<u>**Working with the Attribute Holder**</u>

1. **Create the box-**
   On the **Create Tab,** select the **Standard Primitives** option and click on box
   to create your box character.   Set the **Length to 100**, **Width to 70** and **Height
   to -25**. Change the **Length Segs**, **Width Segs** and **Heigh Segs** to **5.**
2. **Apply the Bend, Twist and Stretch modifiers to the box-**
   Go to the **Modifiers** menu and scroll down to **Parametric Deformers**. Apply
   first the **Bend modifier**. Do the same for the **Twist** and then the **Stretch**
   modifier.
3. **Apply the Attribute Holder-**
   Go to the **Modifiers** menu and scroll down to the **Animation** option and
   select **Attribute Holder**. This will add the Attribute holder modifier to the
   top of the modifier stack. The order of the modifiers is irrelevant at this point,
   but your modifier stack should look like something like this. You MUST
   have the Box at the bottom and the Attribute Holder at the top for this exercise
   to work well.
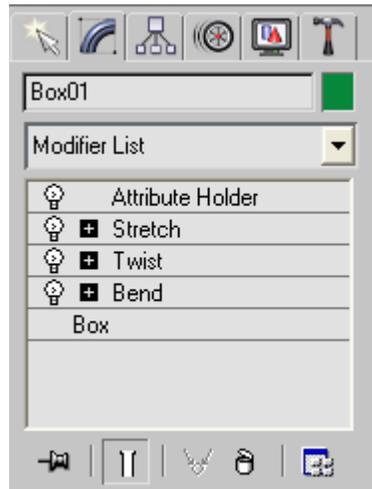
4. Select the Attribute Holder on the Modify stack now to link the values that you
   want to show on the options from the three modifiers underneath. It should look
   grayed out.
