

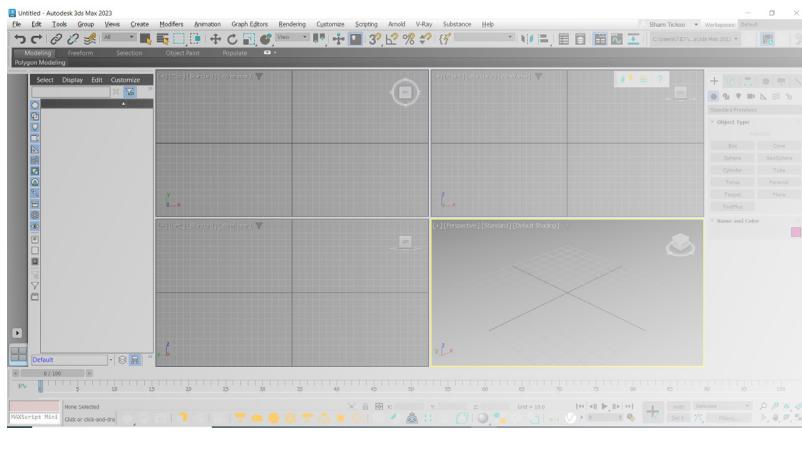
1

Introduction to Autodesk 3ds Max 2023

Learning Objectives

After completing this chapter, you will be able to:

- Understand the Autodesk 3ds Max interface components
- Use controls for creating or modifying objects
- Use and customize hotkeys in Autodesk 3ds Max
- Customize the colors of the scene elements



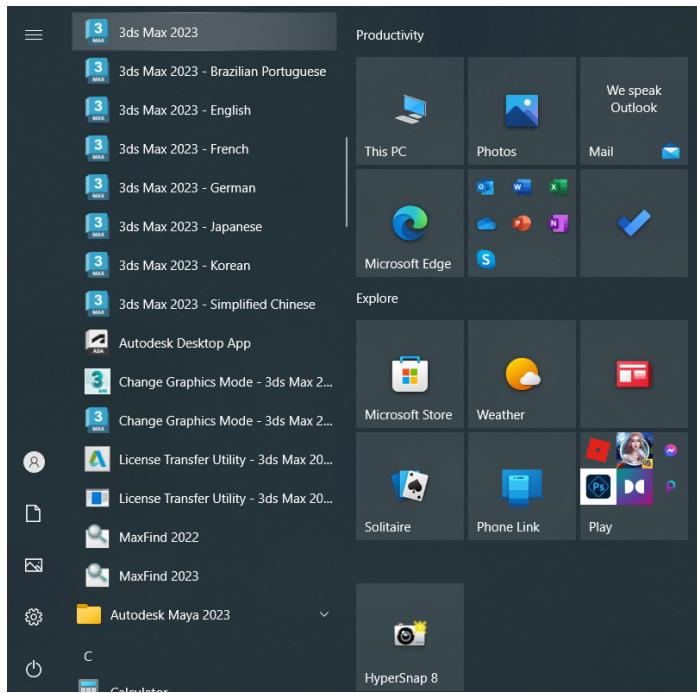


Figure 1-1 Starting Autodesk 3ds Max 2023 from the taskbar

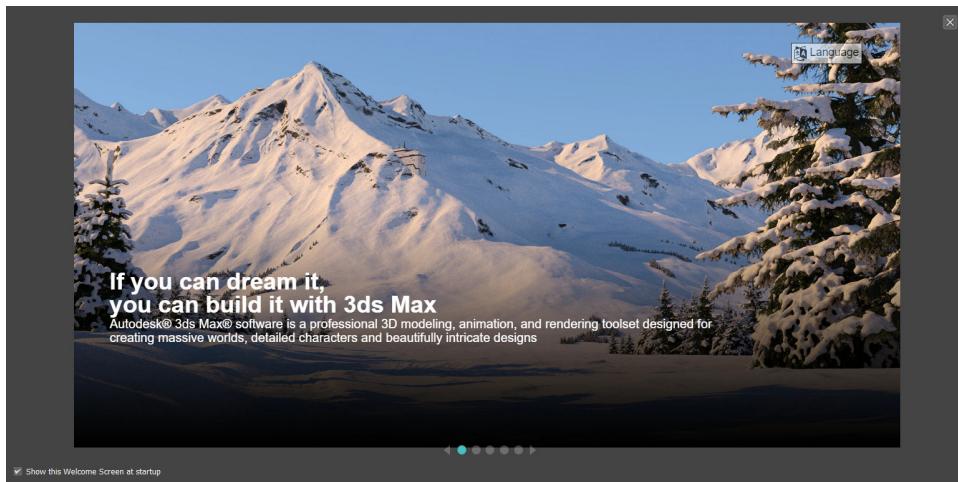


Figure 1-2 The Welcome Screen

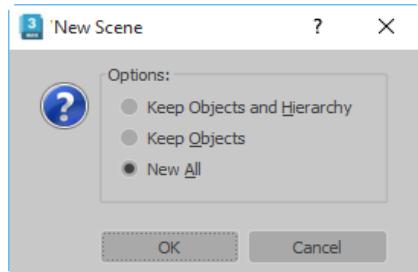


Figure 1-3 The New Scene dialog box

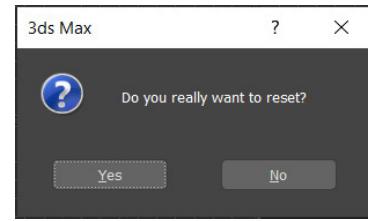


Figure 1-4 The 3ds Max message box

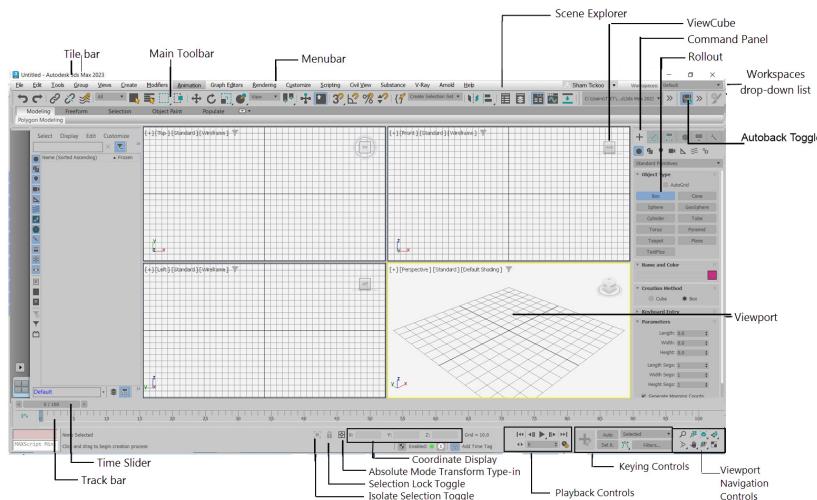


Figure 1-5 Different screen components of Autodesk 3ds Max interface

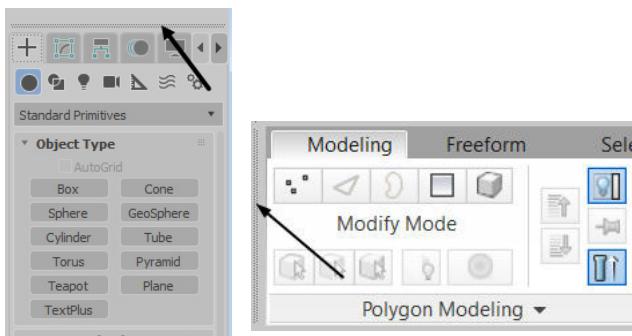


Figure 1-6 The handles marked with arrows

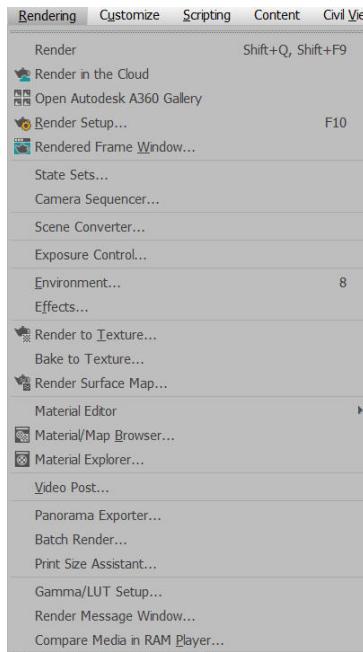


Figure 1-7 The keyboard shortcuts in the **Rendering** pull-down menu

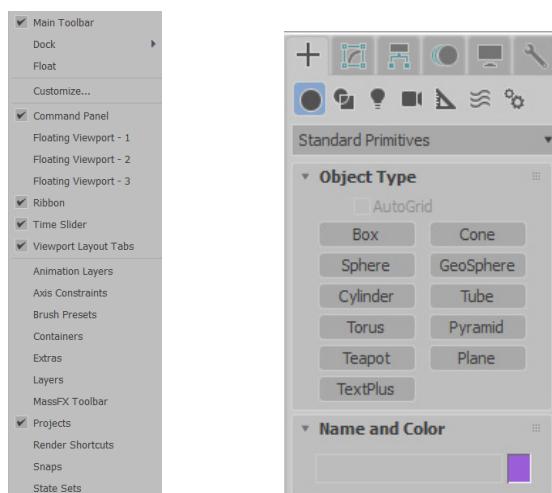


Figure 1-8 The shortcut menu displayed to view the hidden toolbars

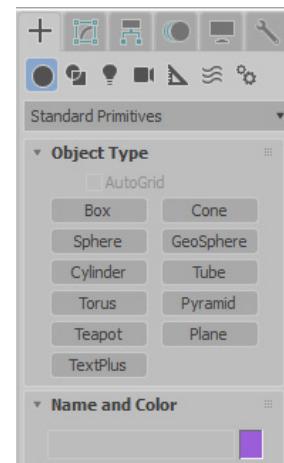


Figure 1-9 The **Command Panel**

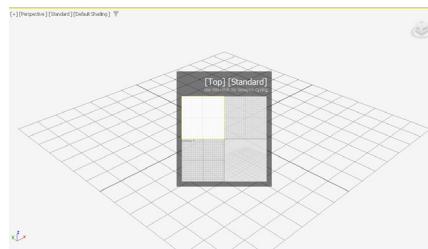


Figure 1-10 Selecting a viewport to make it active

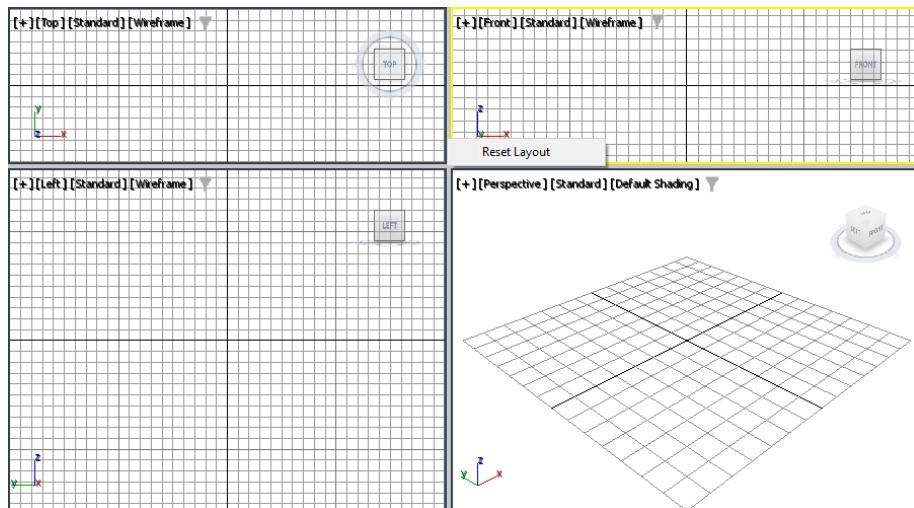


Figure 1-11 The **Reset Layout** option in the shortcut menu

[+] [Perspective] [Standard] [Default Shading]

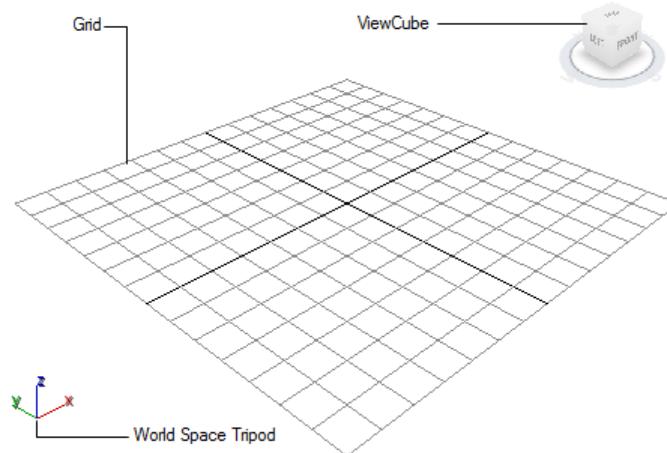


Figure 1-12 The world space tripod, grid, and ViewCube in the Perspective viewport

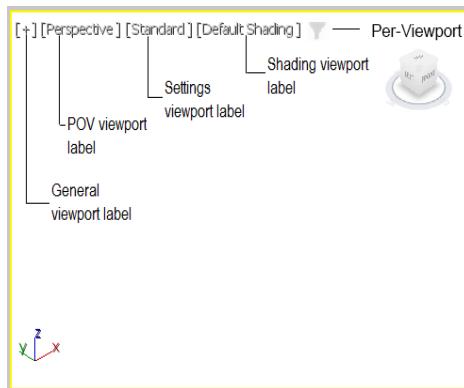


Figure 1-13 The viewport labels in the Front viewport

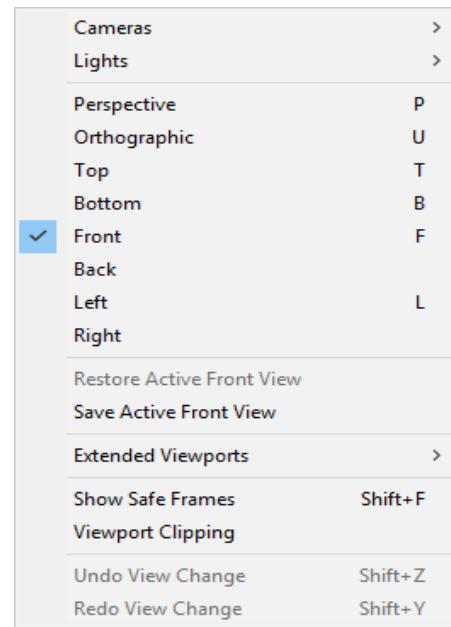


Figure 1-14(a) The flyout displayed on clicking the POV viewport label

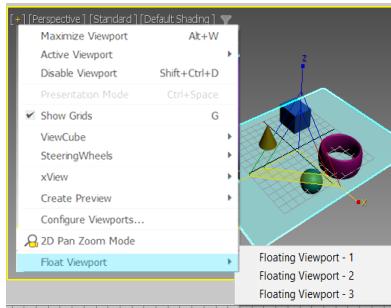


Figure 1-14 (b) The cascading menu displayed on choosing the *Float Viewport* option

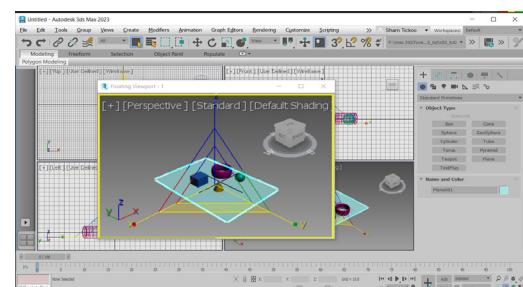


Figure 1-14 (c) The Floating viewport

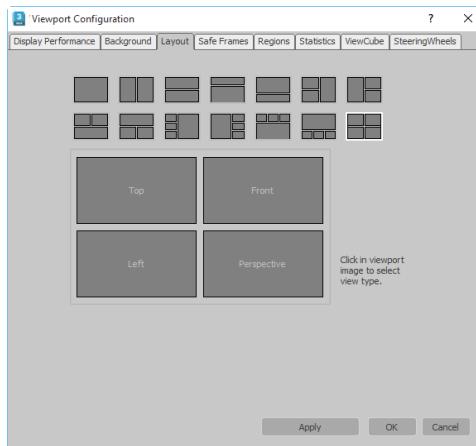


Figure 1-15 The **Layout** tab of the **Viewport Configuration** dialog box

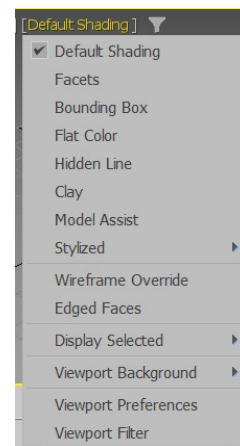


Figure 1-16 The flyout displayed on clicking the **Shading** viewport label



Figure 1-17 The viewport navigation controls



Figure 1-18 The animation playback controls



Figure 1-19 The animation keying controls

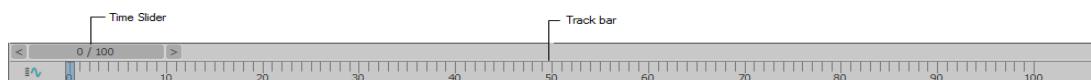


Figure 1-20 The track bar and the time slider

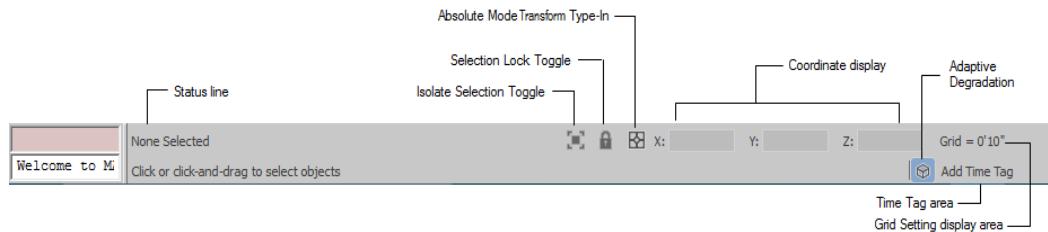


Figure 1-21 The status bar

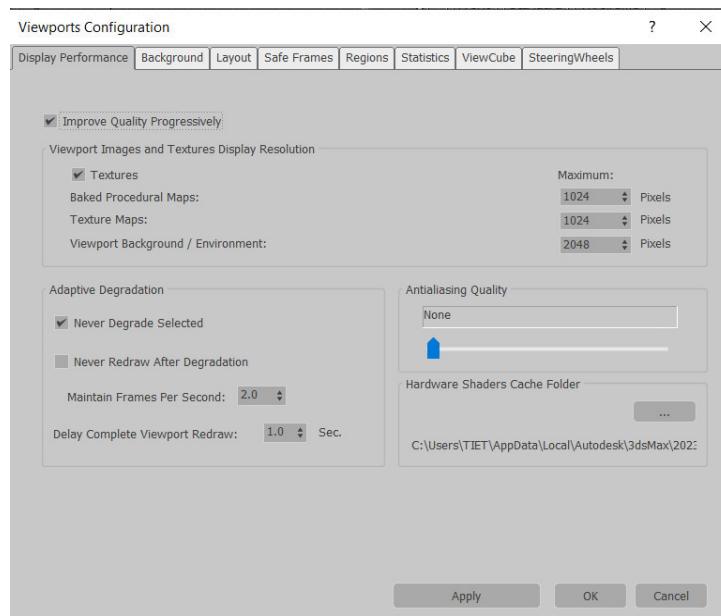


Figure 1-22 The **Viewport Configuration** dialog box

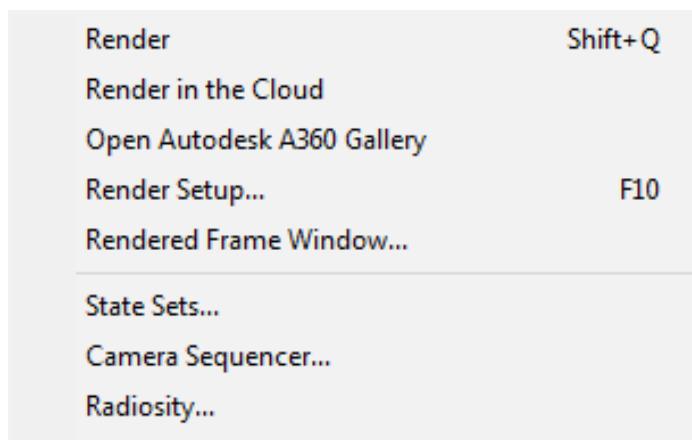


Figure 1-23 The **Max Creation Graph - Untitled** window

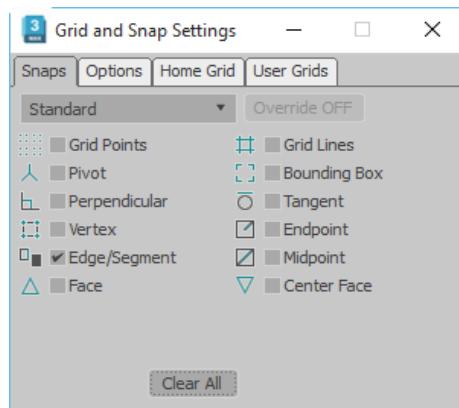


Figure 1-24 The Grid and Snap Settings dialog box



Figure 1-25 The Snaps Toggle flyout

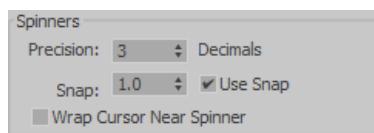


Figure 1-26 The Spinners area in the Preference Settings dialog box

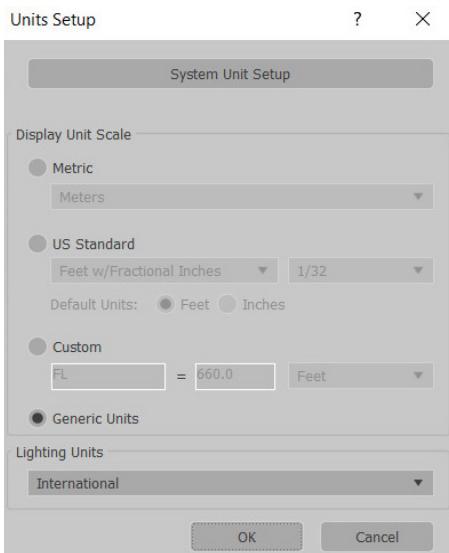


Figure 1-27 The **Units Setup** dialog box

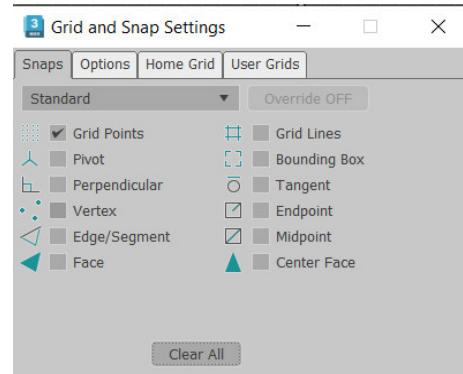


Figure 1-28 The **Home Grid** tab chosen in the **Grid and Snap Settings** dialog box

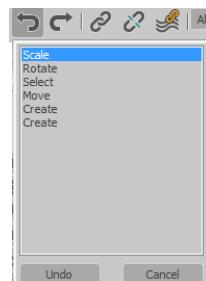


Figure 1-29 The list of actions displayed

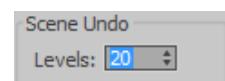


Figure 1-30 The **Scene Undo** area in the **Preference Settings** dialog box



Figure 1-31 The **About to Fetch. OK?** dialog box

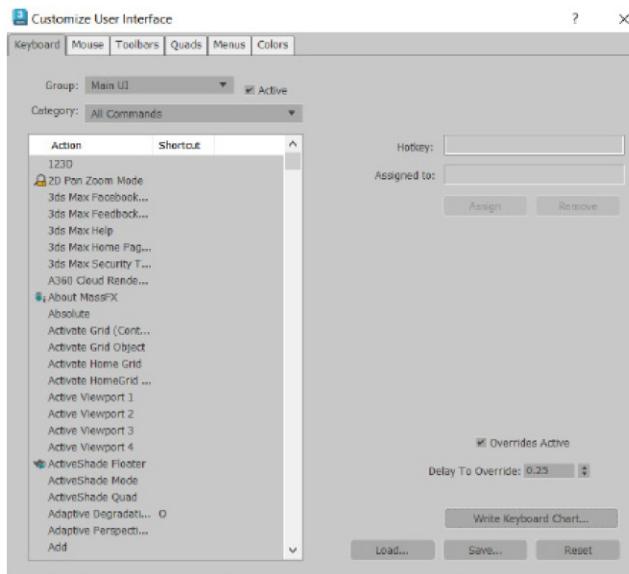


Figure 1-32 The **Customize User Interface** dialog box

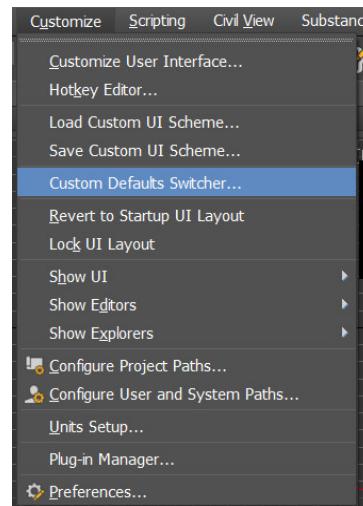


Figure 1-33 Choosing the **Custom Default Switcher** option from the **Customize** menubar

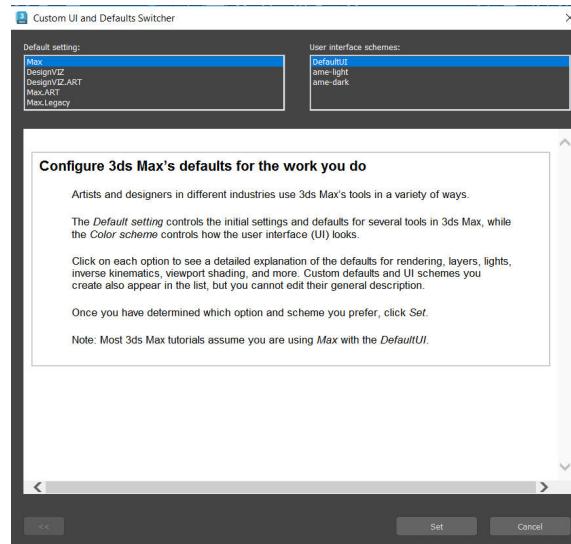


Figure 1-34 The **Custom UI and Default Switcher** dialog box

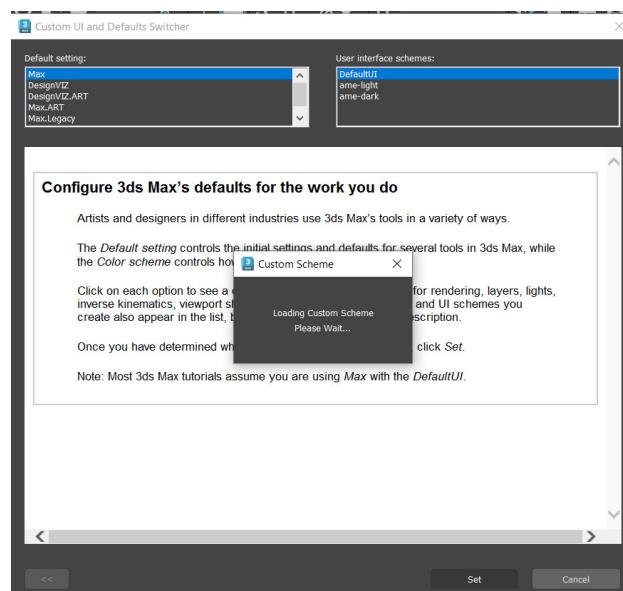


Figure 1-35 The **Custom Scheme** message box

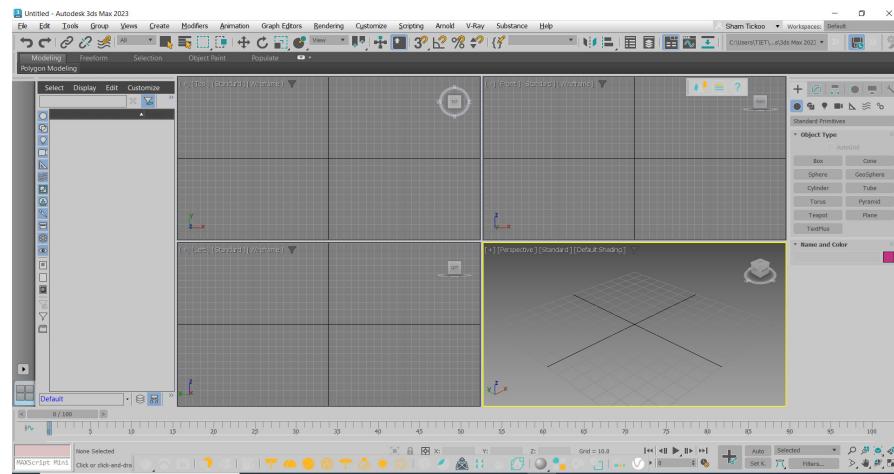


Figure 1-36 The Interface changed into light color

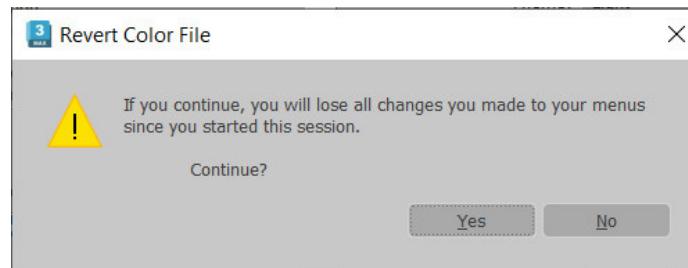


Figure 1-37 The Revert Color File message box

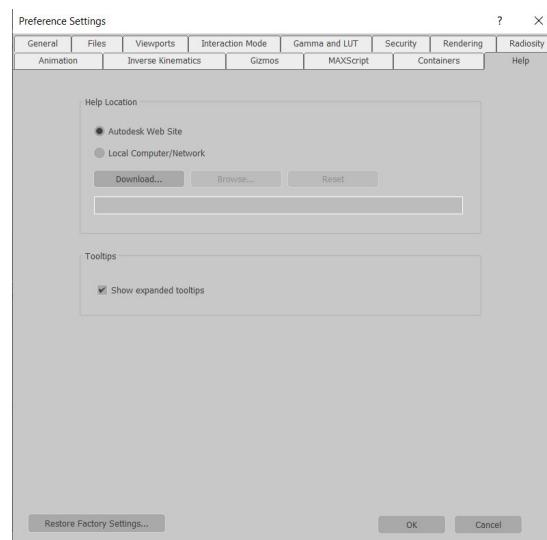


Figure 1-38 The Help tab chosen in the Preference Settings dialog box

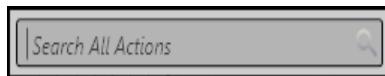


Figure 1-39 The search field

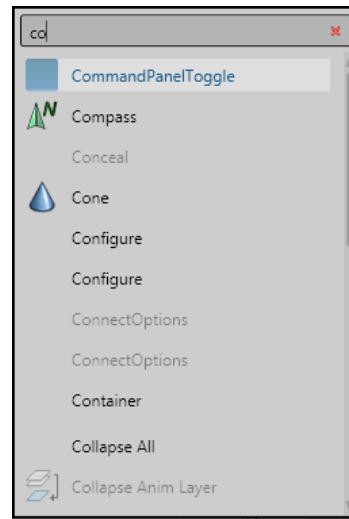


Figure 1-40 List of commands displayed on entering first few characters

Chapter 2

Primitive Objects-I

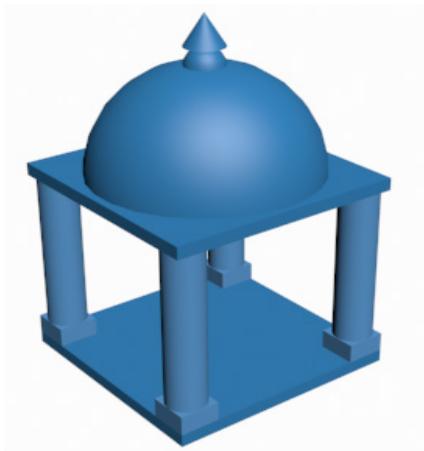




Figure 2-1 The model of a temple

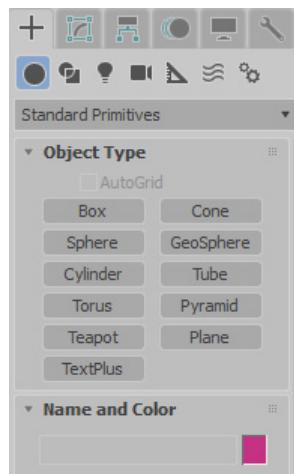


Figure 2-2 The tools and rollouts in the **Command Panel**

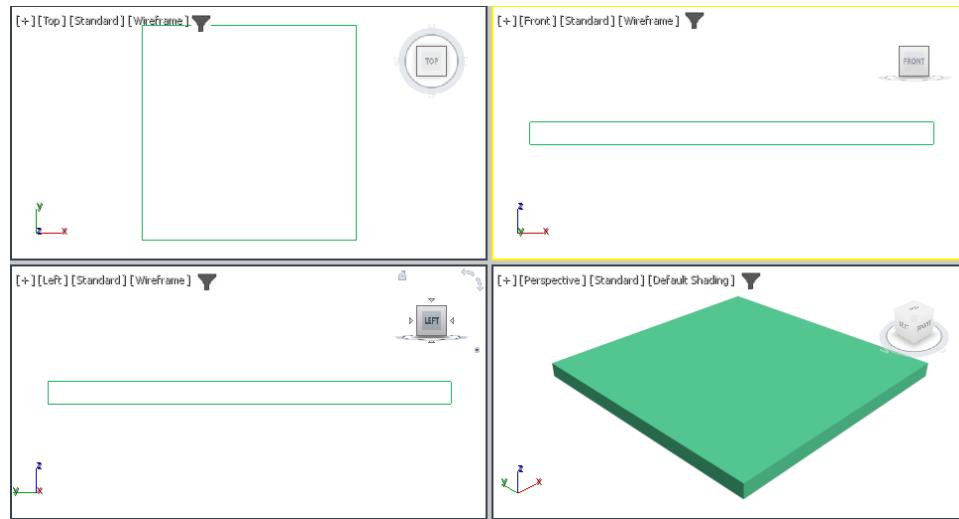


Figure 2-3 Bottom zoomed to its extents

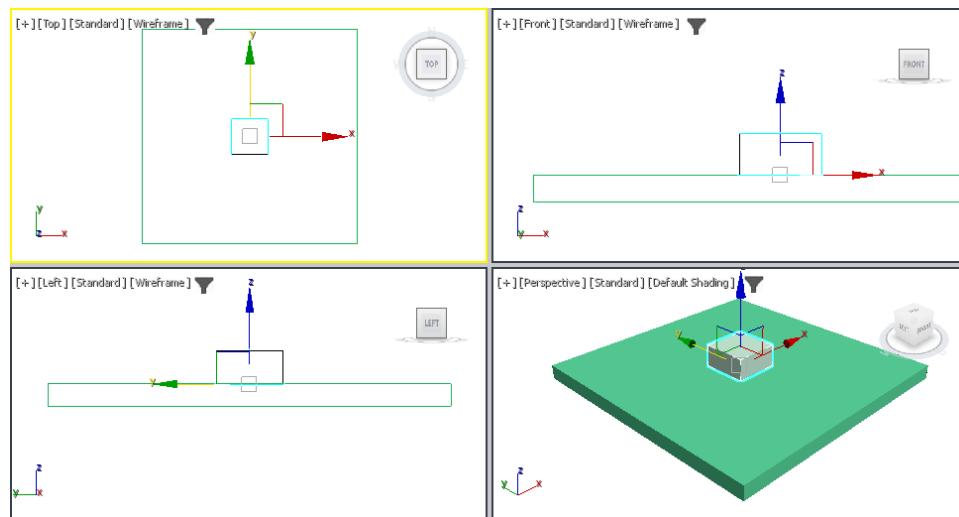


Figure 2-4 Bottom and Base01 displayed in viewports

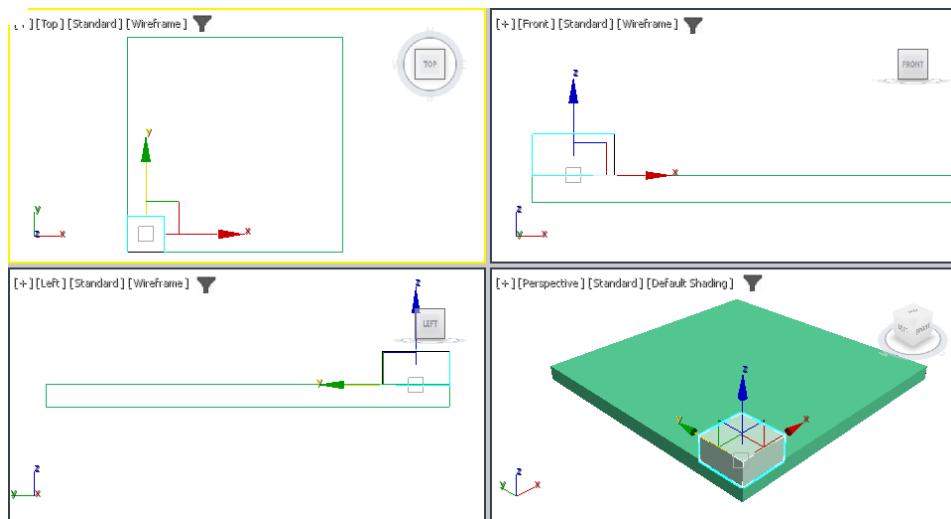


Figure 2-5 Alignment of Base01 to the lower-left corner of Bottom

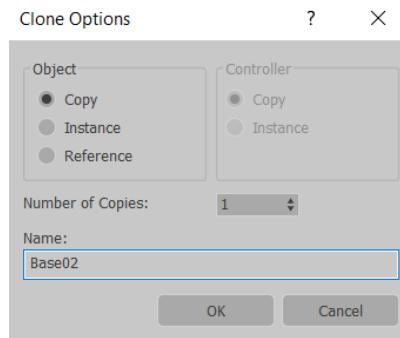


Figure 2-6 The **Clone Options** dialog box

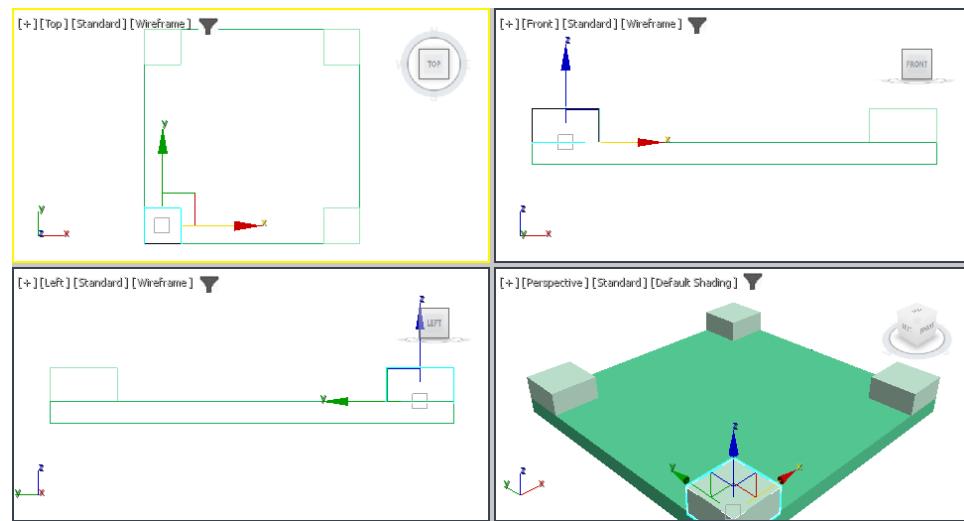


Figure 2-7 Four bases of the temple

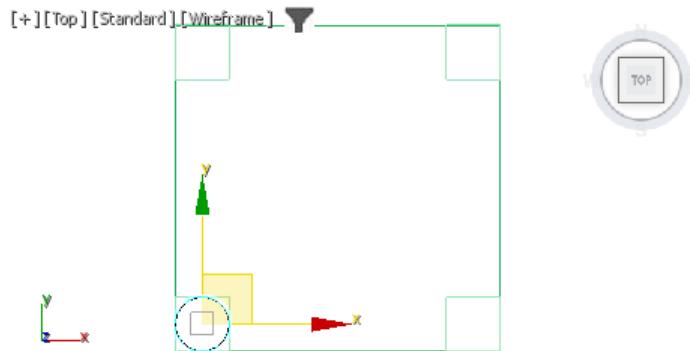


Figure 2-8 Aligning Pillar01 to Base01 in the Top viewport

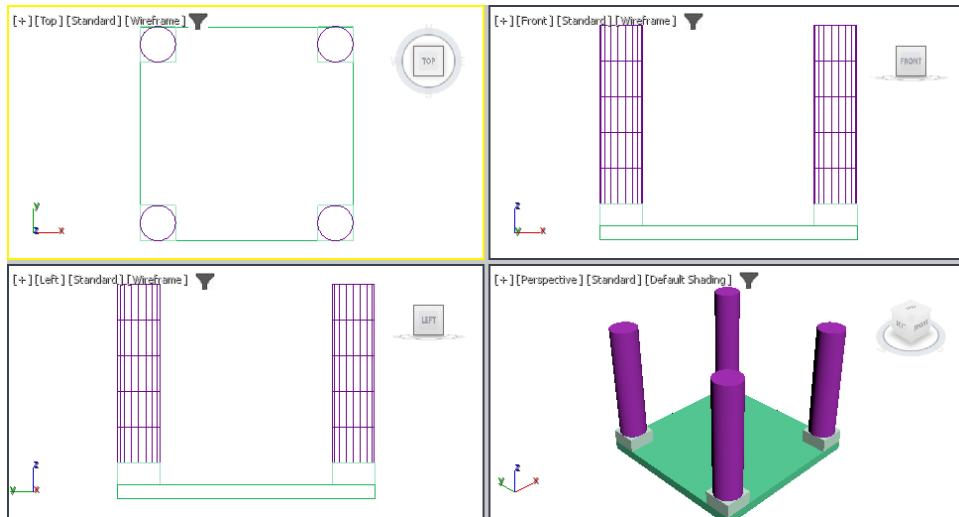


Figure 2-9 The pillars created for the temple

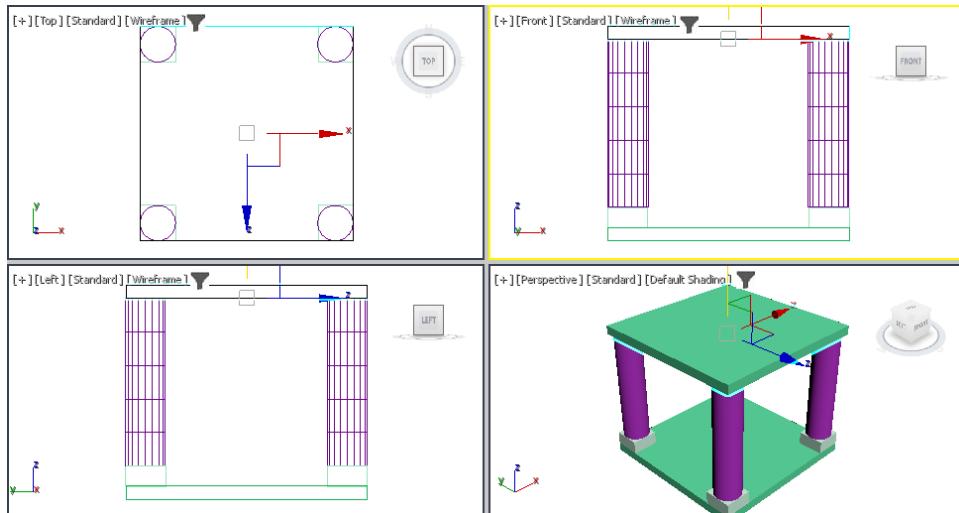


Figure 2-10 Bottom copied to create top of temple

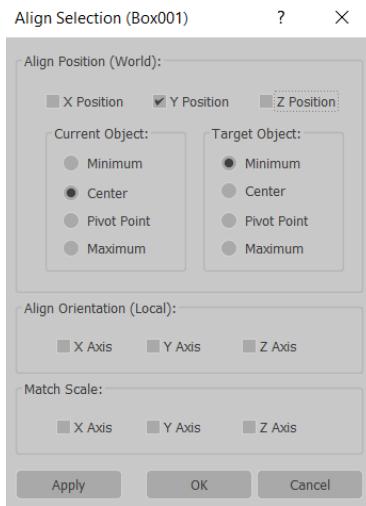


Figure 2-11 The Align Selection (Box001) dialog box

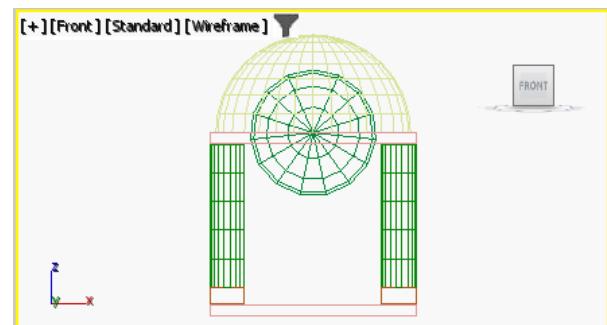


Figure 2-12 Alignment of Sphere001 with Dome

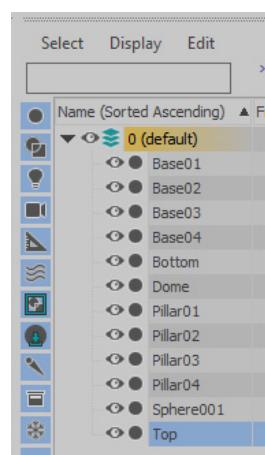


Figure 2-13 Selecting Top from the Scene Explorer

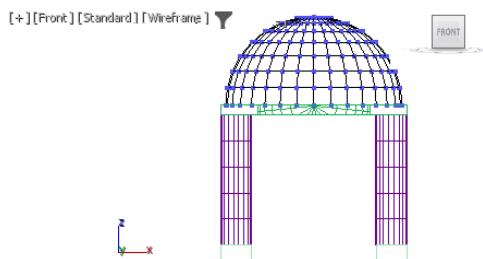


Figure 2-14 Vertices of the Dome displayed

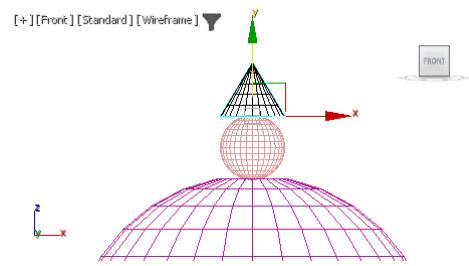


Figure 2-15 The details added to the top of Dome

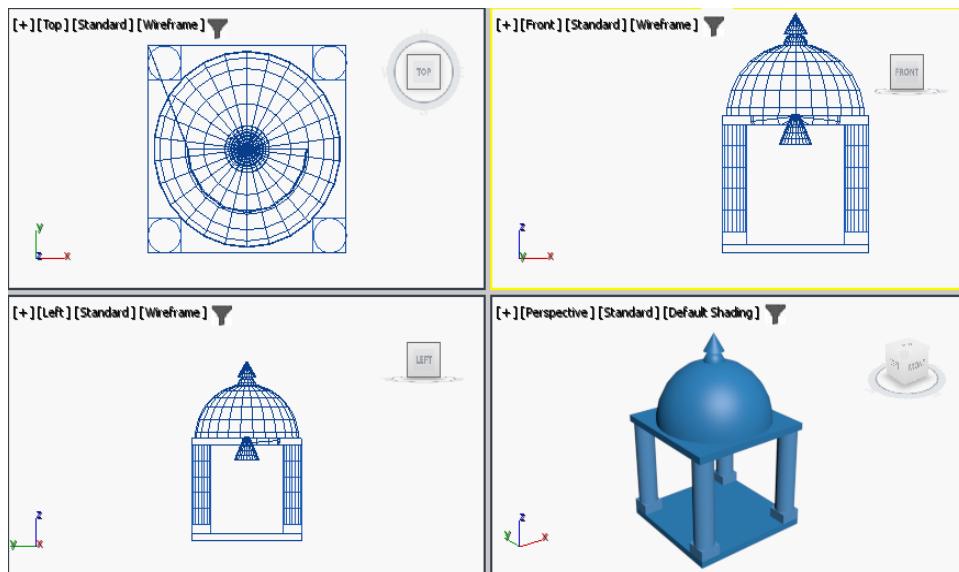


Figure 2-16 Adjustment of Bell at the center of Dome

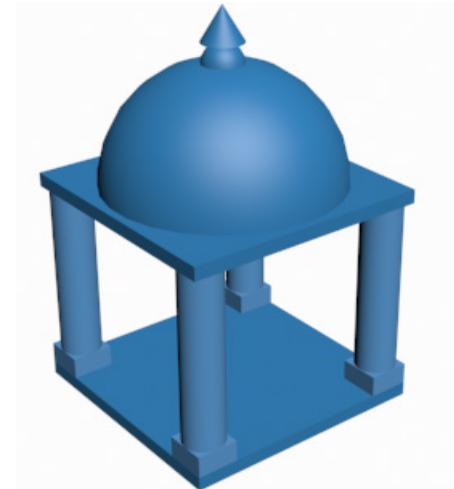


Figure 2-17 The rendered image



Figure 2-18 The table and benches

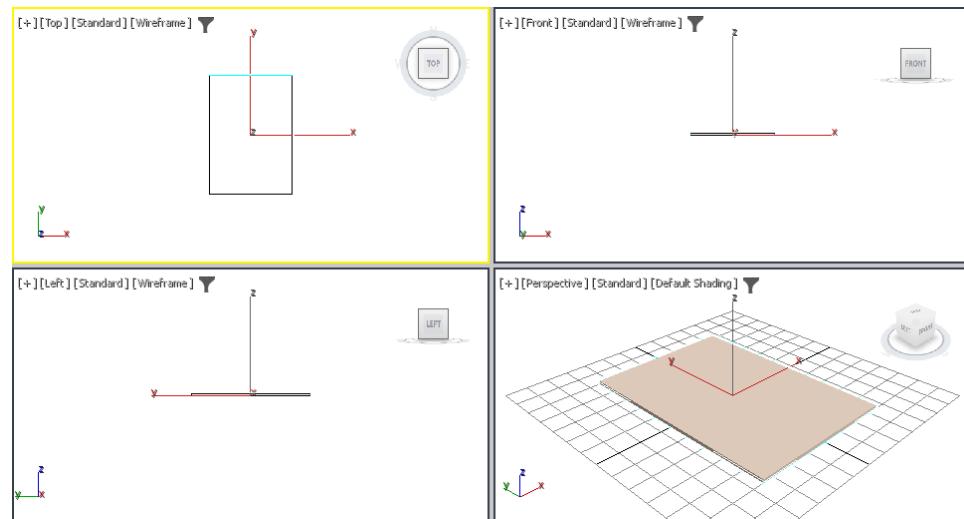


Figure 2-19 The box created in all viewports

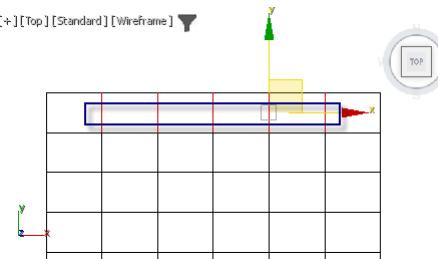


Figure 2-20 Five vertical edges selected

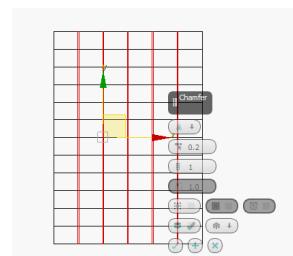


Figure 2-21 Setting the value in the Chamfer-Amount spinner

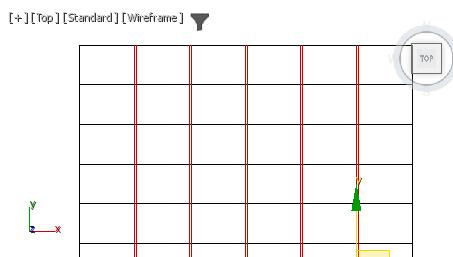


Figure 2-22 The edges chamfered

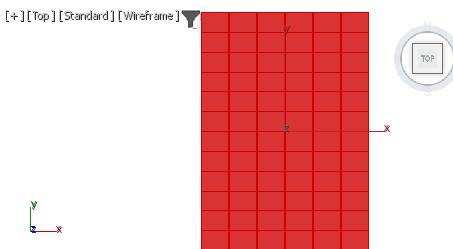


Figure 2-23 The polygons selected

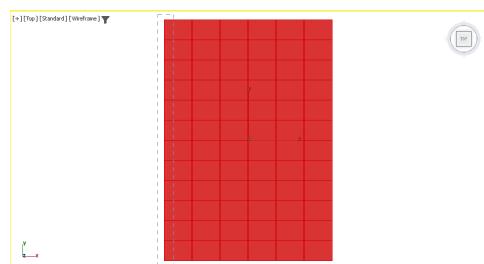


Figure 2-24 Drawing a cross window around the polygons

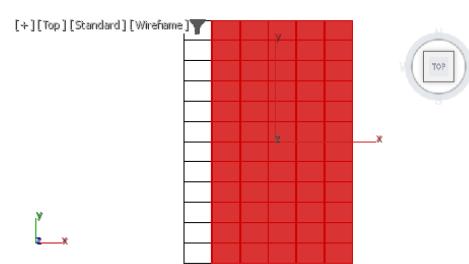


Figure 2-25 The polygons deselected

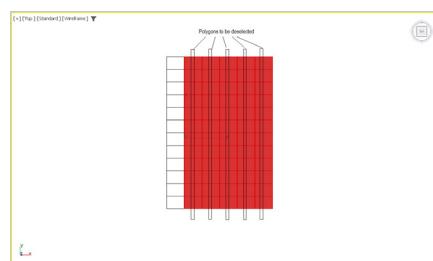


Figure 2-26 The polygons to be deselected

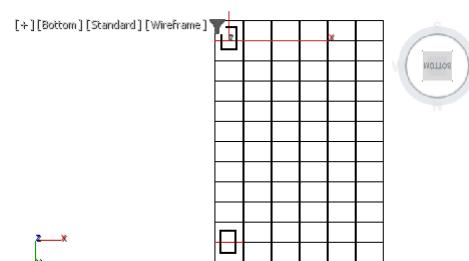


Figure 2-27 Two horizontal edges selected in the Bottom viewport

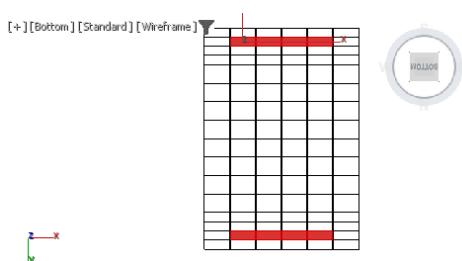


Figure 2-28 The polygons selected in the Bottom viewport

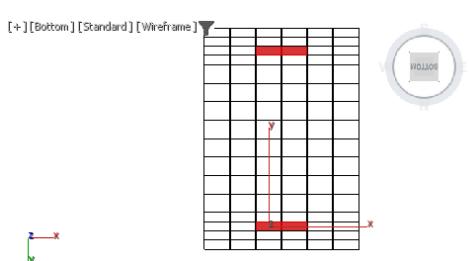
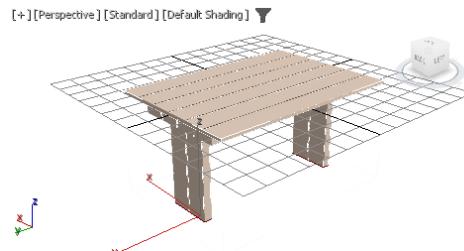
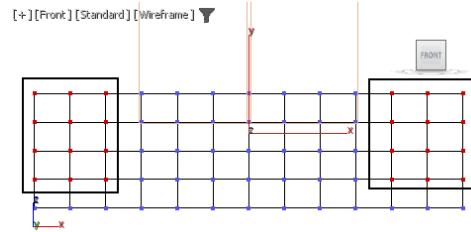
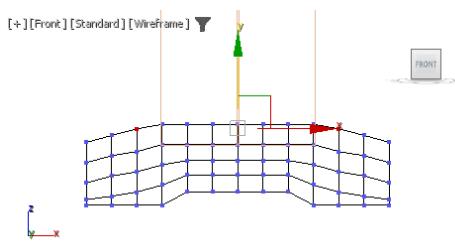
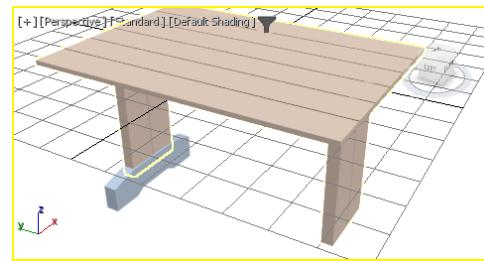
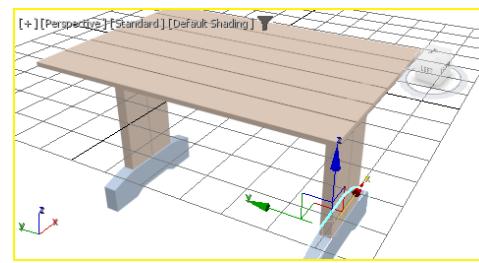
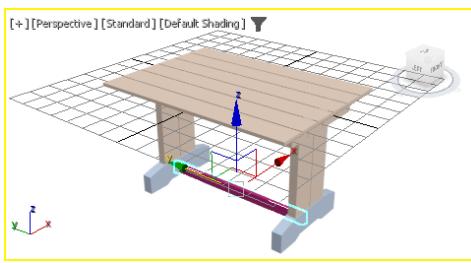
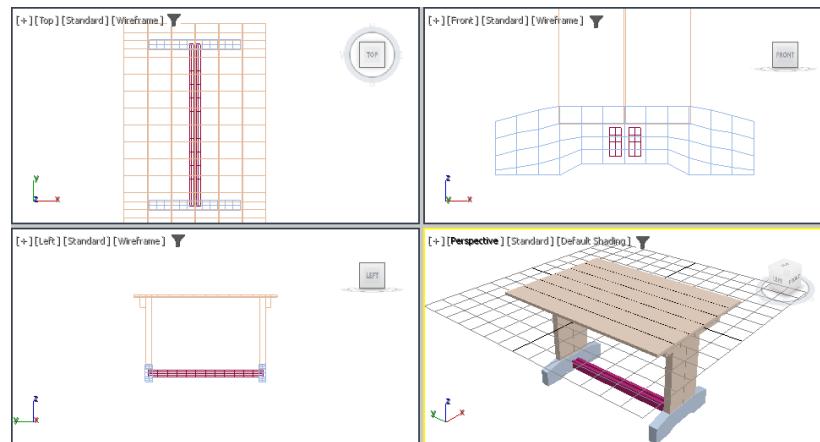


