Carrara 3D Expo

Issue 10 - March 2013

Wellcome to the best of Carrara!

Carrara 3D Expo is the creativity of Carrara users gone wild! It is an inspiration that never ends. Carrara is a wonderful tool that enables the creative ideas fly. And we at C3DE are here to show you that Carrara is no joke - it is a tool designed to be loved by 3D artists!

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Danas_Anis.....Slow down your Carrara rendered animations with PD howler tutorial.
David Collins.....Perfect fixes for V4 tutorial
David Collins.....3 point lighting in Carrara
Scott Franz.....The Creation of The Motion Picture Enterprise in Carrara

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Meet with the initiator Of Carrara 3D Expo

Danas_Anis A.K.A. Jetbird_D2

After some serious begging, pleading, threatening and arm twisting, we finally have the much sought after interview of the creator/publisher of Carrara 3D Expo. He is known online as Jetbird_D2 and as Danas_Anis. With Carrara 3D Expo, Danas has created the first and only free-to-all magazine focusing on the art created using our favorite 3D tool, Carrara. Now, sit back, grab your favorite snack and let's get to the interview.

Alright Danas, let's get down to business. Tell us a little about yourself.

Hello! As you already know, my name is Danas, but I am better known online as Danas_Anis or Jetbird_D2. I am a professional multimedia design artist. I was born in 1987 in Lithuania. It is a very small country in Europe next to the Baltic Sea.

I have been attracted to the arts ever since my early childhood. As a kid, I was always living in my own fantasy world. That's probably why I became the strange guy I am now. I loved drawing. It was one of my most favorite activities. By the time I was 4 or 5 I had already drawn my first comic book. Well, I'm not sure you could call it a comic book, but it was a book filled with drawings that told a story of a small town that was protected by a robot. I really loved robots when I was a kid. I also loved fantasy and sci-fi movies.

I consider myself to be an imaginative person. I could imagine spaceships from spoons and forks and build entire cities using whatever I could get my hands on.

In school, art lessons were my favorite. Art is very important and the pursuit of art is what drives me through life.

Do you have any formal art training?

Yes. I went to a dedicated after school arts program. Before I left secondary school, I had my first exhibition of paintings at school. Then, I went to Kaunas Art Gymnasium. It was while at the Kaunas Art Gymnasium that I learned a lot. It was difficult for me because everyone there was really advanced in the arts. I lacked some mandatory basics in many disciplines of art. Luckily, I made it through and graduated successfully.

During the last two years, students at the Kaunas Art Gymnasium have to chose an area of specialization like painting, design, sculpting, etc. I chose design. From the Gymnasium, I went on to study design at Vilnius College of Technologies and Design. This is where I studied digital animation and received all the basics I was lacking and improved my skills dramatically.

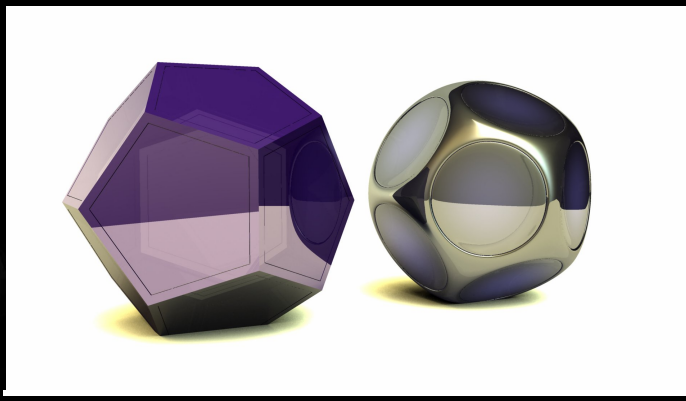
When did you find Carrara?

I first heard about DAZ3D while I was still a pupil of the Kaunas Art Gymnasium. I didn't participate in the community at that time. I was one of those lurking 'ghost' persons.

When I began to study interactive design, my interest in software began to grow, and I began to look for animation software. I once again came to DAZ3D. I found Carrara and was intrigued by this beautiful software. I downloaded the trial, but I didn't understand how it worked, so I put it away. I did find Bryce and was able to create some interesting images, but I was missing character animation features.

I tried many programs: Maya, Cinema 4D, XSI, Houdini, Anima8or, TrueSpace, Realsoft 3D and something called Electric Image or something. I was amazed at how many tools there were for creating 3D and animation.

Then I found Blender and Hexagon. Blender was an amazing tool, and it was free. I managed to learn my way around Blender even with all its buttons. I even made a snowman



push around gift boxes in the Blender Game Engine. That was quite an achievement for me considering I still had no knowledge of 3D apart from what I'd read on the internet.

I really liked how Hexagon worked for modeling better than Blender. Hexagon was such an easy software to learn for a novice such as I was. After reading more about it, I found it was created by the same people who created Carrara. I decided to try Carrara again. I read the manual, and the software and its various rooms began to make sense. After that, Carrara just grew on me. It was this super cool software that did just about everything.

I saved my money and bought a copy of Carrara. The choice was to be a party guy or buy Carrara. I got Carrara. So, I began to learn 3D graphics on my own. When final projects were due, I would bring mine in animated in 3D. With Carrara it was easy.

So, how did you come to the DAZ3D community?

I became active in the DAZ3D community during my most successful project called The Jetbird_D2. It was during my second year of studies and we had the task of animating an old fairytale. My tale was the one where a dog stands on a bridge with a ham in his mouth. He looks down and sees his reflection. Thinking this is another dog with another ham, the dog barks. He drops his ham into the water and ends up with nothing at all.

I decided to rework this tale and set it in a jet world including jet birds. I ended up creating several sorts of jet birds that I used in various composition tasks and projects. This concept of jet birds dominated my mind.

One of the jet birds I created was called Jetbird_D. Jetbird_D was a pink, round shaped bird that also had a propeller in his butt. I was so proud of it I decided to post some images to the DAZ forum. This is when I first appeared in the forums. The feedback from the community was amazing! There were so many people complimenting my artwork. The positive feedback

helped boost my creativity.

As I became more involved in the forums, I realized that Carrara was mostly known as a tool for posing and rendering content figures. Having created my Jetbird project with Carrara, I knew it was capable of so much more. That is when I decided to become an advocate for Carrara and became more involved in the forums.

One person became very interested in my Jetbird. His name was Crazy Wabbit. He was very supportive of my Jetbird and with his push I dared to post more of my work.

I began to refine my Jetbird for animation. After some good advice from the Carrara community, I was able to create my first Jetbird animation in one week. That was a huge thing for me. It was my first true animation with a story.

The finished product was way more than we were asked to do in the course. Now, when I look at it, it is 3 minutes of animation mistakes, but it is still nice to me.

I had some big plans for it, but I needed to continue with my studies as well as learning more about 3D because my plans were ambitious.

That's how I got to know the DAZ Carrara community which is amazing and so friendly.

So, you like Carrara, do you?

Well, Carrara is my FAVORITE software. It is like an obsession. I use it almost everywhere. I am a multimedia designer and Carrara is really a handy tool. It is useful when starting projects, story-boarding, conceptual arts, making schemes, checking perspectives, etc.

Many of my college tasks were made with Carrara, even when I was supposed to be using 3DS Max. It was always very funny to me when my instructors would ask if I did a particular project in 3DS Max. I would answer, no, I did it in Carrara. The instructors would always ask, What? What is that? And then I would promote Carrara.

I have also used Carrara for creating visuals for musical events. My sister and I are both creative people. We had a musical duet where I would play guitar and she would sing. One day we decided to do a concert. We played, along with other artists, in a small theater. We performed 10 songs and each song had its own visuals created with a mix of video and CGI.

After graduation, I used Carrara for freelance projects. I used Carrara for visuals for a nightclub event, for a television visual intro (unfortunately, the project died before it was completed), a visualization of how a tick gets onto a human leg and also an architectural visualization.

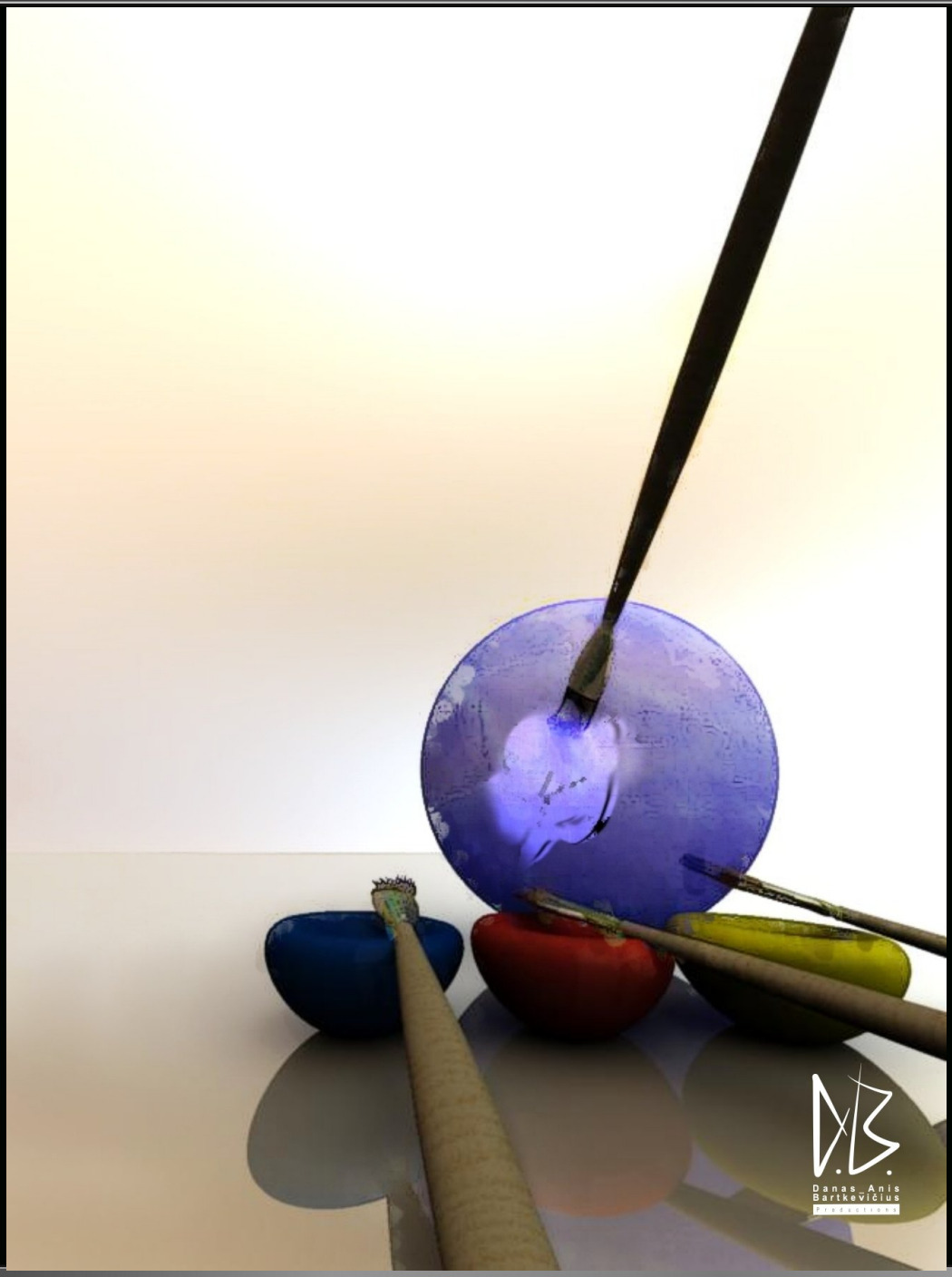
Carrara is awesome!

You said you were a multimedia design artist. What other software do you use besides Carrara?

I use a wide range of software to help me in my work. I use Corel Graphics Suite for my print design projects. I am also trained with Adobe Creative Suite, but Adobe products aren't my favorite. For the most part, I use tools that are less well known, even open source, since my pockets aren't deep. After many years of research I am finally settling on the software I like. I use Carrara (of course), Blender, Lightworks video editor, Project Dogwaffle Howler, Corel Draw and GIMP. I am also familiar with many Linux based software such as Mypaint, Krita, Scibus, Inkscape, KDEnlive, Audacity, etc.

All my tools compliment Carrara and they work quite well together.


Danas_Anis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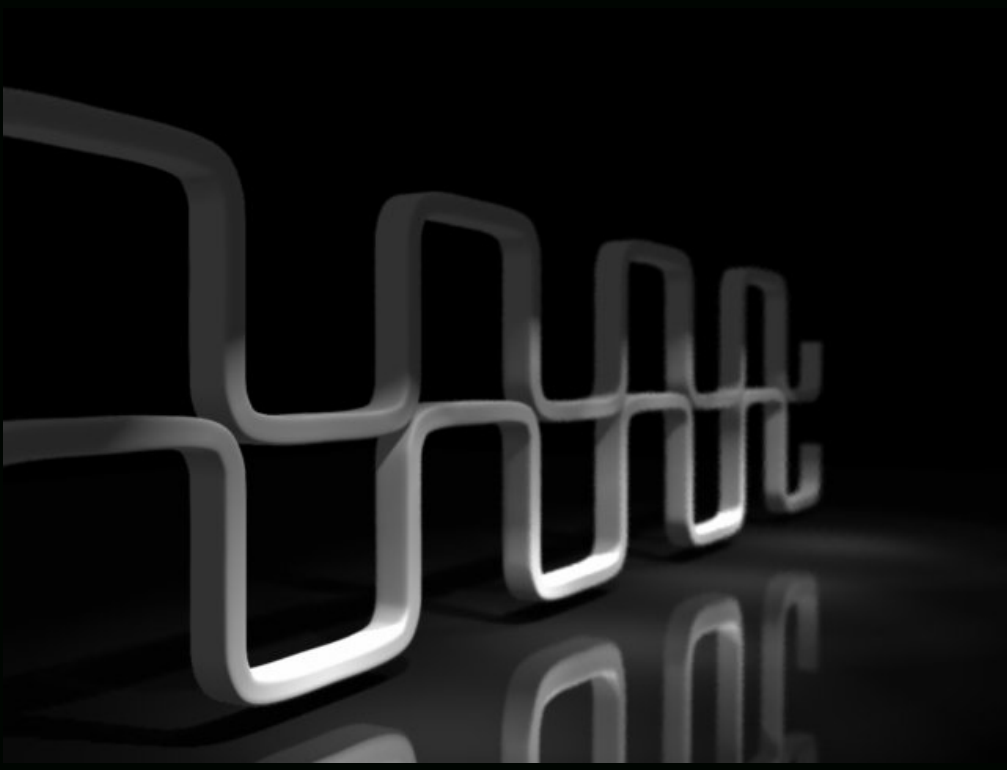

Tell us a little about your art?

Well, it is experimental. I feel that art created by me is a bit distinctive and different visually. My digital art also has its own distinctive look and feel. I like to blow against the wind. While many 3D artists want to mimic real life and do photo realistic images, my goal is to do something just the opposite. For photo realism we have cameras. Most of my images would not take longer than 2 minutes to render but they still preserve mood and artistic form.

I would really like to do more

animation. I know it will take time to learn, but I want to make a really impressive animation. It will take time, but it will be worth it.

At the moment, I am struggling to focus my artistic direction. The many jobs I've done since graduating have taught me much. My old work was unique but it was mostly experimental. I want to develop a deeper vision for my work, refine it.

Whatever I am doing, I never want it to look like anything else but my work. I prefer unique looks. I hope my created images look like that.

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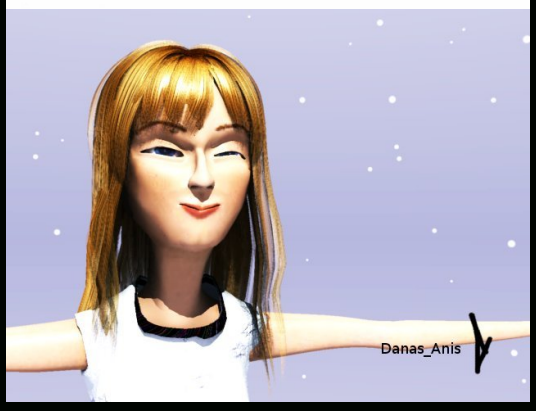
Danas_Anis


Cheese on Fire!


Danas_Anis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Productions


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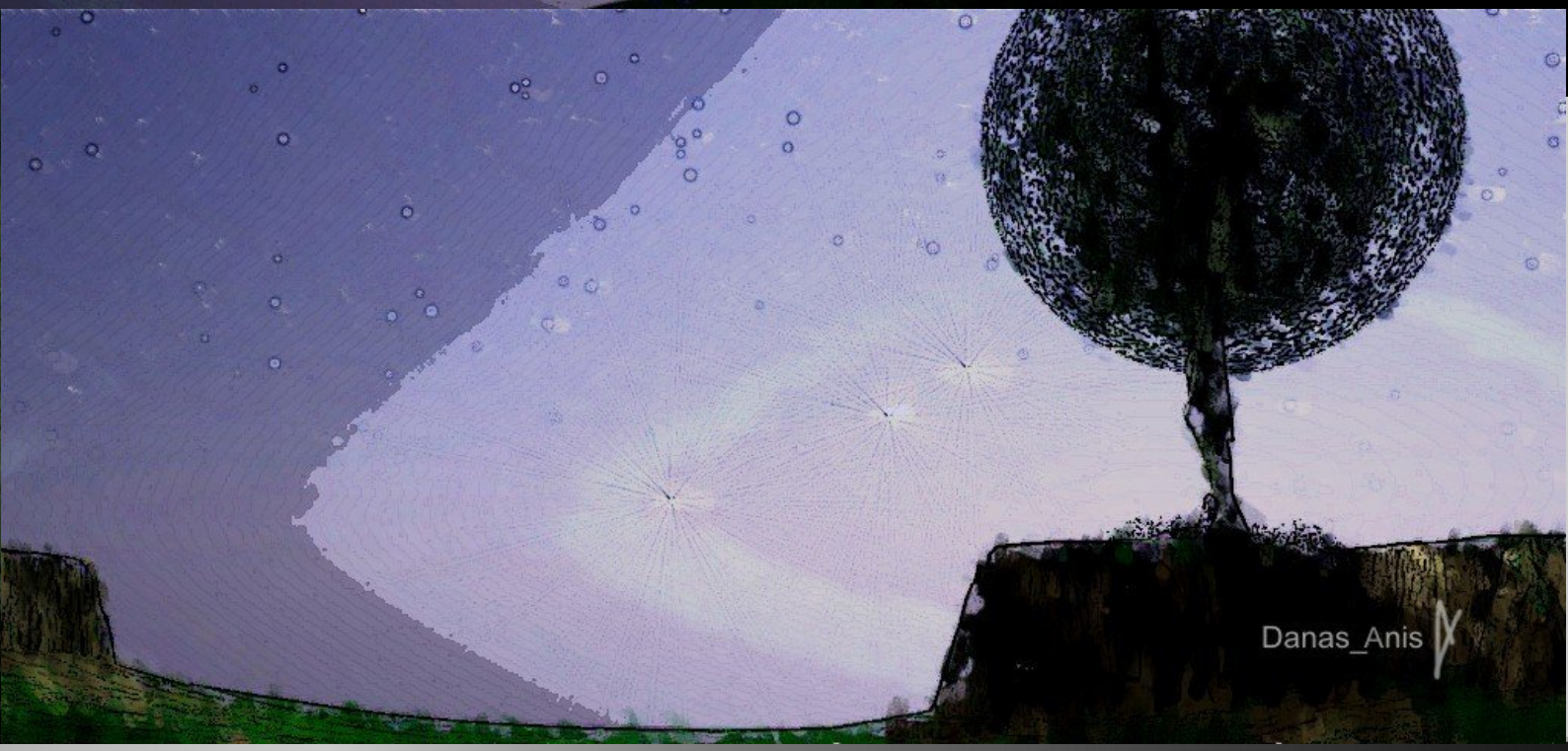
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So, tell us how you came up with the idea for Carrara 3D Expo magazine.

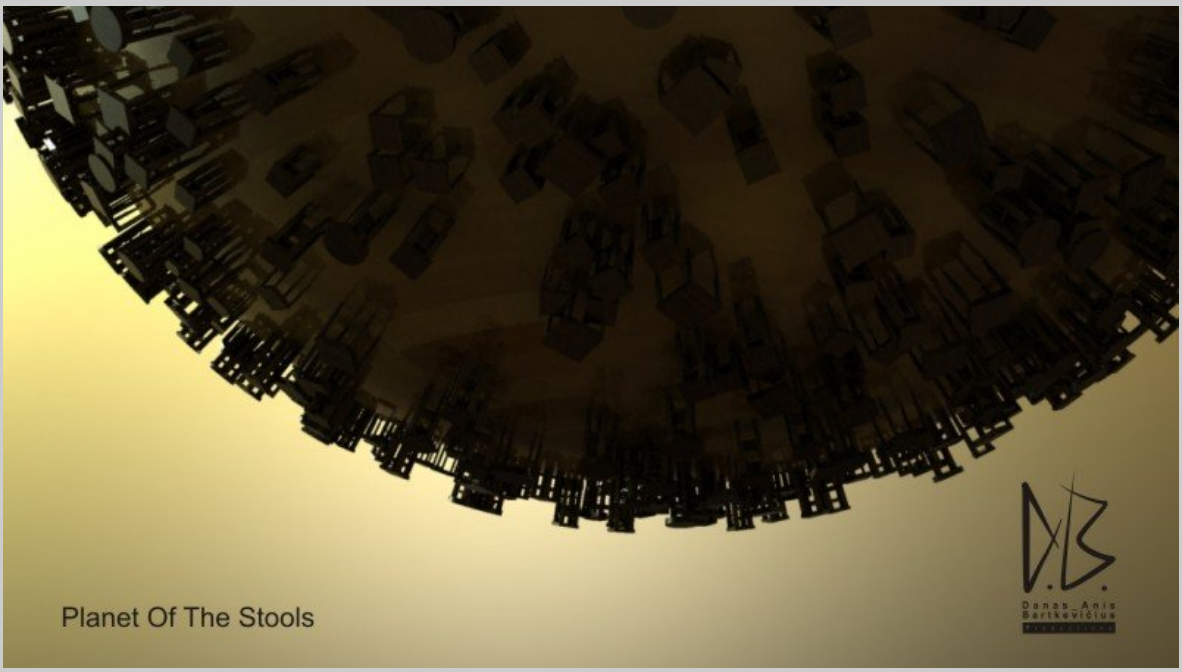
Carrara always seems to be on the edge of a cliff, about to fall at any moment. It's a very good tool and doesn't get the credit it deserves.

I used to dig through the internet and search for anything related to Carrara. I would discover some really amazing stuff made with Carrara that was never shown anywhere at DAZ3D. So, I began to think about how I could show my gratitude to Carrara and the people who created it. How could I inspire others to use Carrara more? It has such an amazing set of features but those features are rarely showcased.

I decided to create a magazine dedicated to art created with Carrara. The idea was well received by the community, and, instantly, I got offers of help. It was amazing how quickly my one small idea turned into a real project.

With the help of 3D-Lust/Jeffery Linn and Sub7th/Michael Mathews, the magazine soon took shape. Michael took the role of designer and created a fantastic look for the magazine. I've learned a lot from Jeffery and Michael, and I couldn't have gotten Carrara 3D Expo off the ground without them.

And, so with pride we presented Carrara 3D Expo to the Carrara community. It turned out to be a lot more than I had planned. Instead of being a simple showcase, it was a true magazine.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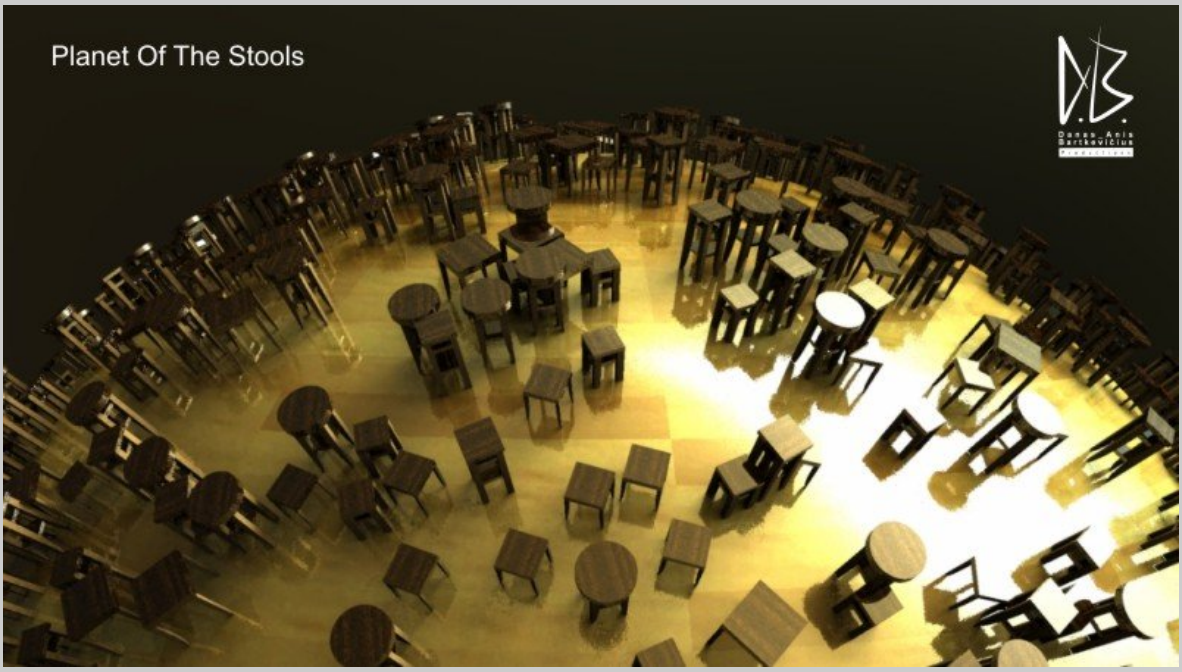
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Can you tell us more about how Carrara 3D Expo works?

Well, we have a small team who dedicate their time to working with the magazine. As I mentioned before, I had two core people who joined at the beginning. There were others who gave additional help with specific issues of the magazine, but Jeffery and Michael were my two main team members. Jeffery keeps the website going and helps with distribution. Michael was lead designer and later design consultant to me when I took over more of the design duties.

Somehow C3DE turned into more than just a simple image showcase, it turned into a real magazine. I began to not only scout for interesting images but also for interesting people to interview. With each issue we included more interviews, articles and tutorials. It became clear that we needed someone to edit the magazine. David Collins/booksbydavid joined our team with issue 5 along with Robbie Mac Gillivray. David is our editor and Robbie takes care of Quality Assurance. Before we release a magazine, he checks for any bugs or mistakes in the layout of the magazine.

