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HERITAGE

BY MAREK DENKO



INTRODUCTION

In the beginning there was an idea, which came to me whilst I was watching the movie, *Stalker*. It is a movie from 1979, directed by Andrej Tarkovskij, and I really enjoyed it. The movie is one of those films that is quite hard to understand. The environments in this movie are just awesome. At the end of the film

there is a nice scene where the whole family is walking on the shore of a lake with a nuclear power plant in the background. The scene is a bit foggy and has dirty, old snow on the shores, and it is so gray and depressing, just as eastern Europe and Russia once was. This was my initial inspiration and the reason behind the creation of my work, *Heritage*. Although, in the end, my image was quite different to the

picture painted by the film, *Stalker*, but it did remain as my starting point throughout. Another important element in the picture is the presence of the transmission towers, which are so romantic during the sunset, and I really like these kinds of structures. So my first inspiration was the nuclear power plant from *Stalker*, followed by the transmission towers.

I spent more or less two months of my free time on this piece, with gaps when I was traveling. I enjoyed all parts of the image, step by step, during the hot summer nights whilst I was working in Italy. So, over the following pages, I'd like to write about how I created *Heritage* in a step by step format, from searching for references through to modeling, texturing, shading, lighting, rendering and, finally, post-production.



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Fig.01a



Fig.01b



Fig.01c



Fig.01d

REFERENCES

For me personally references are one of the most important parts when I'm creating my images. Usually I spend several hours searching the Internet and my photo library trying to find the best references. Very often I just go outside to take new pictures if need be. You should never underestimate this part of work. In your references you can find a lot of interesting things and details which are very hard to represent if you don't see them directly. They are very helpful for modeling, texturing and shading (Fig.01a–f).



Fig.01e



Fig.01f

PHOTOGRAPHS COURTESY OF THE ARTIST

MODELING

For me, modeling is really quite relaxing. I added so many more details in my models than I have done before, and really enjoyed the task. I agree that it was definitely not necessary to model all of these details, but in my personal works, where I'm not pressured by deadlines, I'm free to spend more time on these areas. All geometry was modeled in 3D Studio Max as editable polygons. In most cases I started from primitives, such as a plane, box, cylinder, sphere or line, and after few deformations I usually converted them to Editable polys. Then I applied extrusions, bevels, chamfers, cutting and all those modeling tools which are available in your 3D package (in this case 3D Studio Max). I usually use several types of modifiers to deform or change the geometry. For example Symmetry, Bend, Twist,



Fig.02a



Fig.02b



Fig.02c



Fig.02d

Taper, Free Form Deformation, Noise, Displace, Turbosmooth, Wave, Ripple, Path Follow, and so on. If you are a beginner in 3D you should read the accompanying manual and try to understand how everything works but, trust me, the modeling of static objects is one of the easier parts of 3D. I essentially used an Editable poly with functions such as connect, slice, weld, cut, extrude, bevel, chamfer, and so on. Again, I'm sure that all of these functions are described in your user reference. If you want to be a swift and precise modeler you need to know your tools as best as you can, so take the time to study them and try them out. Don't avoid solving things for yourself as opposed to posting questions in forums, as there is no substitute for learning through experience. I'd like to mention that, for the grass modeling, I used a script called *Advanced Painter*, by Herman Saksono, later upgraded by my friend Federico Ghirardini. This script allows you to do something similar to Maya's PaintFX, but in 3D Studio Max. Another useful plug-in I used was Greeble, which allows you to create "Death Star" like surfaces with a few clicks. I used it to create certain parts of the power plant (Fig.02a-d).

UV MAPPING, TEXTURING & SHADING

If there is something I find boring in CG it is definitely making UV maps. For these I used basic planar, box and cylindrical mapping almost everywhere. I always unwrap only those parts which really require it. In this case it was only the concrete part of the transmission tower in the foreground. This is mainly because this part is displaced with a V-Ray displacement modifier, and to have a continuous displacement you need to have continuous UVs. There is a lot of displacement which is just great in V-Ray, but I was very careful about where to use it. It's hungry for memory and slows down the render times, but the end result is much better. For texturing I used textures from my personal library, pictures I had taken, and also from www.environment-textures.com. This is the biggest reference library of environment textures that I know. I also used a lot of dirt textures from the 3DTotal Textures collection. These are some of the most used textures in my personal, as well as professional, work. I used a V-Ray material as a base shader

for all geometry. Very often I use low intensity, fresnel, glossy reflections. In general, raytraced reflections also increase rendertimes but they help to create a more natural and believable looking image. For smoke on the power plant I used pre-rendered images. I made them with ParticleFlow and Afterburn and then I projected them onto planes (Fig.03).