Figure 2-29 The polygons selected

**Figure 2-30** The polygons extruded**Figure 2-31** The vertices to be selected**Figure 2-32** The shape of base1**Figure 2-33** The base1 object aligned in all viewports**Figure 2-34** The base2 object aligned in all viewports**Figure 2-35** The footrest1 object aligned in all viewports**Figure 2-36** The copy of footrest1 object aligned in all viewports

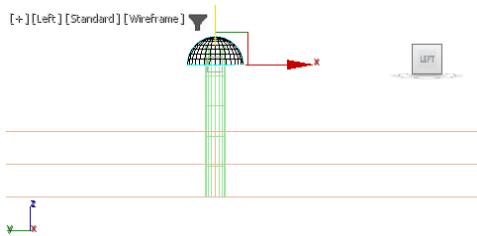


Figure 2-37 The cap and body objects aligned in all viewports

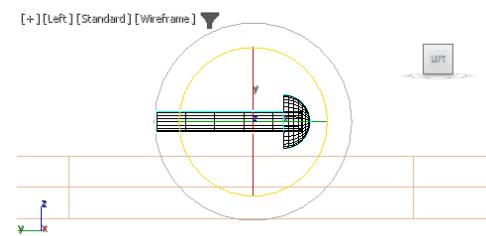


Figure 2-38 The rivet001 object rotated in all viewports

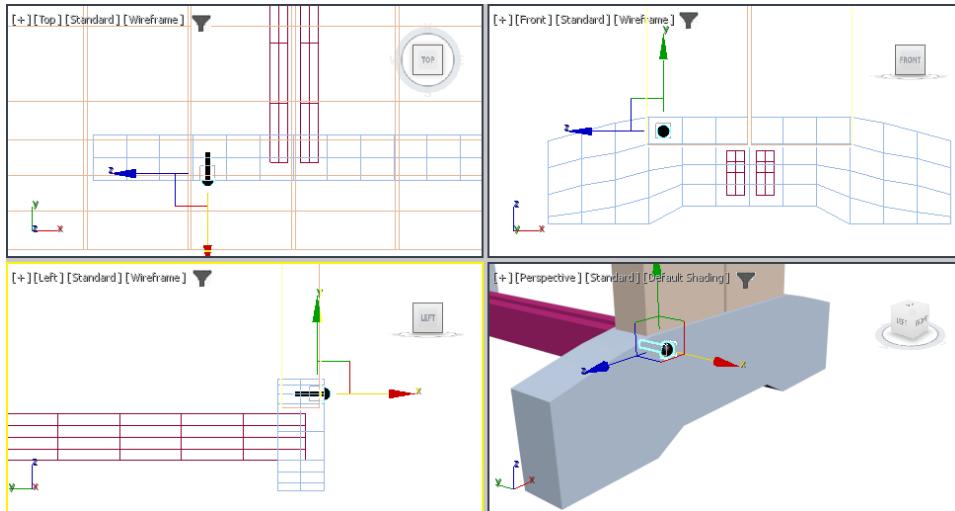


Figure 2-39 The rivet001 object aligned in all viewports

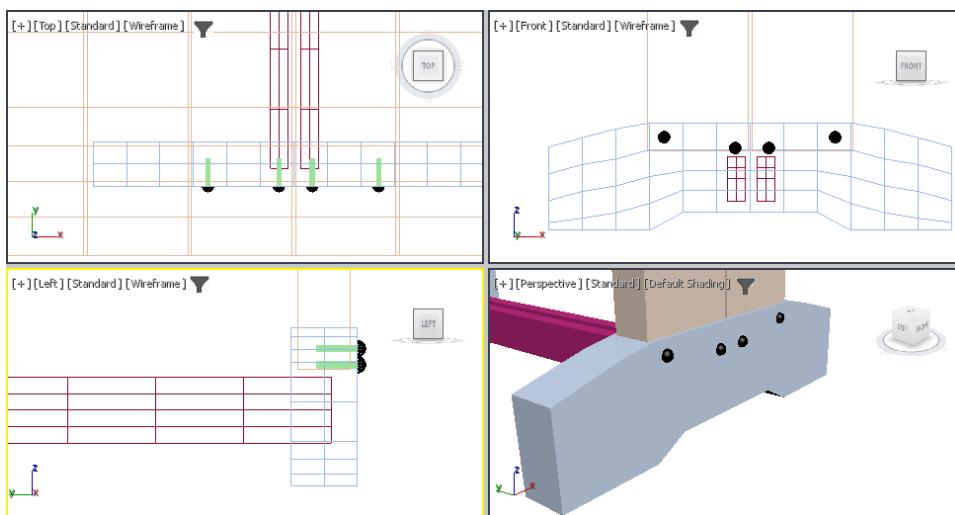


Figure 2-40 The copies of rivet001 aligned in all viewports

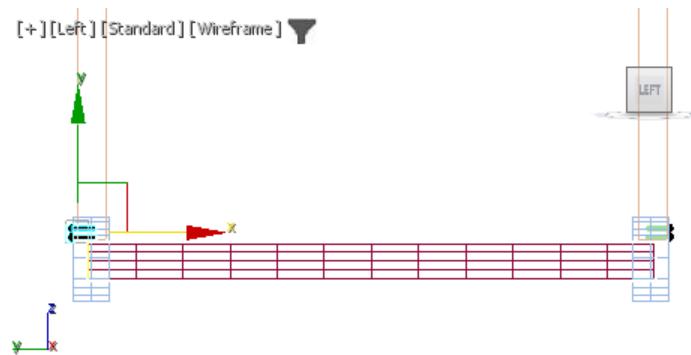


Figure 2-41 The copy of rivets created

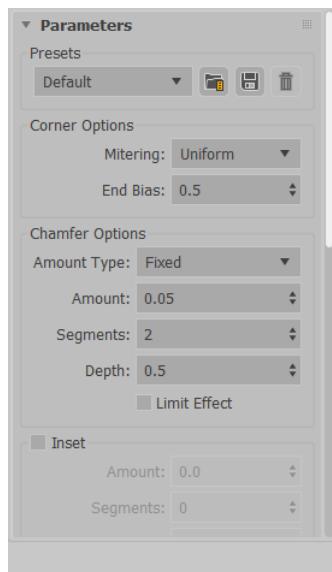


Figure 2-42 The Parameters rollout

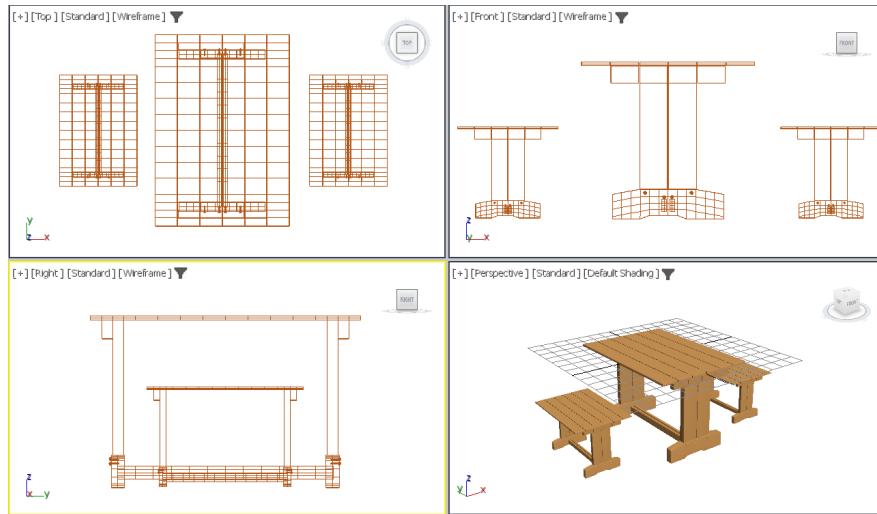


Figure 2-43 The table and benches aligned



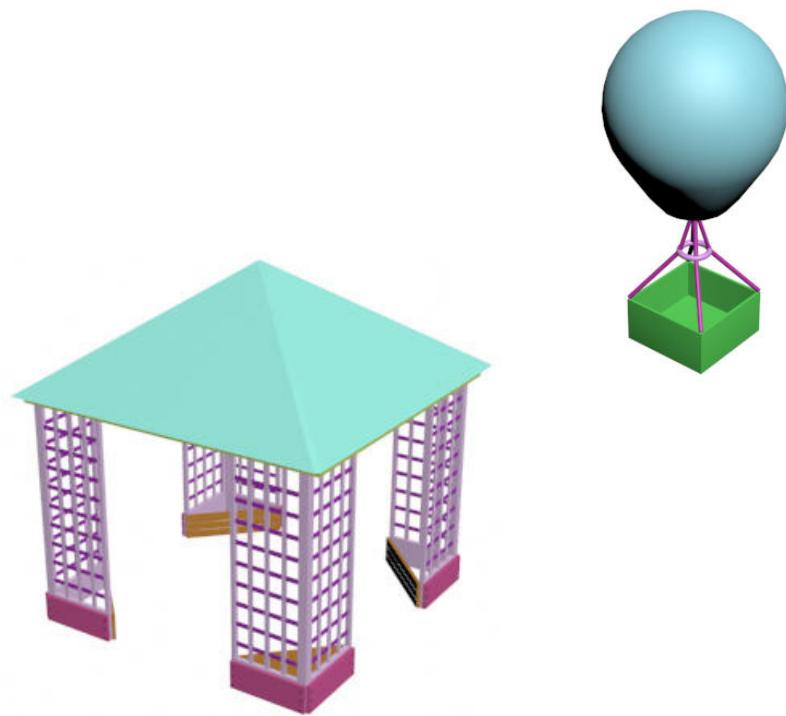
Figure 2-44 The rendered image



Figure 2-45 The model of chairs and center table

Chapter 3

Primitive Objects-II



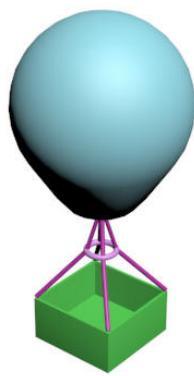


Figure 3-1 The model of hot air balloon

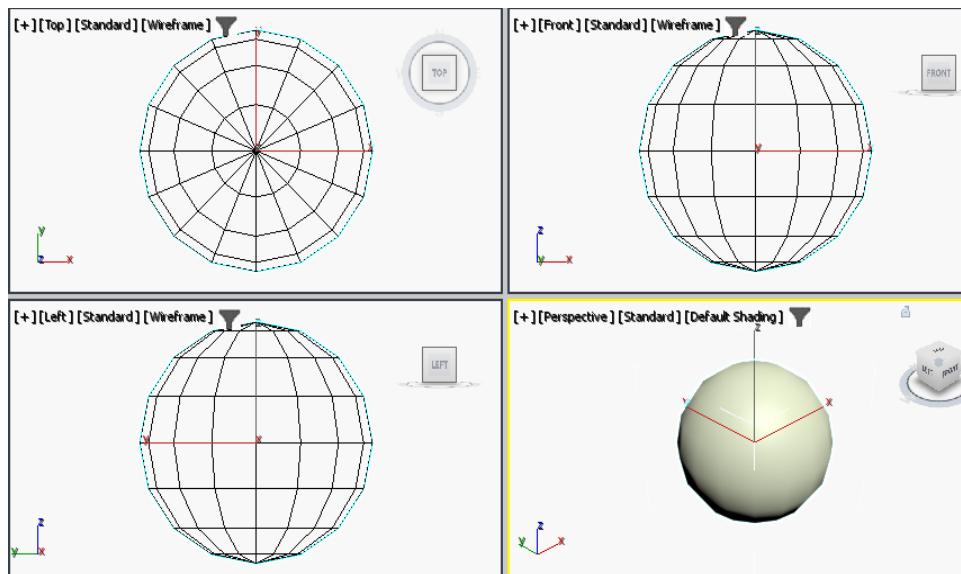


Figure 3-2 The sphere created and zoomed in all four viewports

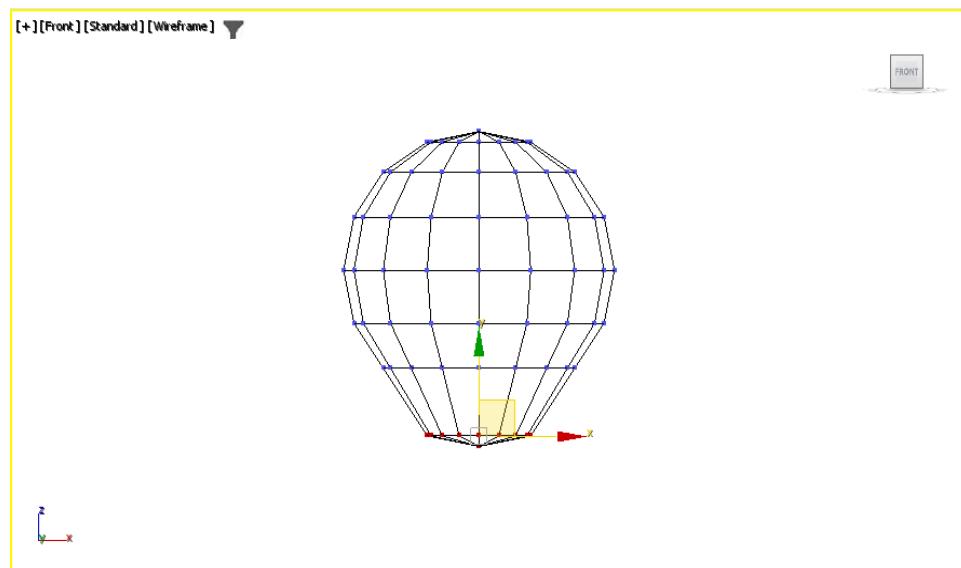


Figure 3-3 The shape of the sphere changes into balloon shape

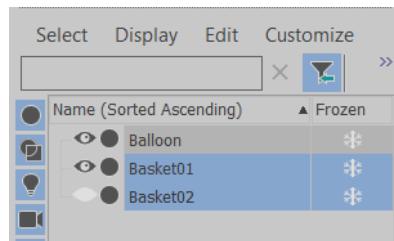


Figure 3-4 Selecting Basket01 and Basket02 from the Scene Explorer

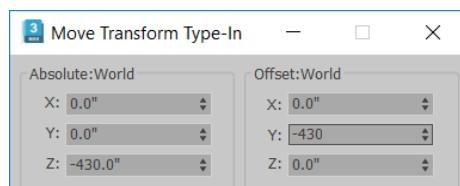


Figure 3-5 The Move Transform Type-In dialog box

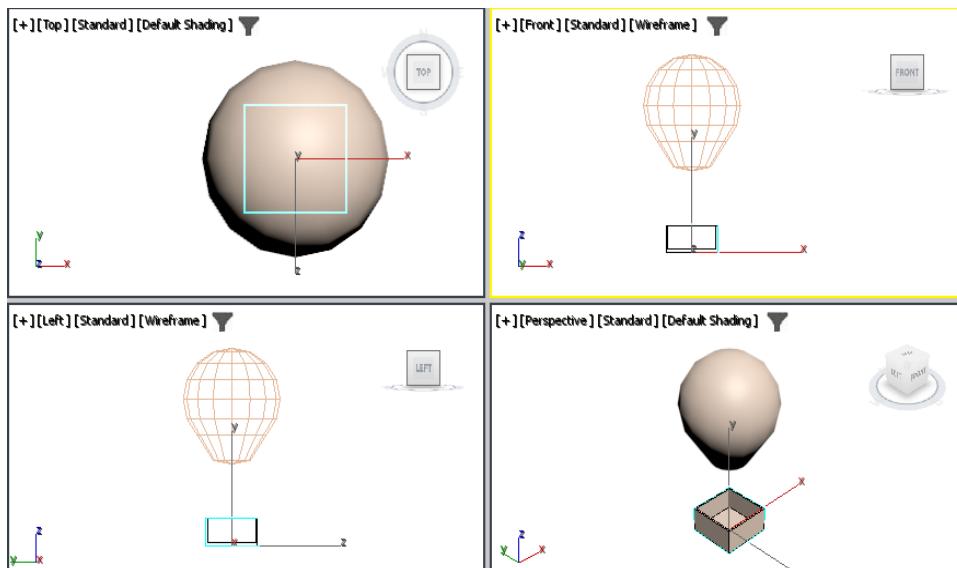


Figure 3-6 Basket01 after performing the **Boolean** operation

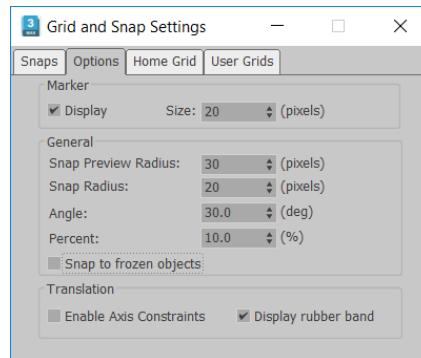


Figure 3-7 The **Grid and Snap Settings** dialog box

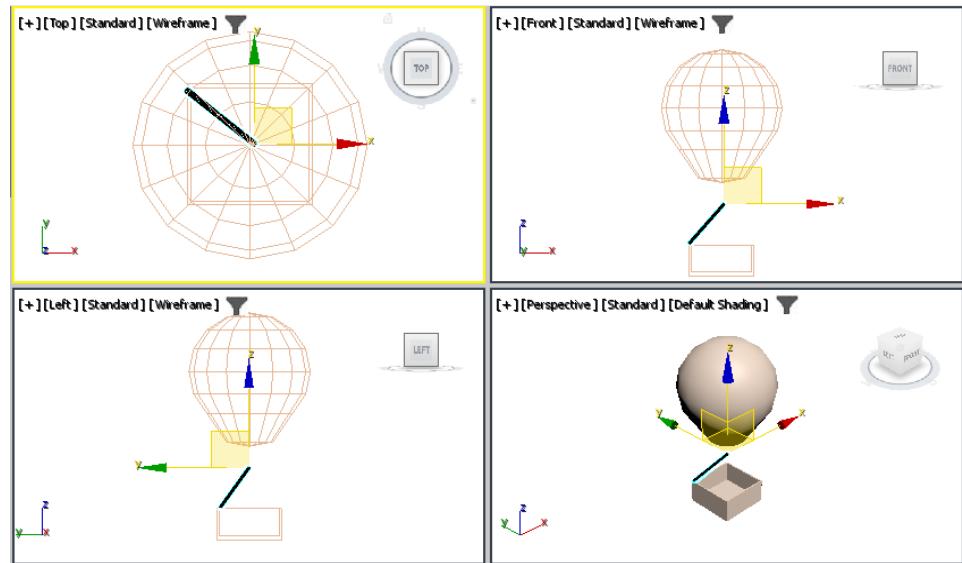


Figure 3-8 Rope01 in all viewports

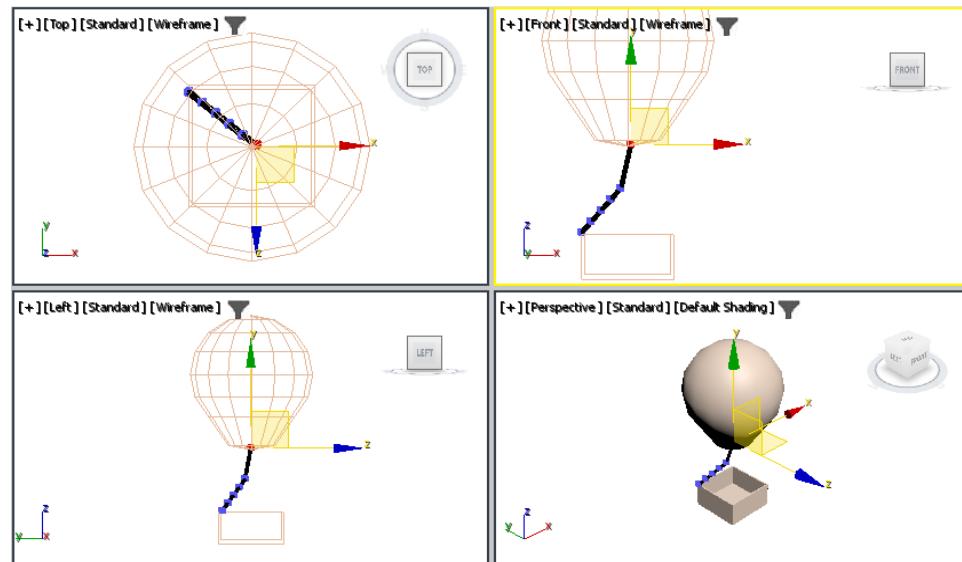


Figure 3-9 The end vertices of the Rope01 moved to touch the bottom of the balloon

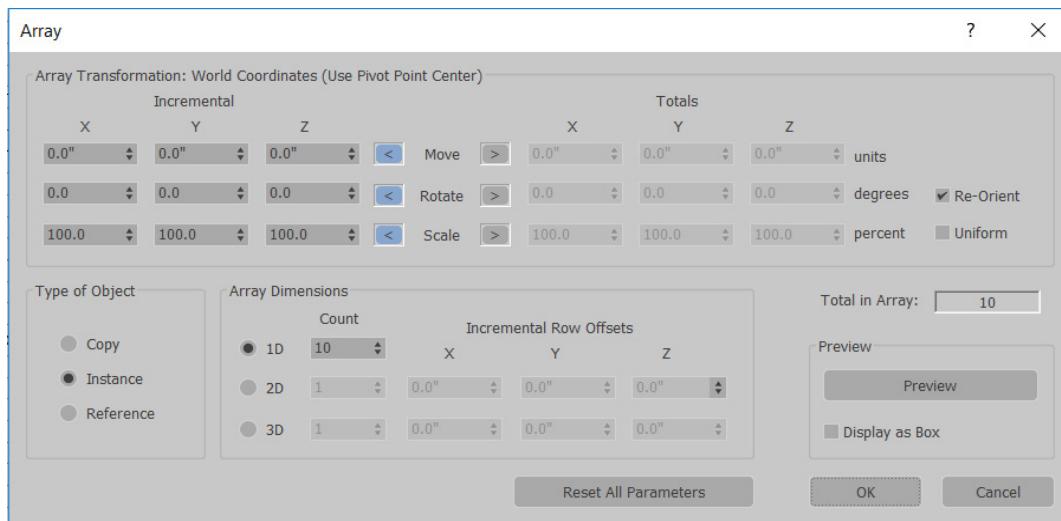


Figure 3-10 The Array dialog box

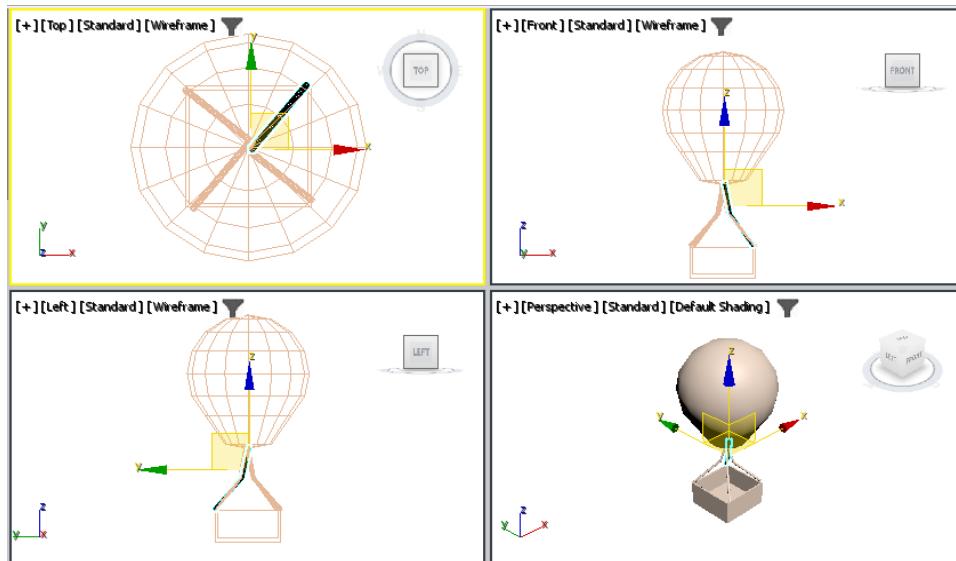


Figure 3-11 The four ropes placed at the four corners of basket

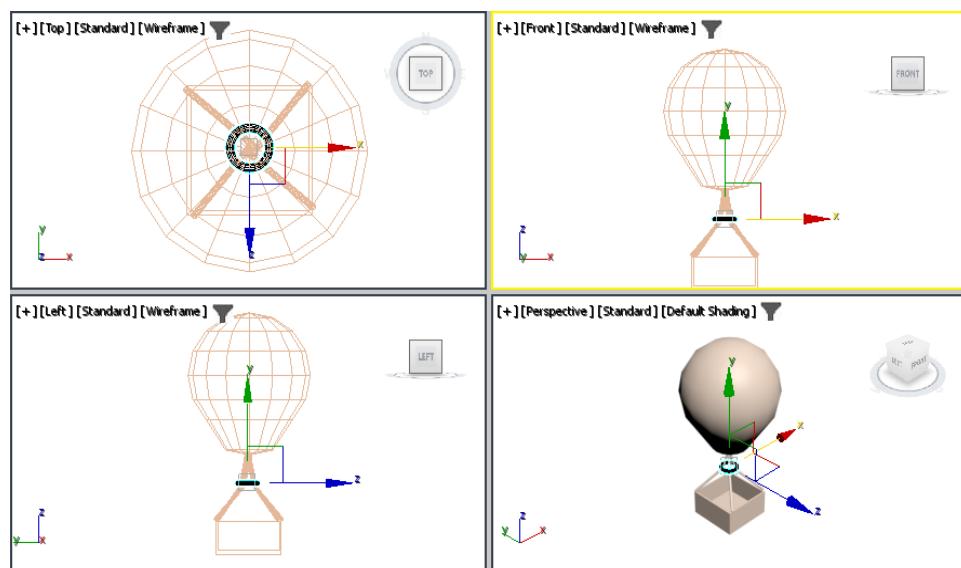


Figure 3-12 Alignment of collar with the ropes

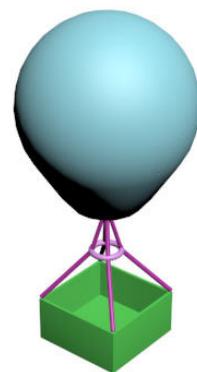


Figure 3-13 The rendered image of the hot air balloon

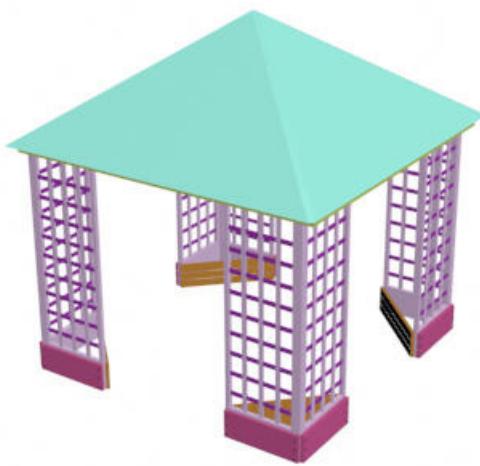


Figure 3-14 The model of a shed

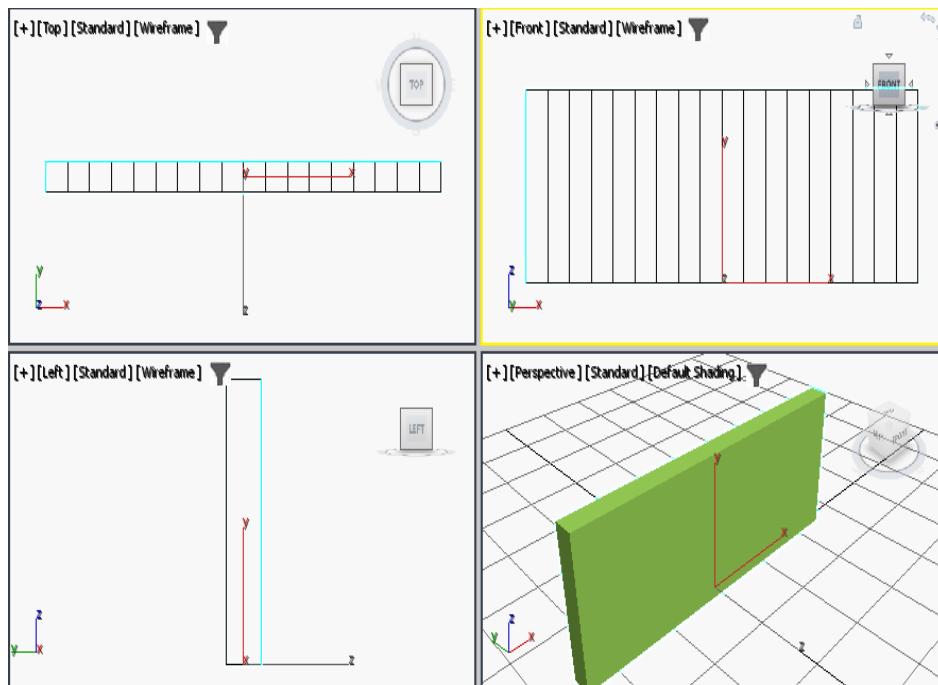
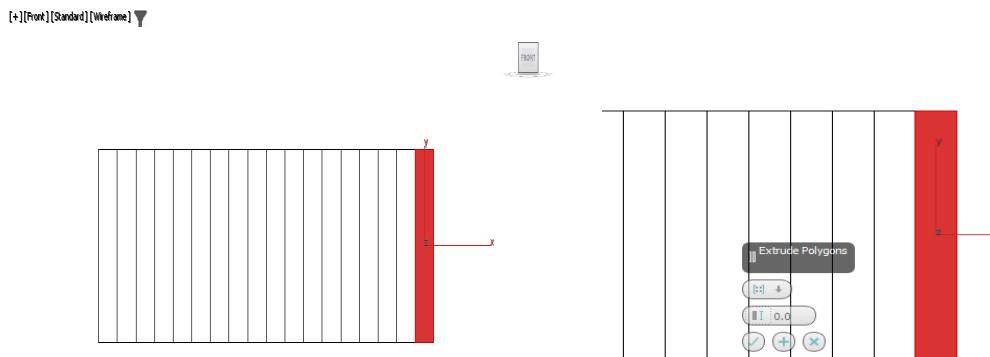
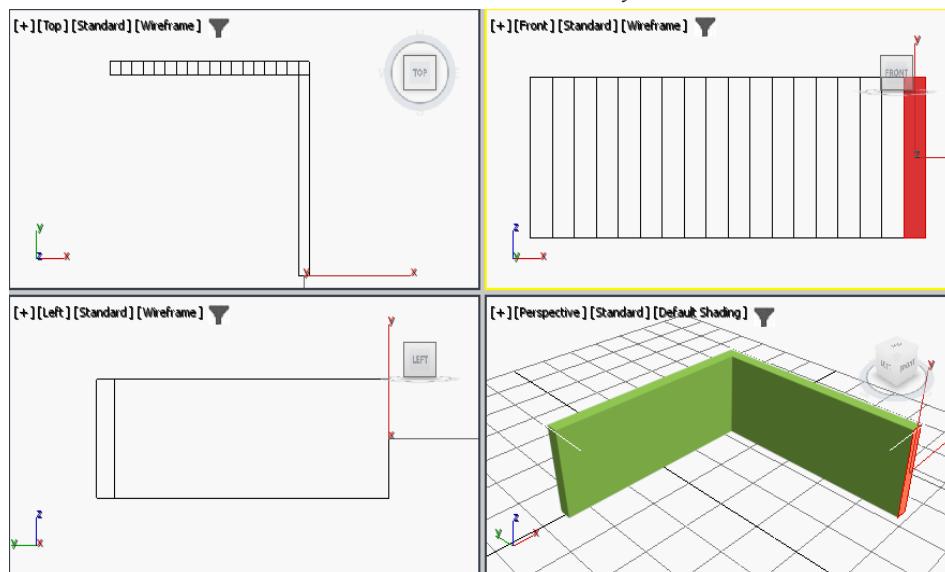
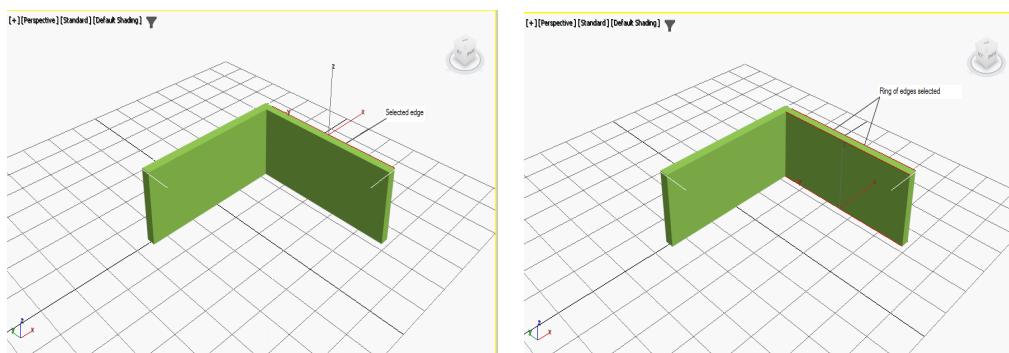


Figure 3-15 The side 1 displayed in all viewports

**Figure 3-16** The polygon selected**Figure 3-17** The **Extrude Polygons** caddy control**Figure 3-18** The selected polygon extruded**Figure 3-19** The edge selected**Figure 3-20** The ring of edges selected

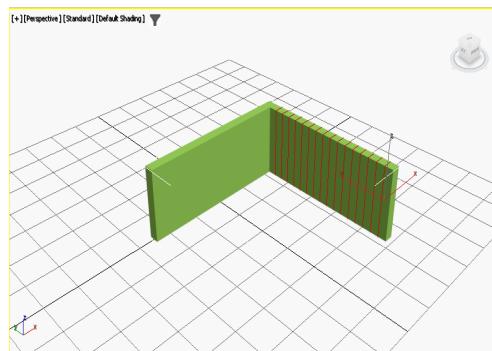


Figure 3-21 The edge loops added



Figure 3-22 The vertical edges selected

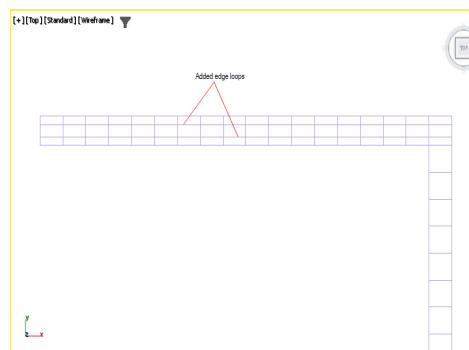


Figure 3-23 Two edge loops added

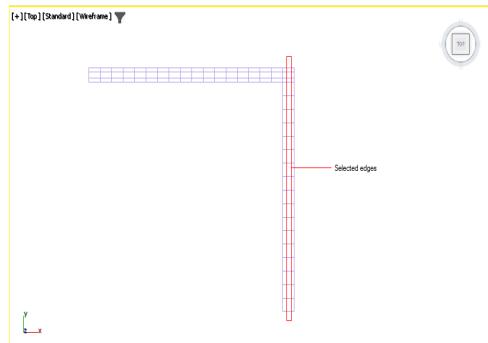


Figure 3-24 The horizontal edges selected

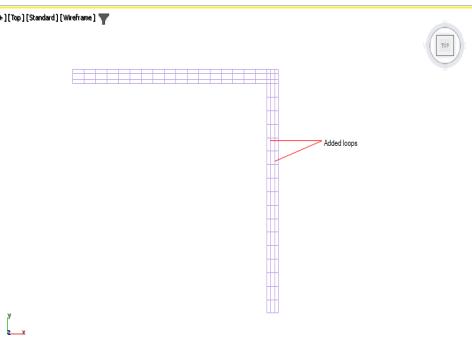
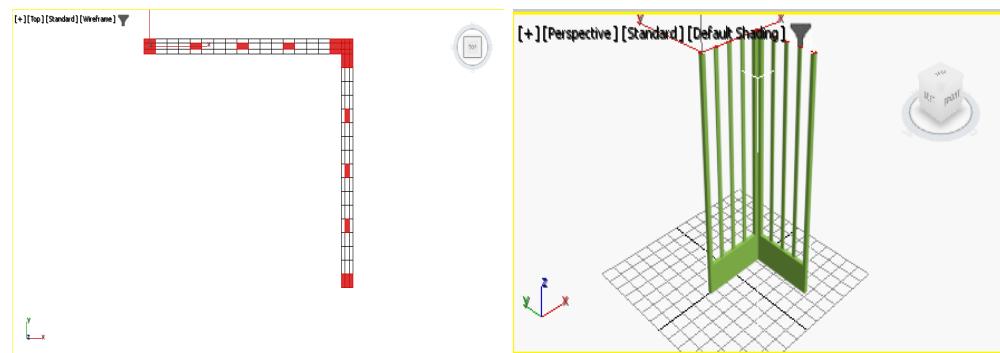
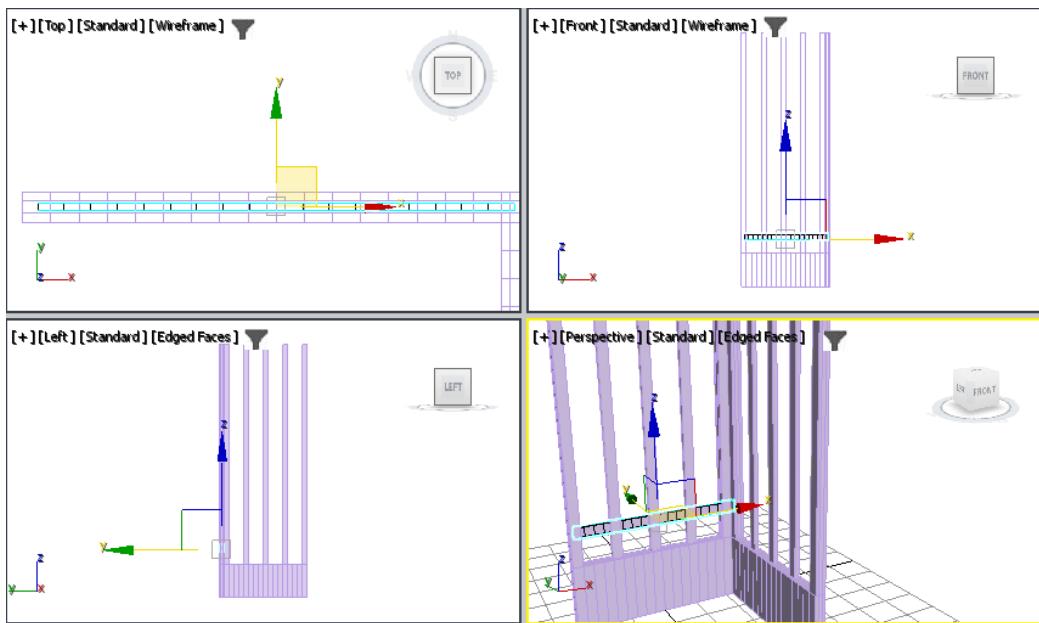


Figure 3-25 Two edge loops added

*Figure 3-26 The polygons selected**Figure 3-27 The selected polygons extruded**Figure 3-28 The hozt strip1 aligned*

