

Painting a Dinosaur in Deep Paint 3D

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The Dilophosaurus of Lynx Lake

Here we go again with the dinosaurs. The last tutorial covered the modeling of a Dilophosaurus in Organica. In this tutorial, we're going to paint that model using Deep Paint 3D with Texture Weapons. We'll also be making the eye maps in Bryce using procedural textures. The picture above, "The Dilophosaurus of Lynx Lake" shows a Bryce rendering of the painted model against a background of pine trees which were common in the early Jurassic period. If you haven't already built the Dilophosaurus model, you can probably find something similar on the Internet using your favorite search engine. The techniques used here, V.A.M.P. mapping and Projection Painting, can be applied to a wide variety of projects in DP3D.

Overview of Painting Strategy

Build or get the model you want to paint.

Import model into DP3D, VAMP map the model, pack the map.

Produce or get image to use as brush and load it into DP3D.

Projection Paint the model in DP3D.

Produce or get image file to use for eye texture.

Apply image to eye objects.

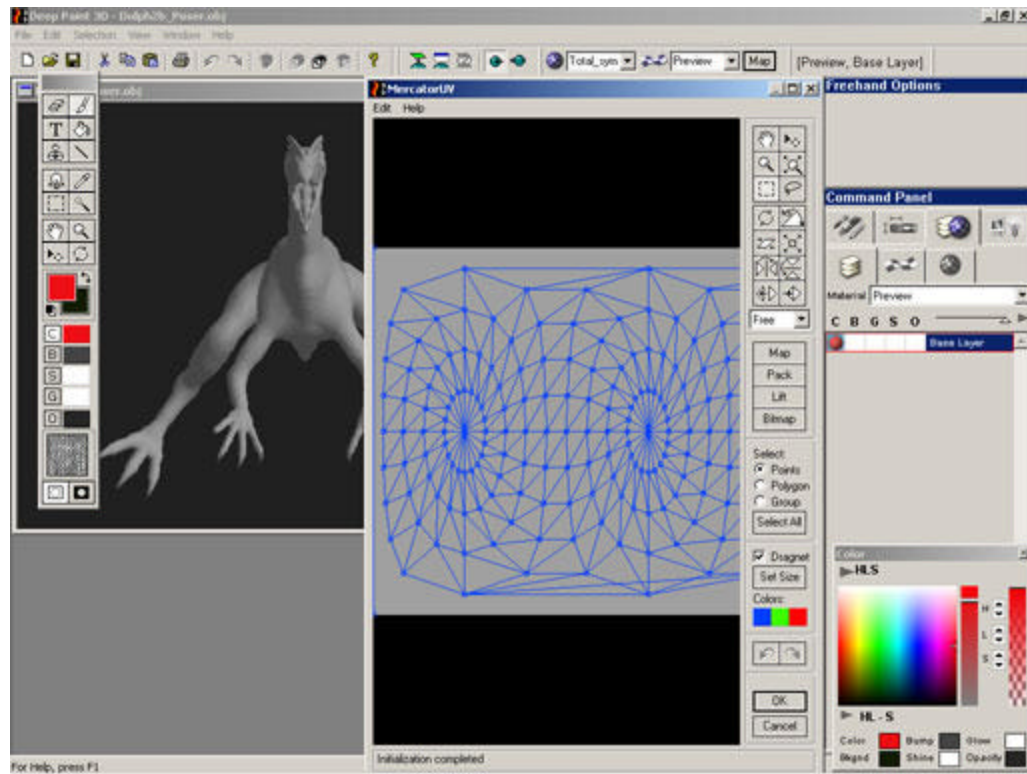
Flatten texture layers, save maps and OBJ file.

Import OBJ file and maps into Bryce for rendering.