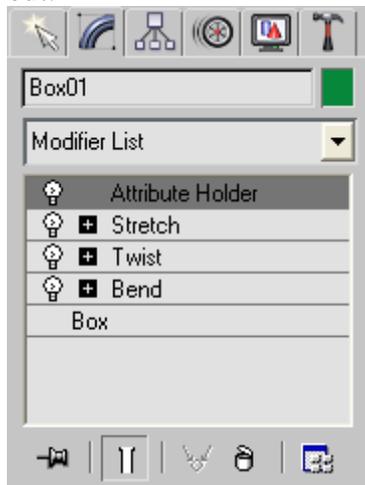
5. With the **Attribute Holder** still selected, go to **Animation – Parameter Editor** to add the parameters of your choice to the Attribute Holder.

6. Go to **UI Type** and change the Name to **Stretch**. Go then to **Range** and change the **FROM** value to **-100**. Then, click **ADD**.
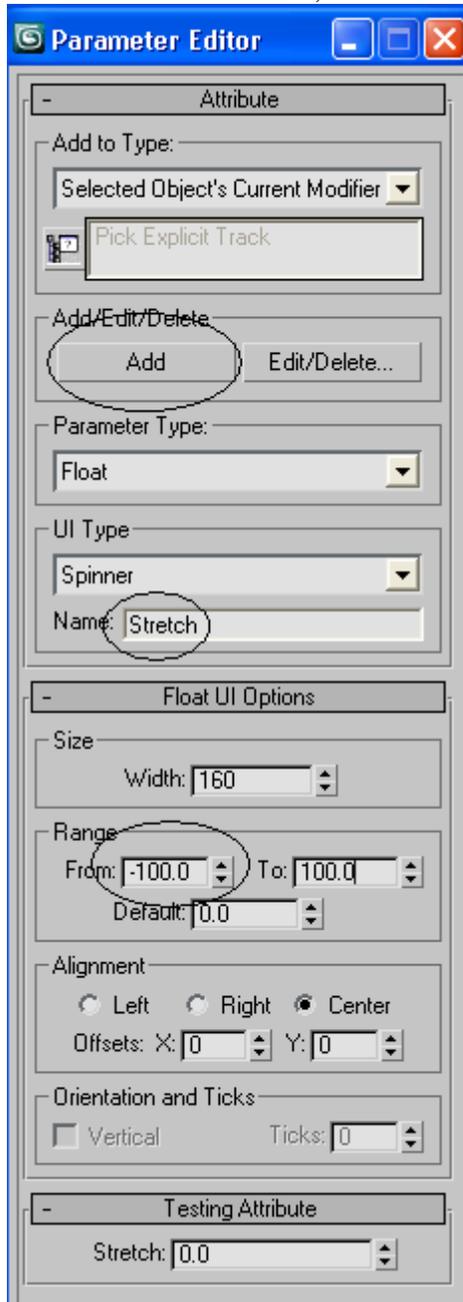

7. Repeat the previous step for the following **UI Type** by typing their names on the NAME textbox and clicking ADD: **Twist, Bend Angle and Bend Direction**. At the end, your **Attribute Holder**'s Attributes should look like this:
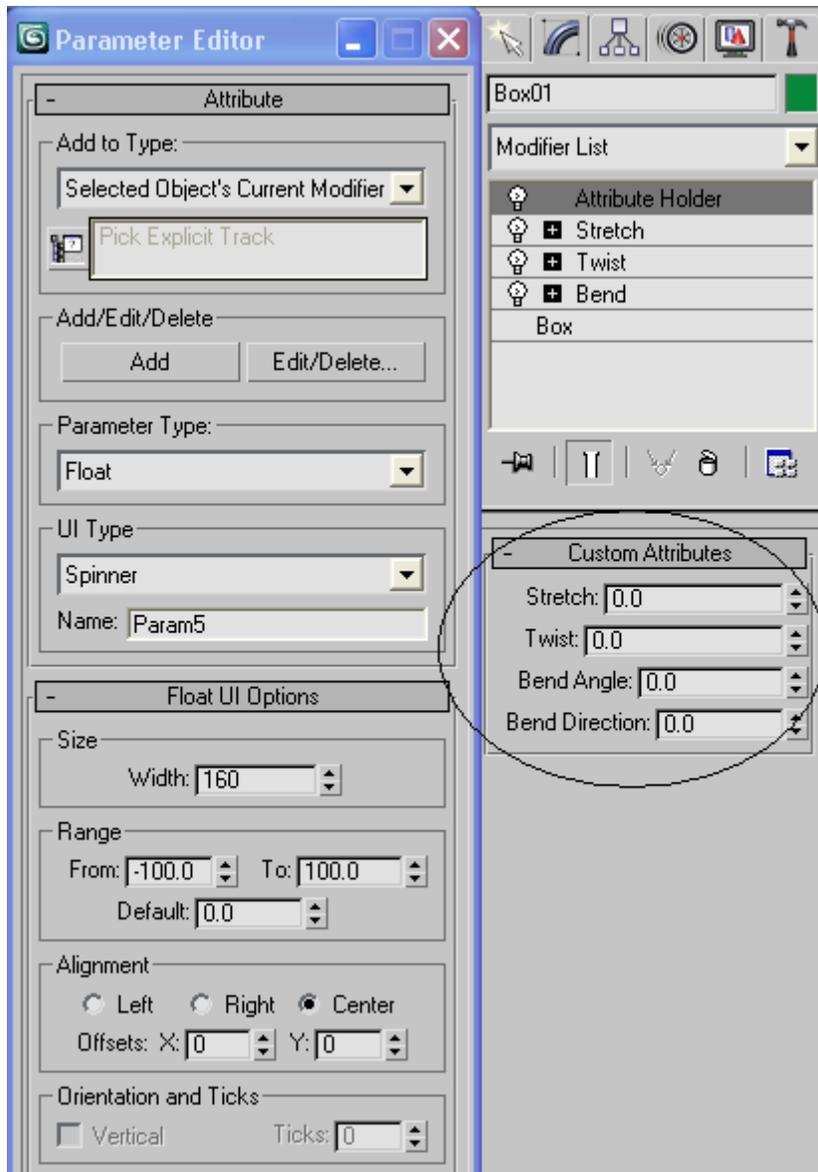
8. Close the Parameter Editor window by clicking on the top right X on the corner.
9. The values on the Attribute Holder are not setup yet, so if you test them, you'll notice that they don't work. We will next link the values of these parameters to the modifiers that you applied to the box.
10. In any viewport, right-click on the Box geometry and select the **Wire Parameters** option.
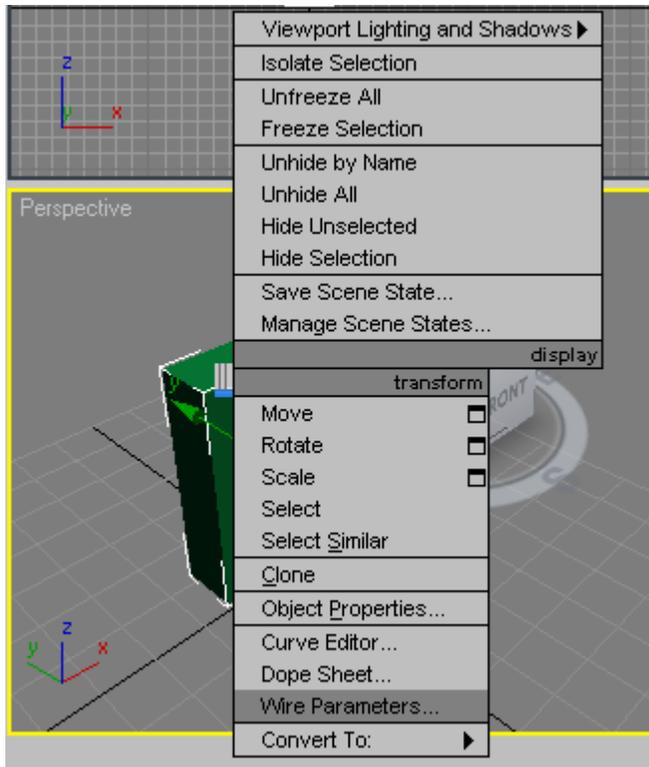
6. On the menu, click on **Modified Object – Attribute Holder – Custom Attributes – Stretch** to link the values of the Attribute Holder to the Modifiers that you applied to this box.