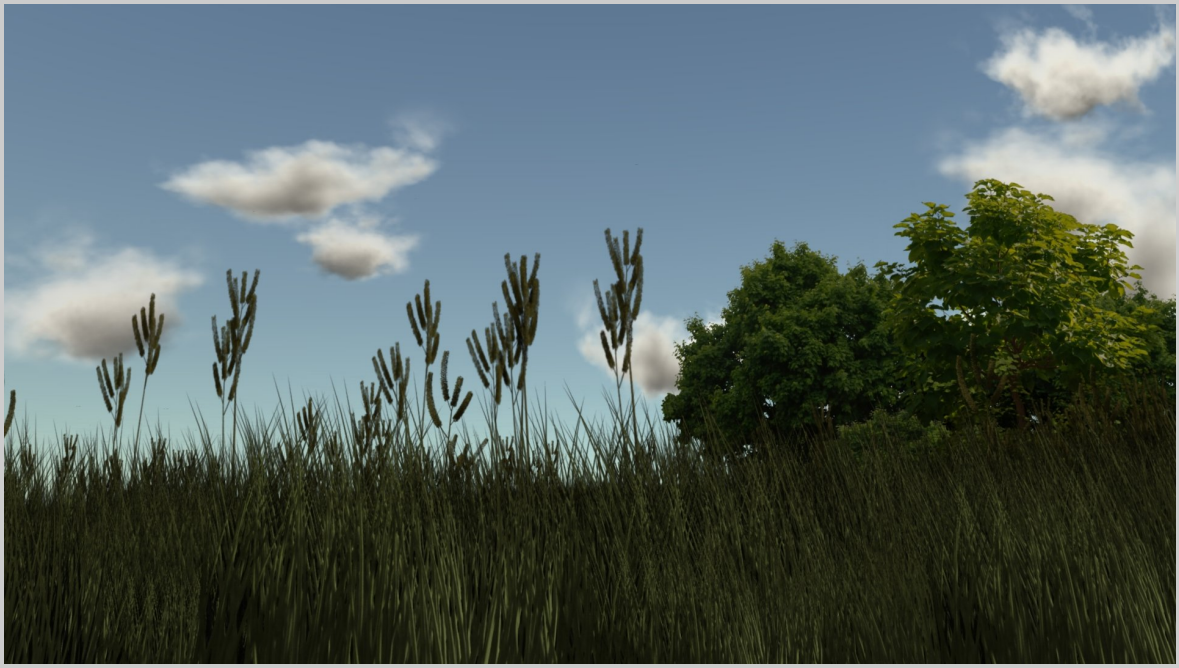
I have learned that having a stable team is very important. Especially since Carrara 3D Expo has turned into a full fledged magazine. Carrara 3D Expo works because of our 5 person team and our dedication to excellence and our commitment to Carrara.

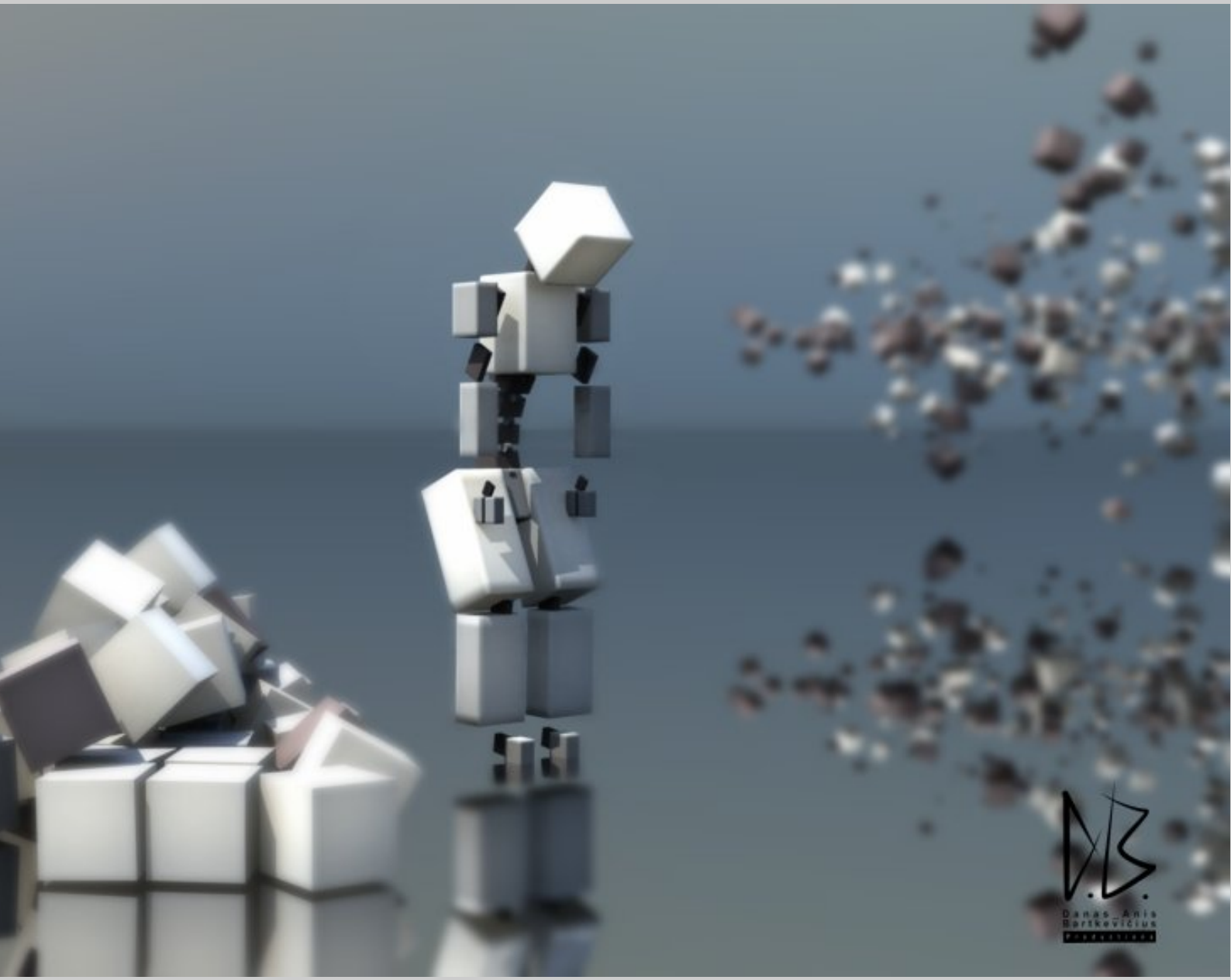
What would you tell artist who might be a bit shy about sending their work to C3DE?

I would tell them not to worry so much about whether their work is good enough or not. Carrara 3D Expo is about creativity. We want to see what you create in Carrara. You may not think your creations are worth much, but another person might see what you've done and be amazed. Don't be selfish. Share your art with us.

None of my images are amazing art. I even get criticized that all my images look unfinished, but I still show them. The idea behind most of my images is to create characters and images from scratch in Carrara. My images are conceptual. Most take less than 2 minutes to render and still preserve artistic elements such as mood, idea, etc.



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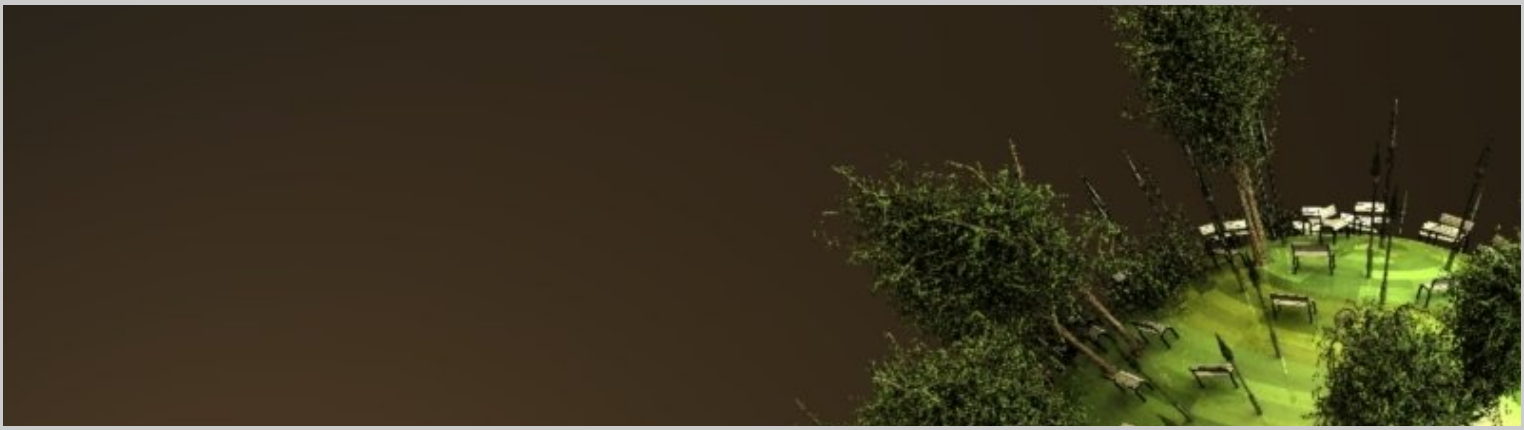


What direction would you like to see DAZ 3D take with Carrara?

With Carrara, DAZ has a great all around 3D package. It can handle premade content as well as animate that content. Carrara is a modeler, a terrain editor, a storyboard tool and so much else. I think it would be very cool if Carrara had interactive muscle simulation system for content figures as well as for modeled figures.

I have tried many software packages and Carrara has the best interface for animators. It was and maybe still is the only software with a storyboard room. Its time line is fantastic. It is a time line and dope sheet in one. It has tweening features that have to be scripted to work in other software. Camera navigation controls are phenomenal. Everything in Carrara's interface looks like it was developed for videography. DAZ's focus on content has slowed the development of Carrara's other tools.

With Carrara, DAZ had a chance to leave the other professional software packages in the dust. With Genesis and Carrara's outstanding tool set, DAZ could have had both the professional and hobbyist markets.

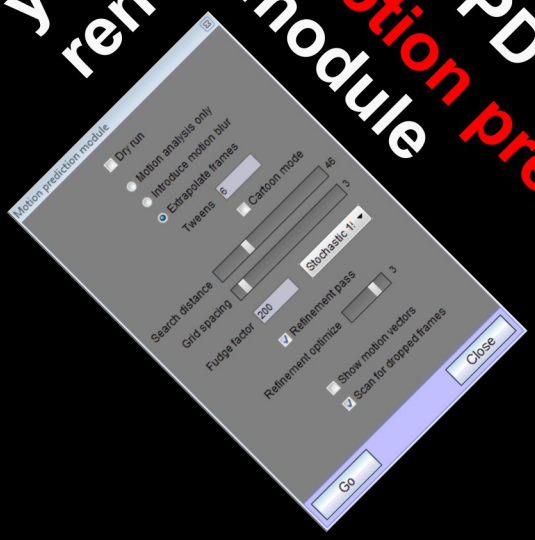
Carrara is a really amazing software that could be revolutionary. I am glad DAZ 3D didn't let it die and be forgotten. It is still being developed, and that is most important.

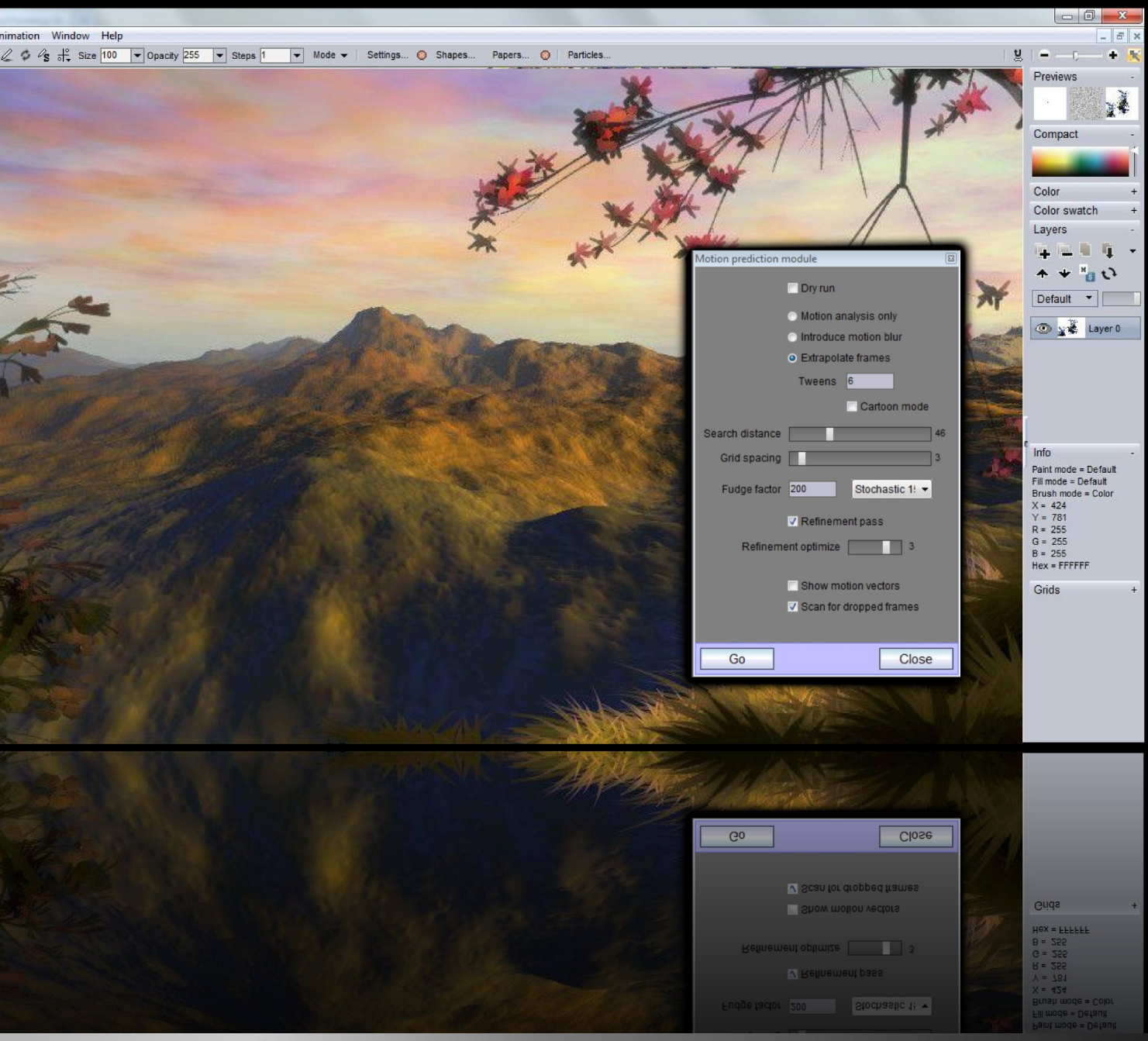
Any last words?

It is not the software that creates the art, it is the artist behind it. The make art button is not something that should be wanted. Time investment is a must if you are after quality. Let your creativity fly and don't be like everyone else.

PS: 90% of all subjects you saw in the images of this interview are modeled in Carrara from scratch, I told you Carrara is a capable polygon modeling tool ;).

SlowDown your Carrara rendered animation with PD Howler 8 motion prediction module

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Extrapolate frames
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Grid spacing 3
Fudge factor 200
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Refinement pass
Refinement optimize 3
Show motion vectors
Scan for dropped frames
Go
Close

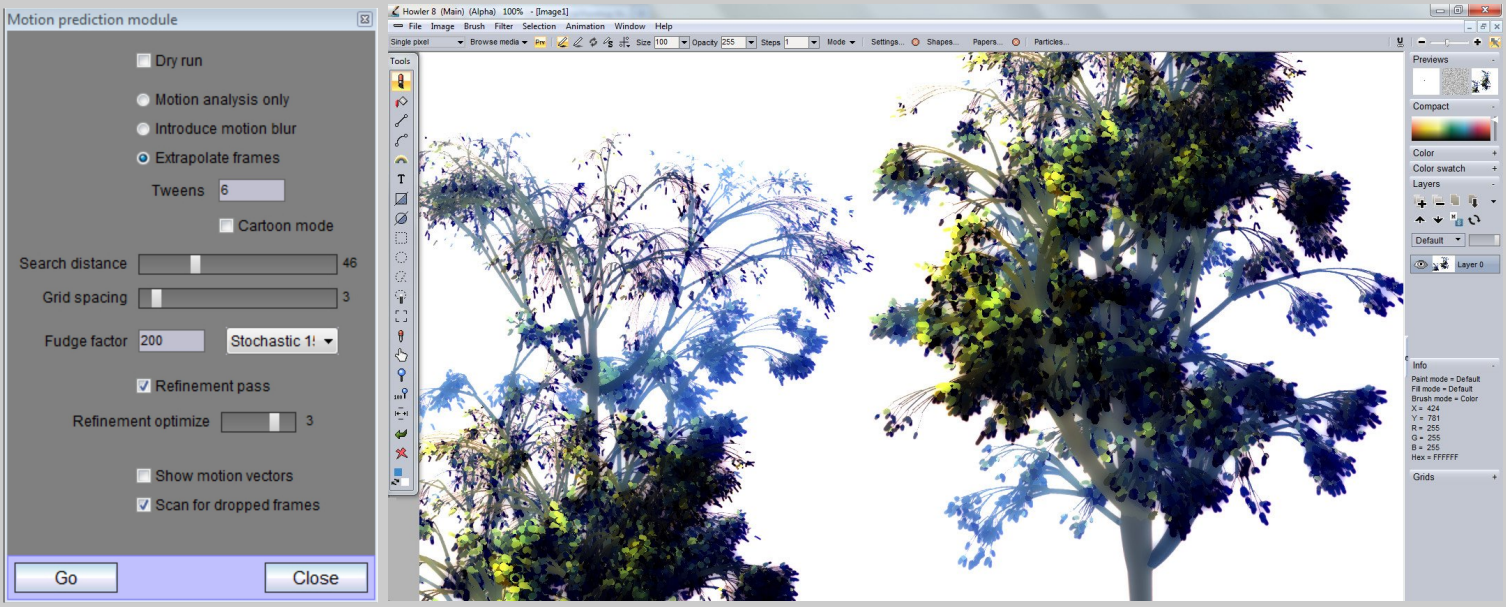
Carrara is a great piece of software, but, sadly, it can't do everything. For postwork to enhance the look and feel of our Carrara rendered images, we must rely on external 2D applications. That's where PD Howler 8 comes in handy. PD Howler has been featured in Carrara 3D Expo in previous issues under it's more well known name Project Dogwaffle. PD Howler is an amazing piece of software that does far more than just digital painting and touch ups for our renders. Howler is an amalgam of traditional painting techniques, advanced animation and post production features that makes it unique to the market.

I won't be reviewing PD Howler in this issue. PD Howler 8 is packed with new features and speed improvements as well as some fancy modernization of its interface. You can find out everything you need to know about PD Howler at www.thebest3d.com.

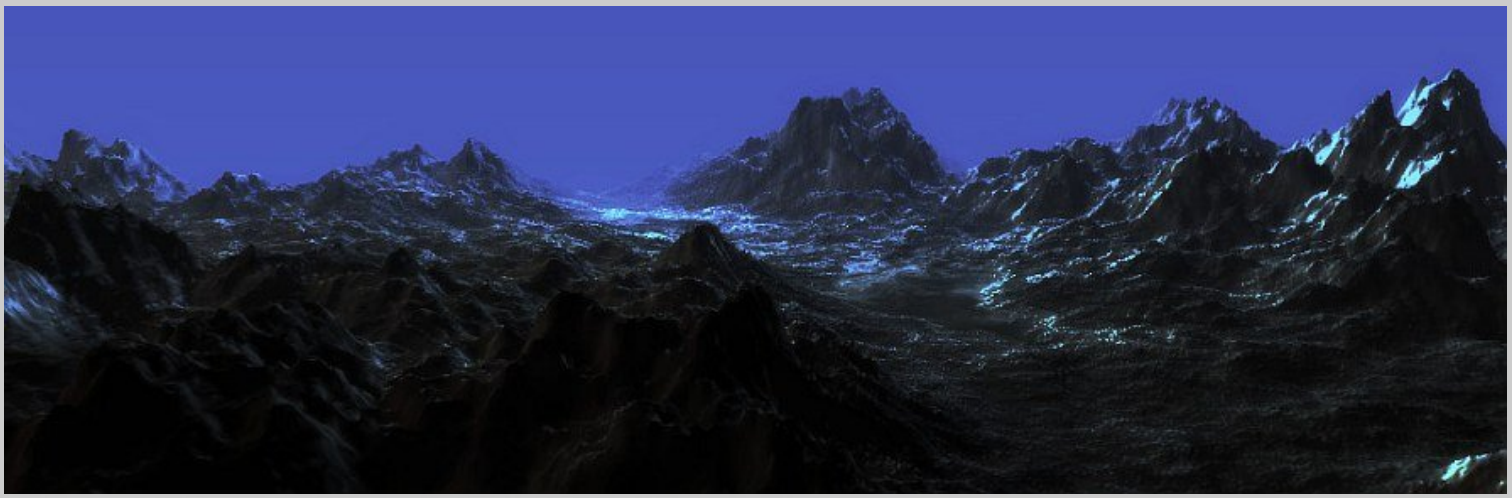
PD Howler's version 7 introduced some very exciting special FX innovations. Version 8 enhances and improves these new features. Carrara animators will be most excited about one particularly interesting, intriguing and very useful part of the PD Howler package. It is called the Motion Prediction Module.

What is the Motion Prediction Module?

It is a special filter that allows the creation of special effects like adding motion blur to moving objects, or even better, to create slow motion effects. Yes, you head right. PD Howler allows you to create slow motion videos from regular ones. The Motion Prediction Module uses a fine grid to dissect the image, in each frame, into smaller squares or squarlets, and then proceeds to analyze those smaller blocks with respect to their motion. It is basically doing a motion tracking analysis on each squarlet. The Motion Prediction Module actually interpolates the data between each frame and creates new frames between the existing ones. The controls are simple, and if you've done your work properly in Carrara, the results are amazing.

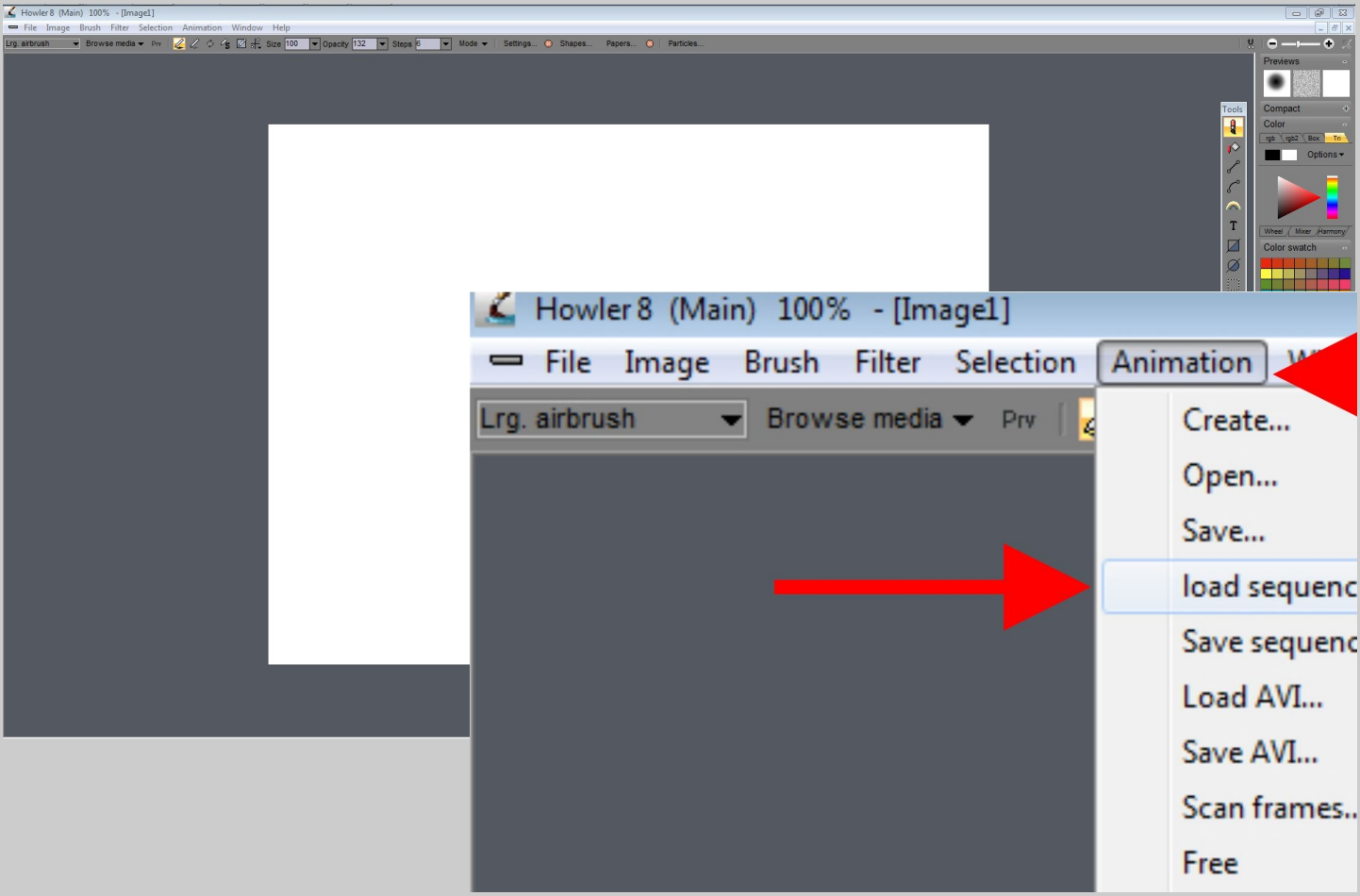


The Motion Prediction Module in PD Howler is an amazing addition to any Carrara animator's toolbox, but it can be very processor intensive. It should also be noted that the quality of your video is very important. Poor quality video, dropped frames and lighting changes all adversely effect the Motion Prediction Module's performance. So, in short, a very clean animation with little to no changes in lighting is best for the Motion Prediction Module in PD Howler 8.



