jalada Sculpture
Beginner's Guide

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Beginner's Guide

If you are new to jalada Sculpture, you should probably start by going through this tutorial, and then begin with your own work. In addition to the tutorial, jalada Sculpture includes a selection of examples and ready to use models that deliberately show off the features. You might want to look at these as well.

This tutorial demonstrates how to create a basic tree using jalada Sculpture for using in any Quake3-based game. It brings together basic techniques in order to design a tree, including the triangle based model and textures.
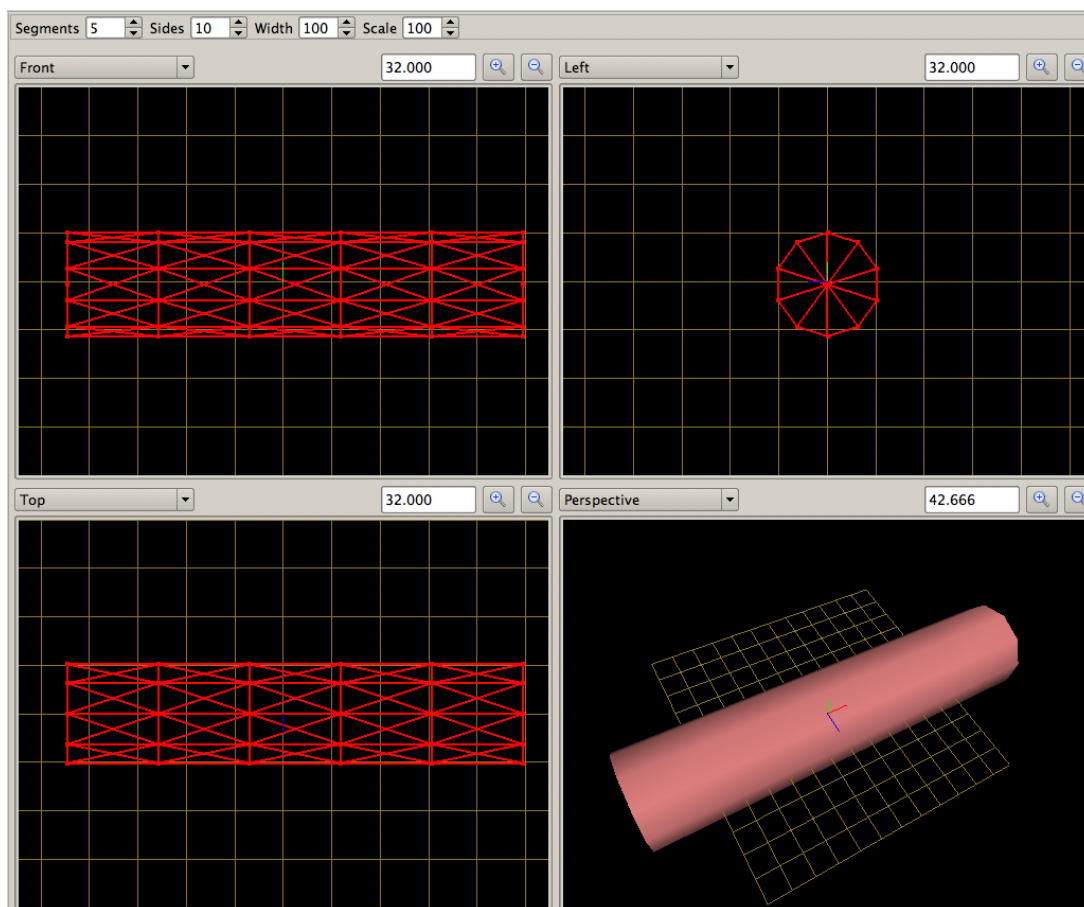
Step 1 - Creating the trunk

First we have to make the trunk of the tree. We will use a cylinder as primitive for that. Depending on the size of the trunk a cylinder with 10 or 12 sides is good.

So let's start to create that cylinder:

- Choose the cylinder primitive tool.

- Some option appear under the tool bar, set side to 10 and segment to 5 (it will be useful to have many segment to "bend" branches and trunk later), keep the 2 other values to 100.

- Drag your cursor in the front 2D view.

You should see something like this:

Before continuing the tutorial you should be familiar with the navigation in the different views and selection tools of jalada Sculpture. Here are some hints:

Navigation:

- To zoom in or zoom out the view: Use the mouse wheel while hovering a view.

- To move: Middle click (the mouse button) while moving the mouse.

- To turn around: in the 3D view just left click while moving and in a 2D view left click while pressing the Cmd-Key and moving (Note: You will turn this view into orthographic view, to turn it back to front/back/top/bottom/left/right view, just select the right item in the drop-down list just above the view).

- To rotate: press Cmd-Key while using mouse wheel (Note that in 2D view it leads to orthographic view, same notice as above)

- Last but not least the 3D view is just for visualization, you can't perform anything here.

Selection:

About each select tools:

- A left-click-drag: Simple select.

- A Shift + left-click-drag: Add to current selection.

- A right-click-drag: Remove some part of the current selection.

There are 2 ways of selecting vertices:

- Choose exactly the vertices you want in a 2D orthographic view (you have to move and turn around to be sure to select only vertices you want).

- A preferred way to do it (most of time it is faster) is to simply select in a standard front/back/top/bottom/left/right view, and then deselect undesired vertices in another 2D view.

