



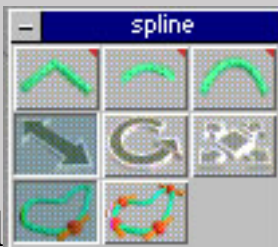


## Boat Hull © by Barry Christian

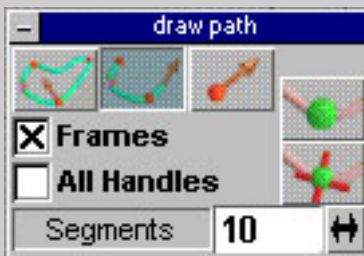
One of the things I had a hard time modelling was a boat hull. Specifically a canoe hull. After this tutorial, I hope you can say, "Why would you have a problem with that? Its easy." If that happens, then I have done my job. One of the reasons I had this problem was that I tried to build everything from primitives. Some things just aren't suited well to that. A boat hull is one of those things. Because of this, I needed to learn how to use the polygon tool and the sweep tools better.


### Setup your Screen and Tools

To begin with, we will setup our screen to the best advantage or vantage you might say to create this model. I prefer the main view set to Top  with two additional views, perspective , and front . You can see this setup in figure 1 (next page). Then we begin the model with the spline tool . First, right-click the spline tool to bring up the spline tool's properties

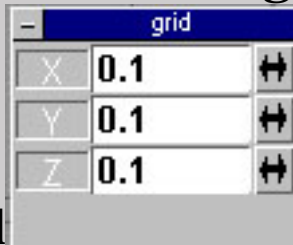


panel, then left-click it to bring up the main




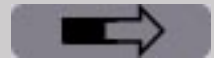
panel. It is probably a good idea to use the grid . I selected 0.1 in each axis for my grid.

This allowed me to keep it in the small part of the screen I was using. You set the grid by right-clicking the icon for the grid to set the values in its properties



panel and then left-clicking it to activate it.

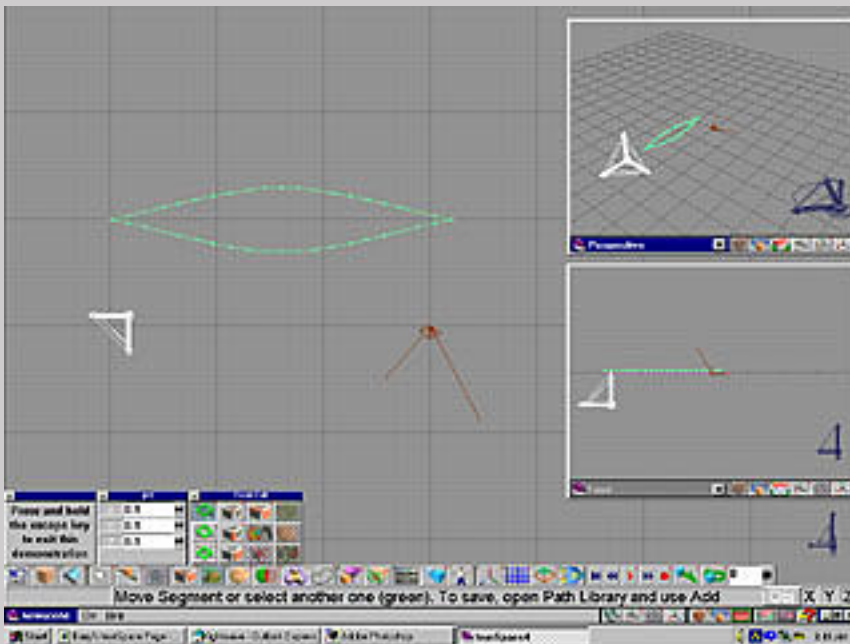
You will notice it is now grey .



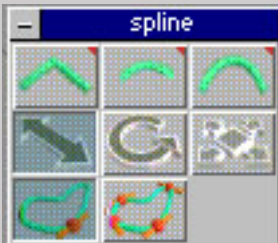
## Creating the Basic Shape

Of course, hull shapes are many and varied. I have chosen the canoe hull, but this works for just about any hull shape. To start, we draw the "top" of the hull. This would be the deck. We are actually building the boat hull upside-down. Hey, come to think of it, that's how real boats are built. Hopefully from the tutorial, you see that you only need 4 points on the spline for the canoe hull. You can also refer to figure 1. You need one each for the bow and stern. (That's front and back, respectively, for you land lubbers). You also need one on each side at the center of the boat. (midships).