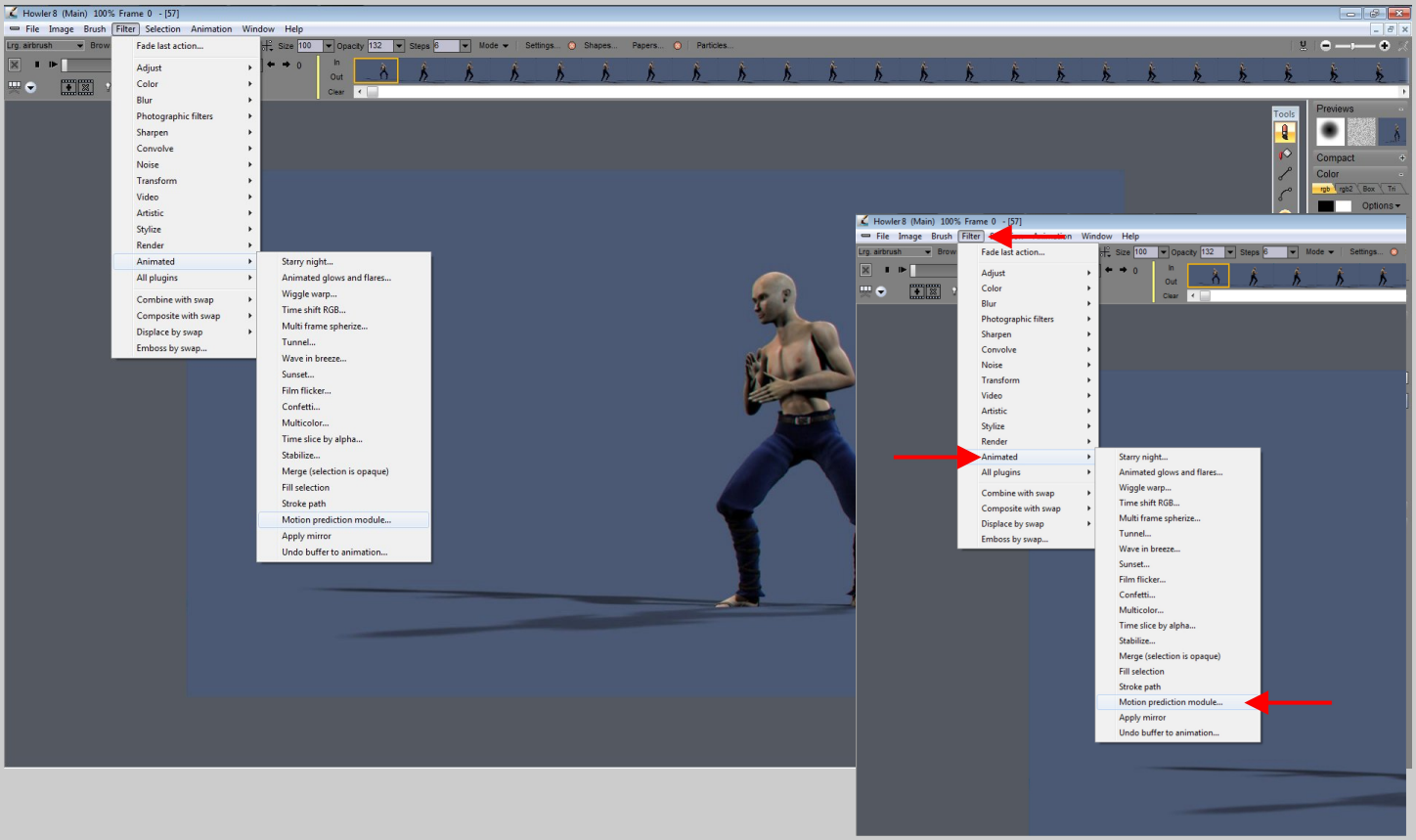
For the purpose of this tutorial, I've decided to create a cool martial arts jump and kick animation. I'm going to be using an amazing model created by Faba. It is not a content figure (sorry M4 and M5), but a true hand made model using DAZ3D software with an amazing rig highlighting what Fenric's ERC plugin can do.

Image by Faba



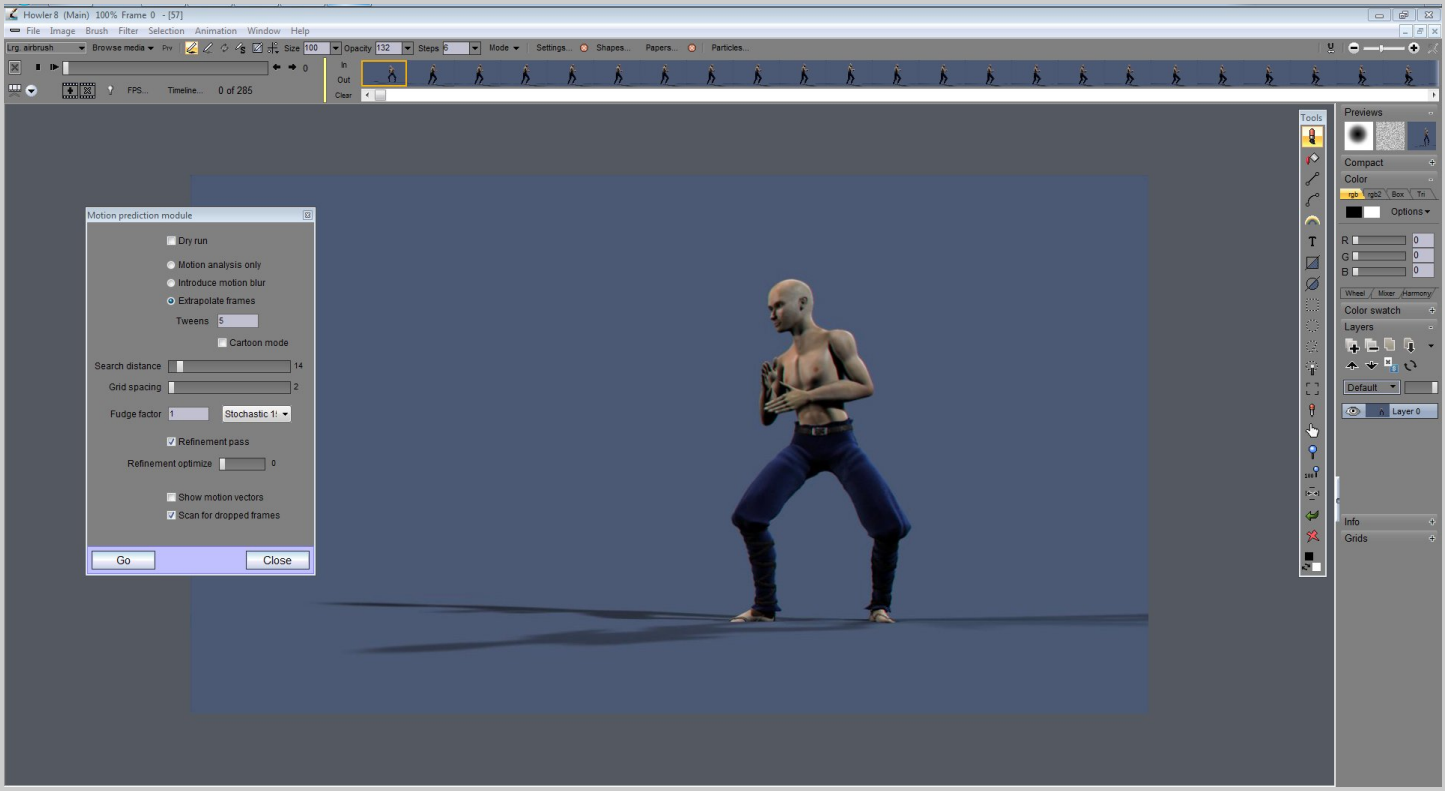
As I said, my animation is a simple jump and kick. Once I'm satisfied with the animation, I export it to sequenced .png images. I launch PD Howler 8 and navigate to the animation drop down menu. Using the 'Load Sequence' option, I load my animation. The canvas size doesn't matter since PD Howler will replace the canvas size with my imported image sequence and will automatically set the canvas to the right size.

Once the image sequence is loaded, the animation timeline appears on the tools row on the top. Also, PD Howler will play back your animation once, so you can see what you've loaded.

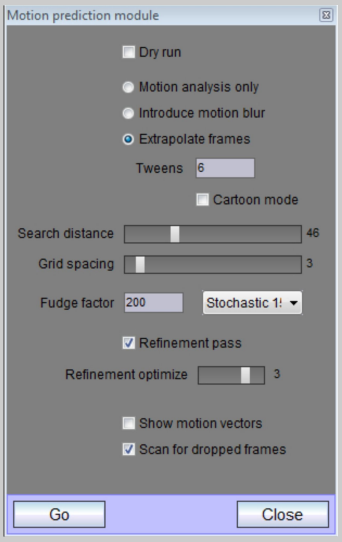


Now, I can move on to the exciting part of creating the slow motion effect!

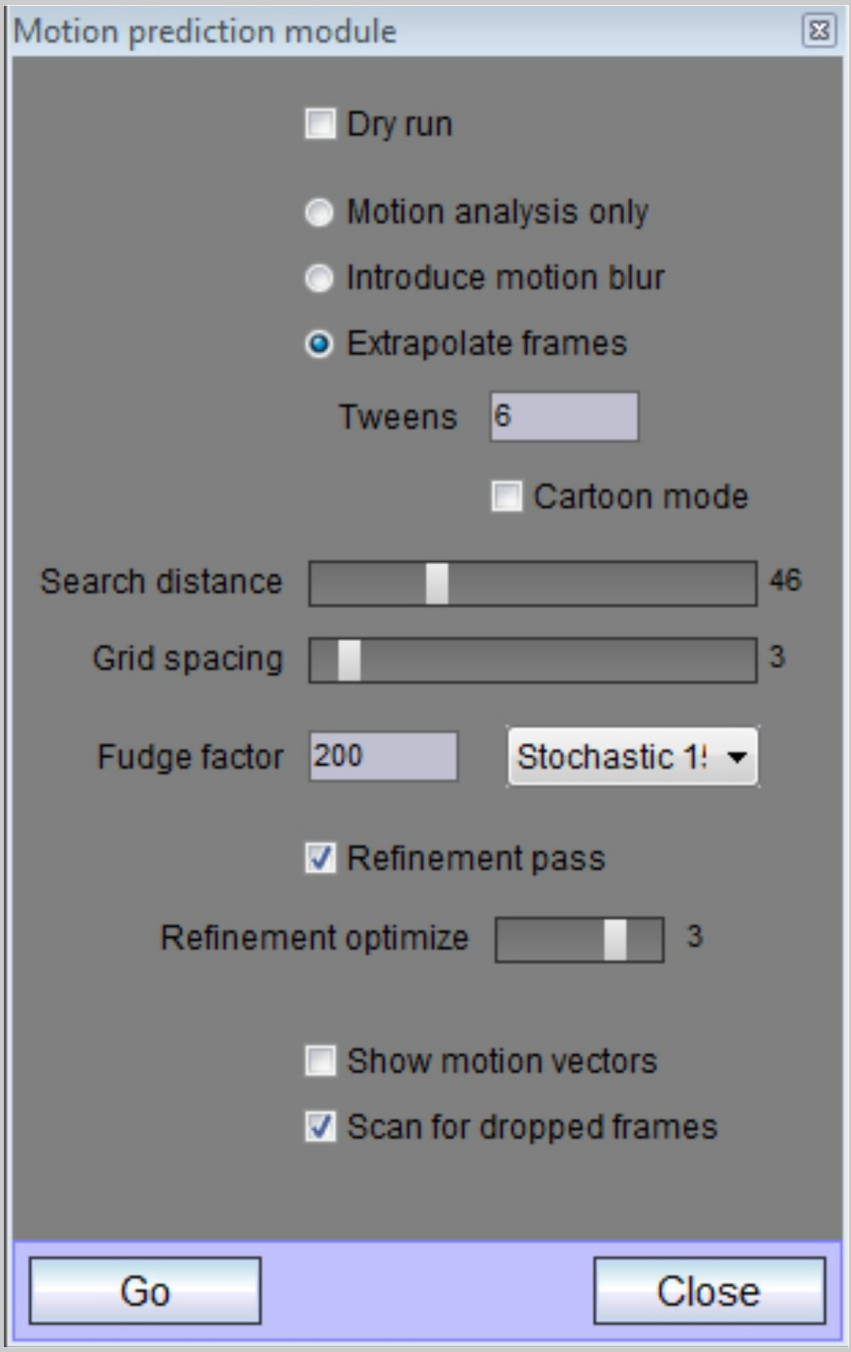
I go to the Filter drop down menu and navigate to the Animated Filters. From there, I select the Motion Prediction Module.



A new dialog box will appear with the Motion Prediction Module settings.



The options shown are to define calculation methods and what to calculate. Dry Run is for the purpose of checking your settings before actually effecting your animation footage. The other three options define what the Motion Prediction Module will calculate. Motion Analysis analyzes motion in your animation, Introduce Motion Blur creates motion blur effects on moving objects in your animation and Extrapolate Frames is the option to create a slow motion effect by creating and adding new frames between the existing ones.



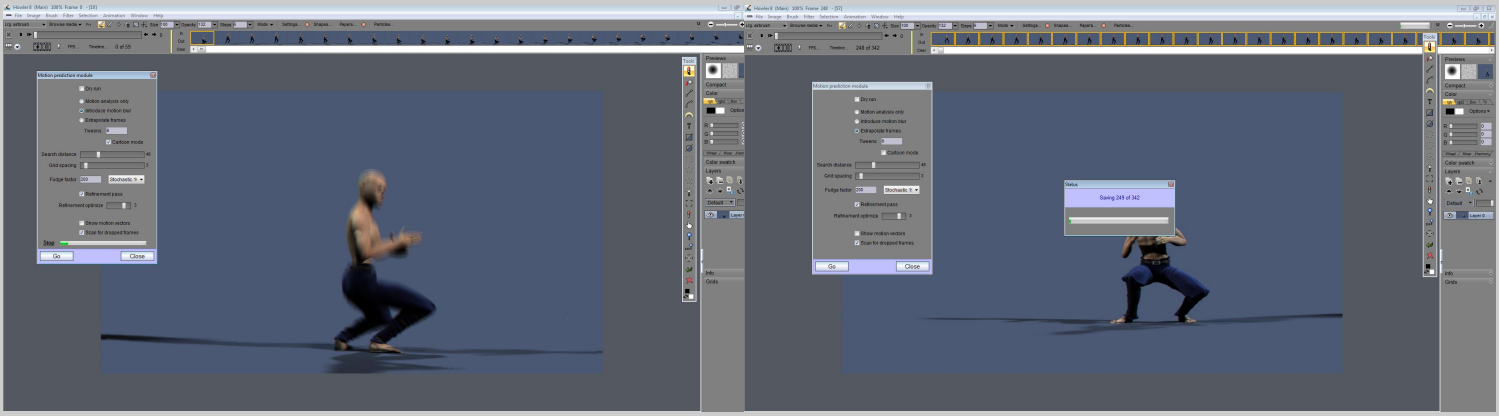
Tweens are the number of extra frames created for the animation. The more tweens you make, the longer and slower the animation will be. I would be careful not to make too many tweens. The more tweens there the more possibility of artifacts in your finished animation.

Search Distance is a very important setting. It defines the area within which the Motion Prediction Module scans pixels. I have found that the bigger the search distance, the better the result. However, it really is dependent on the situation.

Grid Spacing is another extremely important setting. The smaller the spacing in the grid, the better the calculation will be. Small grid spacing will take more time to calculate, but the results are more correct. I used the tiniest spacing that was available for my animation and achieved a pretty good result.

Fudge Factor, to my understanding, defines how the Motion Prediction Module creates the tweens. The smaller the fudge factor, the better the detail of the extrapolation and the better the quality of the final product.

When considering the Fudge Factor, you have to also consider the quality of your video. The Motion Prediction Module is very



sensitive to video quality. The better the footage being used, the better the quality of output from the Motion Prediction Module. If you have an excellent quality video, then using a smaller Fudge Factor will produce very realistic results. A larger Fudge Factor, say 5000, handles fast motion video very well. This larger Fudge Factor creates ghosting which appears as motion blur in the final product.

Once you have your settings, all you have to do is click on the Go button, and it will begin to calculate your clip. Once you are satisfied with the outcome, you can save the animation as a video file or image sequence. I would recommend saving to image sequences to give you more control over in any further post production work.

You can view my jump kick video on the Carrara 3D Expo youtube channel.
Kind regards,
Danas

Perfect Fixes for V4 in Carrara

by David Collins

Xameva and Meipe's Perfect Fixes for V4 in Carrara

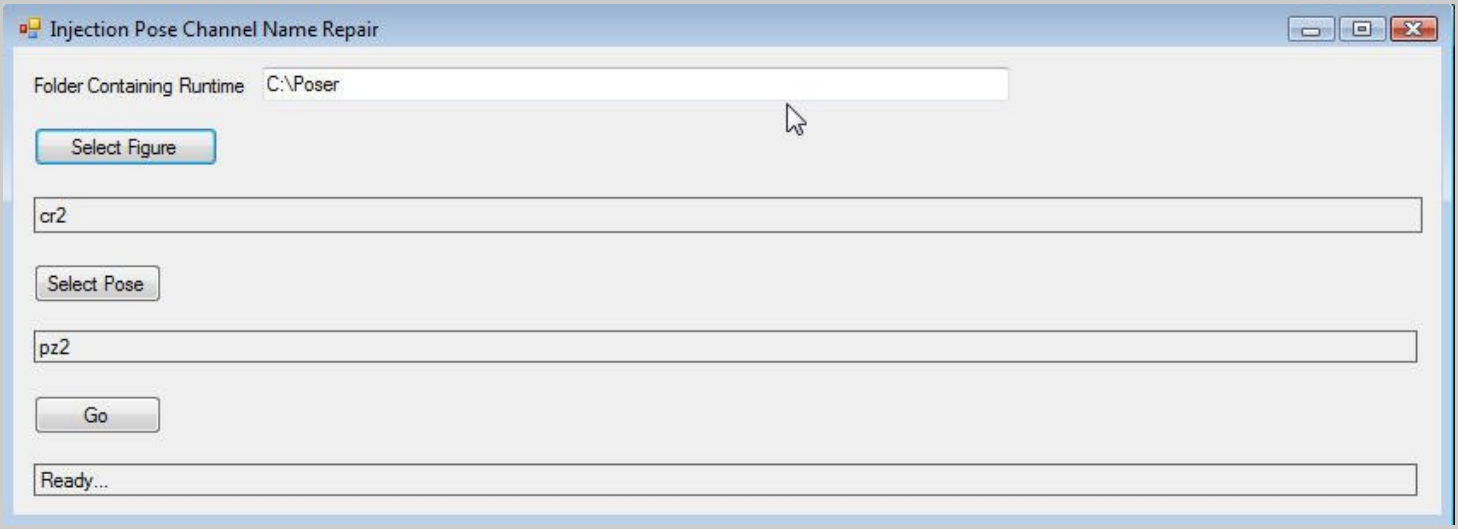
We all know Victoria 4 is a less than perfect model. She has issues of one sort or another with every one of her joints. Vicky's poor joints were one of many reasons people jumped all over Genesis. Genesis is pretty amazing. He/she/it can be just about any type of character you can imagine, and I've seen some pretty imaginative characters created using Genesis. But Genesis isn't for everyone. So, what about us stalwart V4 users?

Well, for some time now Xameva and Meipe, vendors at Renderosity, have been releasing fix morphs for Victoria 4's bad joints. Recently, Xameva and Meipe released their newest product V4 Perfect Complete which includes all of their V4 fixes in one package. That's great news for Studio and Poser users but not so much for us Carrara folks who still find V4 useful. The V4 Perfect fix morphs don't work very well in Carrara because Carrara is a bit more strict in how it reads Poser files. Enter the hero of this piece, Fenric.

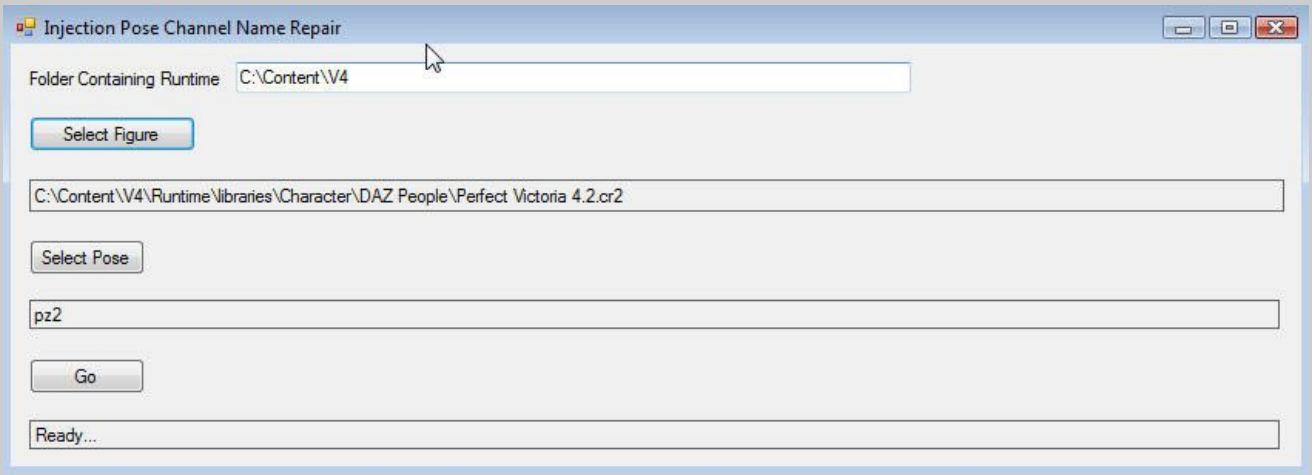
Fenric has created a small utility that will, for the most part, solve Carrara's problems with the new V4 Perfect Fixes. This little utility will also work on Corvas' shoulder fixes as well (also available at Renderosity).

The first thing you need to get Xameva and Meipe's Perfect Fixes working in Carrara is Fenric's Fix Pose Channels utility. You can download it at Sharecg. The file you will receive contains Fenric's Fix Pose Channels utility as well as a sample .cr2 loader file to edit for your own use. The zip file also includes the source code as well as some short, to the point and very well written documentation that makes the entire process quite painless.

When you double click on Fenric's Fix Pose Channels utility this is what you see:

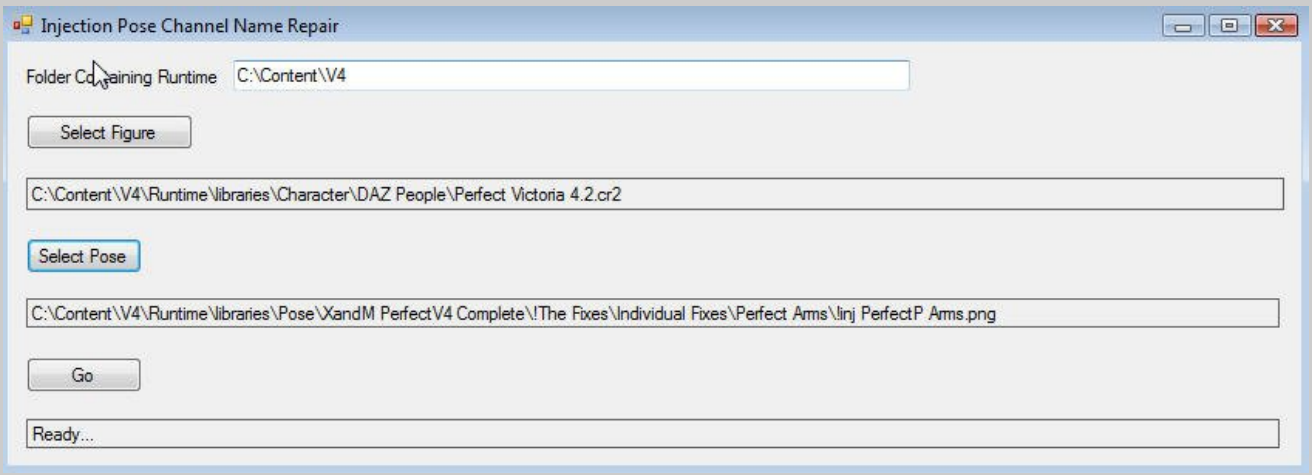


Fenric's utility shows the Runtime located in C:\Poser. The first thing you'll want to do is type in the location of the Runtime where V4 is kept on your computer. Next, you'll hit the Select Figure button and navigate to the V4 you want to use the Fix Pose Channels utility on. If you are going to be using Xameva and Meipe's Perfect Fixes, which is what we're using for this tutorial, you need to use the prepared Perfect V4 cr2 as your selected figure. You'll find a link to video instructions for preparing V4.2 for the Perfect Fixes in the Perfect V4 Complete documentation.



The above image shows the location of my Runtime where V4 is kept as well as the location of my Perfect V4 cr2 file.

The next step is to hit the Select Pose button and navigate to where the Perfect V4 poses are kept in your Runtime.



Now, the path to the fixes will look a bit different if you are using the individual fixes created by Xameva and Meipe. I waited until they released the whole lot before I purchased them, so my path shows how it would look for the Perfect V4 Complete package. When you have your path chosen, you will need to click the Go button.

There are ten separate folders, one for each of the Perfect Fixes included in the Complete package. You'll need to go through the previous step for each of the ten fixes. This may seem a bit tedious, but you will only have to do this once and then never again. Unless of course you enjoy it.

Fenric points out in the instructions included in his Fix Pose Channels utility that the resulting files will work in Poser and Studio as well as in Carrara.

The next step is to prepare what Fenric calls a loader file for your newly fixed pose files. This is the file you'll actually be using in Carrara to load your Perfect V4. It's basically a .cr2 file that includes both the figure and the Perfect Fixes, so when you use your loader .cr2 your bringing everything at once into

Carrara.

Being able to load everything all at once makes the loader .cr2 a real timesaver. My only problem is that for people who don't have experience with .cr2s or script writing this is possibly the most time consuming and difficult step. By difficult, I don't mean hard, I mean tedious and stressful. If you're going to be loading all the Perfect Fixes you are going to have a lot of typing to do. Everything has to be just so or your Perfect Fixes won't work as expected if at all.

Thankfully, Fenric includes an example loader .cr2 that includes text for both the Perfect Fixes and Corvas's Simple Details fixes. The simplest way to go about this task is to just use Fenric's provided loader file and fill in the details pertinent to your own Runtime.

The first line points the loader .cr2 to the Runtime where your Perfect Victoria 4.2.cr2 is located. Mine looks like this:

readScript
":Runtime:Libraries:Character:DAZ People:Perfect Victoria 4.2.cr2"

The remainder of the loader script is just you typing in the location of the individual Perfect Fixes for the loader .cr2 to find. Like this:

readScript ":Runtime:Libraries:Pose:XandM PerfectV4 Complete:!The Fixes:Individual Fixes:Perfect Arms:!INJ PerfectP Arms.pz2"

There are nine more lines very similar to the above, one for each of the Perfect Fixes. The most important thing is to make sure you get your file structure typed in correctly for each fix. You'll need to check and double check if you're not comfortable with this sort of thing. When you're done typing and checking then save the file as a .cr2. To save confusion, you should probably save your new loader .cr2 to the same folder as your Victoria 4.2.

Congratulations! You're done. Open up Carrara and load your new Perfect Fix loader .cr2 and you should be good to go. If, for some reason, your Perfect V4 doesn't work properly, the first thing you should do is open up your loader .cr2 in a text editor and double check that you typed all your paths correctly.