Please notice that at the bottom right of the window, you see every time how many vertices and faces you have selected, and the total vertices and faces count of the whole model.

For example: *V:30/62 F:40/120* indicates your whole model have 62 vertices and 120 faces, and you have currently selected 30 vertices and 40 faces.
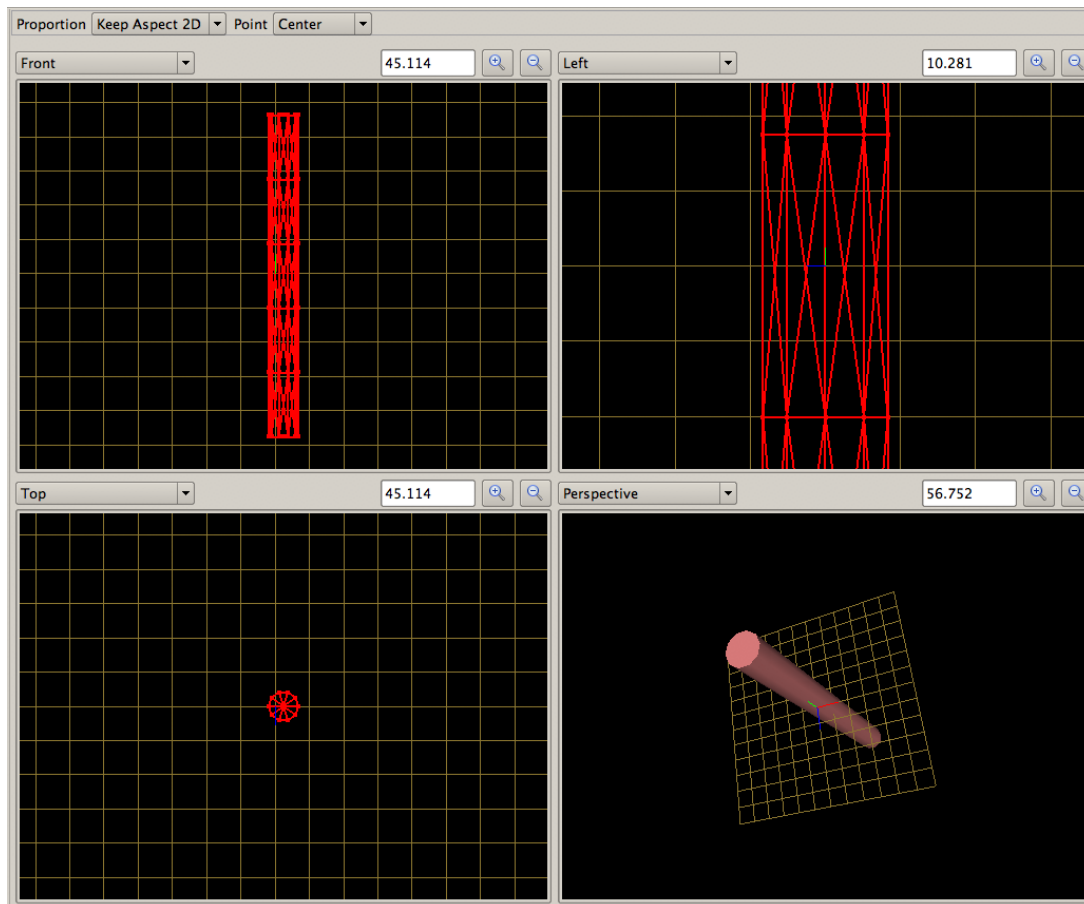
To continue the tutorial

- Choose the rotation tool.

- In the front view, rotate 90° the cylinder (you may press Shift while doing it so that the cylinder will only move by 15° degree increment).

- Choose the scale tool, set the tool's option (just under the tool bar) to "Keep Aspect 2D" and adjust the size of your trunk in the top view.
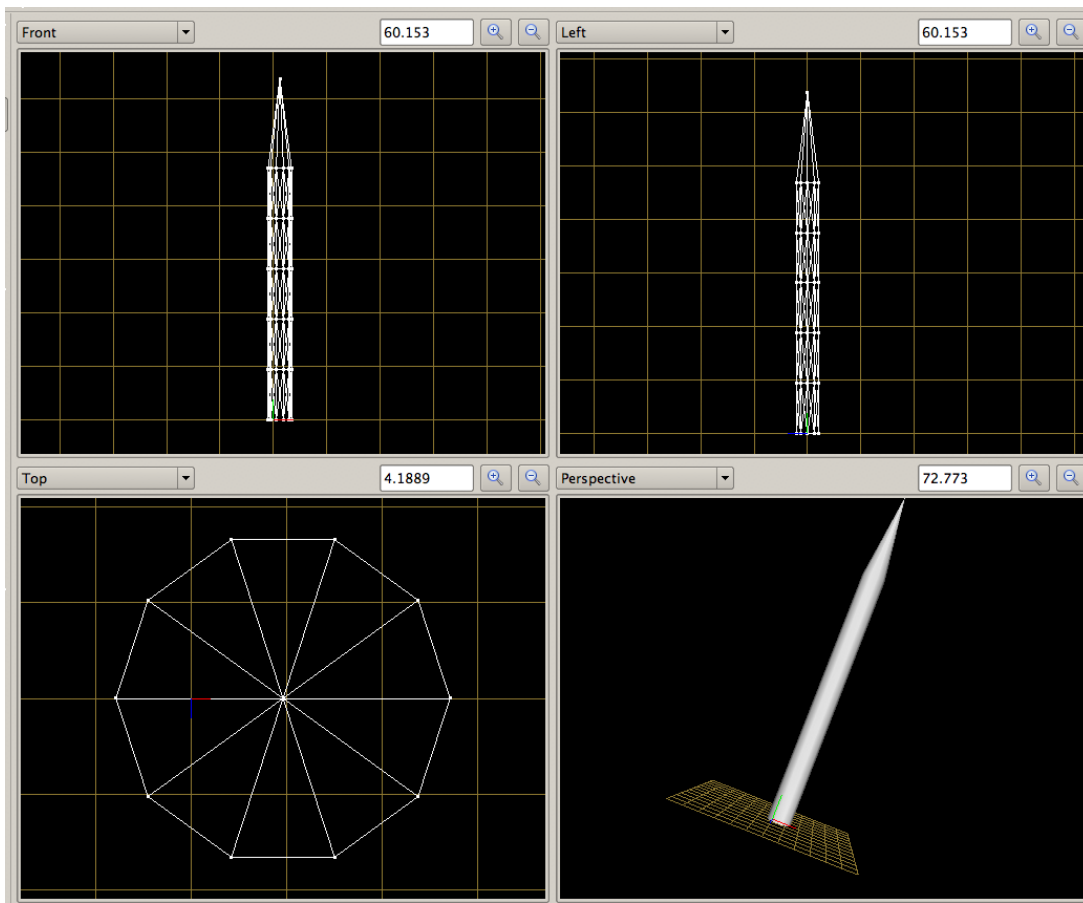