Figure 1





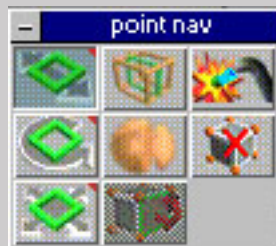
Now you need to set the spline corner setting for the bow and stern vertices to "sharp corner". You do this by clicking the upper left button in the spline properties





panel while you have the corner to act on selected. Once you have done this for the bow and stern (front and back) you can go to the sweep/extrude tool to shape the object into the hull.

## Extruding the Hull

It is a good time to turn of the grid by clicking the grid icon . Now click the sweep/extrude icon . You will notice in your front view that the flat shape you created earlier is now a 3D version of its former self. You may also notice that it is too tall. That's okay though because we are going to change that in just a moment. The default tool that is ready once you extrude it is the "Point Nav, Point Move" tool. This is in



the Point Nav panel . you will see it grayed out(selected) in the accompanying image. If you are using trueSpace 4, you may not see the panel. In that case, you can bring up the panel by right-clicking the point edit icon . If you are using trueSpace 3 this will not work, but you will not need to do it because it is already there automatically. (I don't know why.) If you place the cursor in the perspective window, you can hold the right button of the mouse down, thereby only adjusting the Z axis of the extruded face of the hull. If you extrude it about 4 or 5 times it should be

enough to make it smooth without creating too many polygons. As you extrude it, you will need to size your selection down with the "Point Nav, Scale" tool. You will find it in the Point Nav Panel where you found the Point




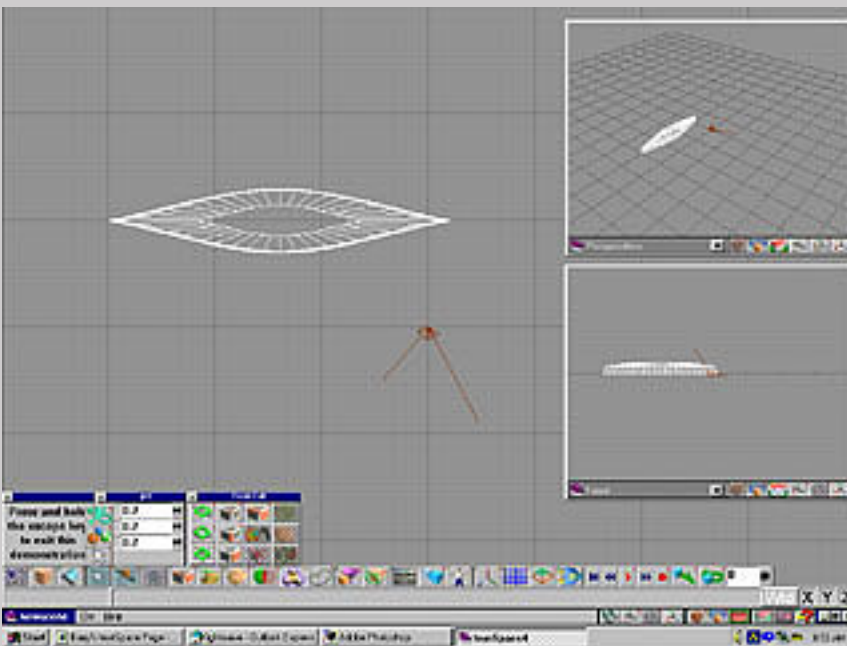
Move tool before . Notice the grayed out icon in the Point Edit or Point Nav Panel depending on whether you are using ts4(Point Edit) or ts3(Point Nav). Each of the extrusions should not be much smaller than the first because a canoe hull isn't too extreme. Only the final extrusion should be a lot smaller as you can see in Figure 2. Figure 2 shows the completed hull. Once its complete, click the "Object Tool" . This will de-select the face and select the entire object.


Figure 2

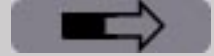


You will notice that the canoe is upside-down. You can

turn it over by whatever method you like.

I like to enter -180 in the "rotate X" axis in the object info panel that you bring up by right clicking the

"Object tool" .