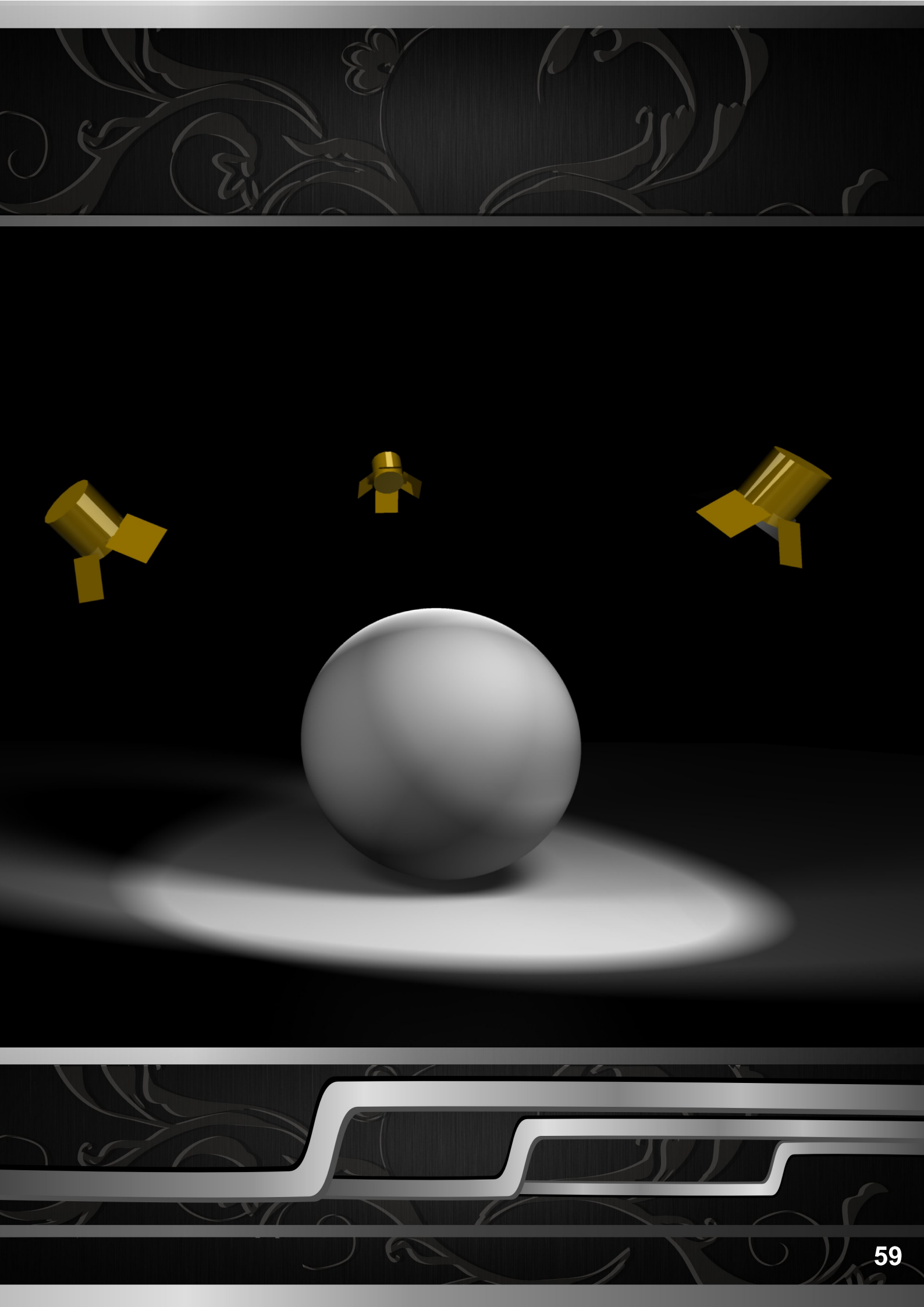
Here are a few images I did of my own Perfect V4. This character has V4's Morphs++, Muscle Morphs and Elite Morphs loaded. All the morph packages loaded with no problem and functioned as normal. I did not do any postwork to hide the few imperfections created by the poses to show that, in fact, Perfect V4 is not perfect in Carrara, but she's darned close. Even Xameva and Meipe admit in the documentation for the Perfect Fixes that extreme poses will not always look perfect. My aim here is to show that the Perfect Fixes work in Carrara with Fenric's handy little Fix Pose Channels utility.

Happy Rendering!

David Collins

3 point lighting in Carrara

by David Collins



3 Point Lighting in Carrara

Three point lighting is mentioned quite a lot when discussing lighting setups in 3D. Jeremy Birn, author of Digital Lighting and Rendering says, “[Three point lighting is] one of the most basic and popular approaches to illuminating a subject...[it is] a design that makes it easy to model your subject with light.”

For Jeremy Birn, modeling with light is using the lighting of a scene to accent/create the effect of 3 dimensions in your images. Modeling with light can make your images appear to come off the page. The three point light setup can achieve this effect of modeling with light very well.

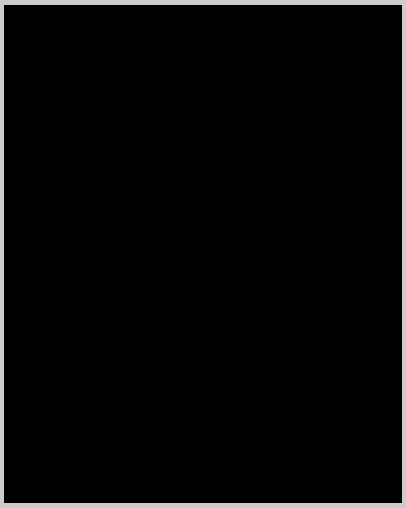
The three points are the three lights you will use to illuminate your subject. The lights are the key light, the fill light and the rim light. The key light is the main light for your scene. The fill light does just what is says, it 'fills' the shadows created by the key light. The rim light creates an edge of light to help separate your subject from the background. Many images you've seen in magazines and in online galleries have employed the three point light setup or a variation of it, and you probably never even noticed.

Before we begin, let me say that what I'm about to show you is only a method for using three point lighting in your scenes. As a matter of fact, it's my method. There are many variations to the three point light setup. You don't even have to use three lights. You can use five or seven or however many you need to effectively light your scene. The three point setup even works for outdoor scenes but on a larger scale. The sun, after all, is the original key light.

It is important to consider what you are hoping to achieve with your image before you even begin adding content to your scene. While there are artists who work in a more free manner by pulling in elements and making changes as they go, being able to start with some sort of goal in mind can keep things from bogging down later. Knowing what the motivation for your image is will also help you make better, more informed lighting decisions.

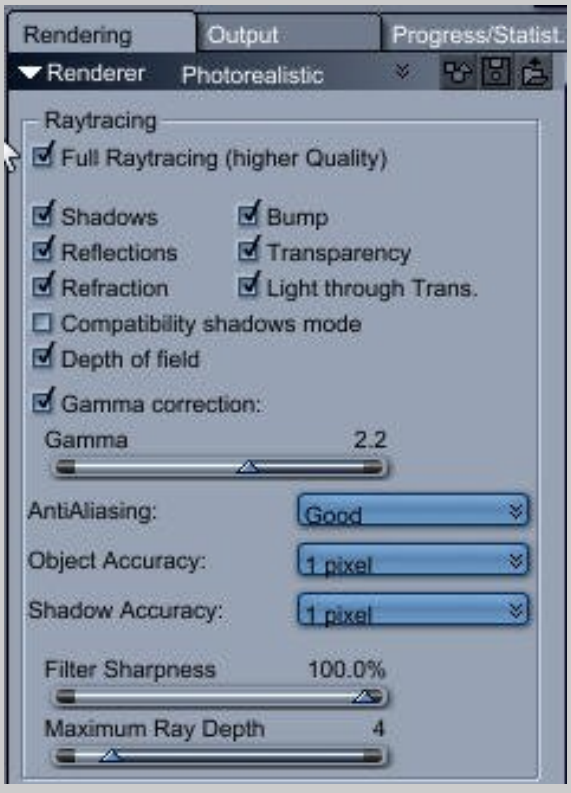
Here is a view of the character I will be lighting for this tutorial. By the end of this tutorial, I hope to have created an image with a soft pinup style look. I'm not going for anything dramatic with my lighting, I just want a soft shot that looks like the model just walked into the studio and this is our first casual shot.

And here is the rendered image without any lights. Not a very attractive image.



As you can see, light can be a very important part of your image. Without lighting all your image will show is a very dark night.

Here are the render settings I'll be using for this image.

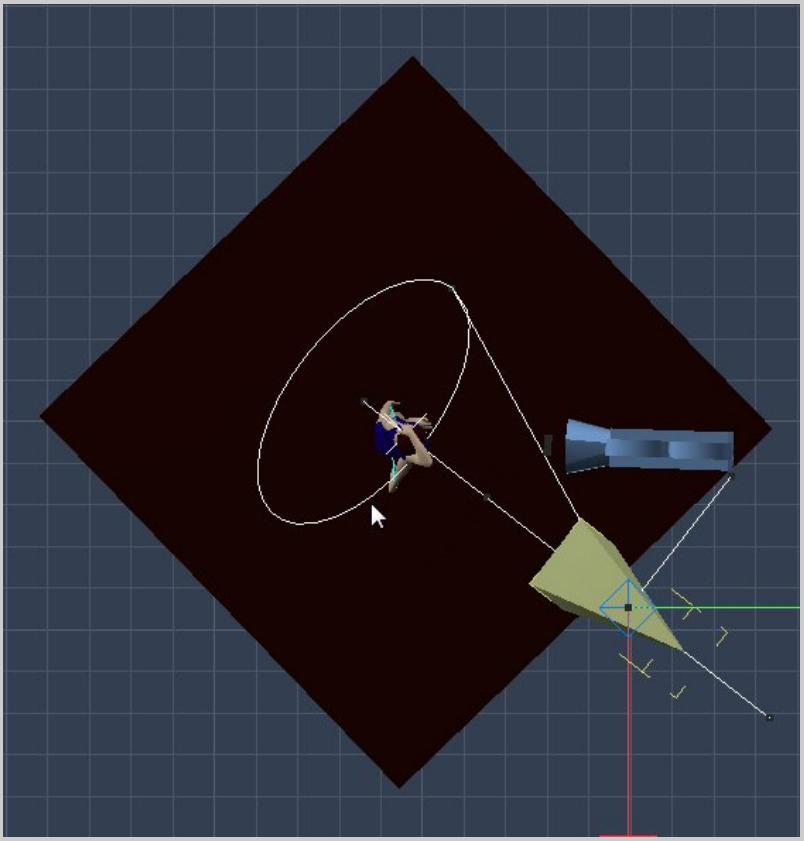


Many people will say not to use Gamma correction in Carrara. Personally, I prefer the results I get with Gamma correction on. I've set the Ray Depth to 4 because the hair renders a tad faster than at my usual setting of 5.

The model in this scene has Subsurface Scattering turned on, so you may notice that some of the darker areas look a bit odd. Having SSS on is going to help me achieve the look I'm going for with this image.

Now, on to the lighting.

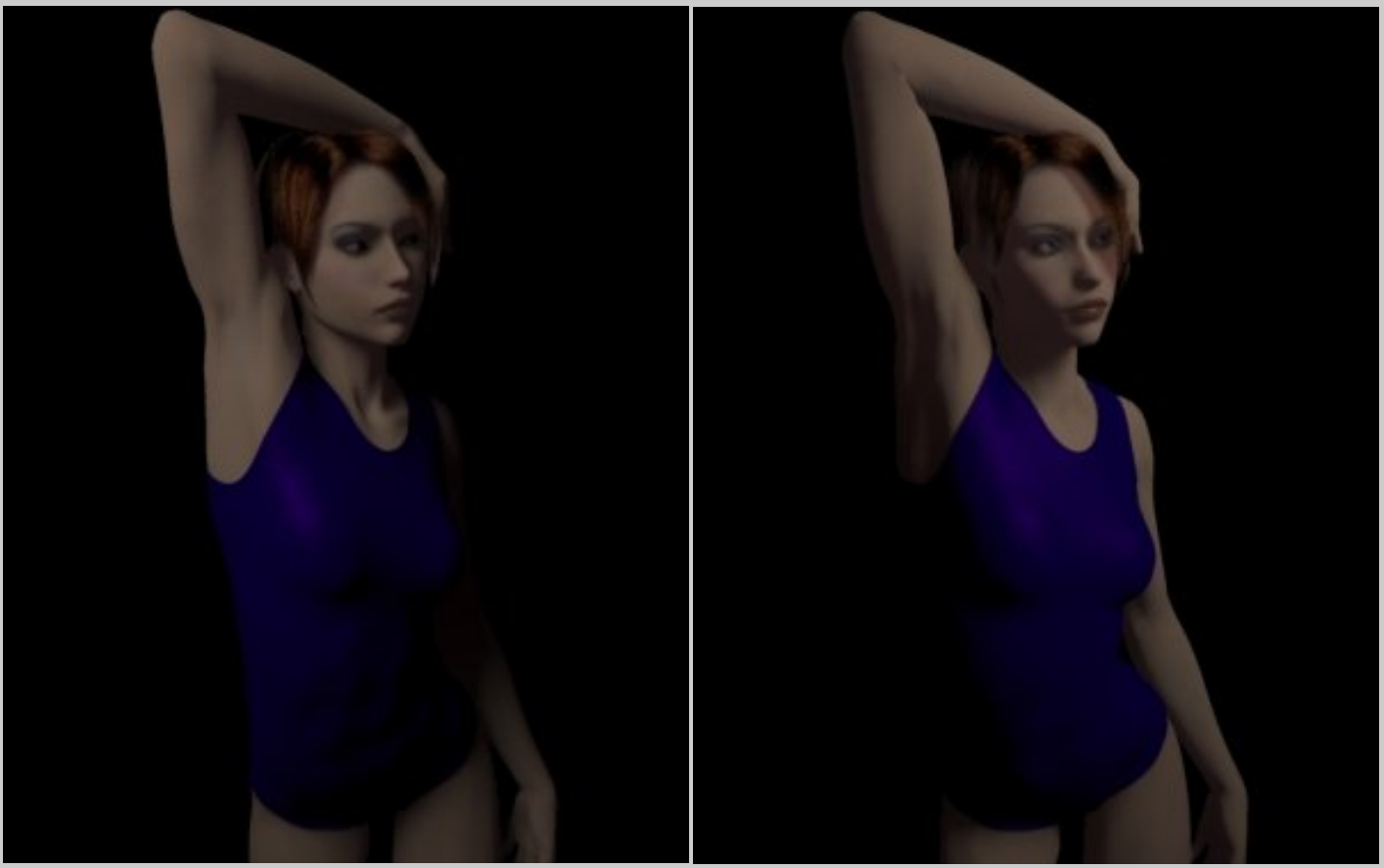
Before I begin to light any scene, I place a target helper where I want my lights to focus. As I add each light, I use the Point At modifier and set it to point at the target helper. This way I can be certain that my lights will always point where I want them to. Also, if I choose to repose my character or move the focus of my scene the lights can be more easily readjusted.



The first light I'm going to play with is the Key light. As I mentioned earlier, the Key light is, most of the time, the main light of your scene. There will be occasions where you may not want a particularly bright Key light. It all depends on where your headed with your image. The Key light helps to establish where the light is coming from. The Key also defines the focus as well as the mood of your image.

The Key light I've created for my scene is a spot set to 100% strength. I've also set the color to 255,244,242 which corresponds to the color of full spectrum florescent light. I normally set all my lights to this color in the beginning. The colors often change as I get close to the final render.

The position of the Key light is up to you. Generally, the Key is placed to either the left or right of the

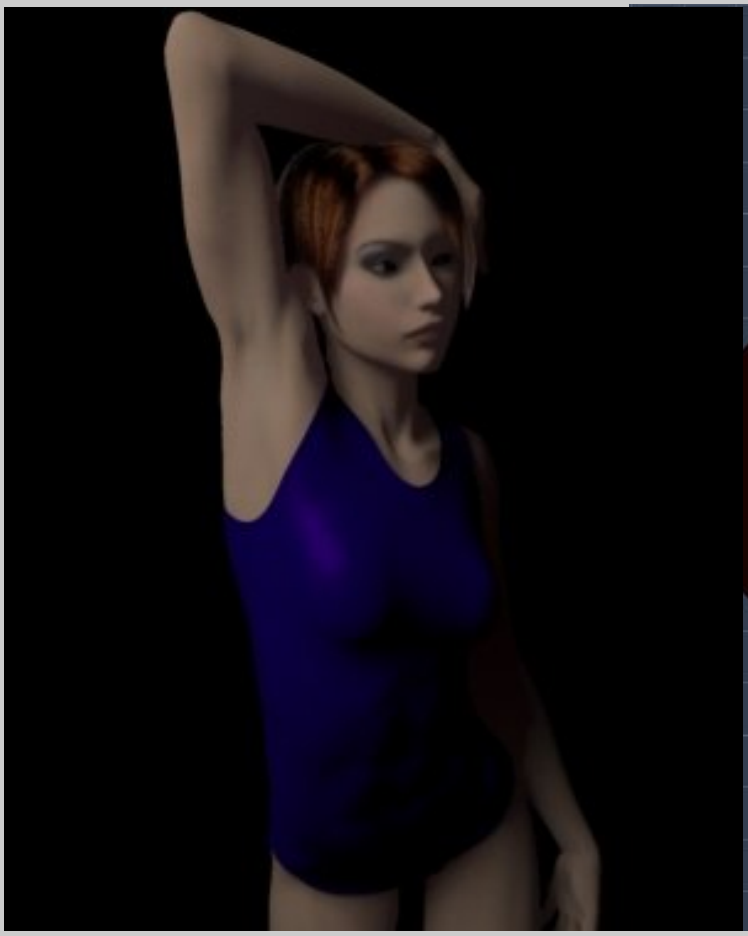


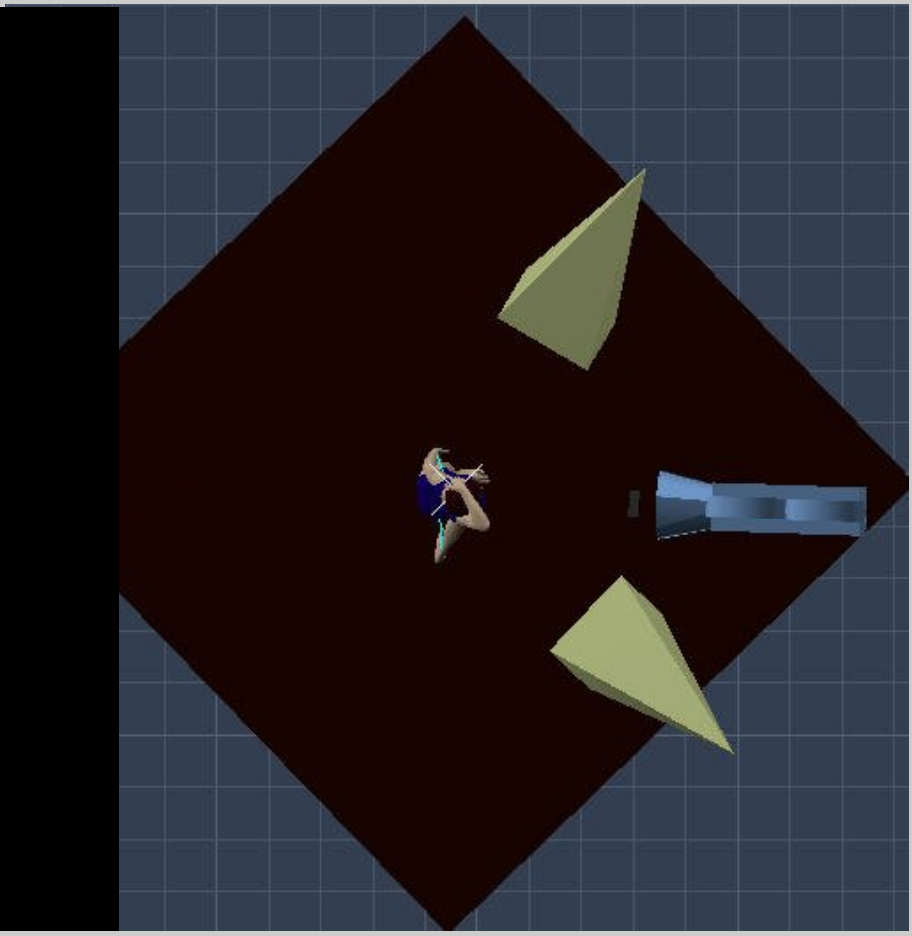
camera, but it can also be under the camera, over the camera or wherever.

Images abow show how the position of the Key light can produce very different results.

After some experimentation, I've decided to position my Key light to the left and above the camera. If I were using a small spot on an extendable stand, this is about where the light would be coming from. I've also increased the brightness to 135%. I decreased the light's range from 12 feet to 8 feet to keep the Key from illuminating the background. In general, I keep my lights at 100% falloff, so the decrease in range dimmed the light on the subject. I increased the brightness to get the amount of light I wanted on the subject.

It's not always necessary to limit your light's range like I have. It's just what I've chosen to do for this image.

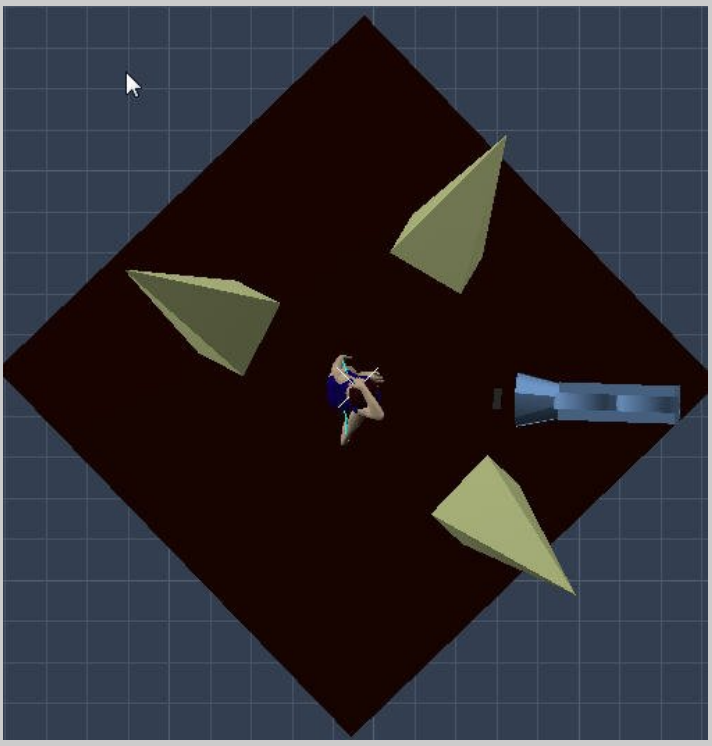




The Fill light is next. You would usually place the fill light on the opposite side of the camera from your Key light. The job of the Fill light is to 'fill in' the shadows left by the Key. There are times when you might want very dark shadows, but when you don't, then it's time to bring in a Fill light. You also might want to give your Fill light a color that compliments your Key.

I've placed my Fill light on the opposite side of the camera but at the same height as my Key light.

I've given my Fill light a light blue color to compliment the pinkish color of my Key. The Fill also has a brightness of 60%. You usually want your Fill to be half as bright as your Key, more or less. The Fill light's range is also set so that it will not shine on the background.



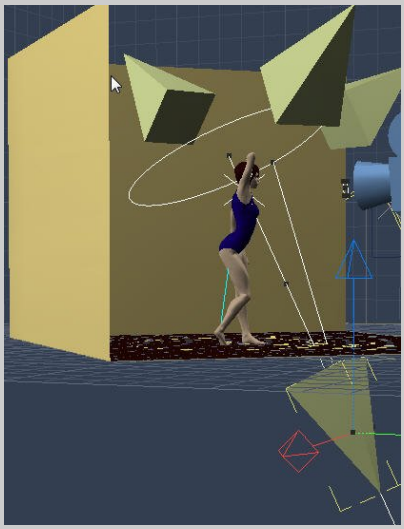
The last light in the three point light system is the Rim light. The Rim light's main job is to help bring your image off the page, to keep it from looking flat against your background. I'll be using one Rim light in my image, but you could just as easily use two to really make your image come off the page. It's all up to you.

I've set my Rim light behind my character and to the right (my right) at the same height as the Key and Fill. Quite often the Rim light is positioned opposite the Key light. Again, where you chose to position your Rim is up to you and what your goal is for your image.

In this scene, my Rim is the same color as my Key light. I have the brightness set to 200%. While you can set your Rim to any brightness you like, I've found that, in general, the brighter the better. As with everything else, it all depends. I have the Range Falloff set to 0% because I want the full power of the light. The Range is set to 20 feet, but it really doesn't matter since the light won't hit the floor in camera range.

The Rim light really makes the subsurface scattering work. If you look closely, you can see a slight rim of light along her arms, face and neck.

I'm fairly happy with the lighting so far except for one thing. The bottom of the character is darker than I want. To take care of this, I'm going to add a light called a Bounce light. A Bounce light simulates the light that would naturally reflect from the ground, in this case the floor. I've set my Bounce light under the floor of my scene with shadows turned off so the light will shine through the floor.



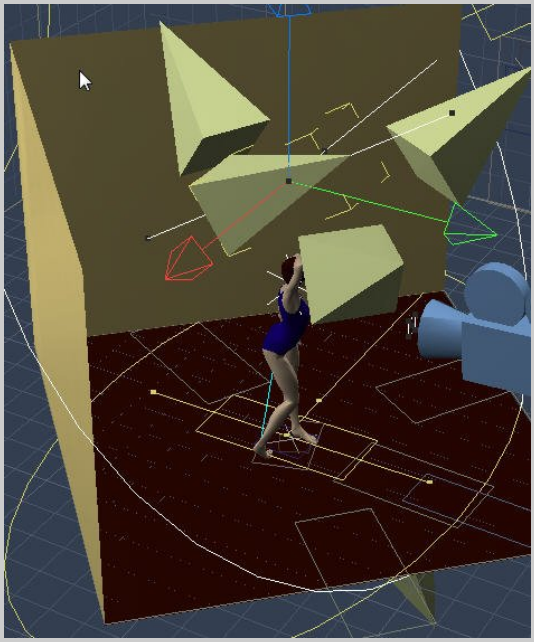
My Bounce light's brightness is set to 40% with 100% Falloff. I don't want the same amount of bounced light shining on the top of my model's head as I do on the bottom of her torso. I've also colored the light to match the background walls. I chose the walls because I didn't like the floor color. It's as simple as that. If you have a green mist creeping across your floor, you might chose green as your bounce color. It all depends on the scene requirements.

The addition of the Bounce light adds a bit of light as well as a hint of color to the lower half of the character. The difference is subtle. What you do is up to you.

I'm going to add one last light. I know this tutorial is supposed to be about a three point light system, but I did tell you at the beginning that three lights is one choice. As long as each light has a purpose you can't really go wrong. The last light I'm going to add is for the background. You've noticed, of course, that my background is black. There are walls behind my character. I want those walls to be visible, but I didn't want my character lights to do the job.

I've placed my Background light above and to the rear of my character and pointing at the walls.

The Background light is set to 60% brightness with 100% Falloff. The color matches the color of my Key light. I want to give the impression that the light for both is actually coming from the same overhead light(s).



I'm also adding a bit of ambience to the scene. I have scene ambience set to 5 and the color is the same as my Bounce light. Some people will tell you to never use scene ambience. I use it often. I normally will set ambience no higher than 10, but that's just a personal preference. In this case, the ambient light adds just a touch of light to the darker parts of the scene and it also serves the same purpose as the Bounce light by suggesting that there is light reflecting from the walls.