- Now choose the "Select Vertices" tool.

- In the top view, select the vertex at the center of the disc. You have probably selected 2 vertices, so deselect the top vertex (with a right-click-drag) in the front view.

- Hit the delete key to erase this vertex (or in the menu choose Geometry->Delete): we don't need extra face at the base of the trunk since those face will never be seen e.g. in a game.

- Select again the central vertex in the top view

- Choose the Move tool and in the front view move the selected vertex higher to create the top of the trunk (you can press Shift to constrain the move along axis).

- Finally select all vertices with the "Select Vertices" tool, switch back to the Move tool and move the whole model until the bottom of trunk lies in the center.

Step 2 - Texturing the trunk

Now it is time to texture the trunk, because designing the whole geometry and texture the model later can be a hard job. Rules of thumb are:

• Always texture your model as early as you can.

• Always keep in mind how you want to texture it.

If you have not already done so, save your model somewhere, because now, we will use textures (that are external), and we don't want to bother later with paths.

To add a texture:

• Choose the menu Materials->Edit Material (Cmd+M). It opens the material panel.

• Now click the button "New Material" and give it a name, for example "wood". The name is important, because we will define MD3 Meta Data for our model later. For this reason choose a short name, and if your name includes more than one word, use an underscore '_' to separate them.

• Click the "Set Texture" button and select you texture for the trunk.

• Click "Ok" to leave the material panel

Now we will deal with the MD3 Meta Data. Providing meta data is important, if you plan to support multiple textures that are not in the same path than the model.

To enter the Meta Data:

• Choose from the menu "Edit" the item "Edit model meta data" and click on the "New" button. A new line appears (name / value). Double-click it and a new dialog box appears.

• Here set the name to "MD3_PATH_wood". Note that the name is case sensitive and the rule is "MD3_PATH_" + the name of the material that should match. We have previously named our material "wood", so that the meta data name must be "MD3_PATH_wood".

• In the value field, enter the folder path of your texture where your relevant game or application can find it, for example "textures/" (Note that it is just the directory part and not the complete path, the file name is not required here).

• Click "Ok" to close the dialog box, and then "Ok" to close the meta data panel.