LIGHTING AND RENDERING

For the lighting I used a V-Ray dome light as a skylight and one directional light for sunlight and didn't use Global Illumination this time. I wanted a high contrast in the image and therefore the bounced light was not that necessary. The image was rendered to a 2000 pixel width resolution with the Mitchell-Netravali anti-aliasing filter to make it a bit sharper. It was quite a nightmare to render it too, and took something like sixty hours on my laptop (Centrino duo processor with 2 GB of Ram). Of course there are many options to optimize the render time; more than half of the image could be a matte painting. Despite this I still think that I spent the time wisely while working on it and finishing it in 3D. Computer graphics is my job but it is also my great passion and I really like to play with the details in my work. Actually I'd like to point out that I've already optimized this scene for animation reducing render times to about 10–15 minutes in HD resolution on the same hardware. So in the near future it is quite possible that you will see it somewhere online.



Fig.03



Fig.05a



Fig.05b



Fig.05c



Fig.04

POST-PRODUCTION

For the post-production I used Fusion 5. It is great compositing software and in Fig.04 you can see a short and simple flow. In Fig.05a–c you can see the passes that I've used. There are two rectangle masks for masking the area of highlights and area of fog. Note that in the fog pass there is still reflection on the water. For this pass I used a black material for all objects except the water which has the same material as in the render pass. From the coloring point of view I decided to use a green/yellow tinting which usually represents sickness, illness and depressiveness, just like the scene suggests.

CONCLUSION

I believe that, if you have read this, then you understand some of my techniques and how I work. I'm not saying that my way is the only way, and indeed the right way, but I'll be happy if you accept this making of my artwork as me sharing with you, my "Heritage".

ARTIST PORTFOLIO







Fig.01

DARK ALLEY

BY ANDREA BERTACCINI



CONCEPT

I have always loved the Ford Mustang ever since I was a little boy and I saw it for the first time in the movie, *Bullitt*. I consider it myself to be an icon, as is its driver, Steve McQueen. I wanted to create an image which was not just a reproduction of a car, but I also wanted to give it a look that identifies my own idea of the car. I spent time looking for an environment which would give the car a dark and “bad” aspect, which is how I imagine this “muscle car”. I considered an alley of a nondescript American city, where the light could not reach the ground, so the illumination was soft and low, even during the sunniest of days. The alley had to be dirty, with lots of garbage, pieces of paper at the side of the road, cigarette butts on the ground (typical of the sixties and seventies), abandoned newspapers, trash cans and floating smoke escaping from the drains. The pencil sketch helped me to visualize what I had in mind (Fig.01).

When I have an idea, I try hard to focus it in my mind, and then I sketch it down using a pencil, further developing the details. I don't think this is necessary, but I do feel that it is the best way, because it helps you to visualize the final project and gives you the ability to better understand it – the scene, the vehicle, and so on. In past times we always used pencil and paper, and today we have the computer, but the ability to take an idea to the drawing board has never changed.

MODELING

I started modeling the car using a blueprint image, found on the Internet, along with several images of the Ford Mustang, on dedicated sites, such as <http://bradbarnett.net/mustangs>. I created all of the models in 3D Studio Max 8 beginning from a plane, and used Edit Poly to optimize the number of polygons used (Fig.02). I usually avoid modeling in Nurbs because it immediately seems intuitive and fast, but it creates very complicated and heavy