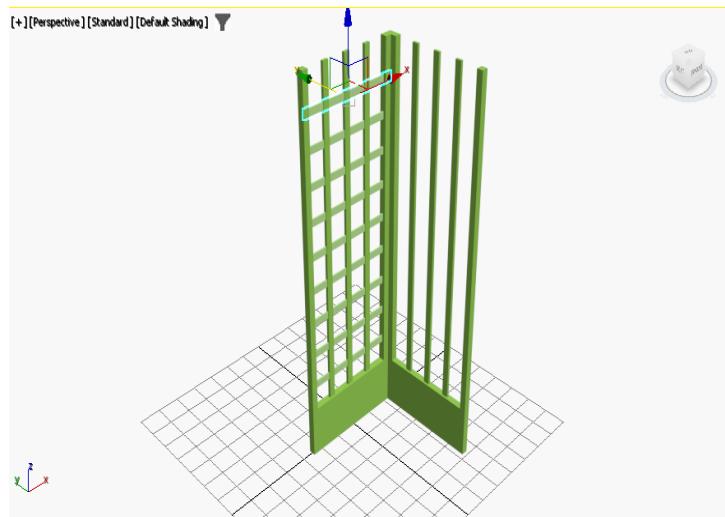


Figure 3-29 The copies of hozt strip1 created

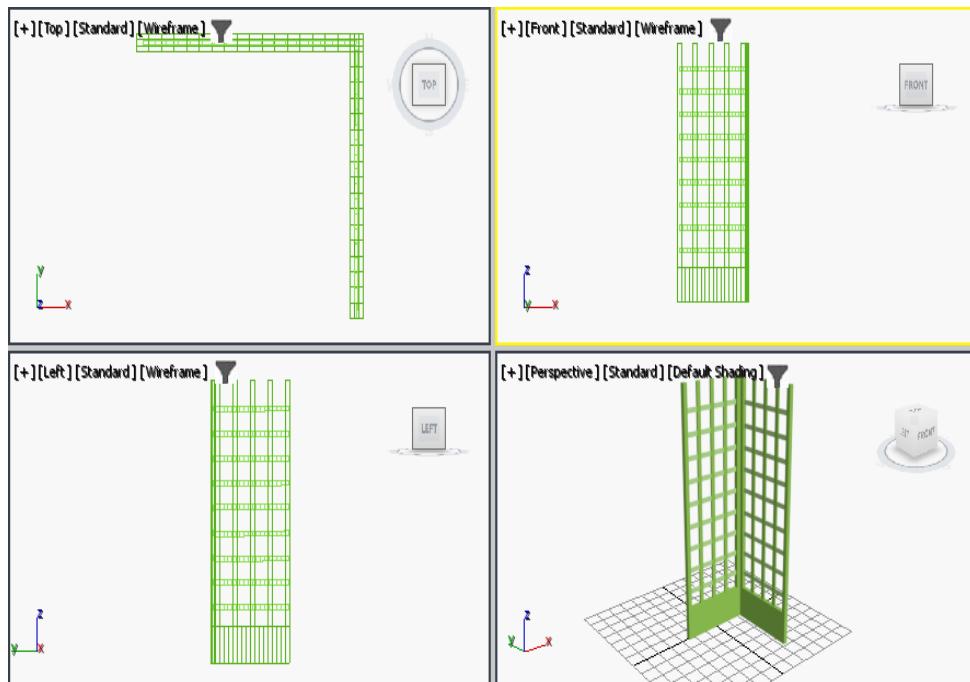


Figure 3-30 The copies of the horizontal strips created

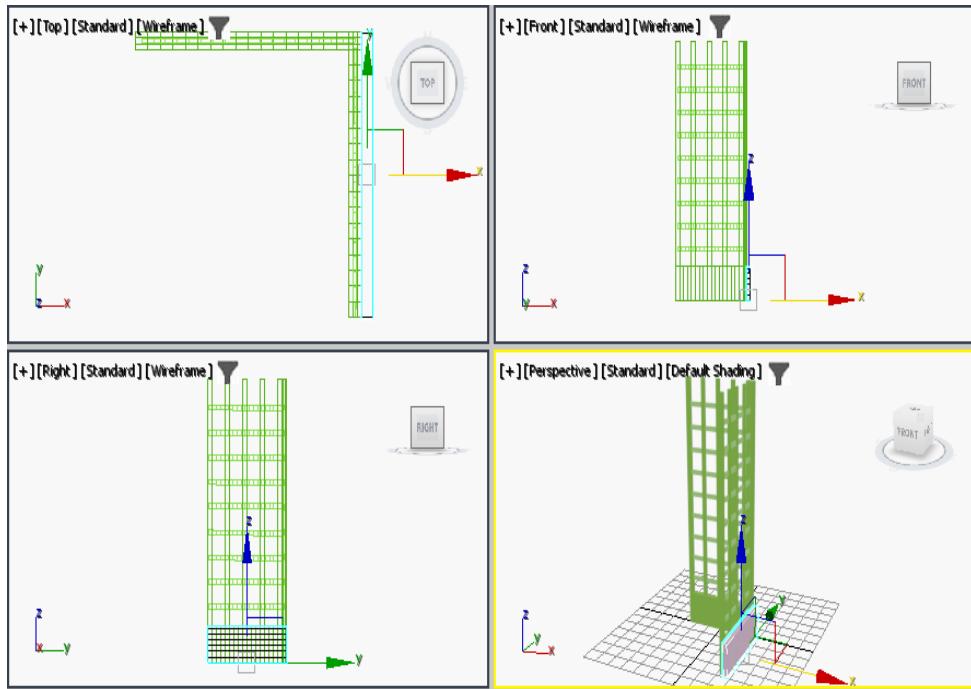


Figure 3-31 The support1 aligned in all viewports

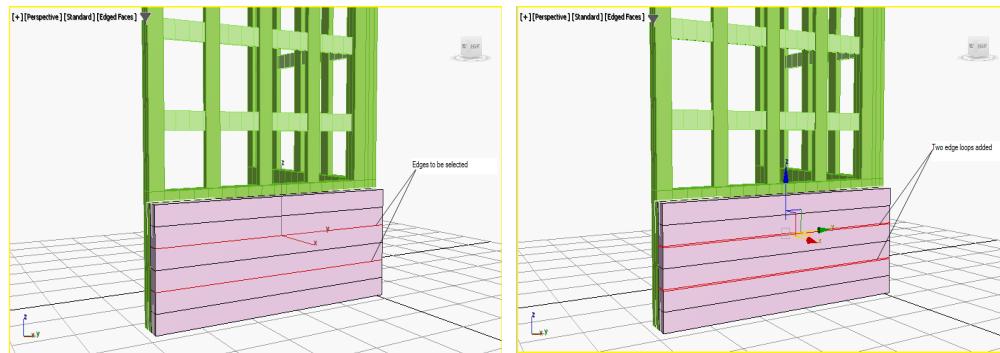


Figure 3-32 Two edges selected

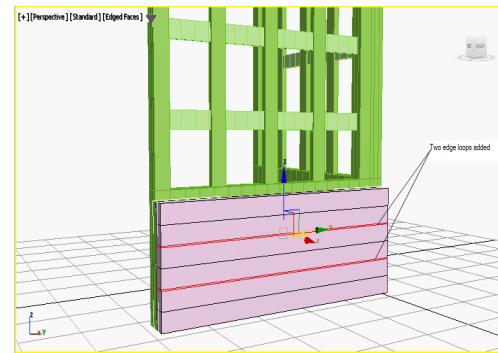


Figure 3-33 Two edge loops added

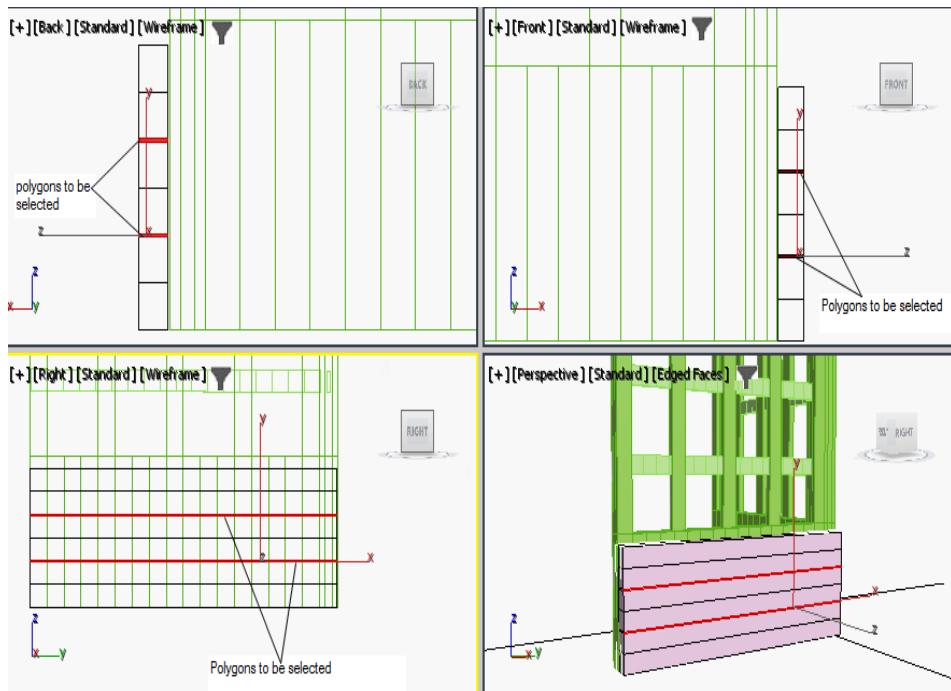


Figure 3-34 The selected polygons

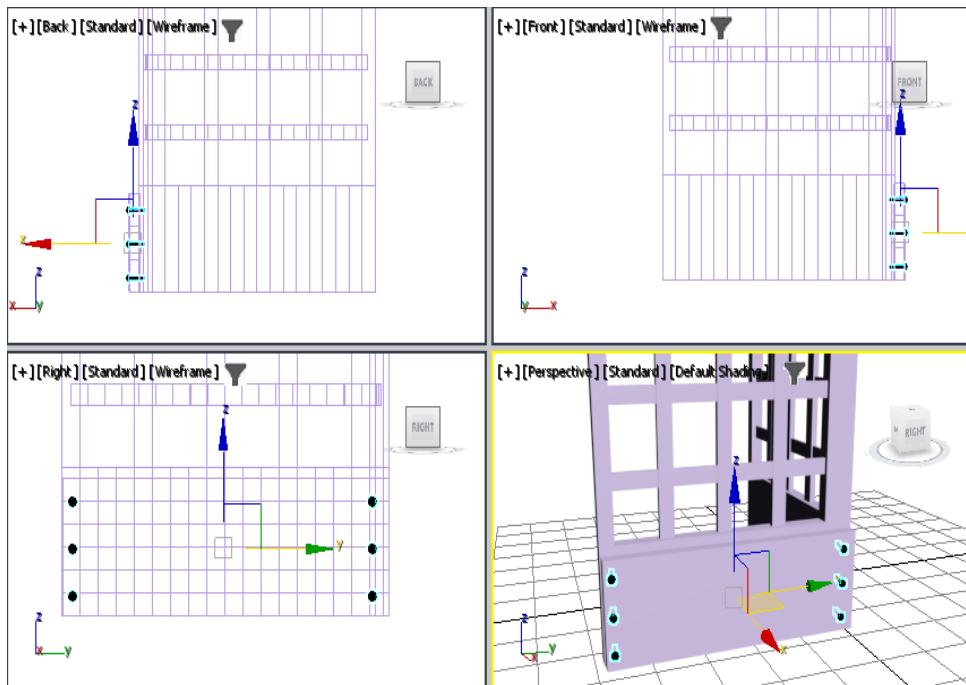


Figure 3-35 The rivets aligned

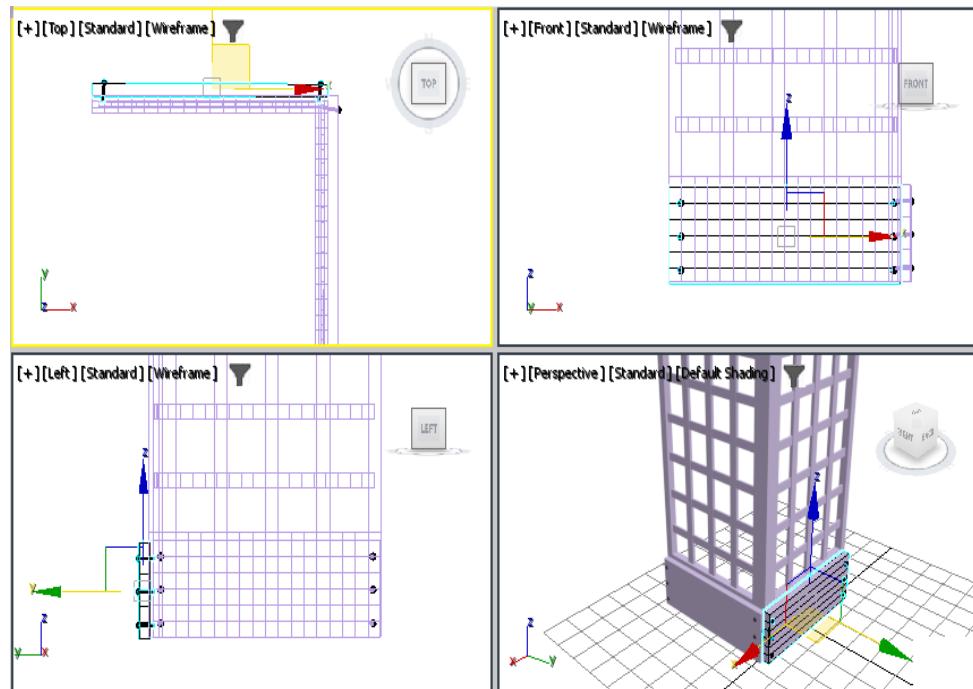


Figure 3-36 The support02 aligned

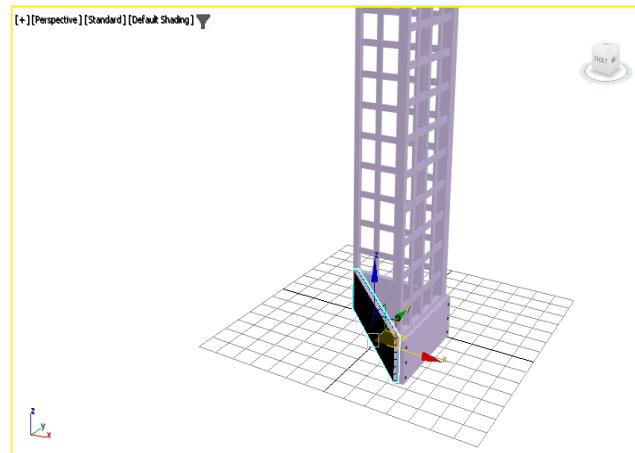


Figure 3-37 The support03 aligned

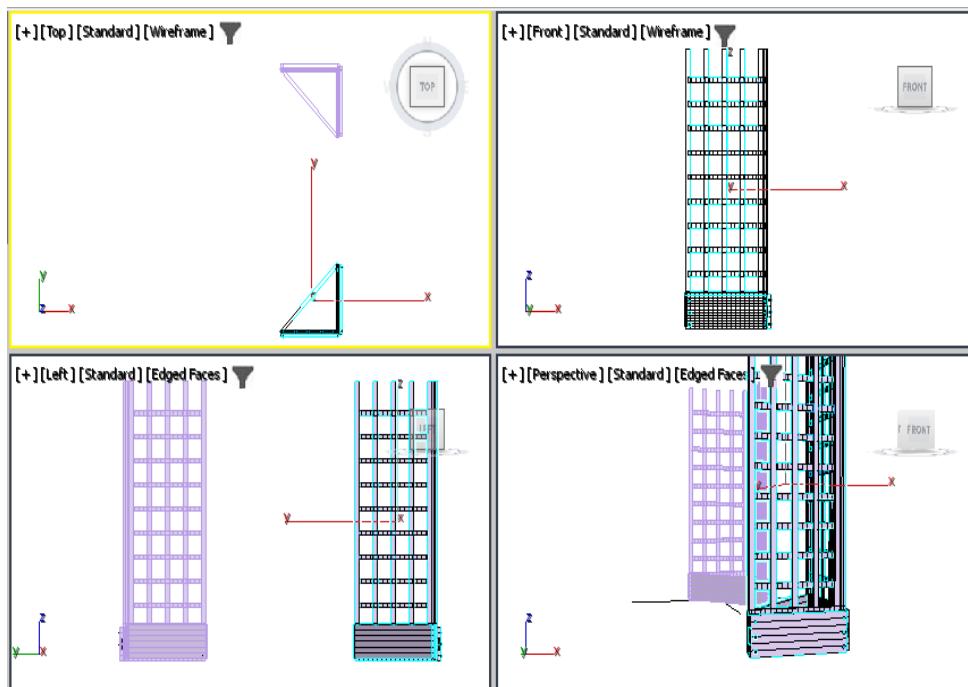


Figure 3-38 The SIDE002 created and positioned

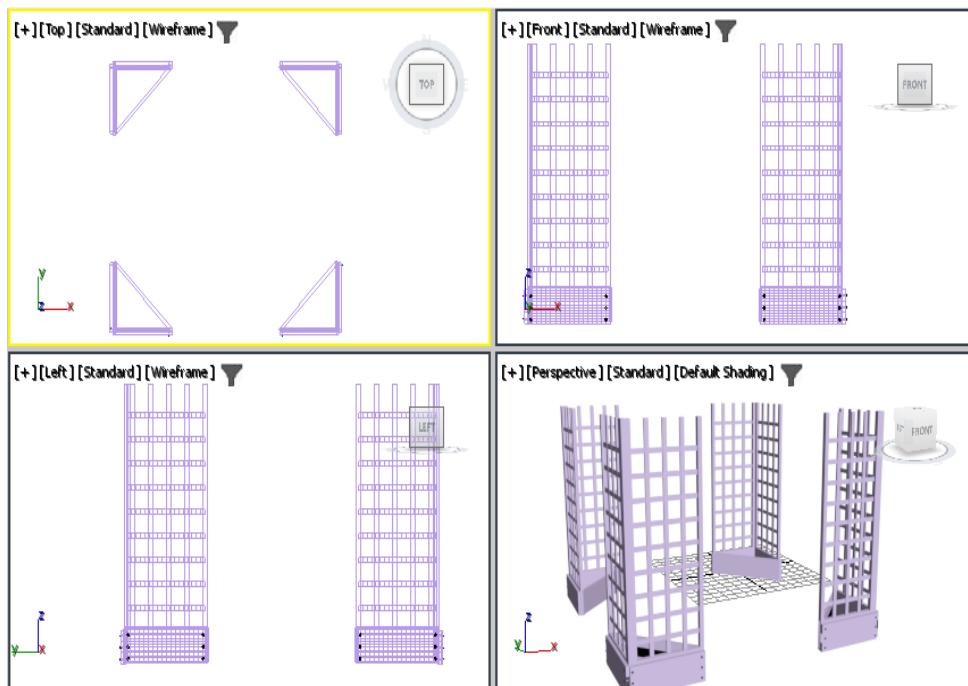


Figure 3-39 The SIDE003 and SIDE004 positioned

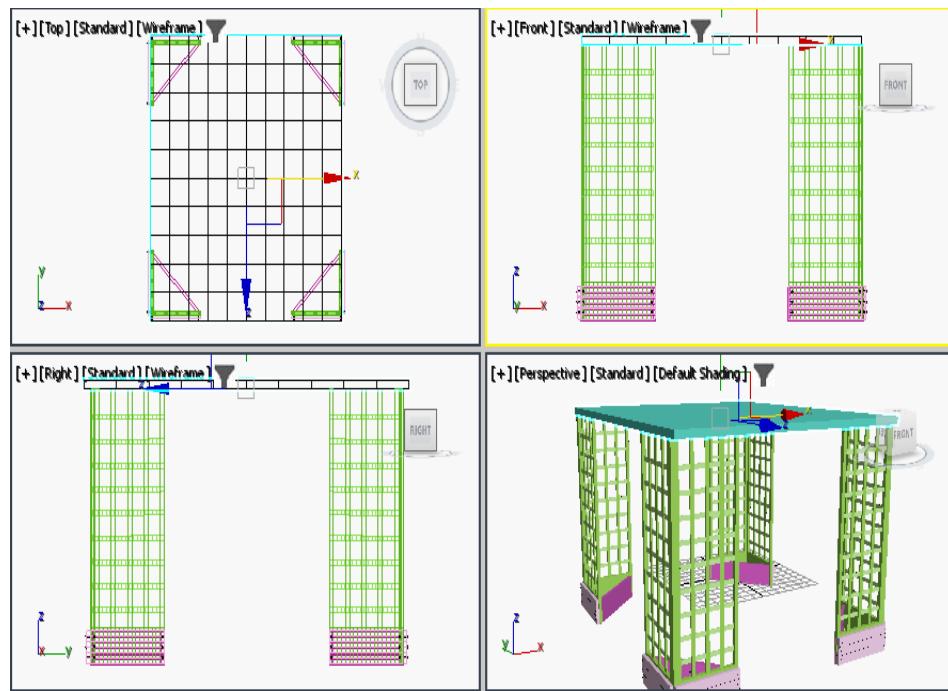


Figure 3-40 Top 1 aligned in all viewports

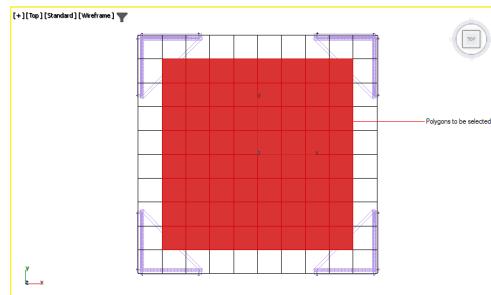


Figure 3-41 The polygons selected

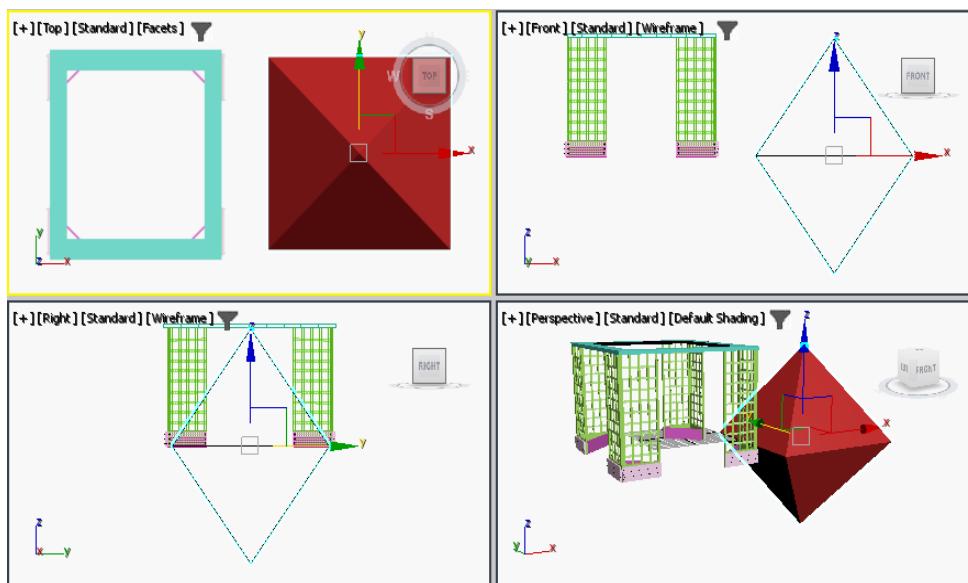


Figure 3-42 Hedra001 created

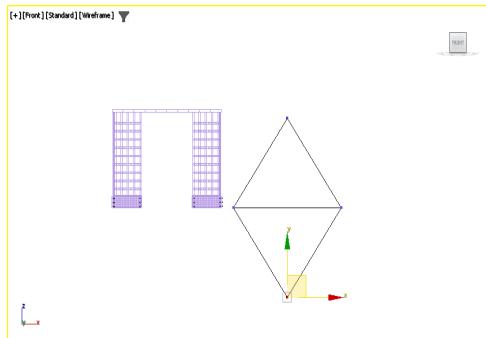


Figure 3-43 The selected vertex

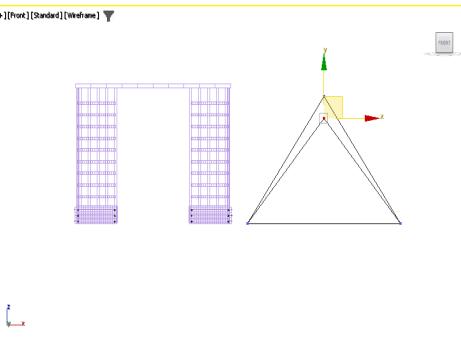


Figure 3-44 The vertex moved

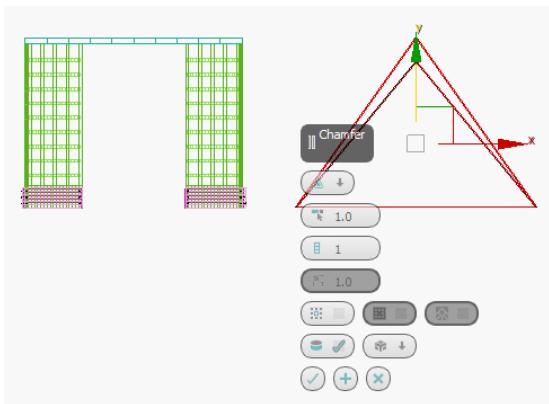


Figure 3-45 The Chamfer caddy control

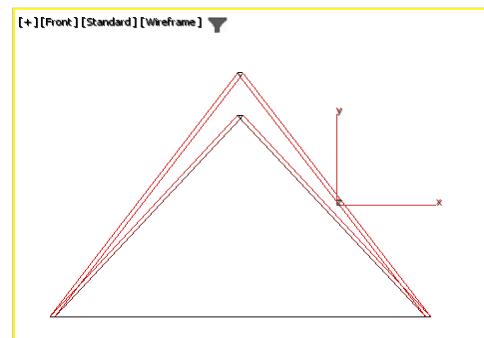


Figure 3-46 All edges chamfered

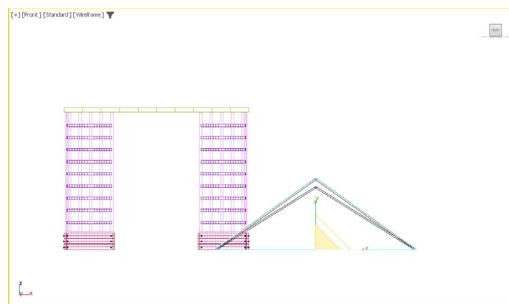


Figure 3-47 The Top 2 scaled

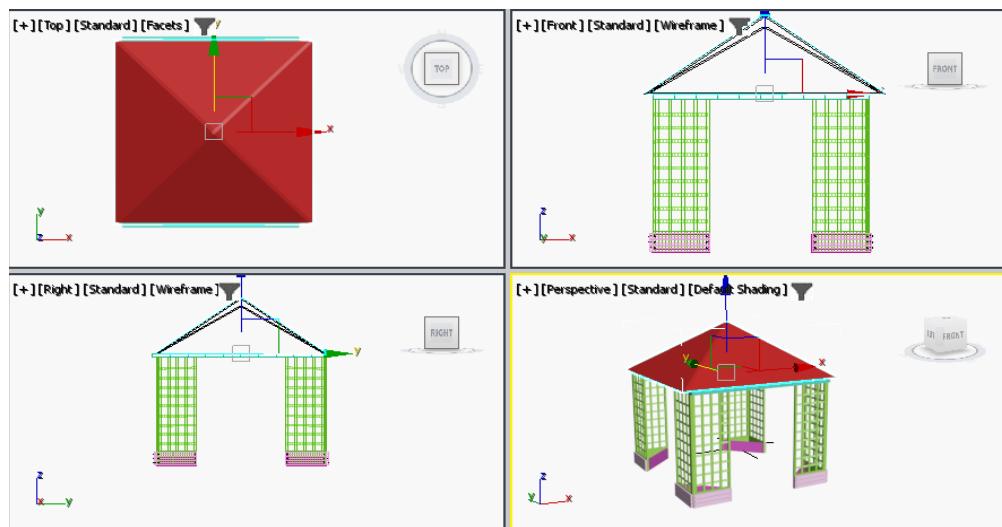


Figure 3-48 The Top 2 aligned in all viewports

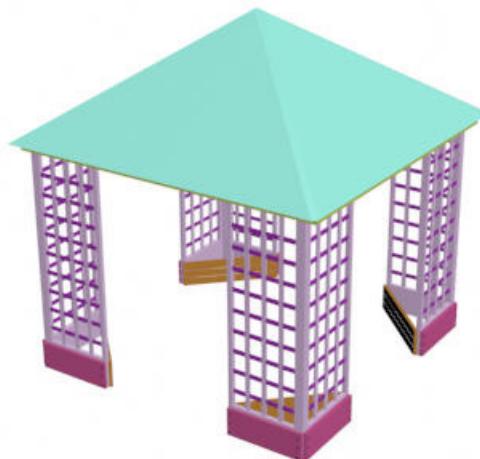


Figure 3-49 The rendered image of a shed

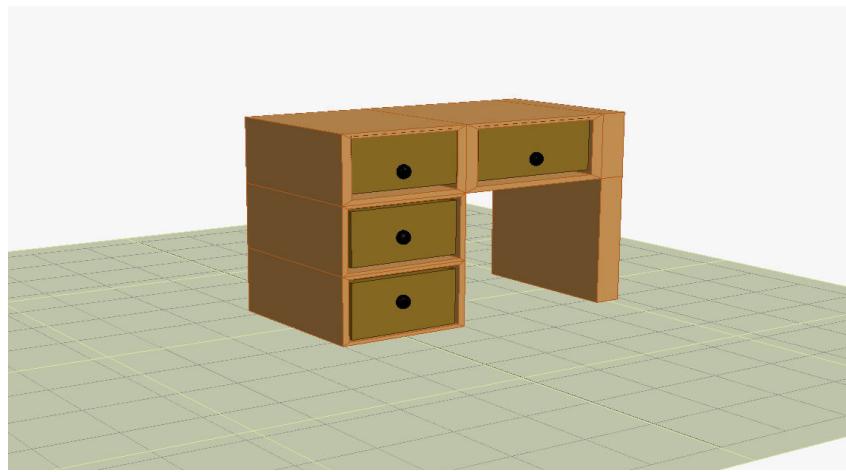


Figure 3-50 The Office table

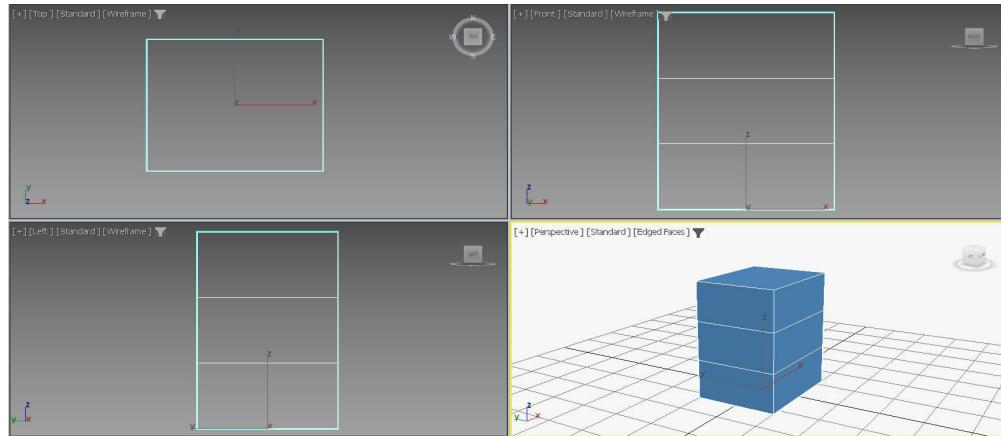


Figure 3-51 The Officetable displayed in all viewports

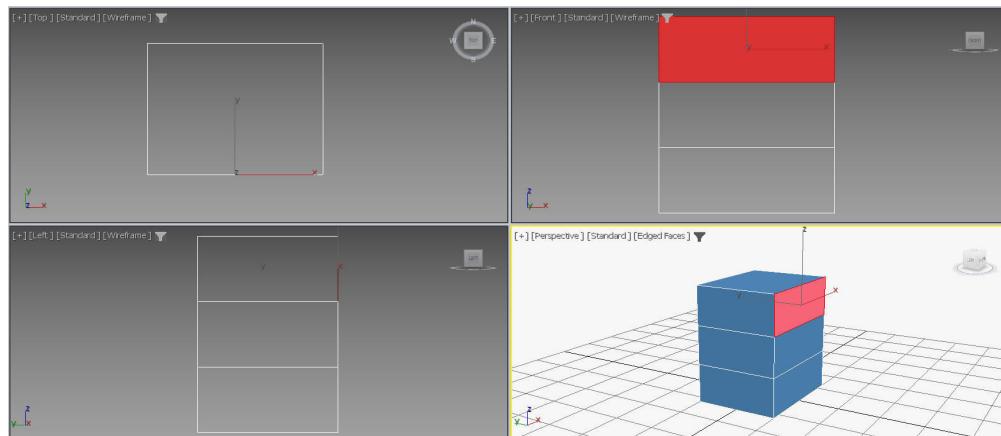


Figure 3-52 Selected polygon

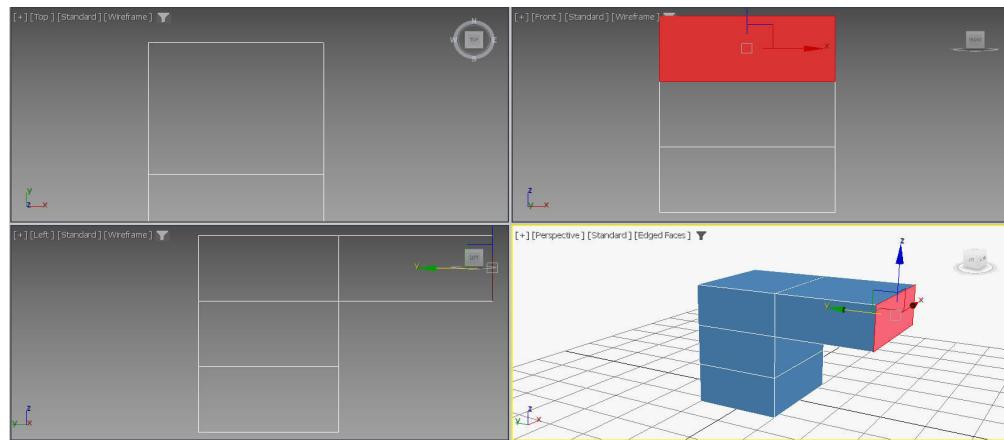


Figure 3-53 Selected polygon dragged

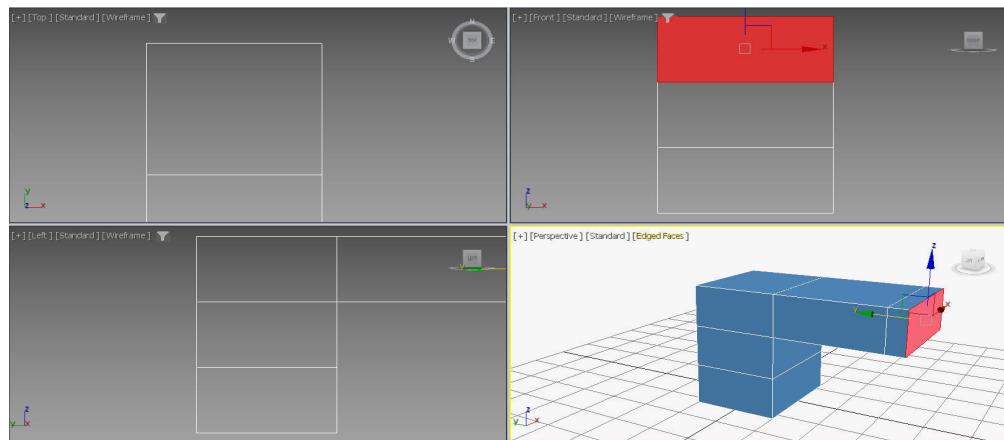


Figure 3-54 Dragged polygon

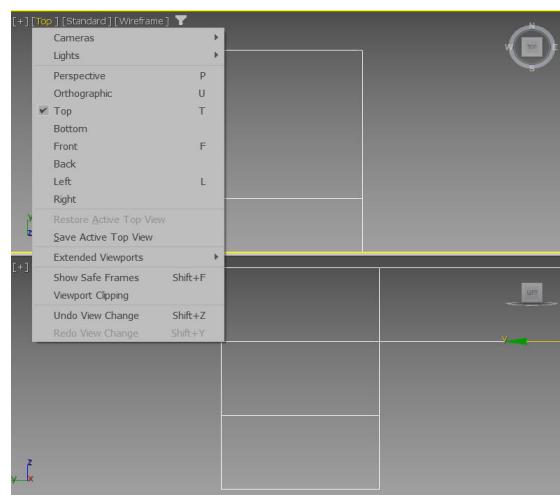


Figure 3-55 The flyout displayed

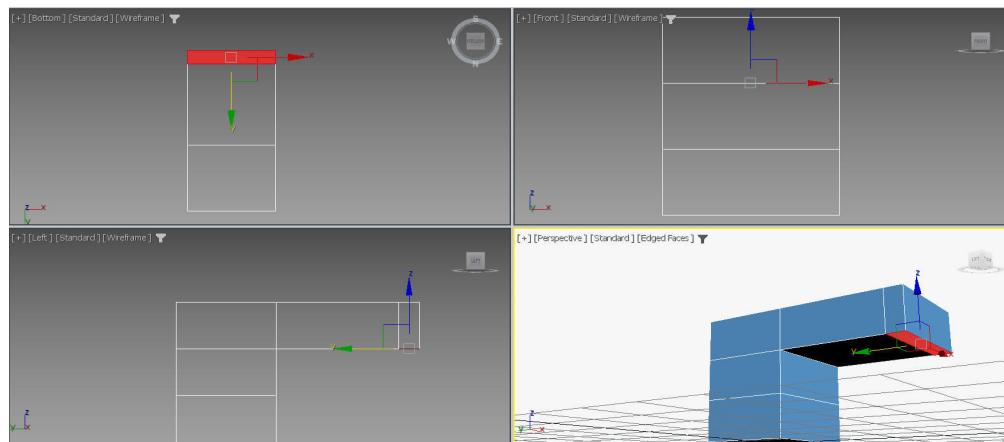


Figure 3-56 Bottom polygon selected

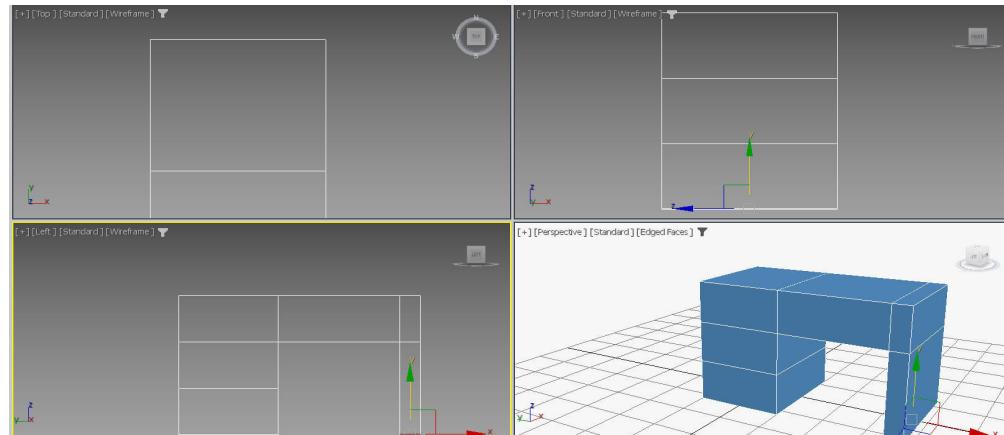


Figure 3-57 Bottom polygon dragged

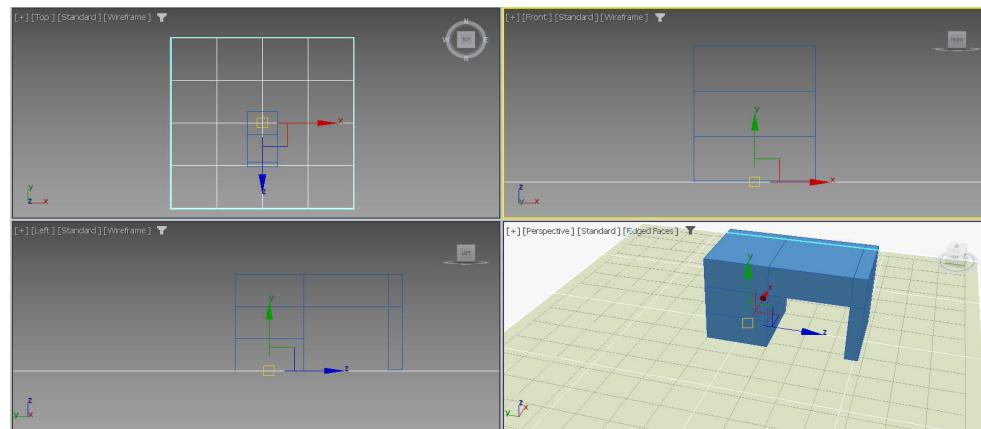


Figure 3-58 The Floor created in all viewports

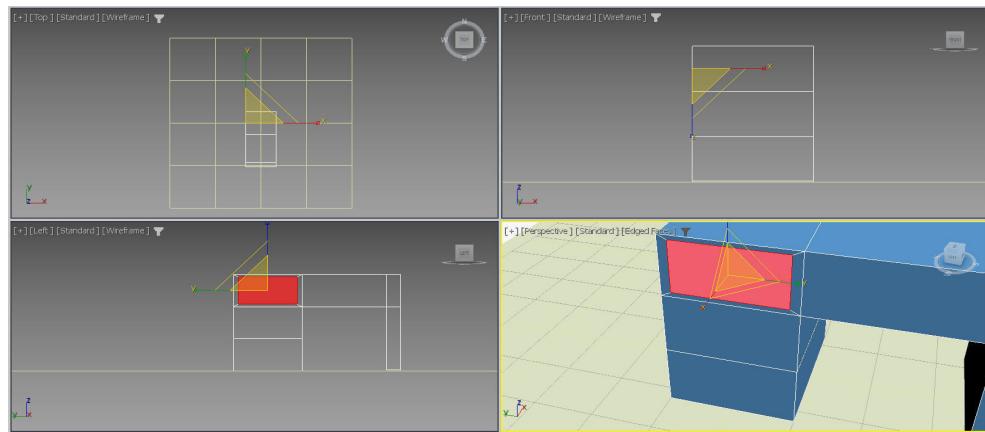


Figure 3-59 Selected polygon scaled

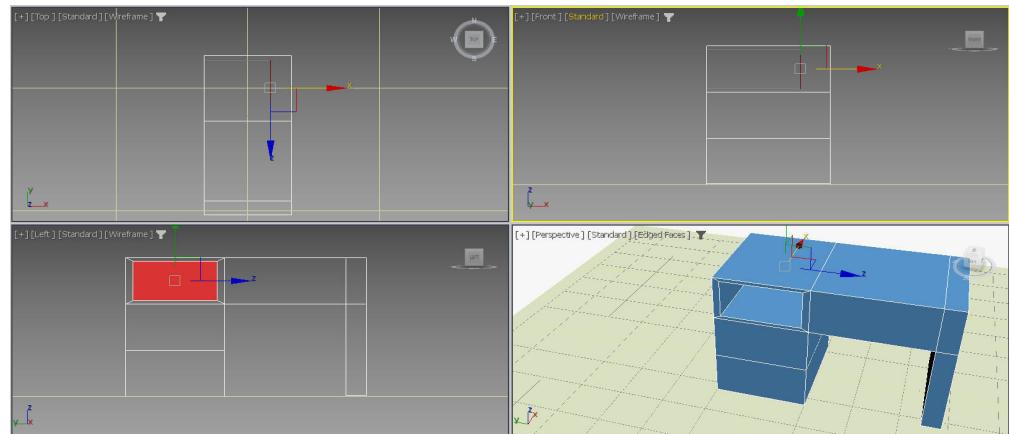


Figure 3-60 Moving the selected polygon inside

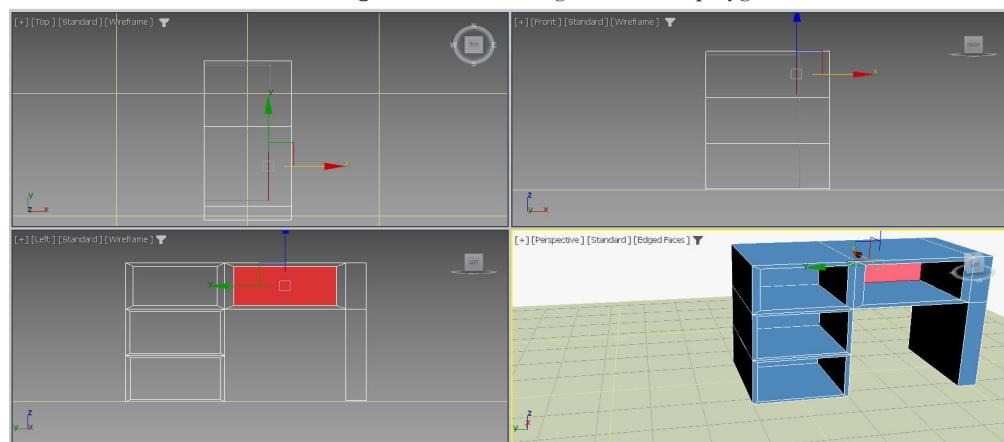


Figure 3-61 Moving other polygons inside

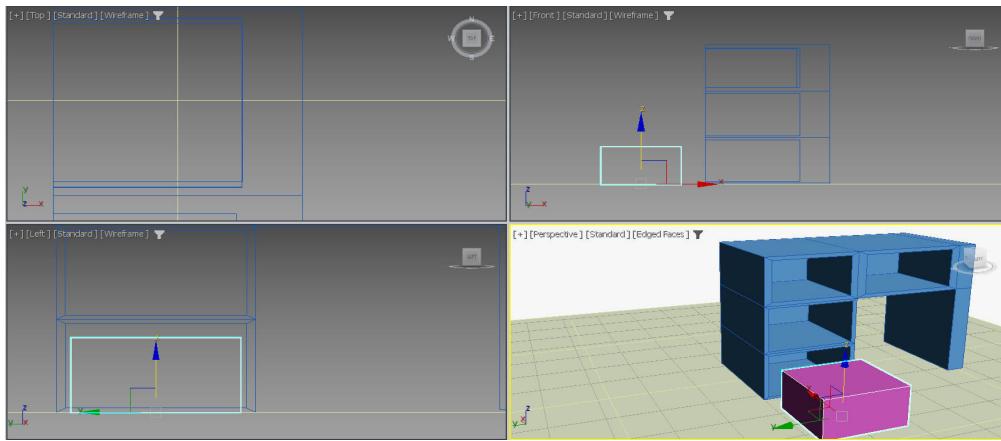


Figure 3-62 Box created in all viewports

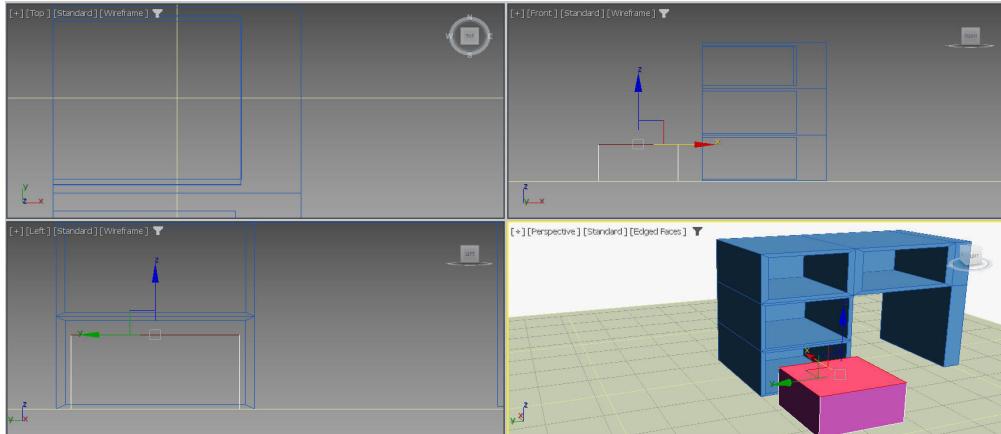


Figure 3-63 Selected polygon of Drawer

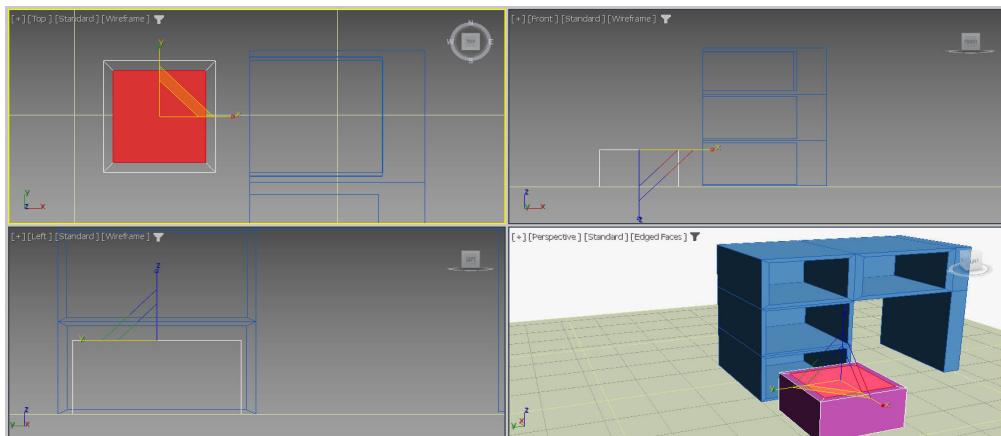


Figure 3-64 Selected polygon scaled inward

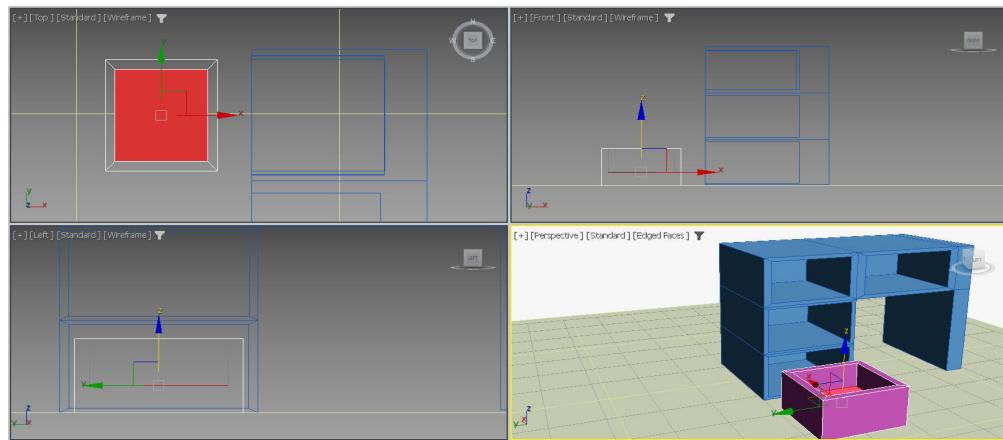


Figure 3-65 Selected polygon moved downward

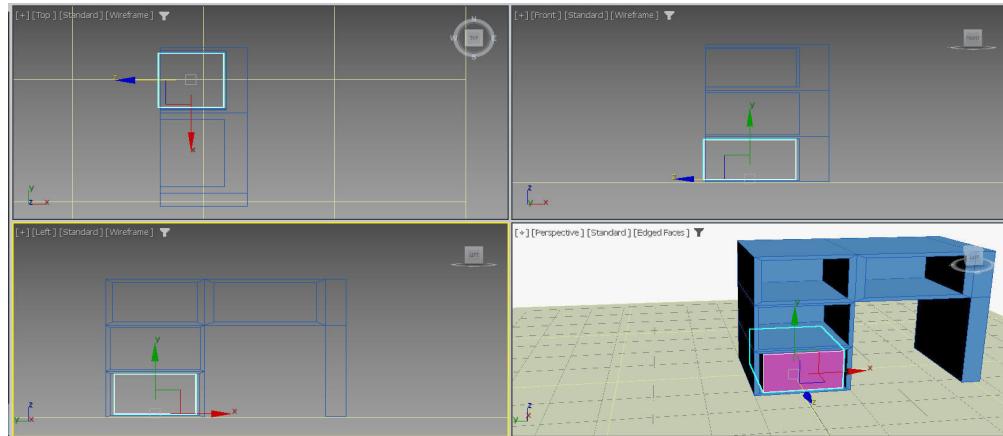


Figure 3-66 Drawer aligned to Officetable

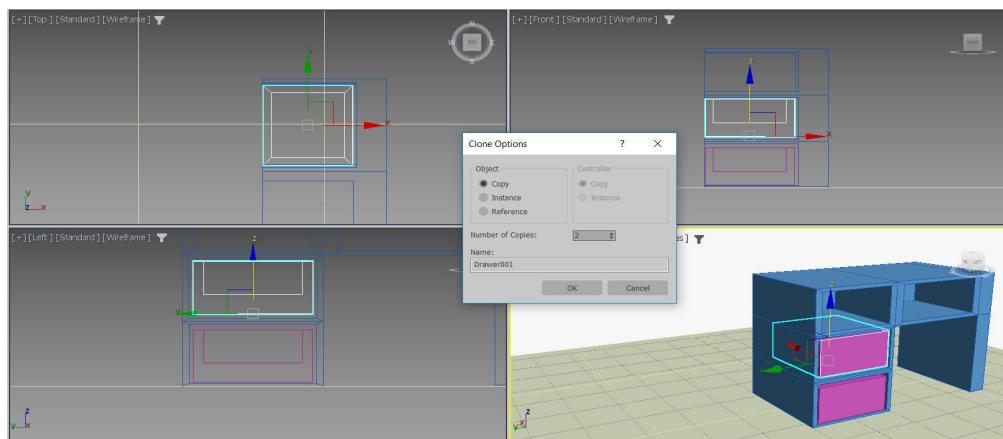


Figure 3-67 The **Clone Options** dialog box displayed

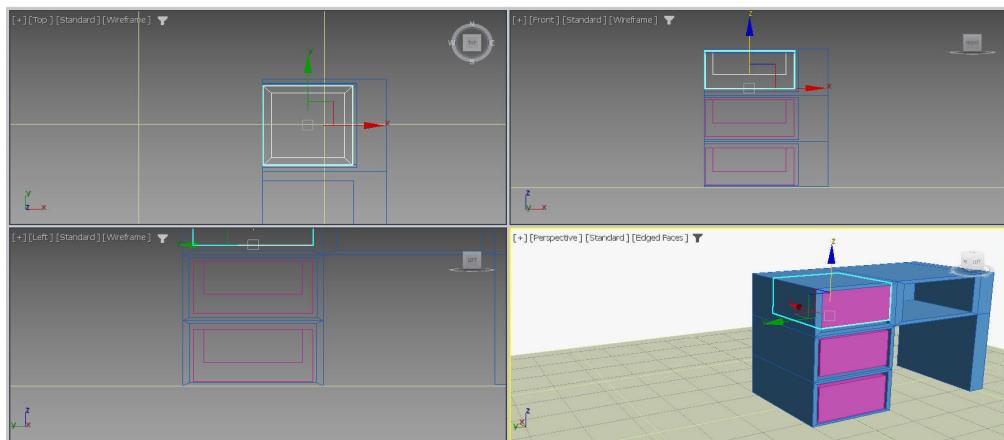


Figure 3-68 Aligning the drawers

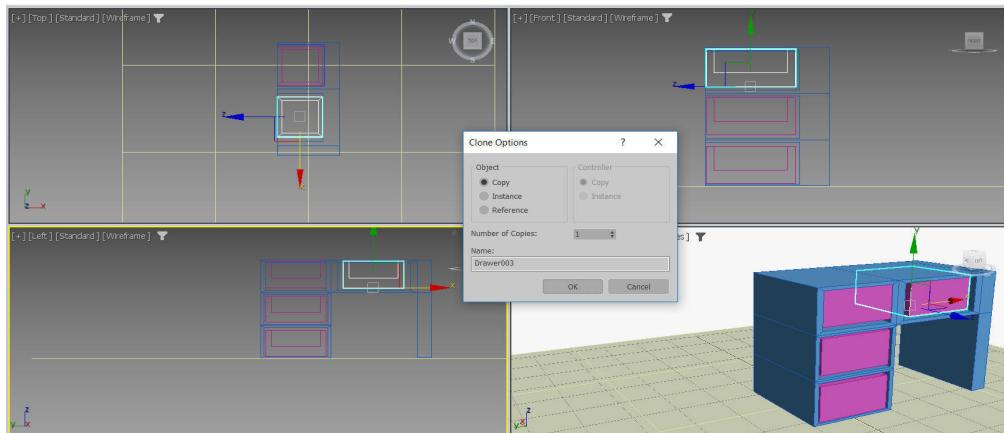


Figure 3-69 Copy of drawer created

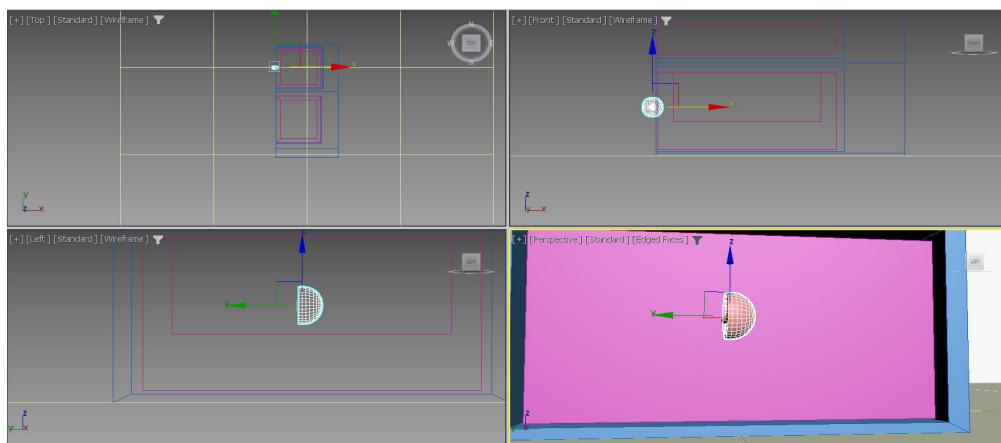