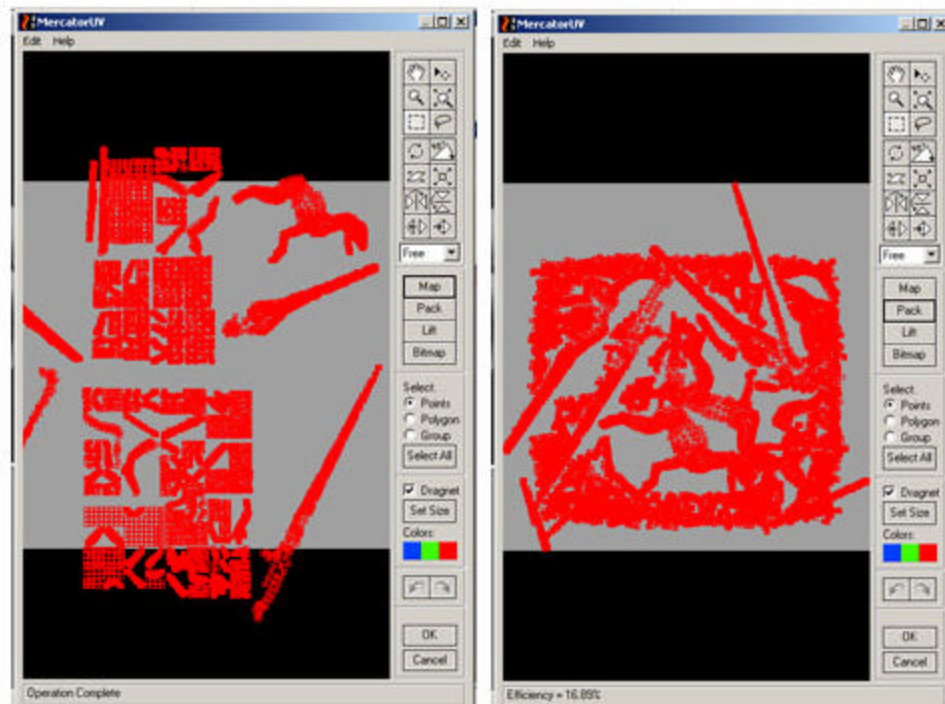
VAMP Your Model

A nice feature of DP3D with Texture Weapons is the ability to apply V.A.M.P. UV mapping to the model. V.A.M.P. (Variable Angle Multi Patch) mapping allows the user to paint without distortion on nearly any surface. This is a far cry from simple spherical, cylindrical, or planar UV mapping. The model from the last tutorial that we'll be using is called DilophosaurusUV.obj. If you're going to use a different model, substitute the name for your model in the rest of the tutorial and you'll be good to go.

First we're going to load our model into DP3D, V.A.M.P. map the model, and then pack the map. This can be slow, particularly if your model is fairly large. Start up DP3D and load your model by selecting File> Open> DilophosaurusUV.obj. Click OK on the Materials Import pop-up window to accept the defaults. Add a color channel by selecting Elements [F7], clicking the Layers tab, and clicking the C box to the left of Base Layer. The Add New Channel pop-up will open. Click on the Color button. A pop-up will ask for the image resolution. Enter 2048 by 2048 pixels. You can always scale it down later if it's bigger than you need. A color picker pop-up will open to allow you to select the overall background color of your model. I picked a dark brownish green color. Click the Map button at the top of the screen to open the Mercator UV window and you should see something similar to the screenshot below.



Click the Select All button, then click Map. On the Map Selected pop-up, click the Analytic V.A.M.P. button. On the V.A.M.P. Parameters pop-up, accept the Distortion Allowed default. When the mapping is done, you should see something similar to the image at below left. Click the Pack button to optimize the resolution of the texture maps you're going to produce. On the Pack All Options pop-up, click Better (slow!) and accept the values by clicking OK. After the packing is done, your screen should look like the image at below right. Now it's time to save your work by clicking File> Save As> DilophosaurusVAMP.dp3. You will also be asked whether to save the image files in the TIF or the BMP format. For most applications, the TIF format will work fine.



Prepare the Image Brush

For the skin surface texture, we're going to create a new brush with color and bump channels by loading a suitable image into DP3D. The few skin imprints found have shown a pebbly scale texture, similar to lizard skin. After some searching, I found several good images of lizard skin at <http://textures.forrest.cz/> under the Skin and Fur section. There is a Lizard Skin brush included with DP3D, but the scale texture doesn't really work for a dinosaur.