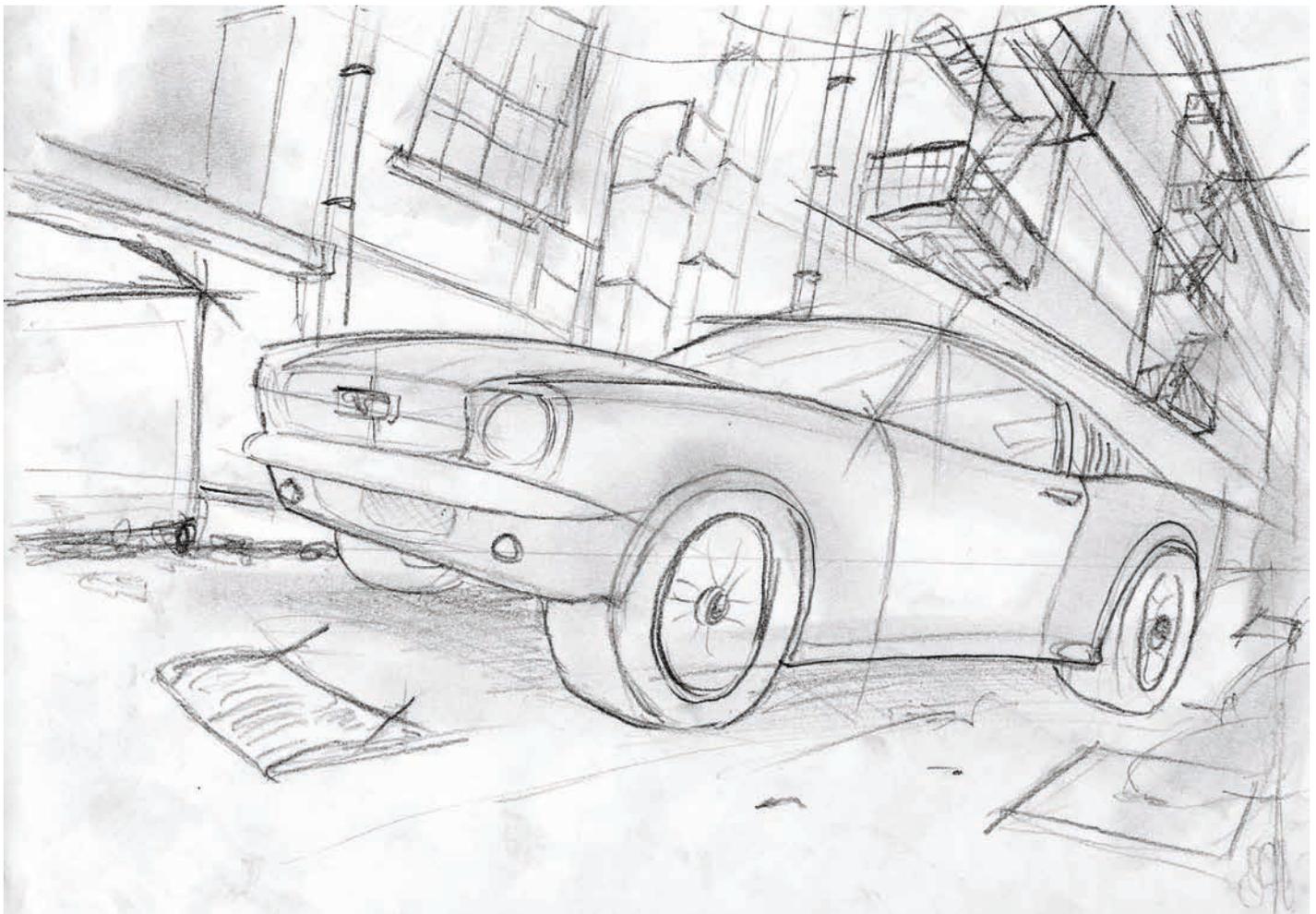


Fig.01

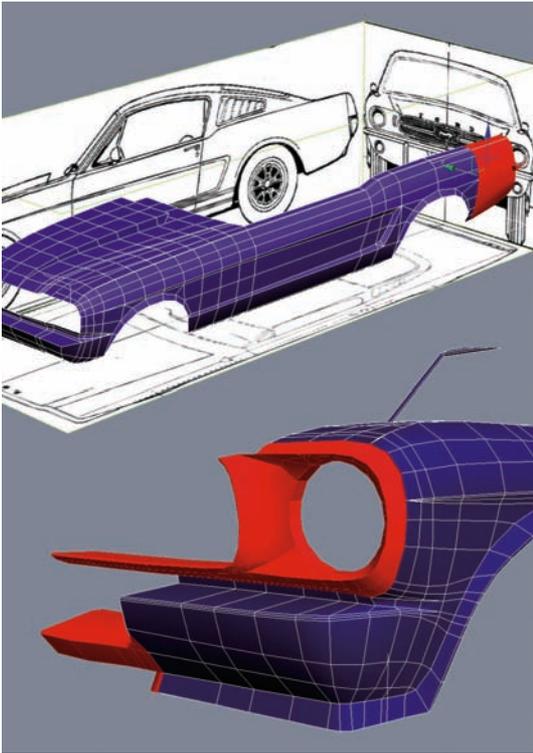


Fig.02

models. You can have a little control over them, and if you have to do animation then you'd better have a renderfarm, or it can be very difficult.

I started to model in low poly and only worked on half of the car, so that I could better manage the polygon detail. I was then able to use the Symmetry modifier and Meshsmooth modifiers to achieve a smooth result.

After making a silhouette of the car, I started work on the details until I had obtained a standard version of the Ford Mustang Fastback 65. Then I worked on the tuning of the car and, in fact, the final car is a "tuned" version of the Mustang, I added larger sides to it, as well as a back aileron, a bumped cowl and side tail pipes (Fig.03). Once the fine tuning was finished, I added all the final details, like the logos, the cowl cable (detail from the Shelby version of the Mustang) etc. Afterwards I turned my attention onto the wheel (Fig.04a–c), which was a very detailed part of the car, because it is seen in close-up detail in the final image.



Fig.04b

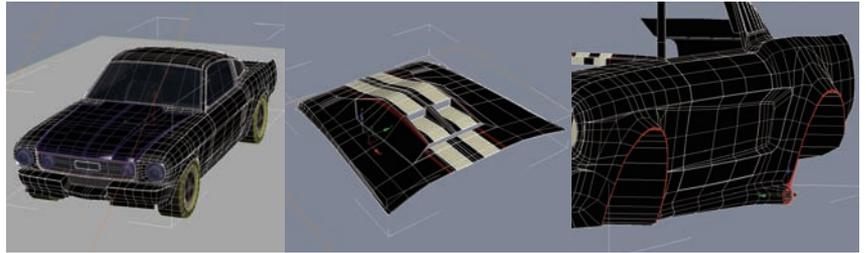


Fig.03



Fig.04a



Fig.04c

