



HEKTOR

BY MAREK DENKO



INTRODUCTION

There was an image of diesel locomotive in an old train station – still alive and still strong enough to carry out its everyday duties. So let me write down a little about the “making of” that image – an image named: “Hektor”.

In the beginning there was an idea, and since I’m a man who likes to

work on personal projects, even if my day job is consuming almost all of my time, I started working on that idea. I studied railway construction at a university of technology, so this image is really a small tribute to all of my old friends and teachers, which is something that had to happen one day. And that day was one at the end of summer 2007. I started painting with my tablet; I painted a simple sketch, and after few days I decided to remake it in 3D. I spent more or less two months of my free time on



© MAREK DENKO



Fig.01

this piece. I really enjoyed doing all parts of the image – step by step, bit by bit – during the autumn nights. So, here is how I created this image, from both technical and artistic aspects; step by step, starting from the sketch, to searching for references, through the modeling, texturing, shading, lighting and rendering, to the final post production work.

CONCEPT AND REFERENCES

The sketch was done in just a few minutes (**Fig.01**). I started with the railway and the locomotive's position, building up the main perspective and then adding details



Fig.02a

to it as I felt necessary. After a few days, when I decided to remake it in 3D, I started to search for references. I spent several hours searching the Internet and my photographic library to find nice pictures of elements which I could possibly use. I also went to the train station of my hometown, Hlinik nad Hronom, to take pictures of railways and objects connected to them, like signal lights, wagons and so on.

I always find references as an essential part of my work. When you look at your references you can find lots of interesting things and details which are very hard to understand if you don't see them directly. They are very helpful for the modeling, texturing and shading stages (Fig.02a–e).

MODELING

All modeling work was done inside 3ds Max, except for a few bushes and trees which I'll describe later. For modeling objects, like the locomotive, the rail track, stones and signal lights (Fig.03a–b), I used an Editable Poly, which is one of the most frequently used modeling techniques in the industry. Anyone who wants to start with computer graphics should know this modeling technique thoroughly. It is one of the most common methods of modeling! For me, modeling is just a routine part of the work, but I still enjoy doing it. When I'm modeling, in most cases I begin with the standard primitive objects, such as a plane, box, cylinder, sphere, or even shapes such as a circle or rectangle. After deforming them somewhat, I usually convert them to an Editable Poly or an Editable Spline. Then it's a case of applying modifications

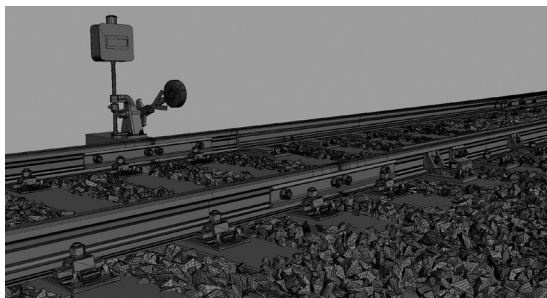


Fig.03b



Fig.02b



Fig.02c



Fig.02d



Fig.02e

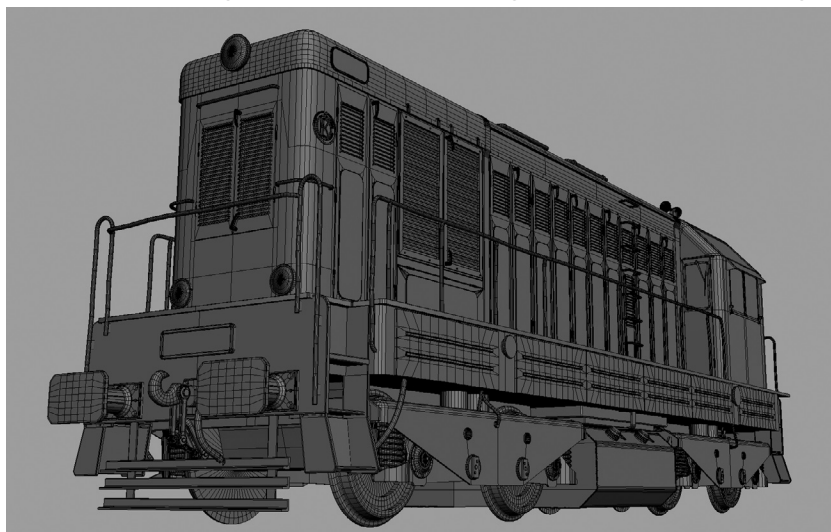


Fig.03a

to certain selection groups: extruding, beveling, chamfering, cutting, and all those modeling tools which are available in your 3D package (which in this case is 3ds Max). Very often, I use several types of modifiers to deform or change the geometry. For example, Symmetry, Bend, Twist, Taper, Free Form Deformer, Noise, Displace, Turbosmooth, Wave, Ripple, Path Follow and so on. If you are beginner to 3D modeling, you should read the manual that came with your 3D package to try to discover how it works. You can trust me that modeling static objects is one of the easier parts of 3D! If you want to be a fast, good and precise modeler, you need to know your modeling tools as well as possible. So take the time to read about them and try them!