Figure 3-70 Knob aligned to drawer

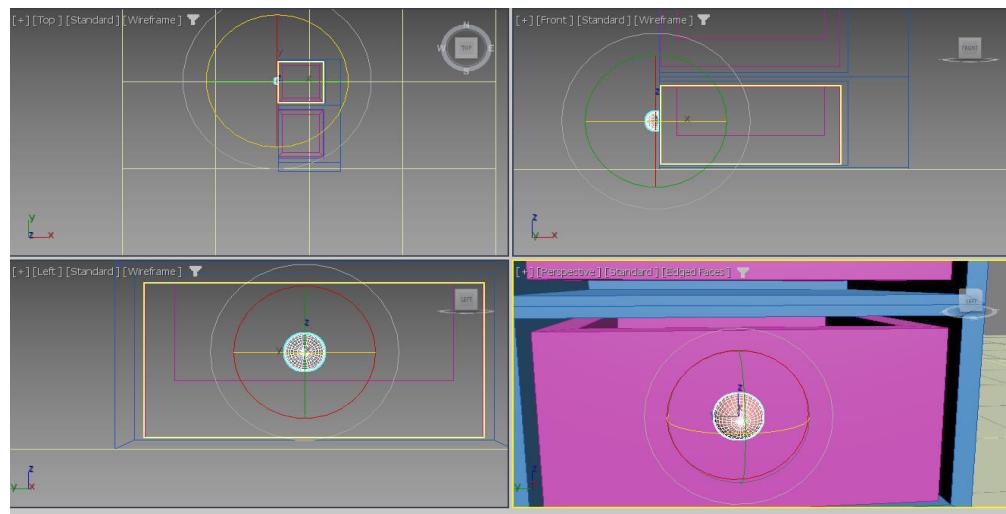


Figure 3-71 Rotating knob

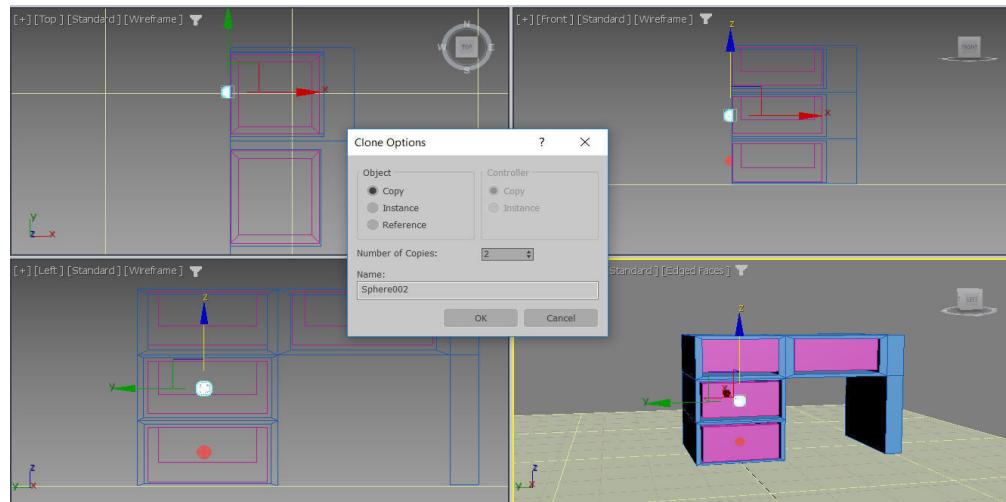


Figure 3-72 Entering value 2 in the Number of Copies edit box

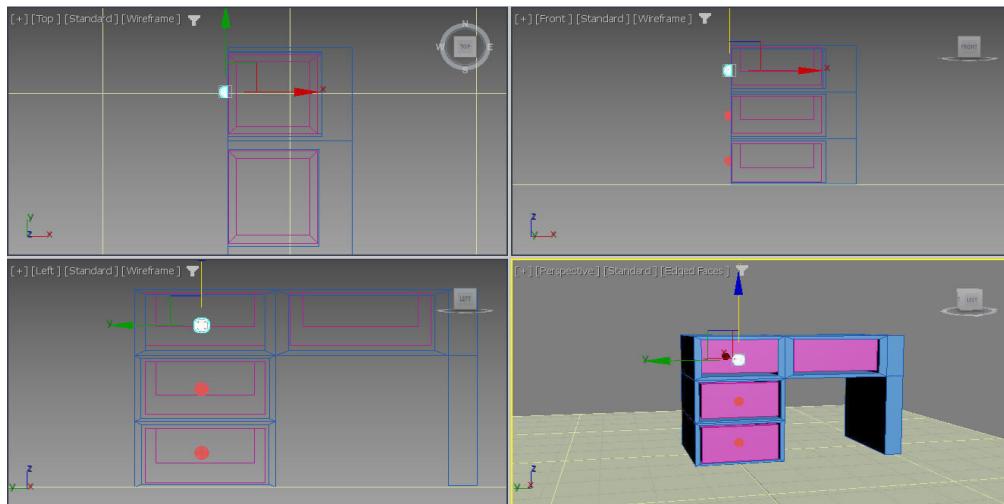


Figure 3-73 Copies of knob created

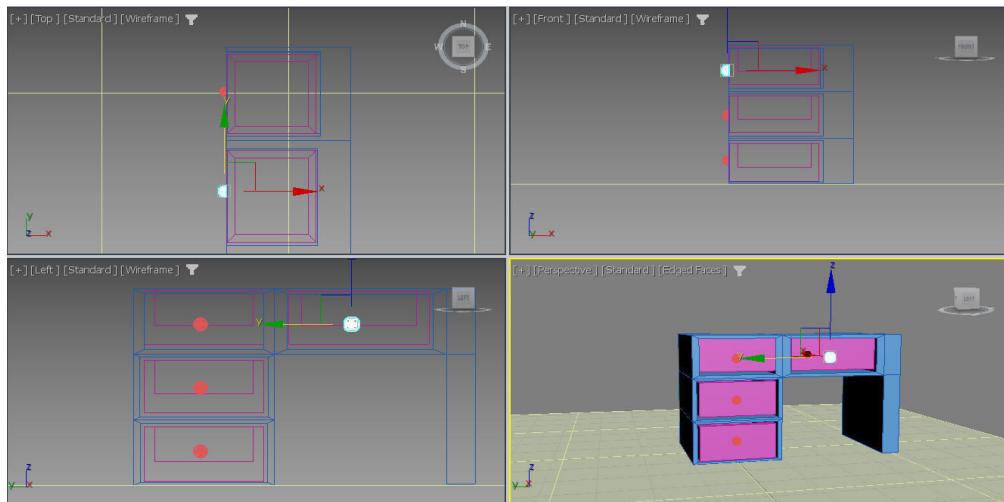


Figure 3-74 Copy of knob created for the side drawer



Figure 3-75 The scene of an umbrella and a table

Chapter 4

Working with Splines-I



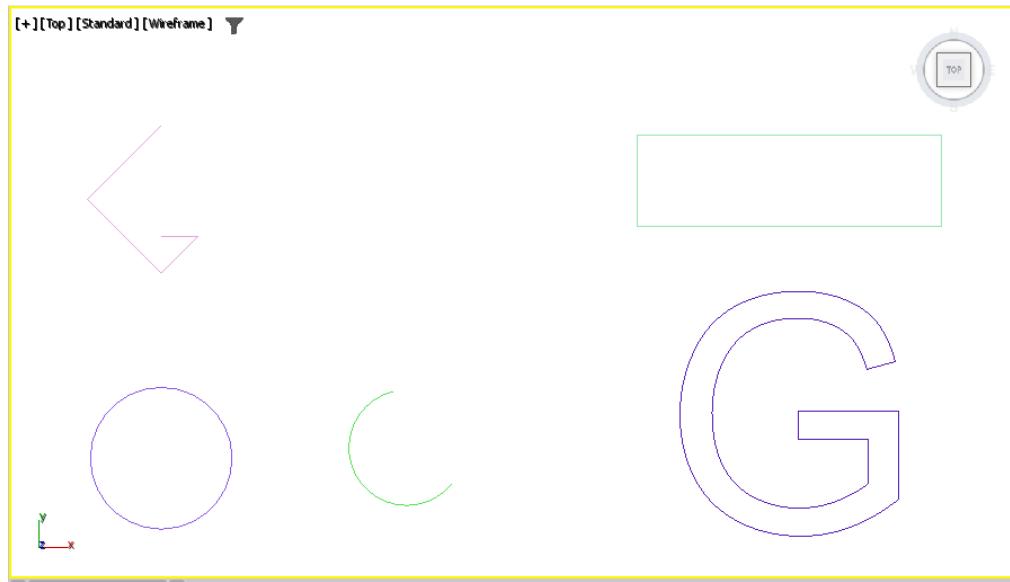


Figure 4-1 Different spline shapes created in the Top viewport

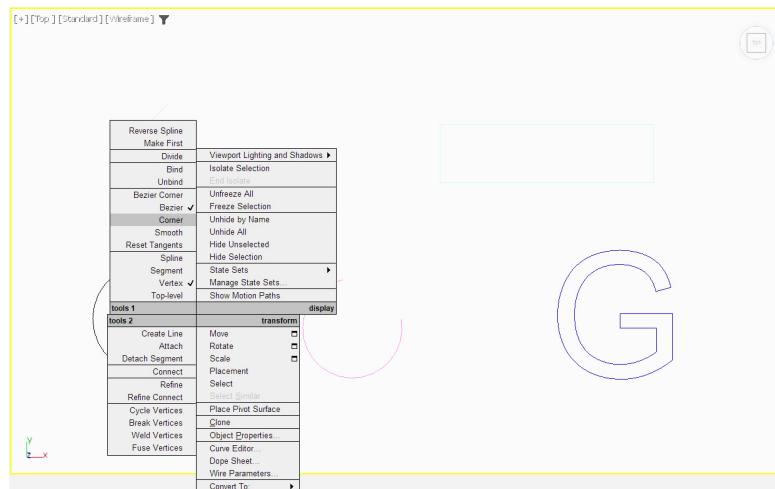


Figure 4-2 Choosing **Corner** from the upper-left quadrant of the quad menu

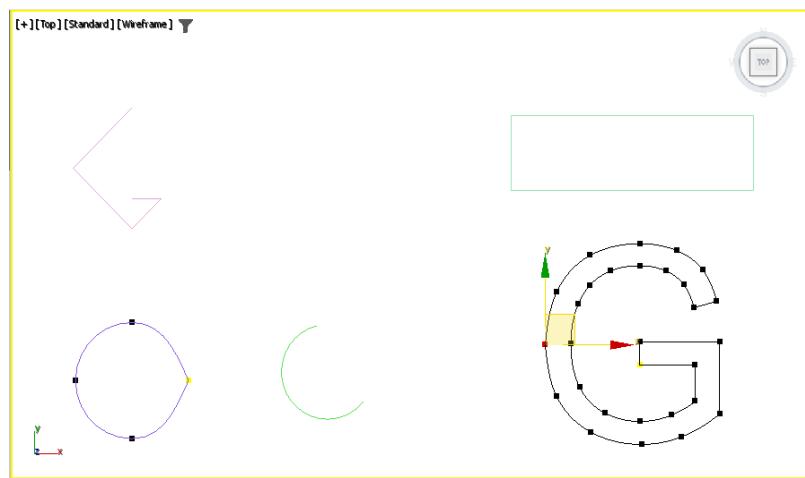


Figure 4-3 The curved vertices changed to corner

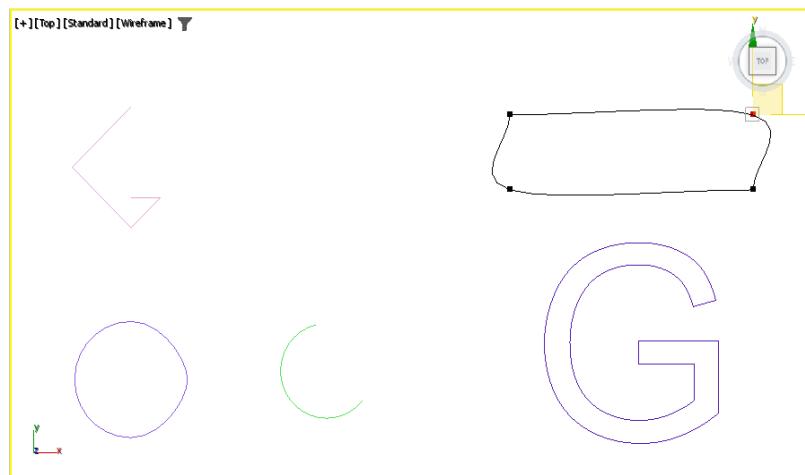


Figure 4-4 Two corners of the rectangle changed to smooth curves

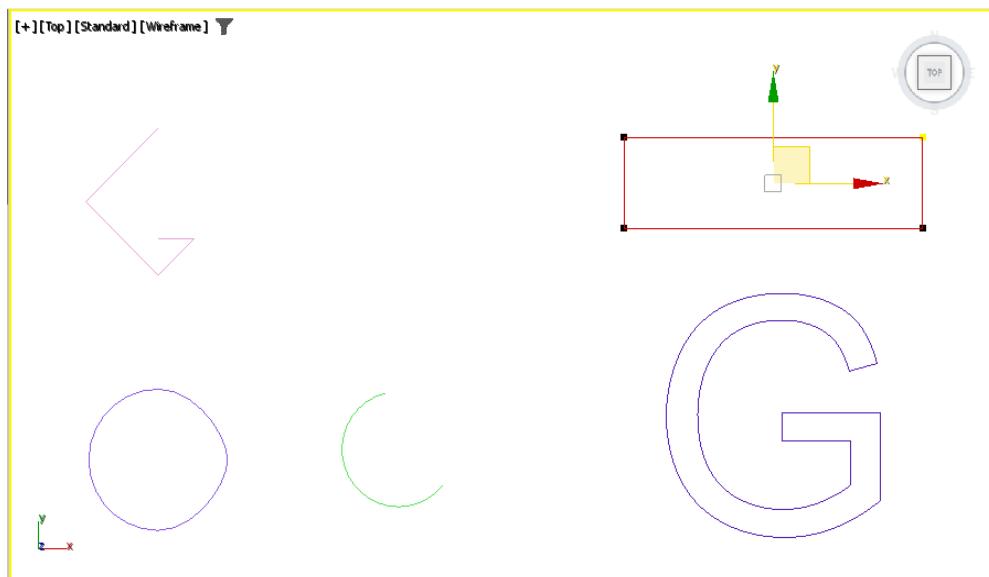


Figure 4-5 The rectangle restored to its original shape

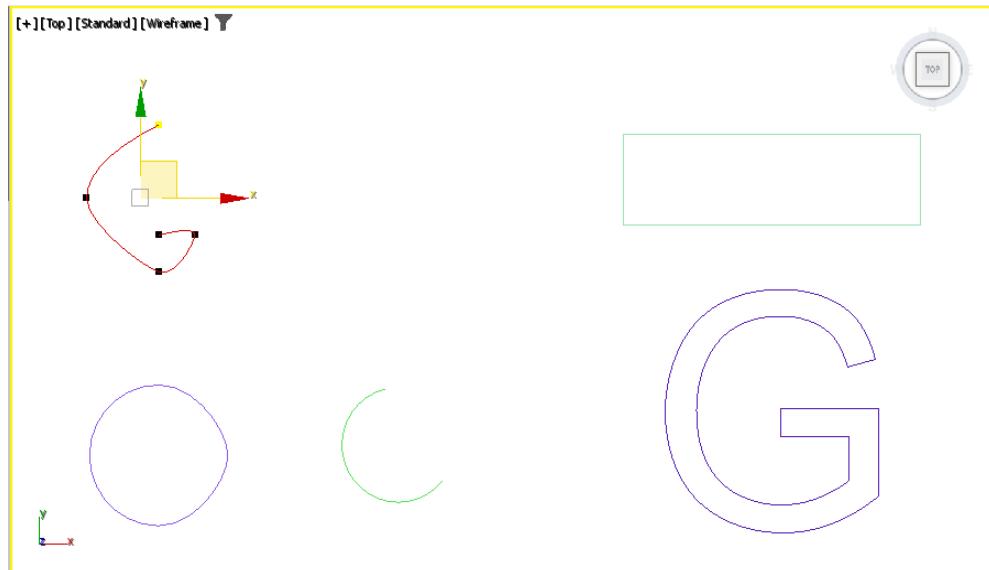


Figure 4-6 The curved line spline

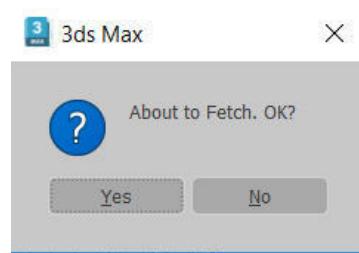


Figure 4-7 The *About to Fetch. OK?* message box

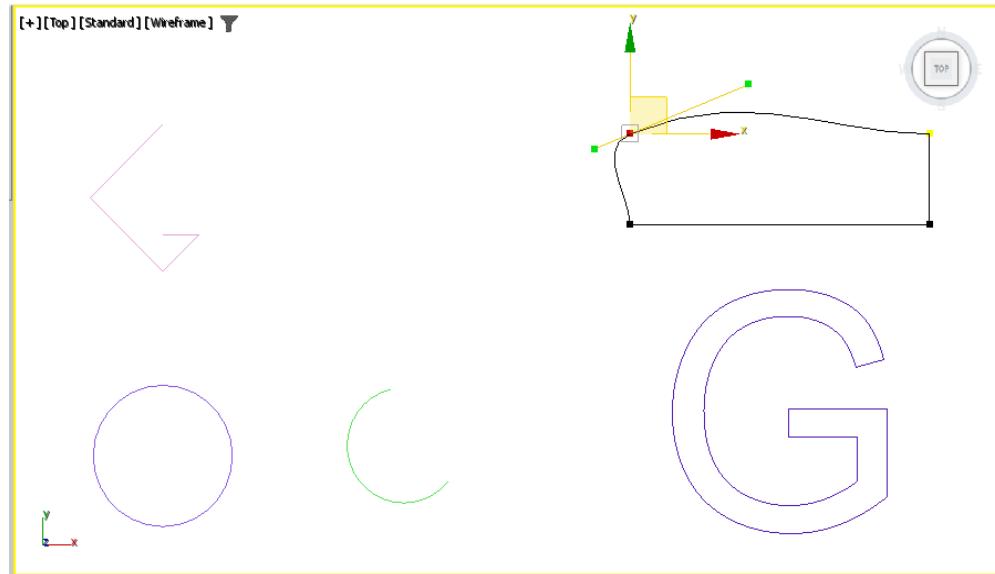


Figure 4-8 Shape of the rectangle after dragging one of the handles

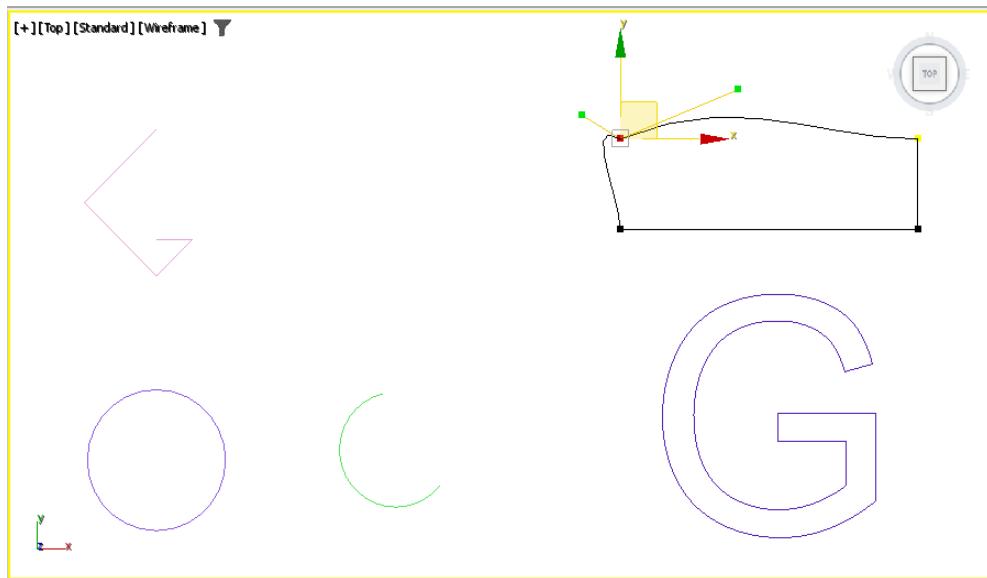


Figure 4-9 Curved line segments of the spline

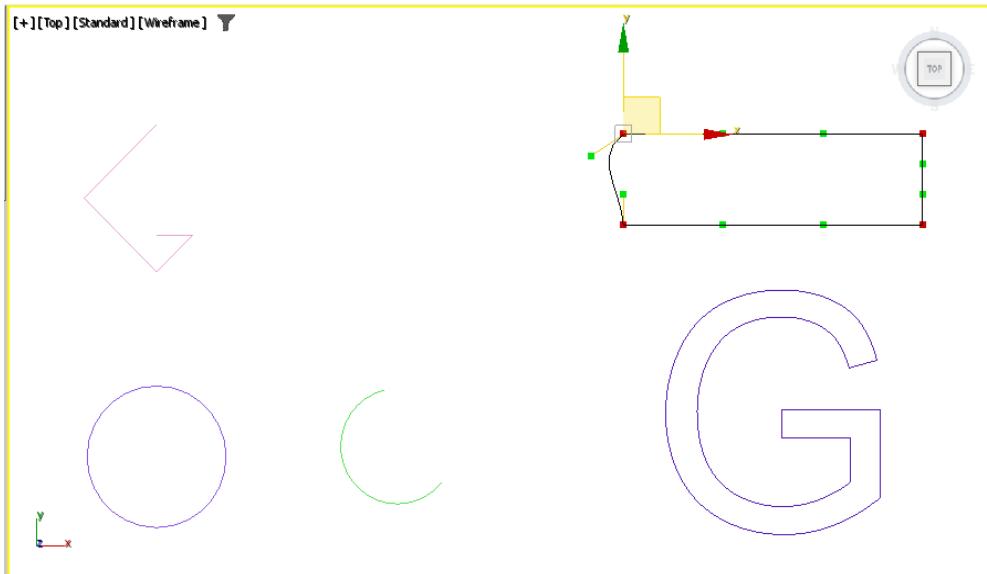


Figure 4-10 Adjusting the bezier handles

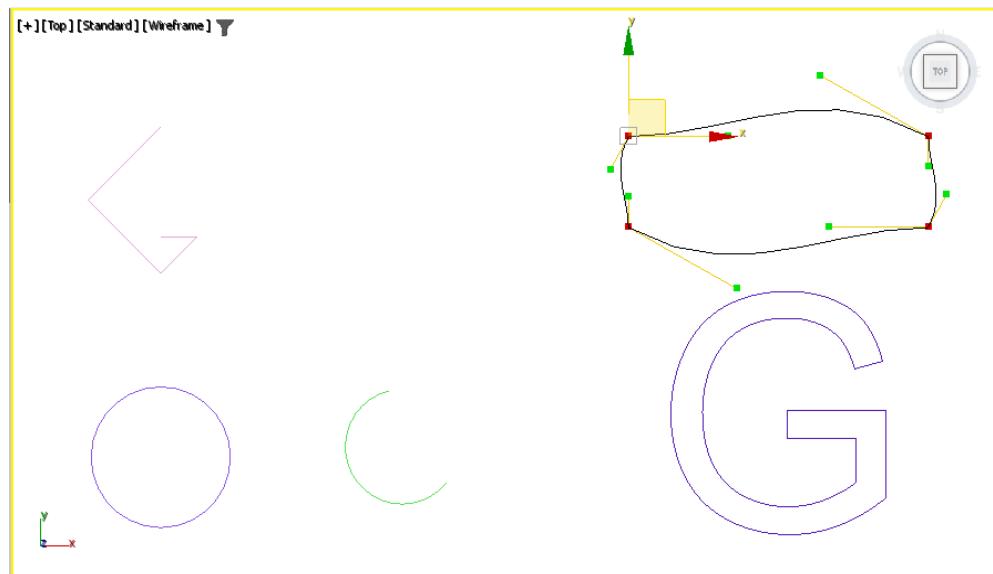


Figure 4-11 All similar bezier handles affected by the **Lock Handles** check box and the **Alike** radio button

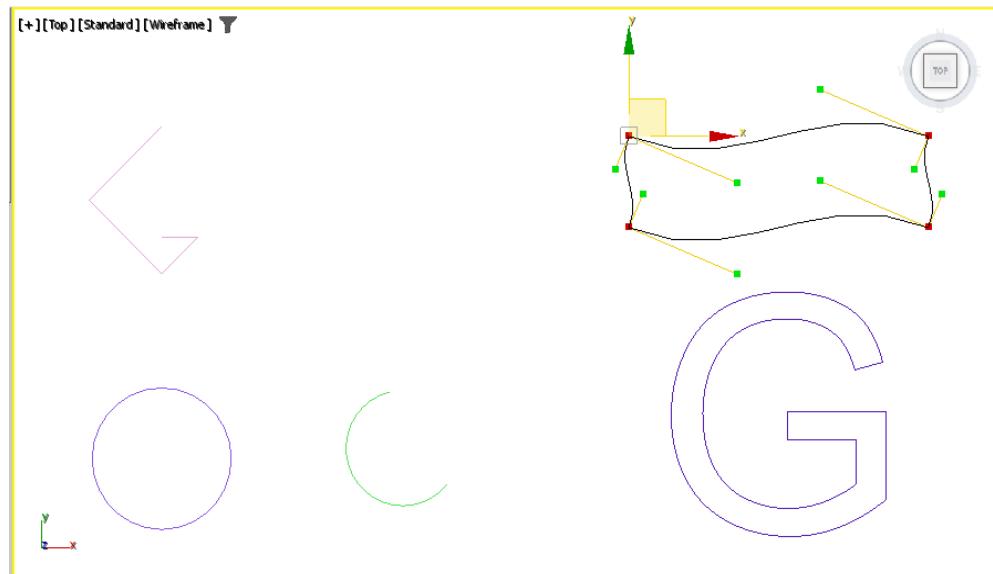


Figure 4-12 All bezier handles affected on selecting the **All** radio button

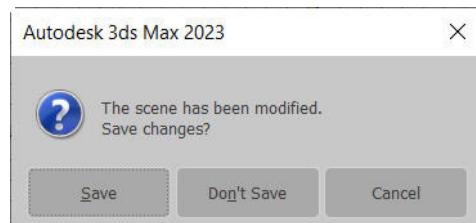


Figure 4-13 The Autodesk 3ds Max 2023 message box

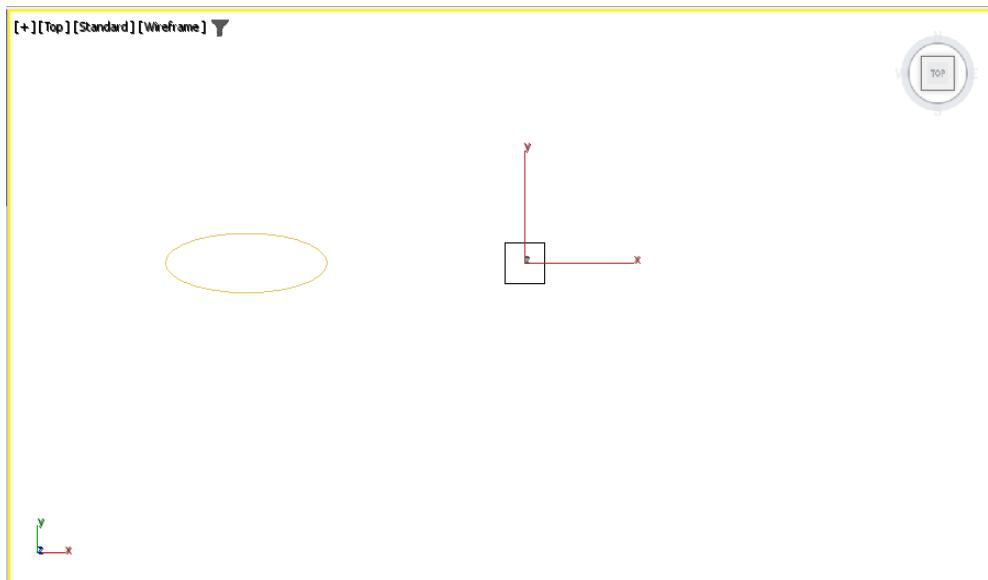


Figure 4-14 The ellipse and square created in the Top viewport

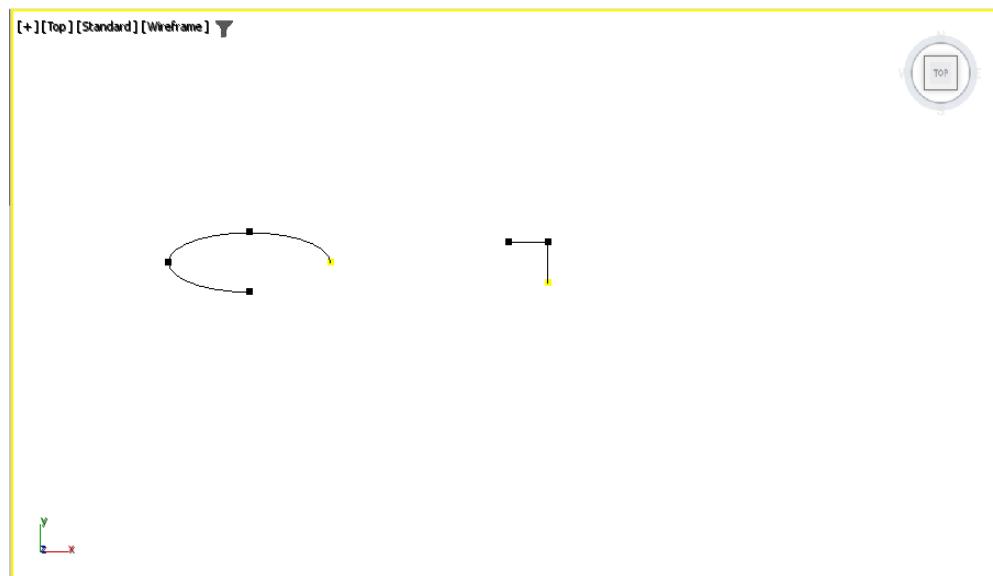


Figure 4-15 Selected segments deleted from the shapes

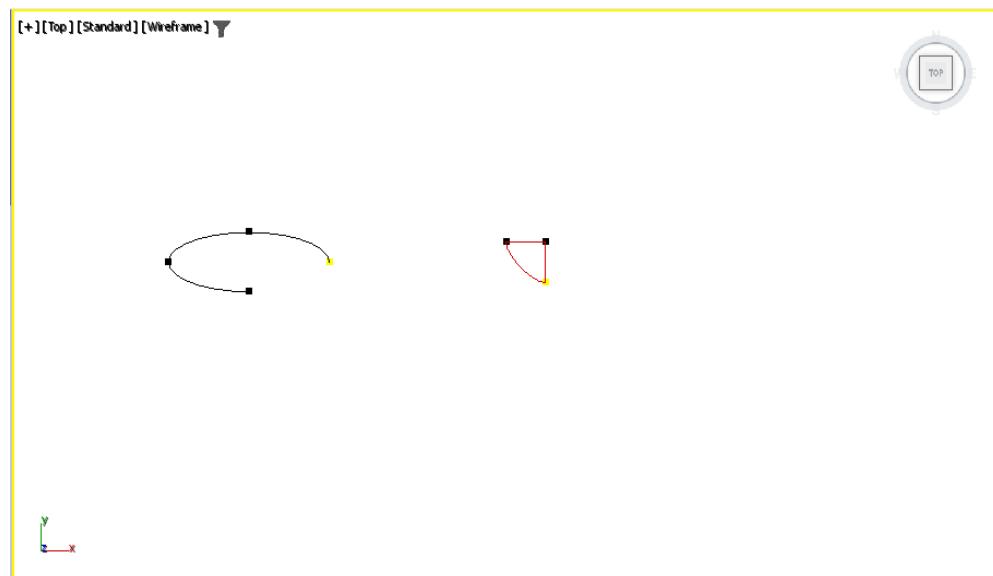


Figure 4-16 The closed spline

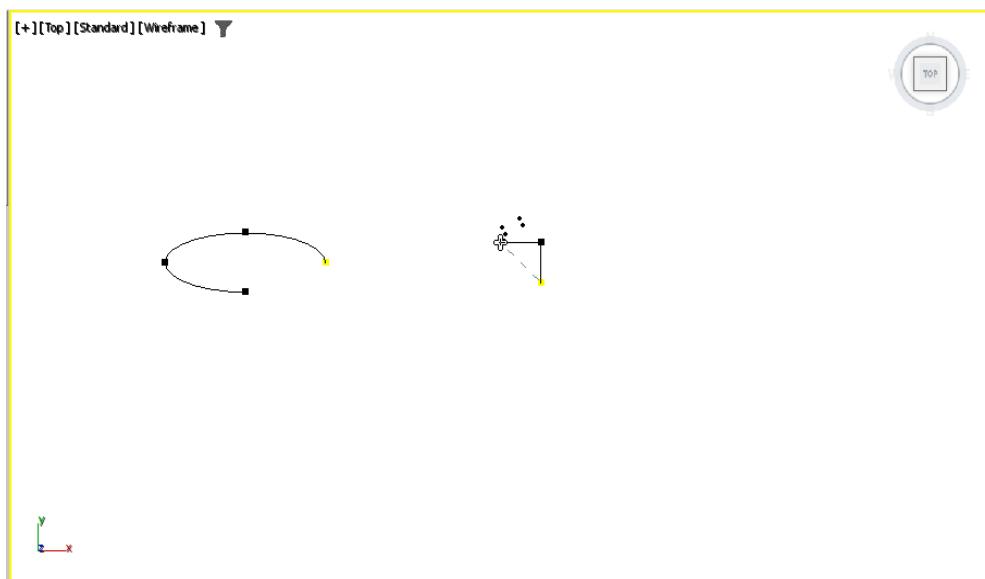


Figure 4-17 A dashed line attached to the end vertices

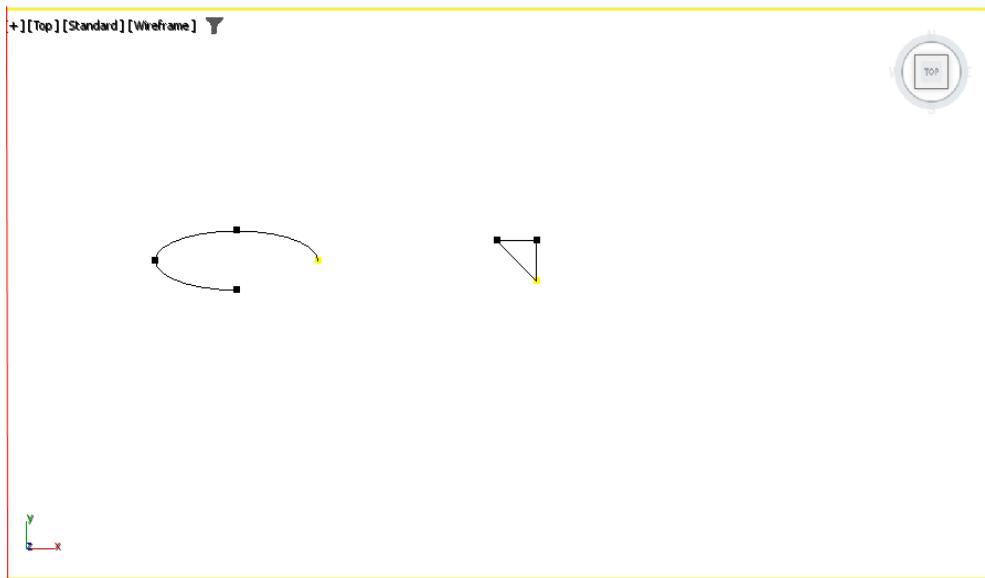


Figure 4-18 The two vertices joined by a straight segment

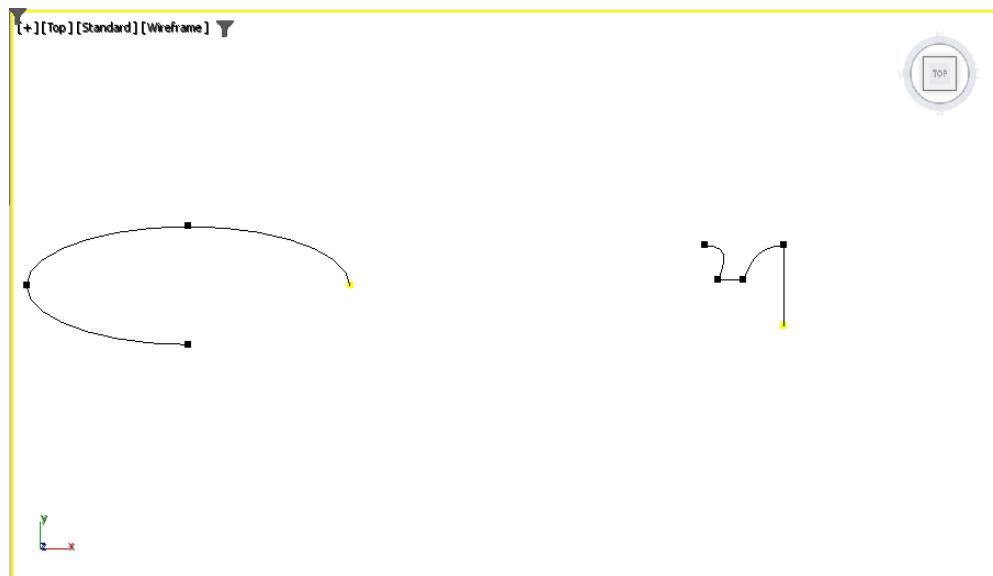


Figure 4-19 New vertices added to the segment

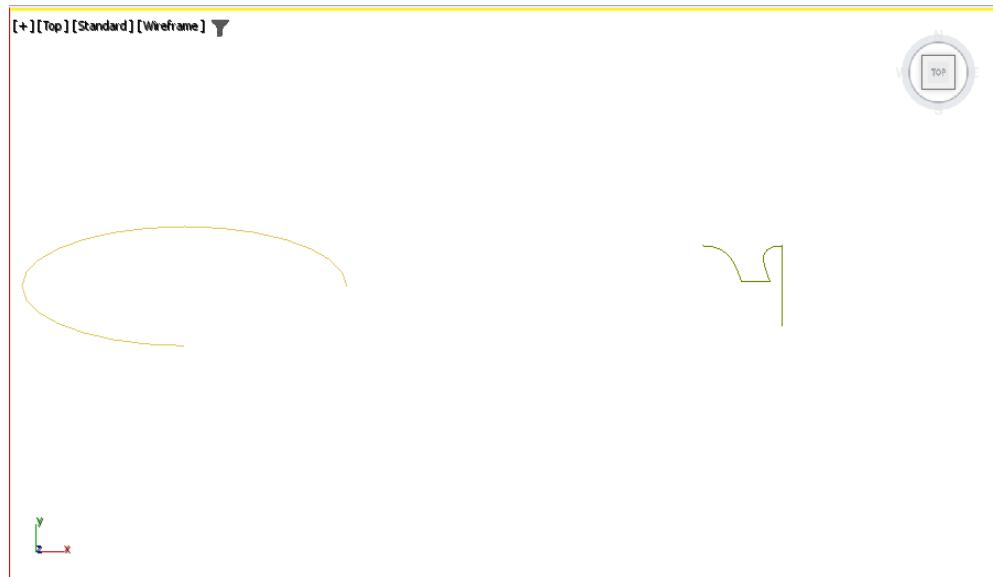


Figure 4-20 The resulting shape created after changing the direction of the spline

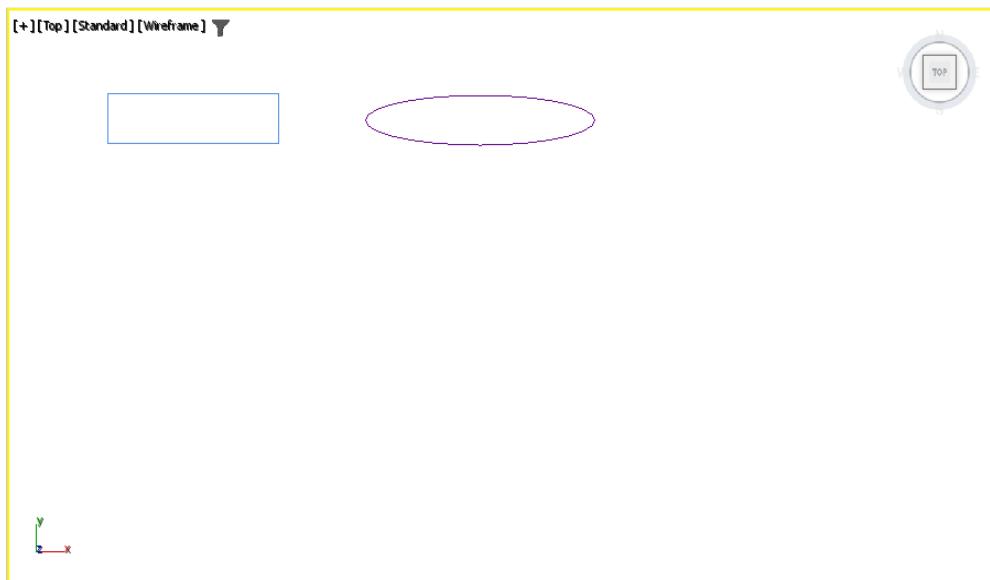


Figure 4-21 A rectangle and an ellipse created

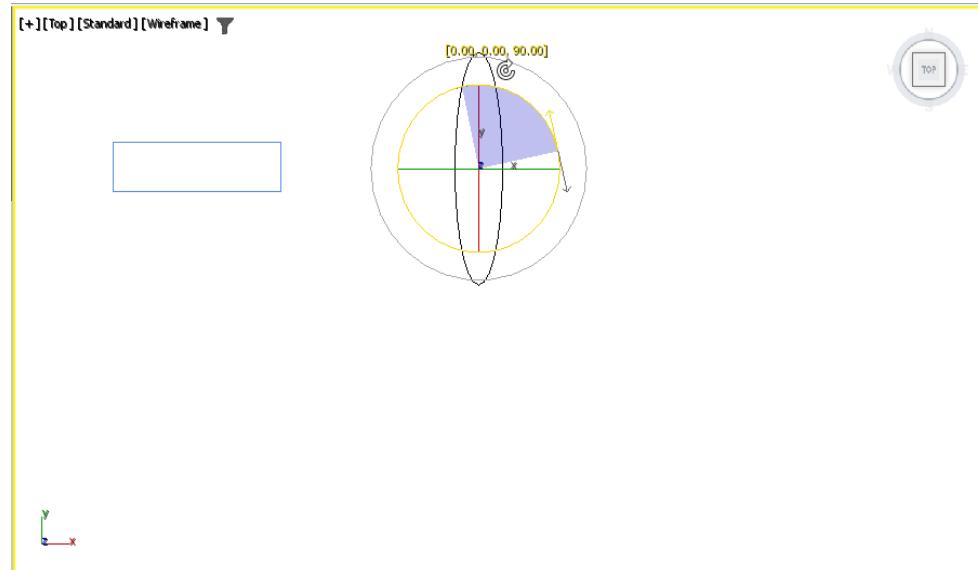


Figure 4-22 The ellipse rotated to 90 degrees

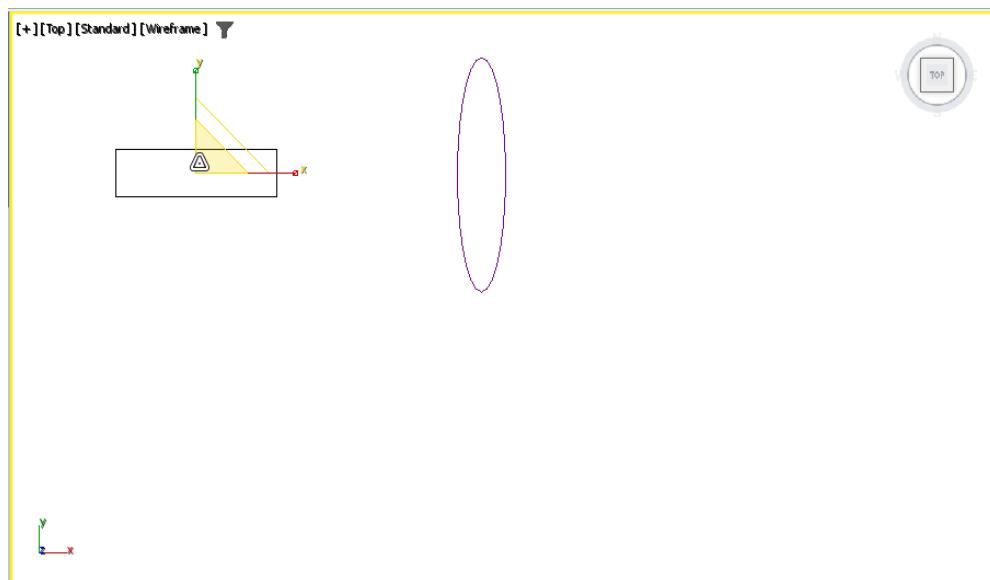


Figure 4-23 The rectangle scaled to its pivot point

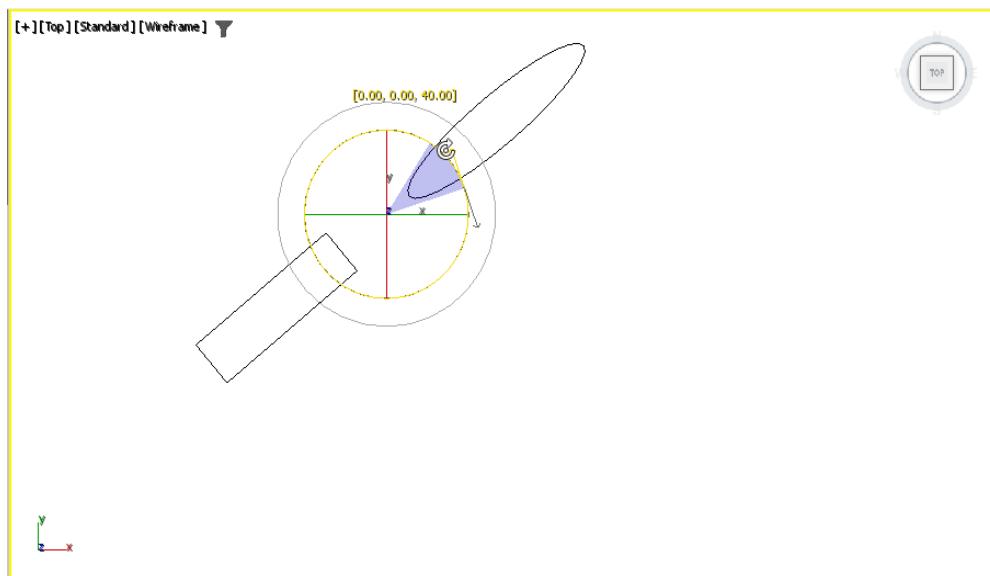


Figure 4-24 Both objects rotated around the center of their combined center point

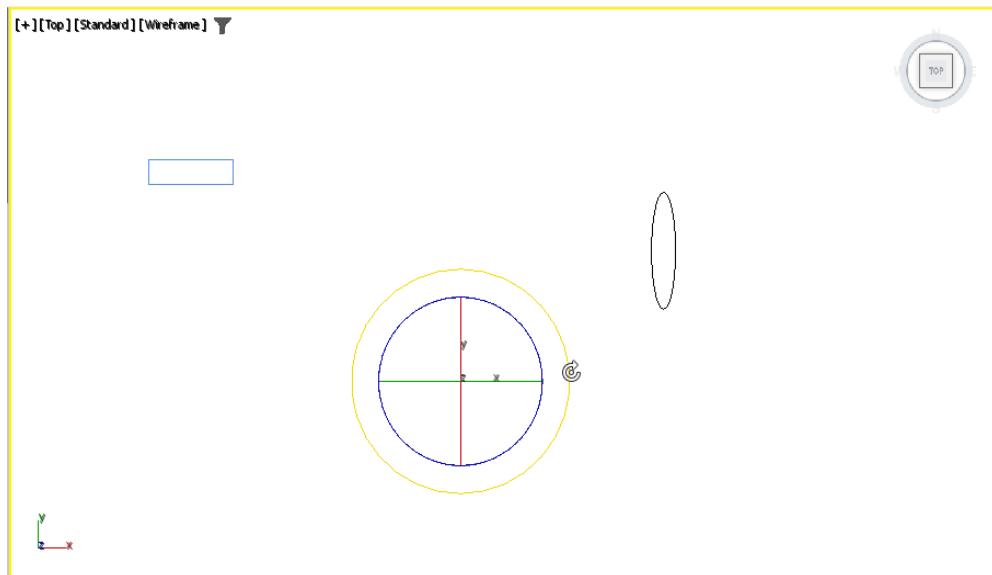


Figure 4-25 The rotated ellipse after selecting **World** from the **Reference Coordinate System** drop-down list

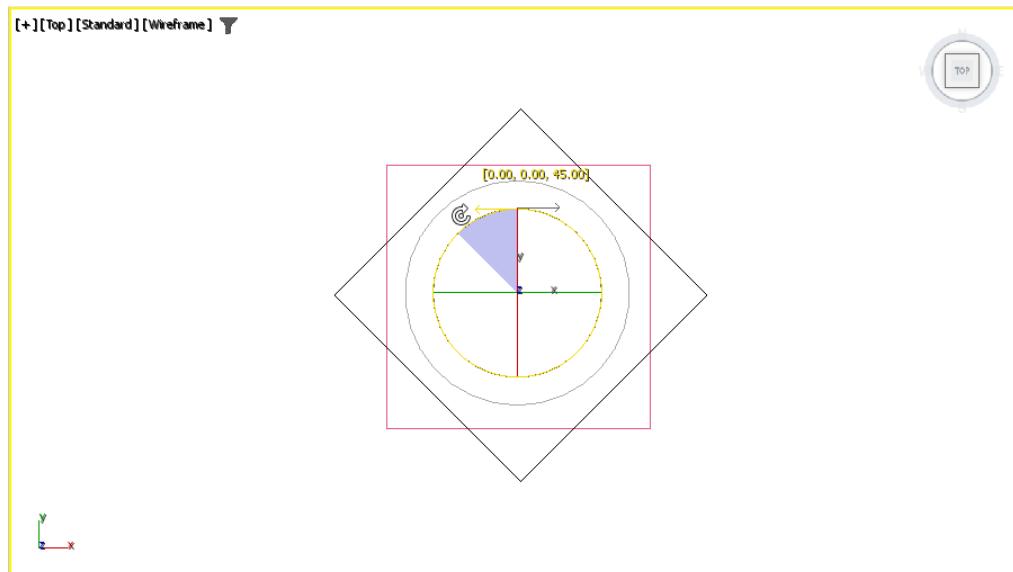


Figure 4-26 Rotating the square at an angle of 45 degrees

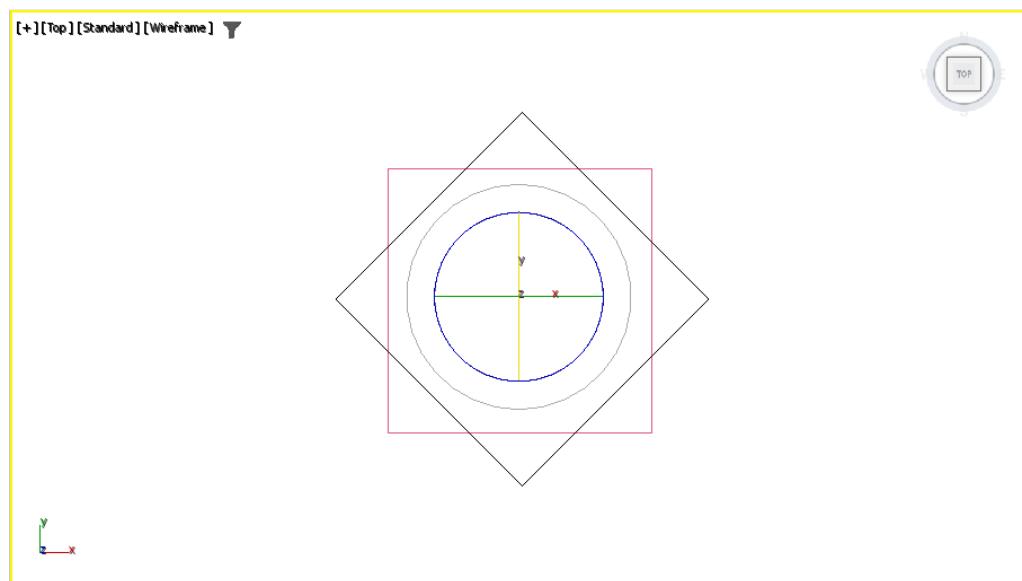


Figure 4-27 A copy of the square created by rotating it at 45 degrees

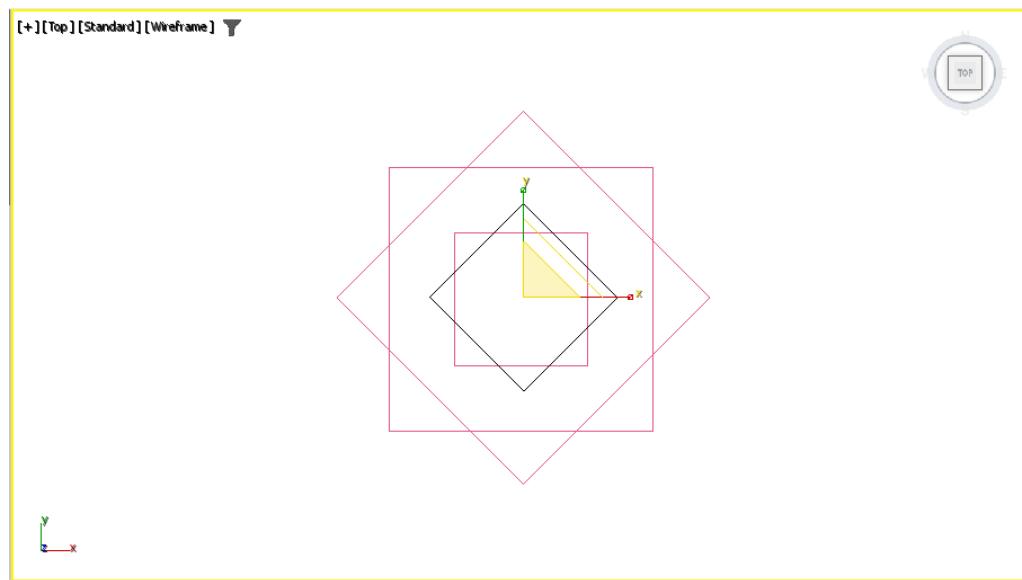


Figure 4-28 Both squares copied and scaled down to 50 percent of their original size