Here is a side by side comparison of the final image before and after the addition of the ambient light.

The effect is subtle but it helps to convey the illusion that the room is real with four walls and a ceiling.

When I work in Carrara, I very seldom use the render generated by Carrara as my final image. My practice is to render the image along with a diffuse pass, a specular pass and an ambient occlusion pass. I combine these in Paintshop as layers and adjust them until I have the effect I want. I then adjust levels, contrast and color and save out the final image.

I won't argue that more could be done to improve the image, but this is a lighting tutorial not a class in postwork.

I hope this tutorial has helped clarify the use and usefulness of the three point lighting system. This is by no means the only way to light a scene. It is just one of many.

Happy lighting!
David

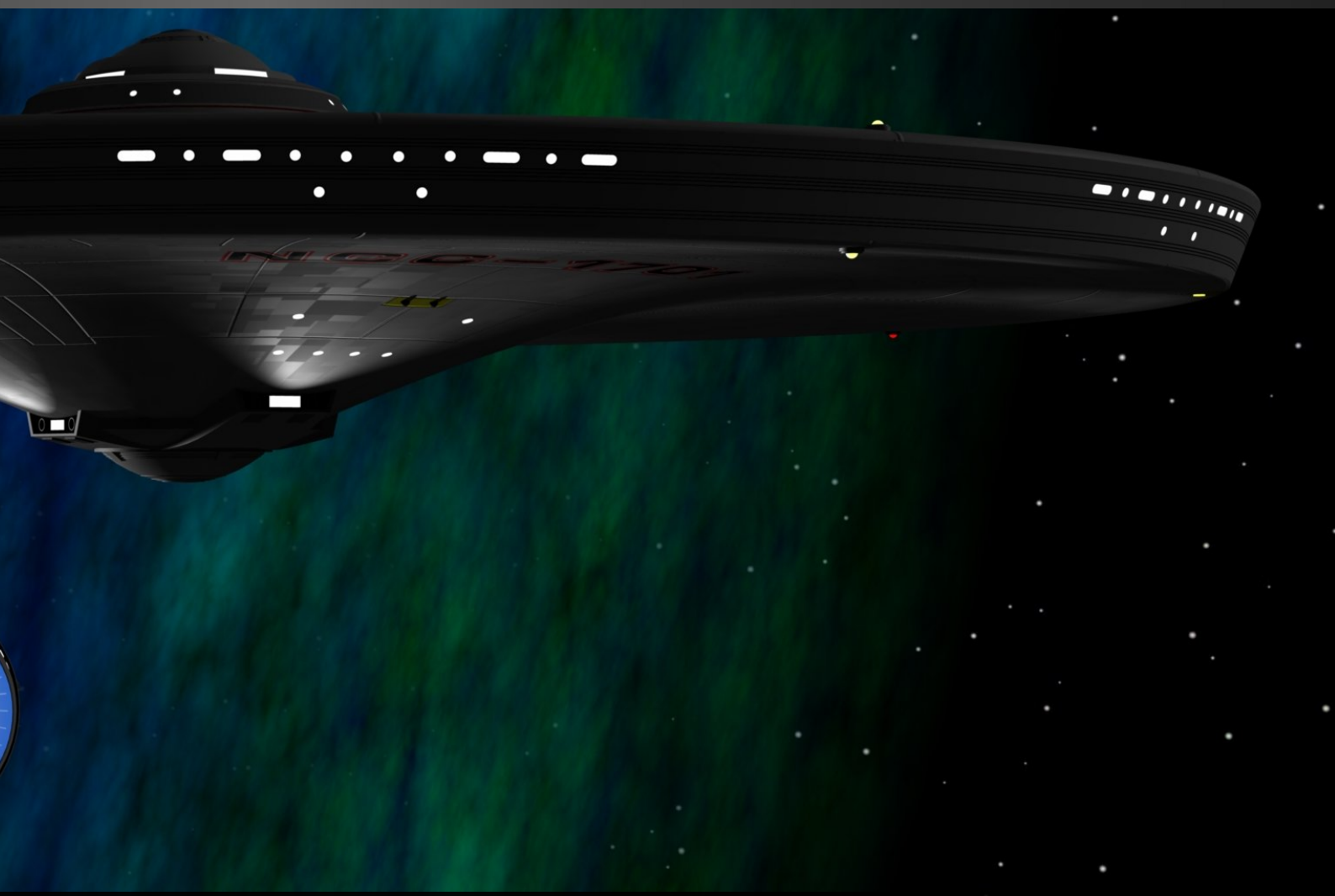
The Creation of The Motion Picture Enterprise in Carrara

by Scott Franz

Late in 2012, a 1/350 scale plastic model of The Original Series (TOS) version of the Enterprise was released for sale. This sparked an old interest to build a Carrara model of The Motion Picture (TMP) Enterprise.

Such an undertaking is a significant challenge to Carrara as a modeling tool. In fact, there are significant limitations that Carrara suffers when trying to build such a model which has extensive surface detail. The main limitation is cutting round holes for windows in curved surfaces which would most likely require significant boolean operations (to preserve smoothness).

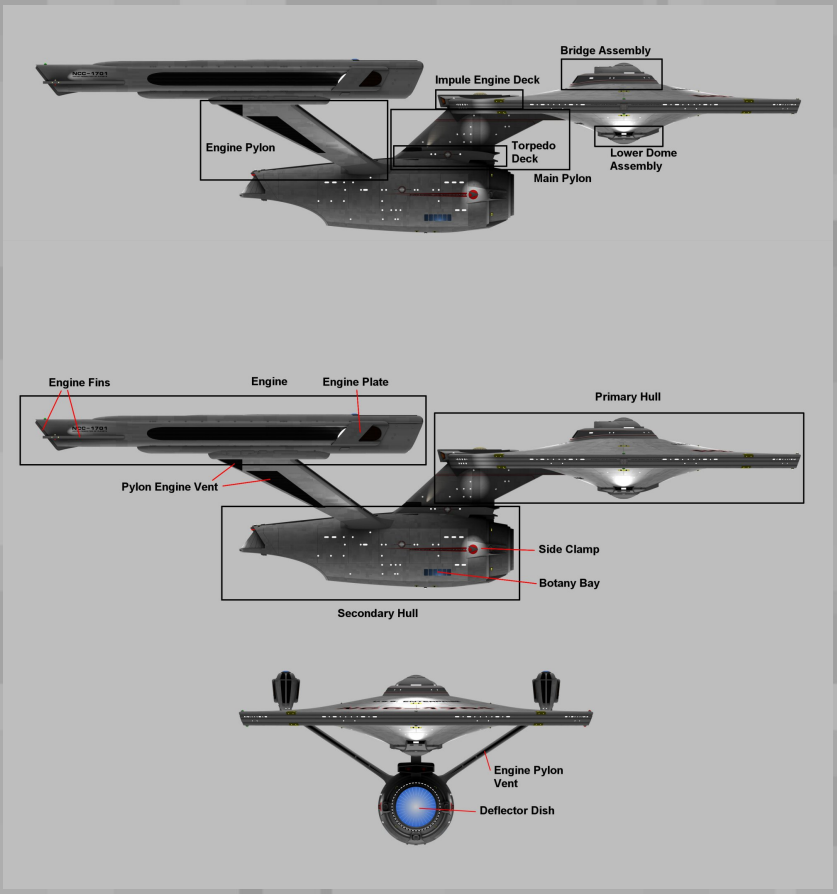
However, boolean operations which would extend into dozens



of window ports is not a practical Carrara solution.

Given this limitation, putting the windows onto the model utilizing textures is a more practical method. While this is a significant limitation in terms of producing a highly detailed and representative model, a good product can still be created which will lend itself to good renders.

This article will discuss the general steps and organization used to build a TMP Enterprise Carrara model. In order to facilitate the discussion, the following “map” will be utilized to explain the names of the parts.



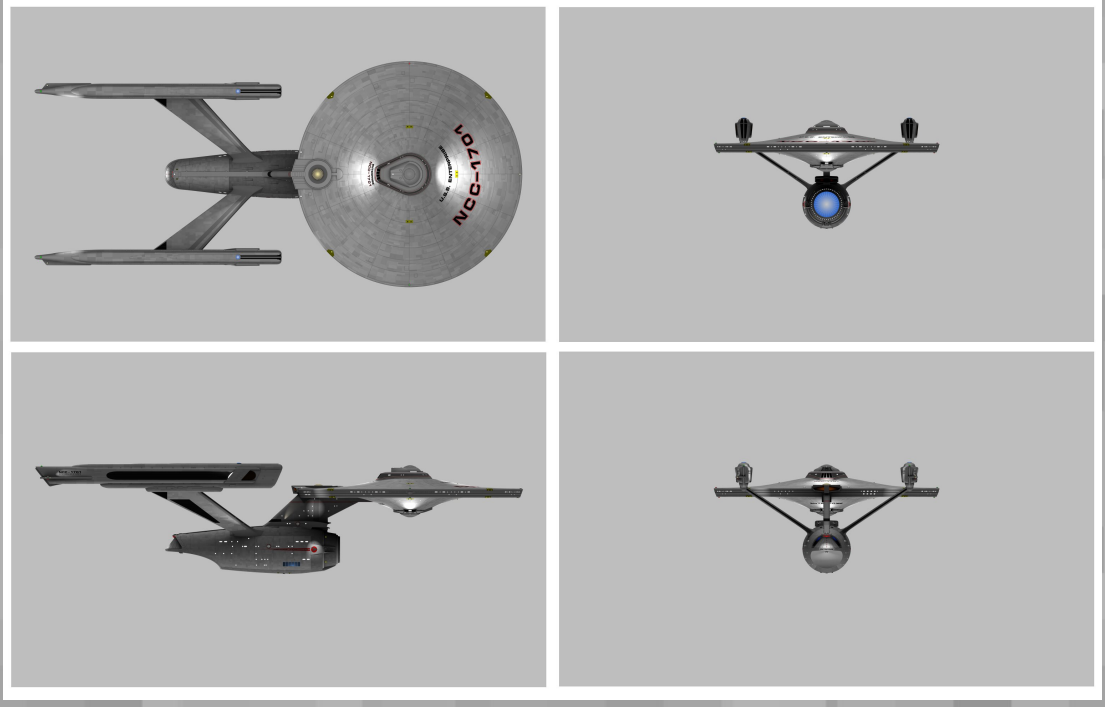
1 Tools used for the project:

Carrara 8.1 was used for this project as well as the following plug-ins.
EnhanceC by Digital Carvers Guild
ShaderOps by Digital Carvers Guild
Veloute by Inagoni
Paint Shop Pro 9 was also used for the management, creation, and manipulation of the texture maps. Paint Shop Pro 9 has both Vector and Raster capabilities as well as layering. These capabilities were very useful to manage a project with textures that have significant complexity. This article will not cover the work performed in Paint Shop Pro but instead will focus more on the Carrara portion of the project.

2 The primitive model (starting from the beginning):
This project was done by first starting with a completely empty scene. When constructing a major model (especially one that is VERY recognizable and has shapes which need to be in proportion), a very beneficial step is to build a simple (or primitive) version of the all the major components first. This process does many things to make the development of the rest of the model easier.

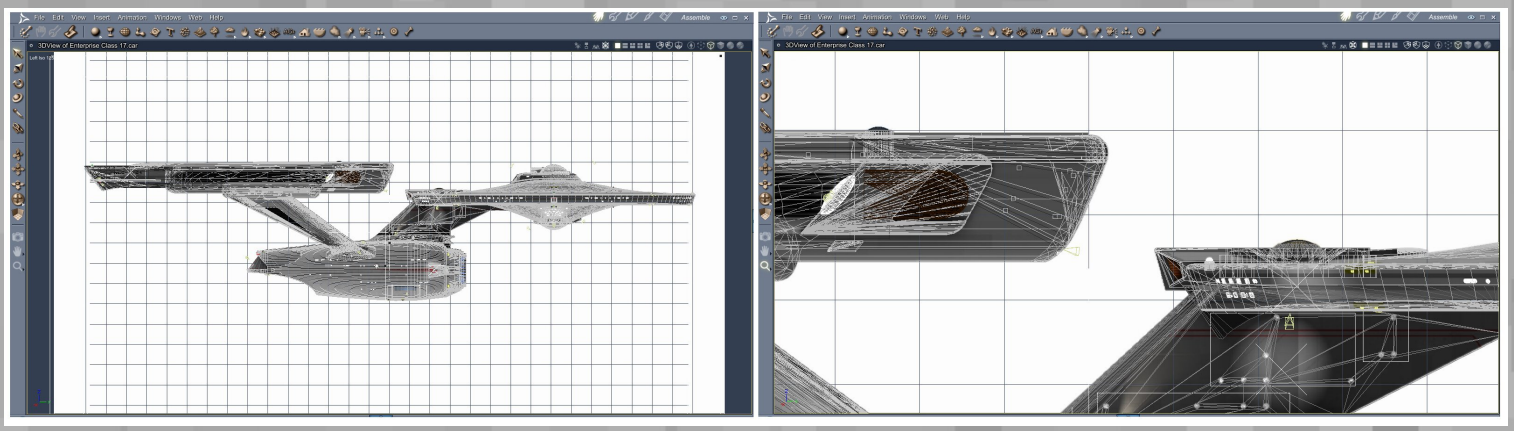
References were collected from many places in order to get proportions of the primitive shapes into order. One of the biggest and most important references for this project was a 1/350 scale plastic model of the TMP Enterprise. Having a well detailed actual physical scaled reference provided good information concerning many surface and geometric details.

There are some highly detailed isometric views of the TMP Enterprise which can be found on the internet. In order to utilize them, the images were resized and assembled into a set of jpegs which have the same pixel dimensions and are aligned geometrically to one another (the top of the ship in the front, back, and side images are all aligned, the bottom of the ship is also aligned, etc.).
The isometric images shown here are actual renders of the final model but are used as an example for this article.



These isometric images are then used as a set of backdrop images in Carrara's assembly room which can then be viewed from Carrara isometric cameras placed in strategic locations around the model. Care must be taken such that the rendering image settings have the same pixel ratio (length to width) as the isometric images. If this is not done, the isometric imges will be distorted when viewing them in the assembly room.

This system provides a modeling environment where components can be built and assembled with alignments to the isometric images in the backdrop. It allows for the creation of a model which will have excellent proportions (as long as the source material is also excellent).



It does require that the backdrop image be changed when changing the camera view. This is a little bit of a pain but it is well worth it in order to produce a model which is designed well. Getting things proportioned correctly in the beginning is a very important critical step to producing a model which will render with good results.

For practical purposes, such a setup utilizes top isometric, bottom isometric, front isometric, back isometric, and left side isometric cameras. Another regular 50mm camera (with the backdrop image turned off) is used to view and work around the model as it is built. Having the "working camera" without the backdrop view showing makes things much easier to manage.

The zoom property for all of the isometric cameras is set to the same value (in the properties tray). The physical locations of the isometric cameras are set to be oriented with the origin in the assembly room in two dimensions with the third dimension placing the camera 50 units away (X=50, Y=0, Z=0 for the left isometric – X=0, Y=50, Z=0 for the front isometric, etc.). All of the isometrics are then pointed to 0,0,0. The rotation of the camera is set to be aligned with the backdrop isometric image (this is only an issue for the top or bottom views). Alignments in the isometric views are done by changing the display to wireframe mode as needed. It is often necessary to zoom in on a portion of the model in the isometric view to check the alignment carefully with the backdrop image. It

is important to use the zoom tool instead of changing the zoom value of the camera (don't use the mouse wheel). Moving the camera or changing the zoom property will mis-align the model with the backdrop image which wrecks the entire function of the process.

These isometric views should not be confused with Carrara's standard isometric cameras always accessible in the assembly room but are instead additional cameras added and arranged.

The importance of constructing a primitive scaled model cannot be overstated. Having 3D reference points (or shapes) in the assembly room which can be used to position and construct the details of the model is very important. The need to have proportions and sizes correct becomes even more paramount when building a model which is very recognizable. If things are not aligned appropriately, there is a very high chance that it will be quite noticeable and such inconsistencies will either require reworking parts (which is a lot of unnecessary work) or may even result in a model which is not useable (just looks wrong because it will be wrong).

A model such as the TMP Enterprise is well known by a huge number of fans. This means that people know how this model should look and will recognize flaws instantly. As a good opposite extreme example, in the world of cartoons, building models to represent hand drawn characters or hand drawn machines is much easier because proportions and details fluctuate wildly. However, for a project like the TMP Enterprise where the model is very well recognized and known, such flexibility is not present.

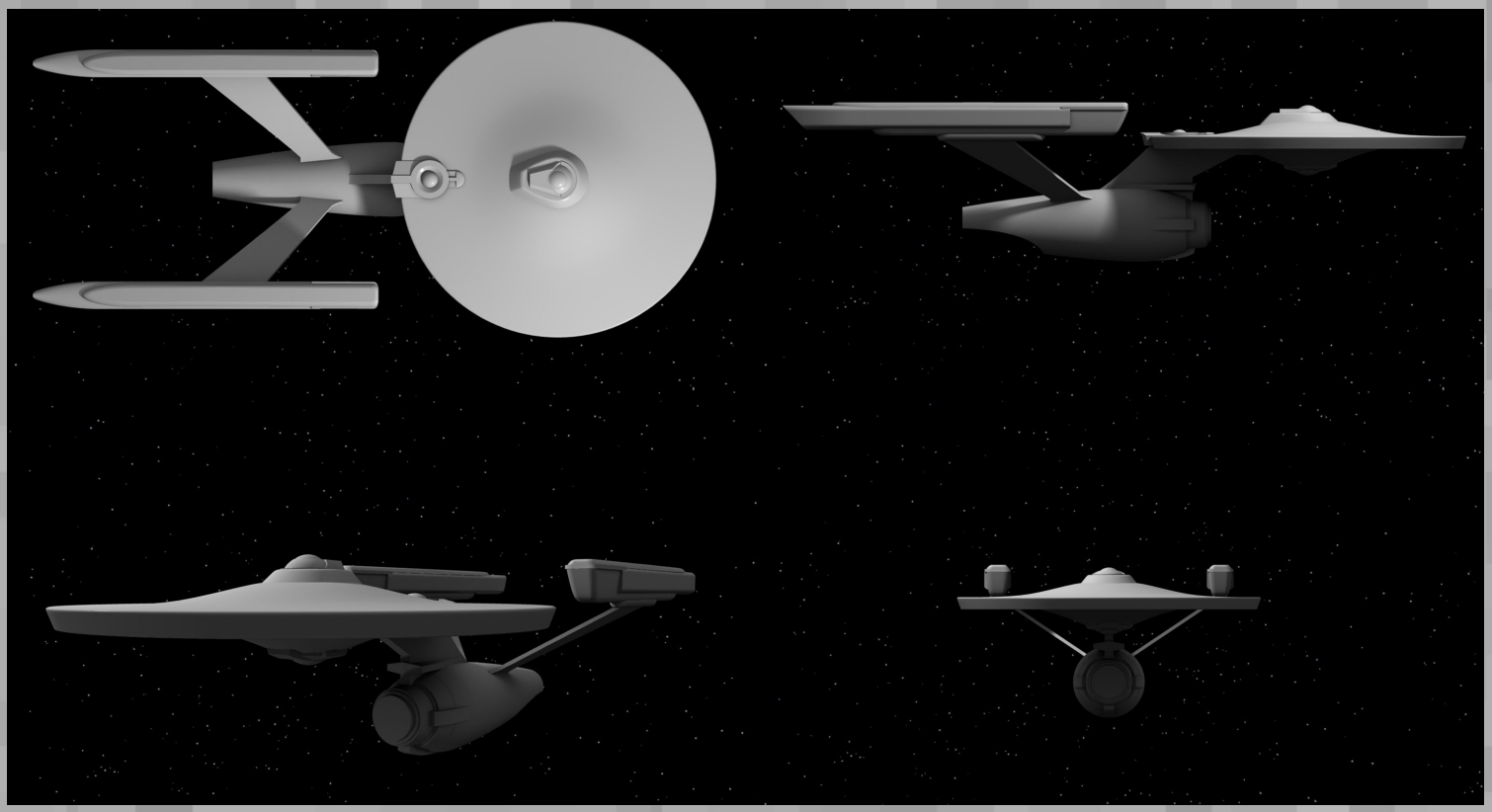
The TMP Enterprise has an enormous number of curved surfaces. In fact, there are very few flat surfaces anywhere. This increases the difficulty in creating the correct curvatures, intersections, and alignments because the geometry of this model is not "hardened" but rather curvy.

A second issue to note is that the surface details for this model are extensive. The number of lights is significant and the number of glowing "components" is also considerable. There are over 30 Carrara lights associated with the model (just for self lighting). There are also numerous "pilot" lights or "navigation" lights, glowing thruster ports, and lit up windows. There are also four domes which are glowing with a color gradient and their associated glowing surface components.

In addition to lit components, there are also a lot of surface lines, paneling, and lettering details in this model. Some of the lettering is quite small and requires very large texture maps to integrate it appropriately. Adding these small details is very often not clear when rendering but such details are perceptible enough to add a great amount of depth. A free downloadable and commercially open version of the Microgramma font was collected which was used for this model. This font version is inaccurate but still functional.

The paneling for this model is extensive and some interesting techniques were used to create it. Some of the panels are generated using procedurals directly. Other components were paneled by first using Carrara to render the texture maps (or components thereof) which are then projected onto the model using texture maps.

Projection mapping is used extensively in this model. No UV mapping was applied. The main reasons for this is because projection mapping tolerates manipulation of the mesh without screwing up the mapping and because it's easy to manage.



As can be seen in the renders of the primitive model, it came together with reasonable clarity. The primitive structure provided an excellent reference to build the more detailed components and also provided some experience concerning which components should be built first. It also provided clues as to which parts would be more difficult to build than others. If the challenges for the model can be assessed upfront, time can be spent planning how to model the components to

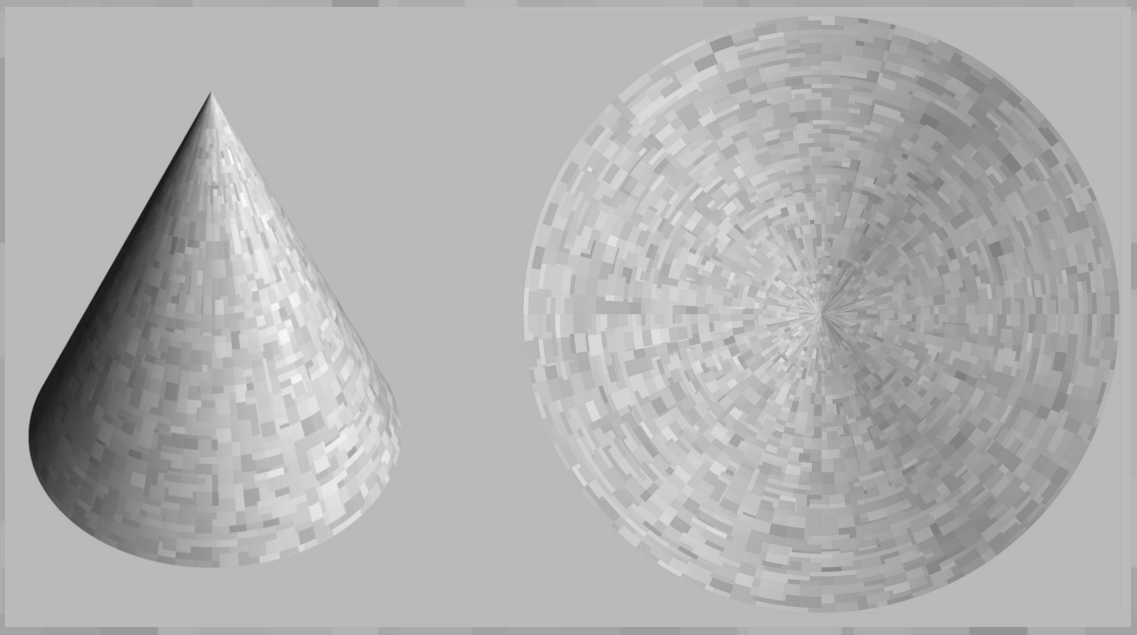
save effort and make the process easier.

One major change made later in the project was related to the first primitive structure. Based on the front isometric render, it was noticed that the secondary hull has a diameter that was too large (by about 5%). This was later corrected. Having the original primitive model aided in the resolution of that significant distortion.

Even though 5% may not seem like much, test renders which were being conducted during the construction process (when compared to other references) did not look right and a change was required. It was later determined that the front isometric reference that was used was out of scale.

3 Primary Hull (or the saucer section):
The primary hull has three texturing domains (top, bottom, and edge). The maps for the top and bottom were generated fairly soon because the surface details in the texture maps somewhat dictate where some of the smaller surface components should be placed or scaled.

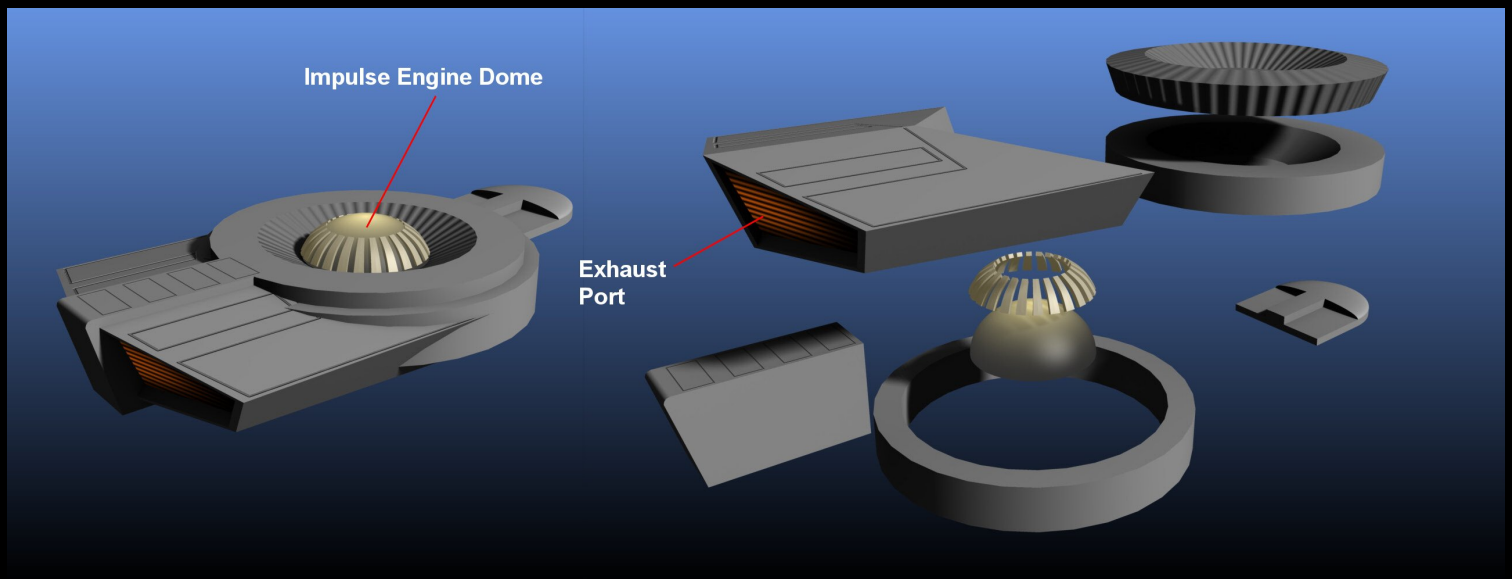
The paneling for the top and bottom was made in a separate scene. A cone primitive was rendered by texturing it mixing the squares function and the Trace function in EnhanceC's plug-in package.



