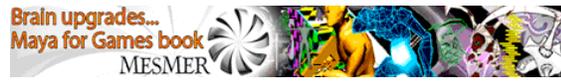


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# How to create a realistic looking turtle - Modeling part 1

by Denis Zen  
[http://www.highend3d.com/artists/2.3d#denis\\_zen](http://www.highend3d.com/artists/2.3d#denis_zen)

[Click here to download the project files](#)

What follows is the first part of a tutorial which will show you how to model, texture, illuminate and animate a turtle. At the end your turtle should look like the one in the picture below:



Ready? Let's start.

The first thing you need is...a turtle to take some reference photos. If you have any, you can use the images included in this tutorial. I used them to draw the reference profiles, to model the different parts of the turtle and of course to get the images I used for the texture maps. Let's see how I did.

First, you have to load the images in Maya workspace to draw the different profiles; to do this you have to create an **Image Plane** for the **side** and the **top** camera:

*(Tip - If you want, you can speed your work creating in the shelf the thumbnails of the commands you use the most by pressing Alt+Ctrl+Shift while selecting the command from the menu).*



The thumbnails in the shelf

Window > Rendering Editors > Multilister In the Multilister, click the **Cameras** tab and doubleclick on **top shape**.

The Attribute Editor of the side camera opens; scrool down until you see the **Environnement** tab; open it and click the **Create** button near Image Plane:



A new window opens: set the parameters as follows:

### Image Plane Attributes

Display: looking through camera

(if you want to see the image only in the top camera view, otherwise select **in all views**)

Display Mode: RGB

Image Plane: Fixed

(this way when you move the camera, the Image Plane and the refence curves you draw will follow it)

Type: Image File

Image Name: here you have to load the file you will use as reference (in this case load the file **bottom.tga**)

### Placement Extras

Center: 0 0 0

Width: 10

Height: 10



Section Sponso



Ultimat UV Mappi

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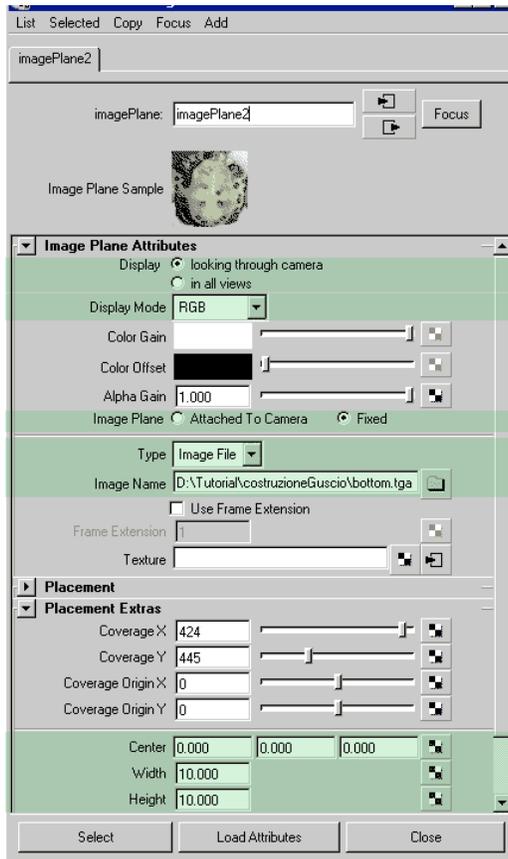
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With the image in the workspace, draw the top and bottom profiles of the tortoise-shell with the **CV Curve Tool**:

**Create>CV Curve Tool** Make sure the curve degree is set to **3 Cubic**. If not, select it or click the **Reset Tool** button.

*(Tip – When you draw a curve you have to use less CV as possible; this way you will control the curve easier and your model will be "lighter" too. In this case you don't need to pay great attention to this because the curves you draw will only be a reference).*

Once you have drawn the top and bottom profiles rename them **bottomProfile** and **topProfile** *(Tip – When you rename something in Maya, it's better not to use spaces or underscore. Try to use compound words with capital letters; this will work better especially when you will use expressions).*

Now, since you don't need to modify them any more and since they are only reference curves, you can template them.