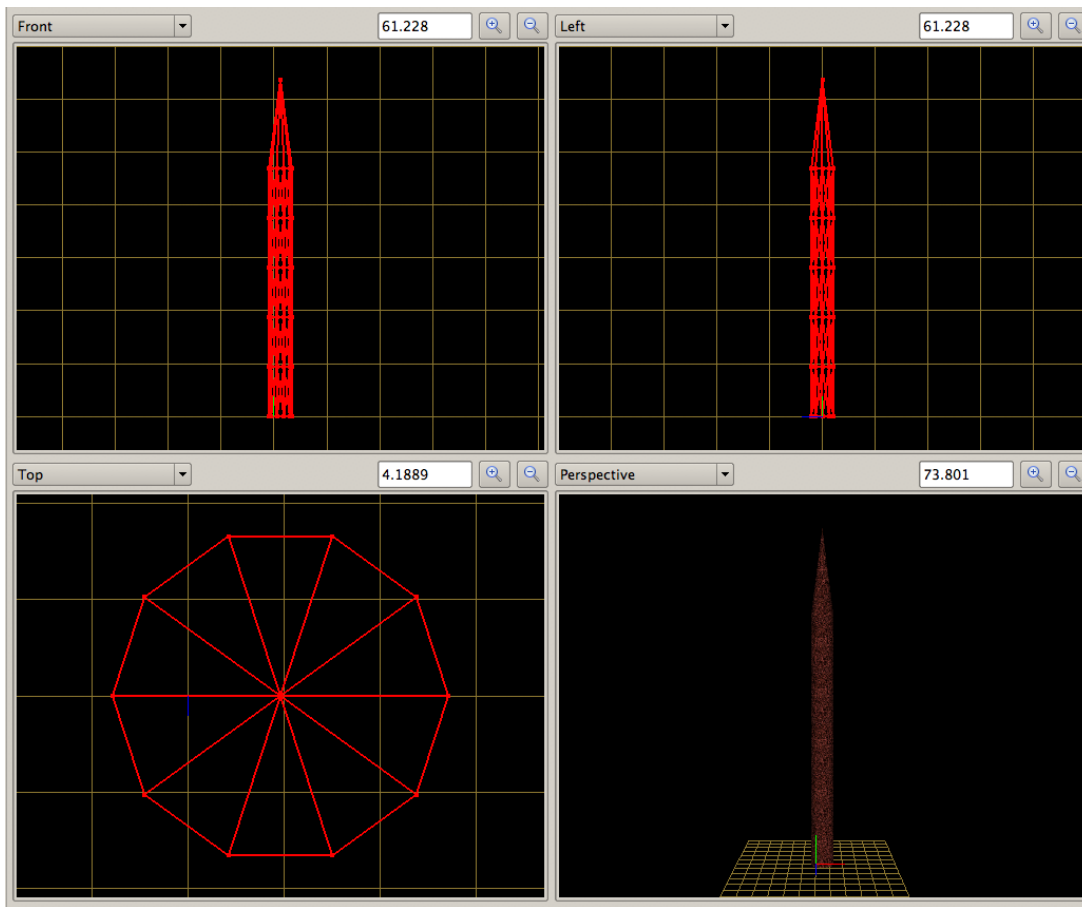Now we are ready to apply the texture to our model. To set it:

• Choose the "Select connected mesh" tool and click somewhere inside your model in one the 2D views. The "Connected mesh" tool selects all faces that are connected together. Your whole model should now colored in red.

• Choose the menu item "Material -> Edit groups". It opens a panel to manage groups.

• Click on the "New" button, a dialog appears, enter "wood" and press "Ok" to close the dialog (Note that you can name it whatever you want. It is only for your convenience and have no later effect).

• Back in the group panel click the "Add to group" button. This adds all selected faces to the group named "wood".

- Select from the "Texture" list box the only material we have: wood.

- Click "Ok" to leave this panel

The perspective view should display now your model with the texture.

Next we would like to create an object to project the wood texture onto the faces of our trunk.
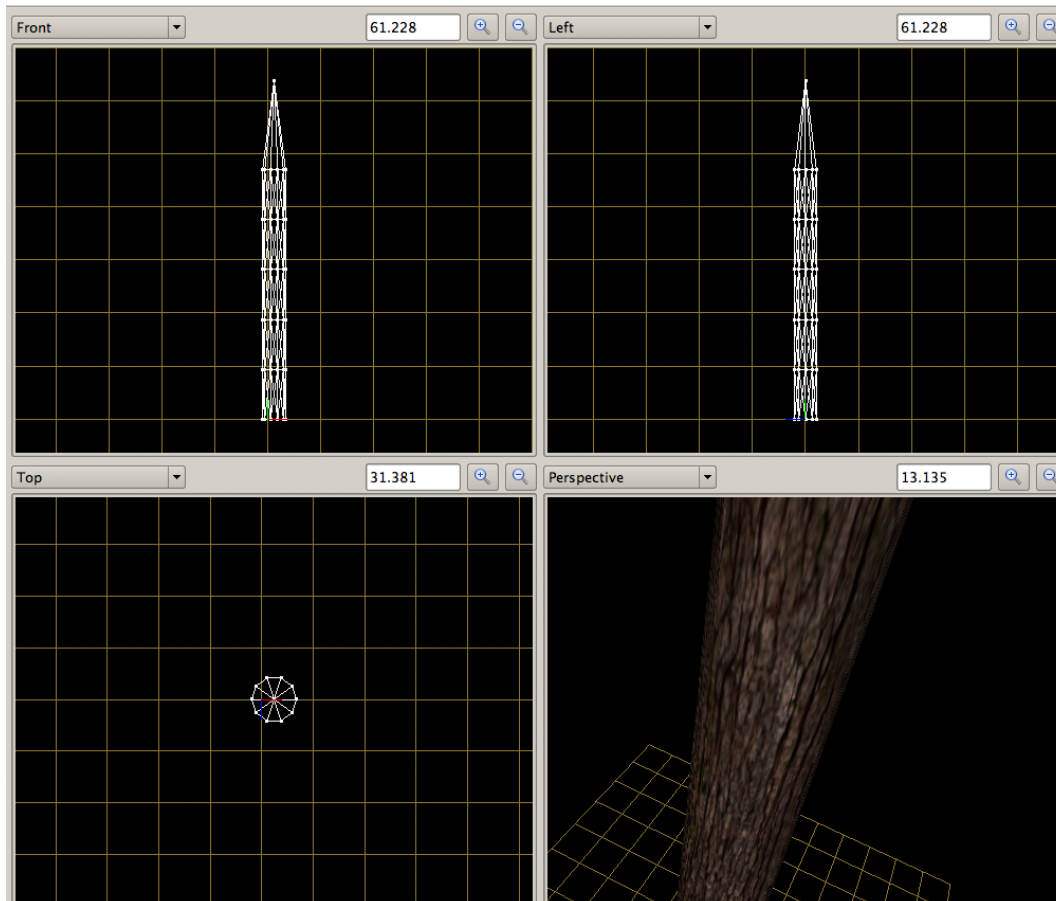
To create a projection object:

- Click on the "Create projection" tool and choose the type "Cylinder" from the list under the tool bar.