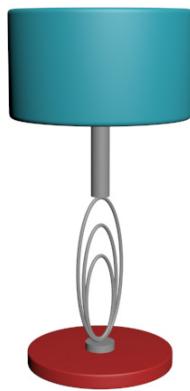


Figure 4-29 The model of a lamp

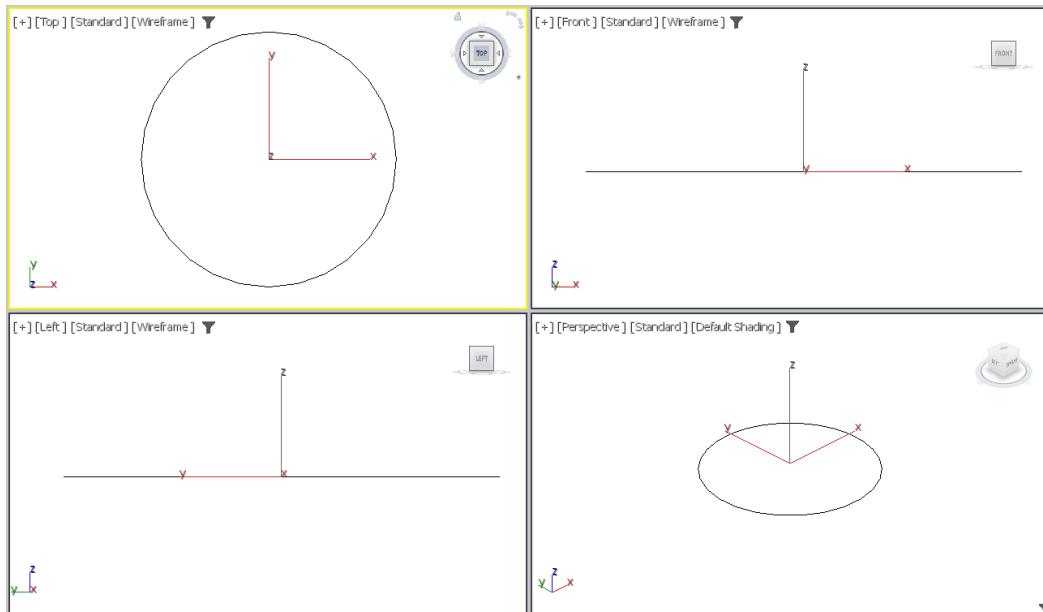


Figure 4-30 The base zoomed in all viewports

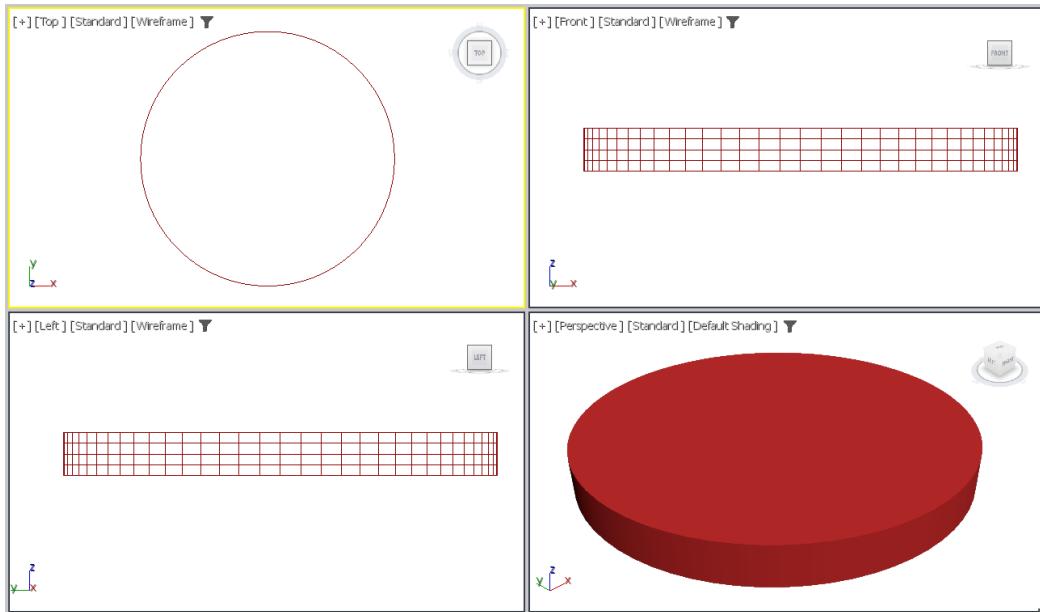


Figure 4-31 The base zoomed in all viewports

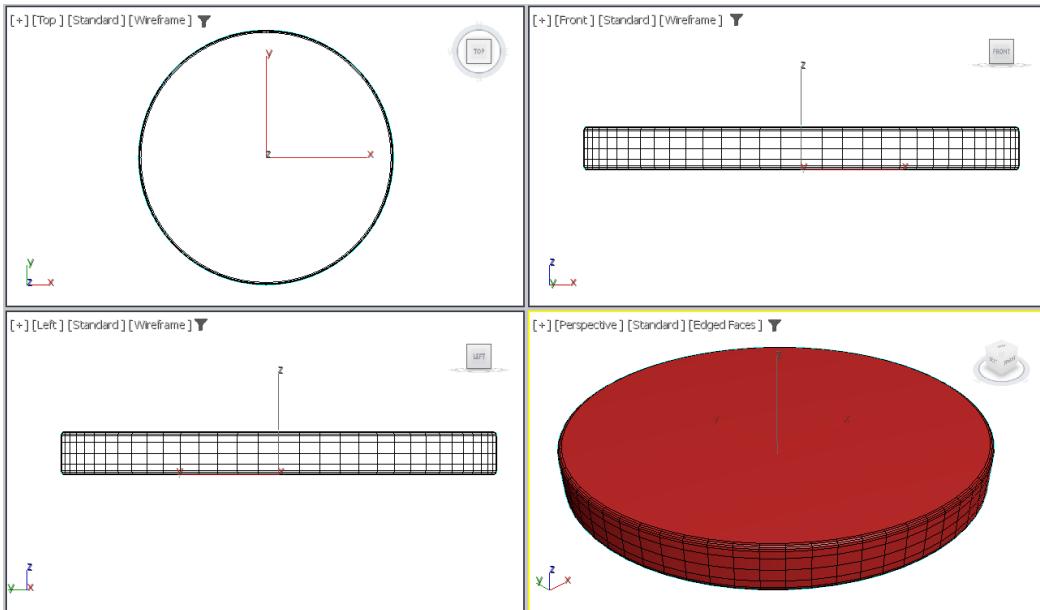


Figure 4-32 The base smoothed

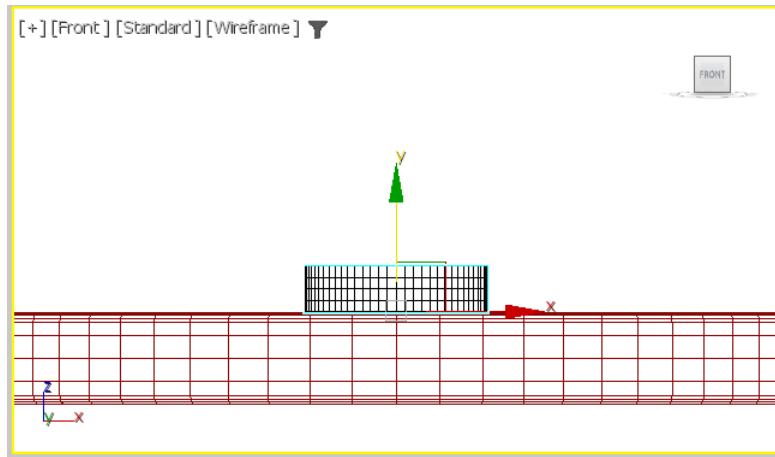


Figure 4-33 The Circle001 object moved

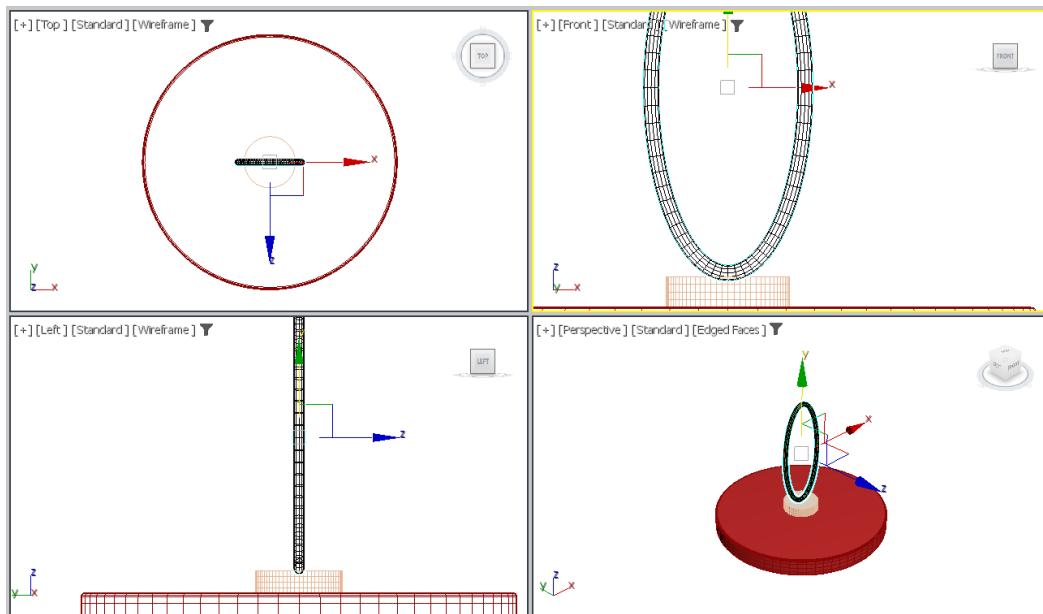


Figure 4-34 Ellipse001 aligned

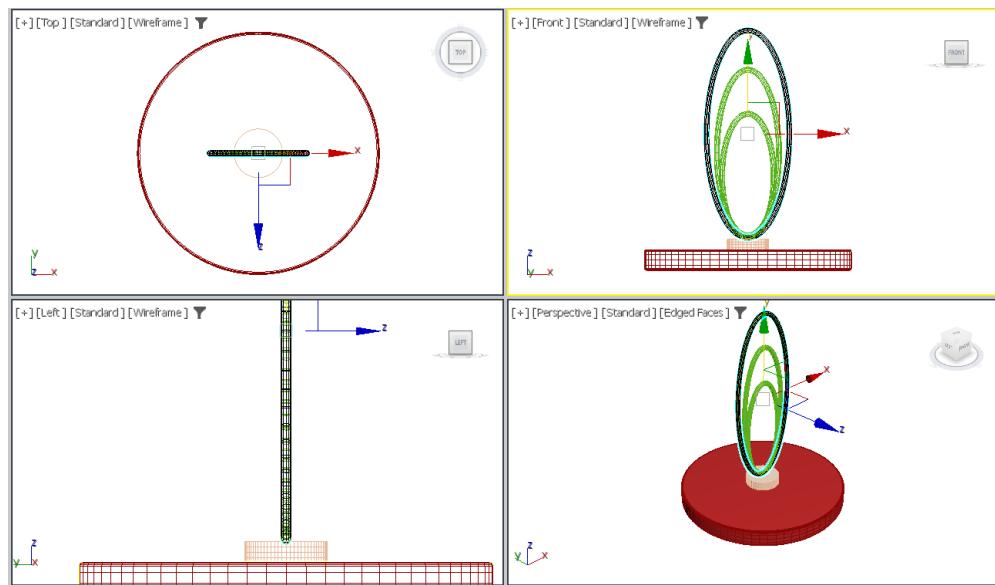


Figure 4-35 Ellipse002 and Ellipse003 aligned

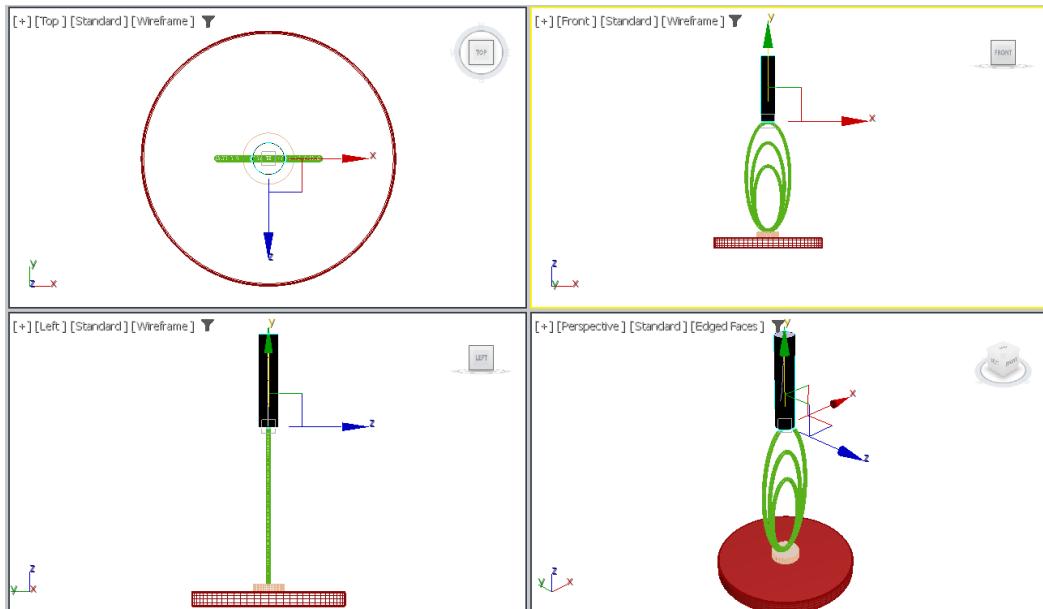


Figure 4-36 Circle002 aligned

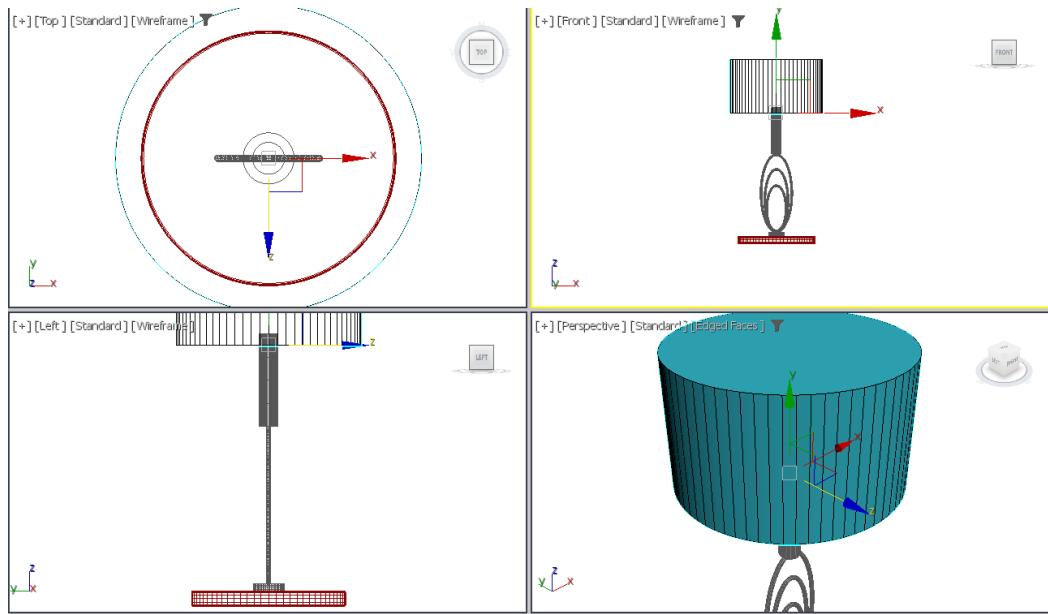


Figure 4-37 The shade object aligned

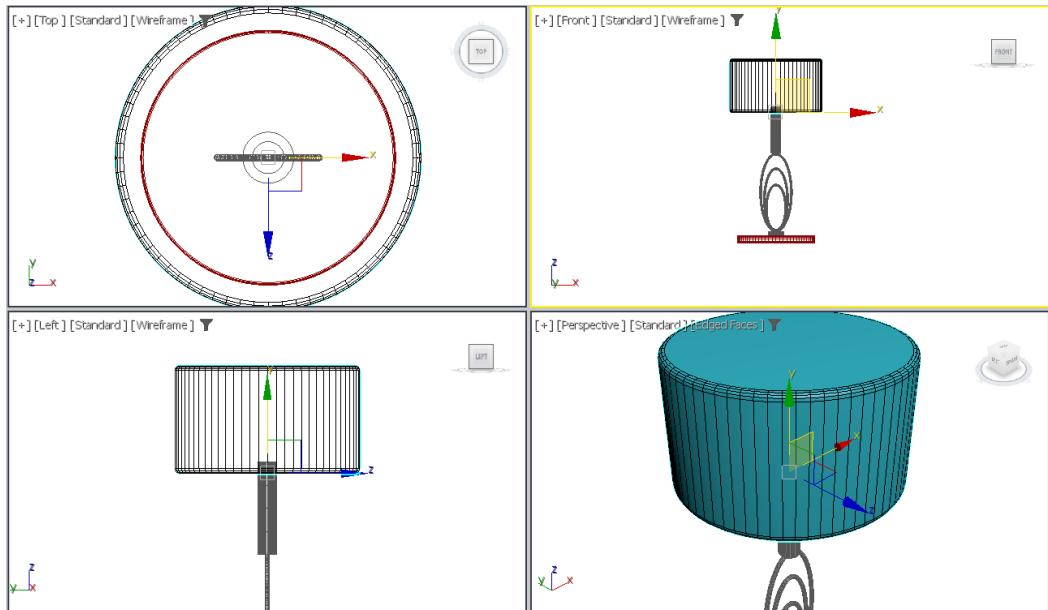


Figure 4-38 The shade object smoothed

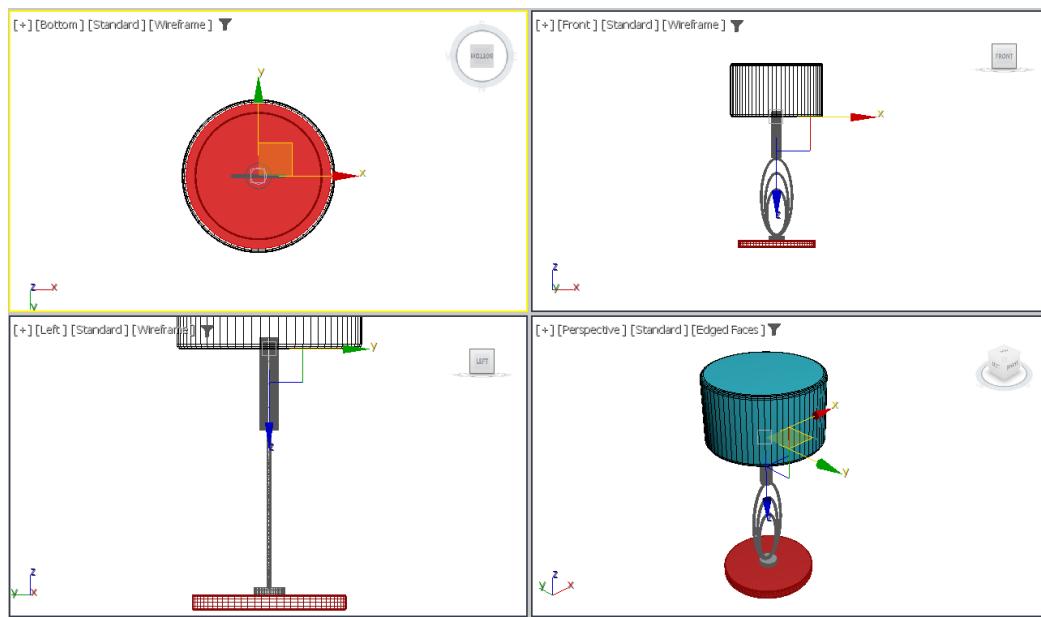


Figure 4-39 The selected polygon

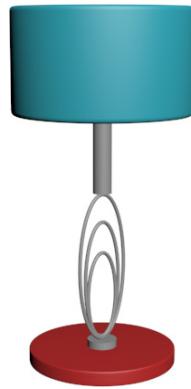


Figure 4-40 The rendered image



Figure 4-41 The model of a vase with flower plant

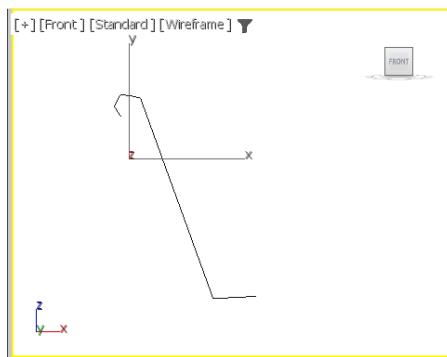


Figure 4-42 A line spline created for the vase

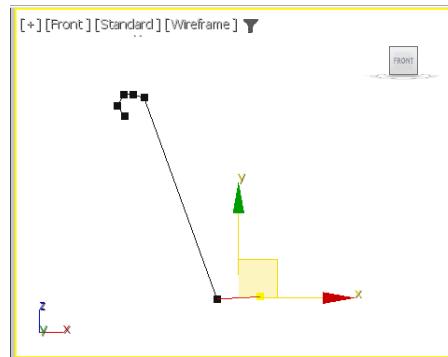


Figure 4-43 The first vertex of the line spline selected in the Front viewport

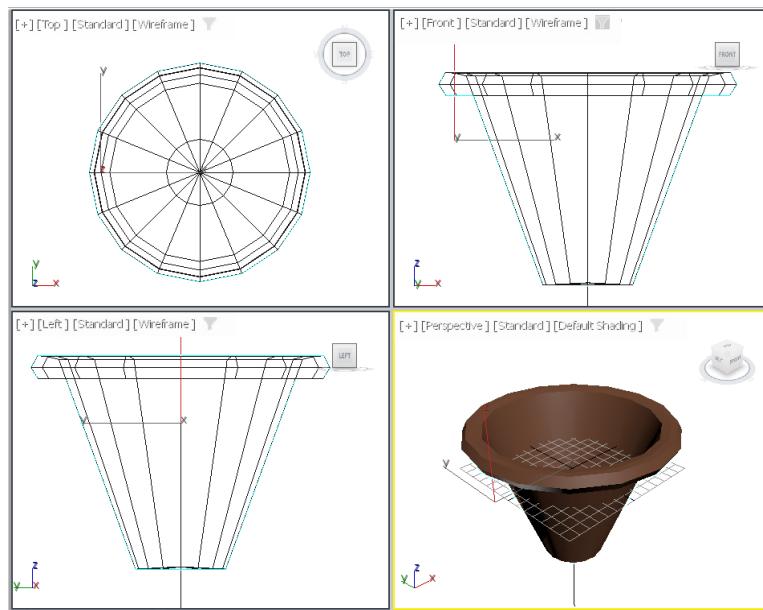


Figure 4-44 The vase geometry after applying the **Lathe** modifier

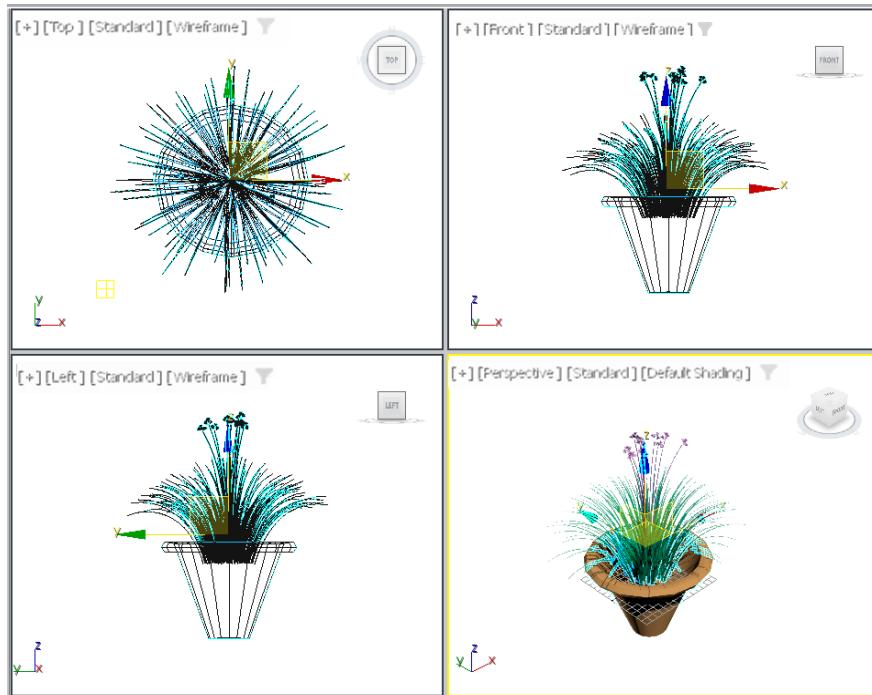


Figure 4-45 Alignment of plant with vase in viewports

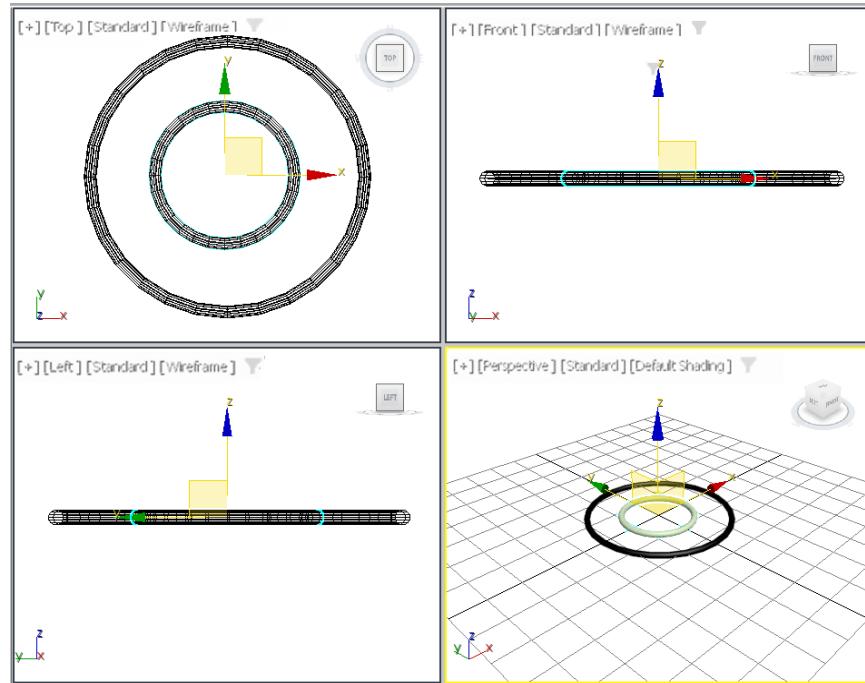


Figure 4-46 Alignment of the circles in viewports

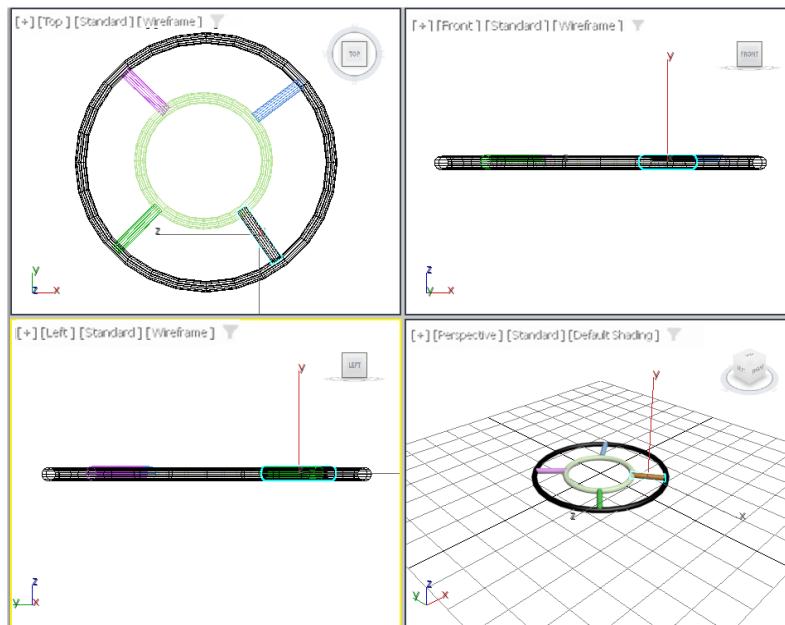


Figure 4-47 The line splines created to join both the circles

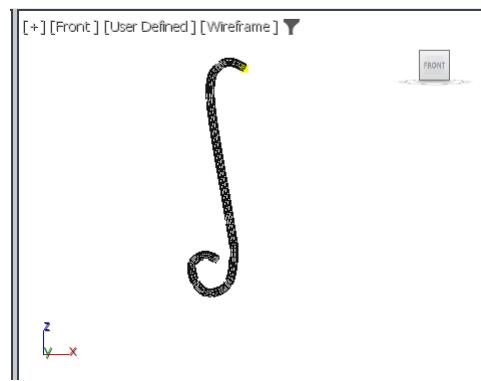


Figure 4-48 The line spline for the leg of stand

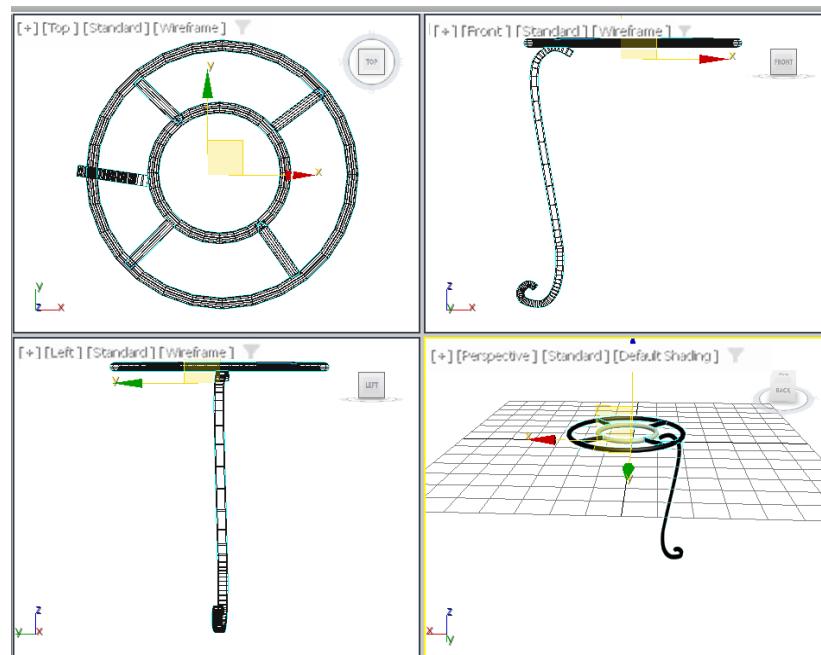


Figure 4-49 Alignment of upper portion and leg01 in viewports

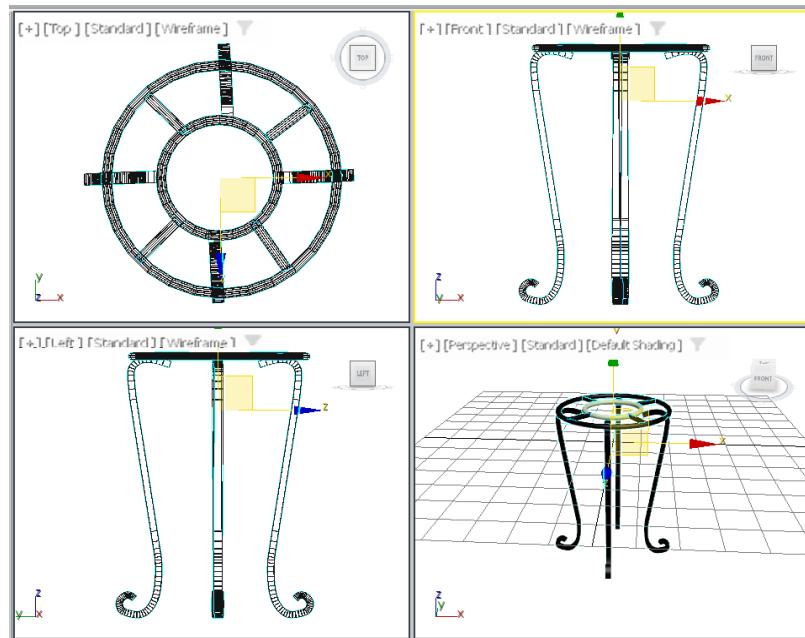


Figure 4-50 Alignment of leg01, leg002, leg003, and leg004 in viewports

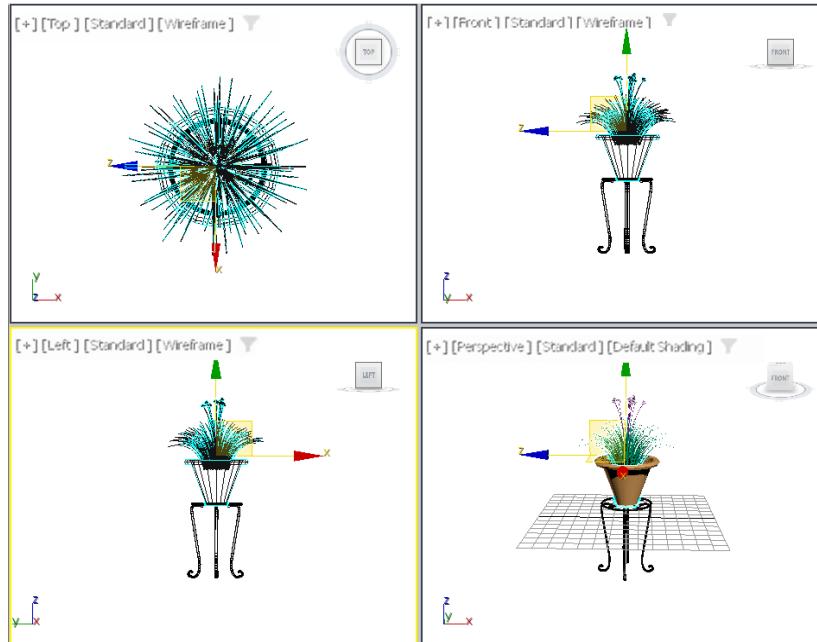


Figure 4-51 Alignment of flower vase and vase stand in viewports



Figure 4-52 The model of a chain

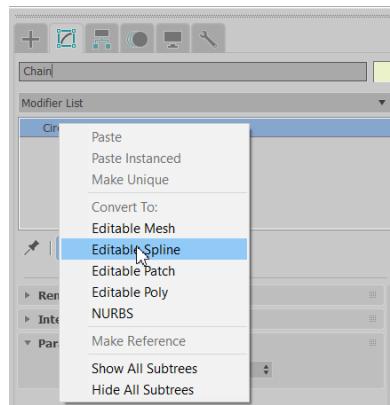


Figure 4-53 Choosing **Editable Spline** from the flyout

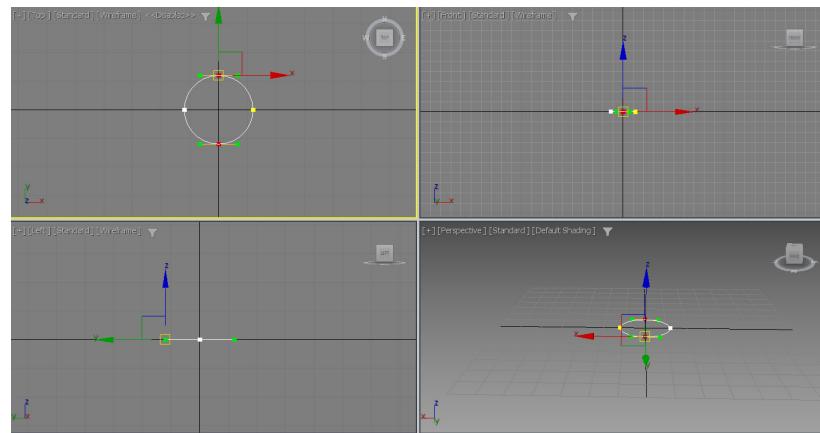


Figure 4-54 Two vertices selected in the viewport

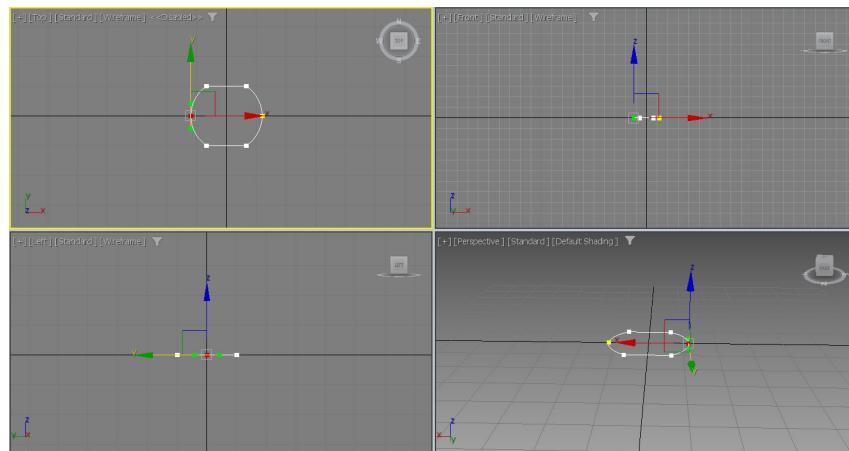


Figure 4-55 Vertex selected in the viewport

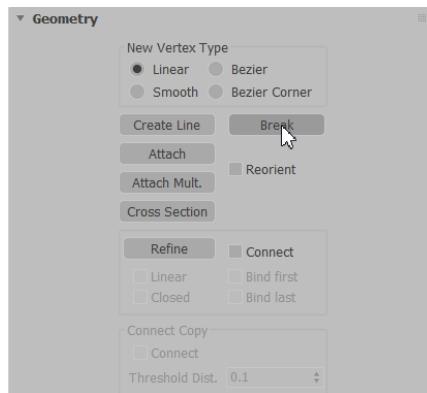


Figure 4-56 The Break button chosen

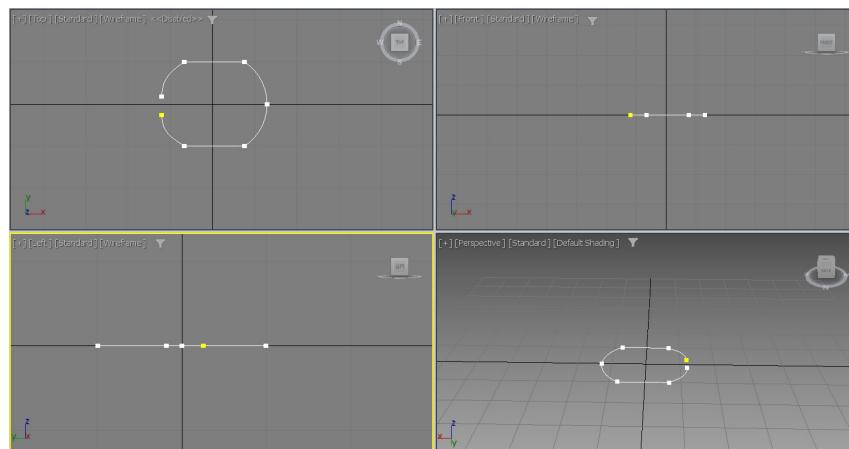


Figure 4-57 Broken vertices moved

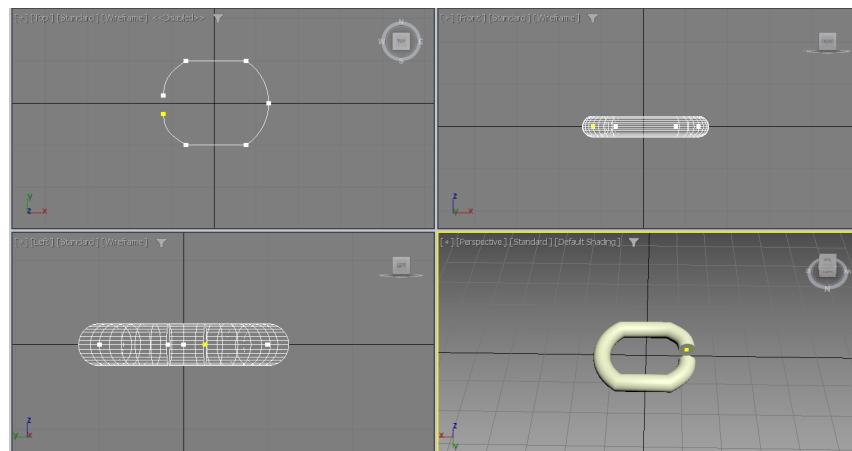
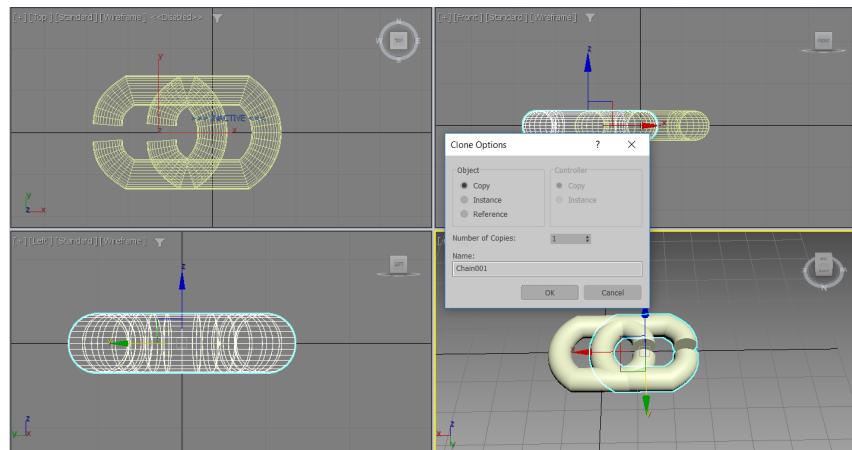
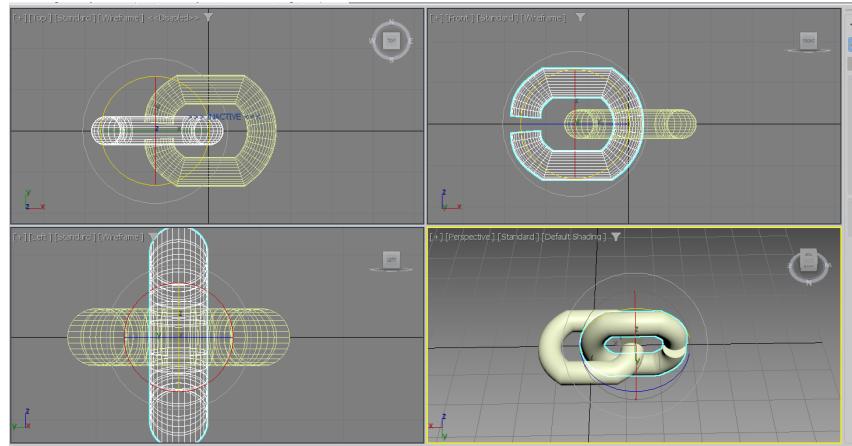


Figure 4-58 The chain modified

Figure 4-59 The **Clone Options** dialog box displayedFigure 4-60 The **Chain001** rotated at 90 degrees

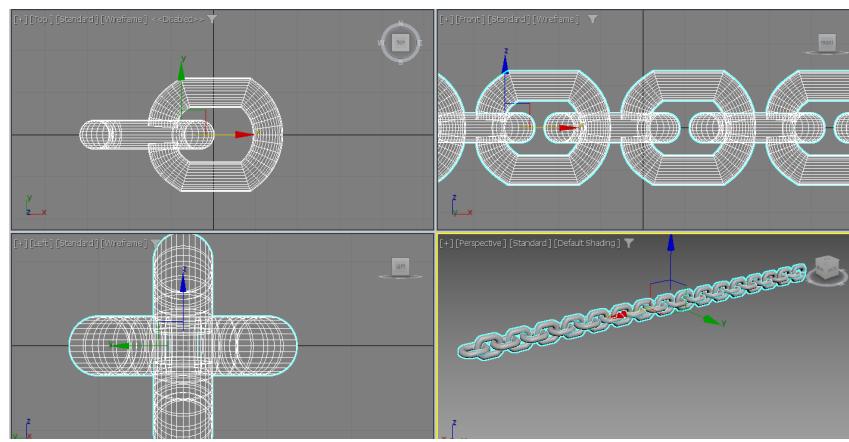


Figure 4-61 The copies of Chaingrp created



Figure 4-62 The final output after rendering



Figure 4-63 Drawing different shapes



Figure 4-64 The model of a street lamp

Chapter 5

Working with Splines-II





Figure 5-1 The model of a table and jug

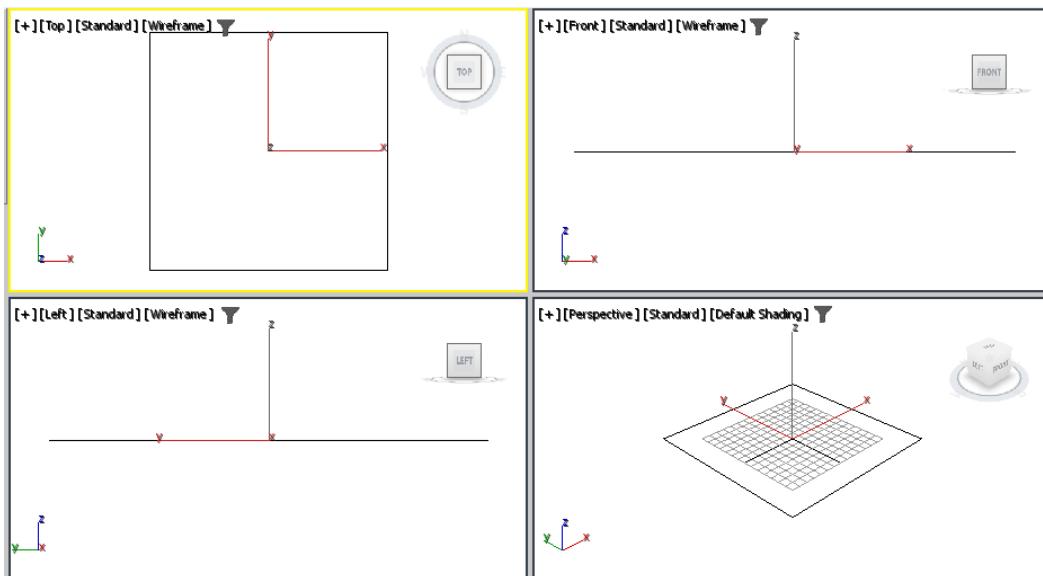


Figure 5-2 The rectangle created for the table top

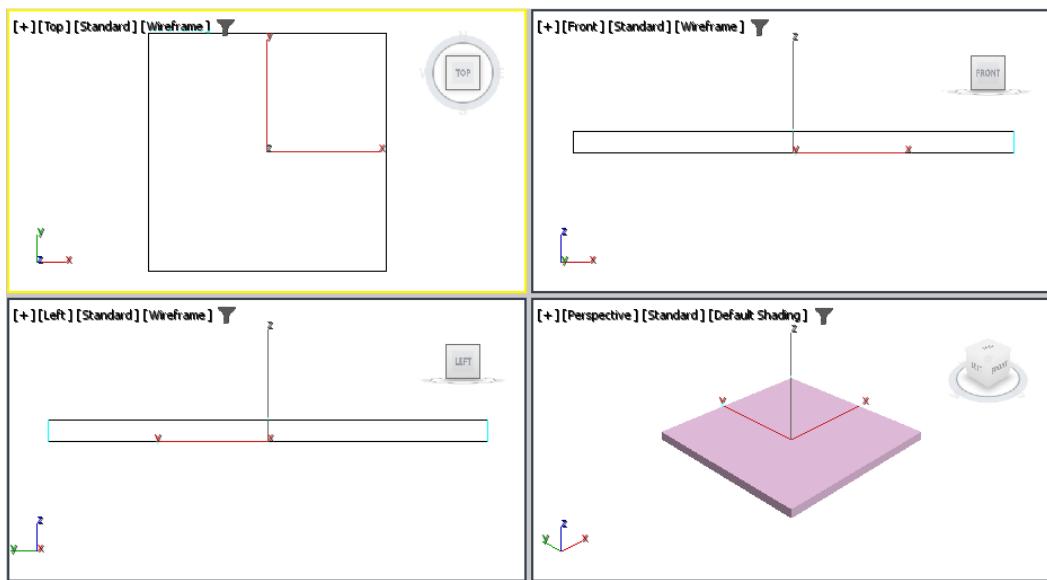


Figure 5-3 The Top extruded by 10 units

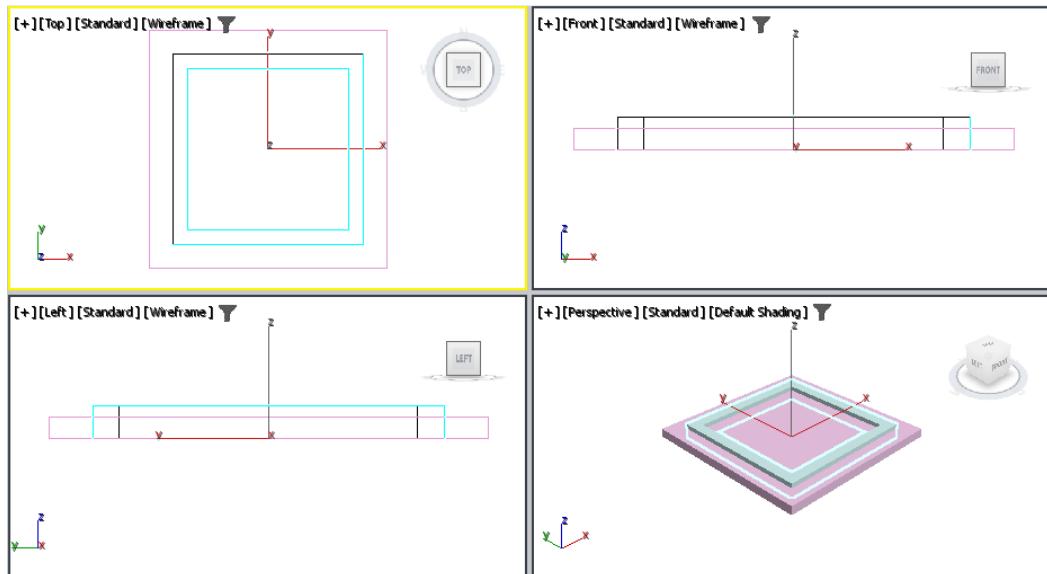


Figure 5-4 The Frame extruded by 15 units

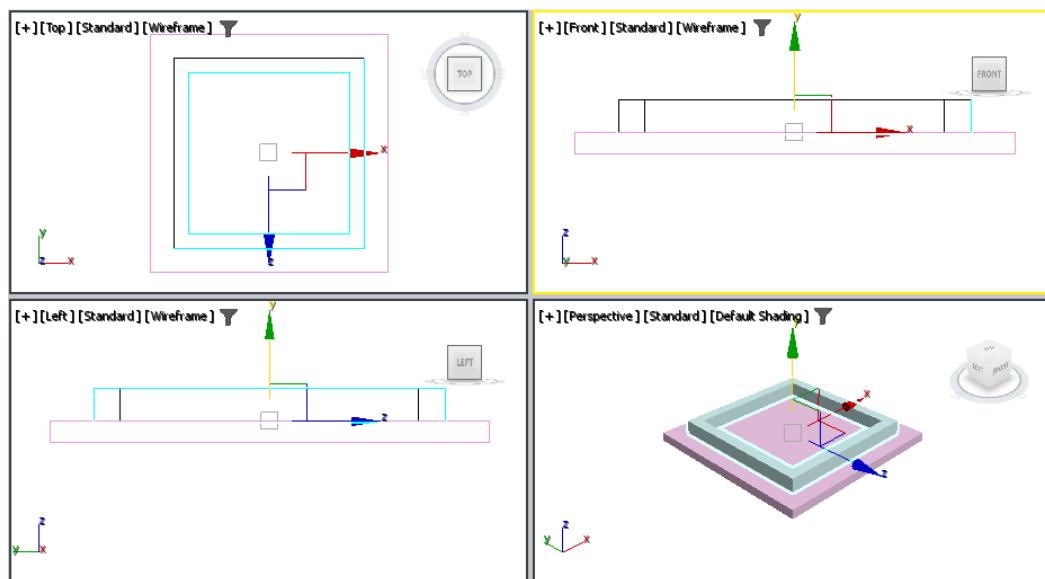


Figure 5-5 The Frame aligned

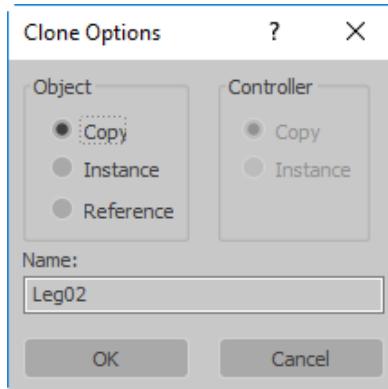


Figure 5-6 The Clone Options dialog box

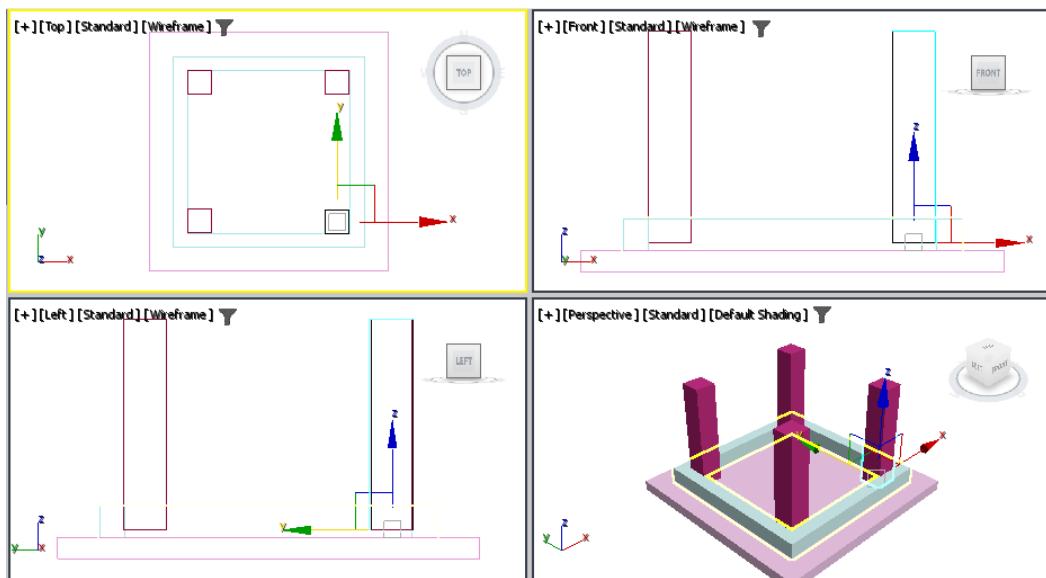


Figure 5-7 The four legs of the table created and aligned to their correct places