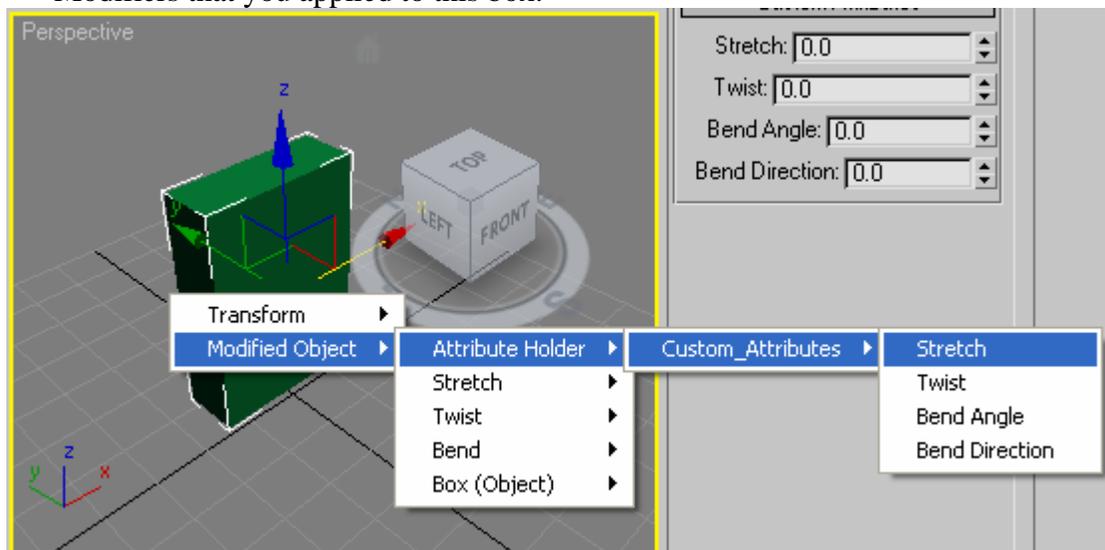
7. You will notice a dotted line if you move your mouse around the viewports. Click next anywhere on the viewports where there's nothing in space as shown in the picture below.
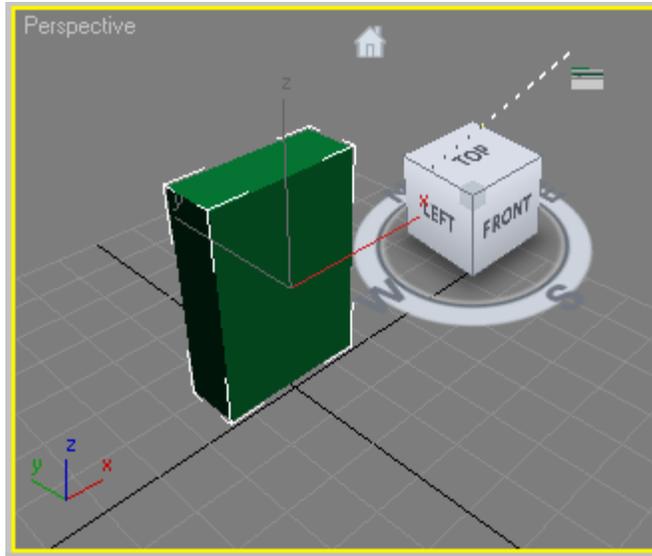
8. The **Parameter Wiring** window will open.
9. On the screen to the left, you will see the attribute holder's Stretch Attribute selected. Don't change the value on the left window. On the right window, click on the Stretch value that appears under the Stretch Modifier as shown below. This will bring the words Stretch to the text boxes at the bottom of the screen.
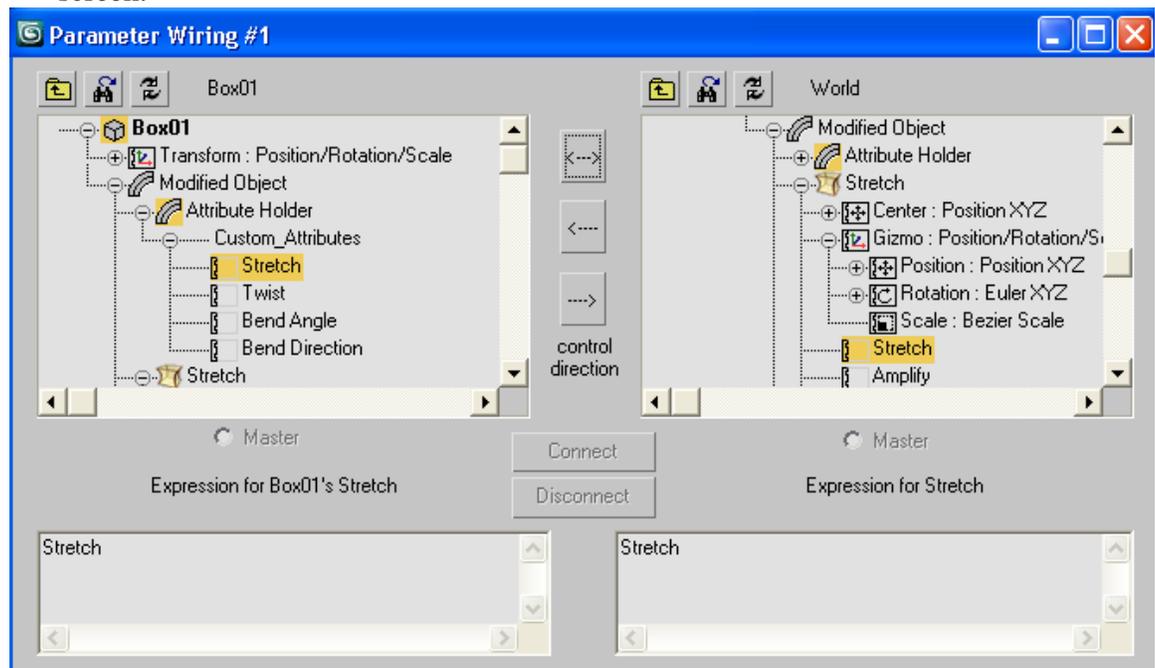

10. Click on the Two Way Connection button (the one that looks like an arrow with left and right ends:) and click **CONNECT**.