- In the front view, drag a projection cylinder over your model (Press Shift to constrain it along one axis).

- Choose the move tool (if you have deselected the projection, select it again with the "Select projection" tool), and move the projection, using the top view to center it on your model.

- Use the "Select connected mesh" tool to select your whole model and choose the menu item "Material -> Edit projection". It opens a panel. Here click the button "Add faces to projection" and close the projection panel.

- Select the projection (with the "Select projection" tool) and delete it. jalada Sculpture memorizes that faces were linked to a projection, and If you move the projection or the model, the coordinates of the texture will also be moved. In order to prevent that, we must delete the projection.

- Select your whole model (same way as usual)

- Choose the menu item "Material -> Edit texture coordinate" to open the texture coordinate

panel. Here you can see the way all your selected faces are using the texture. If you would like, select the "Scale tool", uncheck "Keep aspect ratio" and scale the texture the way you want (Note that the 3D view in the background window is updated in real time).

- When scaling horizontally, keep in mind that the texture should wrap around, or you will see a seam line somewhere on you model (You should use 1 time, 2 times or 3 times the texture width, but not one and a half for example). How to do it? Simply set the zoom factor to 2 or any other integer value, and when you stretch the vertices in the texture coordinates view, use exactly the same width.

- If you finished your work, press the "close" button.
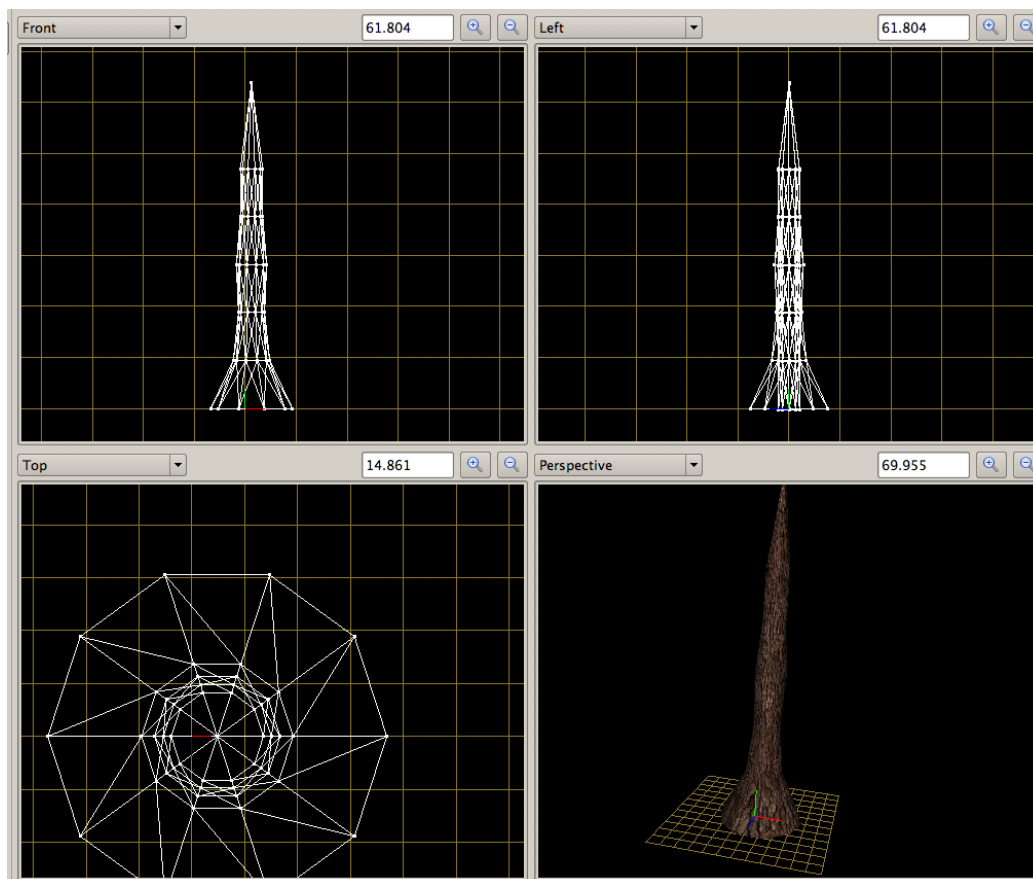
Step 3 - Transforming the trunk

Before transforming our model to a more real trunk of a tree, it is a good idea to duplicate the model first. This enables us to use this part of the model as the base for the branches of the tree. If you would like, you can create alternative another cylinder with less sides for the branches. To do it, just repeat step 1 and 2.

To duplicate the base trunk:

- Select the whole model (You know how to do it now).

- Choose the menu item Edit -> Duplicate or the shortcut Cmd+D.

- Select the "Move" tool and move away the freshly duplicated mesh. As mentioned before, we want to use the copy to create the branches, so keep it unchanged. The best is, to move it as far that it isn't visible in any of the front, right or top view of your main model, so that it will not interfere your further design process.

