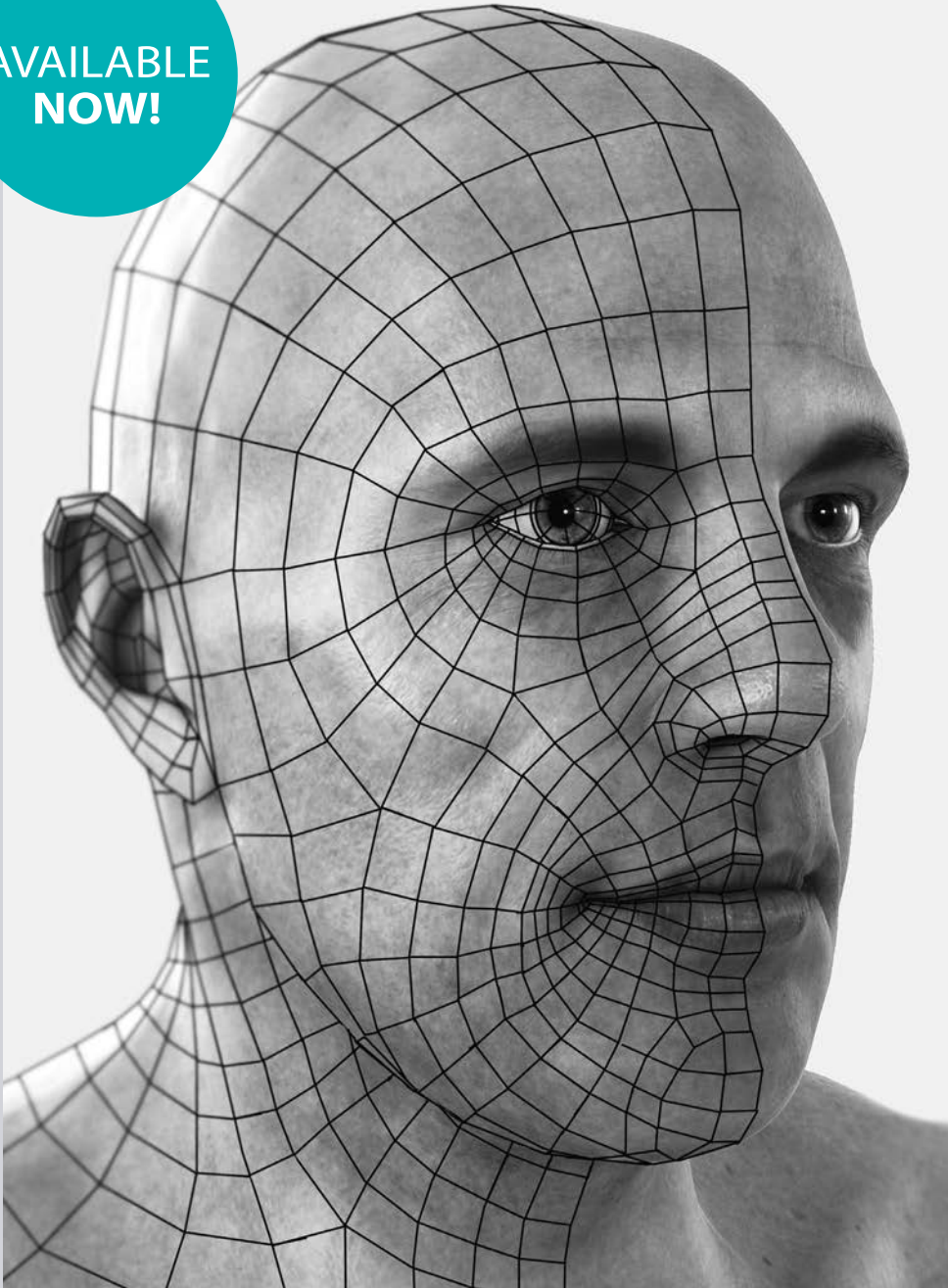


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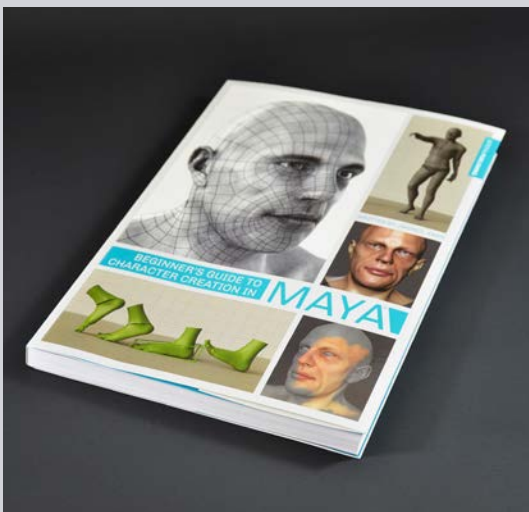
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## The Artist



**Vikrant J. Dalal**

[project01studio.blogspot.com](http://project01studio.blogspot.com)

**Software Used:**

3ds Max

Vikrant Dalal has nearly a decade of experience in VFX and graphic design, which he's ready to share with people who love VFX. He is based in India and runs Project01 Design Studio.

# Create dramatic smoke effects

by Vikrant J. Dalal

You've learned how to make thin white smoke, but how about something bigger? Vikrant Dalal shows how to make billowing black smoke in FumeFX for 3ds Max [▶](#)



## Join Vikrant Dalal as he shares his FumeFX expertise...

Hello everyone! Here I've got a tutorial for creating a thick smoke effect, which can be used for such things as oil or explosion smoke, a volcanic eruption, a forest fire, and so on. You may have seen this kind of smoke on the internet or on television, or sometimes in your real life, but it doesn't happen every time.

There are number of software packages and plugins with which you can create fire and smoke effects, such as FumeFX and Phoenix FD for 3ds Max and Maya, Houdini, Cinema 4D and so on, but many big VFX and animation studios use FumeFX in their pipeline as it's well-established, trustworthy and most importantly user-friendly. There are different techniques you can use to make this effect in FumeFX, such as Simple Source, Object Source and Particle Source, but we are going to use Object Source.

Before you start working on this kind of effect, it helps to have good knowledge of fire and smoke properties, such as Turbulence, Velocity and Buoyancy. There are different types of smoke, from thin smoke for incense and cigarettes, to thick oil smoke or explosion smoke, and each one has different properties.

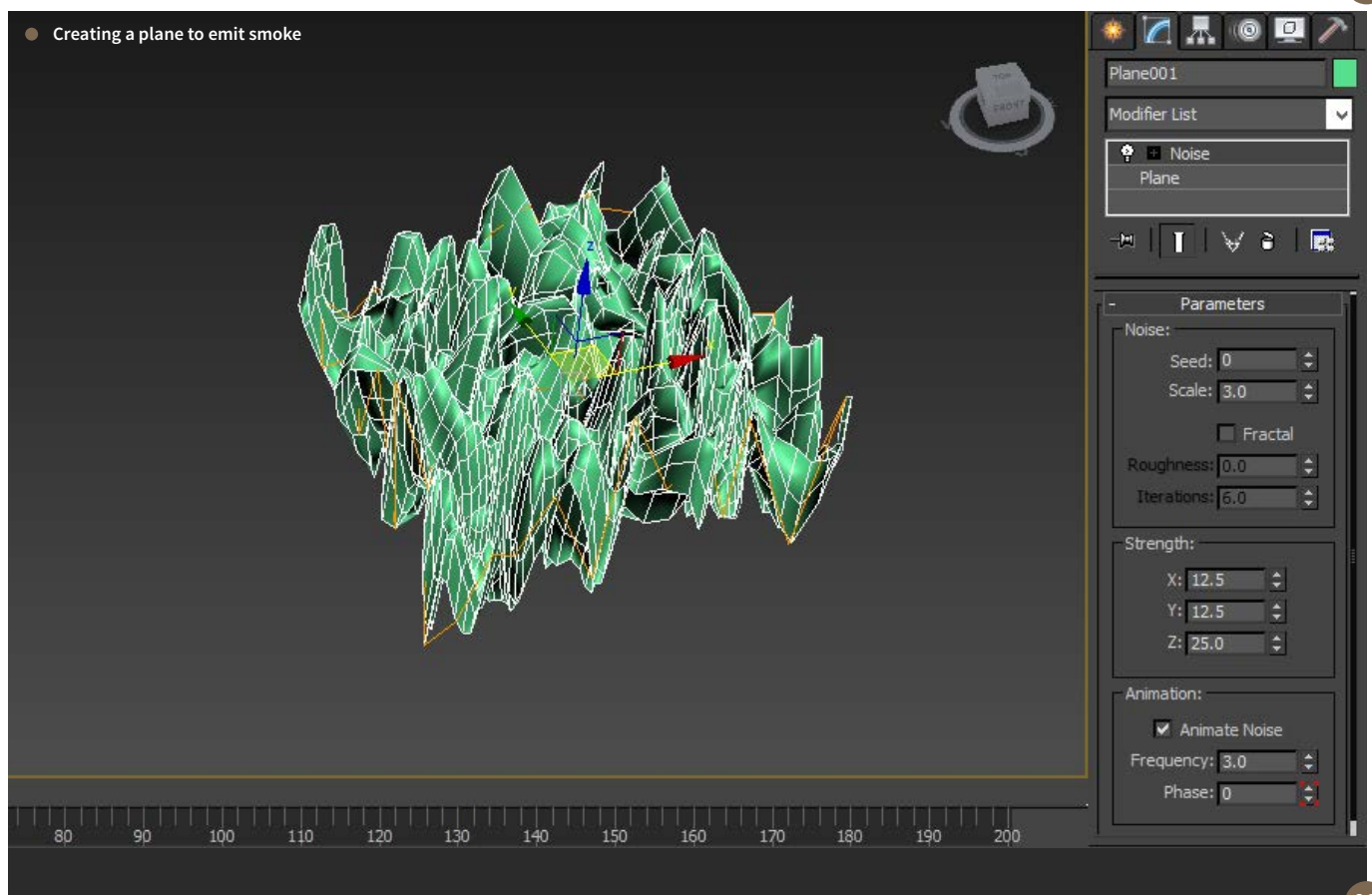
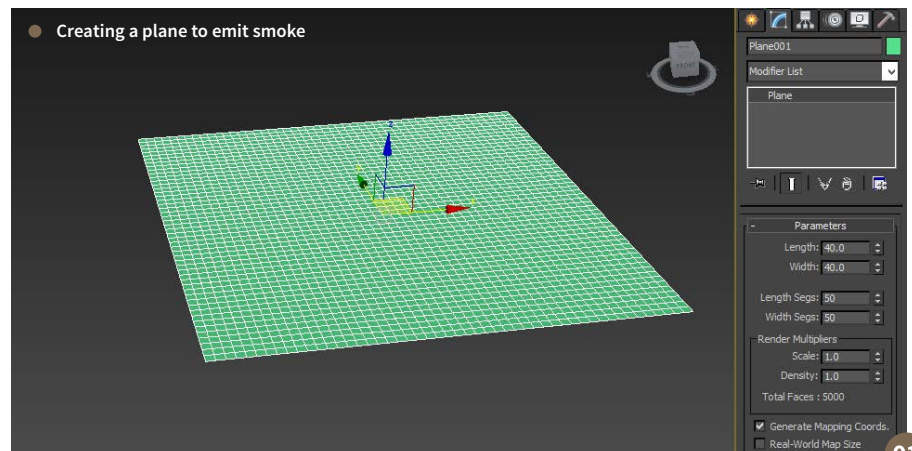
I can't teach you each and every parameter of this plugin and software, as they're very vast and need a lot of time to go through, but this particular tutorial will cover as much as required to create this thick smoke effect. This is very interesting subject, because you can't define one certain process to create this effect. As much as you will use your creativity and tools available, you will find different types of effects every time. So it very much depends on your own understanding of how to use the tools and techniques.