Before doing this it's better to assign these and the other profile curves we will create to a level. The use of the **layers** is extremely important; using the **Layer Editor** you can hide, template or select the different parts of your model very easily. So to assign the curves to a new layer:

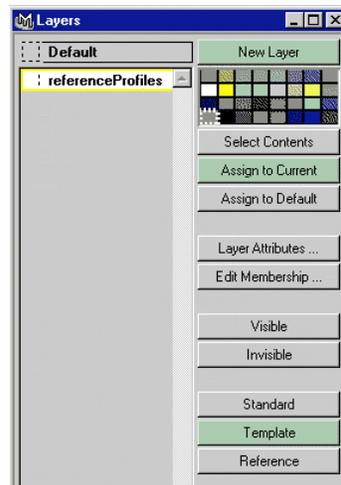
**Window>Layer Editor...**

Click the **New Layer** button

Click the **Rename** button and rename the layer **referenceProfiles**

Select the **bottomProfile** and the **topProfile**

Click on the **Assign to Current** button.





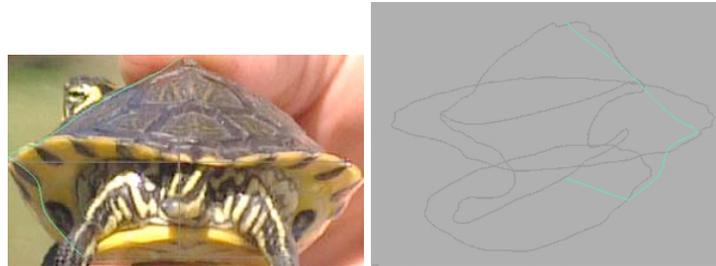
Create an Image Plane for the side camera (load the file **side.tga**) in the same way, draw the **sideProfile** and the **curveProfile** and assign them to the **referenceProfile** layer. Once you have drawn all the reference profiles you need, click on the **Template** button.



*Top and bottom profiles - Side and curveProfiles - Perspective view*

Now you can begin to draw the curves you will use to create the tortoise-shell surface.

Create an Image Plane for the front camera loading the file **front.tga** and draw the profile as you did before. Rename it **lateralProfile**.



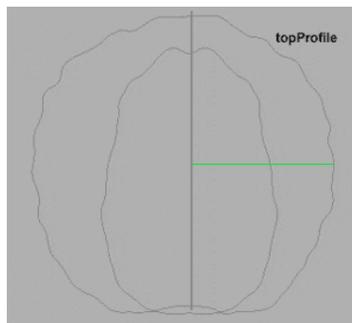
*The Image Plane for the front camera - The lateralProfile*

To draw the **lateralProfile** correctly, use the reference profiles you drew:



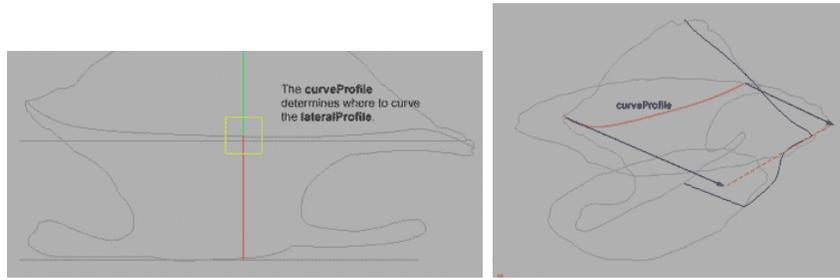
*Use this image as reference.*

use the **topProfile** to adjust the part of the **lateralProfile** that will become the **top** part of the tortoise-shell (the green one in the reference picture)



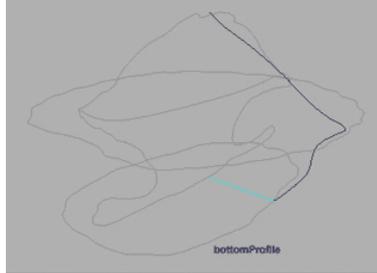
use the **sideProfile** to adjust the part of the **lateralProfile** that will become the **side** part of the tortoise-shell (the red one in the reference picture). Use the **curveProfile** to decide where to "bend" the **lateralProfile**.