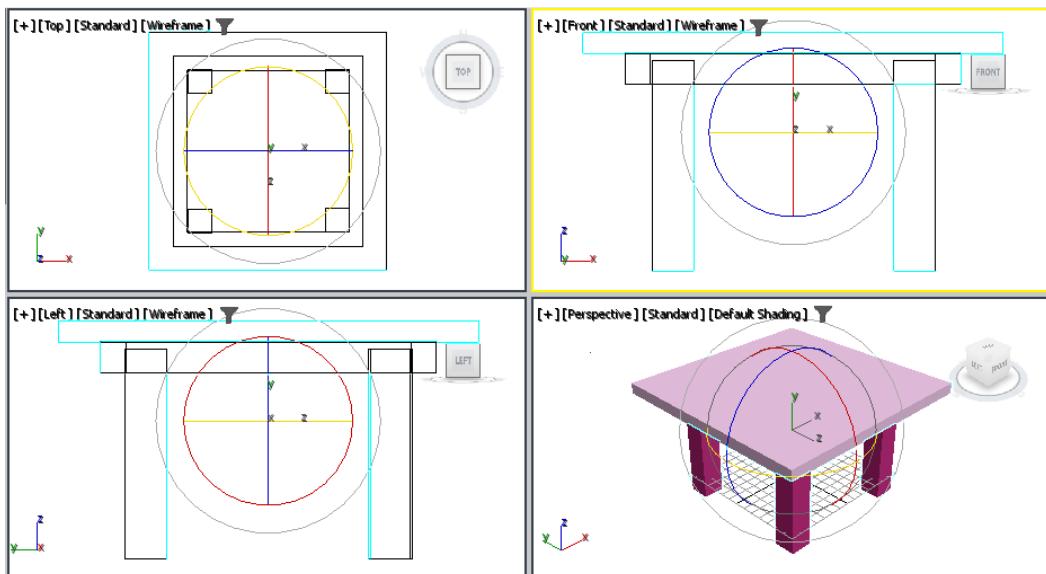


Figure 5-8 Table rotated upright to stand on its legs



Figure 5-9 The center of Table zoomed in the Front viewport

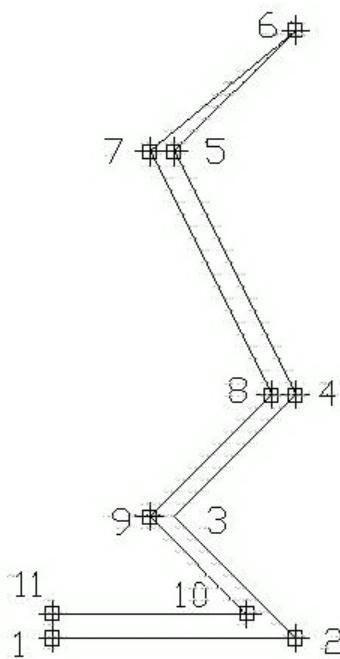


Figure 5-10 The profile curve of the Jug

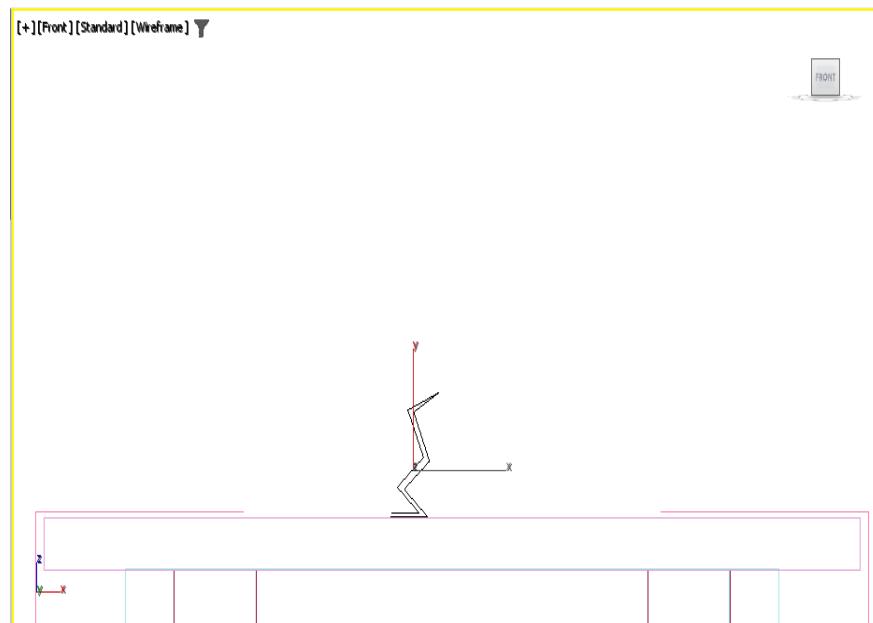


Figure 5-11 The profile of the Jug

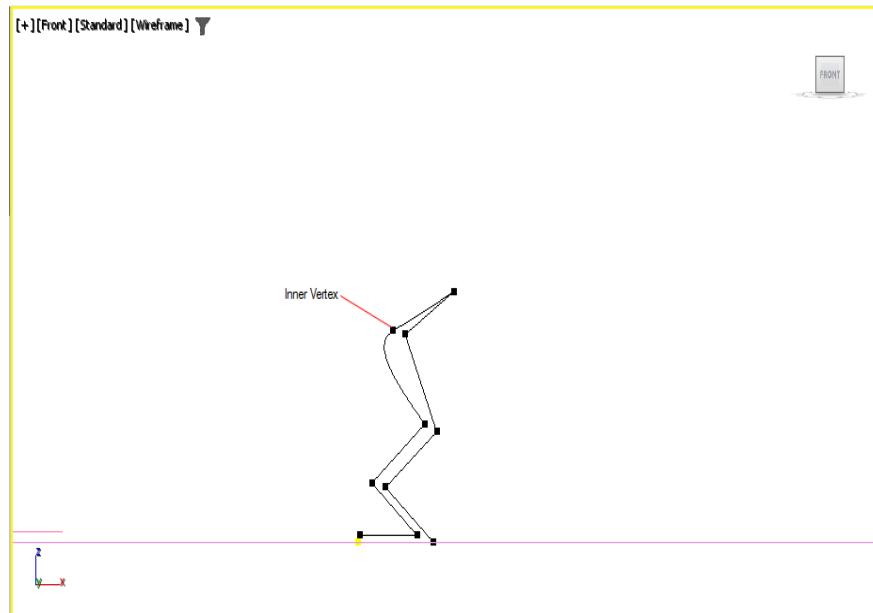


Figure 5-12 The bezier handles displayed at the vertex

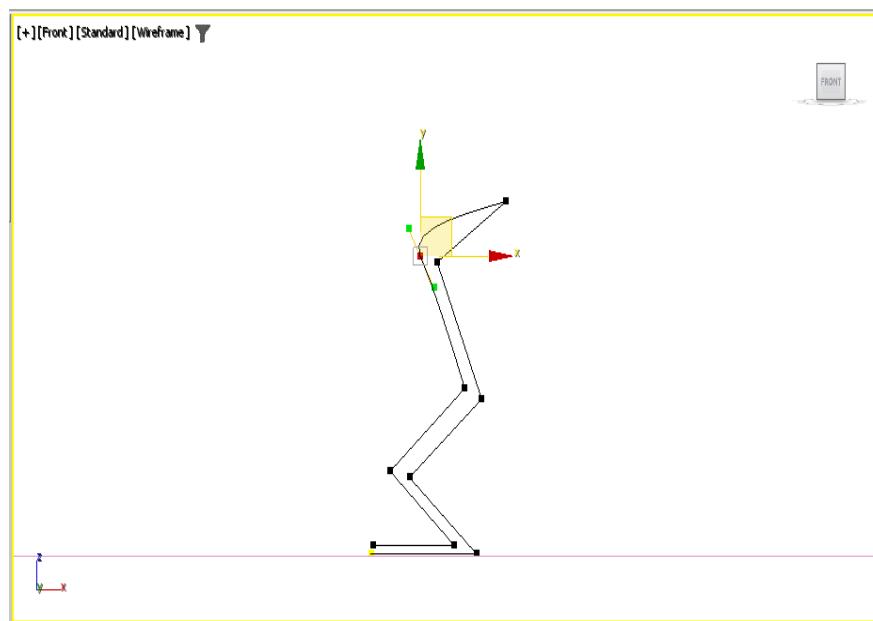


Figure 5-13 The curve reshaped by dragging the bezier handle

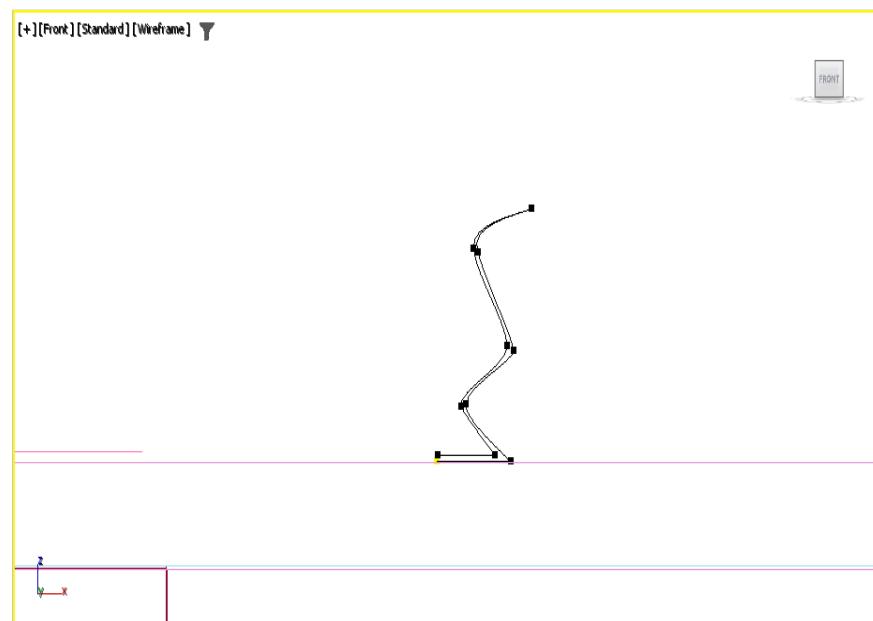


Figure 5-14 The curve edited by moving the bezier handles of the vertices

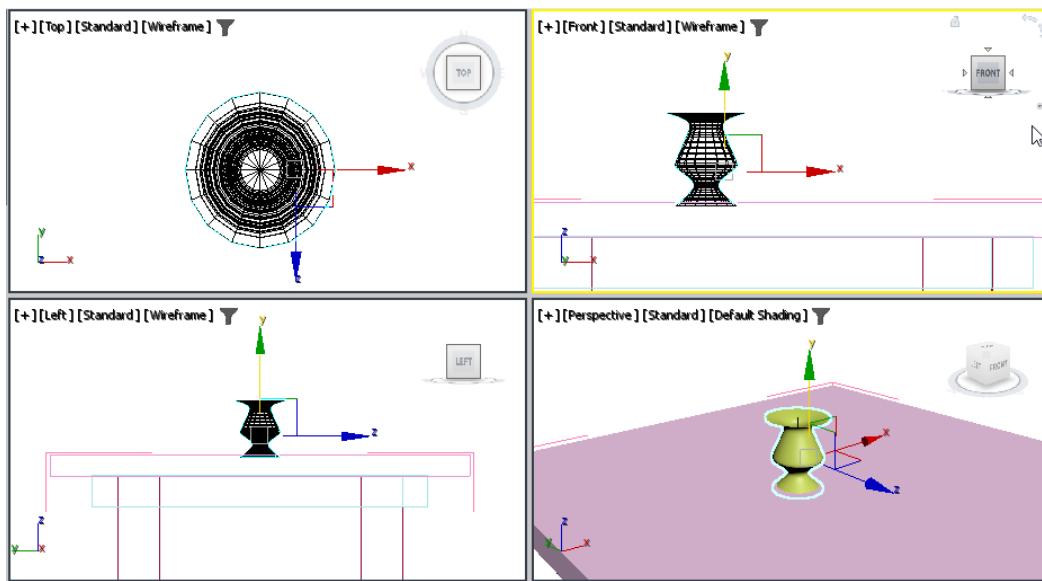


Figure 5-15 The profile rotated to form the Jug

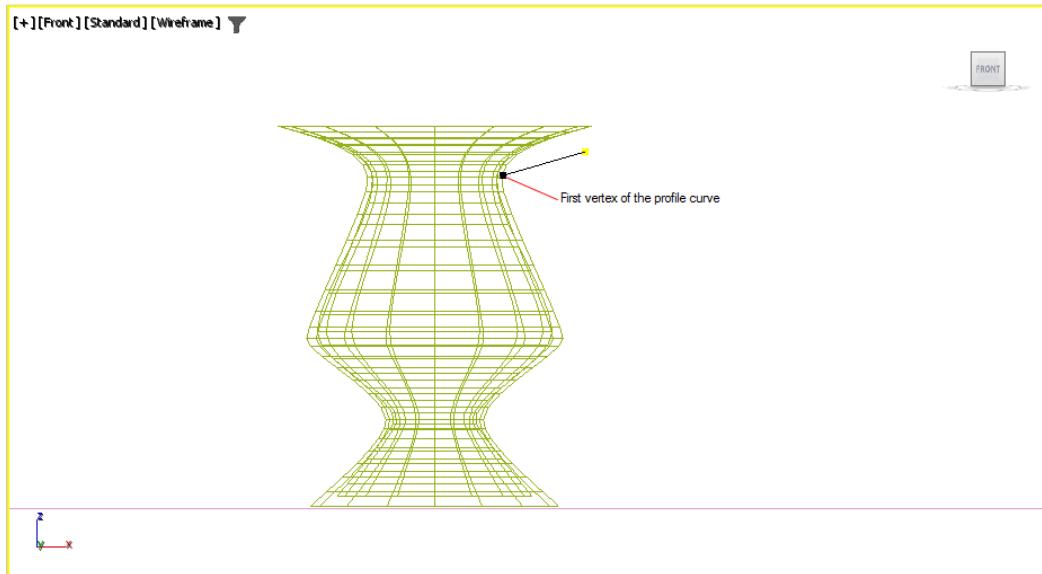


Figure 5-16 The first vertex placed within the profile

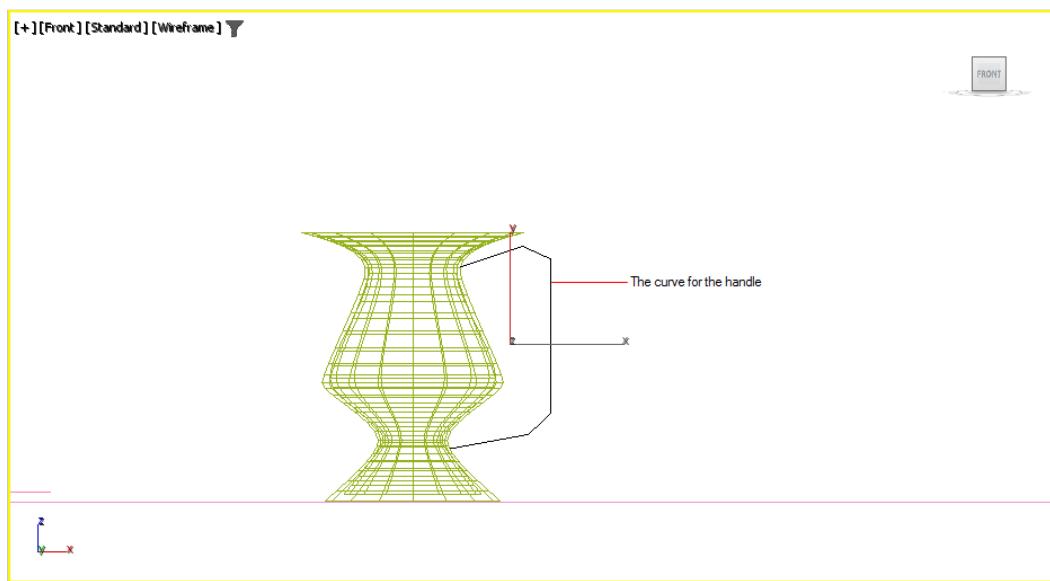


Figure 5-17 The curve for the handle of the Jug

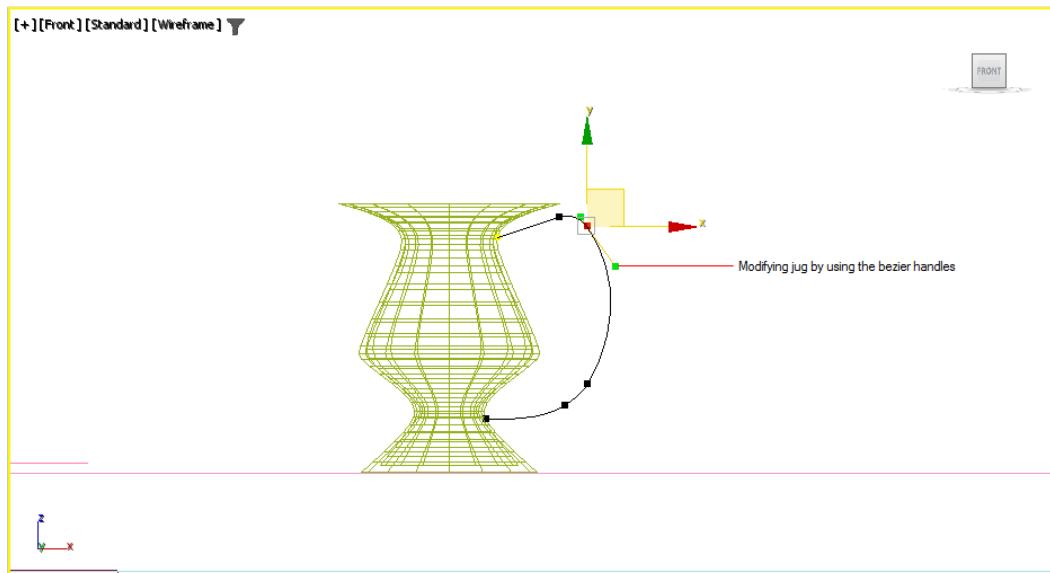


Figure 5-18 The Handle modified by moving the bezier handles

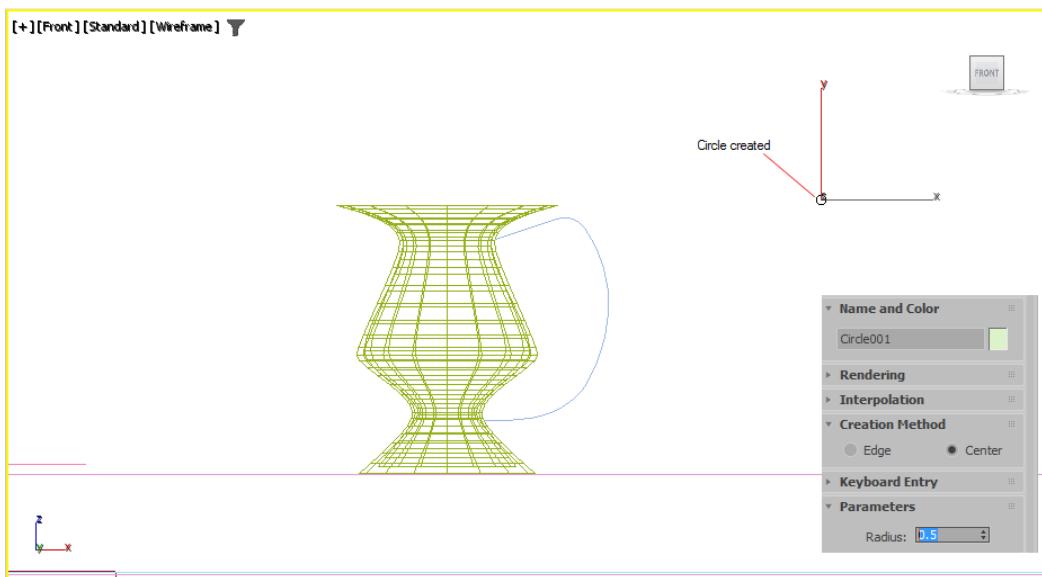


Figure 5-19 The circle created

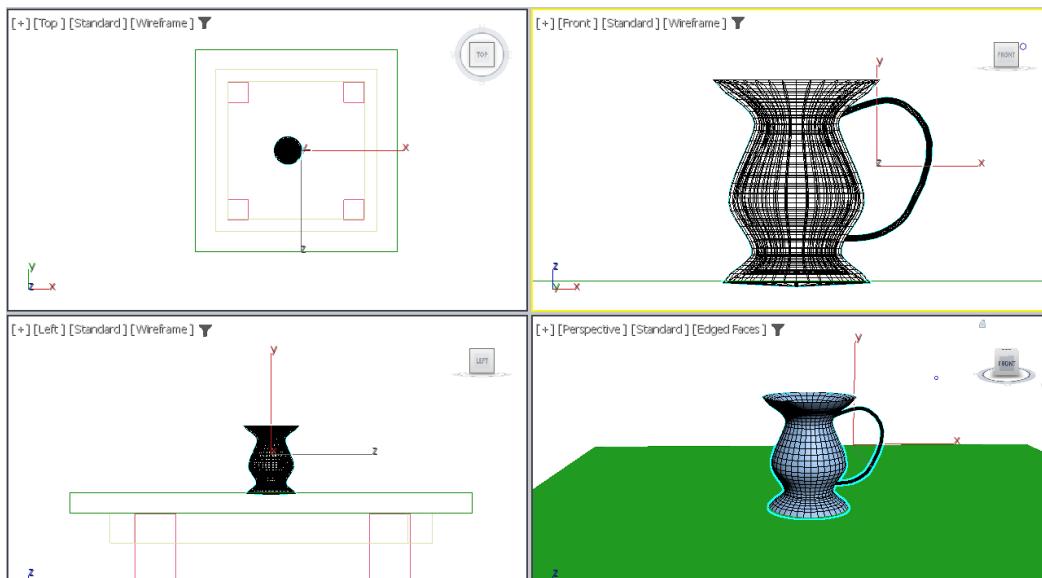


Figure 5-20 Using the boolean operation to join the Handle and Jug



Figure 5-21 The rendered image



Figure 5-22 The model of a lamp post

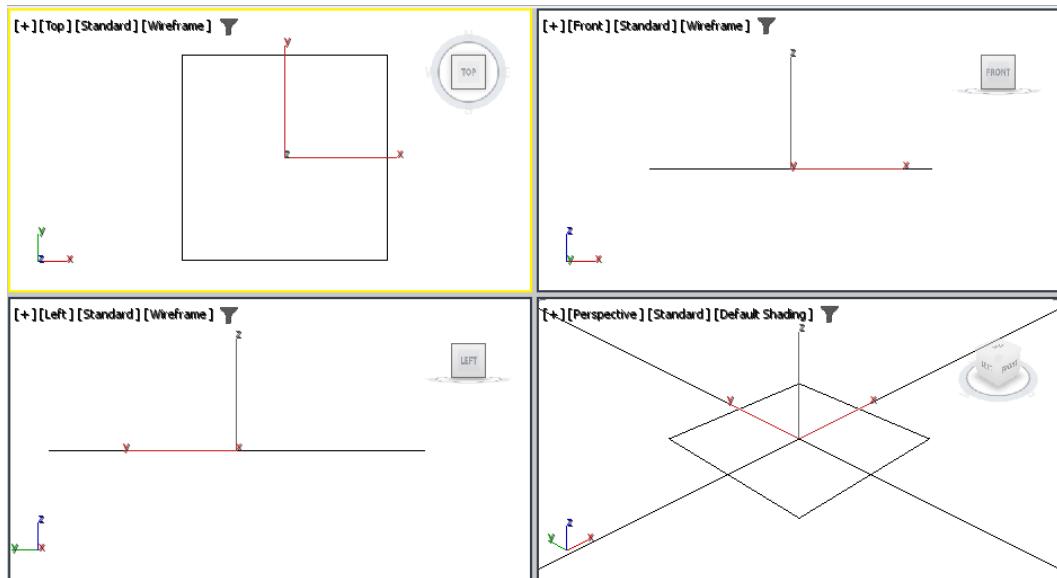


Figure 5-23 The base zoomed in all viewports

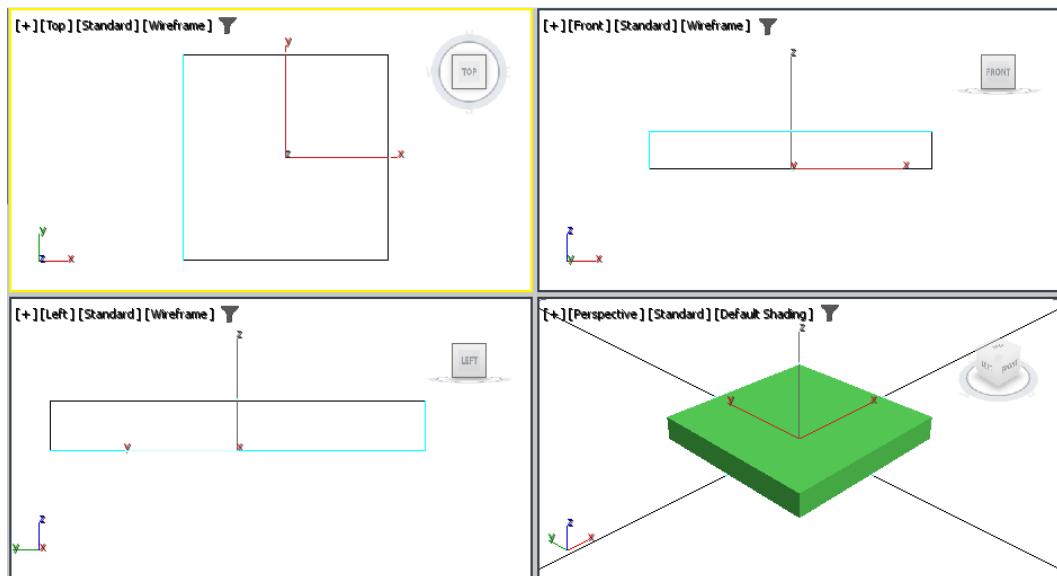
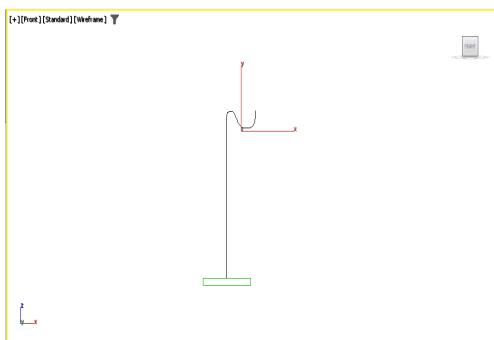
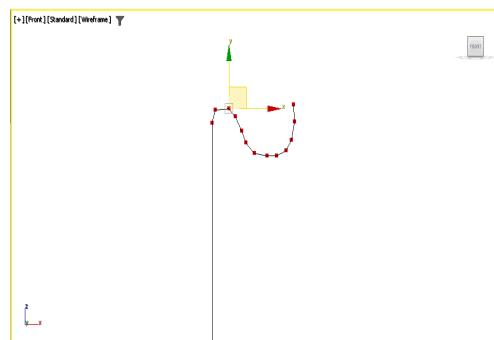
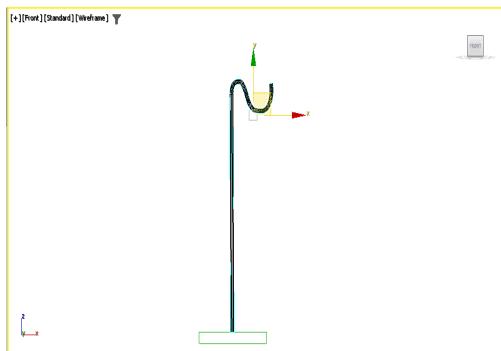
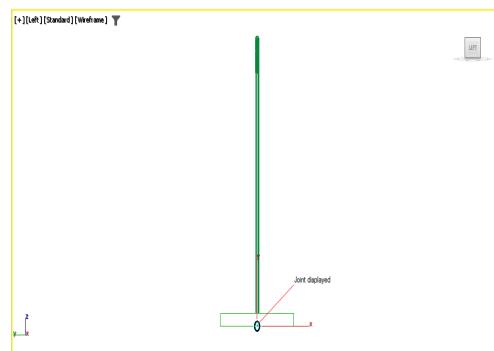
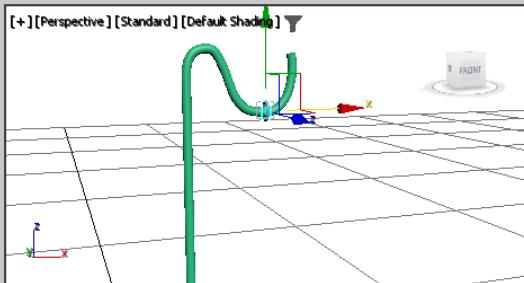
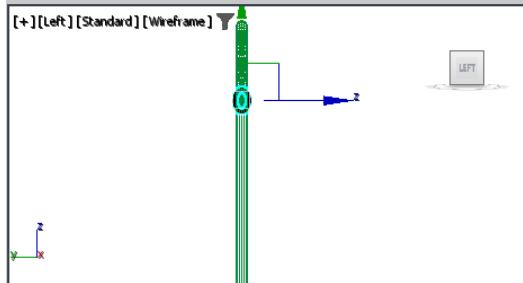
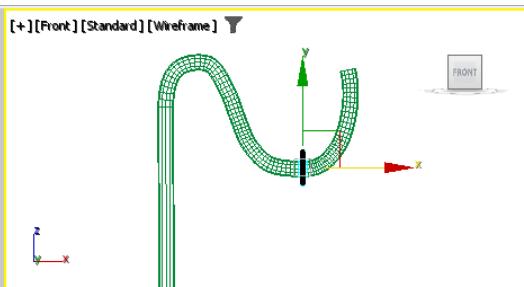
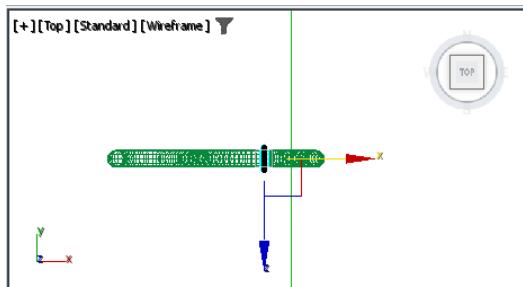


Figure 5-24 The base extruded in all viewports

*Figure 5-25 The line created**Figure 5-26 The selected vertices**Figure 5-27 The thickness added to pillar**Figure 5-28 The joint displayed**Figure 5-29 The joint aligned in all viewports*

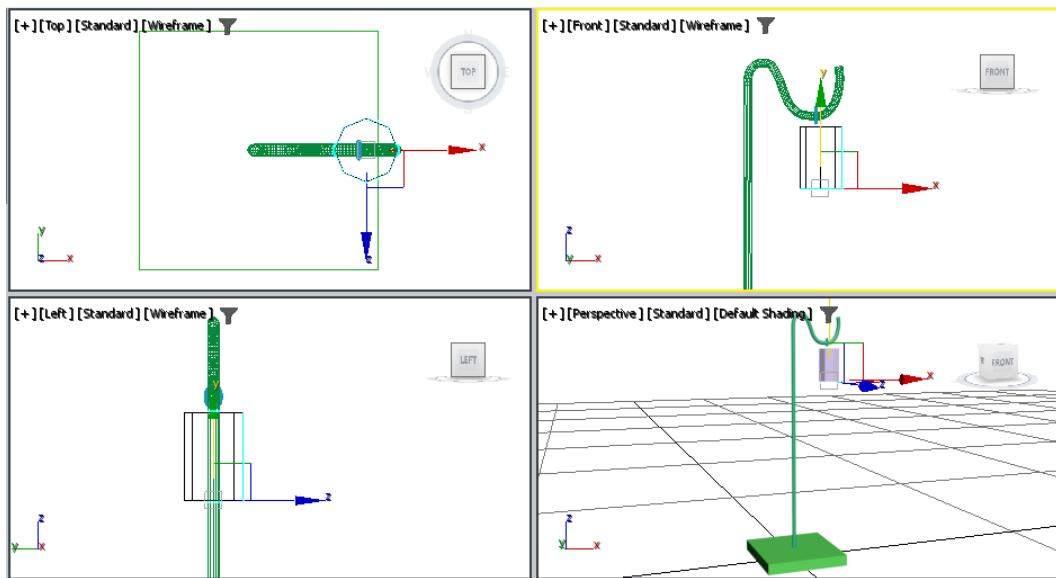


Figure 5-30 The lamp holder aligned in all viewports

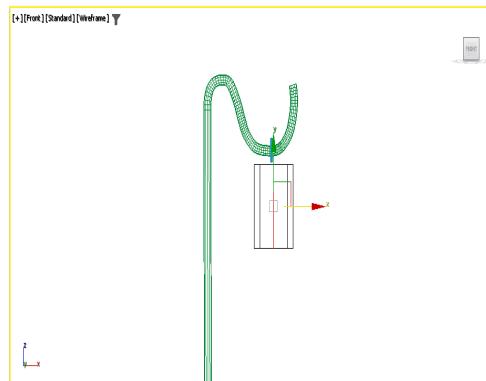


Figure 5-31 The edge selected

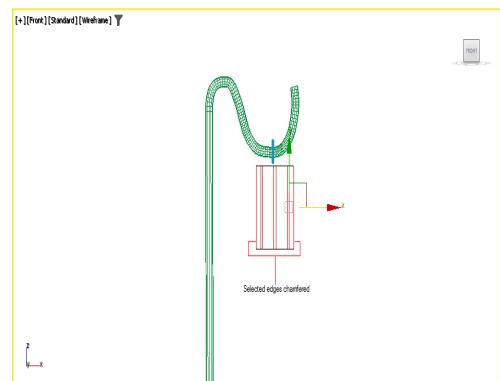


Figure 5-32 Selected edges chamfered

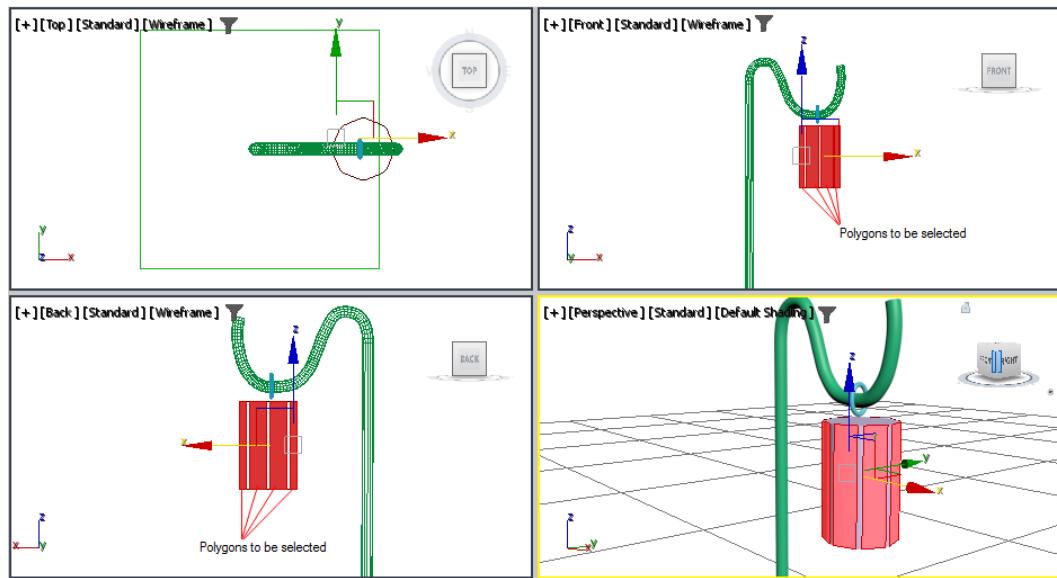


Figure 5-33 The selected polygons between chamfered edges

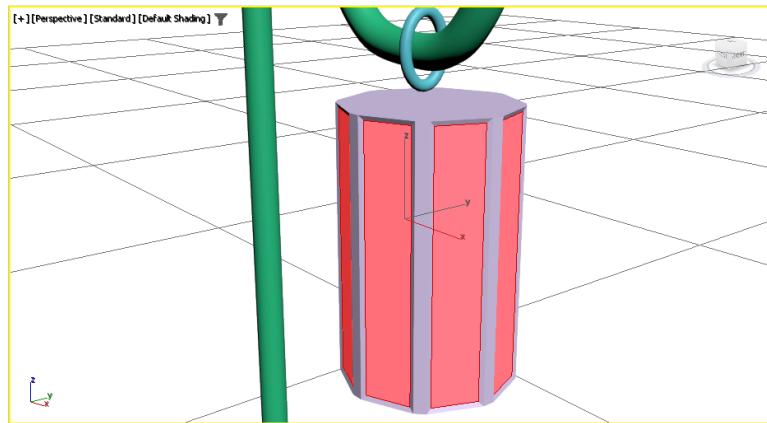


Figure 5-34 The selected polygons beveled

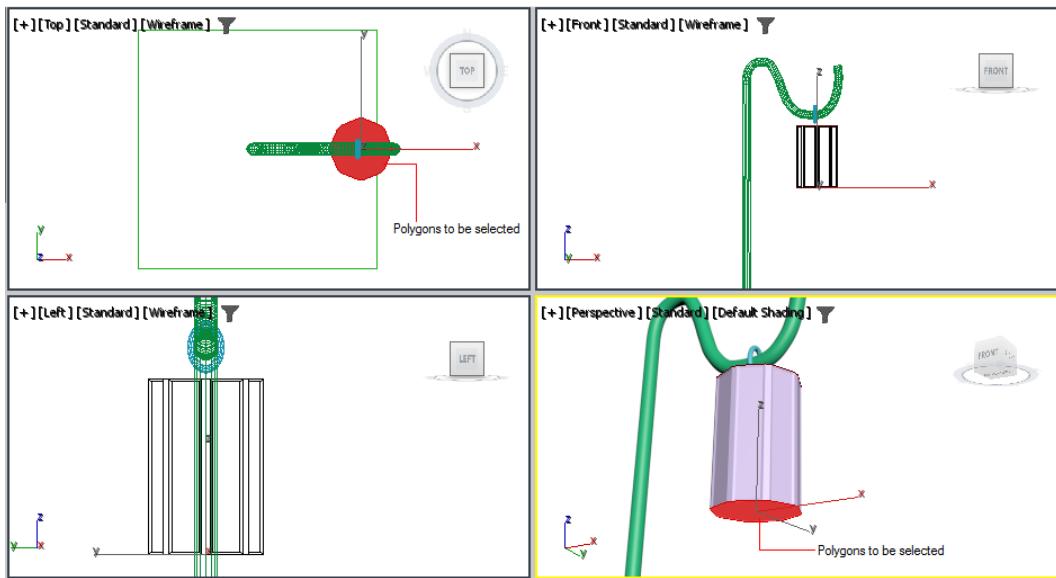


Figure 5-35 The selected polygons

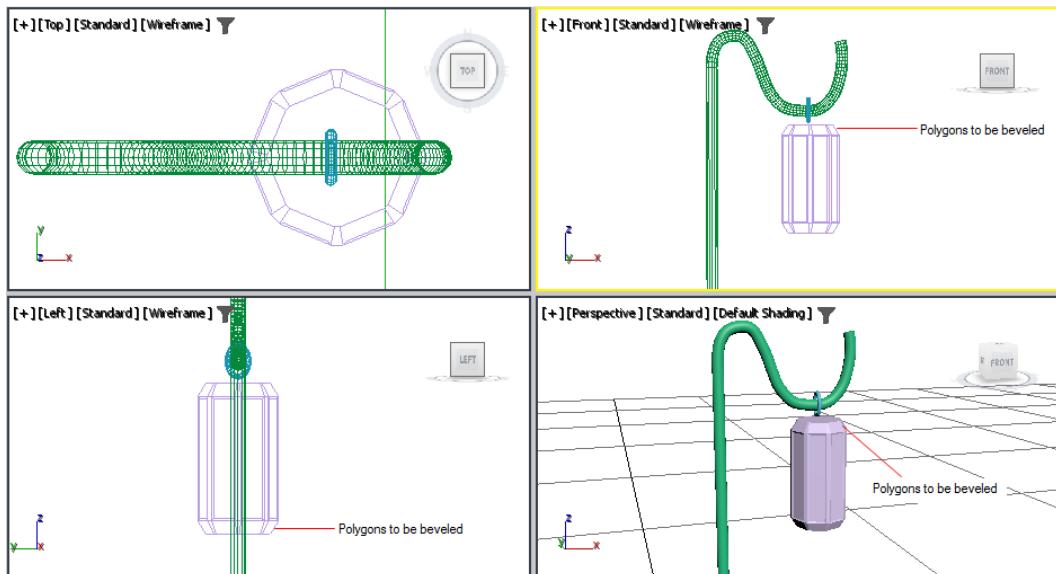


Figure 5-36 The selected polygons beveled

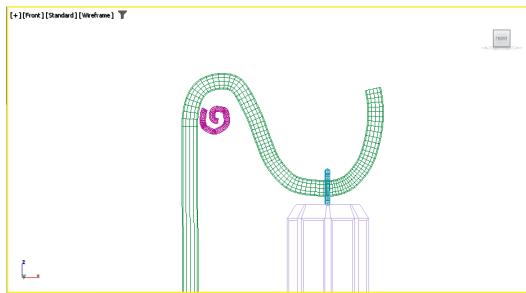


Figure 5-37 The curve created

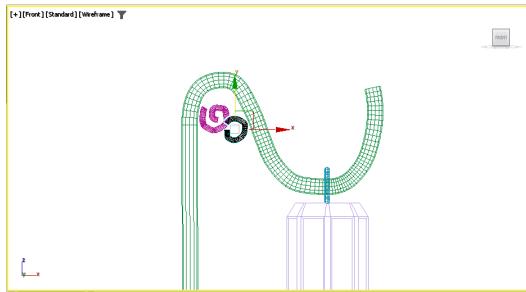


Figure 5-38 The second curve created

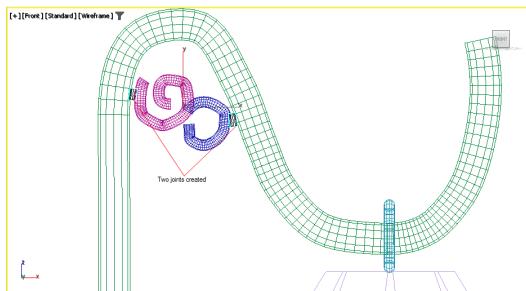


Figure 5-39 Two joints created



Figure 5-40 The rendered image of a lamp post



Figure 5-41 The cup and saucer

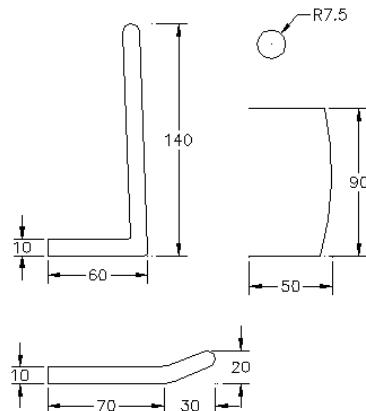


Figure 5-42 Profile curves of the cup and saucer



Figure 5-43 A pair of cocktail glasses



Figure 5-44 A candle stand



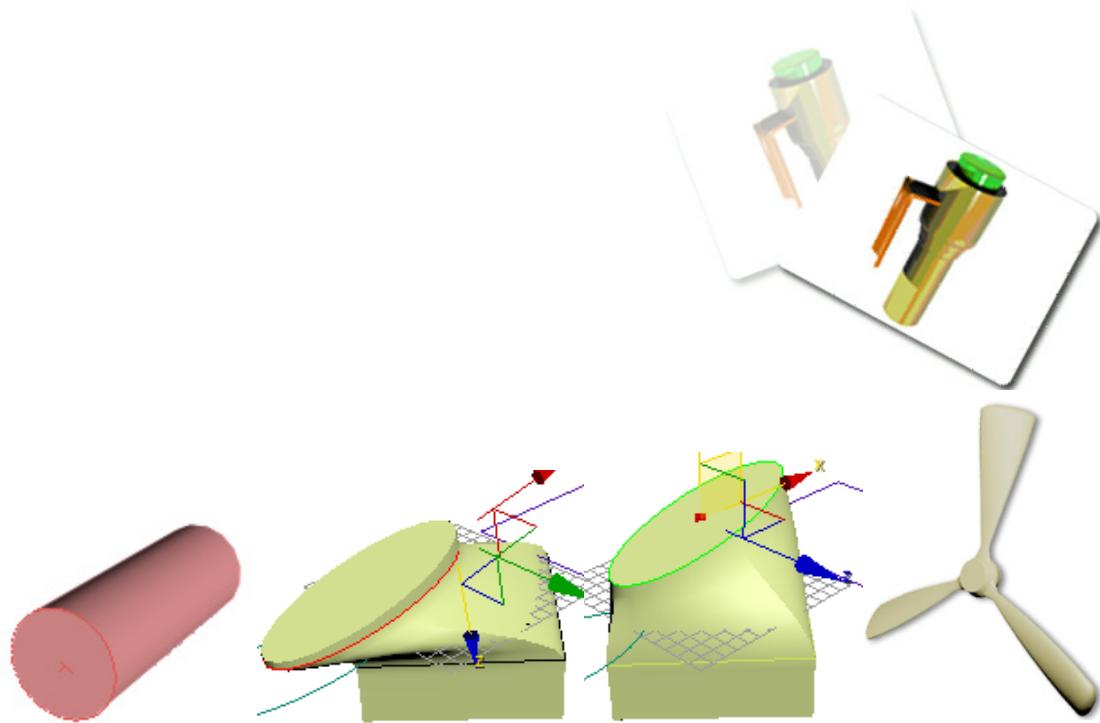
Figure 5-45 A pair of glasses



Figure 5-46 A pair of wine glasses

Chapter 6

Lofting, Twisting, and Deforming Objects



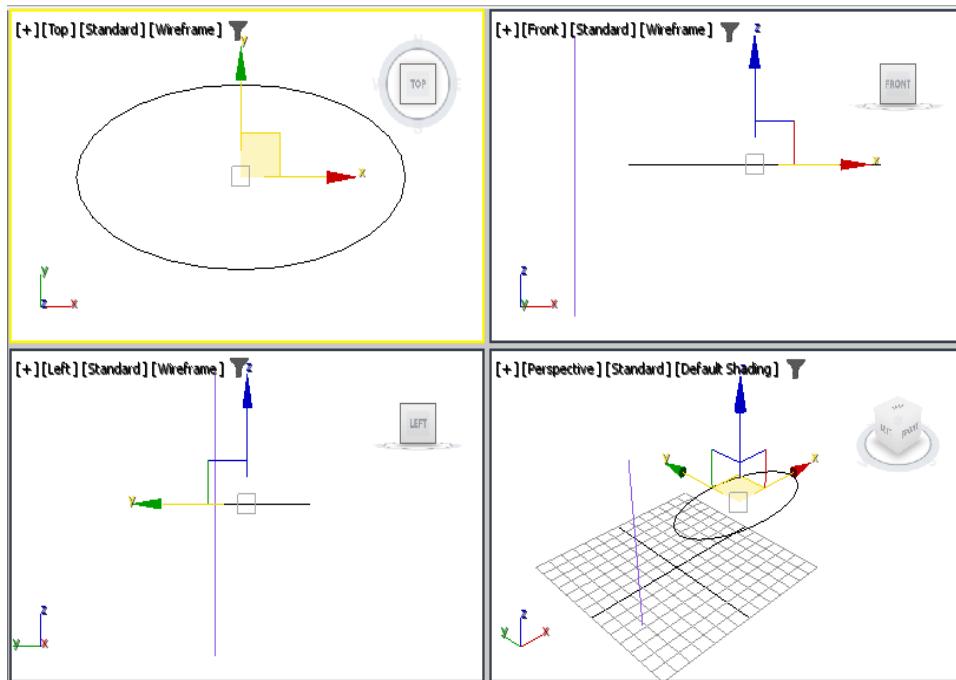


Figure 6-1 A straight line and an ellipse

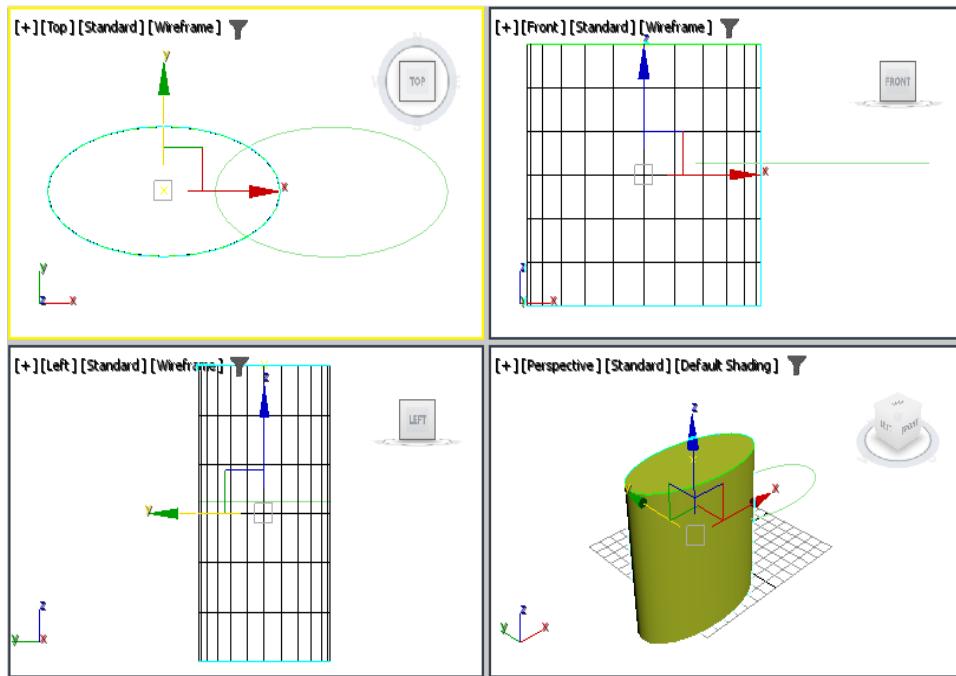


Figure 6-2 The lofted object zoomed to its extents in all viewports

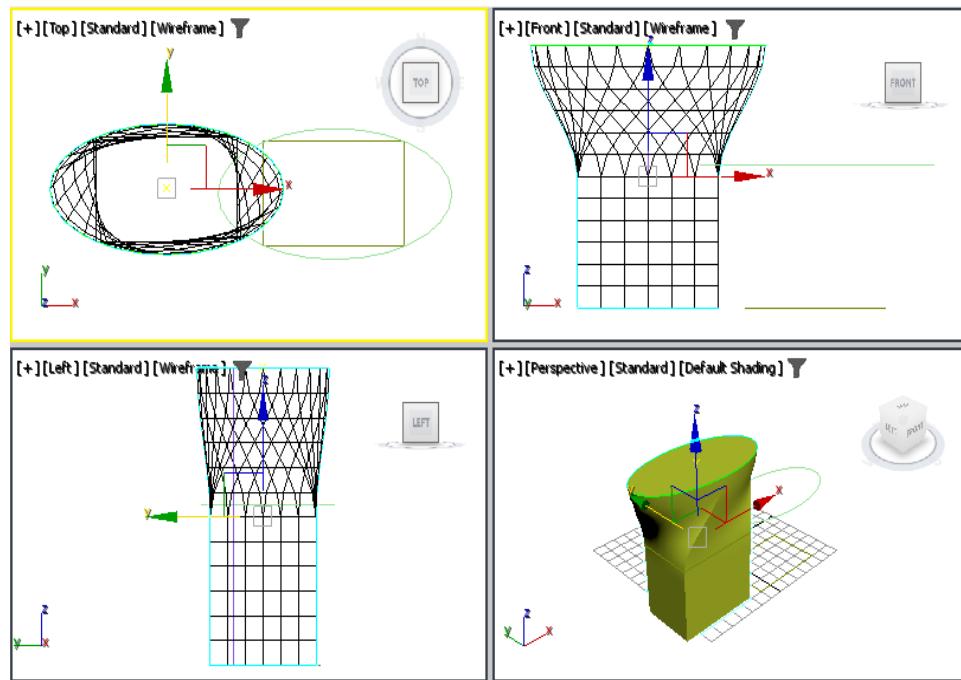


Figure 6-3 A rectangular section created in the middle of the loft

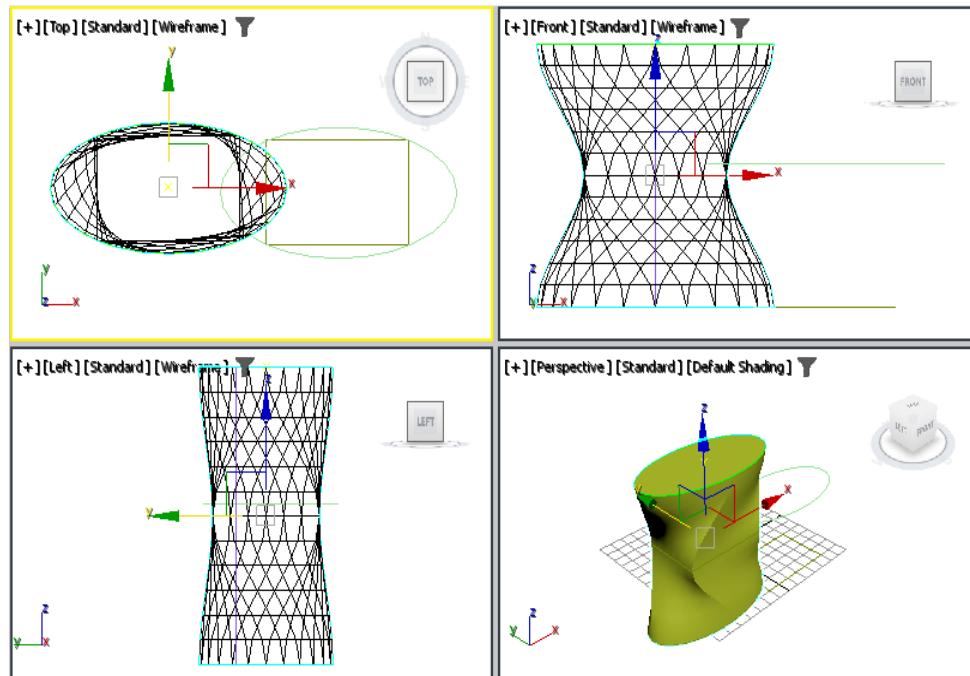


Figure 6-4 The ellipse added as a shape at the end of the path

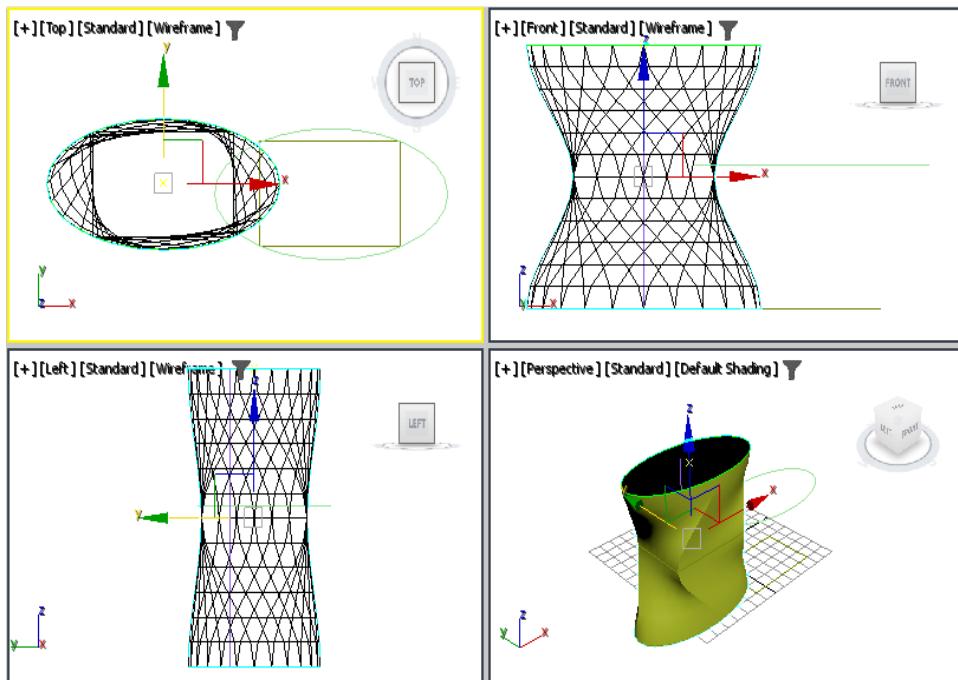


Figure 6-5 The top end of the loft object opened

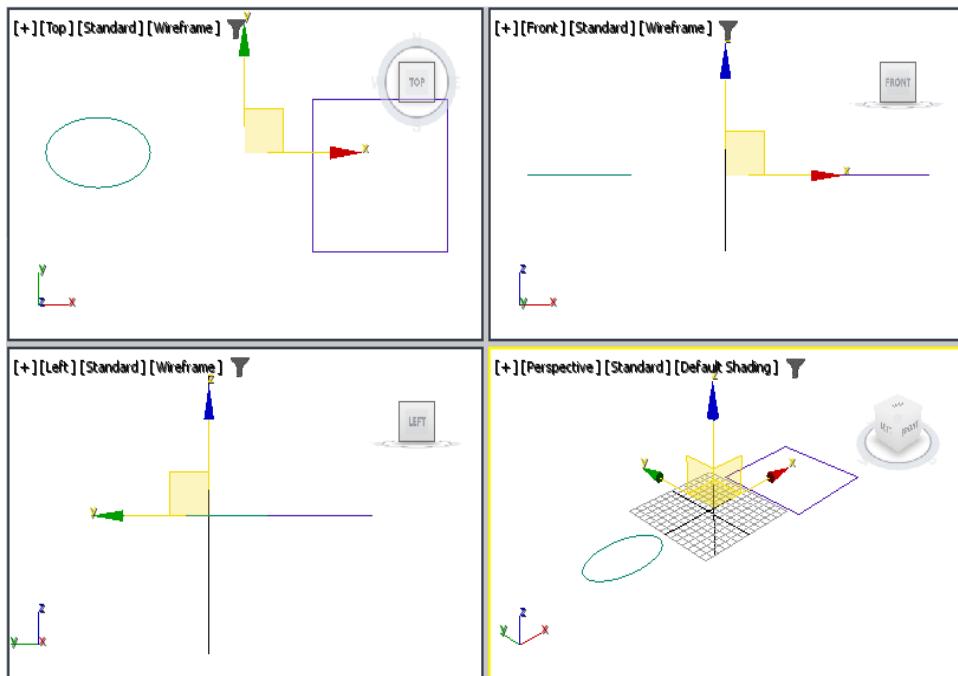


Figure 6-6 The ellipse, rectangle, and line created

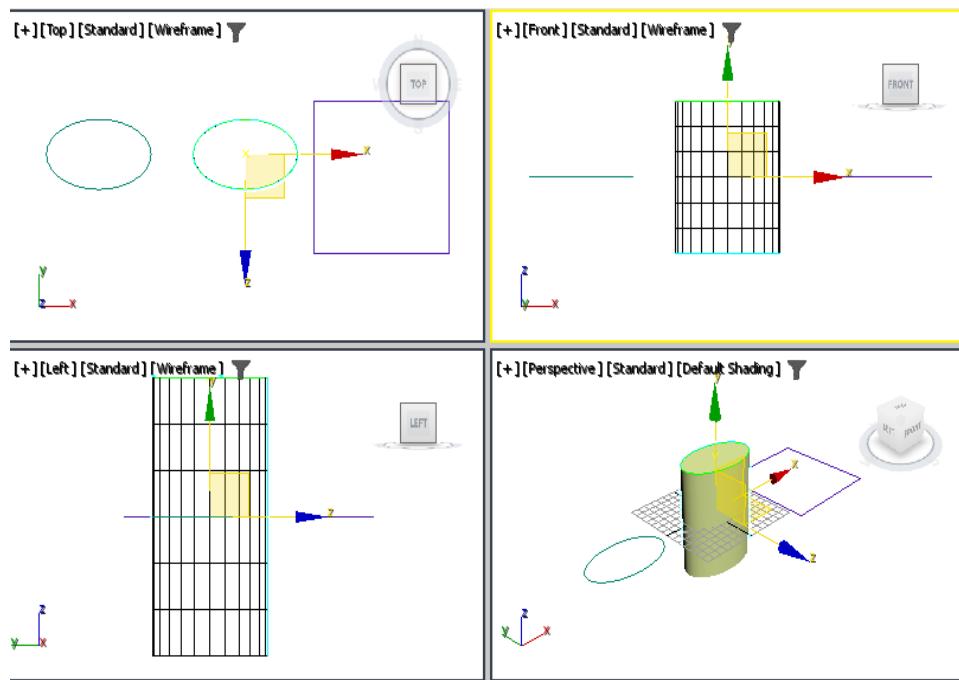


Figure 6-7 The lofted object and the shapes zoomed to their extents in all viewports