**01 Create an object:** Open 3ds Max. Before we start working on our scene, remember that we are going to use the Object

Source technique in FumeFX. This means we are going to use an object to emit smoke, so for that purpose we'll start by creating an object. We'll use a Plane.

Go to the Create panel and select Geometry > Standard Primitives > Plane. Now change the parameters to the following: Length: 40, Width: 40, Length Segments: 50, and Width Segments: 50. Set the Position to X: 90, Y: 00 and Z: 15.

**02 Modify the object:** After creating the Plane, it's time to modify it by adding a Noise Modifier. Select the Plane, go to the Modify panel and select Noise Modifier. Now make ▶





the following changes: Scale: 3.0, Strength X: 12.5, Y: 12.5 and Z: 25. Now go to the Animation section and turn on Animate Noise, then set the Frequency to 3.0. Now you can see the Plane with animated noise applied, and you're ready to use it as fire and smoke emitter.

**03 Create a FumeFX Object Source:** After finishing the modeling and modification of our object, it's time to proceed to the FumeFX plugin. So first of all we will create the FumeFX Object Source where we will add our Object. To create a FumeFX Object Source, go to Create Panel > Helpers > FumeFX > Object Src. Click on this button and drag it into the viewport. Now go to the Modify panel to make some changes in the Parameters. Change the Object Src Type to Solid. Set the Smoke to 25.0, then go to the Velocity section and set Object's to 5.0 and Extra to 15.0. Keep the other parameters as they are.

**04 Create a FumeFX Container:** We are going to use FumeFX as it's very simple to use, but still has many options and parameters. We'll cover as much as is required for this particular tutorial.

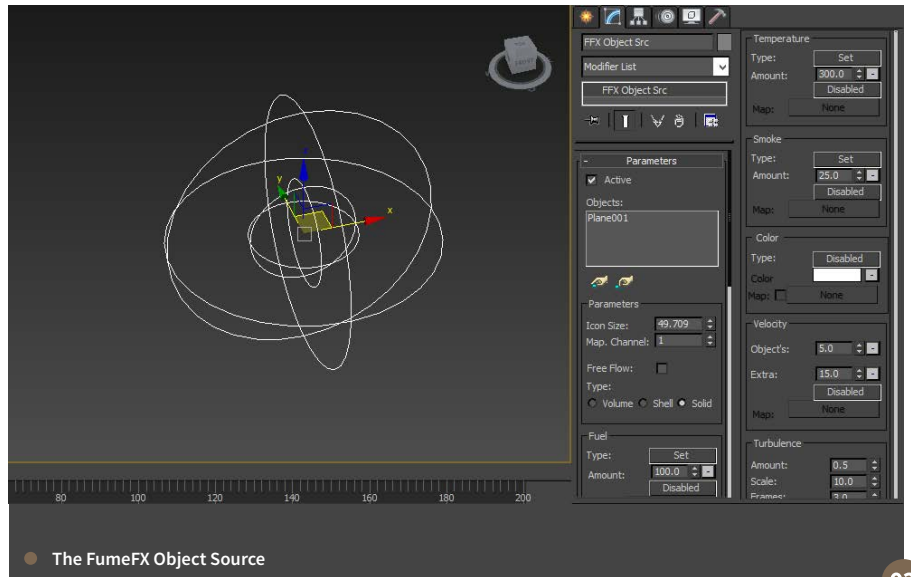
So let's start with the FumeFX Container. Go to the Create panel and select Geometry > FumeFX > FumeFX. Click on the FumeFX button and drag it into the viewport, then go to the Modify panel and set the Size and Spacing as follows. Width: 400, Length: 400, Height: 600 and Spacing: 1.2.

Now set the Position of FumeFX to the following: X: 00, Y: 00, Z: 00.

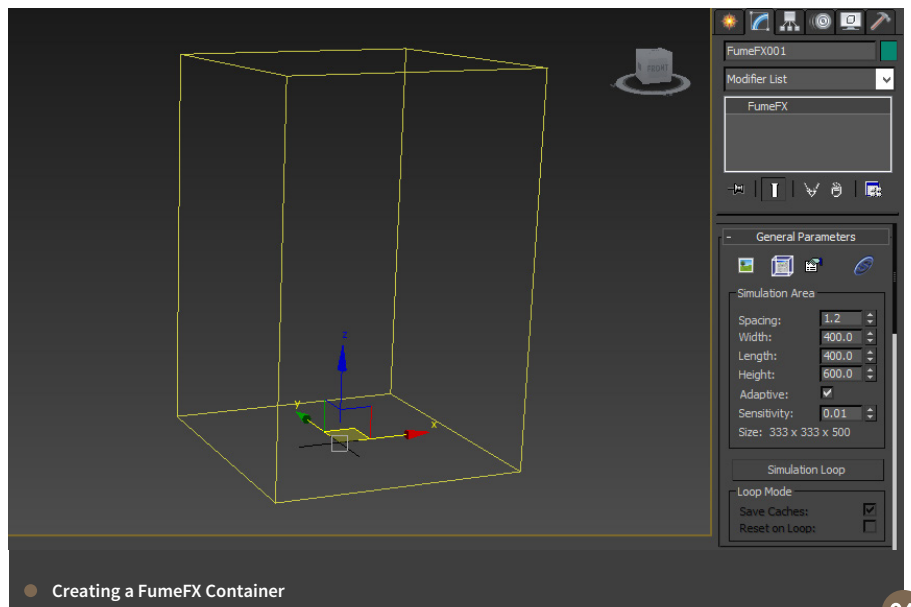
**05 Create a Wind Force:** To push the fire and smoke in a certain direction, we'll use Wind. To create this, go to the Create panel and select Space Warps > Forces > Wind. Click on it and drag it into the viewport, then change the Strength to 2.0.

Now set the Position of FumeFX to X: 250, Y: 00, Z: 150. Set the Rotation X: 0.0, Y: -90, Z: 0.0.

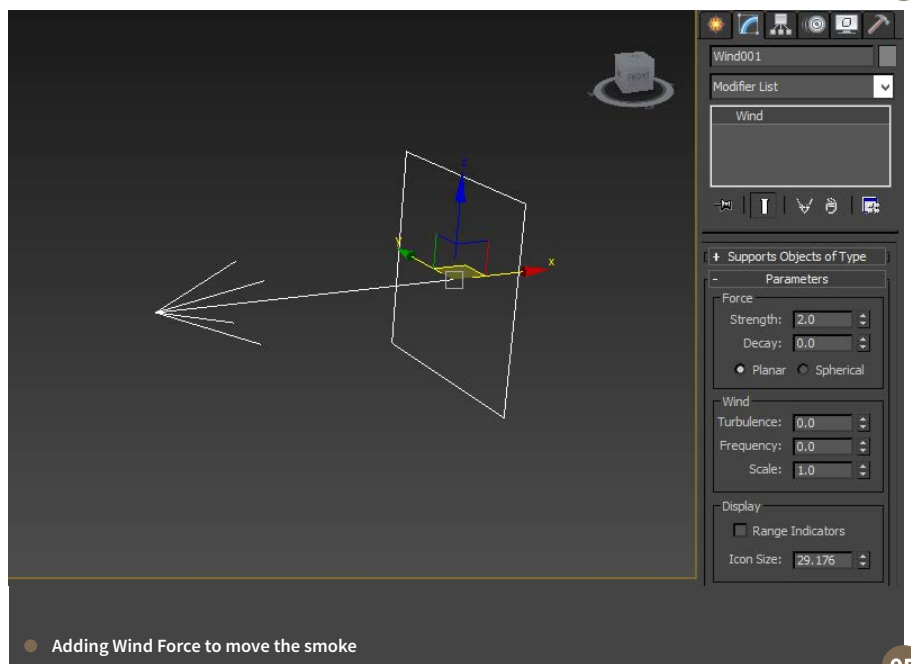
**06 Modify the FumeFX Container:** After setting up the FumeFX Container, it's time to modify the parameters. So select the Container and go to the Modify panel. Now click on the 'Open FumeFX' UI button and a new window will appear. As you can see, there are six sections in this FumeFX interface and we will modify them one by one. So let's start with the Obj/Src section. In this section you just have to add the FumeFX Object Source which we generated earlier. So go to the Obj/Src section and click on the Pick Object button, then select the FumeFX Object Source and Wind Force.