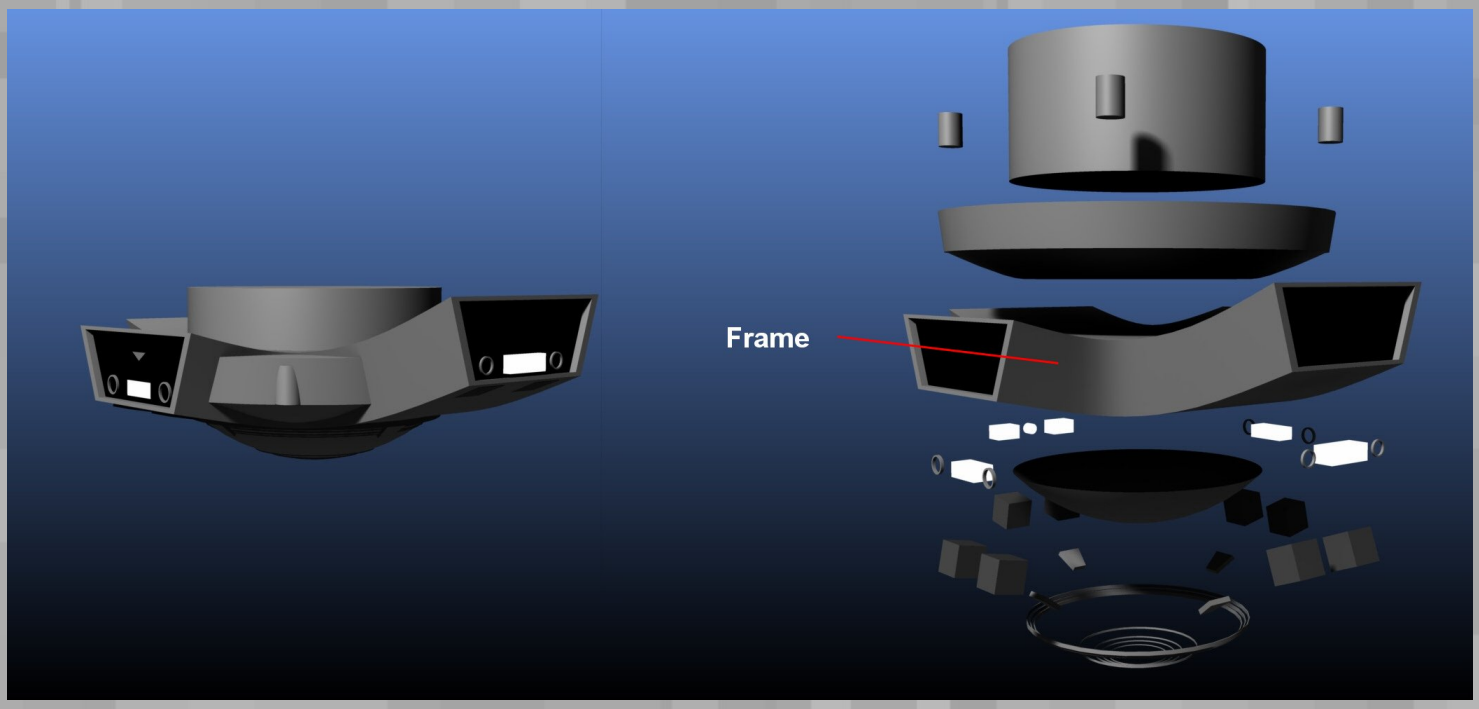
The cone was rendered with 100% ambient lighting and no other light source utilizing an isometric camera looking straight down on the cone. The backdrop was adjusted to have a single color which is essentially the average of the general color of the resulting panels. Adding a general color to the background provides a good edge color to the final product in case it shows when applied. The isometric camera used to render the cone is arranged such that the zoom of the camera fits the XY extents of the cone perfectly. The X and Y pixel size for the render are the same producing a square image.

The resulting render is a circle of panels with an average value in the corners. Carrara still renders the final result with a certain radial color gradient which is part of Carrara's inherent ambient lighting structure but it's not severe enough to cause a problem. Distant lighting can also be used but having a slight gradient in the map produces a little bit of realism so the result is functional.

It is not necessary to align the final render with the edge extent of the cone. In fact, the render could have been made in such a manner that the cone filled the entire camera view. What is important is that the cone edges cross the camera view edges. Otherwise, the backdrop will certainly show up when used for projection mapping.
Aligning the primary hull edge map (which is a cylindrical projection) with the top and bottom maps (which are flat projections) was tricky. The edge has tiny lettering which means that the edge map is quite large (10,000 pixels wide). The alignment process required some iteration as well as careful planning in Paint Shop Pro.



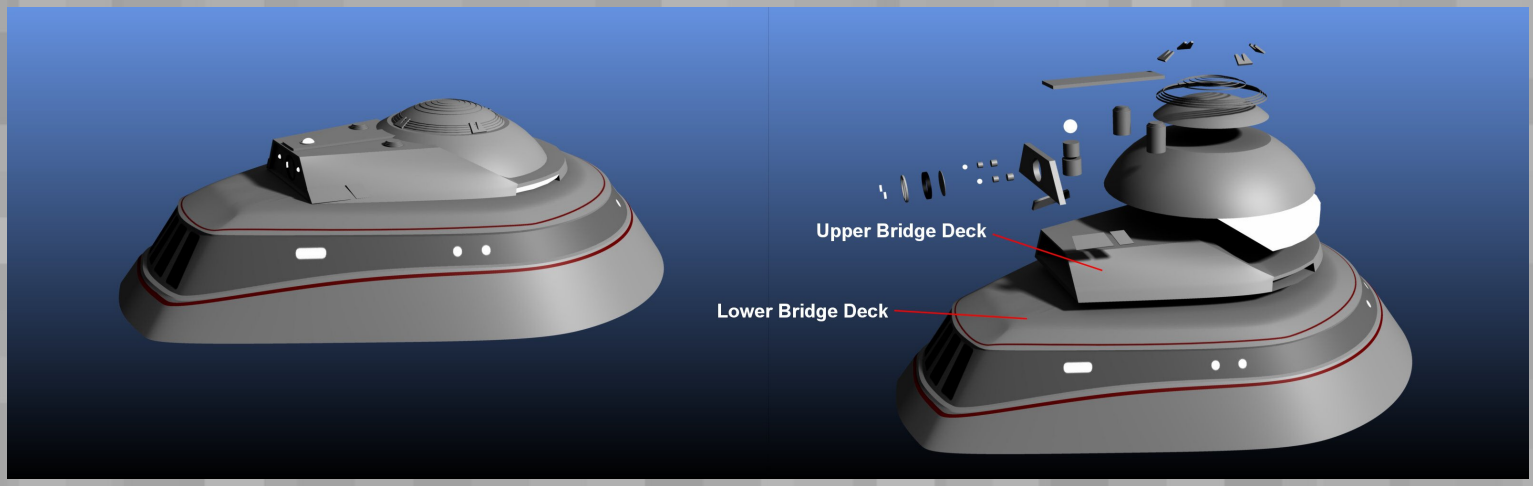
The impulse engine deck is not too complicated and has simple parts. A copy of the deflector dish was made and moved up to the impulse engine dome assembly. A new set of ribs for the surface detailing were created and an adjustment to the colors in the glow channel was applied. The general frame of the impulse engine deck is a vertex object with a separate shader domain applied for the glowing exhaust port. A procedural texture is used for the orange glowing lines in the exhaust port. The top bump is done through a texture map with a procedural applied to the ridges around the impulse dome.



The lower dome assembly at the center of the primary hull has about 35 pieces in it. The most complicated piece is the four channeled frame for the lights. The frame was created by using a simple smoothed vertex object.

There are several rings of surface bump in the central dome itself which were produced by building a very thin walled tube in the spline modeler. Duplicating and resizing several tubes provided the material needed to create the surface bump. The tubes were placed such that they barely protrude through the dome.

The "light sources" at the exits of the frame are just scrunched up cubes with a white glow. The actual Carrara lights are positioned a bit of a distance away from the surface of the primary hull in order to get the spread of the light to work on the surface in a more realistic fashion. Using range fall off and angular fall off set to 100% for these spot lights adds a significant amount of realism to the lighting.



The bridge assembly consists primarily of two tear drop shaped objects and two partial spheres. The two teardrop meshes were built using smoothed vertex objects. Windows were mapped using a top down projection along with the top red line detail. However, texture mapping the red line along the bottom was very difficult to achieve with a good result. Therefore, more vertices were added and an additional shading domain was put in to add the lower red line.

The process for mapping windows and creating the holes in the back of the lower bridge deck is the same as the one used for the secondary hull (see below).

3.1 Primary Hull Edge Windows

The windows on the primary hull are not part of the texture but are actual white glowing objects snuggled up to the mesh. This was done instead of painting the windows into the texture to reduce the number of large textures used in the model. However, it will be a good idea to paint these windows into the glow channel sometime in the future.

A “Snuggled” window for the purposes of this article describes an object where one face is sticking out of a surface to show itself but it is as close to the surface as possible in order to not look like it is sticking out (it’s a fake window). There are many problems associated with "Snuggled" windows. One of them occurs when the model is re-scaled. Commonly the windows do not scale well because they sometimes get folded underneath the mesh they are set against given they are so close to the mesh they are snuggled up to (the scaling process is not accurate enough to retain full geometry). There are other issues associated with snuggled windows concerning lighting. Therefore, painting the windows into the texture in the future is a good idea.

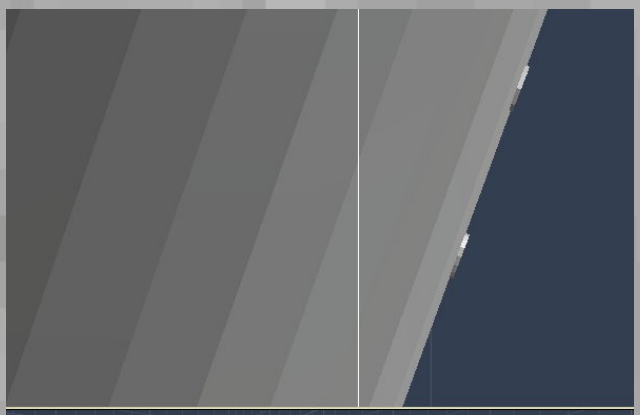
These window objects have shadows turned off in order to enhance the illusion that they are flush with the surface.

The process to align the windows takes a little bit of time. First, the texture around the edge of the primary hull needs to be finished and applied so that the shapes can be aligned with the lines in the texture map. Then the process of placing the windows can proceed.

There is lettering along the primary hull edge which is very small and it requires that a very high resolution map be used. As a consequence, the original spline object in the primitive model is replaced with a smoothed vertex object. This was done in order to make the selection of the polygons for the texture domains easier. The process to create the vertex object was to first convert the primitive spline object using a very low surface fidelity and a low accuracy. This resulted in a vertex mesh which had a low vertex count making it easier to manipulate.
That vertex object then had several modifications made to it. The edge polygons were originally triangulated (source from the spline modeler) and the triangulation was undone by unlinking the diagonal vertexes. When applying the smoothing operation, the triangle edges induced lines across the faces of the edge polygons which severely disturbed the flatness in those areas requiring their removal.
The top part of the mesh was then rotated so that the vertices connecting the top to the bottom became straight vertical lines. The smoothing option was applied and the XY scaling of the mesh was adjusted so that it produced the original shape as the primitive spline object. Shading domains for the top, bottom, and edge were then created.

Once that was completed, the texture maps for the edge were generated and applied. This produced the lines along the edge which were needed to arrange the windows and the thruster panels.

There are two elevations of windows along the edge (upper and lower). A single circular window and a single oblong window are first placed in the front of the primary hull "snuggled" up to the surface at the upper elevation, and turned to the appropriate angle. A second single circular window is placed at the lower elevation in the same manner. Later, squares are also placed in a similar manner to build the square set of windows which will eventually be placed in the back starboard corner.



Each individual window is then re-grouped. This is done in order to reset the window object with a new coordinate system which starts with no rotation. The hotpoint of the regroup is then moved to the center of the primary hull. The number of significant digits beyond the decimal which are displayed in the properties tray is set to five for this operation in order to get the highest level of accuracy possible.

The system of having the window objects regrouped into a new coordinate system allows the regrouped windows to be moved around the perimeter of the primary hull by only changing the rotation angle in the z axis while maintaining the orientation of the window to the primary hull mesh.

There are eight groups of windows around the primary hull edge. Six of these are identical. The back two are unique.

Initially, a set of oblong and circle windows were arranged to make up a main window group (the original circle and oblong window regroups are duplicated and rotated to create the window set). This set is then grouped, the hot point moved to the center of the primary hull, and that group is then duplicated seven more times rotating 45 degrees each time. All eight groups are then grouped again and the group is rotated 22.5 degrees.

At this point, the edge of the primary hull has eight sets of windows which are identical and arranged 45 degrees apart. It is easier to align all eight sets and then delete the two unneeded sets at the back than to align the needed six sets independently.

The back two unneeded groups are deleted and replaced with new groups made in a similar fashion which have different window arrangements. The result is that all of the windows along the edge are placed in the correct positions with a high level of accuracy.

A similar process is done for the thruster ports (yellow glowing squares and circles).

It should be noted here that Carrara's trigonometric algorithms are of poor quality when making the rotations. While five decimals of accuracy are used to start the process, the trigonometric functions in Carrara distort the duplication process significantly (down to the second and sometimes into the first decimal digit). This is an unfortunate aspect of Carrara when performing duplications (especially when Carrara is supposed to be a 64 bit code). The result is that some of the windows may not be perfectly aligned to the mesh and may need adjustments.
Similar issues exist in the vertex modeling room when performing subdivisions on single lines. The subdivided newly created point is commonly distorted off of the original line it was created from.

3.2 Final Details:
The rest of the details are small navigation lights which are constructed from primitive cylinders and spheres. Also, there are phasers which are placed on the surface which are again just primitive spheres aligned with the texture map. There is also a docking port door on the back of the bridge assembly which is a scaled copy of the docking port door found on the torpedo deck and secondary hull.

4 Main Pylon:
The main pylon is constructed mostly from two parts, the central support structure and the torpedo deck. The central support structure is a spline object. It is the only piece in the whole project where the holes for the windows are explicitly modeled. The process to build this piece once again utilized the reference isometric left image and the basic shape was drawn with circles for windows combined into a compound shape. This shape was then cut into three cross sections (the first, middle and last cross section). The first and last cross sections were modified to provide the crown or curvature of the main pylon back edge coupled with a gentle curve at the front.

Texture maps for the central support structure were made for the surface grooves (bump channel) and for the red lines which are along the top edge of the main pylon. Glowing white cubes are put inside the main pylon to provide light for the windows.

The paneling is done procedurally and the red lines are mixed in using another map.
The torpedo deck is built as a smoothed vertex object. This is required given the complex curvatures coupled with the openings in the front. The hole in the side for the landing dock was made using a projection map in combination with the alpha channel. Additional maps contain the lettering and red circles around the landing dock

and the windows in the glow channel. The Port and Starboard sides are independently mapped given that the text had to be flipped appropriately. Procedural panels are used here and are mixed using a map for the lettering and red lines.

The process for mapping windows and creating the hole for the docking port for the torpedo deck is the same as the one used for the secondary hull (see below). Once the hole is made, a small set of docking bay doors (with side lit panels) is built and placed precisely behind the hole. Two Carrara spot lights are added to shine onto the door from either side.

The rest of the details are made with spline objects stacked and aligned appropriately.

5 Secondary Hull:
One of the main BIG parts of this model is the gigantic glowing blue deflector dish! The glow is a very simple texture using Veloute's 2D gradient function which made this texture SUPER easy. The mesh for the deflector was made by taking a primitive sphere into the modeling room, converting it to a vertex object and cutting off the unwanted section.

To create the main mesh for the secondary hull, it was decided to start with a spline object which would then be booleaned appropriately. The first attempt produced results which were surprisingly good. As the project proceeded, it was realized that a more appropriate version of the secondary hull mesh was needed with smarter and better booleans.

The "source" spline object used in the first attempt needed to have a more appropriate shape. The original had curves and extrusions which were the wrong shape and were incomplete. The rebuilt "source" spline object had the curves for the tail incorporated directly (pre-boolean) which reduced the number of required boolean procedures and created a much smoother surface. It was also possible to build cutting surfaces which made the upper area of the landing bay easier to manage.

It's always a good idea to keep copies of the "cutters" and copies of the original objects that are used for boolean operations because there's a VERY good chance that a boolean operation will need to be redone. This is a usual practice because several attempts are usually required for a successful boolean operation to be achieved. All of the original parts (pre boolean) were saved which made a second attempt easier.

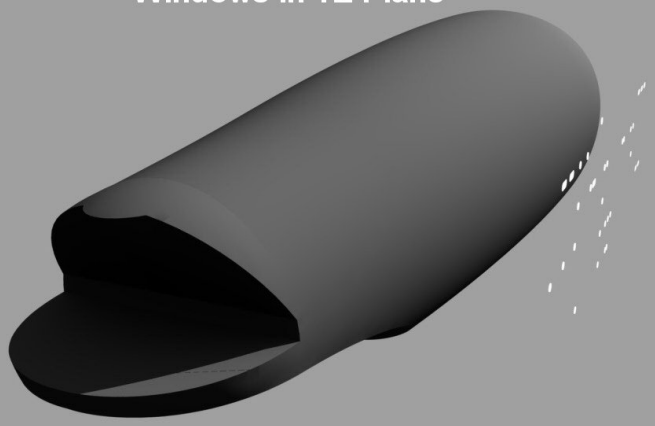
A few changes were made to the source spline object to better account for the needed geometry for the deflector dish array and also to make space for the lit ring around the deflector dish. The result is what is represented in the final product (with some minor modifications made directly to the mesh to punch the four holes into the back).

The ring of lights around the deflector dish was added and that made the model really pop! The ring is an arrangement of duplicated spline objects. This makes it possible to change the shape of the one single spline object master to adjust the look of the entire ring with one modification (which was done a few times to get the final look).

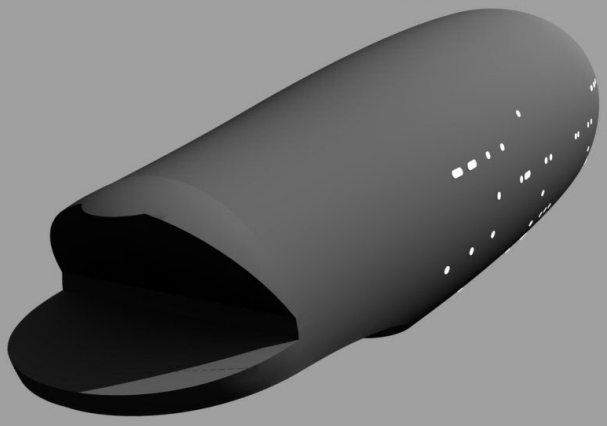
5.1 Secondary Hull Windows:
In order to create the windows on the secondary

hull, a disk was first created as a spline object which matched the size of the windows already built into the main pylon. Then an oblong window was made which matched the relative size of the circular window. These windows were then used to render a texture map of the windows which would be projected onto the side of the secondary hull. The easiest way to create the map for the windows was to render it in Carrara.

Windows in YZ Plane

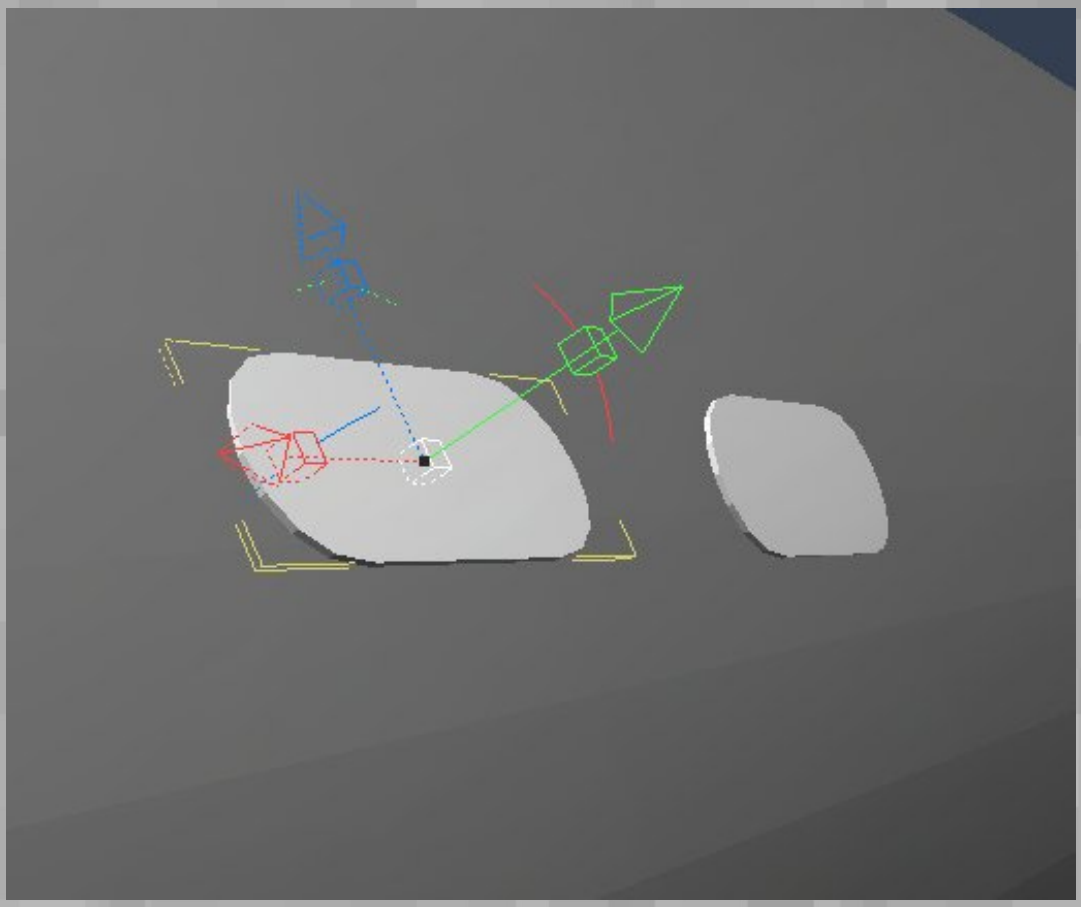


Windows "Snuggled" up



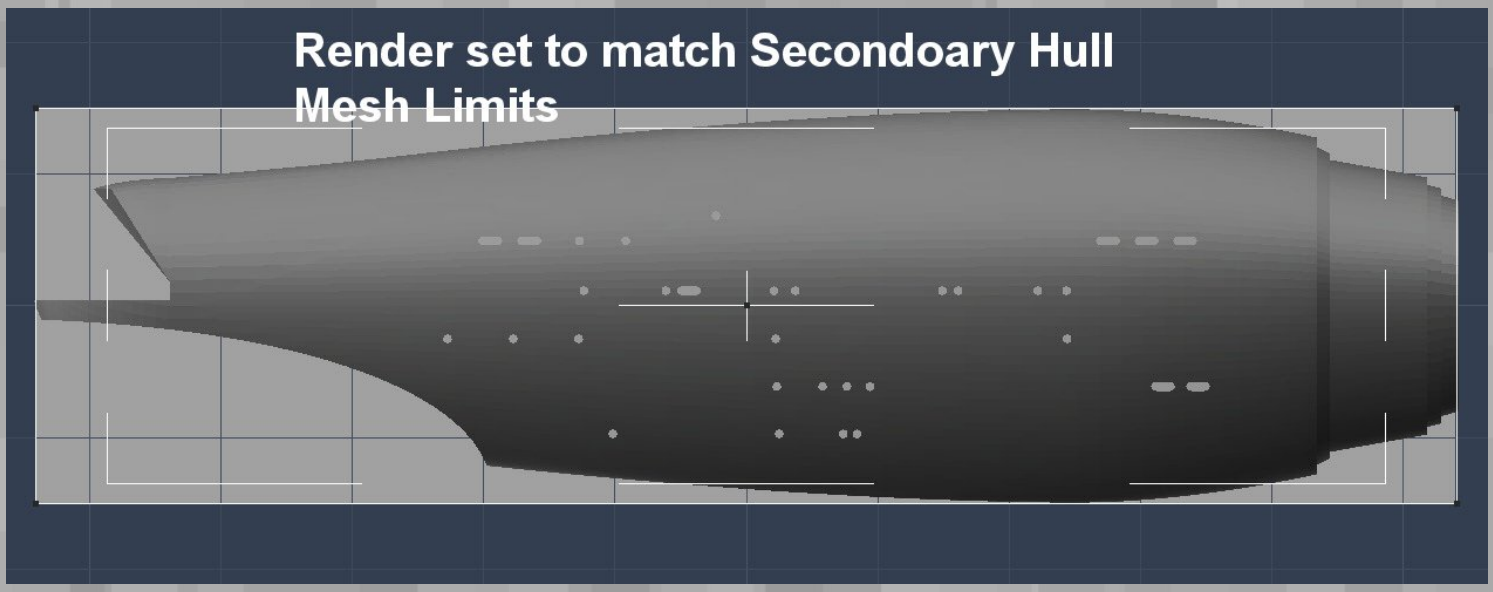
First, the two kinds of windows are positioned in a YZ flat space between the secondary hull and the side isometric camera. The isometric camera with the appropriate reference backdrop is used to determine the window placement. The windows, the camera, and the secondary hull mesh is saved to a new file to keep things separate so that the texture map for the windows could be modified and re-generated if needed.

In the new file scene, each window is then "snuggled" up to the secondary hull. The procedure for each window is essentially the same. First, move the window to the hull in the X direction making sure the center of the window is just showing. Then, using the universal manipulator, rotate the window along the Z axis first so that it's aligned with the hull. Then, rotate the window in the Y direction using the universal manipulator until it is appropriately laying flat onto the surface. The universal manipulator is a VERY useful tool to get something aligned like this.



The windows have a small thickness. This is very useful when doing the positioning because it can be seen where the hull is cutting through the window. Once the window is placed, the thickness is scaled to zero. Scaling the thickness to zero is important because it is undesirable to have the edge showing up in the map.