11. Close the window by clicking on the X at the top corner of the window.
12. Test now the Stretch parameter by click and drag of the up and down arrows. NOTE: if the stretch seems to be going on the wrong direction, adjust the stretch axis on the Stretch Modifier itself. In the example below, it was

changed to the Y axis. The stretching should happen on the axis that you have setup as height on your software.
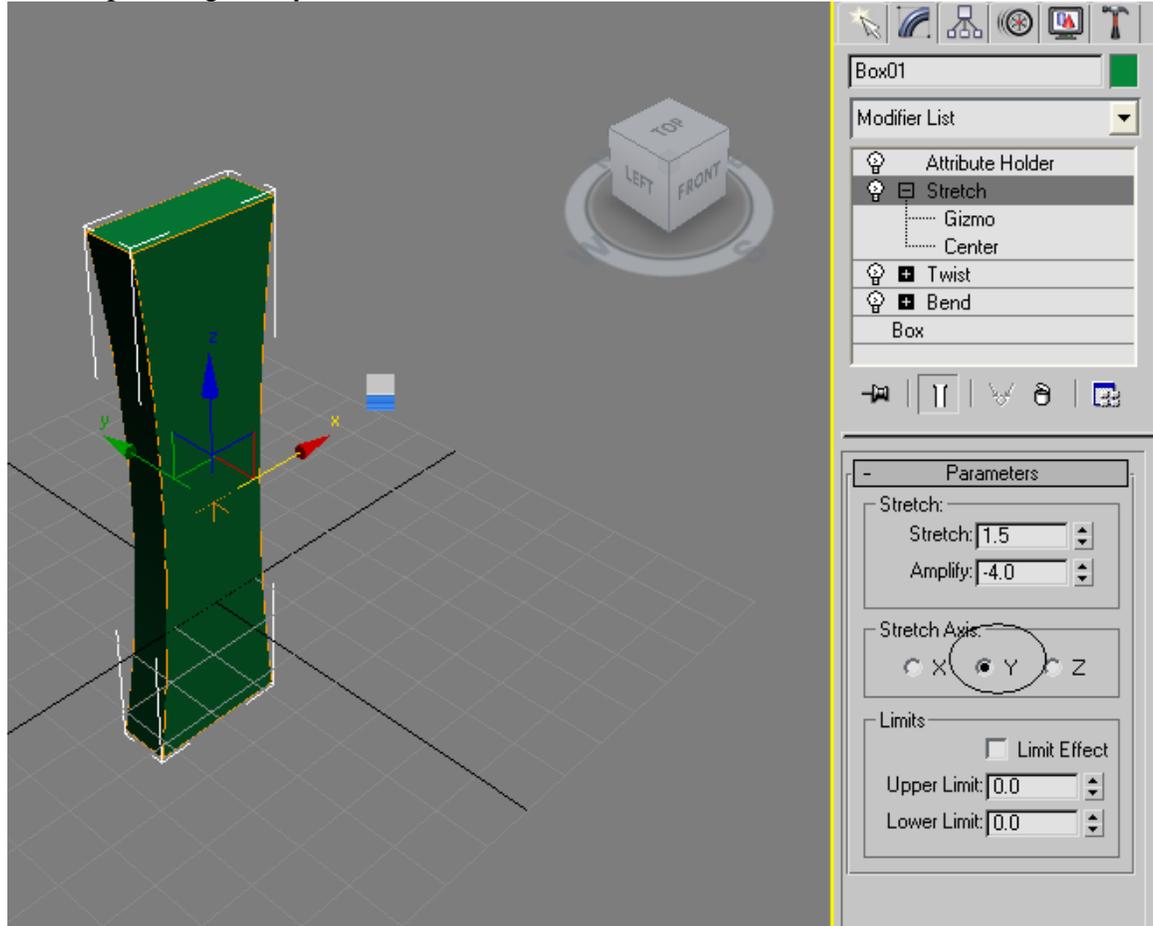

13. You might notice now that the box goes over the floor plane. To fix this, we'll then adjust the center of the box.
14. With the Move tool still selected, click on the Stretch modifier and select the Center attribute. Move the handles as shown in the picture so that the X axis is aligned with the ground plane.