03



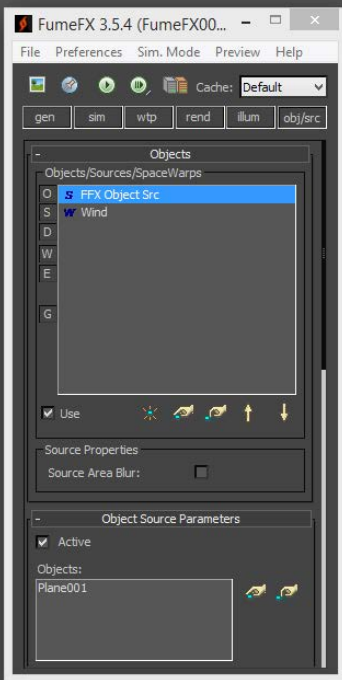
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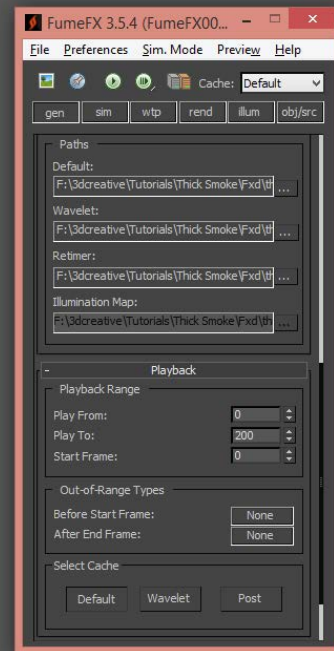
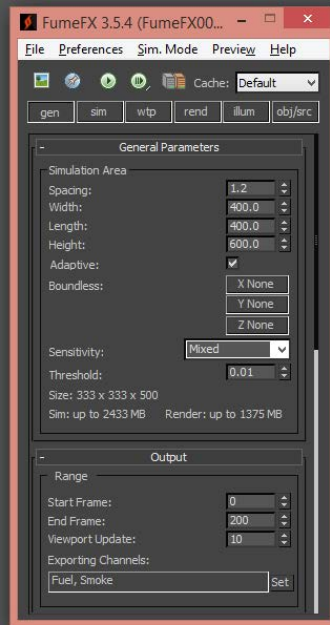


● Modifying the FumeFX Container



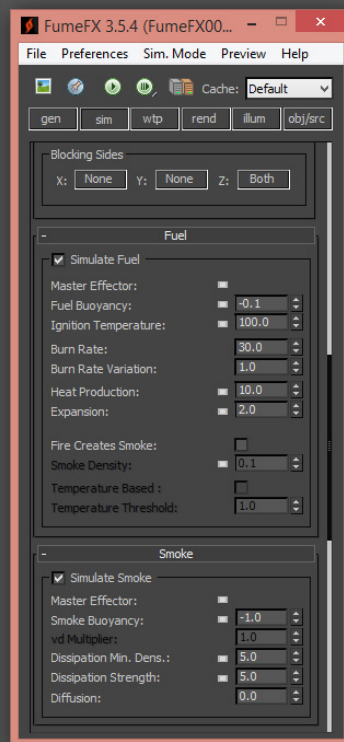
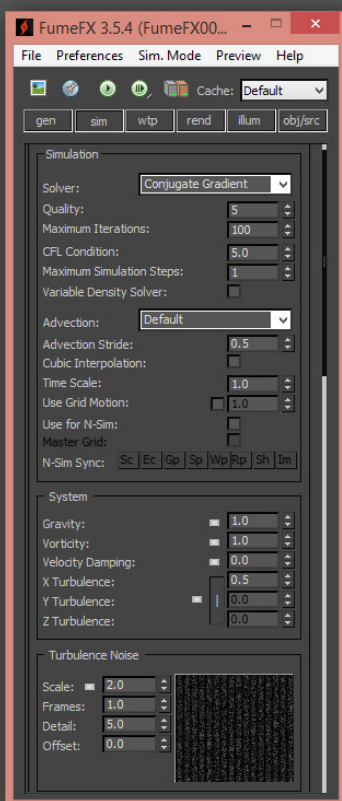
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● Going through FumeFX's General Parameters section



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● Setting up FumeFX's Simulation section



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**07 FumeFX – General Parameters:** After finishing the setup of the Obj/Src section, let's set up the General Parameters.

We have already set the General Parameters to Spacing: 1.2, Width: 400, Length: 400 and Height: 600. Now we'll move ahead to the Output Range, set the Start Frame: 0, End Frame: 200, then go to Paths, where we set the FXD Files (Cache Files) path. So click on the button which is next to the Default Path and set the path as per your Folder Structure. Now move ahead to the Playback Range and set the Play From as 0 and Play To as 200. So these are some simple modifications in the General Section.

**08 FumeFX – Simulation Parameters:** After finishing the setup of General Parameters, let's modify the Simulation Parameters. Go to the Simulation tab and apply the following settings. Change the Vorticity to 1.0 and the X Turbulence to 0.5. Now go to Turbulence Noise and set the Scale to 2.0, Frames to 1.0, and Details to 5.0.

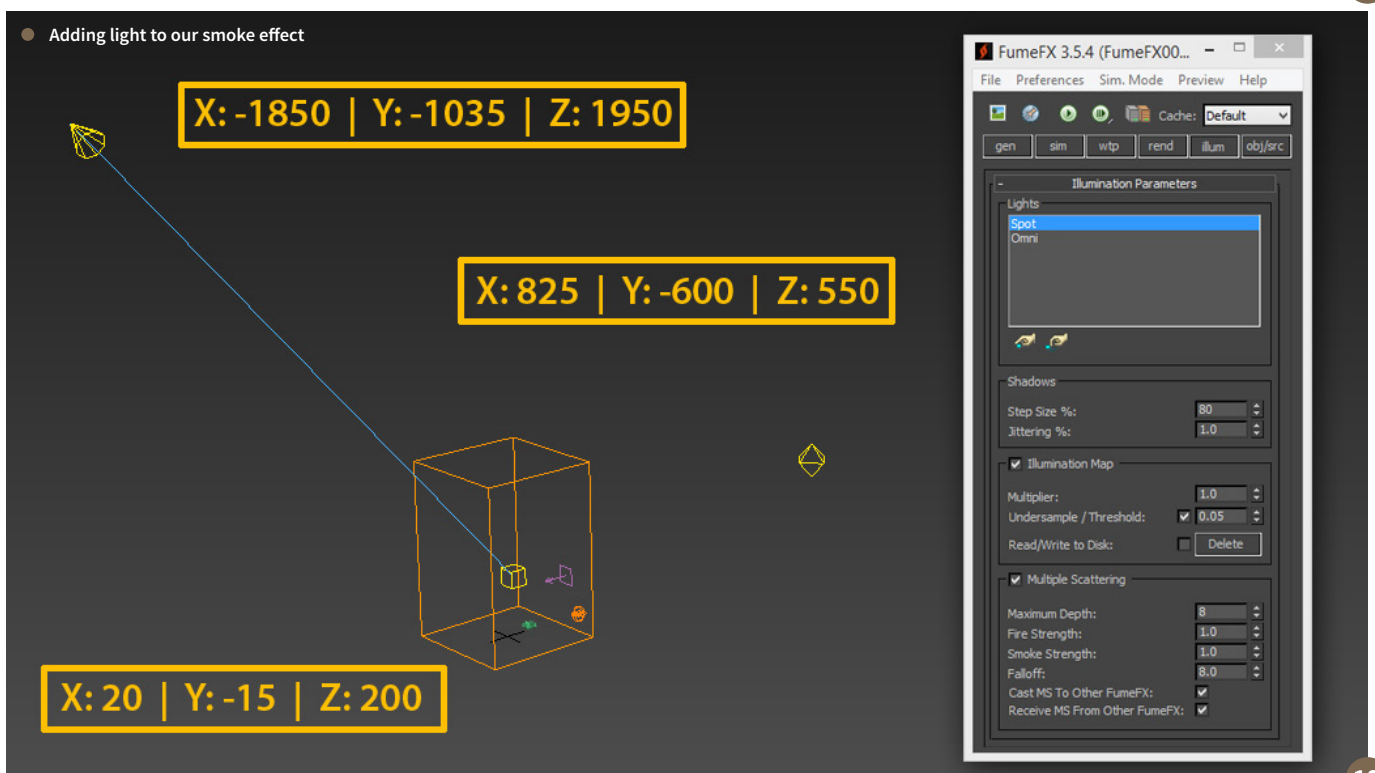
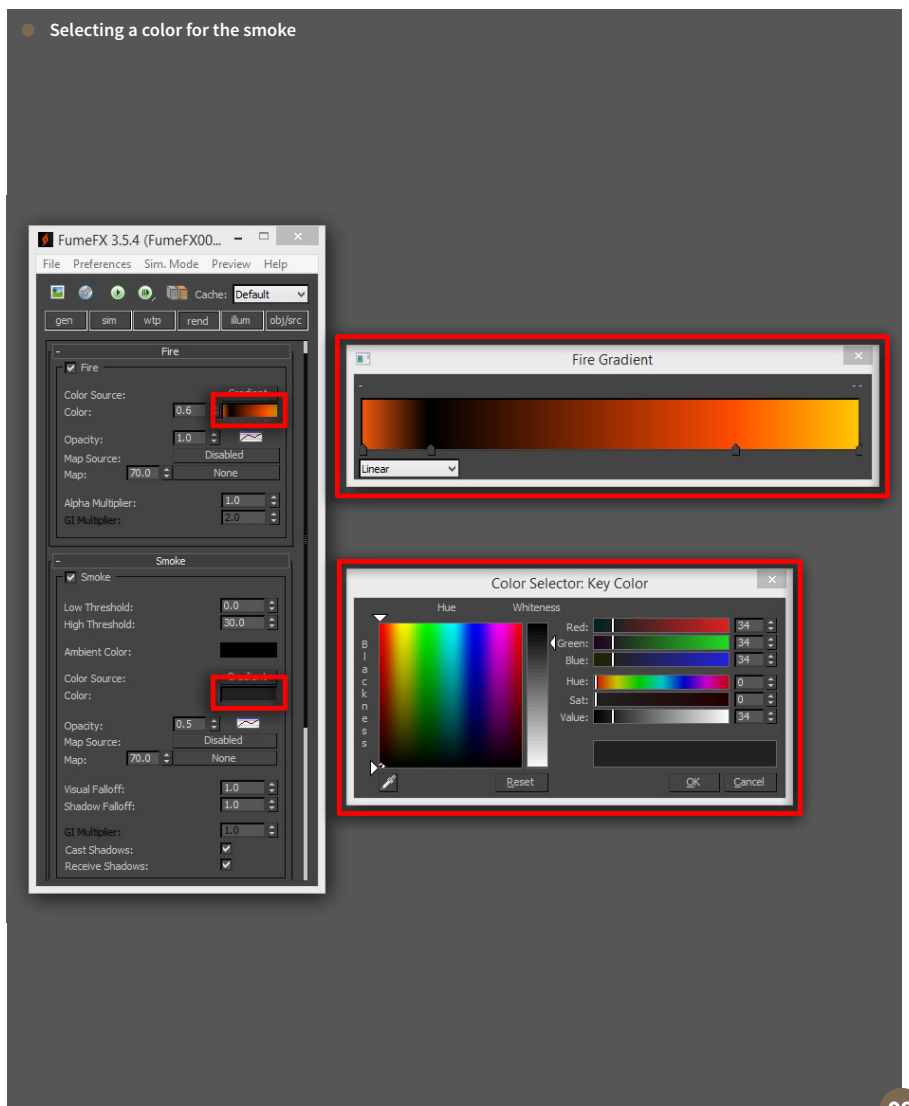
Now go to Fuel and increase the Expansion to 2.0, keeping the other parameters as they are. Then go to Smoke and set the 'Dissipation Min. Dens.' to 5.0 and Dissipation Strength to 5.0 to dissipate the smoke fast. Keep the other parameters as they are and hit the Simulation button. It will take around 3-4 hours to finish. ▶