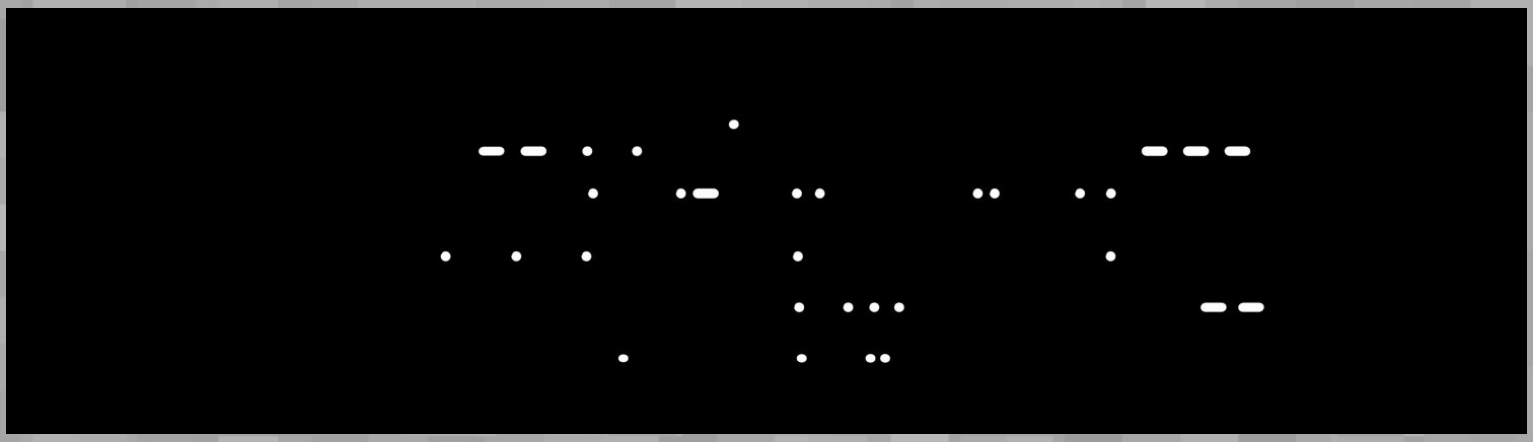
An isometric camera is used to render the window map. The camera view is aligned with the mesh of the secondary hull by adjusting the camera zoom in the properties tray and adjusting the final rendered image dimensions in the render room. This is done so that the limits of the render will exactly touch the four extremes of the secondary hull mesh (top, bottom, left, right). This will then produce a final product that can be flat projected onto the surface of the secondary hull and produce the correct result.



The windows are textured with a value of 100% in the glow channel. Then, all the lights are turned off, the background is set to black, the secondary hull is set to invisible, and the windows are rendered. The result is a black and white image where the only white objects are the windows.

This “window glow map” can be used in the glow channel for the secondary hull when projecting a texture onto the mesh to get white glowing windows. It is better to use the window glow map as a mixer mixing values of 100% and 0%. If it is used this way, the lights can be turned off easily by changing the 100% to 0% with a single slider in the texture tree rather than deleting the texture map from the tree.

If the lights are turned out so to speak, black windows need to be added to the color texture maps (which can easily be done given that the map for where the windows are can use the exact same map for the glowing windows). Using the window glow map to create black windows in the color maps is an exercise undertaken in Paint Shop Pro and is not explained in detail here (in short, the window glow map is used as a mask on a filled black raster layer which is then composited into the rest of the color map layers).



Rendering the windows as they are "snuggled" up to the primary hull will produce a final product that when projected onto the mesh will result in the correct window shape. A flat projection of an oval onto a curved surface will result in a round window if the original source to create the oval was a disk actually snuggled up to the original geometry. In other words, if you take a picture of something from an isometric point of view and then project it back in the exact same way, it will project an image onto the curved surface to reproduce the original shape. This is the function of placing the windows onto the surface of the secondary hull and rendering the window glow map (so that the result will have windows with the correct shape on the curvatures of the mesh).

5.2 Other texture details:
The detailed ridge lines are painted in paint shop pro and then projected onto the model in the bump channel. Veloute's filter function is used to anti alias the map which produces a clean and smooth result.

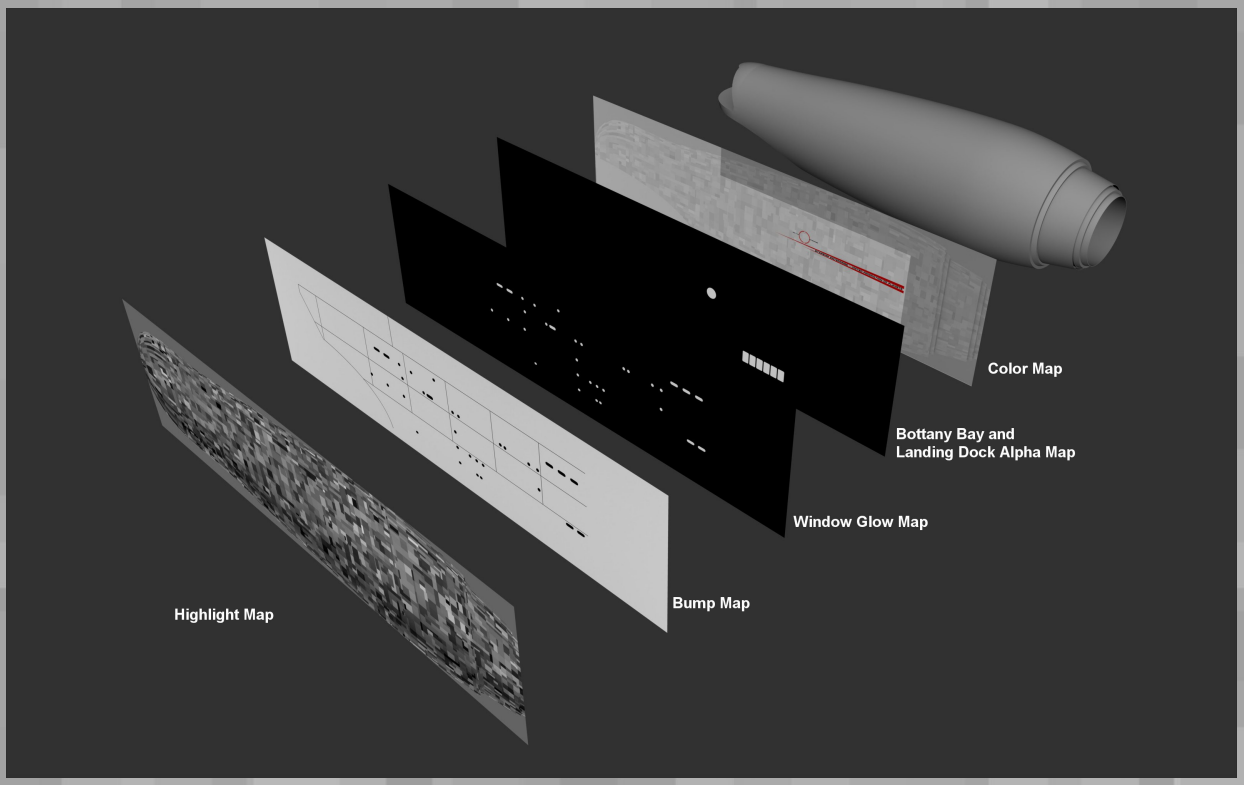
In order for the holes for the botany bay and the landing dock to be "cut", the same technique used for the windows is used to generate the map for the holes. The map for the holes is mixed into the alpha channel producing holes in the mesh without having to actually model them.

White walls were put inside the secondary hull with a blue glowing bulb light to provide the blue glow for the interior of the botany bay.

The lettering and red lines are painted in paint shop pro into the color maps.

The panels are generated using an isometrical render of the original spline source object used for the primitive model and rendering the panels using procedurals. This produces panels which wrap themselves to the shape of the primary hull with a good dispersion and the appropriate curvatures. The lighter and darker areas are created by overlaying vector shapes in paint shop pro on a partially viewable layer.

Two versions of the secondary hull side projection maps are created in order to reverse the lettering for the opposite side of the secondary hull. The image used for the paneling is also vertically flipped in order to get rid of "mirroring" along the top and bottom ridge lines.



5.3 Final Details

The deflector clamps were modeled using a smoothed vertex object. It was some work to get the curves to align with the secondary hull. However, the shapes are not finicky and getting a good fit was fairly straight forward using iteration. The remaining detail parts for the clamps were fairly simple objects to build.

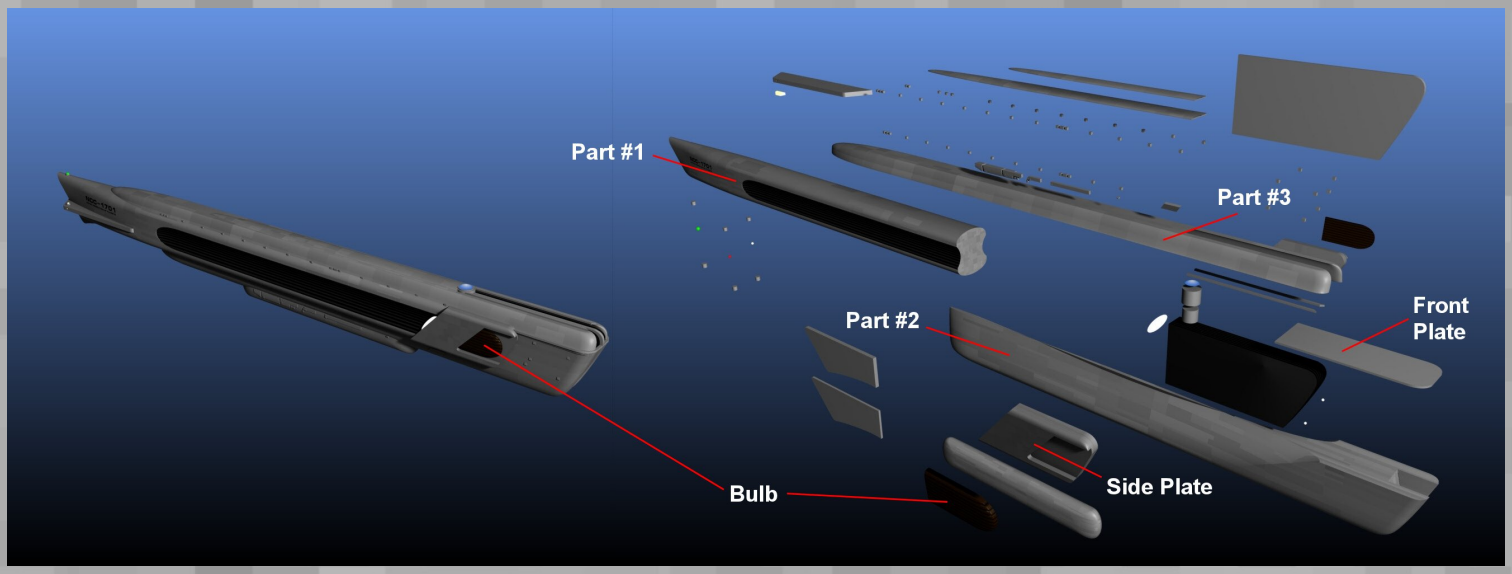
Maps were painted in paint shop pro to add the emblem and the other painted shapes found in the clamp components.

The landing dock doors are placed behind their mapped holes in the sides in order to complete all of the structures which have penetrations into the secondary hull.

A few more surface detail pieces, a projection map and the associated shader domain for the "ENTERPRISE" lettering on the tail, some navigation lights copied from the primary hull, adding a couple more shading domains for the lighter colored rings on the front and poof, the secondary hull is complete!

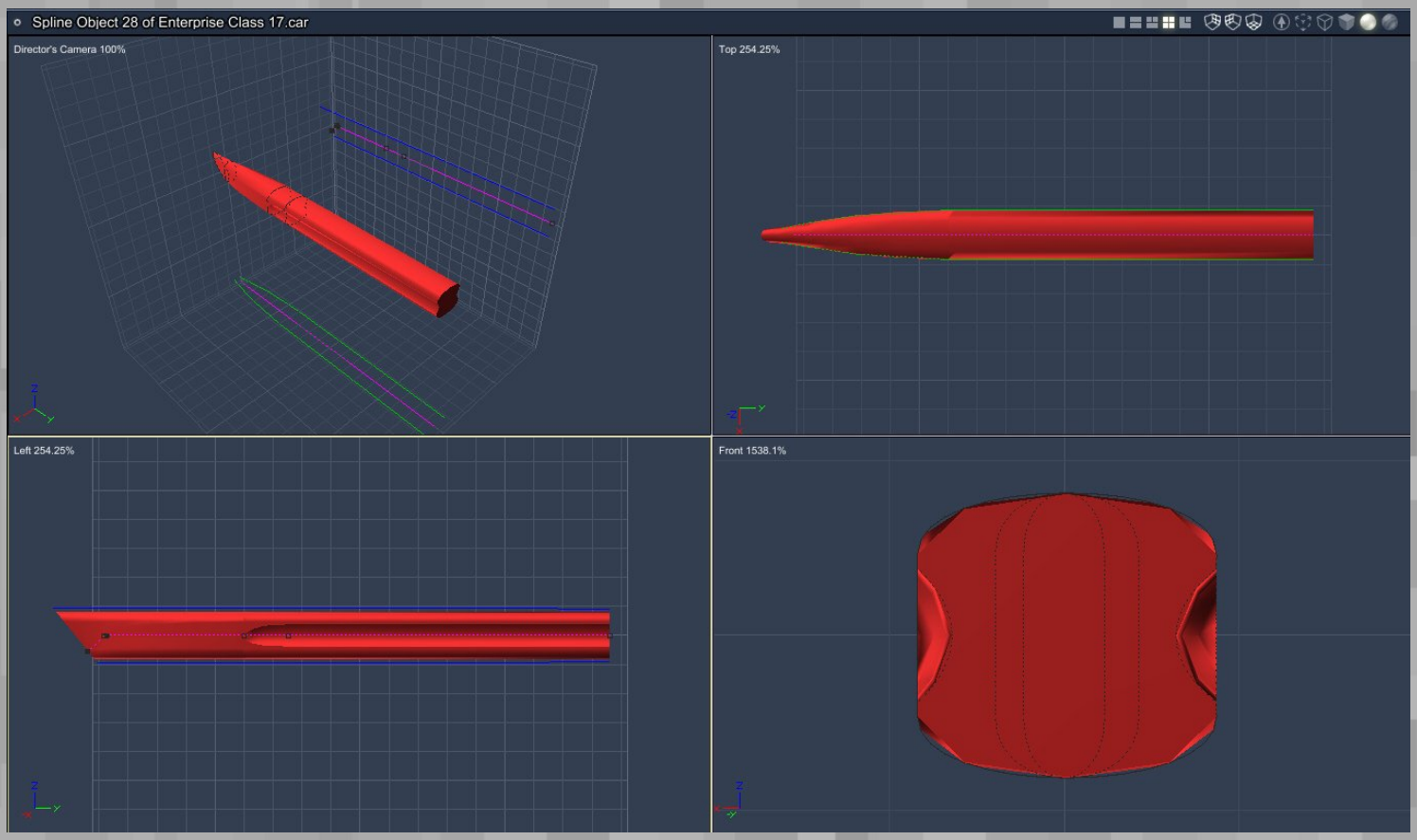
6 Engines:
A major challenge for this model was to manage the shapes of the engines. It was assumed that the curved surfaces of the sides of the engine would be a difficult surface to model when coupled with the unusual shape at the very back (aft section) of the engine. A lot of time was spent reviewing the plastic model to determine the best approach. In general, there are three shapes which comprise the main body of the engine.

Part # 1, There is a shape starting at the back which contains the side curves. The front of this shape terminates at a smaller side plate which has a flat spherical object in it (called the bulb in this article).
Part # 2, There is a second piece which comprises the main body of the bottom of the engine starting at the front and going back behind the engine mount.
Part # 3, The top edge curve of the engines uses a piece that is separated from part 2 by a plate in the nose section and it cuts naturally into part # 1.



There are several smaller pieces which make up the surface details (the side plates, the engine mount, the separation plate between the two pieces in the front, the front black fill piece and several other sundry and smaller components). Parts 2 and 3 were not particularly challenging to construct in the spline modeler. Part # 1 is the most difficult as it starts aft with a flat surface at an angle, comes forward, and then has the two complex inner and outer surface curves on the sides.
In order to construct part #1, a spline object is used. A pipeline extrusion method was employed with careful manipulations. It is possible to terminate a spline object with an angled surface aligned with

straight components along the rest of the mesh if it's done carefully. It can be done by setting the extrusion method to pipeline, moving the sweep path such that the cross section is angled to the rest of the mesh, and then bringing in the sides with the sweep envelope (using the “free” option). Then, with some struggling with the profiles and with some appropriate node smoothing, part # 1 can be created. The result is a little rough but the textures cover up the discrepancies and it works.



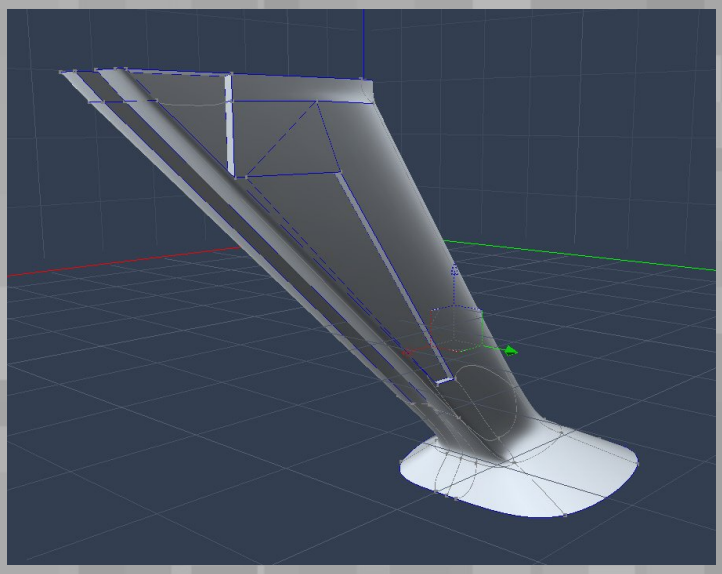
There are two additional small and thin curved pieces along the top of the engines. These spline pieces were very simple to make. A copy of the deflector dish without the ribs for the "crystal" dome and two cylinders for the base were added along the top edge. After some review with the references, it was realized that the crystal dome was too far forward in the primitive model and that the cuts in part # 3 needed to come back further. These were easy modifications to make and were fixed with almost no effort (fortunate!).

There are two "fins" along the back of the engine. One is a horizontal shelf and one is a vertical piece. The vertical piece is a straight forward spline object. It was duplicated and shrunk a little bit, and the copy put in slightly off center to the original to provide a small amount of additional detail.

The horizontal shelf is a little more tricky because it has holes in the back corner on two of the outer edges. This isn't too difficult to build with the spline modeler using five cross sections. A cube is added inside the fin with a yellow glow to match the references which creates the fin thruster ports.
The surface navigation lights (which are copies off the primary hull) are added. Additional Carrara lights which illuminate the NCC-1701, United Federation of Planets lettering are added. Two glowing spheres for the light ports on the front of the engines are added. This is a small detail which is on the 1/350th scale plastic model and it shows up in the movies. It's a good idea to have a light source identified with all self lighting as much as possible in order to add some realism and some continuity. The result of a model which has some physicality and function is usually better and comes across with more punch.

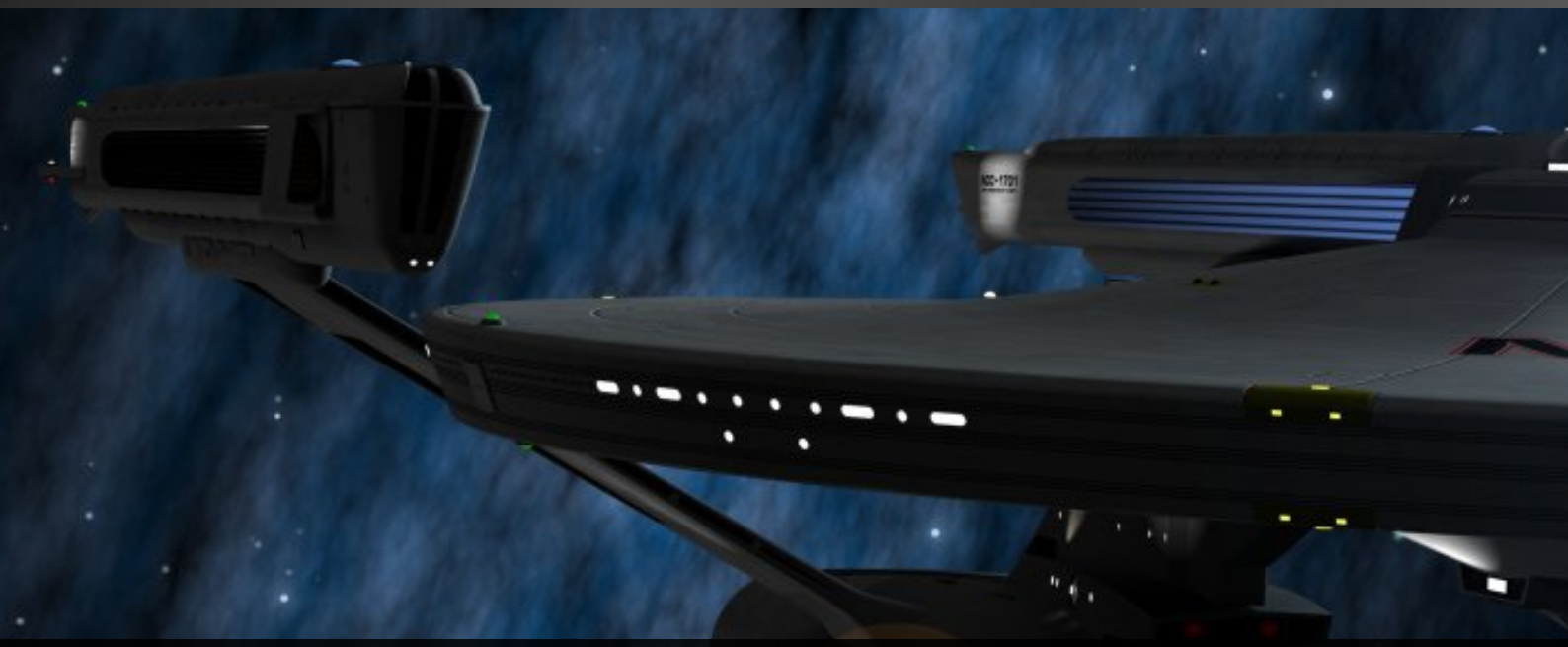
Additional Carrara lights were then placed on the engines for the illumination of the back of the landing bay, and the lights which are pointed at the primary hull.
The rest of the engine is fairly straight forward. The smaller surface details are generated using simple spline objects or primitives.

7 Engine Pylons:
A lot of work went into the engine pylons trying to come up with a Carrara solution that would produce a mesh which is acceptable. The simple primitive made at the beginning of the project utilized a spline object and the result had essentially the appropriate shape. The final product would need to follow a similar geometry.
Three attempts were made at creating a model which was acceptable. A final third solution worked which is described here. The surfaces of the pylons along the outside and inside are flat which makes things much easier to manage. The engine pylon was started with the primitive spline object from the primitive model. The spline object was converted to a vertex object by reducing the surface fidelity to 10 and using a low accuracy. A few vertices were added in the appropriate places and the final product used the smoothing option to generate the final piece.



There are clear discrepancies between the actual design and this solution but they are small and are not too much of a problem.

Mapping the shaders to the pylon using projection mapping was easy. The "fill" piece which appears as the black internal vent components is modeled using essentially the same mesh as the original pylon with some minor modifications to keep it from sticking out of the external pylon mesh. The "fill" shows up on all for sides of the pylon so it's an important piece to mate with the original pylon structure.



8 Lighting:
All of the remaining Carrara lights were added and adjusted for their appropriate locations and desired effects. All Carrara light sources are separated into a group in the model where they can easily be found and accessed. This is an important aspect of the organization of the model because all of the effective distances the lights shine will need to be modified if the model is scaled.
As an example, if the model scale is changed from 100% to 40%, the distances all of the lights shine will need to be reduced to 40% of the original. Carrara does not scale the distances lights project when scaling objects that they are grouped with. Having all the lights organized in a convenient group in the model is very useful!
All of the lights have falloffs to 100% with soft shadows applied. Spot lights (which are the vast majority of the lights used) also have 100% angular falloff. This usually required that the brightness of the lights be above 100% in order to get an effect which was desirable.

9 Conclusion:
The time it took to build this model from scratch was about 70 hours. This includes all of the time required to build the textures. The final resulting product is geometrically accurate and has a reasonable amount of surface detail to produce renders which have depth and value. The surface lighting also produces practical results and does not overpower the model. Texture mapping of the glowing components (windows and thruster ports) for the primary hull is a good idea in the future so that scaling the model will not impact how the windows may or may not show up.

In addition, the highlight in the surface textures

could be modified to reflect the paneling more. This has already been done to a certain extent but the effect should be increased. This is not a difficult issue but it does increase the number of texture maps in the model which is already quite texture heavy.

Over half of the work for this model was actually spent on the 2D work for the textures (a significant article could be written on the Paint Shop Pro work done). The 2D skills of the artist and the power of the photo manipulation tools available can make a significant difference when creating a product like the TMP Enterprise. A tool which has layers, vector manipulation, and raster manipulation is very useful to manage, generate, and adjust complex texture maps. This is particularly true when lettering, lines, and shapes are involved in the map.

Only two boolean operations were performed in the creation of this model. Boolean operations are kept to an absolute minimum because they commonly create significant difficulties and poor results. Experience with booleans and the manipulation of the source objects can help in producing results which are acceptable (but there are no guarantees!). Given these facts, it is very lucky that an acceptable model could be realized without a HUGE amount of rework from the boolean operations (very, very fortunate).

Overall, this project has been a reasonably successful Carrara project and has produced results which should render some great artwork. As always, the value of a final render is in the eye of the beholder.