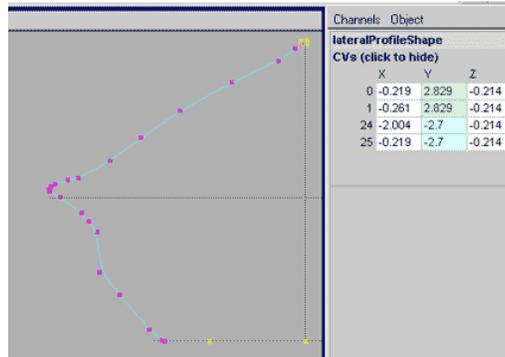


Use this image to "bend" the lateralProfile

use the **bottomProfile** to adjust the part of the **lateralProfile** that will become the **bottom** part of the tortoise-shell (the light blue one in the reference picture).

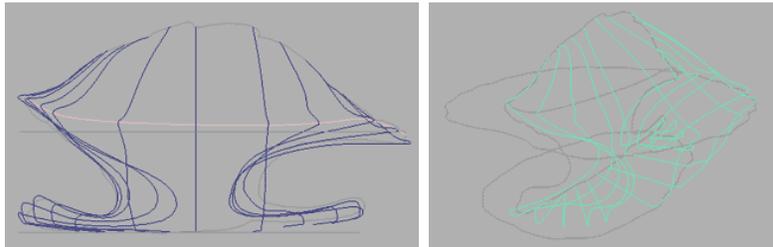


(Tip – When you draw the **lateralProfile**, make sure that the first 2 CVs of this curve have the same value in y – and the same for the last 2 CVs –; this will later ensure the tangency of the two parts of the tortoise shell).

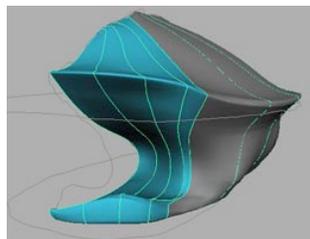


The Y values of the first and last 2 CVs

Duplicate the **lateralProfile** and moving the CV create the other profiles as you can see in the pictures below. At the beginning, you don't need to many lateralprofiles; 12 could be a good number.



Note how the lateralProfiles follow the curveProfile. - The 12 lateralProfiles you will use to build the tortoise-shell

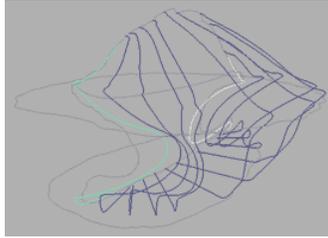


Use this image as reference for the lateralProfiles that will build the front part of the tortoise-shell. (The light blue area gives you an idea of how to move the CVs of those curves).

Since the tortoise-shell is symmetrical, you can simply obtain the curves for the right part of the tortoise-shell by grouping and duplicating the 12 curves you created. (Tip – Nothing in nature is perfectly symmetrical; real world objects and human beings have little differences that make them not exactly symmetrical. This is very important if you want your 3D model to appear photorealistic. So when the tortoise shell is finished, move some CVs to create little differences between the right and left part of your tortoise-shell).

Select all the lateralProfiles except the first and the last (otherwise, after the duplication, you will have 2 pairs of curves you won't use)

- Edit > Group
- Rename the group **leftCurves**
- Modify > Center Pivot (to center the Pivot of this new group)



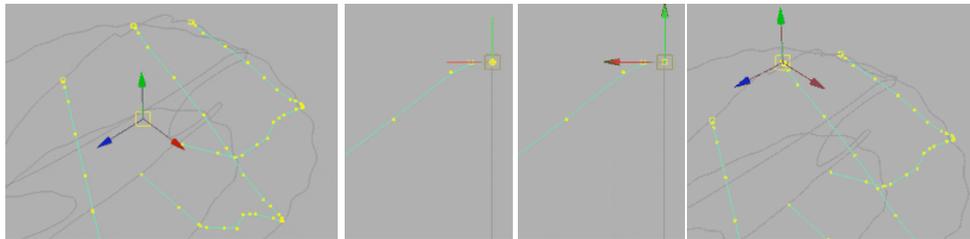
Group all the curves except the first and the last.