Now we will work on the trunk. Because the trunk of a tree becomes smaller from the bottom to the top, we need adjust the size.
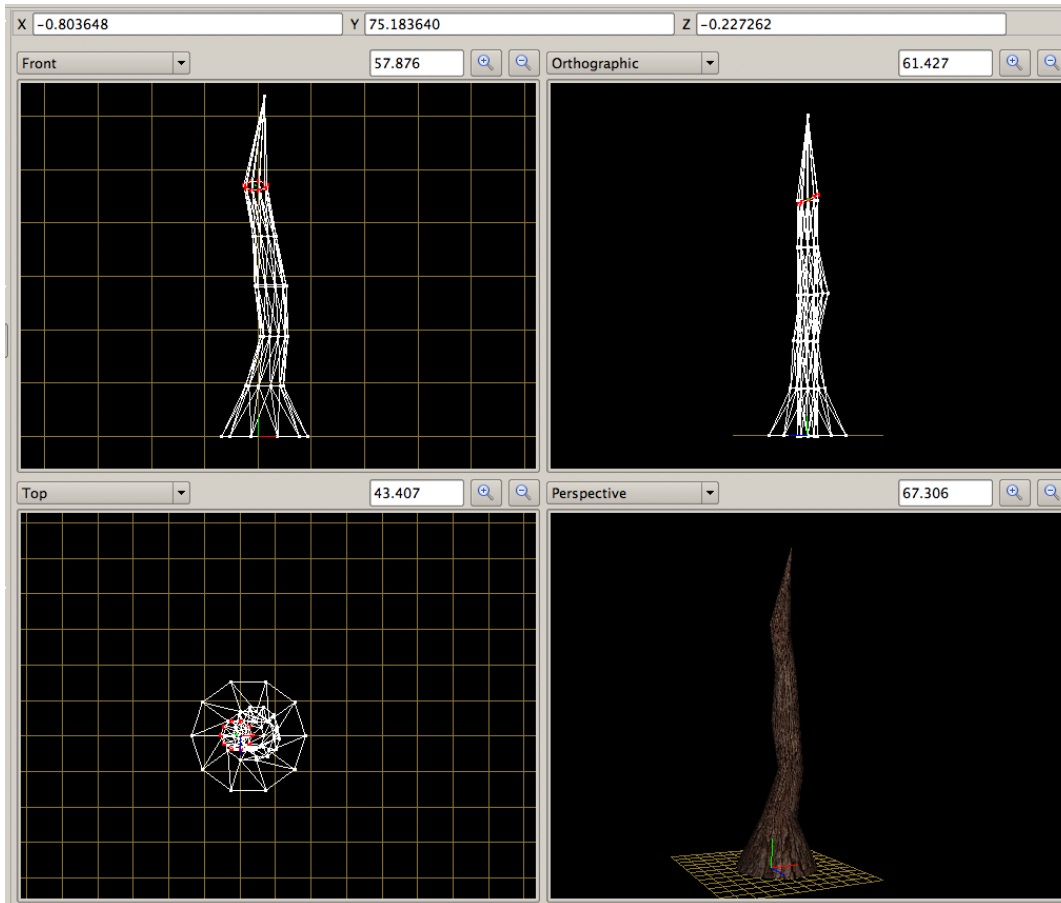
- Select a line of vertices of your trunk in the front view. (This means a circle of vertices in a 3D sense, but in the front view they are displayed in a line; the vertices that split the cylinder into a segment)

- Choose the "Scale" tool, and scale the selected vertices in the top view using the "Keep 2D ratio" option.

- Repeat the last two actions with different selections, until you get what you want.

Next we would like to twist and bend a bit the trunk.

- Select a circle of vertex (front view)

- Move the selected circle in the top view and optional for better effects rotate it in one of the side views.

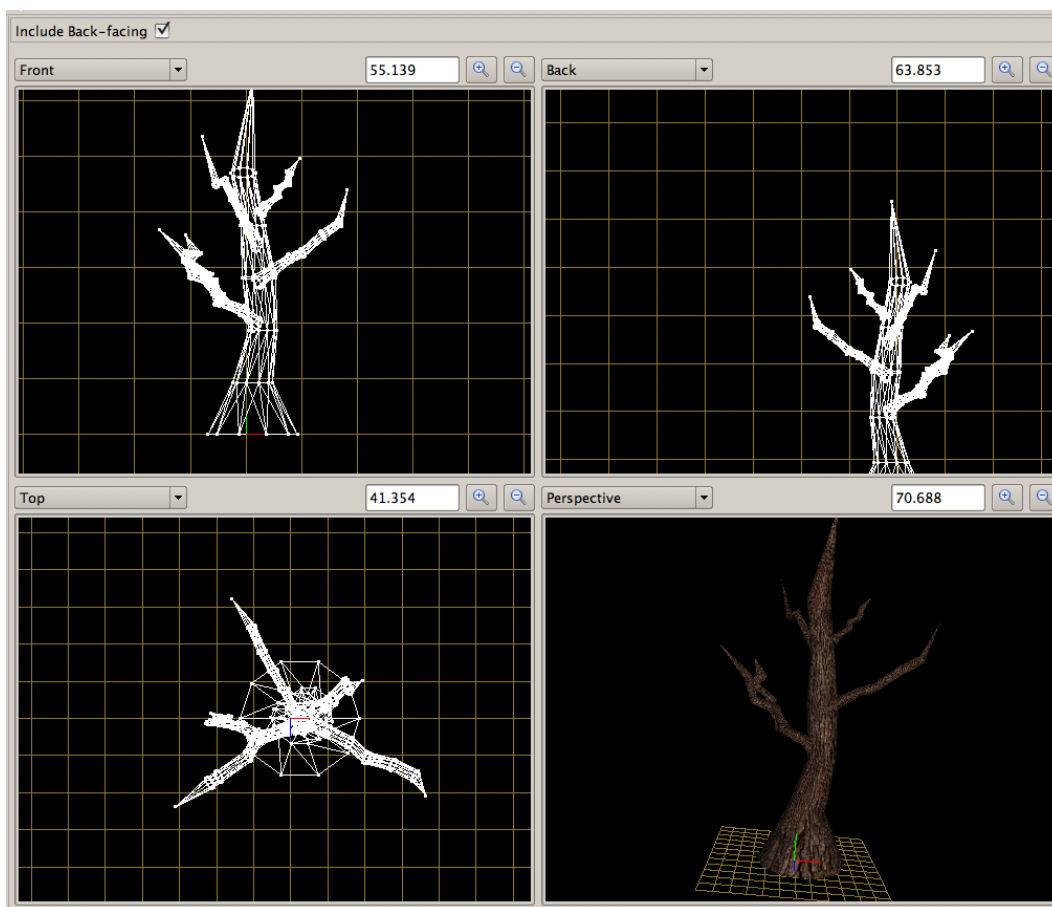- Repeat the actions with other selections, until you think the trunk looks fine.