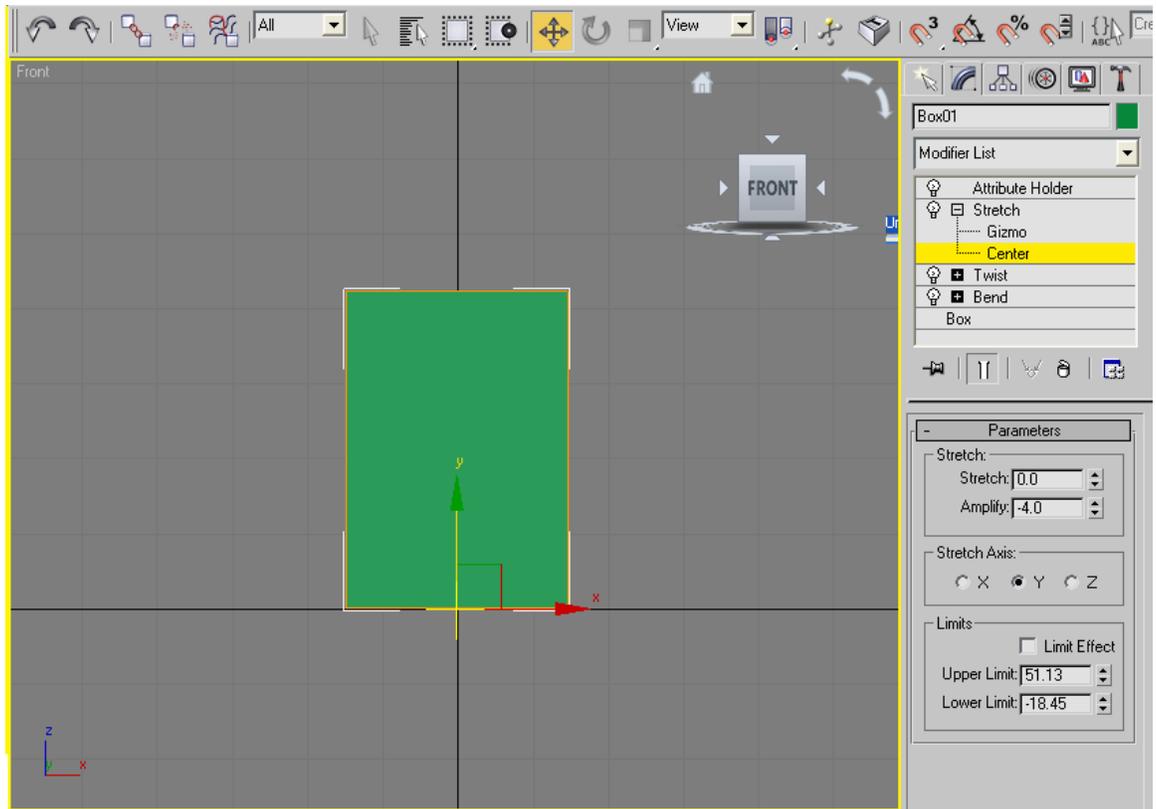
15. You will notice now when you work with the stretch modifier, that it stretches upwards and the box doesn't cross the ground plane.
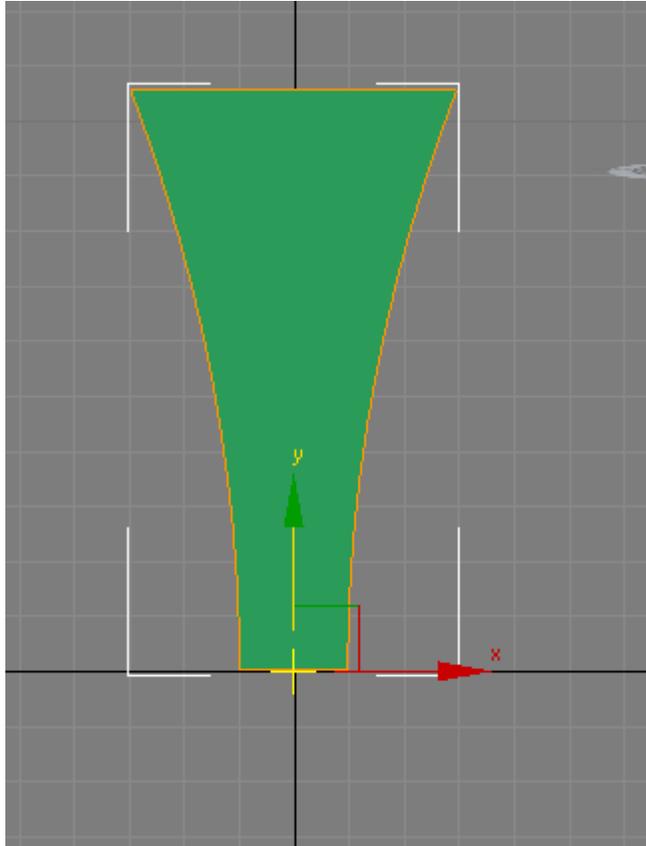
16. You have now finished setting up the Stretch Attribute for your Box.
17. Repeat the steps 6 to 11 but this time, substitute the Stretch Attribute for Twist. The only difference from what you did before is that when you reach the Parameter Wiring step, you'll select the Angle attribute on the right window under the Twist modifier. See the picture below for more on this. The other steps remain the same.