**09 FumeFX – Rendering Parameters:** After finishing the simulation, just make sure that everything is as per your requirements. Now it's time to set the colors of the fire and smoke. So go to Rendering section and select the Fire tab. Right-click on Color and change it to Key Mode, then change the Gradient Color as shown in the image. Now move on to the Smoke Parameters. Set the smoke color to gray and reduce the Opacity to 0.5, then turn on the Cast Shadows and Receive Shadows options (so when we add the light, we should see the smoke's shadow).

**10 FumeFX – Illumination Parameters:** After finishing the Color settings, it's time to add light to the scene. We'll create two lights: one Target Spot and one Omni Light. To do that, go to the Create panel and select Lights > Standard > Target Spot. Click on the Target Spot light and create it in viewport. Now set the light position to X: -1850, Y: -1035, Z: 1950, and its Target Position to X: 20.0, Y: -15.0, Z: 200.0. Create the Omni Light with same procedure and change its Position to X: 825, Y: -600, Z: 550.

Now select the lights and go to Modify panel, then turn on the Shadow and set it to Ray Traced Shadows. Now go to Shadow Parameters and turn on Atmosphere Shadows. After finishing these settings, return to FumeFX Container. Go to the Illumination section and add these lights into the Light section by clicking the Pick Light button. Now turn on Multiple Scattering, set its Max Depth to 8 and Falloff to 8.0, and leave the other parameters as they are.



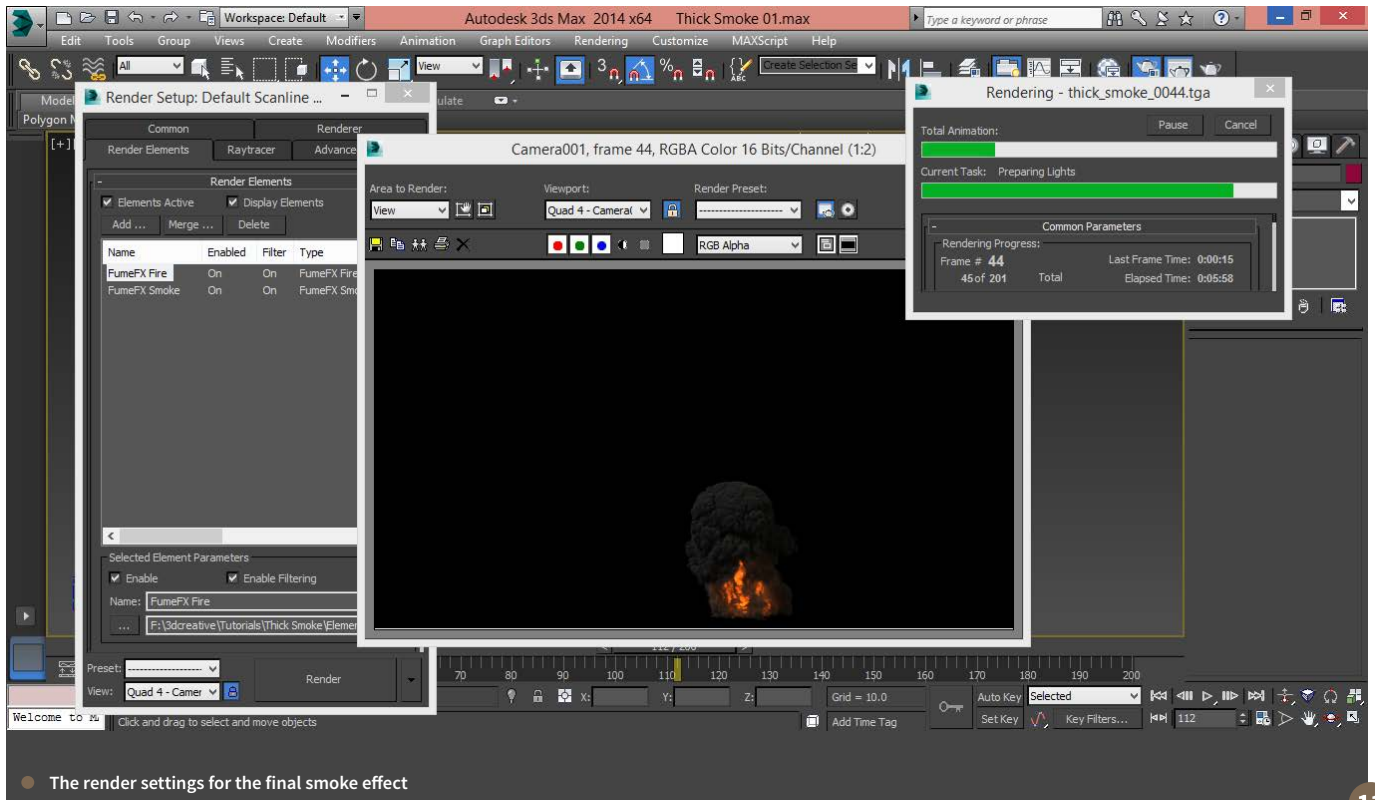


**11 Rendering:** After finishing the light setup, it's time for rendering. Go to Render Setup by pressing F10 and set your desired Output Range, Output Resolution and Output Path. Go to the Render Elements tab and click on the Add button, bringing up a new window. Select the FumeFX Fire and FumeFX Smoke elements and click OK. Now just hit the