To create a new brush preset, we're going to make a bump image from our original image. Then, we're going to copy a similar brush and use it as a template for the new brush. First, take the image you're going to use and defocus it using the blur filter in DP3D or Photoshop. Save the defocused image for use in the bump channel. In DP3D, select the Presets tab [F5] on the Command Panel, go into Skins, Fur and Hair and select Lizard Skin. Click on Save As and save the brush as Lizard Skin 2. Under Brush and Paint Settings [F6], click on Texture > Texture Channels. You should see the image for the original Lizard Skin texture. Click on File in the Color row and use the browser to select your new image. Click on File in the Bump row and select the defocused version of the same image. Under Behavior > Advanced Behavior set Hue to -194, Saturation to 68, and Luminosity to 31. Save your new brush.

Paint the Overall Texture

Now, we're going to Projection Paint the model using single-sided and double-sided painting. We will rotate the model as we paint since any parts that are at an angle to the viewer will be distorted unless the view point is rotated.

Make sure the 3D window is active by clicking on its border and set the view for the right side (Shift + R). Create a new image layer on top of the base layer, give it color and bump channels, and name it Lizard Skin. Turn on Projection Painting and set it to Paint Hidden Pixels Also. Click on the brush in the Toolbar and paint a single sample stroke on the side of the model. You're going to want to adjust the color, size, and rotation of the image brush. Make the adjustments in the Brush Settings palette, then click Edit>Undo (CTRL + Z) to remove your sample brush stroke. After a couple of adjustments, you should be ready to start painting the entire skin surface.

Paint only the areas on the side of the body that are directly facing you. When this part is done, select Paint Visible Pixels Only. Rotate the model until an unpainted surface is facing the viewer, then paint. Continuing this process, you can cover the whole surface with scales. You will need to adjust the scale and rotation of the brush as you work so that the scales follow the contours of the body. This is particularly important around the eyes, mouth, and head crests.

Paint the Details

To paint the claws, create a new layer with color, bump, and shine channels and call it Claws. Select the Human Skin brush preset and set Hue to 0, Saturation to -170, and Luminance to -78. Projection Paint is set for Visible Pixels Only.

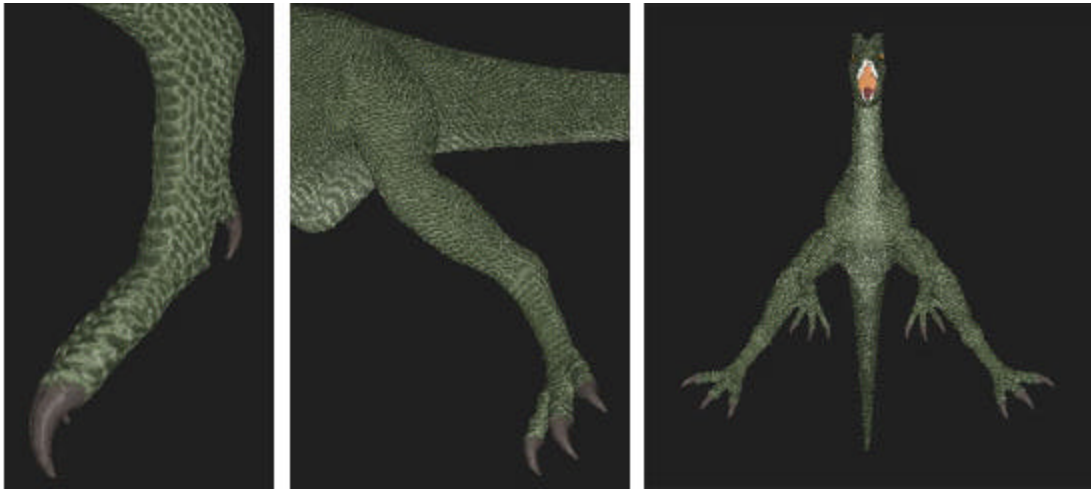
To paint the tongue and inside of the mouth, create a new layer with color, bump, and shine channels and call it Mouth. Select the Human Skin brush preset and set Hue to -15, Saturation to 7, and Luminance to 15 for the tongue. For the inside of the mouth, set Hue to -15, Saturation to 78, and Luminance to 15. If you want to get fancy, you can sample the color from the mouth of a crocodile and use that to paint only the color channel. This way, you'll still have the bump and shine information from the human skin

preset. I found a picture of a Caiman on the Internet with its mouth open. I opened the picture in DP3D, used the Eyedropper to sample the color, and painted away.