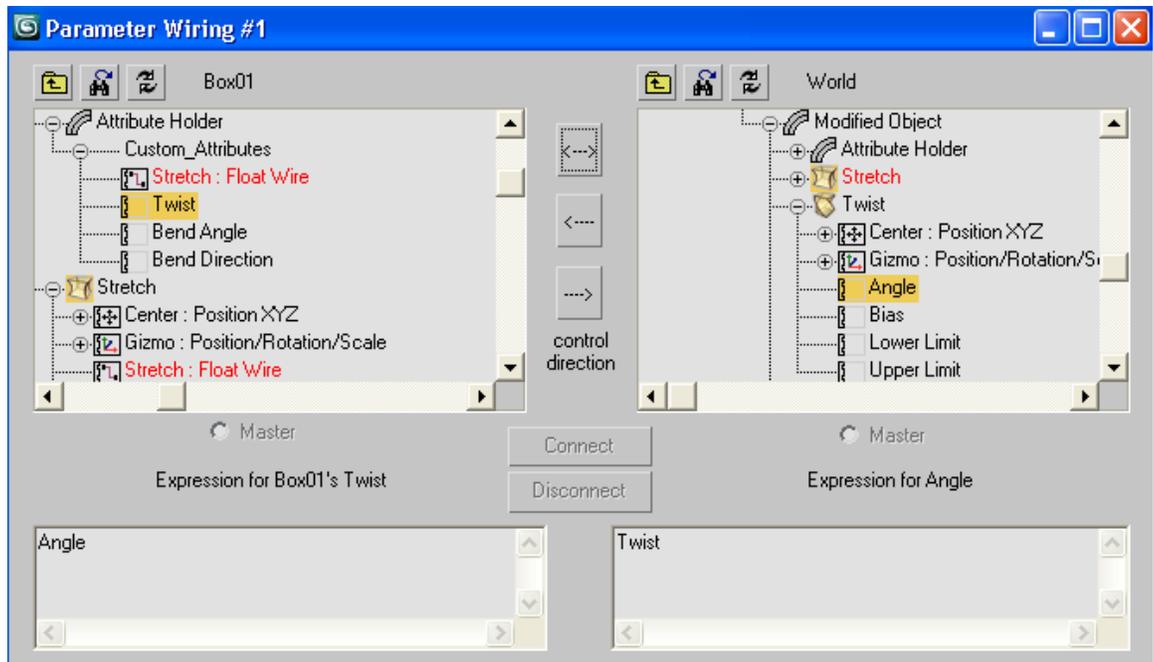
18. Remember to click on the Twist Modifier in the Modify stack if the twist happens in the wrong direction. Click on the Modifier and change the angle to Y as shown in the picture below, if needed. Also, adjust once more the Center of the Twist Modifier as shown below to make it twist and stay in place on the ground.
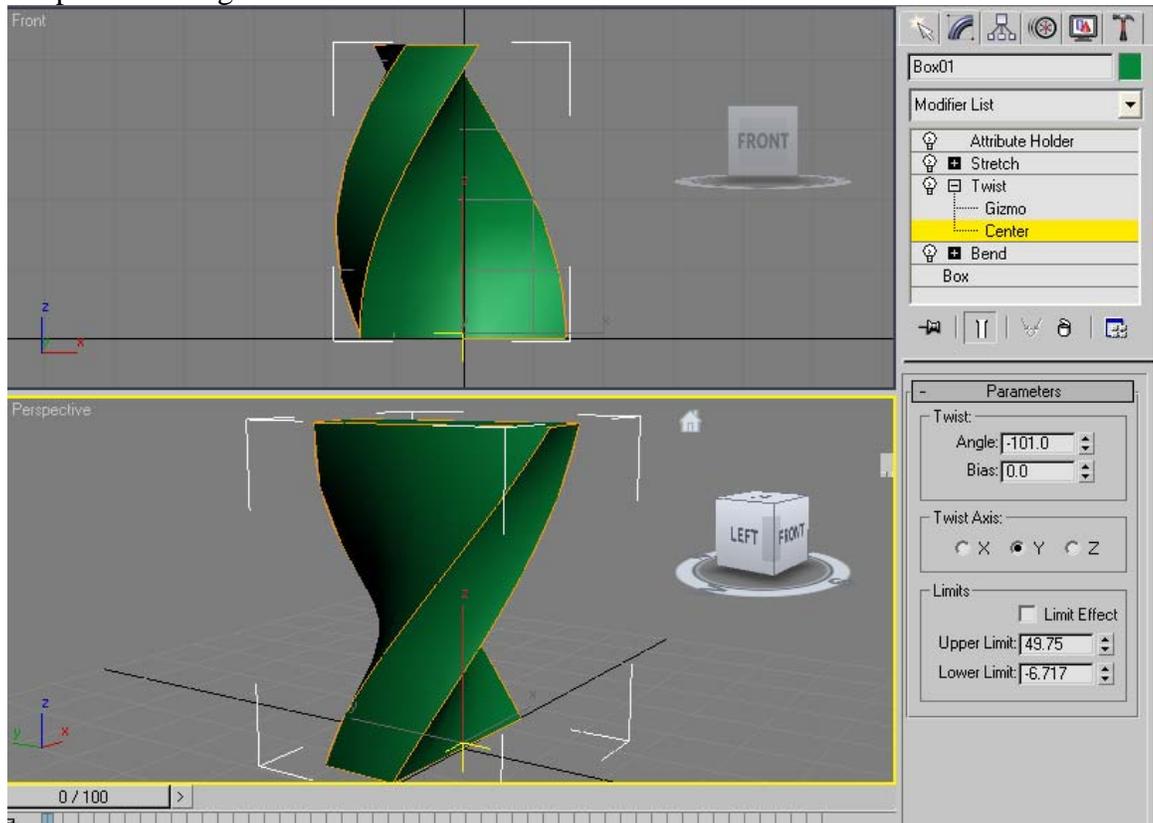