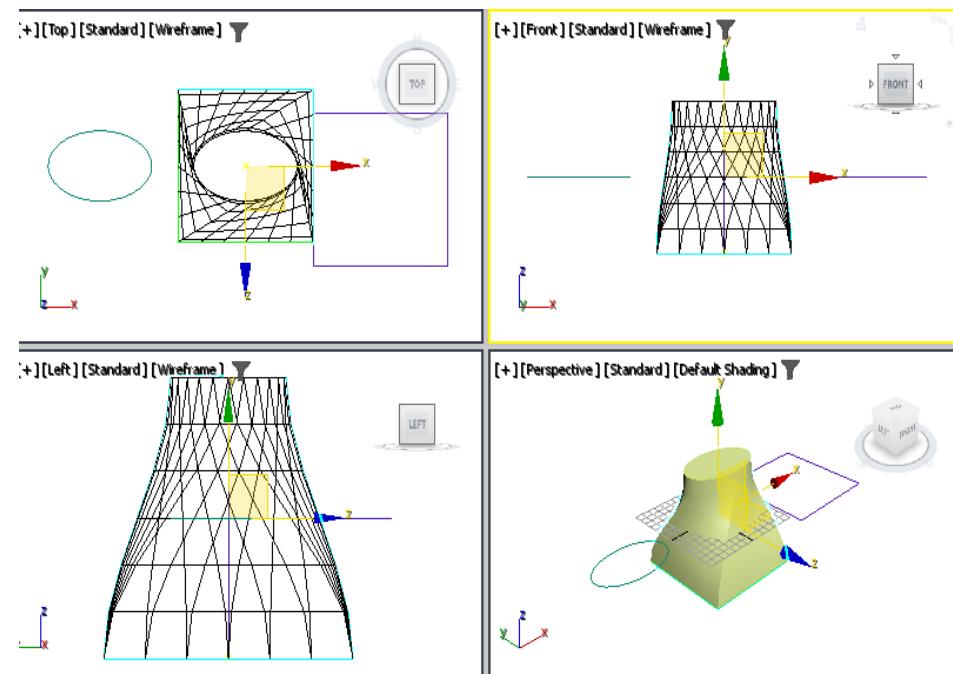


Figure 6-8 The rectangle used as one of the lofted objects

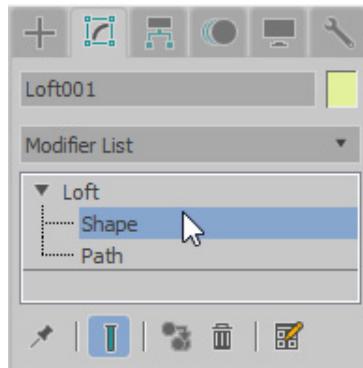


Figure 6-9 The **Shape** sub-object level selected in the modifier stack

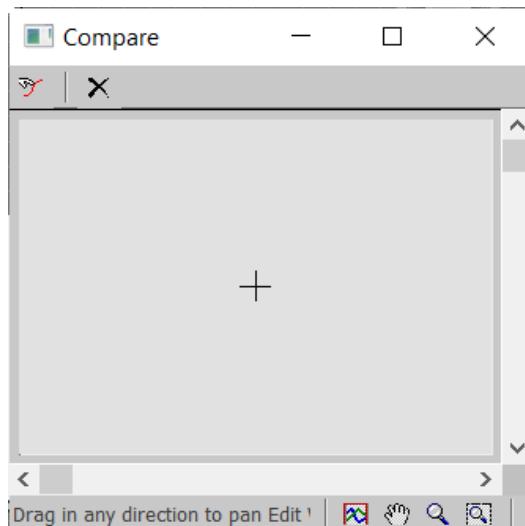


Figure 6-10 The **Compare** window

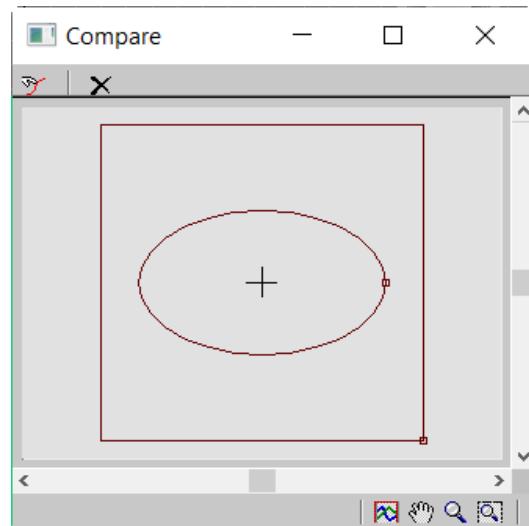


Figure 6-11 The ellipse and rectangle displayed in the **Compare** window

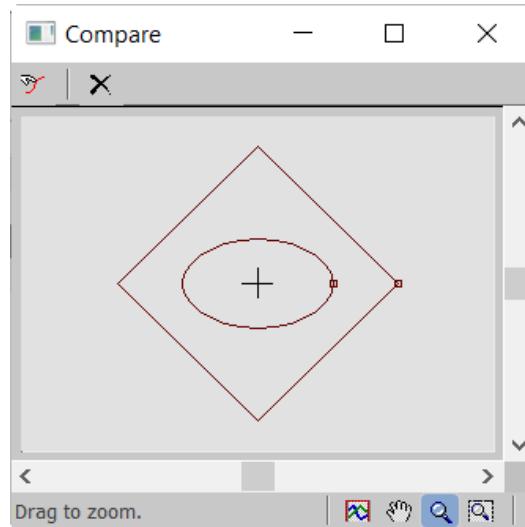


Figure 6-12 The rectangle rotated to align first vertices of both shapes

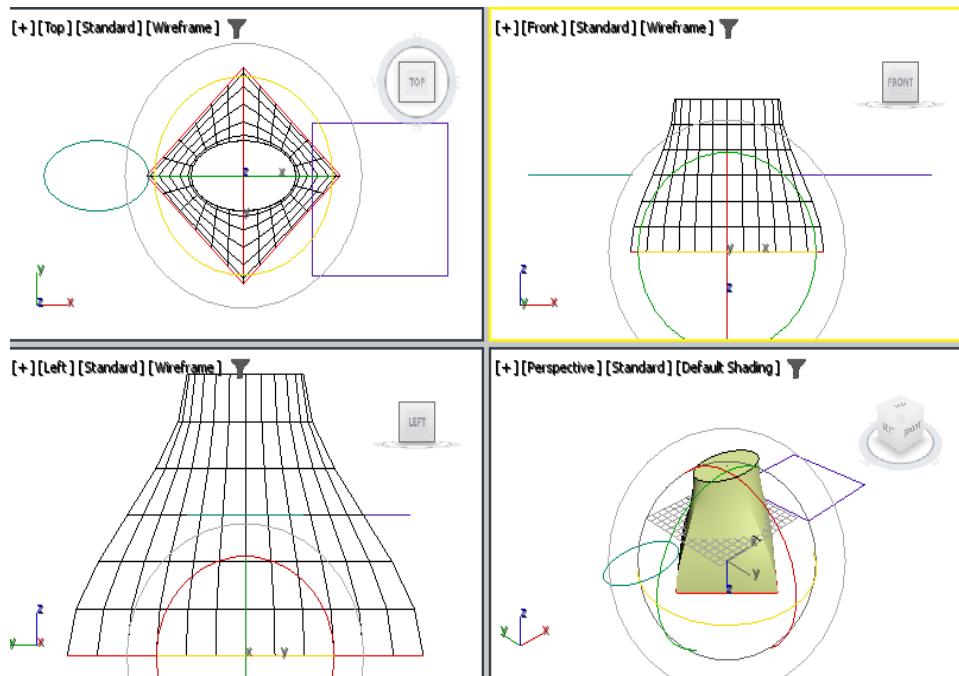


Figure 6-13 The twist removed from the lofted object by rotating the rectangle shape

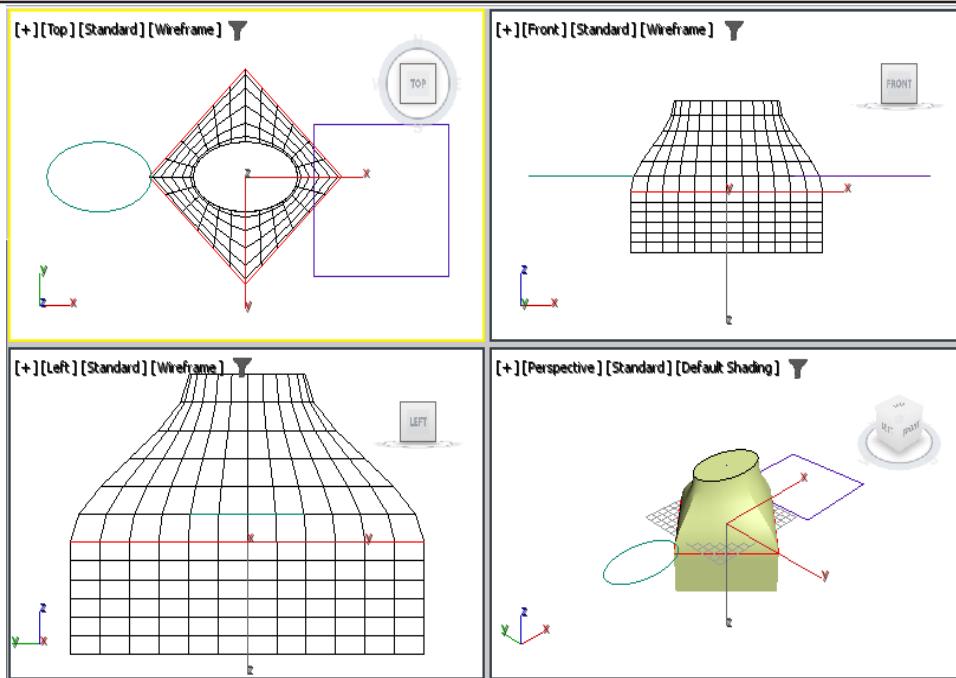


Figure 6-14 The rectangle shape moved to the 60% position on the path

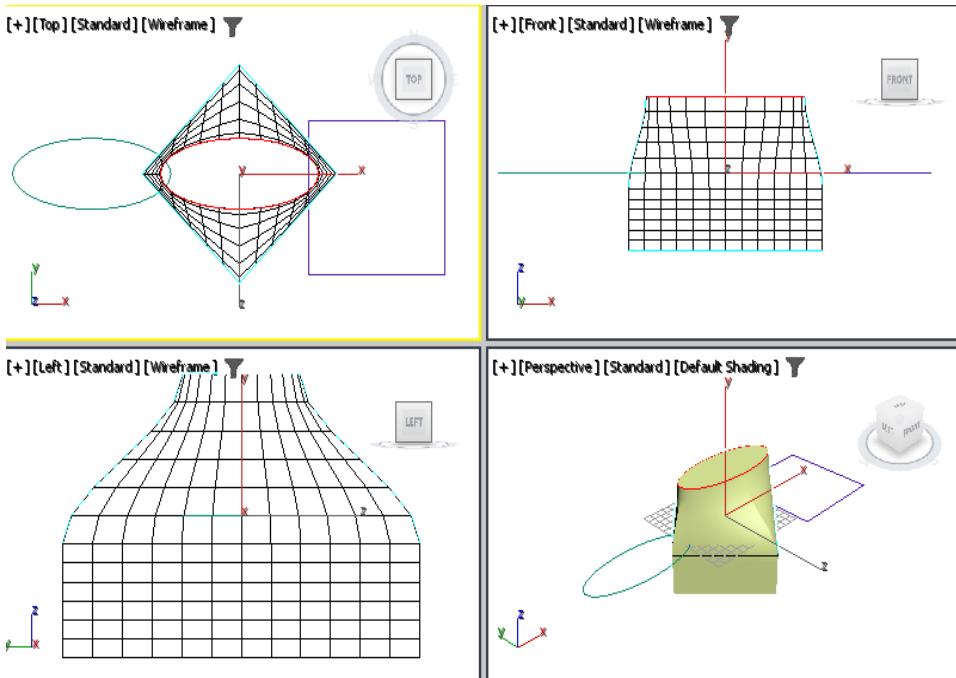


Figure 6-15 Width of the ellipse increased

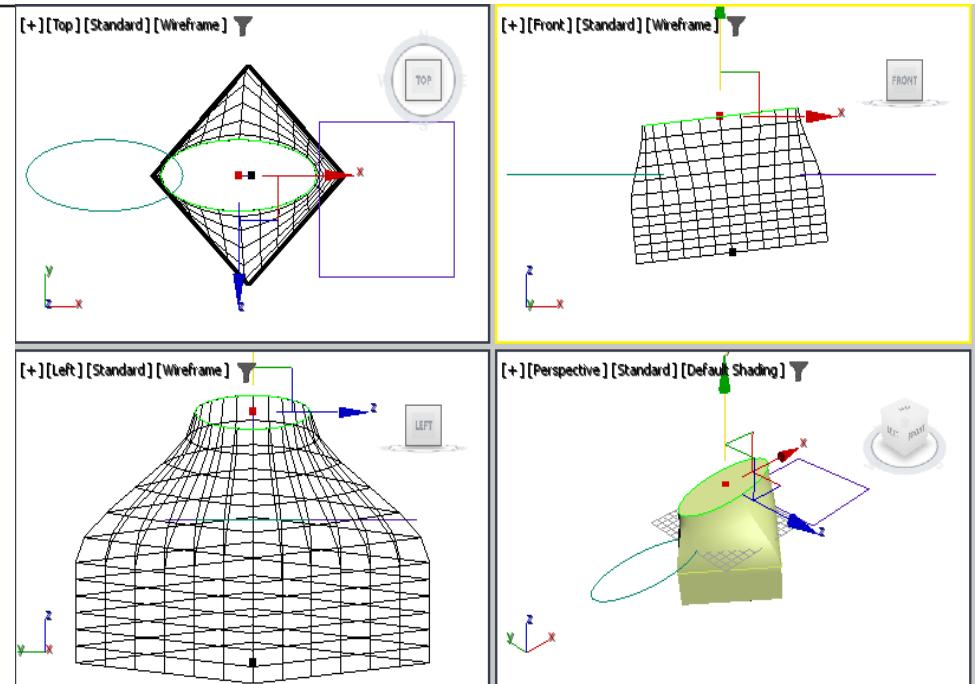


Figure 6-16 The top vertex of the path moved

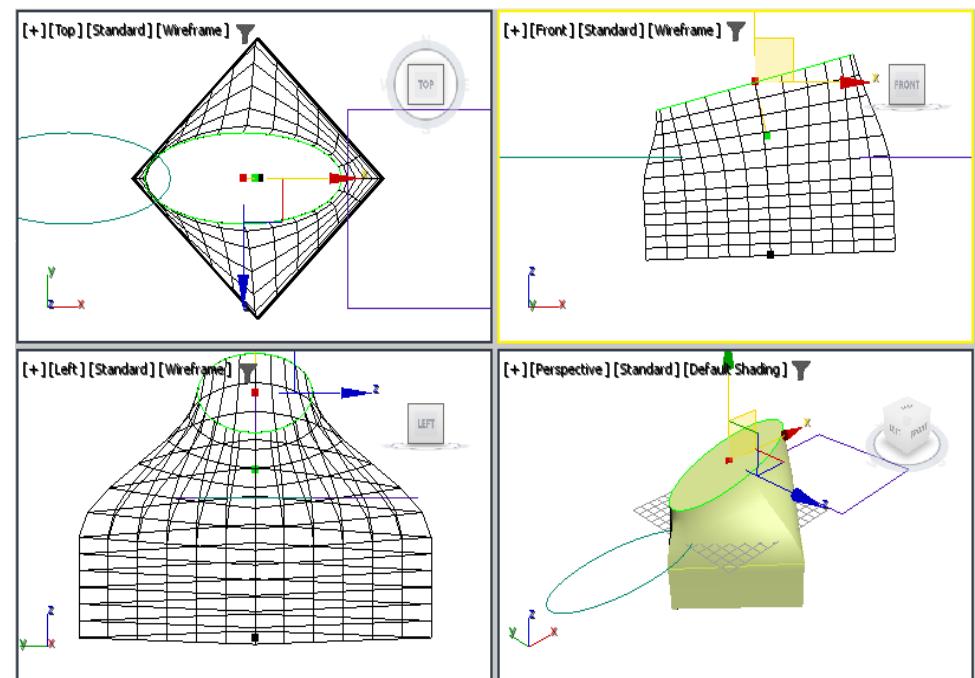


Figure 6-17 The lofted object curves with the path

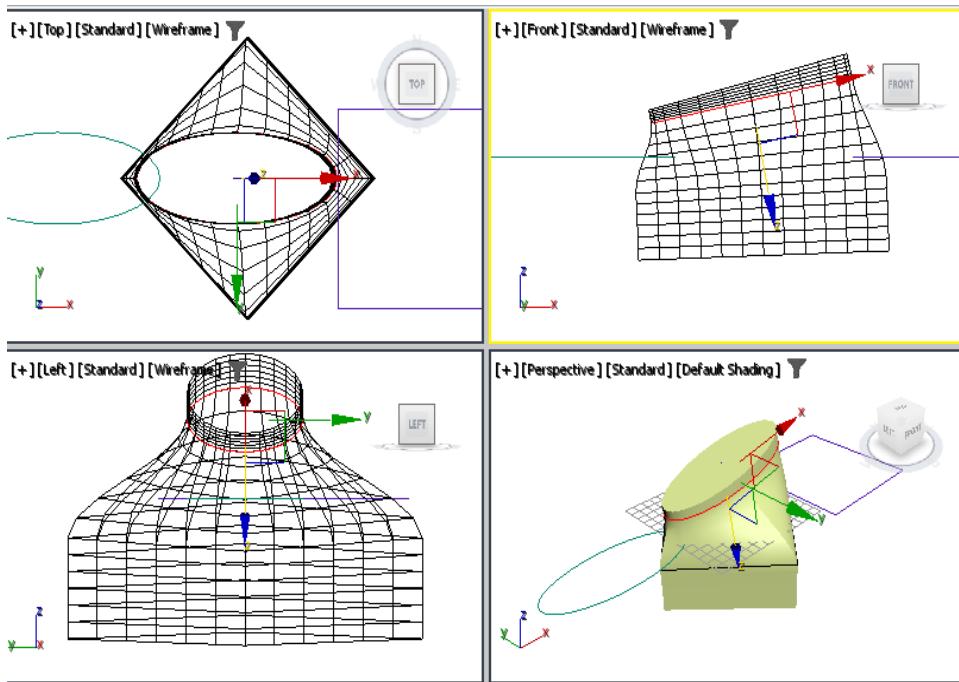


Figure 6-18 The ellipse moved away from the path (to the right)

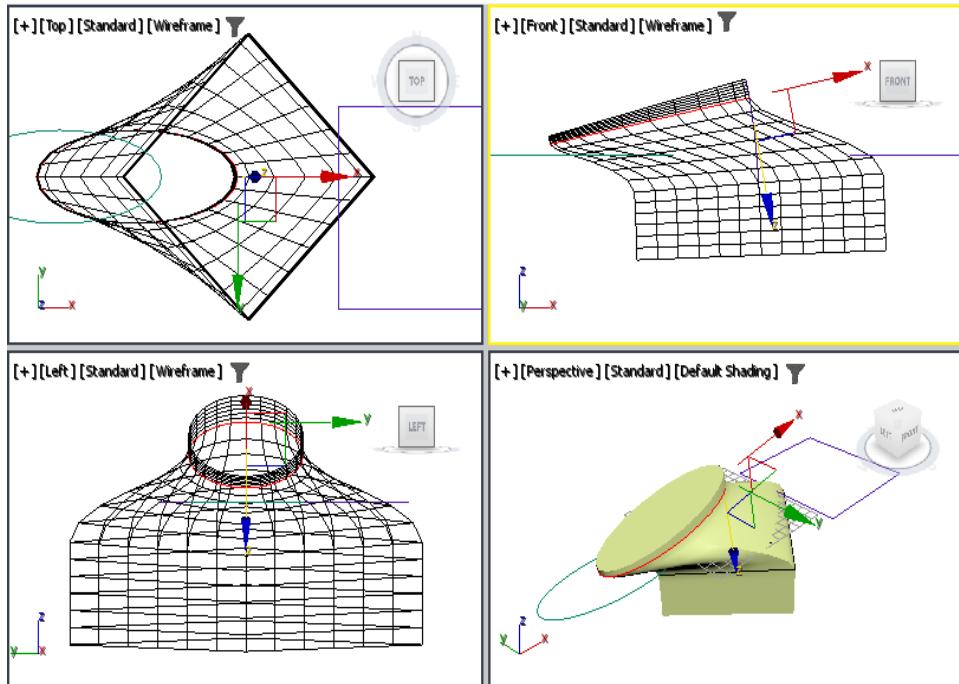


Figure 6-19 The ellipse aligned on the right by using the **Right** button

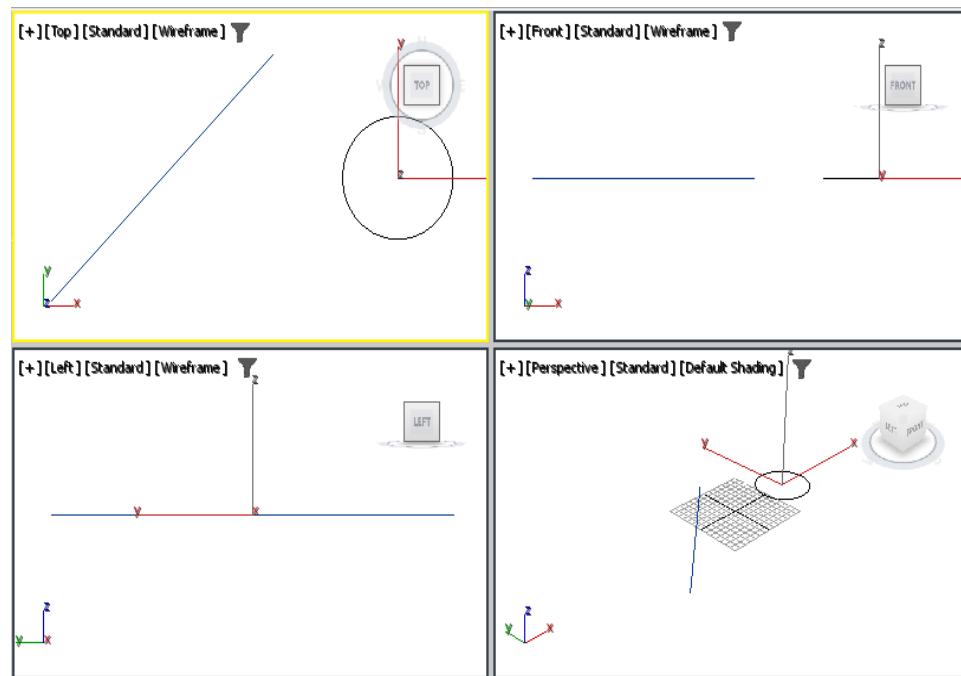


Figure 6-20 A line and a circle created

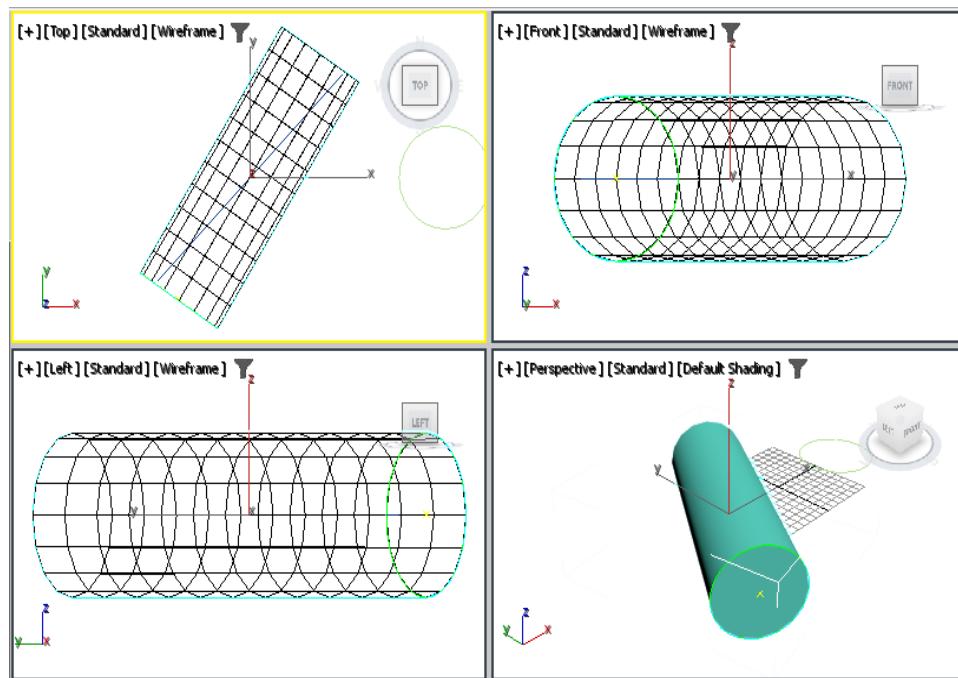


Figure 6-21 The lofted object zoomed

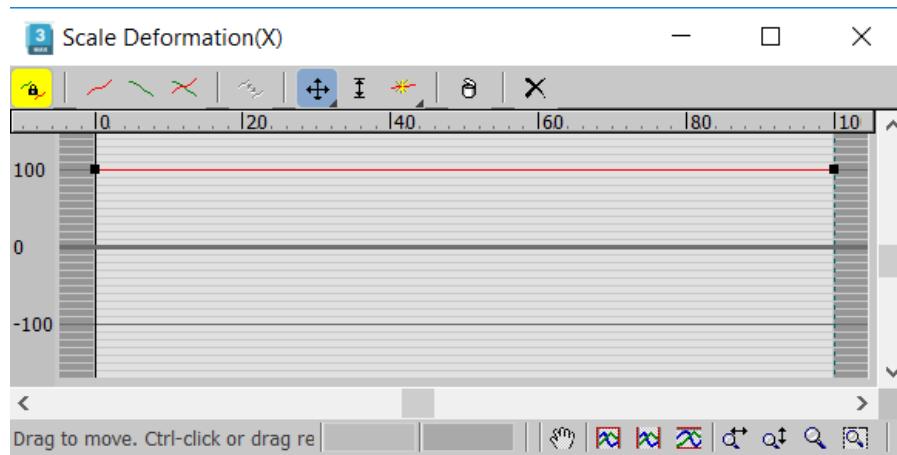


Figure 6-22 The Scale Deformation(X) dialog box

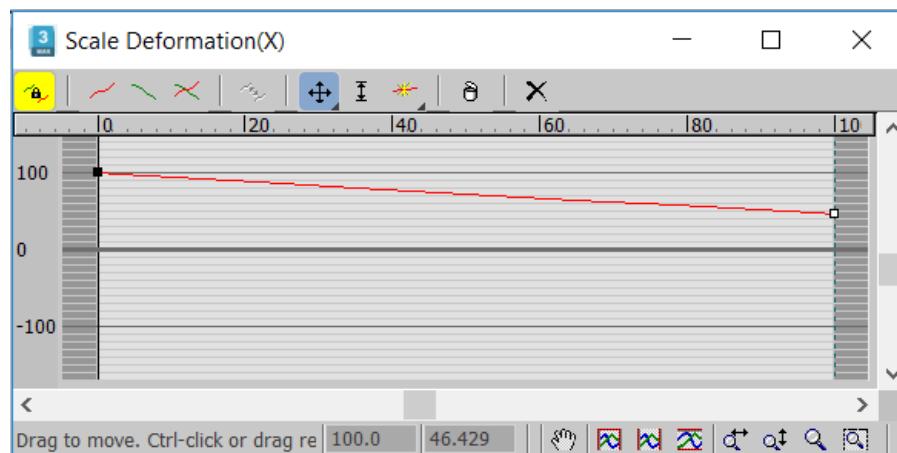


Figure 6-23 The vertex moved in the Scale Deformation(X) dialog box

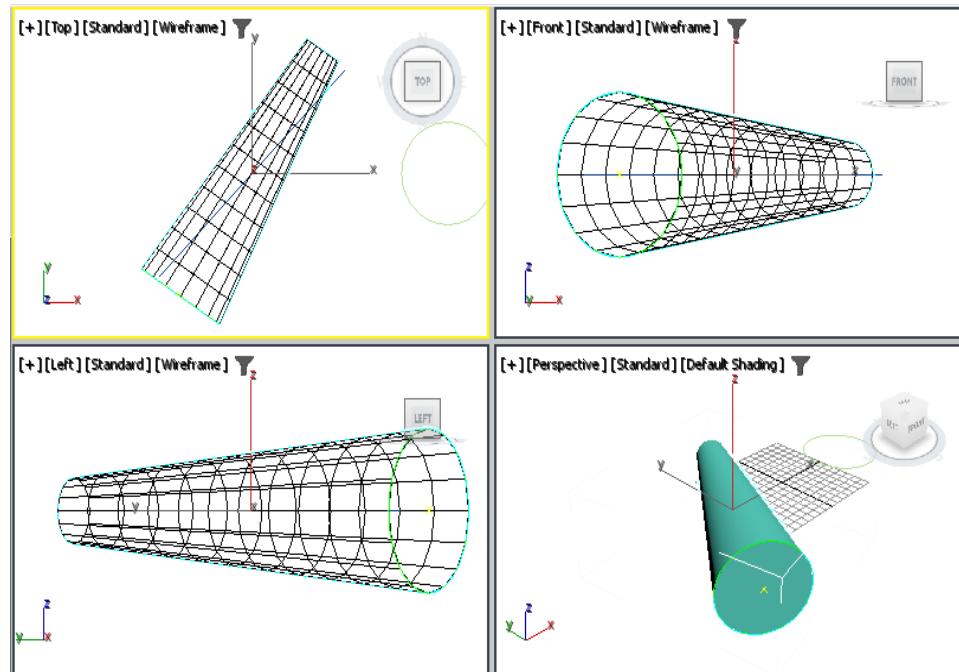


Figure 6-24 The lofted object tapered after moving the vertex in the **Scale Deformation(X)** dialog box

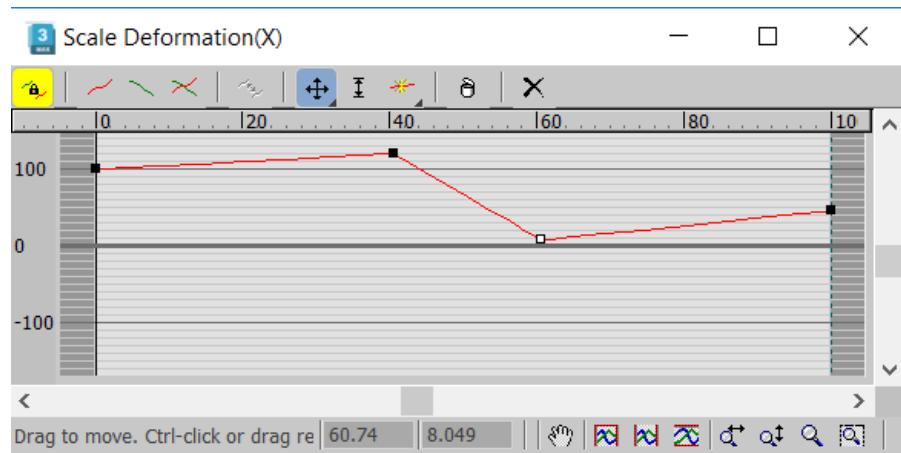


Figure 6-25 Two vertices added and moved in the **Scale Deformation(X)** dialog box

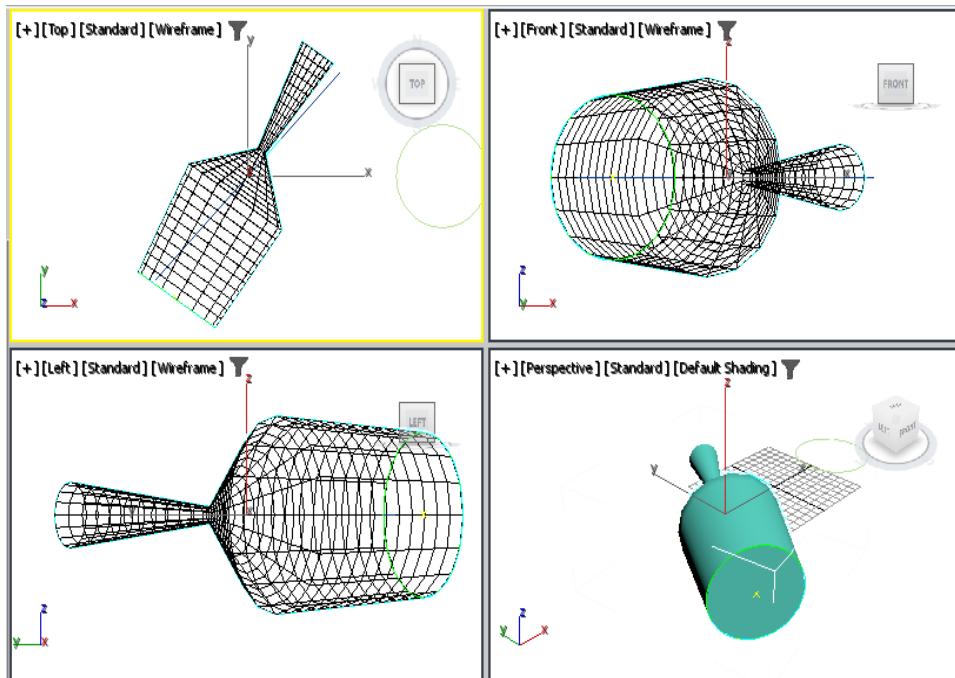


Figure 6-26 The modified lofted object after adding and moving the vertices

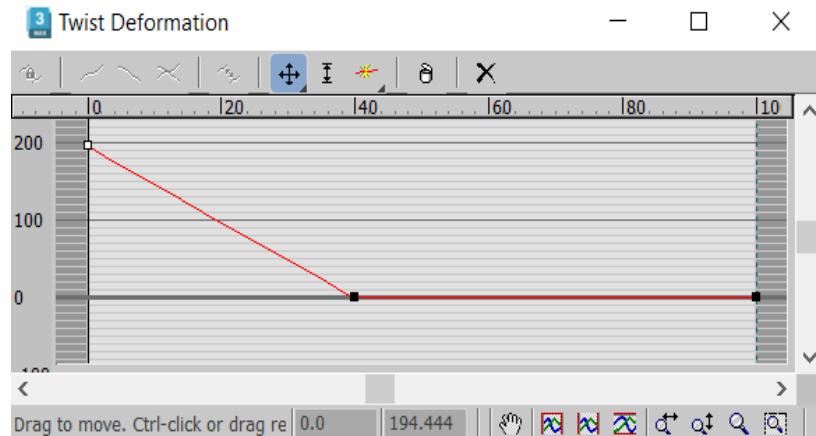


Figure 6-27 Moving the vertex up to 200 degrees

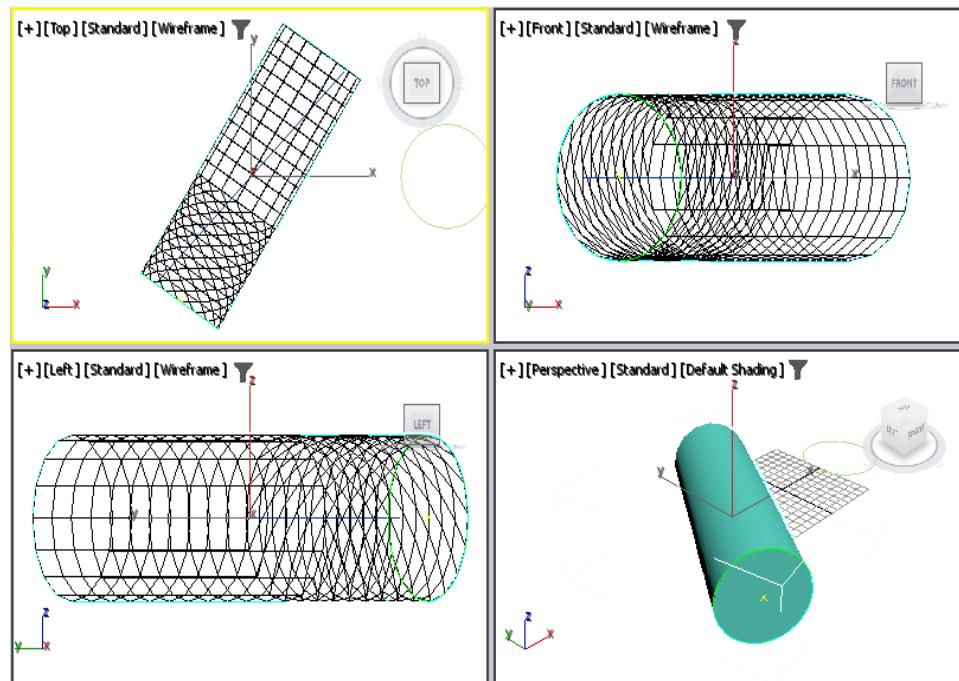


Figure 6-28 The modified loft object after adding a vertex and moving the left vertex

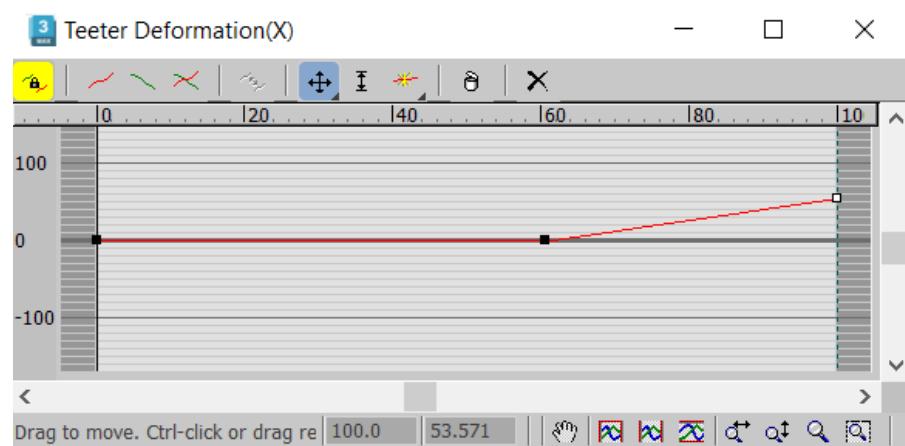


Figure 6-29 Moving the right-hand vertex up by five lines

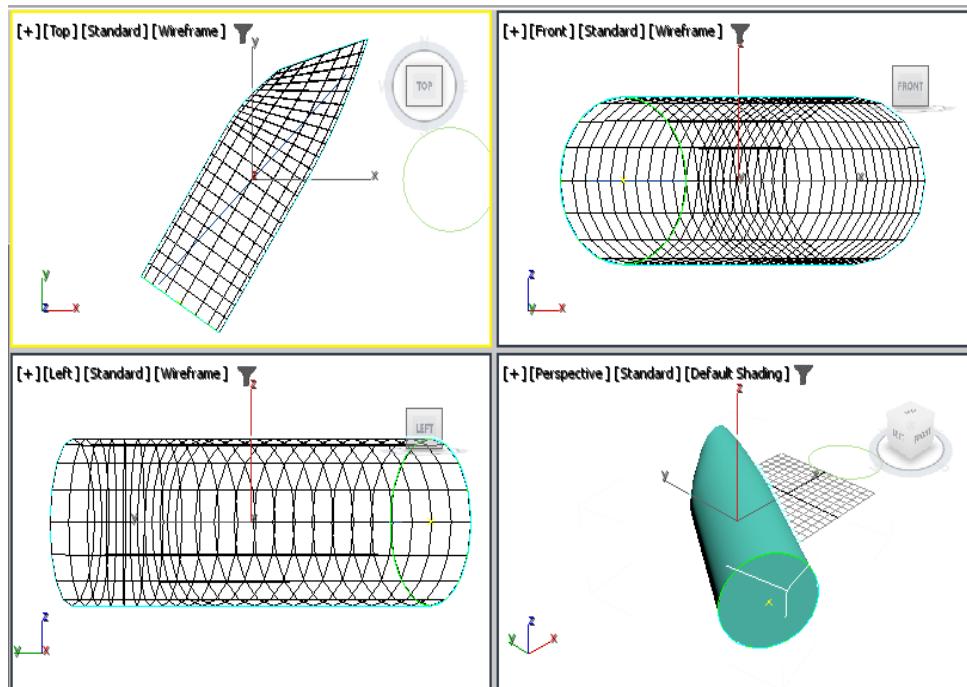


Figure 6-30 The lofted object tilted along the Y axis

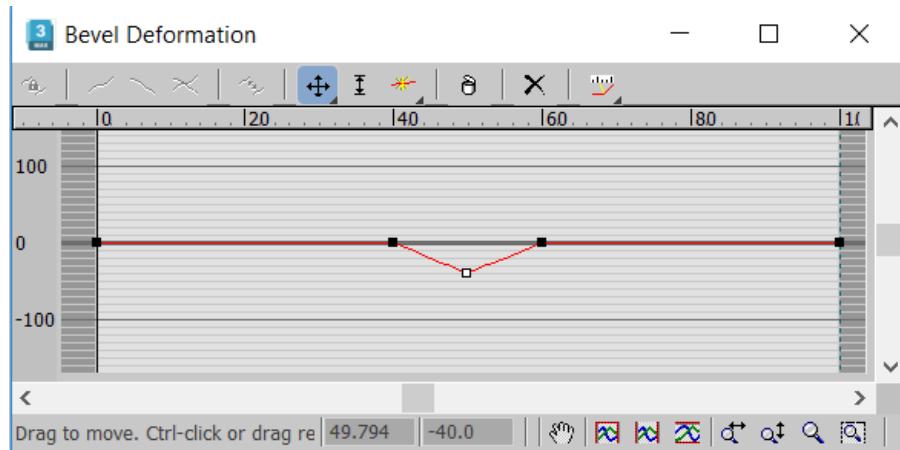


Figure 6-31 The three vertices added in the **Bevel Deformation** dialog box and the middle vertex moved down

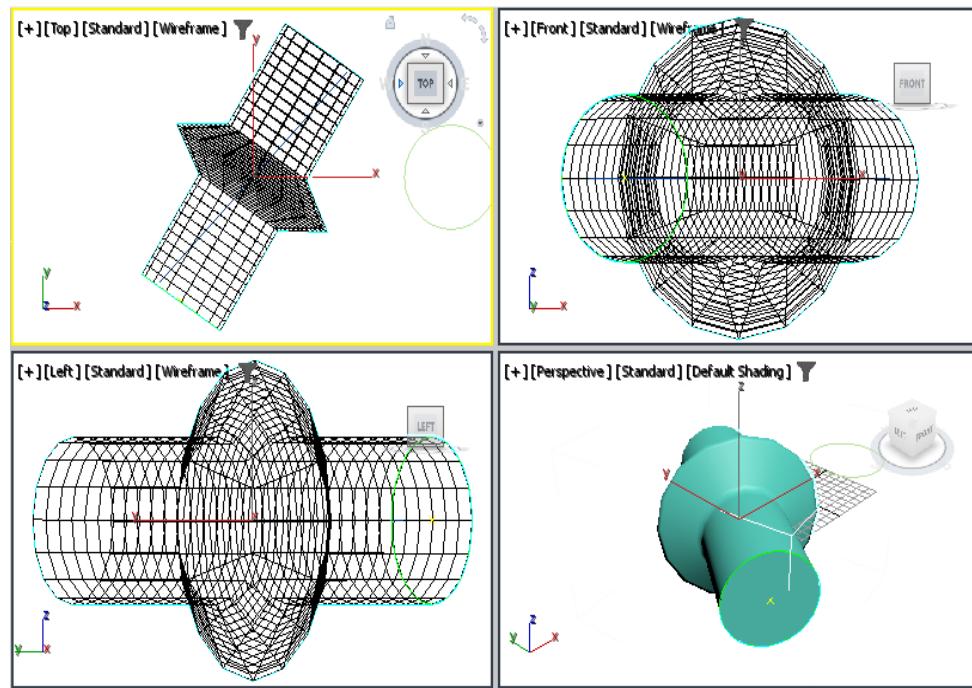


Figure 6-32 The lofted object beveled after inserting three vertices and moving the middle one