To ensure proper dental hygiene, create a new layer called Teeth with color and shine channels. Use the Simple Medium brush set to an ivory color and a strong white shine channel. Projection Paint as needed and don't forget to floss.

One feature you see on a lot of dinosaur models and pictures is the presence of broad scales going down the front of the shins. In birds, these scales are called the scutellate tarsus. It's not known for certain if dinosaurs had these scales, but they add a nice touch and people expect to see it. To make these scales, we're going to use double-sided Projection Painting and take advantage of the distortion that occurs when you paint over the edge of an object. Create a layer with color, bump, and shine channels and call it Scutellate Tarsus (or Shin Scales). Use the marquee tool to select the leg you're going to work on first. Click on Show Only Selected Faces to hide everything but that leg. Adjust your viewpoint so you're looking at the leg from the side. Click on Paint Hidden Pixels Also and try painting from the middle of the leg to the front. Rotate the viewpoint to see what the front of this leg looks like. Again, you'll have to adjust the brush size and image scale and rotation till you get something that looks right. When you're finished with the first leg deselect everything (CTRL + D) and click on Unhide All. Now rotate the view to repeat the whole process on the other leg. This process of Projection Painting across an edge is illustrated in the images shown below right and below center.

Finally, lighten up the underbelly by getting out of Projection Paint mode and using the Lighten brush in the Image Processing presets. This is shown in the image at below right.



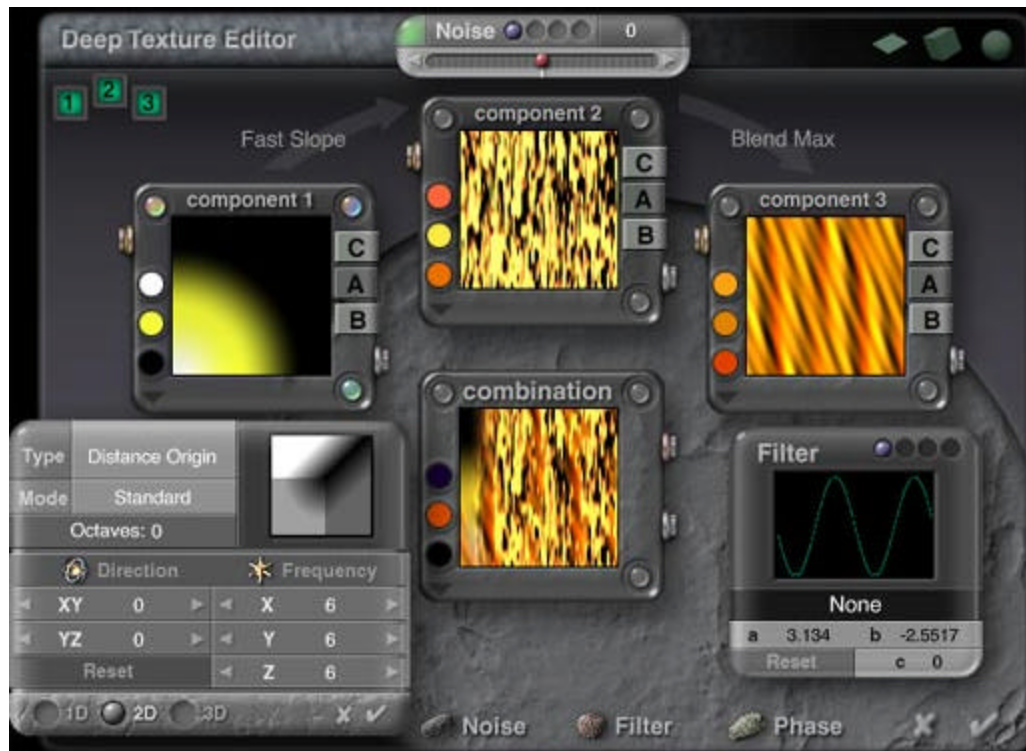
Generating Eye Textures in Bryce

Since dinosaur eyes are generally assumed to have been similar to lizard or bird eyes, we're going to take a different approach so we don't end up with regular looking human eyes. We're going to generate an eye image as a procedural texture in Bryce. Because we're making an image of a textured sphere, the spherical distortion is already in the flat image, allowing it to be used for Projection Painting onto a sphere.