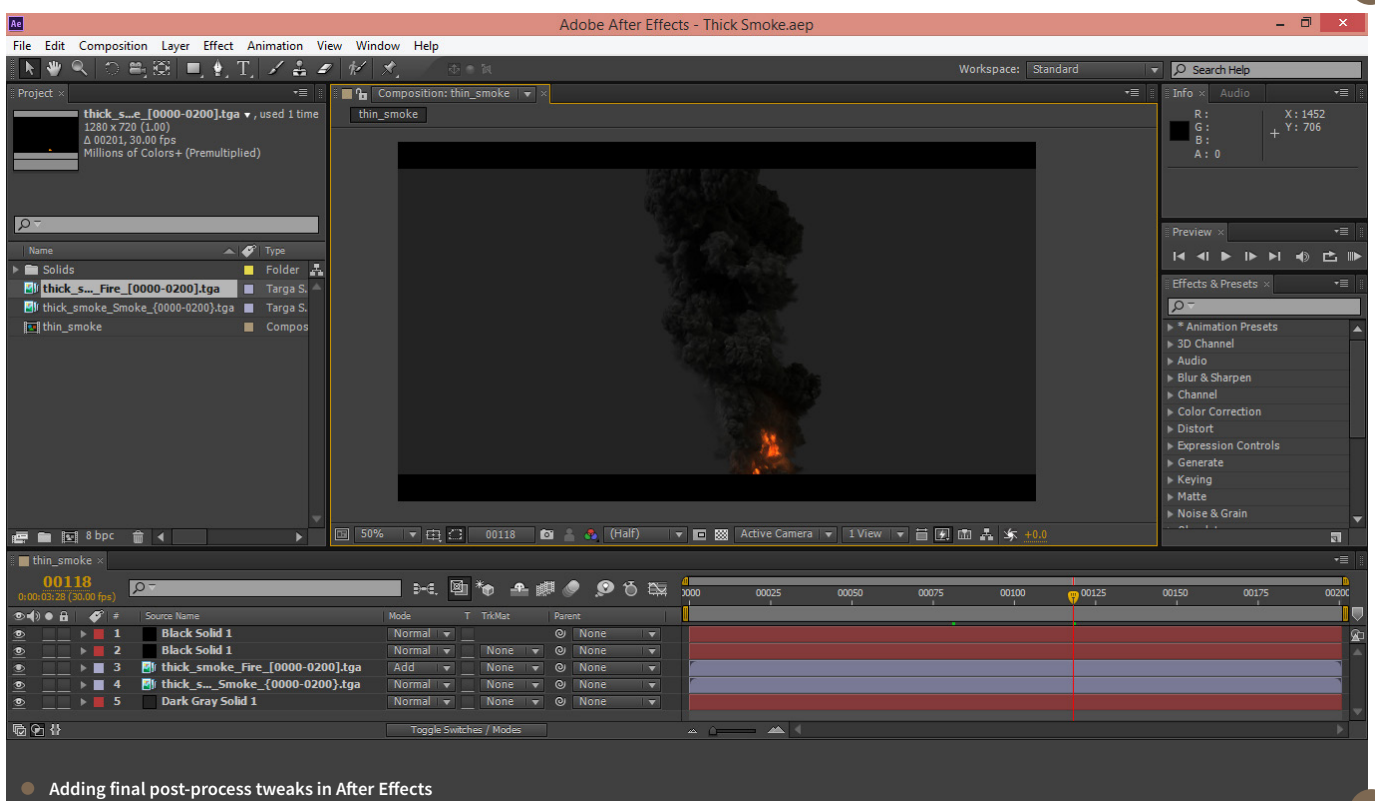
Render button. It will take around 4-5 hours to finish rendering.

**12 Post-production:** After finishing the rendering, import both the fire and smoke renders into After Effects, or any other compositing software which is convenient for you. I'm using After Effects, so import both elements

and drag them into the timeline. Select the fire element, then right-click and change its Blending Mode to Add. You can include Glow effects and make some changes in the Parameters. Select the smoke element and make whatever changes you like to the color or brightness settings. Now render the final output and you'll get your finished thick smoke! ●



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● The render settings for the final smoke effect

● Adding final post-process tweaks in After Effects



## ⚡ TOP TIP

### Always use Noise Float Controller

Wind doesn't travel at a constant speed, so to get this effect, you need to animate the Wind Strength on every frame or after every five frames, which is very time-consuming and hectic. Instead, do this using Noise Float Controller to save time: just right-click on Strength and select 'Show in Track View'. A new window will appear with the Strength option selected. Right-click on this and select Assign Controller; in the new window, select Noise Float, and another window will appear with the Noise parameters. You have to try these parameters to achieve the effect you want.

## The Artist



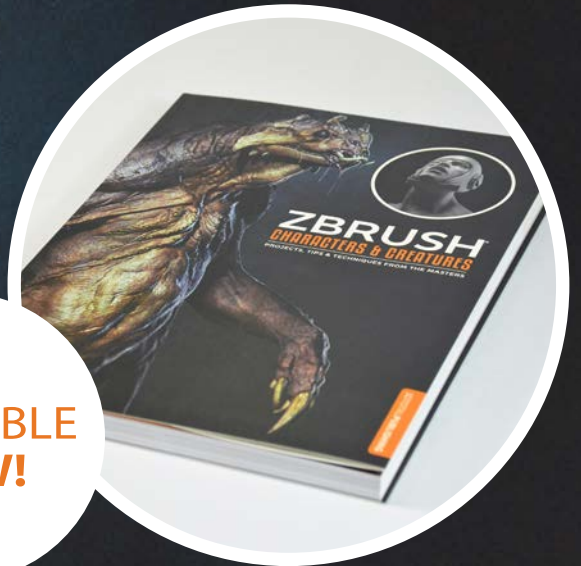
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# ZBRUSH®

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ZBrush is a powerful program offering digital artists of all levels intuitive and inspiring workflow solutions for 3D models and 2D images. Following on from the success of other ZBrush titles such as *ZBrush Character Sculpting: Volume 1*, this new book focuses on the design and creation of a variety of character and creature sculpts by world-class artists including Mariano Steiner, Maarten Verhoeven, Caio César, and Kurt Papstein.

Topics covered by the panel of industry experts include alien concepts, quadruped designs, and inventive creatures, while a collection of speed-sculpting tutorials offers fantastic insight into working quickly with this revolutionary sculpting software. Aimed at aspiring and experienced modelers alike, *ZBrush Characters & Creatures* is a go-to resource for those looking to learn tips, tricks, and professional workflows from the digital art masters, taking you from concept to completion across a variety of imaginative projects.



## The Artist



**Stavros Fylladitis**  
stavrosfyl.artstation.com

**Software Used:**  
ZBrush, Maya

Stavros Fylladitis is a 3D artist based in Athens, Greece. He has worked for IXOR Visual FX and Faust VFX, and has a special interest in modeling.



# Sculpting realistic animals

Stavros Fylladitis reveals the ZBrush and Maya techniques behind his superbly lifelike elephant model ▶



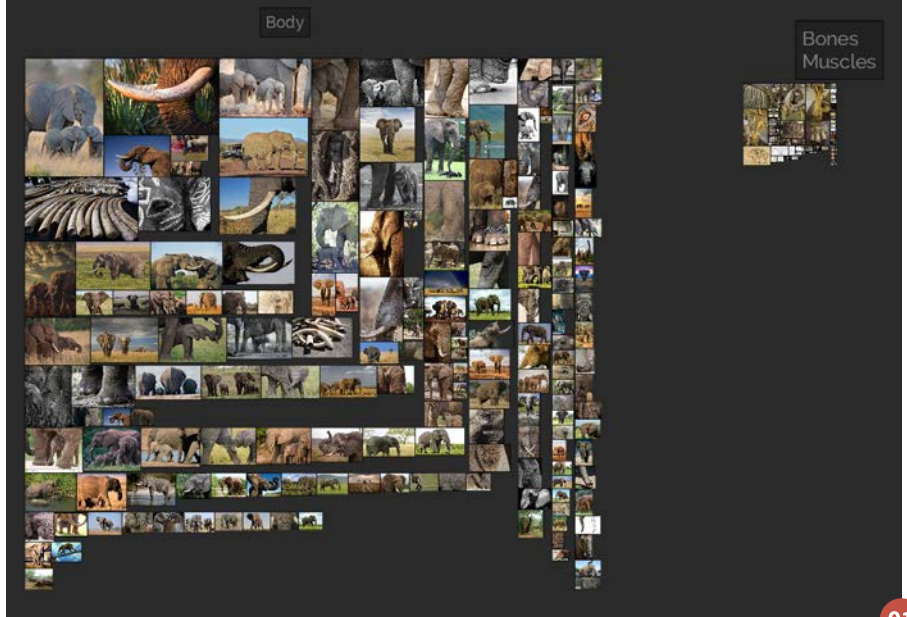
## Improve your ZBrush sculpting with these insights from Stavros Fylladitis...

In this tutorial, I'm really excited to share with you the process and techniques I used for my latest personal project, *African Elephant*. I learned a lot and would like to pass some of the knowledge and experience I've gained on to the CG community.

**01 Reference:** A lot of people get too excited at the beginning of a project and they want to dive into the fun and interesting stuff right away. What I've learned to do, and has helped me a lot, is to take some time to study what you are about to do. Where does the animal live? How does it look when it's born or when it gets old? A lot of these things play a huge role in the shape of its body, the way it walks, and most of all they give you a huge advantage because you can easily give a personality to the animal and bring it to life.