Step 4 - Creating the branches

For the branches we use the copied mesh from step 3. However, you can also create new meshes for the branches.

To create the branches:

- Duplicate the mesh from step 3.

- Transform it using the same methods as the trunk.

- Scale it, so that a branch is thinner and smaller than the trunk. Optional you can also remove one or more segments (For this select the vertices on the base and remove them).

- After that select, rotate and move the branch mesh into the trunk or another branch.

- Repeat the actions as many times you want, but keep in mind, that 3 to 5 branches looks fine in most cases.

Step 5 - Modeling the foliage

There are various ways to model the foliage. Because this is a beginner tutorial, we will choose an simple way here. The result isn't perfect, but for the first tree it isn't too bad.

In order to begin, we need a new texture for the foliage that represents the leaves and small branches of a tree. So we do not really have to worry about the form, it is the best to use a texture with alpha channel.

Note: To see the alpha channel effects in the perspective view, select the menu item "View -> 3D Alpha Blend".
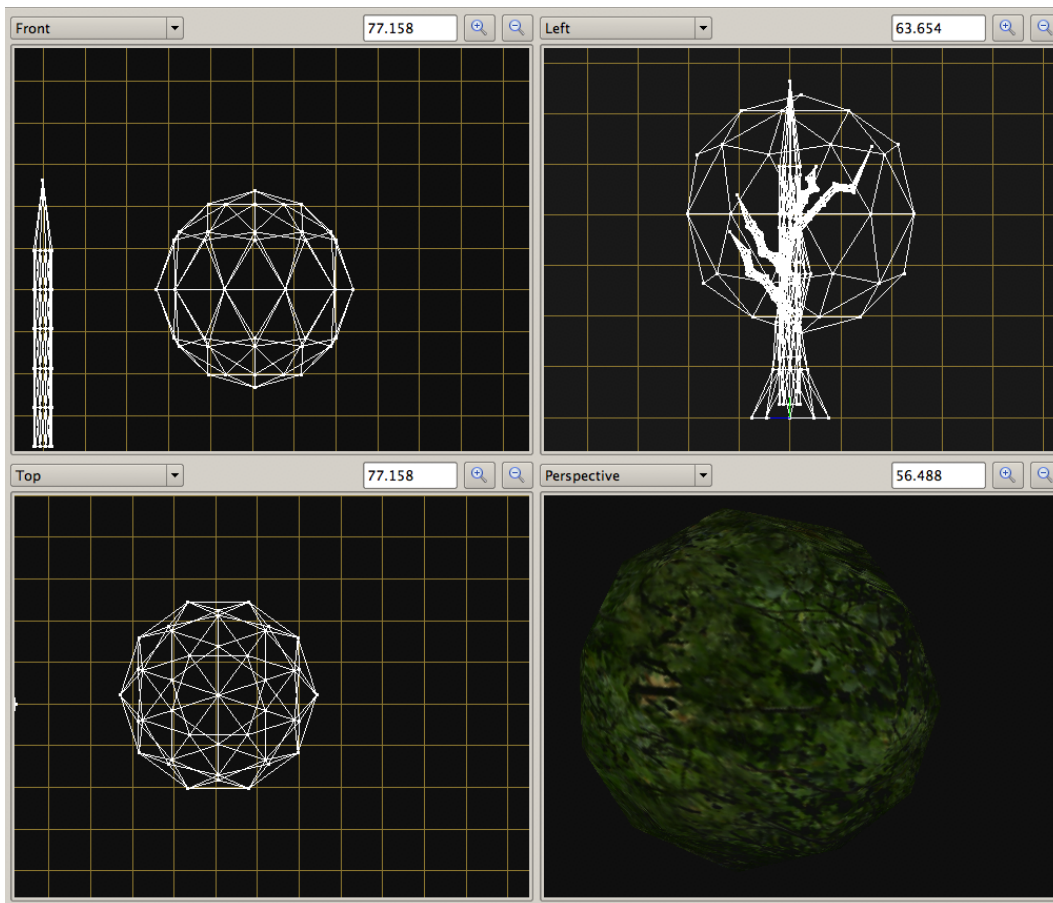
To add such a texture:
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- Open the material panel, create a new material named "foliage" and set your texture.