The alley had to be narrow with high buildings, with back doors on the ground floor and a depository security exit. I added some details, like the electrical cables, an air conditioning tube, street signs and the fire escape staircase, which is typical of an American back alley. The final part of the modeling was all the ground details, like the garbage, pieces of paper at the side of the road, fag butts on the ground, paper boxed and everything else which adds to the sensation of a realistic, dark alley (Fig.05a–c).

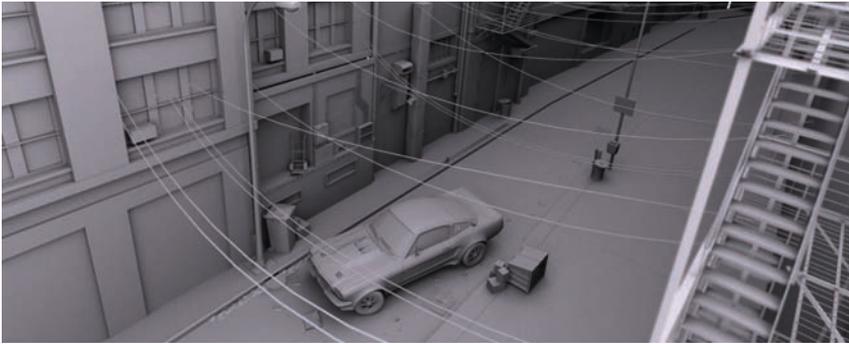


Fig. 05a



Fig. 05b



Fig. 05c

TEXTURE AND SHADING

The textures were created in Photoshop, using photographs taken in the United States. The most complex part was the creation of the textures of the ground and buildings. In fact, the ground was only one high definition, large texture (3000x1048 pixels) from which I made all of the masks: diffuse, specular, and so on (Fig.06). For the buildings, I used real photographs of windows, and the bricks were pasted together to build up a dirty façade. I then applied the texture to a flat surface in 3D Studio Max and made some cuts and extrusions to give a three-dimensional effect.