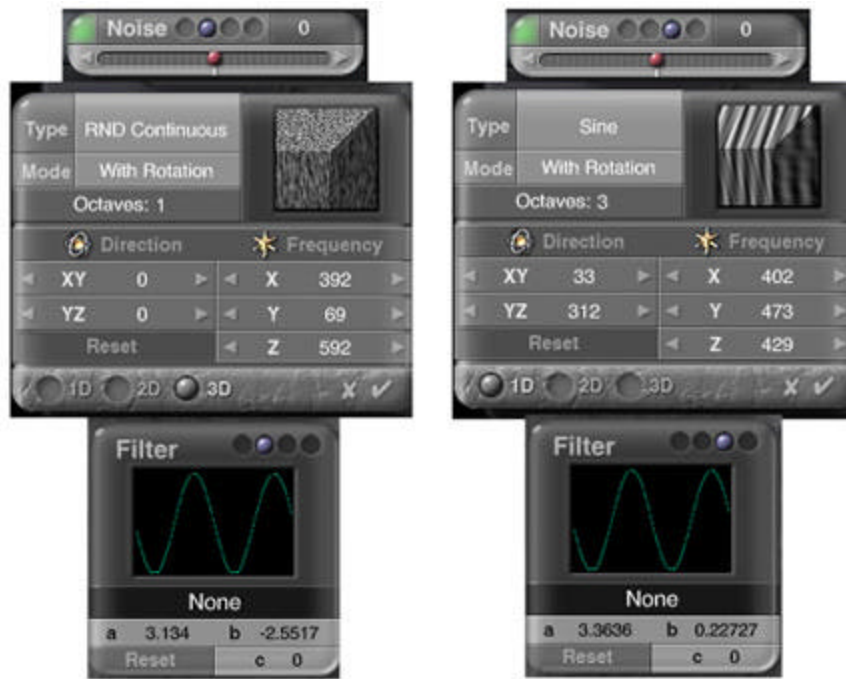
Start up Bryce and create a sphere. Set the viewpoint to a top view and zoom in until the sphere nearly fills the screen. Delete the ground plane and set the Sky for a simple black background. Adjust the position of the sun so the light is pointing straight down at the sphere. Click the little arrow next to Edit to bring up the Materials window. Select Abalone2 in the Wild and Fun materials group. Enter CTRL + M to go into the Materials Lab and set the controls as shown below.



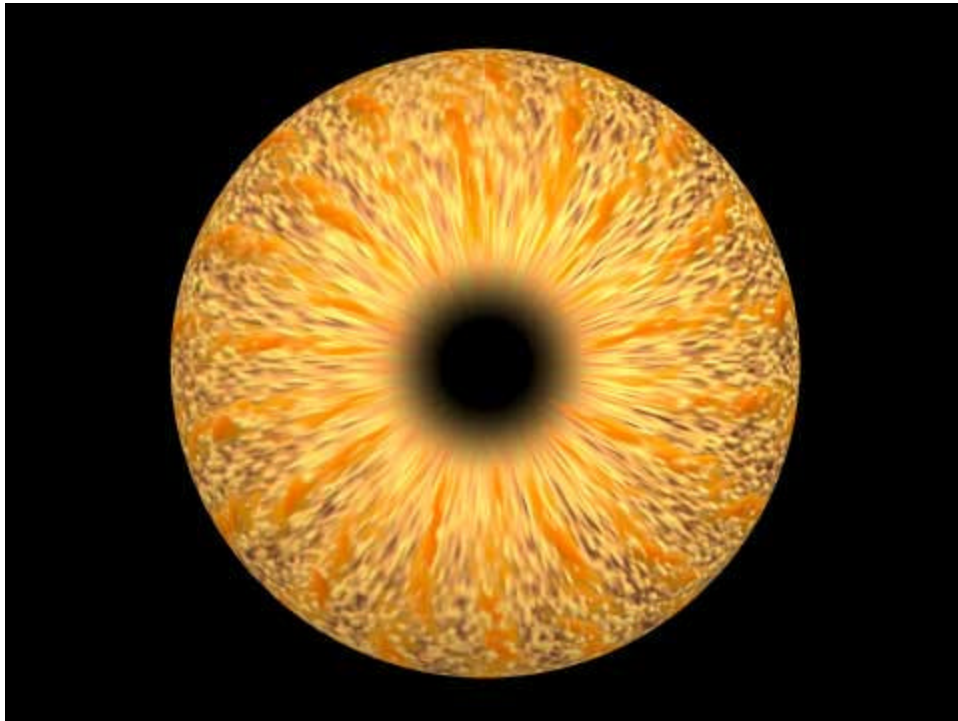
Open the Deep Texture Editor and modify the settings as shown below. This image also shows the Noise and Filter settings for the first of the three texture components. There is no Phase contribution to this texture.