I've come to the conclusion that your model will go as far as your references. Go through anatomy books, visit zoos, watch documentaries, browse Pinterest. Spend some time to find the best references you can find out there. Always keep in

● Reference material laid out in PureRef

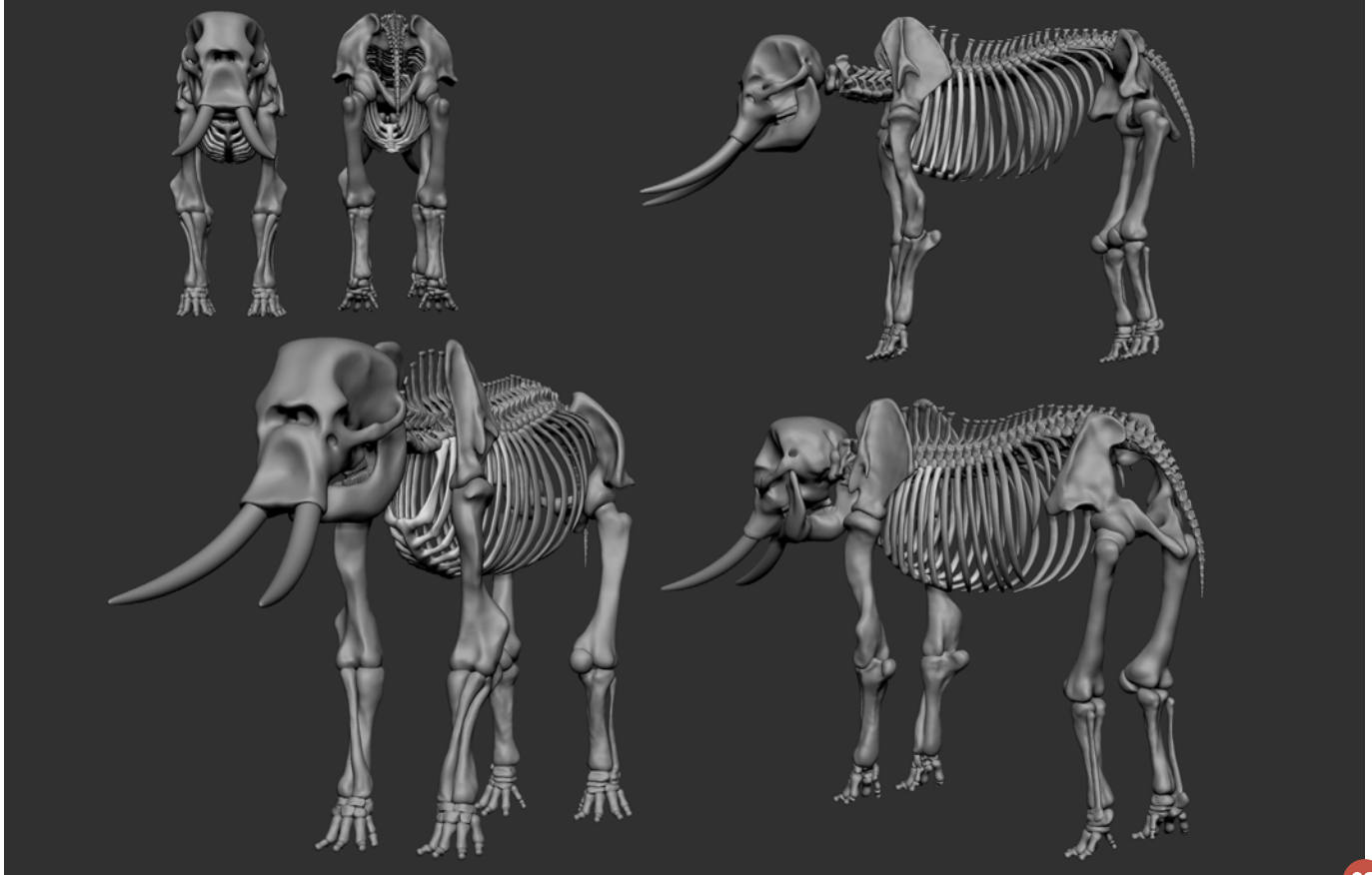


01

mind the '80-20' rule: the 20% of work you do in the beginning will determine how the other 80% will look. After finishing with the references I use PureRef to have them next to me all the time. It's a free image viewer where you can display a lot of images without any distractions.

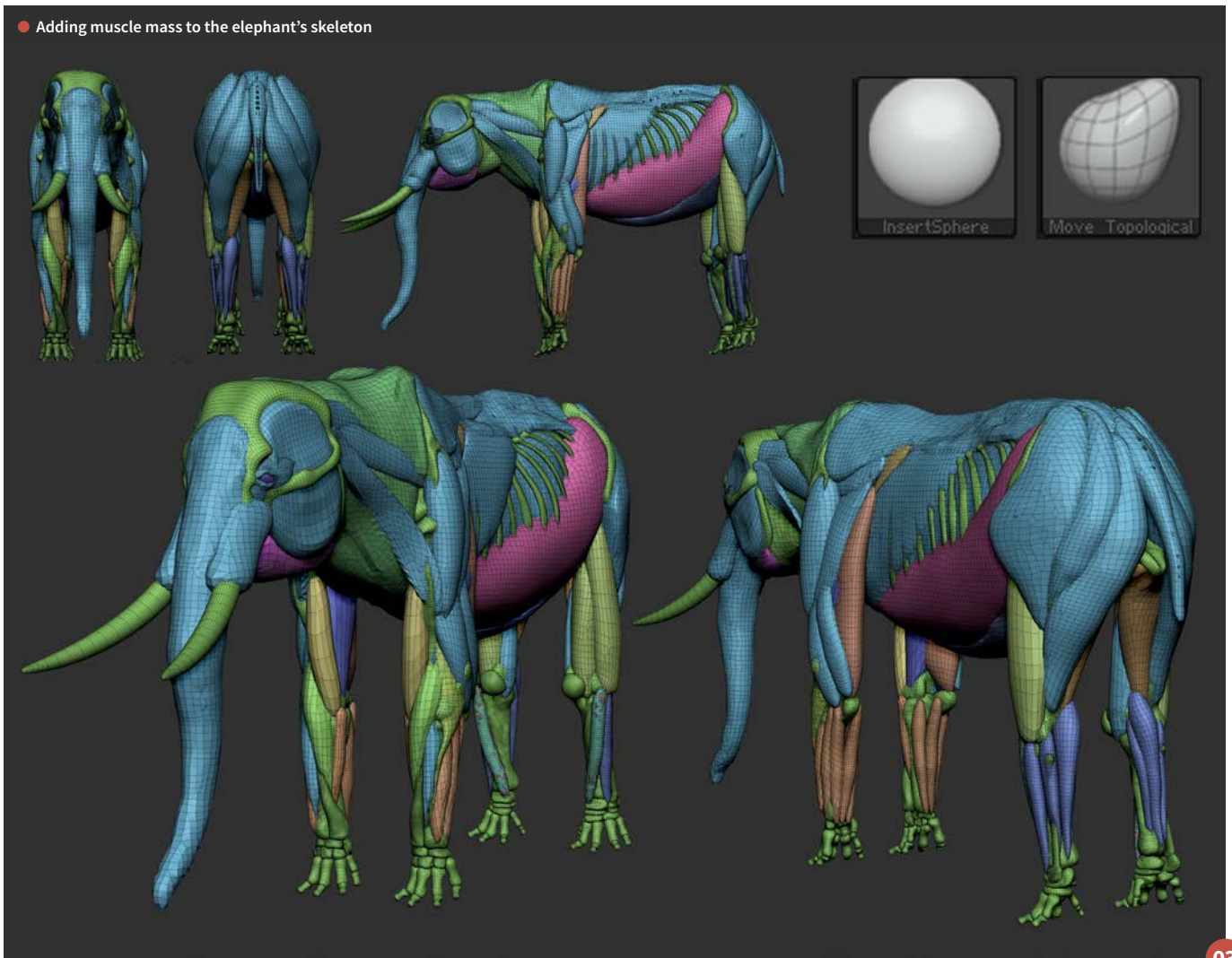
**02 Skeleton:** The best way for me to understand an animal is to start working on it from the inside. That's why I almost always start with the bones. You don't have to go crazy here, just some simple geometry with the basic forms and volumes of the bones will do the job. ▶

● Building up the elephant's structure, starting with the skeleton



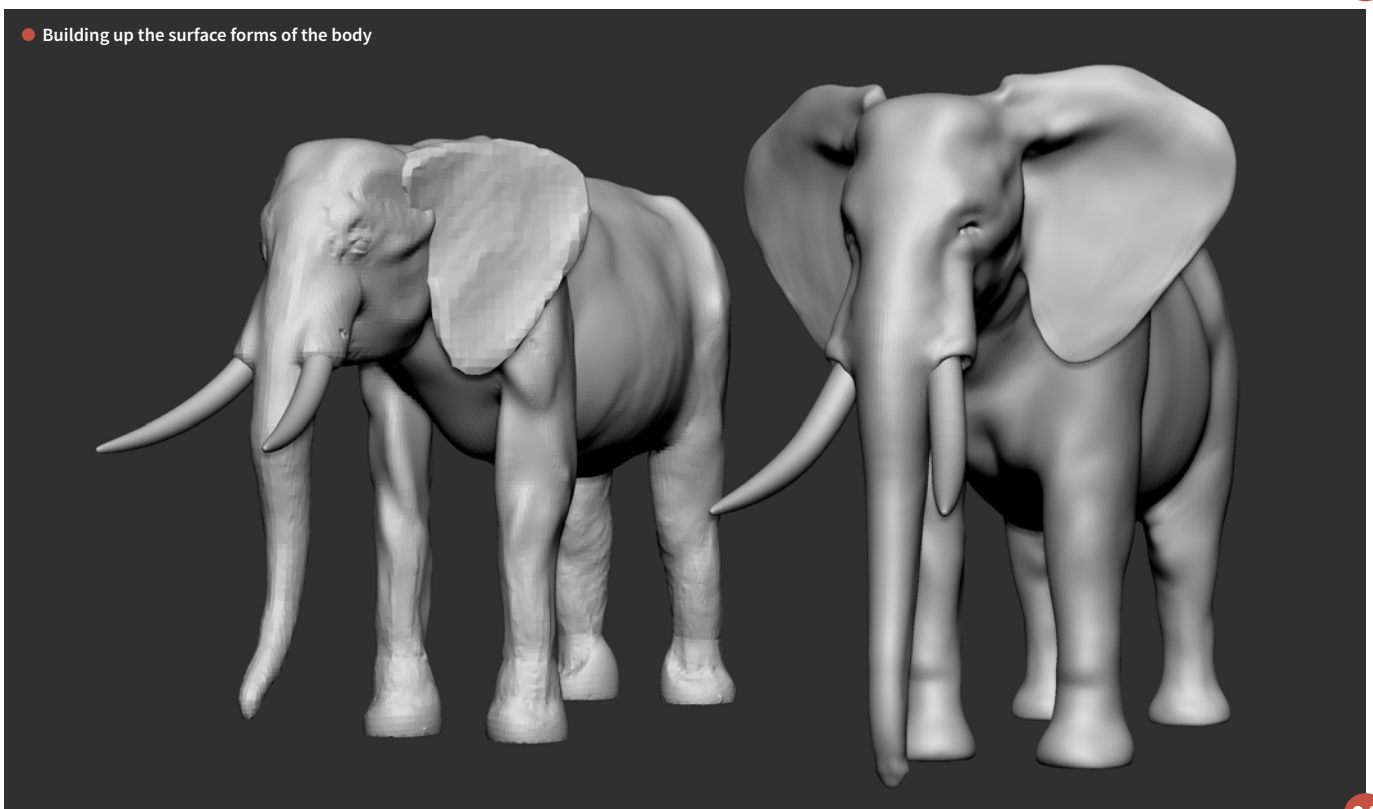
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● Adding muscle mass to the elephant's skeleton