- Don't forget to add the new texture to the model's meta data. To do it, choose the menu item "Edit- > Edit Model Meta Data" and add a new key/value pair. For example "MD3_ PATH_foliage" and "textures/".

After that:

- Choose the "Create Ellipsoid" tool, select the options "Sphere" and "From Center" and set smoothness to "1" (80 faces).

- Drag a sphere away form your trunk and branches in one of the 2D views.

- While your sphere is still selected, open the group manager (Cmd+G), create a new group named "foliage", choose the texture "foliage" and click "Add to group". Then click on "Ok" to close the group manager.

- Choose the "Create Projection" tool, set the type to "Sphere" and drag the spherical projection inside your sphere mesh. The center of the projection should match the center of your mesh.

- Rotate your projection, so that the projection axis is vertical.

- Select your spherical mesh and choose to the menu item "Material -> Edit Projection". Within the panel click on "Add faces to projection" and close the panel.

- Delete the projection (same reason as at the beginning of the tutorial).

- Open the texture coordinates panel and adjust the texture scale (It is a little bit more difficult to get it work for a sphere than for a cylinder).
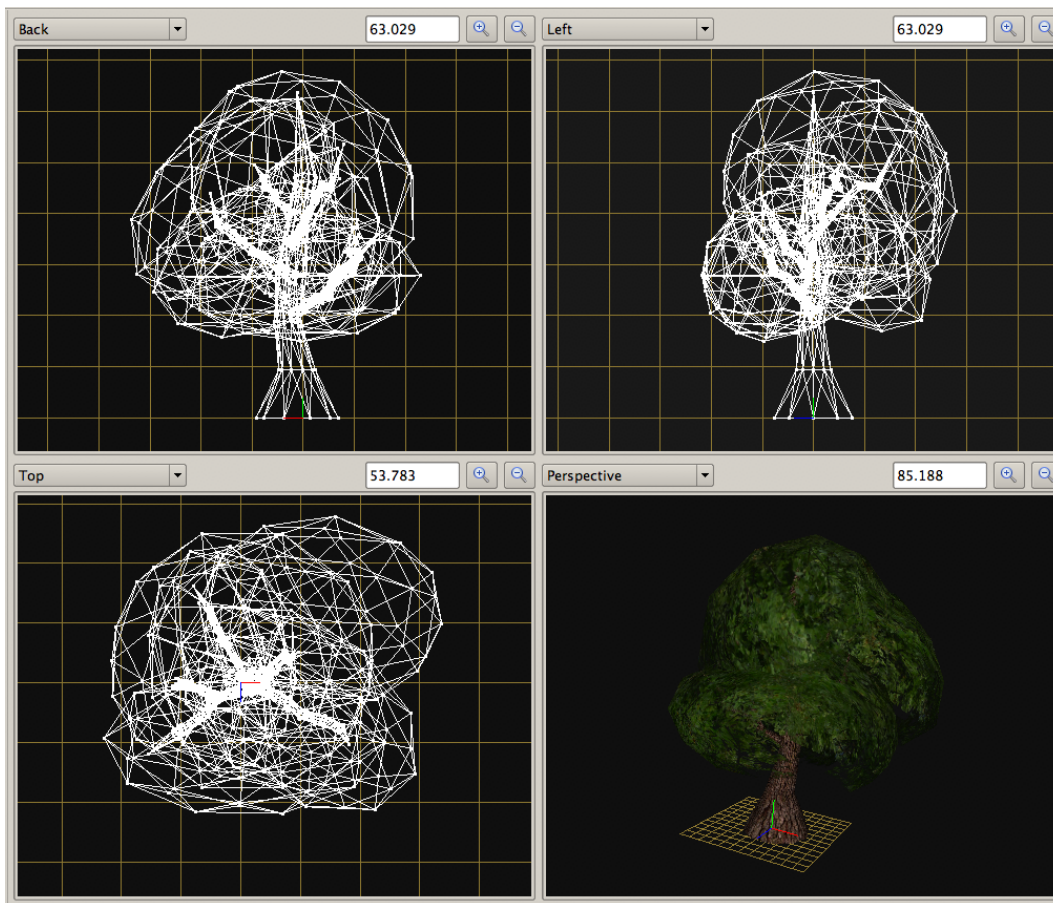
Now we are close to the end. Our final task is to fill our trunk with the just created foliage.

For that:

- Duplicate your foliage mesh.

- Move the copy into the position you want.

- Change the scale, if necessary.

- Rotate it and fix the mesh in the middle of a branches.

- Make larger foliage spheres that overlap and intersect smaller ones and deform them.

- An so one, until you are satisfied.

Last but not least remove all useless meshes that you used for Copy & Paste, and move the whole model, so that the base of your tree match the origin. It will be easier to map your model this way later, for example in Radiant.

Step 6 - Exporting the tree

When everything is fine, save your tree in Quake MD3 format to use it your Q3-based game.

Further steps

If you would like, you can improve your model in many ways. For example you can:

• Add additional branches.

• Use different textures for different parts of the tree.

• Use other meshes or forms to create the foliage.