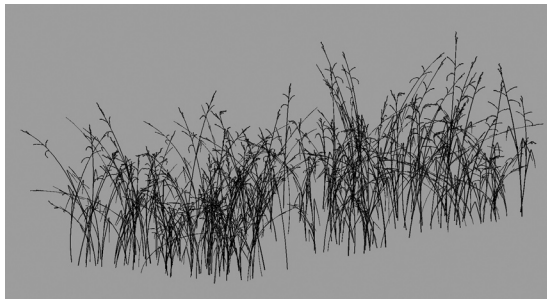


Fig.04

After I finished this picture, the most frequently asked questions I received were about how I created the vegetation. My answer is always that I didn't use anything special! I've simply just tried to reproduce real vegetation as well as possible, taking hardware limits into consideration.

GRASS

I modeled a few types of grass strands with very few polygons, and then I scattered them with the script called "Advanced Painter", by Herman Saksono, upgraded by my friend Federico Ghirardini. Script is free and you can find it on Scriptspot.com. I created several different grass groups and then randomly placed them into the scene. I was quite satisfied with that, but it still missed some variation and irregularity (**Fig.04**).

PLANTS AND BUSHES

For the plants, I used base geometry from X-frog and OnyxTree libraries imported into 3ds Max. I optimized them and then scattered a few, simple, polygonal boxes across them to create a more "realistic" look. To finish them, I used the Noise modifier to make them look older, after which I followed the same approach for the bushes (**Fig.05a-e**).

DISTANT GRASS

For the grass in the distance I used cards with pre-rendered grass.



Fig.05a

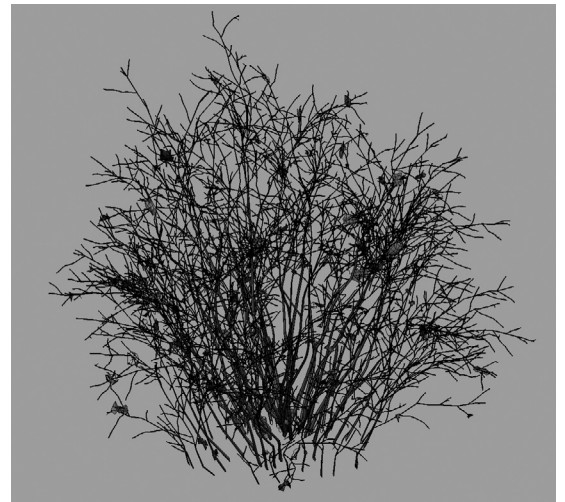


Fig.05b



Fig.05c



Fig.05d



Fig.05e

STONES

I created several levels of detail for the stones on the railway. I then used Particle flow to scatter a few types of stones across the base geometry. High resolution stones were used for the foreground, medium for the more distant stones, and low polygonal ones for the background.

TEXTURING AND SHADING

When it comes to texturing, I mainly exploit the use of photographs and sometimes, if necessary, I paint in some details by hand. There are a few very nice texture sites on the web, such as www.environment-textures.com and www.cgtextures.com. I also used a lot of dirt textures from 3DTotal Textures: Volume 5: R2 DVD. I consider the dirt collection from 3DTotal to be one of the best texture collections available! For texturing, I used Photoshop (**Fig.06a-c**).

Since I used V-Ray for this image, I used V-RayMtl as a base shader for all geometry. Very often I used a low intensity of fresnel glossy reflections. In general, raytraced reflections also increase render times, but they help to achieve a more natural and believable image (Fig.07).

LIGHTING AND RENDERING

For rendering, I used V-Ray from Chaosgroup, which is a very good renderer used mainly in architectural visualization, but it is also more frequently used for movies and commercials. Basically, there are two lights in the scene: one is a directional light coming from the background of the image, simulating the sun. I used very soft shadows since the sun is behind the horizon in the scene. The second light is a skydome with constant color. I also used Global Illumination bounces to produce a more realistic result.

POST PRODUCTION

For post production I used only Photoshop. I added the background sky using an alpha channel. I did lot of color correction to the render and I also painted over a few details. All was done in a 16-bit/channel with color depth to protect color information as much as possible.

CONCLUSION

So that's it – the making of Hektor. I believe that if you've read all of this then you may have understood some of my techniques and how I work. I'm not saying that my way is the only way and the right way, of course. I'd be happy if you could take this "making of" as a piece of my heritage that I'm sharing with you.



Fig.06a



Fig.6b



Fig.06c



Fig.07

ARTIST PORTFOLIO



ALL IMAGES © MAREK DENKO