Select one of the lateralProfiles and then press Shift. This way you have selected the **leftCurves** group.

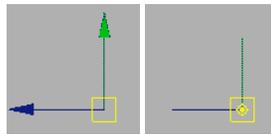
You will now change the position of the **Pivot** of **leftCurves** to be sure that the duplicated group is tangent to this one.

With **leftCurves** still selected:

- Display > NURBS Components > CVs
- press W on your keyboard to show the Move Tool icon
- press Insert on your keyboard. (Note the different aspect of the pivot when pressing Insert)
- Press V (shortcut for the Snap to points) and middleclick over one of the starting CVs of one of the lateralProfiles; the pivot will immediately snap to it
- Press Insert again to definitively change the position of the pivot



The starting position of the pivot - Snap to point - The new position of the pivot on a starting point

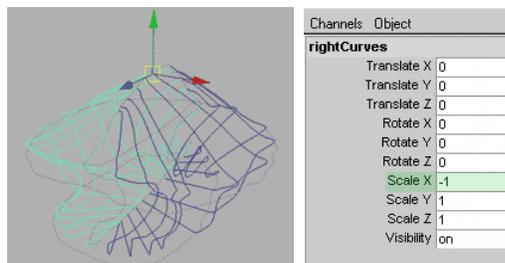


Normal - Whith Insert pressed

Before you duplicate **leftCurves** it's better to reset all the values in the Channel Box using **Freeze Transformations**.

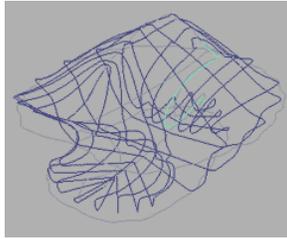
So, with **leftCurves** selected:

- Modify > Freeze Transformations
- Edit > Duplicate > Click **Reset** in the Duplicate Option window)
- Set the **Scale X : -1** (this will mirror the new group along the Z axis)
- Rename the new group **rightCurves**



Using the two groups of curves you can build the tortoise-shell using the **Loft** command; this will build a surface, a skin through the curves you created.

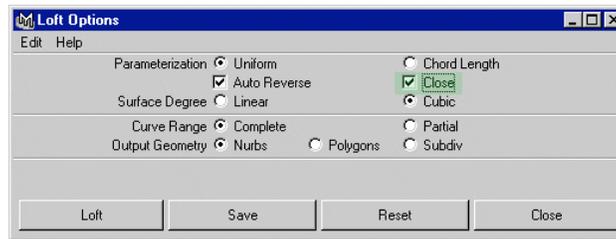
Starting from the first curve on the back select all the other curves in a clockwise direction; doing this the opening of the surface will remain on the back.



The starting curve on the back of the model.

When all the curves are selected:

Surfaces > Loft In the Loft Option window click the Reset button and then check the close option box.

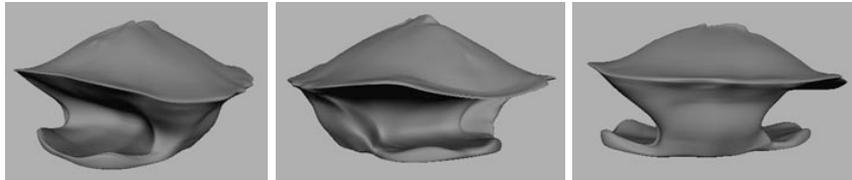


Loft Option window.

Click the Loft button and the tortoise-shell will be created. (Tip – Remember that since history is on in the Status Line, changing the shape of any of the curves will automatically change the shape of the tortoise-shell).



The Status Line.



Three different views of the tortoise-shell.

Once you have created the tortoise-shell using the "right number" of profiles, you can modify your model moving the CVs; if you need more detail you can insert new Isoparms.

In the first case (to move the CVs) select the model, rightClick on it and in the menu select Control Vertex.  
 In the second case (to add more detail) select the model, rightClick on it or anywhere in the workspace and in the menu select Isoparm; click one existing Isoparm and drag until the zone where you need more detail (to add more than one Isoparm use Shift). To add this new Isoparm to the model: Edit Surfaces > Insert Isoparms.

>> Continued on Part 2 >>



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