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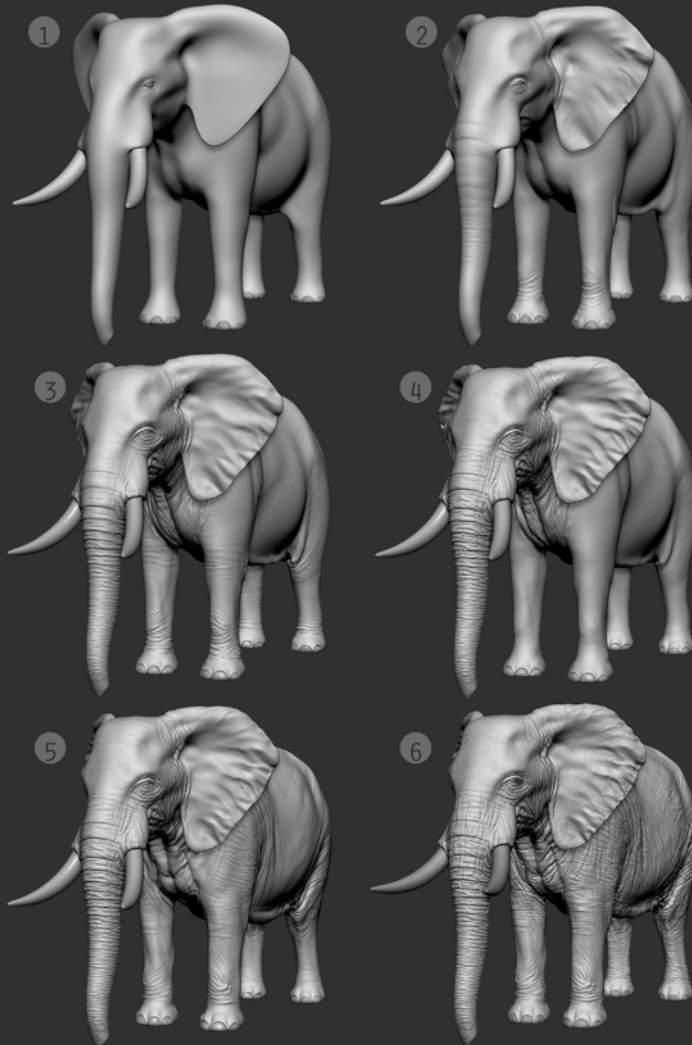
● Building up the surface forms of the body



04



● An overview of the sculpting and detailing process



But since it was a personal project and I had the time, plus I love making bones, I took it further. The process I use here is back and forth between ZBrush and Maya. I usually build a low-poly silhouette of the bones in Maya and then detail them using DynaMesh and ZRemesher in ZBrush.

**03 Musculature:** When your skeletal structure seems good to go, it's time to move on to the muscles. From here you can take a variety of approaches. What I prefer to do is to block out the main muscles with DynaMeshed spheres – not anything fancy, but enough information to represent the main muscle groups on top of the bones.

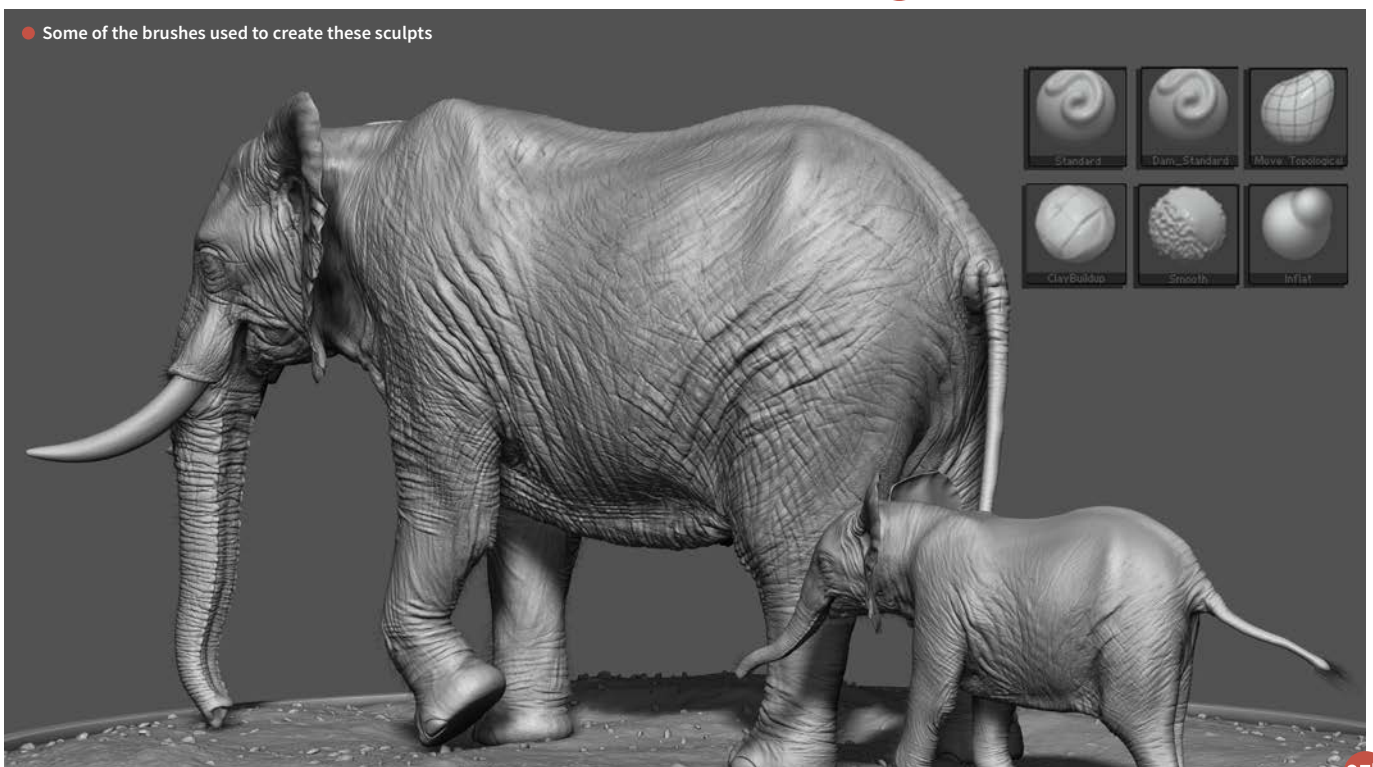
**04 Working on the body:** When I have finished the muscles and bones, I like to DynaMesh everything together. The key here in the density of the mesh is to have enough information to see the muscle groups, but also low enough density that you can move big forms easily. Here is the point where I have the base structure of the body, and from there I start to build the forms.

Here is the part of the process where you have to decide the body type of your animal: whether you want it skinny with bones and ribs that stick out on the surface, or fatty enough to cover the muscles and bones.

**05 A quick note on brushes:** Here you can see how the elephant's surface details were built up very gradually, making sure ▶

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● Some of the brushes used to create these sculpts