The image below shows the settings for the second and third texture components. As in the first component, there is no Phase contribution to the textures.



The size of the pupil is controlled by the vertical (Y) gain of the sphere. The picture below shows the final rendering of the eye texture saved as a JPG file.



Painting the Eyes

Back in DP3D, we're going to incorporate the eye image we just generated in Bryce. The method we're using, dropping the eye image onto the eye object, works well unless you zoom in for an extreme close-up of the eye. To do that, you'll need to refer to the manual and re-map the eyes separately then apply a higher resolution image. An alternative is to map the eye image onto a sphere, then use the new eye object to replace the old one inside of Poser.

Open the eye image you just created. It will pop up in a new 2D window. Select the whole image by pressing CTRL +A, then copy it into the buffer by pressing CTRL + C. Make the 3D window active again by clicking on the border. Create a new layer with color and shine channels and call it Eyes. Set the view for the right side and zoom in with the eye centered in the screen. Click on the Objects tab under Elements [F7] and turn off everything but the eye that is facing you.

Now enter the Projection Paint mode. Paste your copied image into the 3D window by pressing CTRL + V. The Move Options window will open. Use the controls to adjust the position and size of the image to fit the eye. When you think you have it, write down the position and size settings you used and press the Drop button. Rotate your viewpoint and see how the eye looks.

The black border should be a thin even line around the edge if the size and position is right. If you need to make adjustments, just clear the Eye layer, return to Projection Paint mode, and try again using your last settings as a reference. When you're satisfied with the placement of the eye texture, switch to a standard brush with only the shine channel active, and paint on some highlights.

When the first eye is finished, set the viewpoint for the left side and use the selections under the Objects tab to make only the other eye visible. Repeat the process to apply the texture to the other eye. You should be able to use the same size settings as before but the position will probably be different.

If by some miracle you've gotten this far without saving your work, you'll really want to do it now. If you don't, your ability to backtrack and fix individual layers will be lost in the next step.

Flatten the Layers

If you're satisfied with the appearance of your model, it's time to reduce the number of maps to make the textures easier to apply in other programs like Poser or Bryce. Click on the Layers tab and select Flatten Layers and save the result as a new DP3 file. Next, save the OBJ file you'll be using for posing and final rendering as DilophosaurusDP3D.obj in the new DP3 folder. The image below shows the model ready for export into Bryce.



Let it Loose in Bryce

Now we're ready to release our toothy friend into a Bryce generated landscape. Open up Bryce and click File > Import Object and use the browser to select DilophosaurusDP3D.obj. Open the Materials Lab and assign the TIF image maps to the Color, Bump, and Specularity channels. MOCMO.TIF is used for the Color Pict image and MOCAO.TIF is used for the Color Alpha image. Similarly, MOBMO.TIF and MOBAO.TIF are used for the Bump channel and MOSMO.TIF and MOSAO.TIF are used for Specularity.

The Rest of the Picture

The picture at the top of this tutorial, "The Dilophosaurus of Lynx Lake", shows the painted model rendered in Bryce against a backdrop assembled in Photoshop. The image of the pine trees was taken at Lynx Lake in Prescott, Arizona, a few hundred miles south of where the original fossils were found. The sky in the picture didn't fit in so it was masked out in Photoshop using Mask Pro. A sky image with clouds was generated in Bryce and imported into Photoshop where it was placed in the layer underneath the tree image. The composite image was exported as a JPG file back into Bryce where it was applied to a finite 2D plane to create a Pict object for use as a backdrop.

Finis (for now)

Well, that's it for the painting phase of this project. Next time, we'll pose the model in Poser Pro Pack so it won't look like it's getting ready for gym class.

Oh yeah, remember to floss after rendering.

Related Links

<http://www.us.righthemisphere.com/>

<http://textures.forrest.cz/>

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