I paid particular attention to the car shader. Because the setting is a dirty alley, the car also needed to be dirty on its surface – it just could not be a clean car. The definition of the car shader was based on the HDR maps. I mixed the real Ray tracing reflection with the HDR maps, emphasizing it on the side with a falloff mask, giving more reflection to the surfaces perpendicular to the point of view, as in reality. The dirty effect were done with some mask maps applied at the color, the reflection, the glossiness and specular level, so that I could have less shine and reflection on the dirty surfaces (Fig.07a–c).



Fig.06



Fig.07a



Fig.07b



Fig.07c

LIGHTING

The illumination was quite simple: I used the Brazil rendering system and the global illumination render engine, to give the whole scene a soft illumination, without marked shadows. I put an HDR map (the same as the reflection) as an Ambient map, and also used a Direct light to simulate the sun, which was visible only on the highest part of the buildings, not on the ground. Towards the end I added some Omni lights with Area shadows to increase the specular light.

RENDERING AND POST PROCESSING

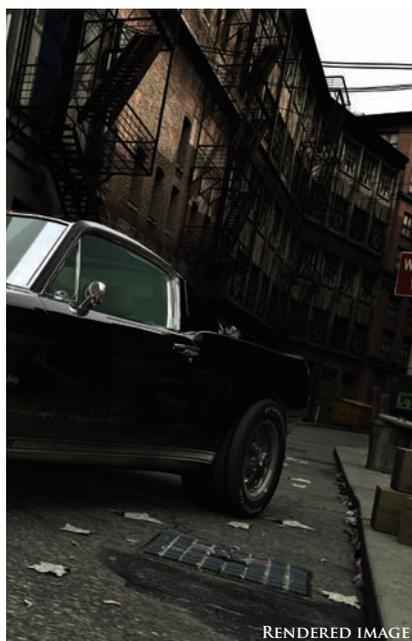
Before starting the render I gave a different Object ID to the scene objects to use later in Combustion. I rendered all of the images in different sections, with the files bigger than 2500 pixels, and then I joined them together.

As mentioned earlier, I used Brazil from Splutterfish to render the scene. The rendering took eight hours for a 4442x2800 pixel (about two hours for each section). I rendered everything using the RPF output format, so that I could open it in Combustion, for the post-processing effect. The RPF file contains a lot of information about the depth of field, alpha mask, render ID, as well as other things. Inside Combustion it's possible to work on the effects in real time. This effect could take a long time if using 3D Studio Max, but with this you have a preview control for the fine adjustments.

First of all I made the glow and the fog effects using the RPF file, and the Z-buffer information inside it. For the smoke coming out of the drains, I used the particle system inside Combustion to create a realistic smoke effect. To obtain a real effect I used the Z-Buffer operator to achieve a depth of field effect (Fig.08a-d). Finally, I added a final touch, with some color corrections, to create the dark look that I was aiming towards.

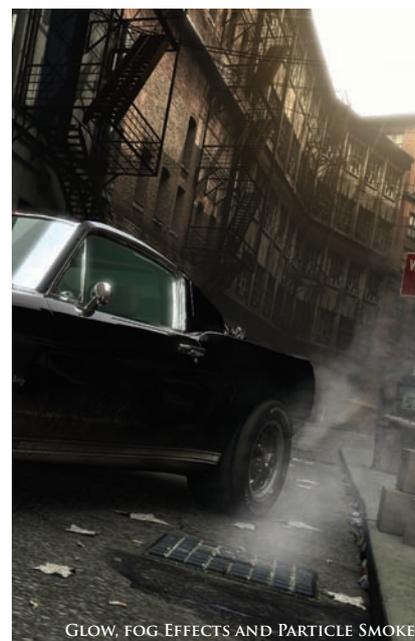
CONCLUSION

The final image has something different about it when compared to any "normal" image of a car, but people will inevitably have to decide upon this for themselves. What I do know is that I really enjoyed creating this image, and so to conclude as Bugs Bunny would, "that's all folks...".



RENDERED IMAGE

Fig.08a



GLow, FOG EFFECTS AND PARTICLE SMOKE

Fig.08b



Z DEEP MASK

Fig.08c



FINAL COMPOSITION

Fig.08d

ARTIST PORTFOLIO