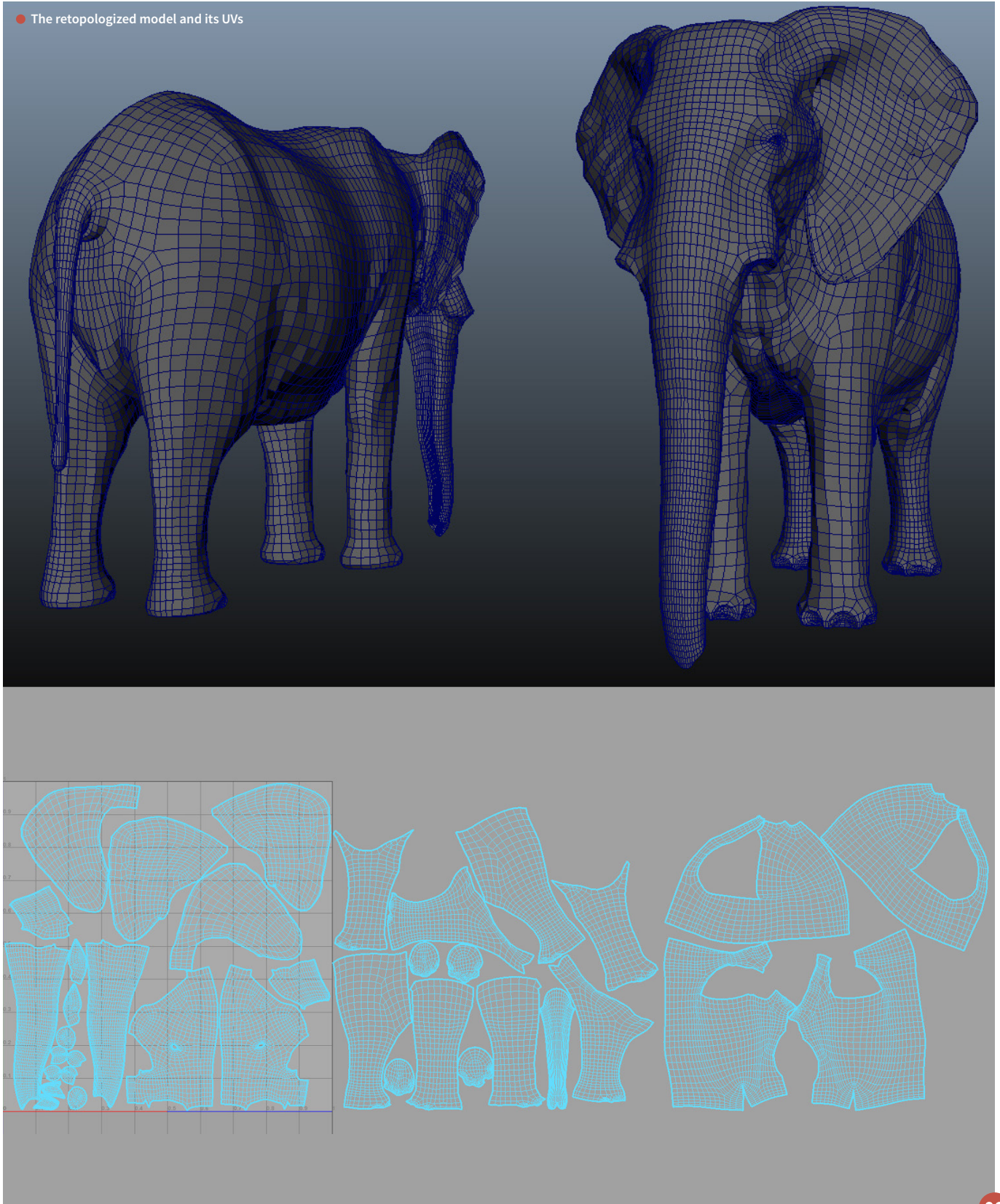
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the larger forms were prepared before starting on adding the refinements. The main brushes that I've used here, and basically throughout the whole sculpt, are the Smooth, Smooth Valleys, Clay Buildup (with and without its square alpha), Move, Move Topological, Dam Standard and finally, Inflate.

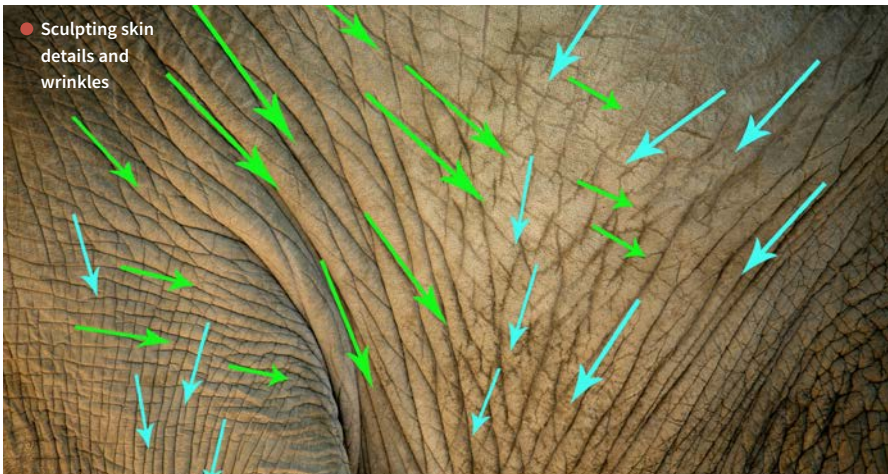
**06 Retopology and UVs:** For retopology I used Maya's tools, which help speed up my workflow. Since I knew that I was going to have a close-up image of the elephant's head, I tried to have more information on the head so I could sculpt higher frequency details compared to the body. I used UVLayout for the UVs.

**07 Skin and details:** The skin of the elephant was the trickiest and most challenging part for me, but also the most enjoyable. I wanted it to be as realistic as possible. I saw a lot of tutorials online about modeling elephants and how to approach them, but none of them had correct and realistic skin.

● The retopologized model and its UVs







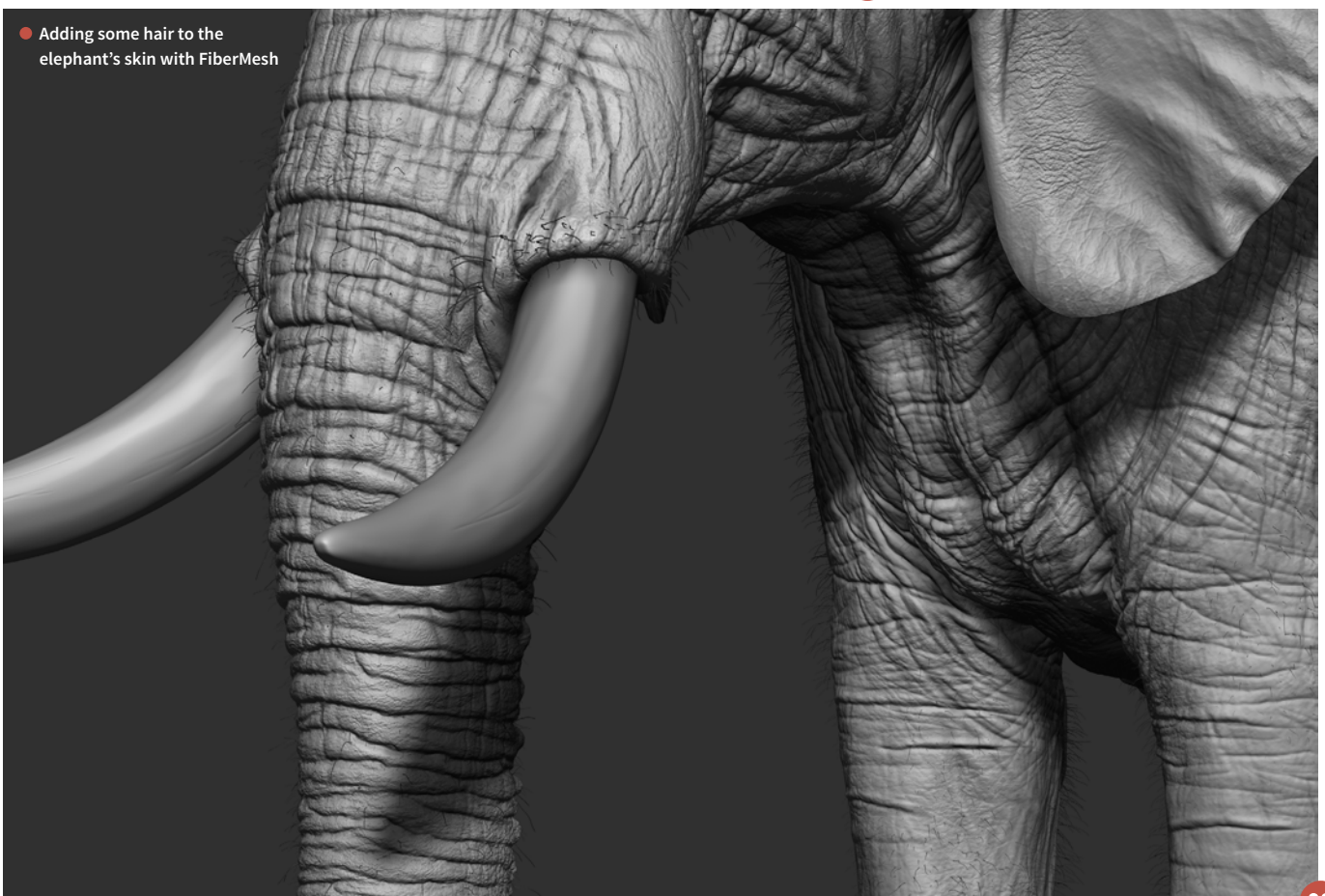
Most people tend to use alphas right away and the result is usually not what they were going after. I spent some time doing studies on how the skin works, how traditional sculptors approach it, and I ended up sculpting nearly all of the elephant's surface details by hand. I used 16-bit alphas only for the high frequency details and to give a little surface noise.

If the forms, muscles and big skin folds are not correct or they aren't there at all, no matter how much detail you put on a model, it will always look like something is odd and unpleasant about it. Spend some extra time making sure that everything is in the right place by going back and forth with the subdivision levels before you start going crazy with the details.

**08 Hair:** I didn't want to complicate the hair a lot, so I went with ZBrush's FiberMesh. For the kind of fur that I wanted, it had pretty decent results.

**09 Rendering and post-production:** For the rendering I used V-Ray in Maya. With a simple area light and some time to find the desired camera angle, I got the result I was looking for. In Photoshop I adjusted the tones a bit to bring some more contrast to the image, and then it was done. ●

07



08





The Artist



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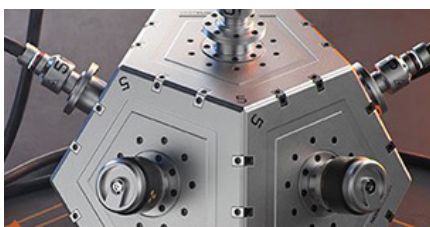
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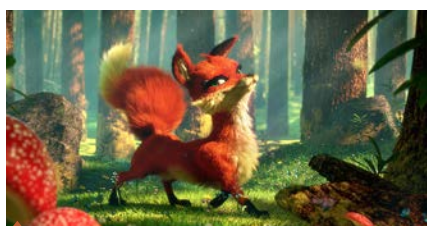
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