The Gallery

Bill Ladson


BullNose Fighter
PKOPE
Peace Keepers of Planet Earth


War Hound Amphibious Assault Vehicle
PKOPE
Peace Keepers of Planet Earth

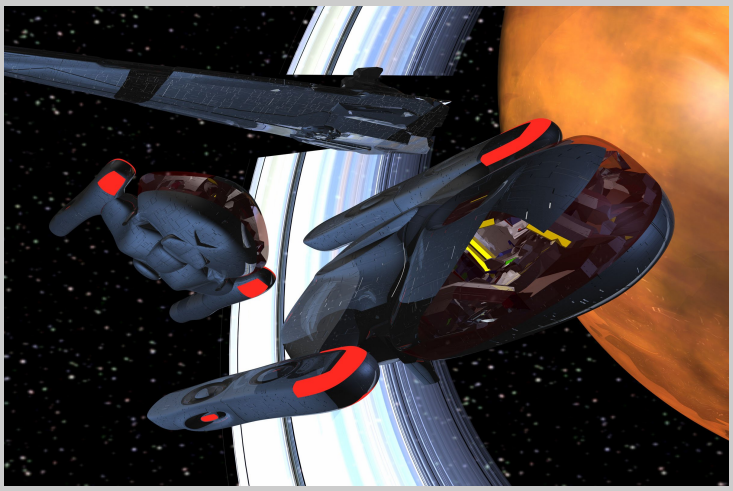

War Raven Heavy Carrier
PKOPE
Peace Keepers of Planet Earth

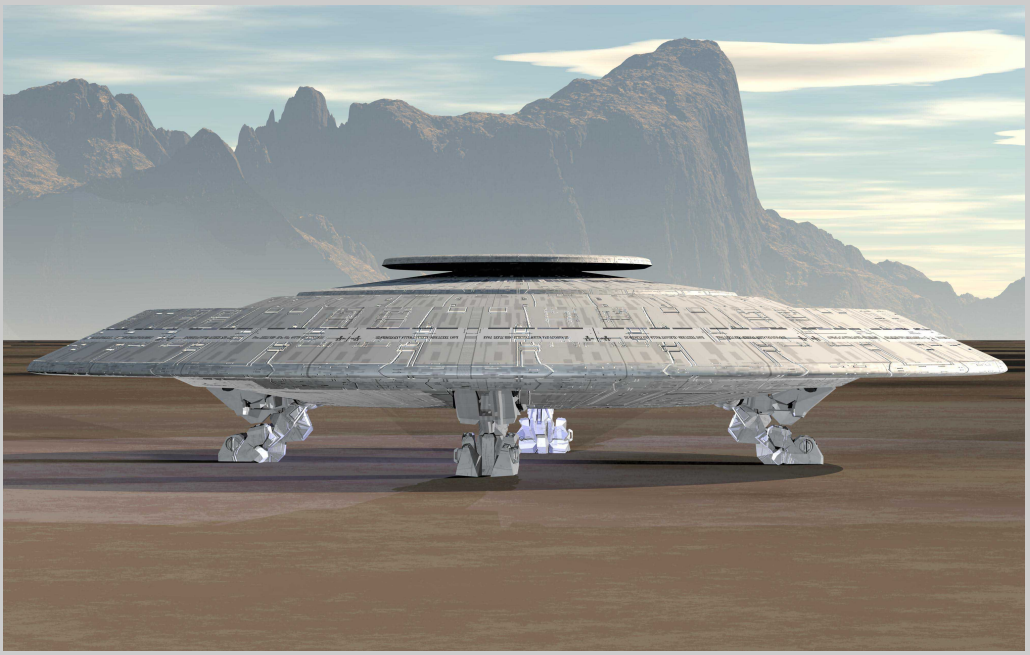
Base Launch Hiatus

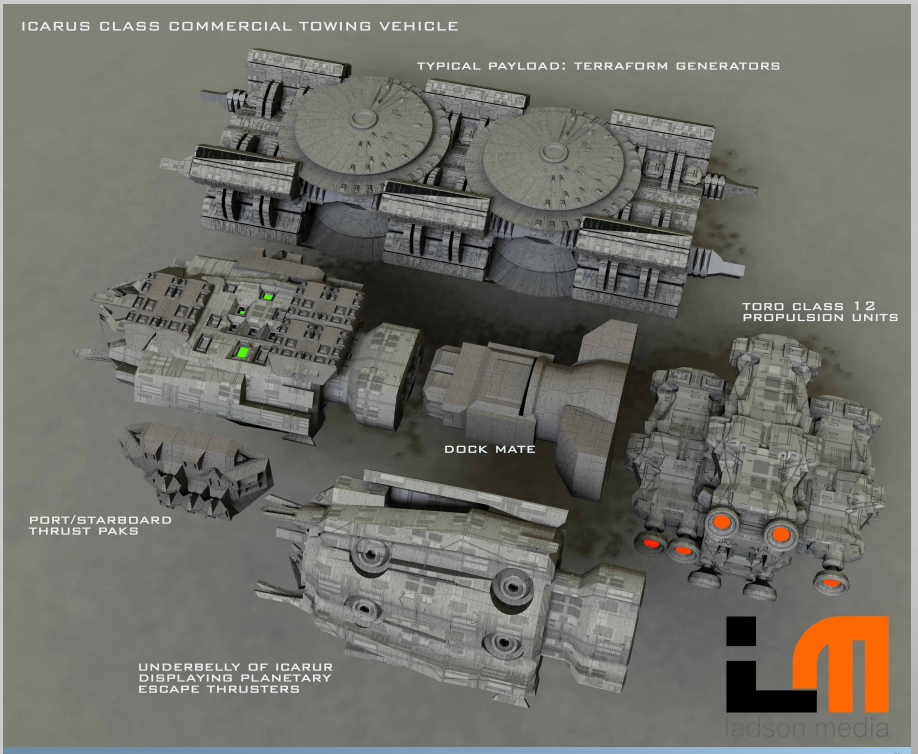

BRUISER CLASS TOWING VEHICLE

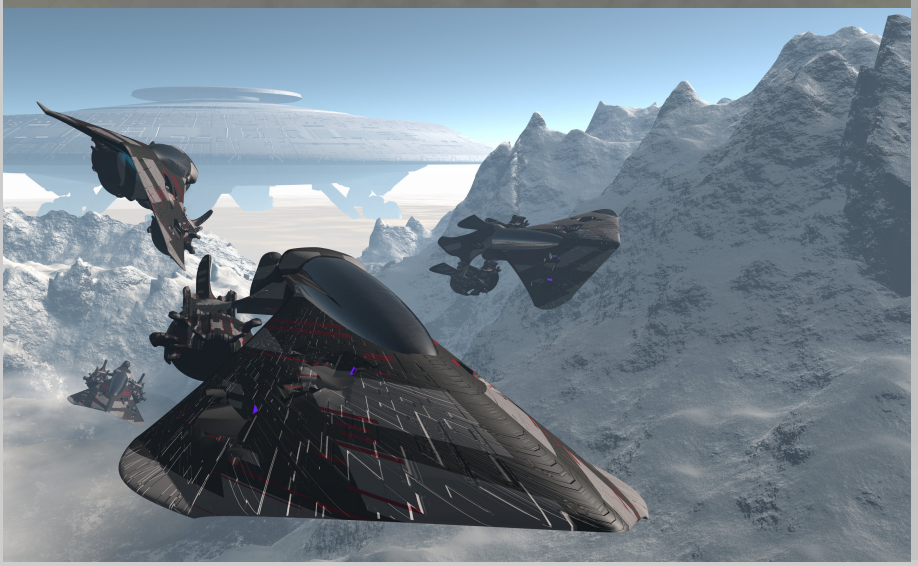

BILL LADSON

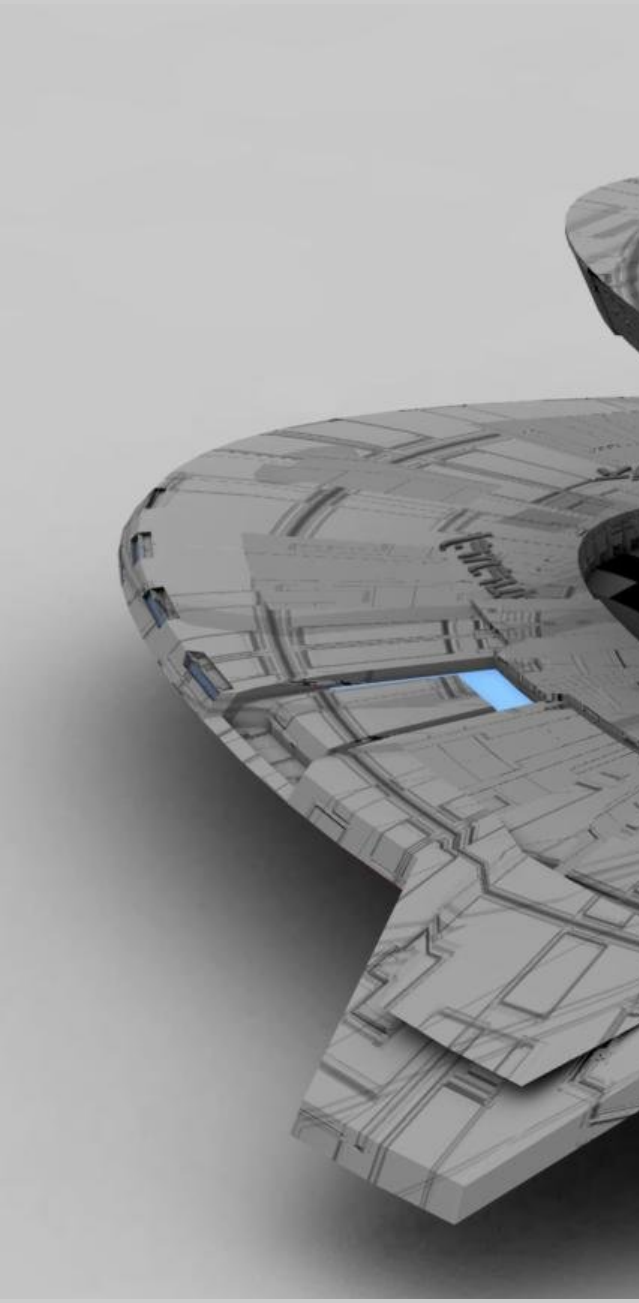

ICARUS



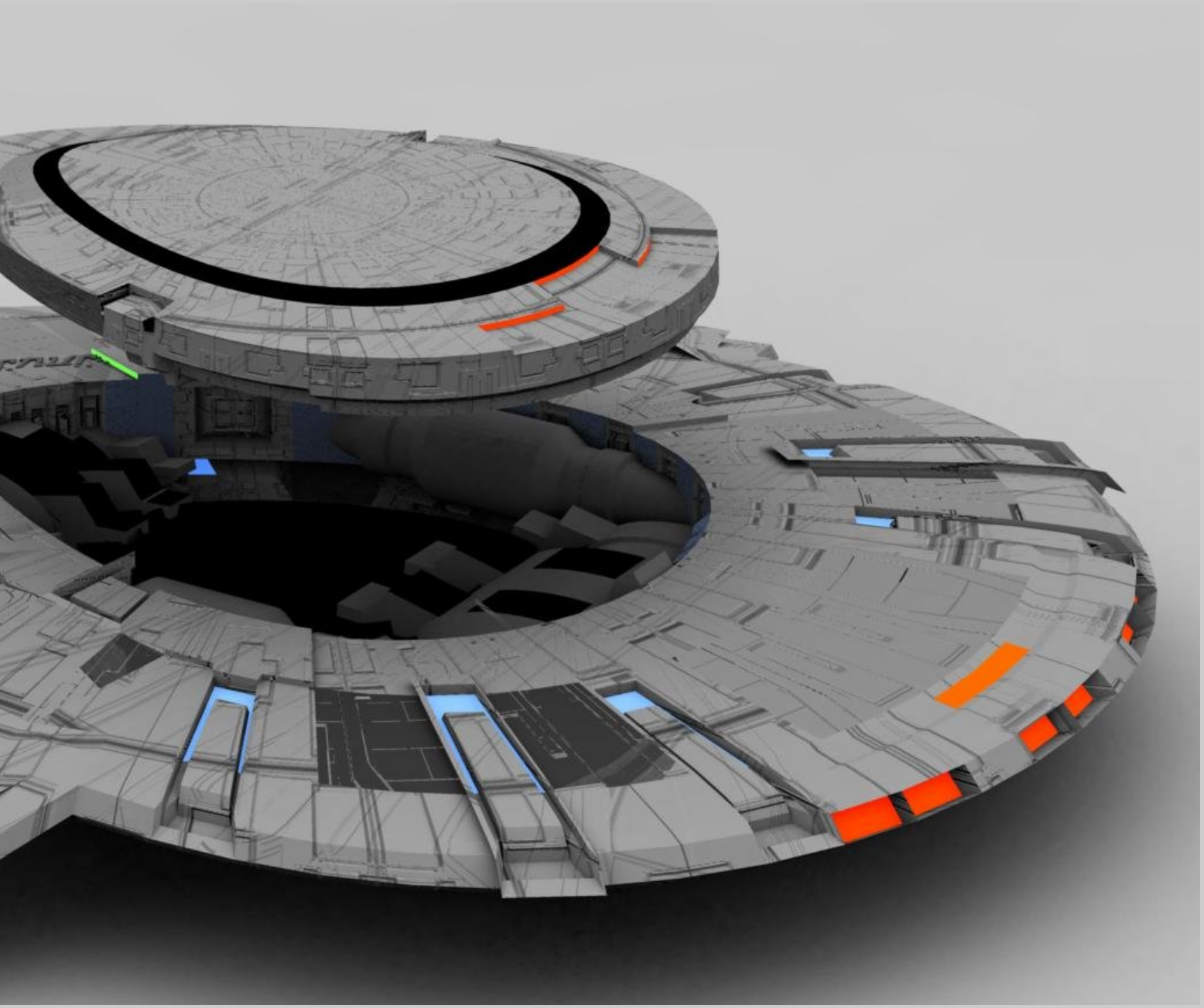



ICARUS CLASS COMMERCIAL TOWING VEHICLE
TYPICAL PAYLOAD: TERRAFORM GENERATORS
TORO CLASS 12
PROPULSION UNITS
DOCK MATE
PORT/STARBOARD
THRUST PAKS
UNDERBELLY OF ICARUR
DISPLAYING PLANETARY
ESCAPE THRUSTERS
ladson media





Stryker

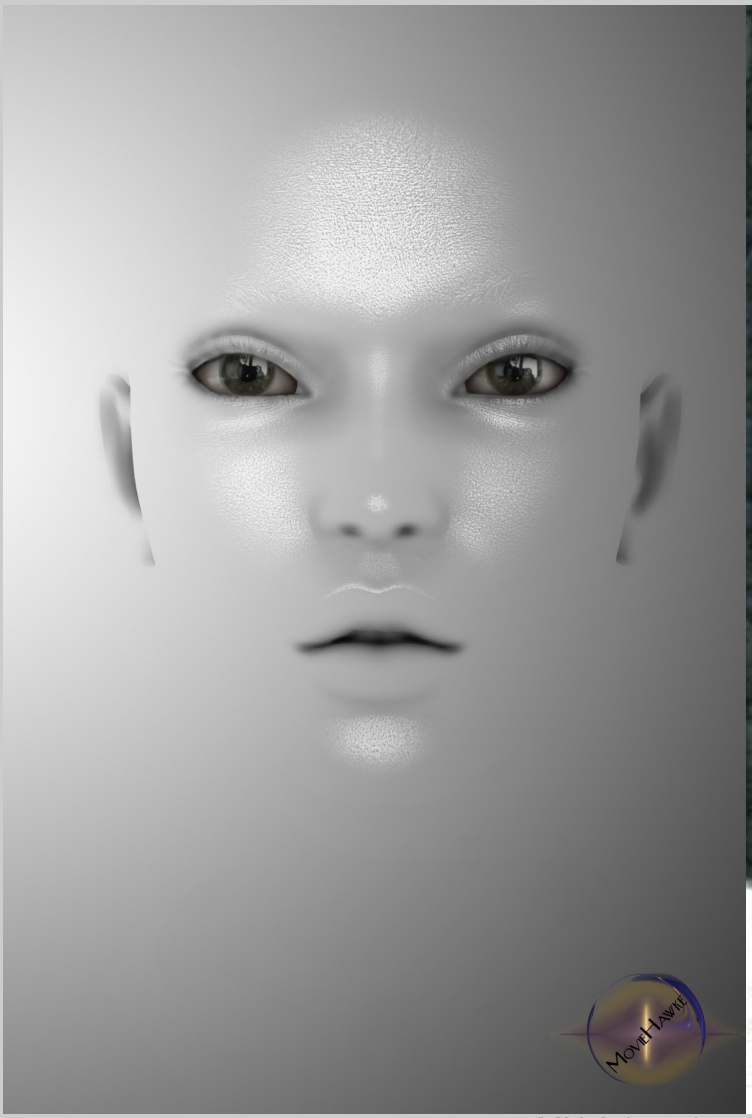


Space Glider

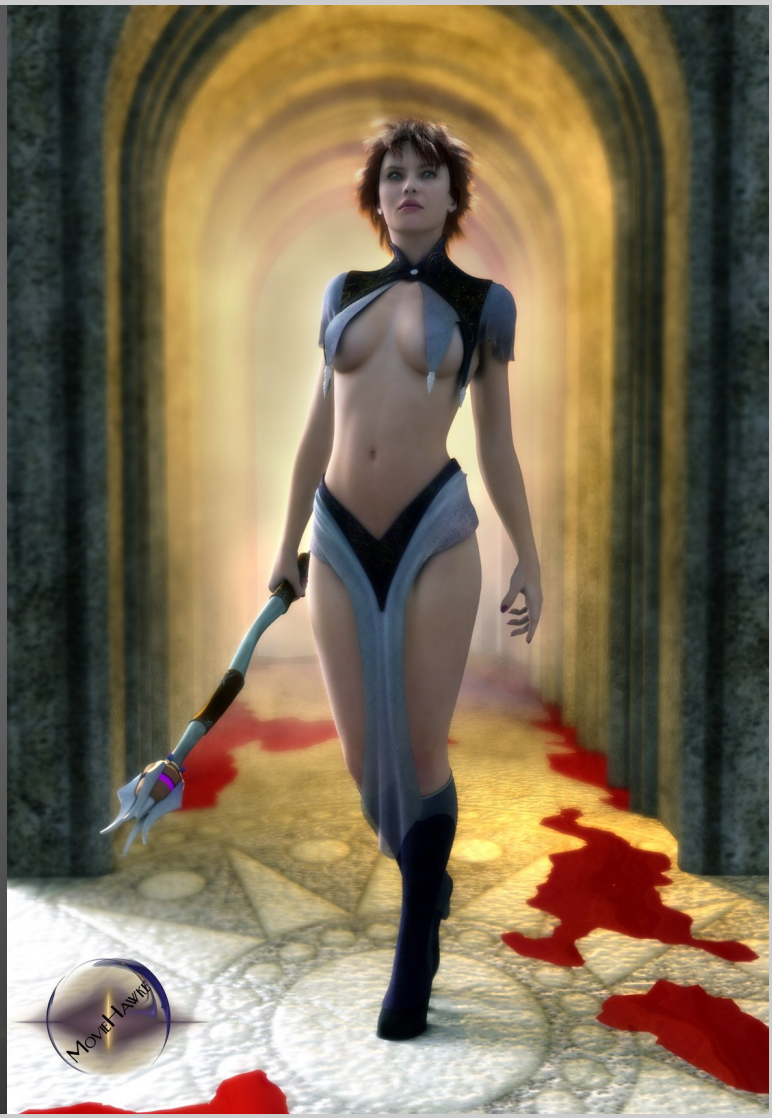
Street Sweeper JRX ramps

Movie Hawke

MH Ranger



MH Adversion



MH temple

MH Supers

MH Joan

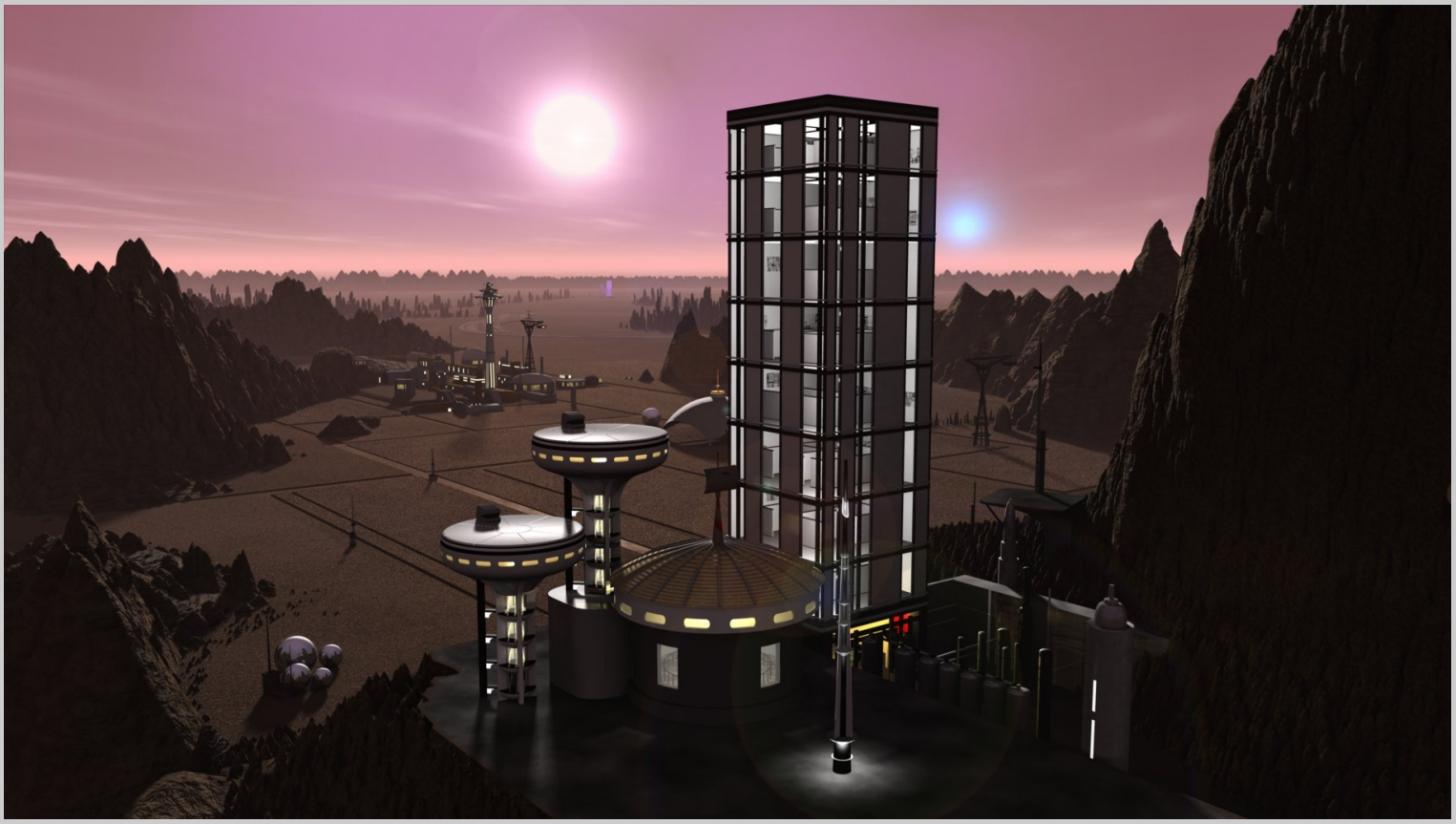
Restif

Sunlit Museum

Sunrise over the Sunken City

Scott Franz

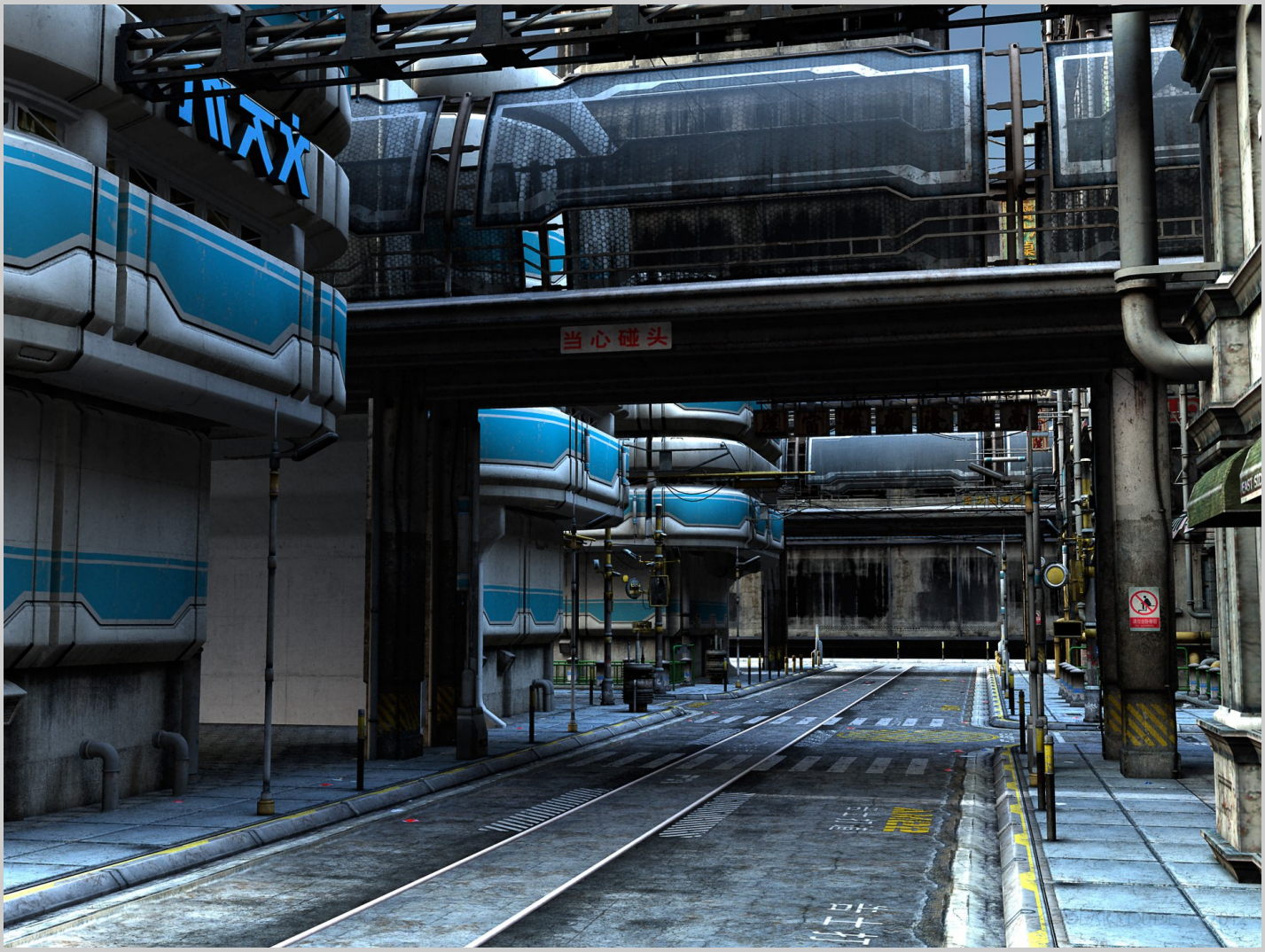
constellation2012 03



Day 19 01

CoolArtDude

Laboratory Of Death



urban streets 4

Vladimir Yaremchuk

Chto to iz detstva

что-то, из детства...
01.04.2012

Andrew Finnie


NO JUMPING
BY ORDER
WAXFIN@GMAIL.COM
ANDREW FINNIE 2011


ANDREW FINNIE2012

David Collins

Dinosaur Attack

From Behind

Fairy 18

Jeffrey Linn


ATOM

Andreasgr

Michael Talin

Lighthouses at Eleuthera

The Outpost

Carrara 3D Expo

http://issuu.com/c3de
contact: c3de.magazine@gmail.com

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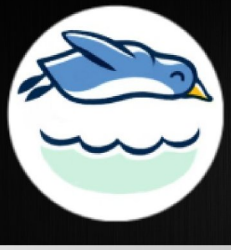
www.carraracafe.com



www.thebest3d.com
The creators of PD Howler:
PD Howler really works good to enhance your Carrara renders!Don't forget to give it a try. :)