19. Repeat steps 6 to 11 for Bend Angle attribute. Remember to select the Bend
    Angle Attribute on the Parameter Wiring window as shown below.
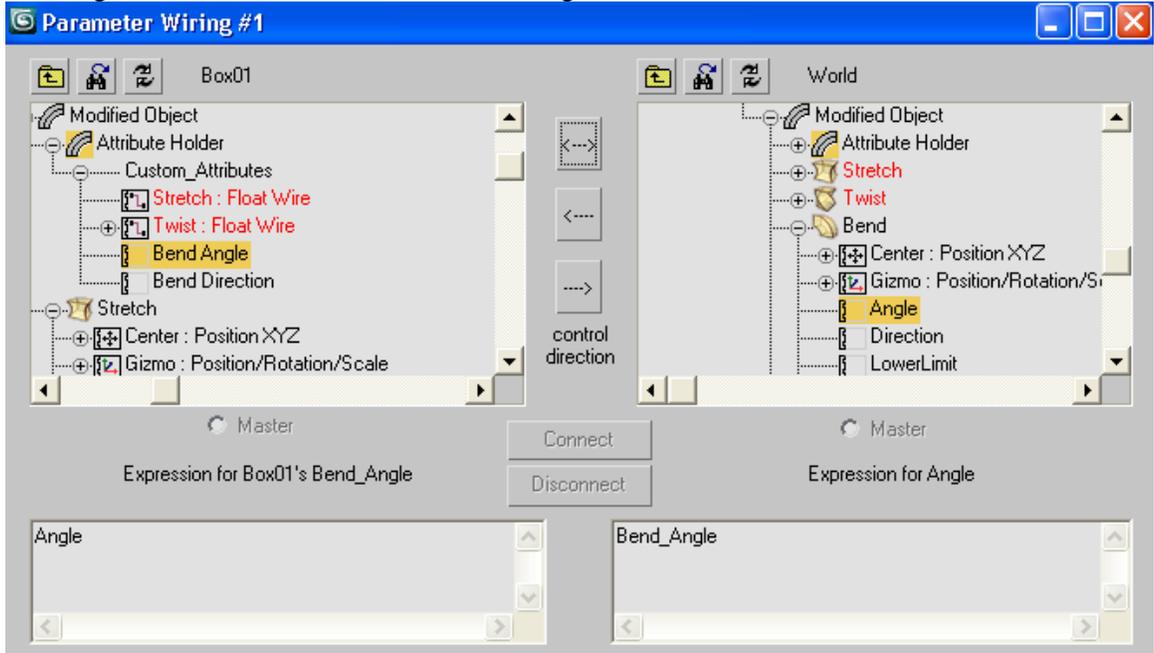
20. Once again, if you find that the direction is going wrong, try the settings
    below on the Bend Modifier. Also, move the Center of the Bend modifier to
    the ground plane in the Front Window.   The Bend angle should work as on
    the picture below.