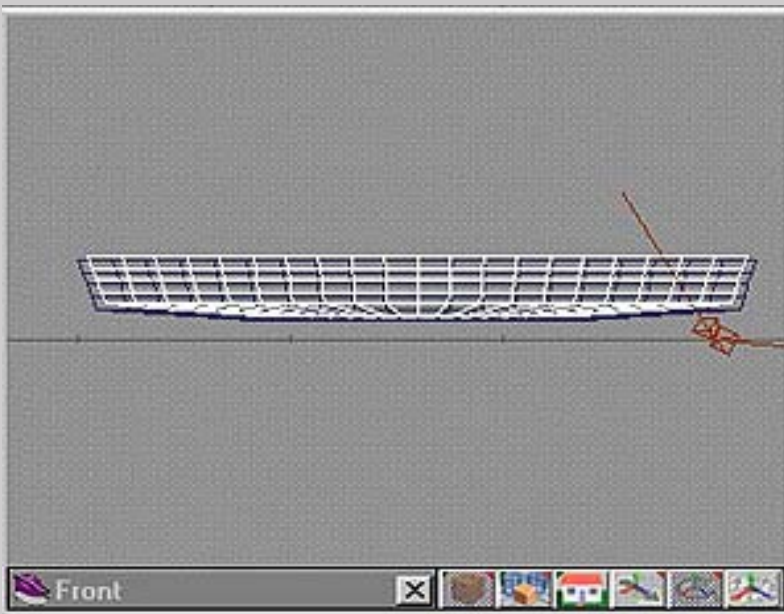





## "Hollowing Out" the Canoe

In the old days, you would have to build a fire over your canoe and contain it with clay or mud to the top of the log and chip out the burned wood of your hull with your hatchet. Fortunately, we trueSpacer's have the "boolean subtraction" tool. To subtract something from the hull, we need something to subtract from it. There is where another useful tool we take for granted comes in. The copy tool. You can click the icon or press "CTRL-C" to do this. Now you have an exact copy of your hull violating the laws of physics. It is in the same place at the same time as your original hull, but this is a good thing.

Figure 3



Now select the "scale" tool . With your mouse cursor in the perspective view, hold both left and right mouse buttons and pull down and to the left to scale the hull down. Only scale it a little bit smaller. Figure 3


shows how the front view should look. Notice that the inner hull has also been raised slightly. This is critical. Otherwise you will end up with a hollow hull, but no opening at the top. Now select the larger hull and click the "boolean subtraction" tool . Your cursor will change to something that looks like an upside-down glue bottle. Click the inner hull. Don't worry, click anywhere on the two objects where they intersect. It will choose the appropriate object to subtract. There are only two and it will not select the outer hull. Now your hull should look something like the one in Figure 4.

Figure 4

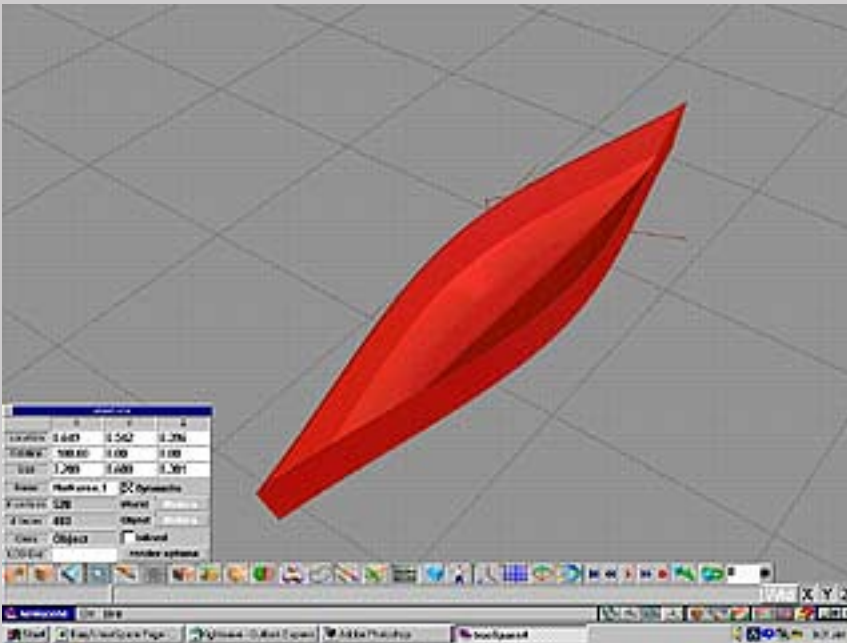


Figure 5 shows my canoe after I added some wooden seats and some material rectangles.

Figure 5





I hope this helped you. It was a lot of work, but I really enjoyed doing it. I hope you enjoy making your boat hull. My next installment will be how to make knife blades. This was another difficult modelling experience for me, but I have found a way that is easy (relatively) and gives you an accurate model. I also have been playing with trueSpace 4 and boat hulls again. This time using nurbs. It is pretty interesting, but I haven't really gotten a hull I am happy with yet, but it is intriguing and we will see.

Close