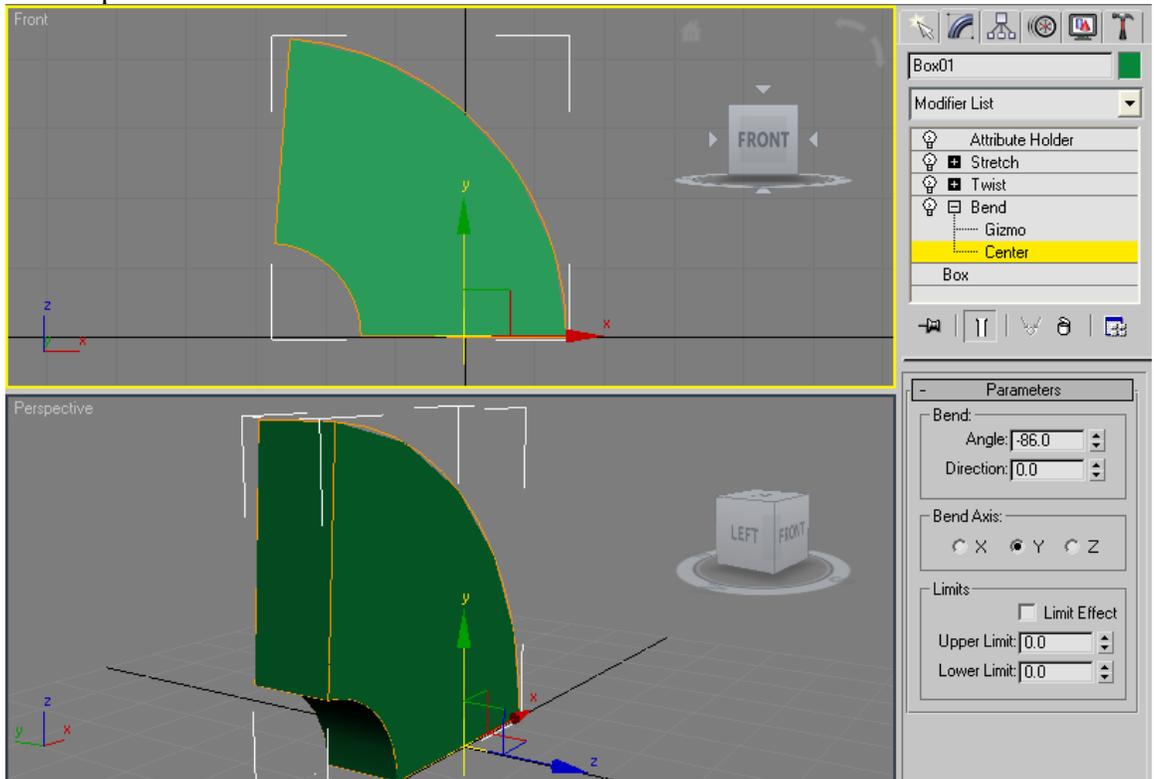
21. Repeat steps 6 to 11 again with the Stretch Direction attribute of the Attribute Holder. Remember to select the Direction Attribute on the right window when you reach the Parameter Wire window, as shown in the picture below.
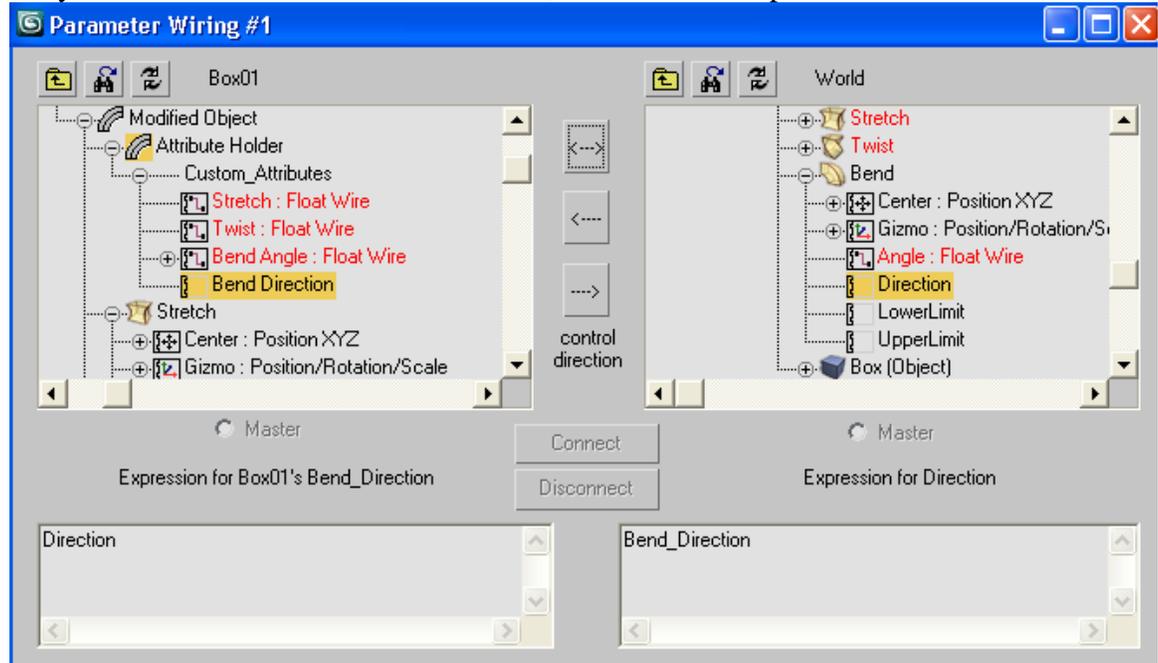
22. Test the Bend Direction attribute and keep in mind that this will affect the direction of the bending, so you need to increase the bend angle to test it. Otherwise, you will see no changes.