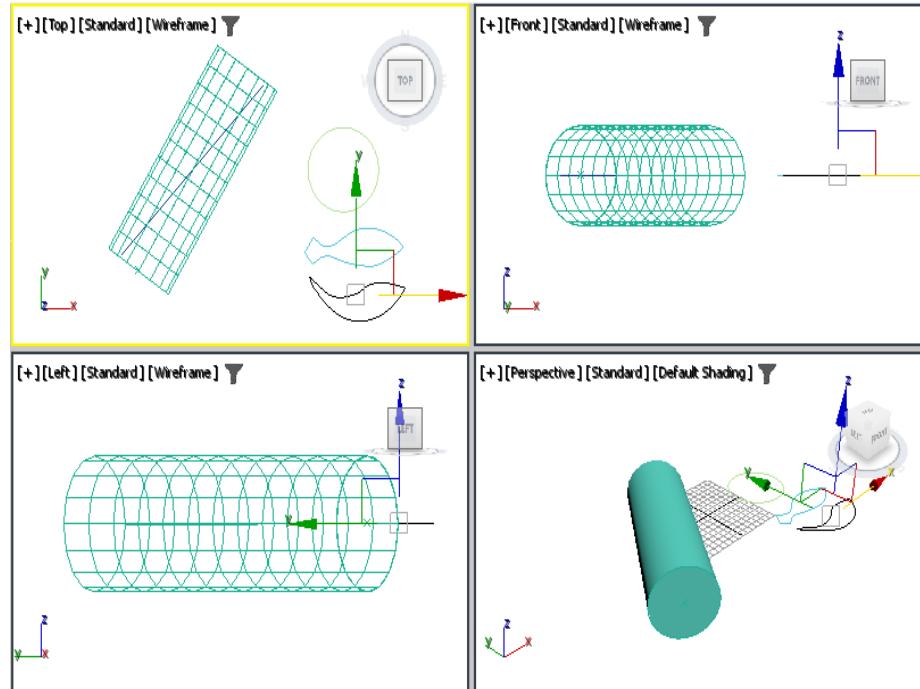


Figure 6-33 Two closed shapes created in the Top viewport

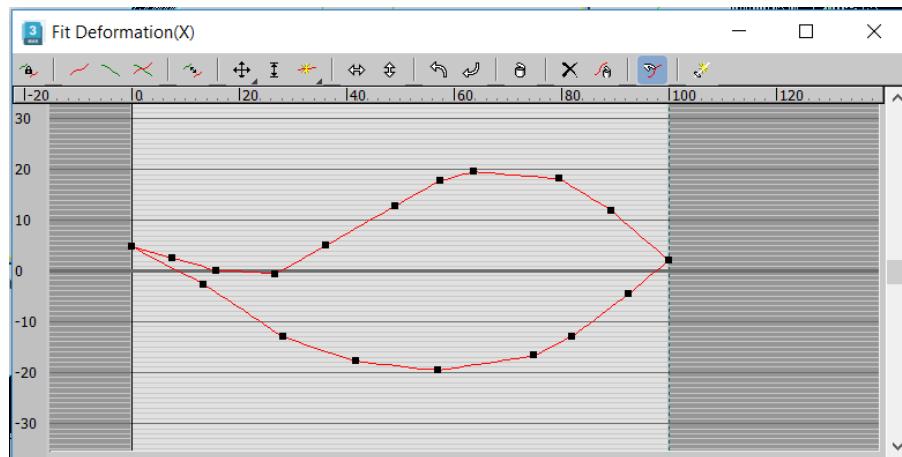


Figure 6-34 Fit Shape (Top) displayed in the **Fit Deformation(X)** dialog box

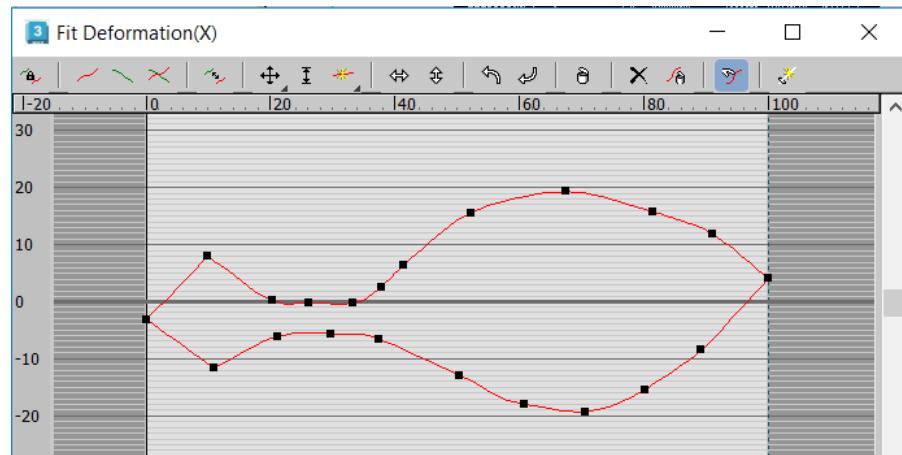


Figure 6-35 Fit Shape (Side) displayed in the **Fit Deformation(Y)** dialog box

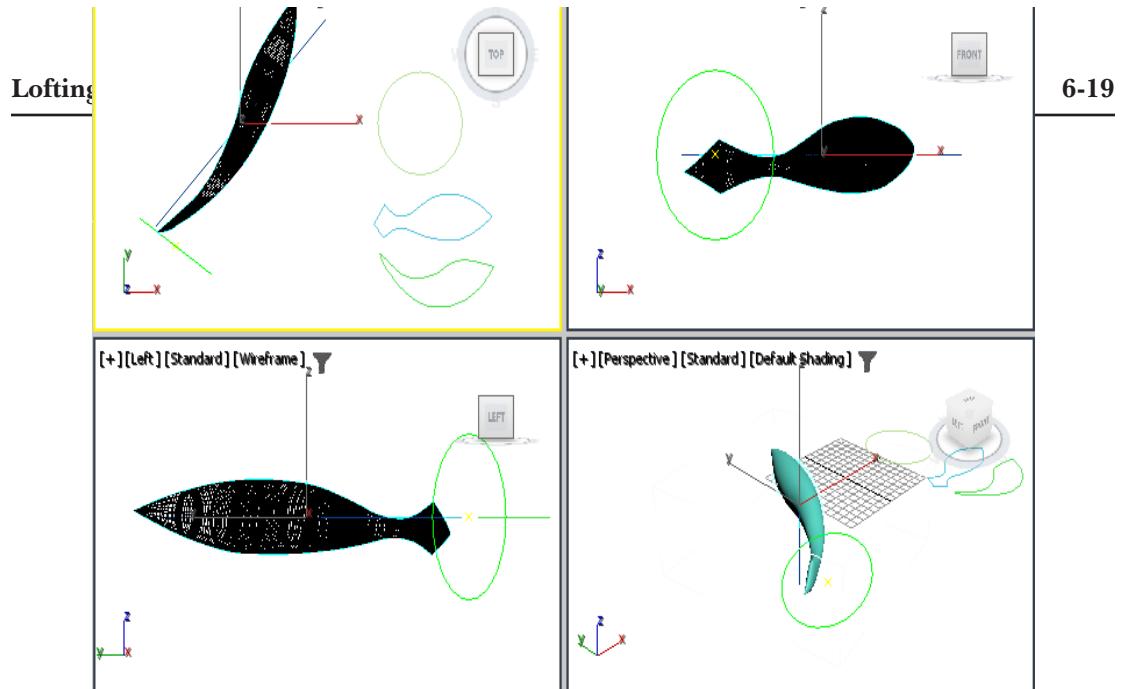


Figure 6-36 The lofted object showing the effect of fit shapes



Figure 6-37 The model of a screw driver

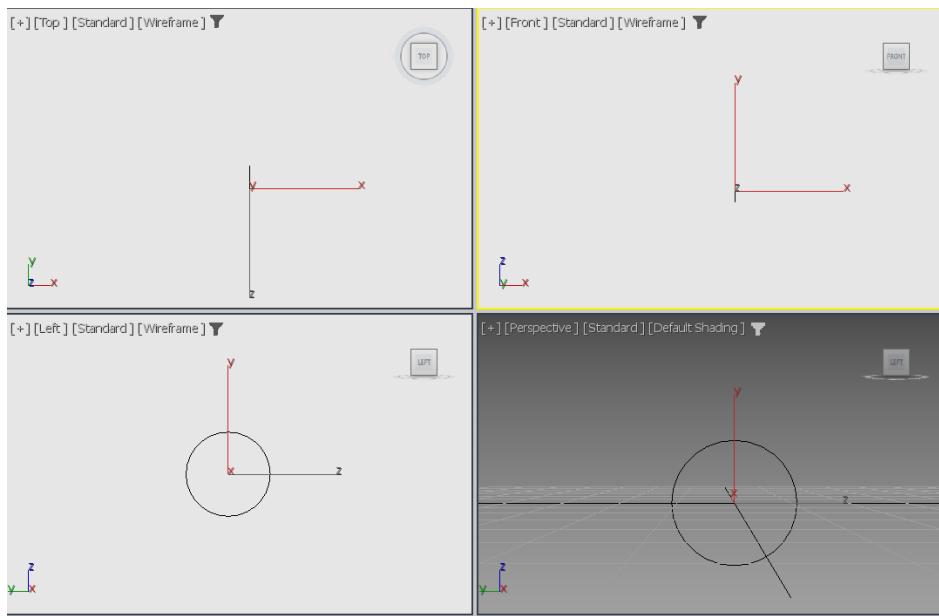


Figure 6-38 The base zoomed in all viewports

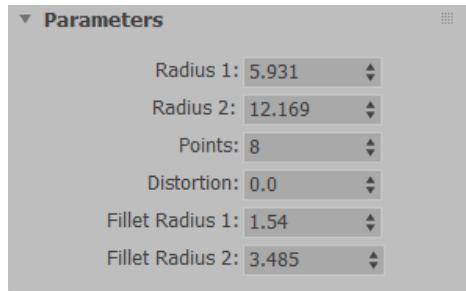


Figure 6-39 Parameters set in the **Parameters** rollout

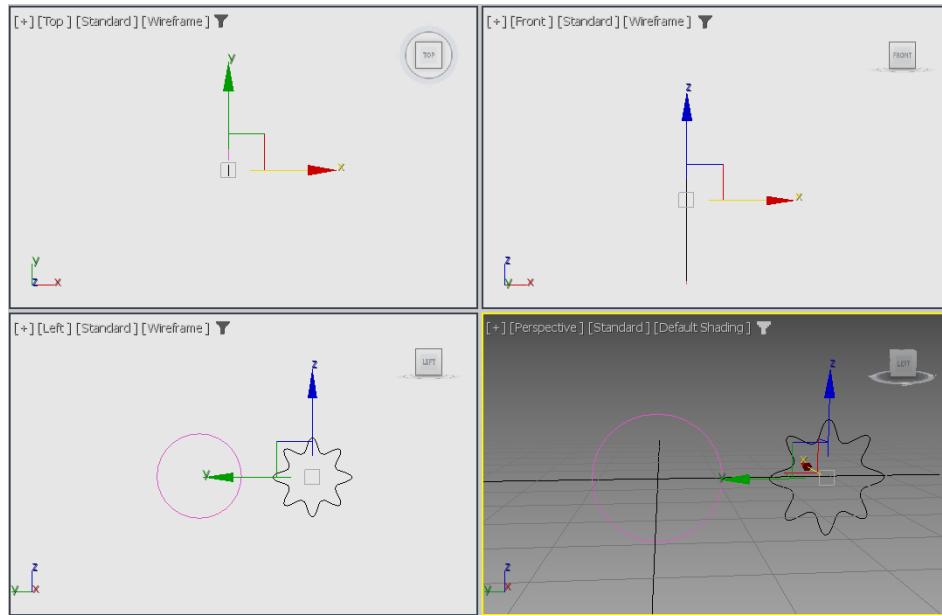


Figure 6-40 The design zoomed in all viewports

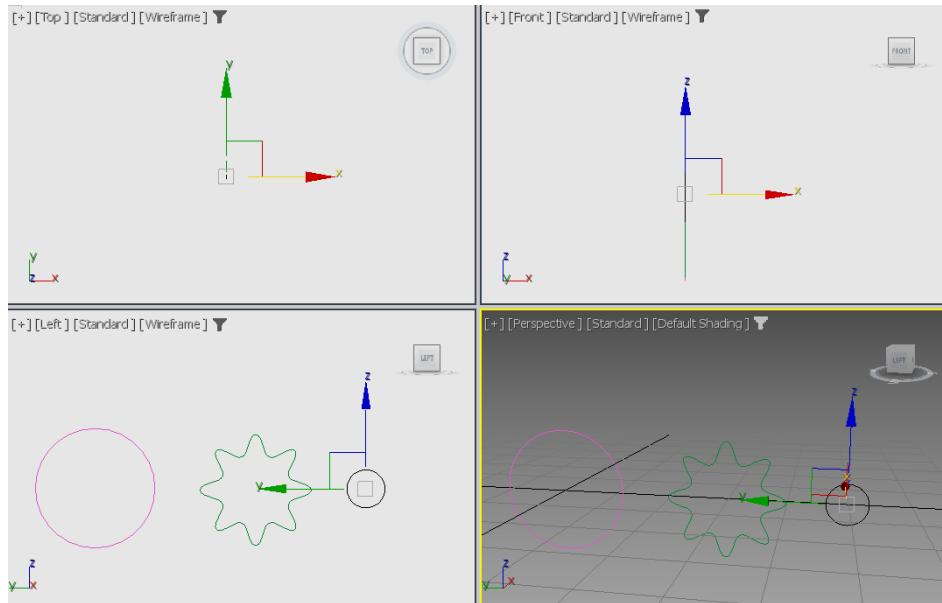


Figure 6-41 The top_base zoomed in all viewports

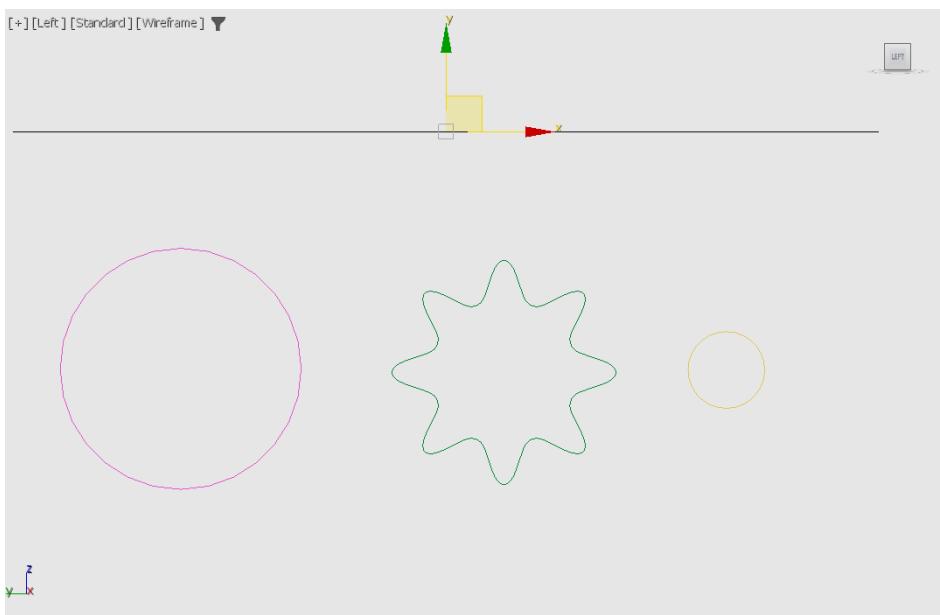


Figure 6-42 The line zoomed in the Left viewport

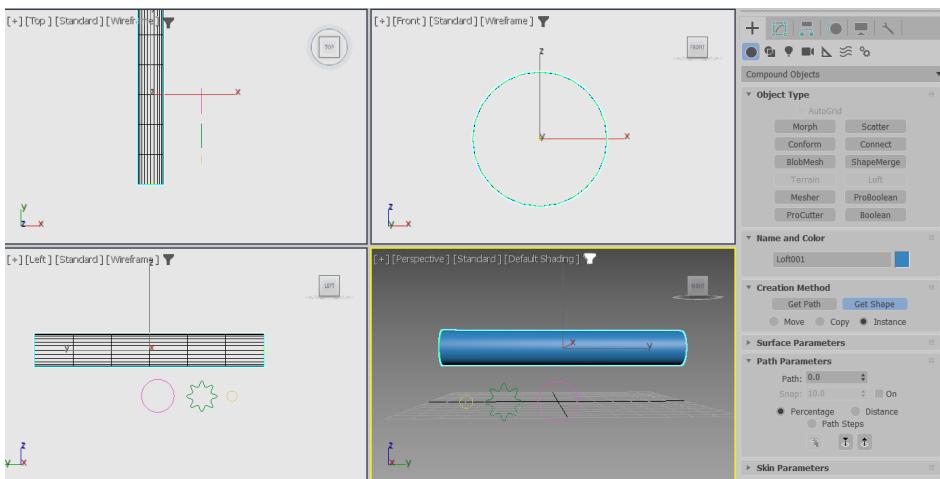


Figure 6-43 The circle lofted along the line

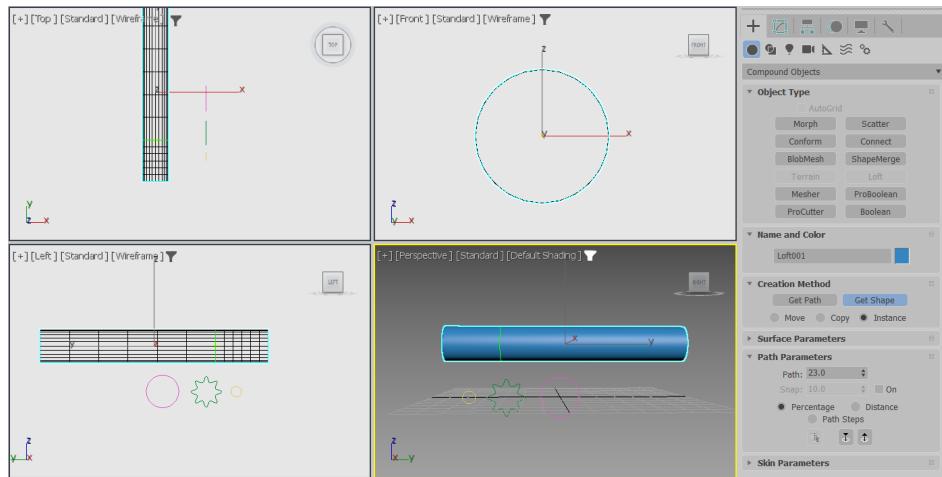


Figure 6-44 The path set

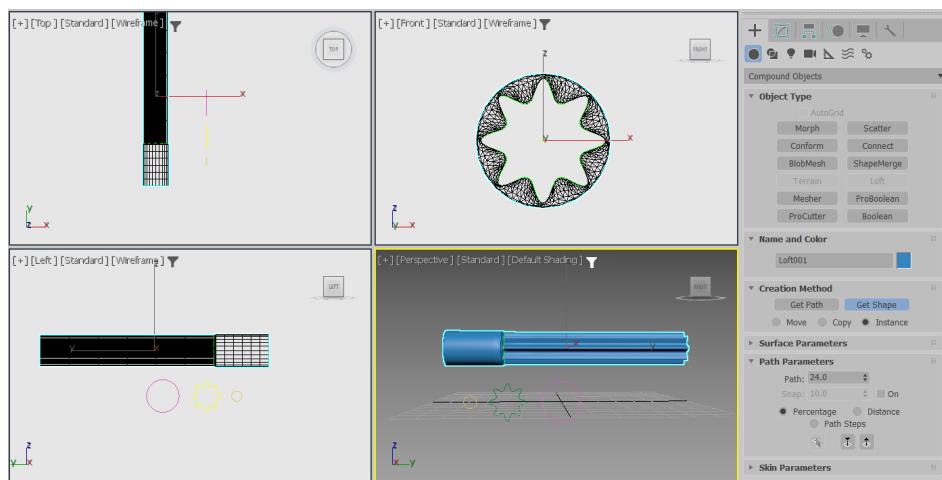


Figure 6-45 The design lofted along the path

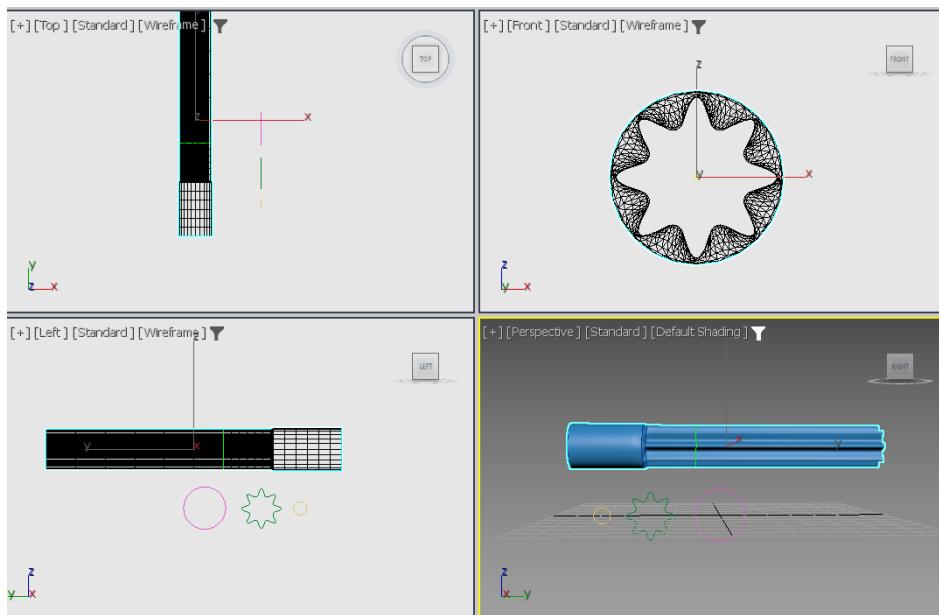


Figure 6-46 The path set

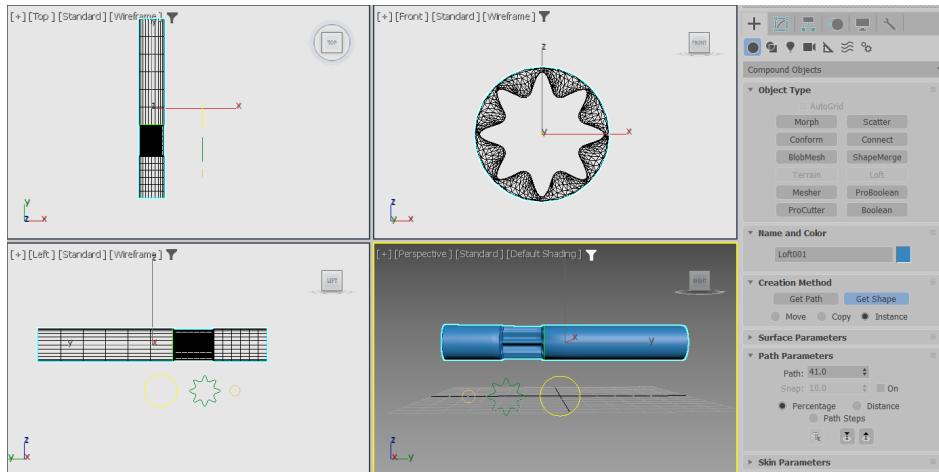


Figure 6-47 The base lofted along the path

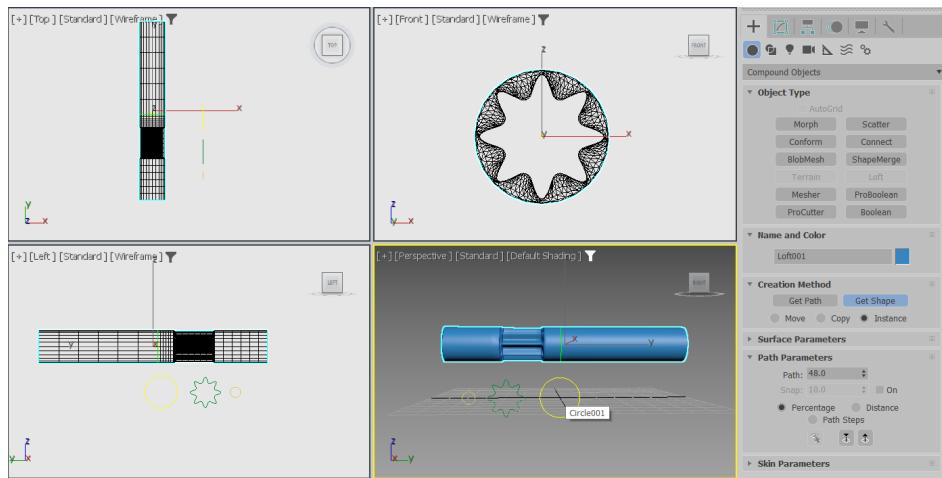


Figure 6-48 The base lofted along the path

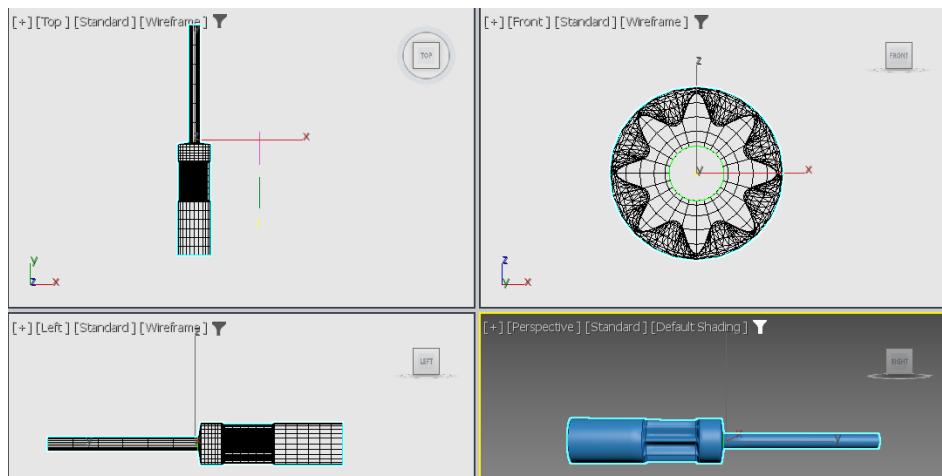


Figure 6-49 The top_base lofted along the path

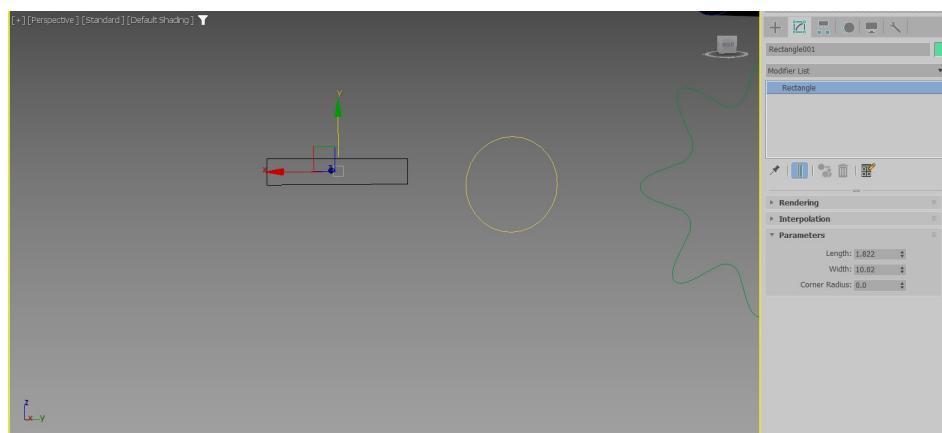


Figure 6-50 The rectangle created in the left viewport

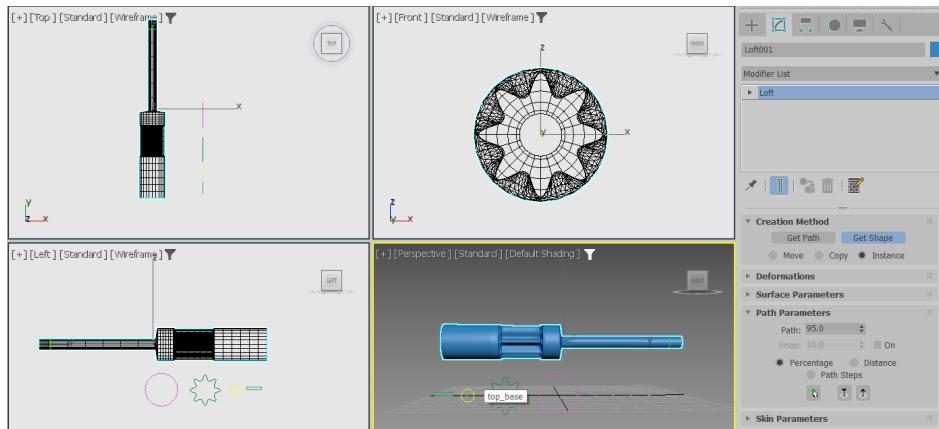


Figure 6-51 The path set

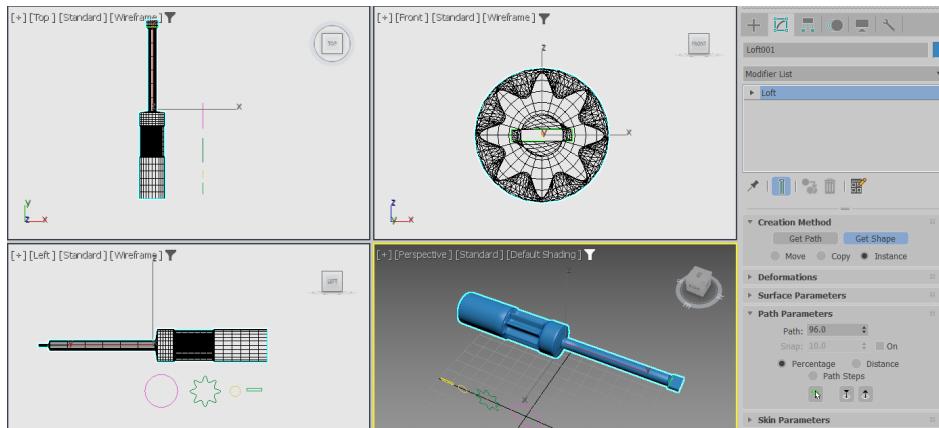


Figure 6-52 The rectangle lofted along the path

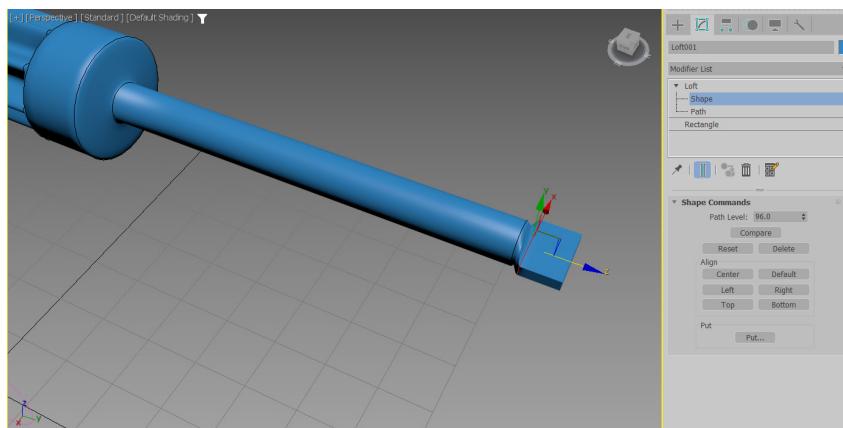


Figure 6-53 The rectangle shape selected

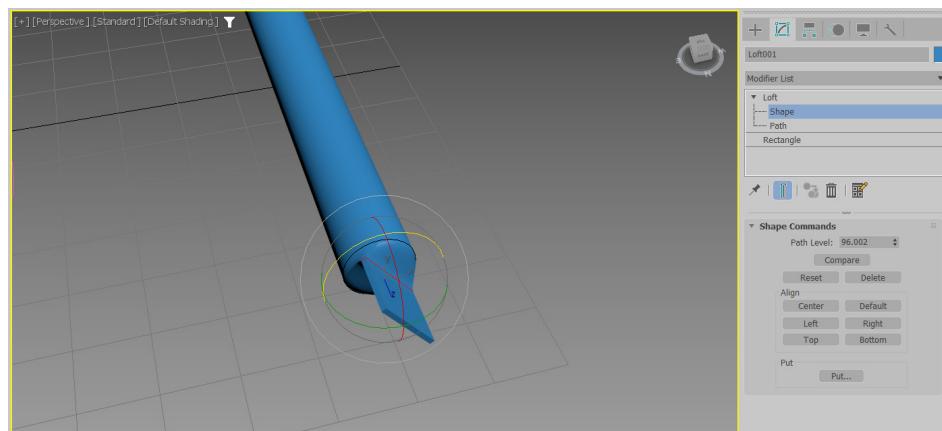


Figure 6-54 Rotating the rectangle shape

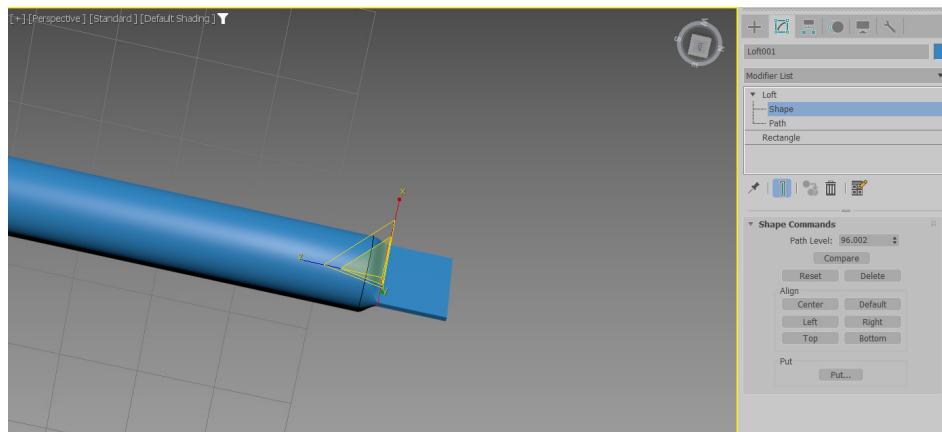


Figure 6-55 The rectangle shape scaled

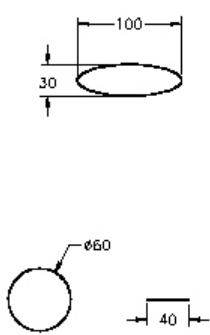


Figure 6-56 The circular and ellipse shapes

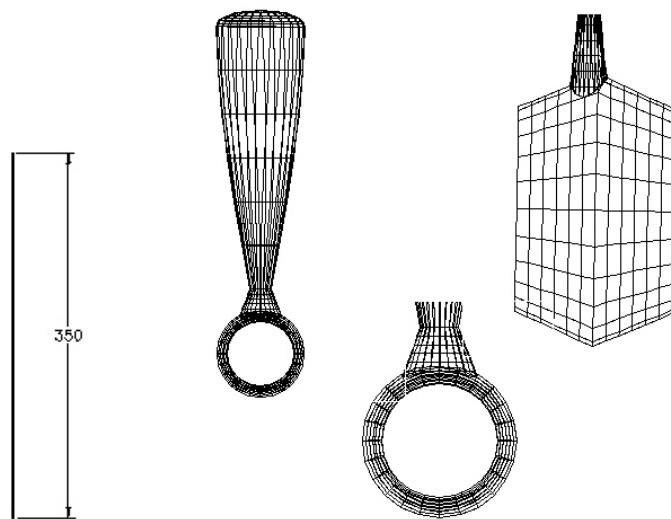


Figure 6-57 Shapes to be lofted



Figure 6-58 The propeller model

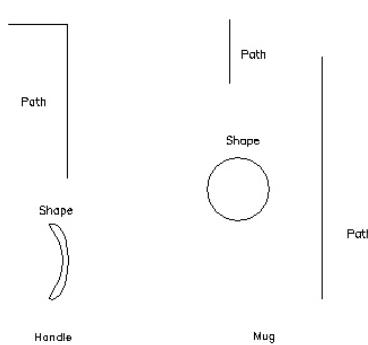


Figure 6-59 Lofted shapes



Figure 6-60 The travel mug

Chapter 7

Material Editor: Creating Materials

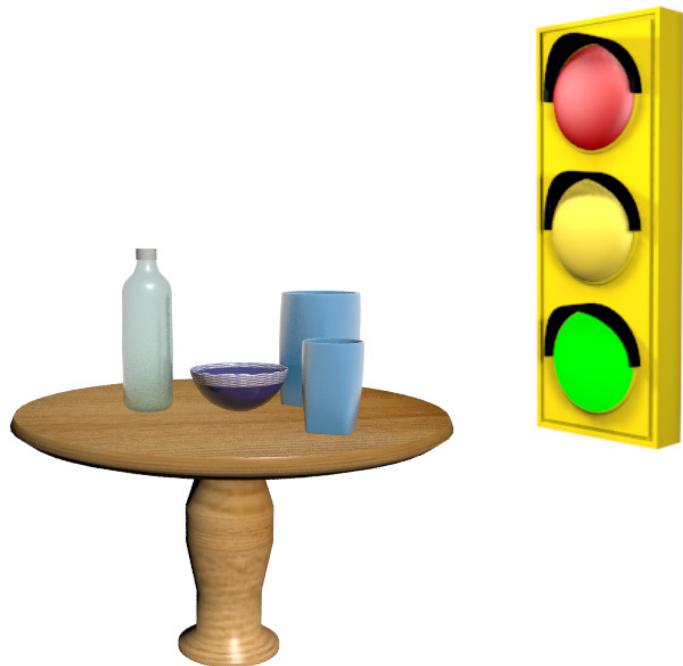




Figure 7-1 The traffic signal model with materials applied

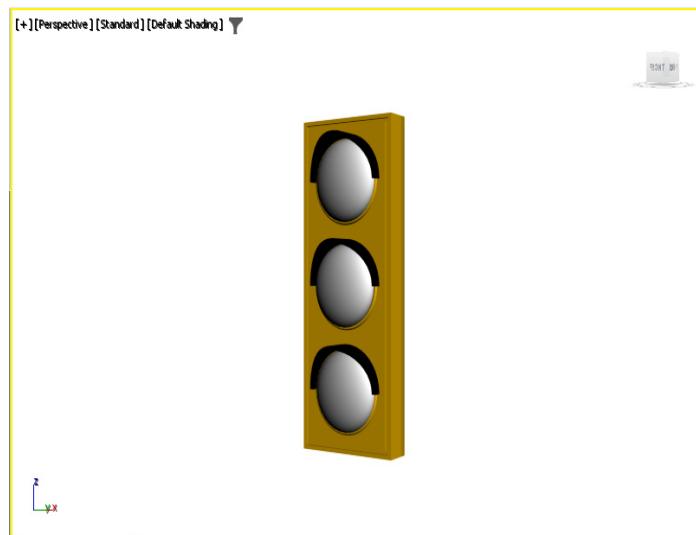


Figure 7-2 The c07_tut1_start file

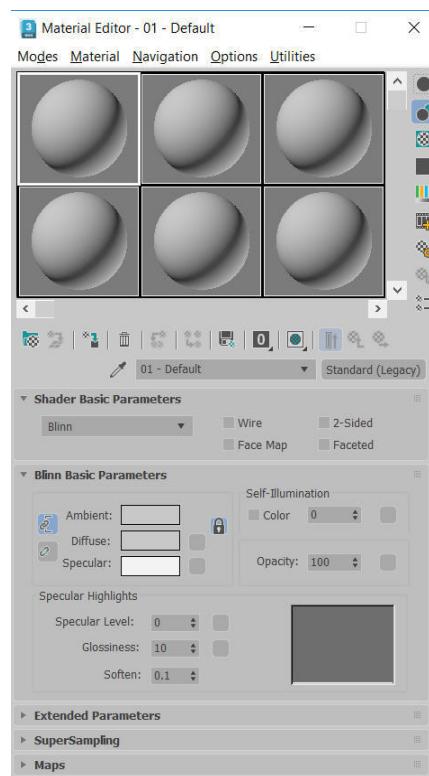


Figure 7-3 The Material Editor dialog box

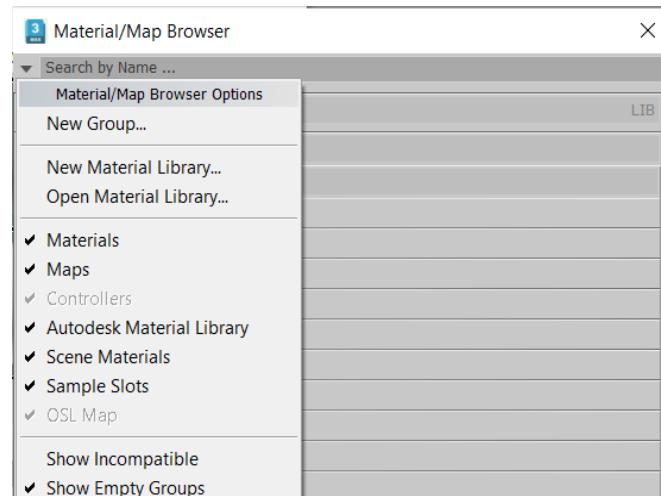


Figure 7-4 The Material/Map Browser Options flyout

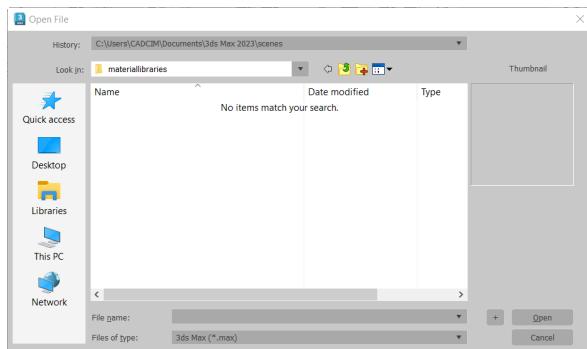


Figure 7-5 The *Create New Material Library* dialog box

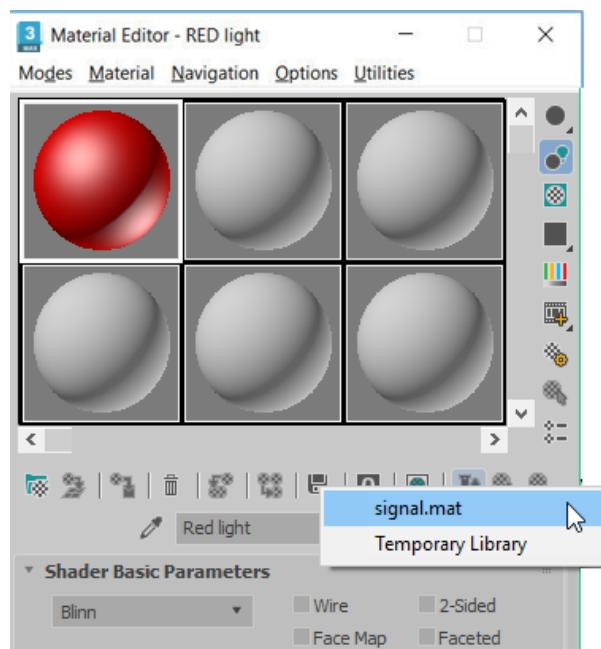


Figure 7-6 Choosing *signal.mat* from the flyout

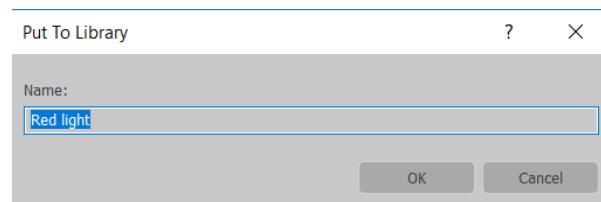


Figure 7-7 The *Put To Library* dialog box

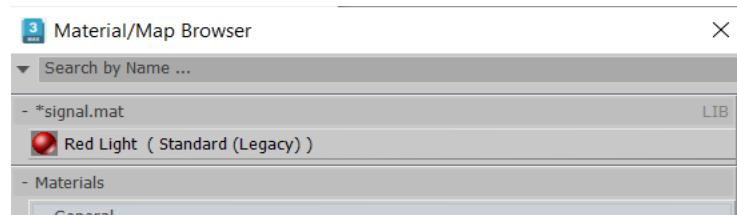


Figure 7-8 The Red light material added to the material library

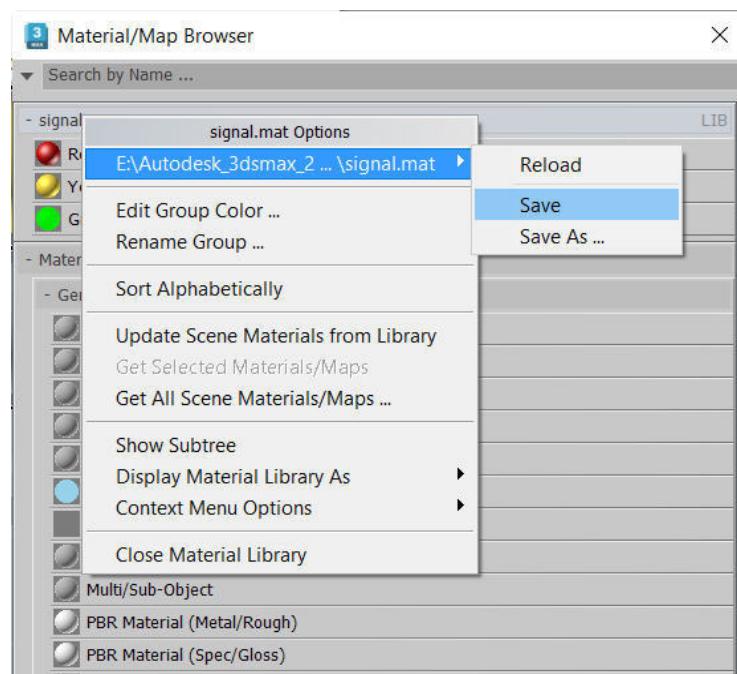


Figure 7-9 Saving the material library



Figure 7-10 The rendered image



Figure 7-11 The textured scene

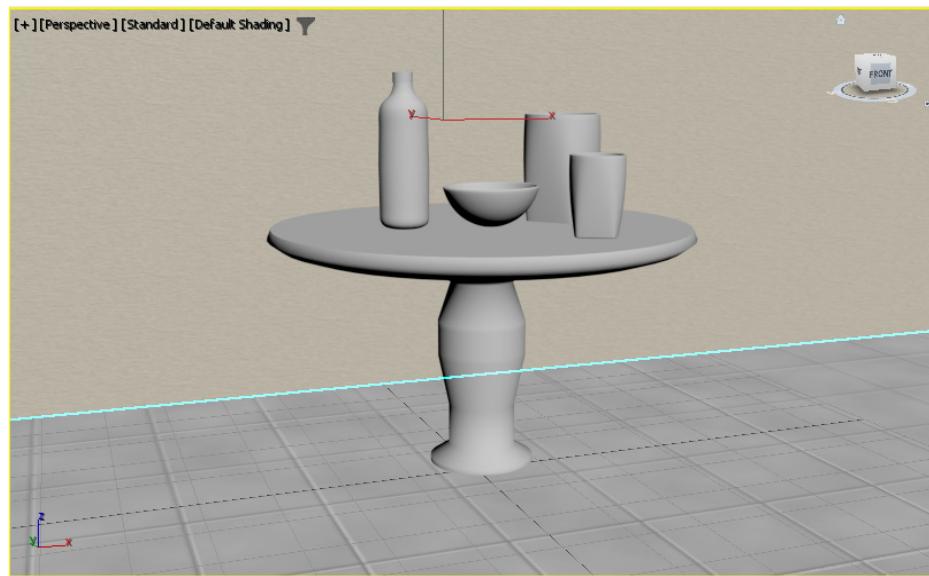


Figure 7-12 The c07_tut2_start file

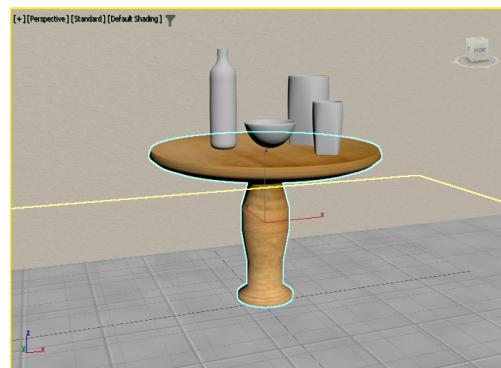


Figure 7-13 The wood material assigned to table

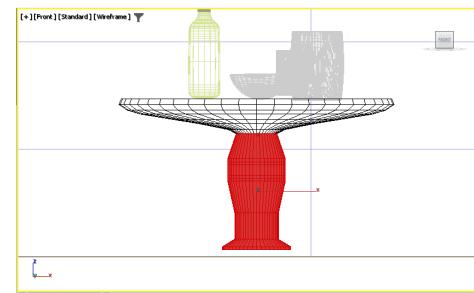


Figure 7-14 Polygons of table selected

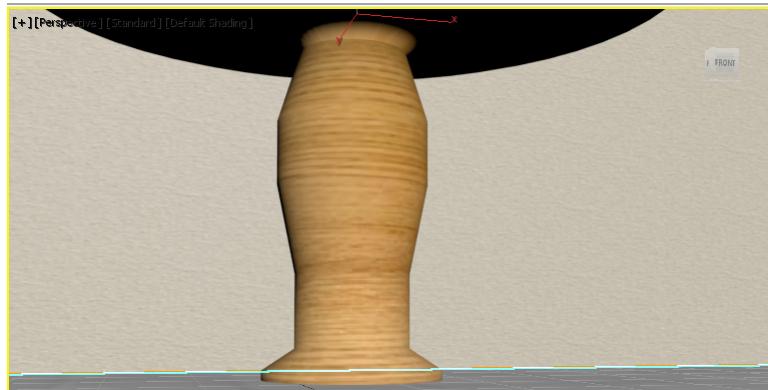


Figure 7-15 The texture aligned on the bottom part of table

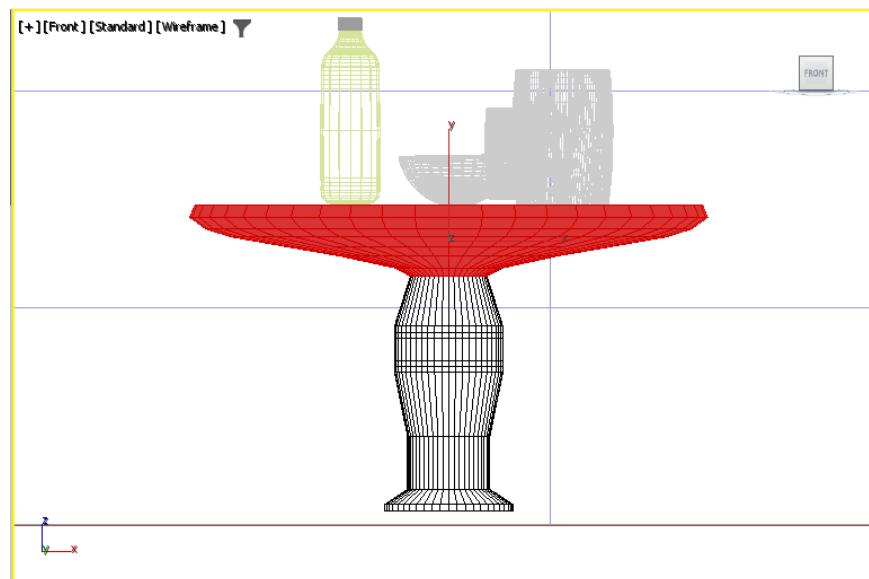


Figure 7-16 Polygons of table selected



Figure 7-17 The texture aligned on the middle part of table

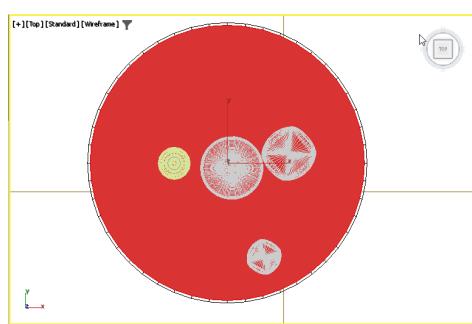


Figure 7-18 Selected polygon of table

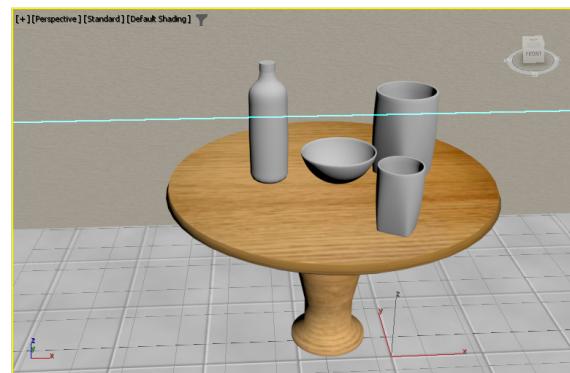


Figure 7-19 The texture aligned on the upper part of table



Figure 7-20 The rendered image

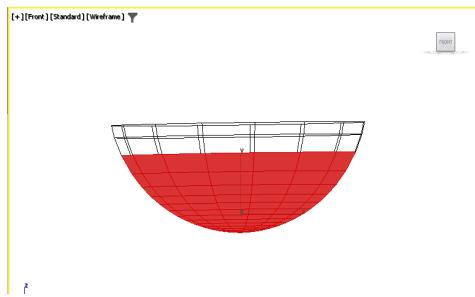


Figure 7-21 Selected polygons of bowl

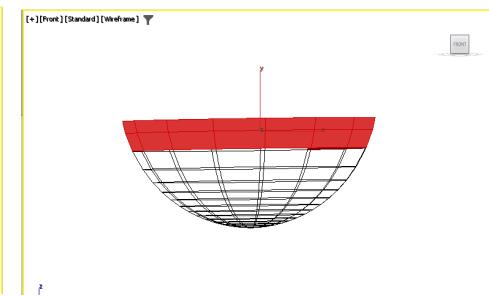


Figure 7-22 Rest of the polygons selected

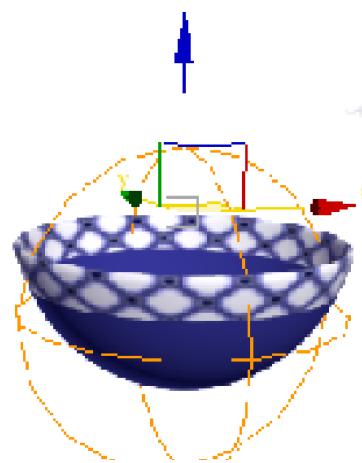


Figure 7-23 The **bowl** material applied to bowl



Figure 7-24 The rendered image



Figure 7-25 The crayons

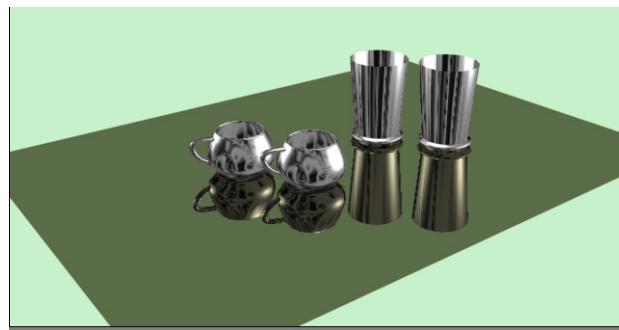


Figure 7-26 The model of cups and glasses

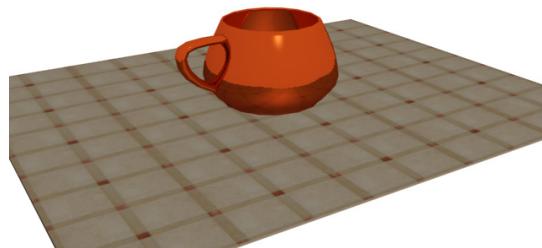


Figure 7-27 The model of a tea cup

Chapter 9

Material Editor: Texture Maps-II



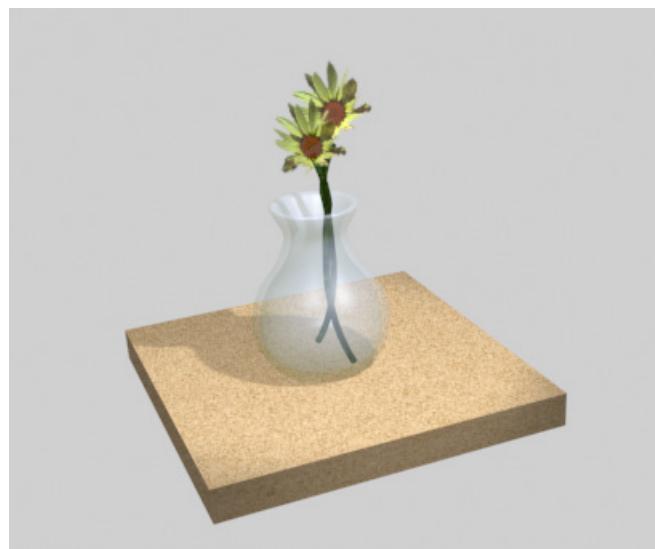


Figure 9-1 Materials applied to models

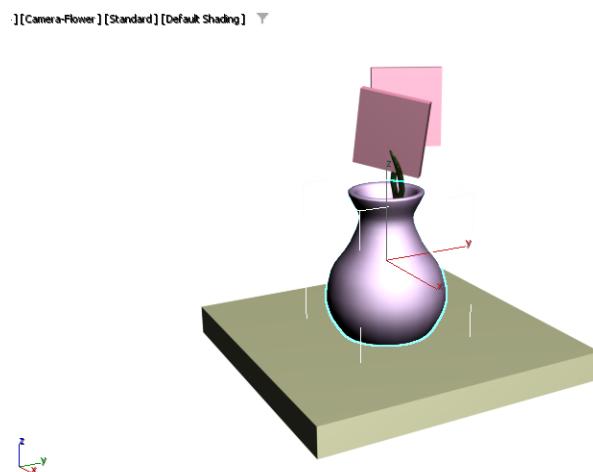


Figure 9-2 The c09_tut1_start file

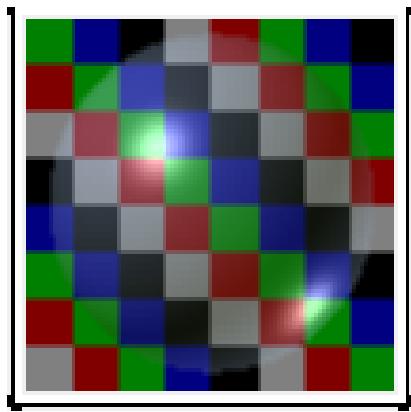


Figure 9-3 The background displayed in the material sample slot in the **Material Editor** dialog box

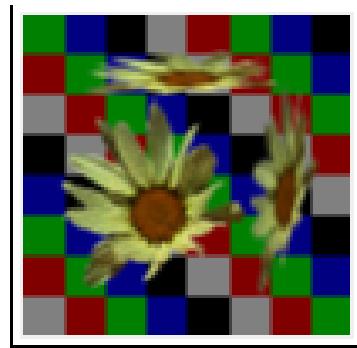


Figure 9-4 The material sample slot displayed in the **Material Editor** dialog box

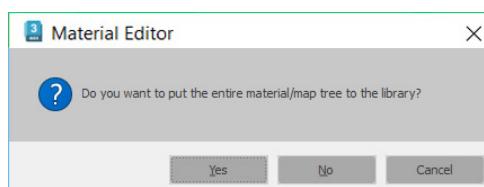


Figure 9-5 The **Material Editor** message box

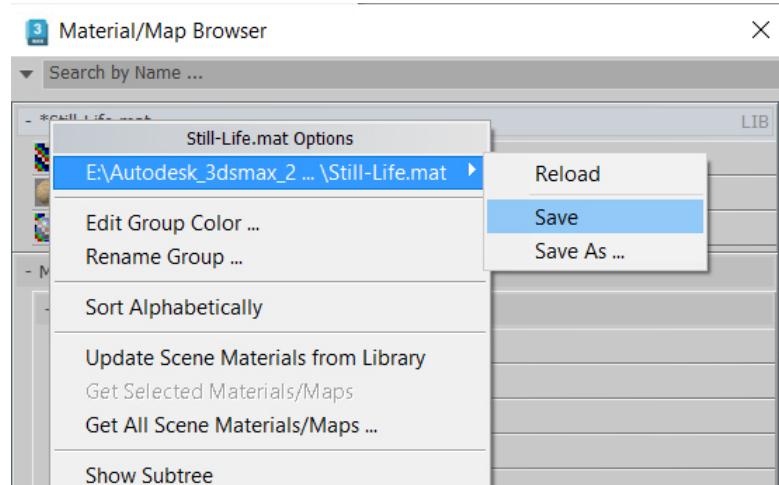


Figure 9-6 Saving the material library



Figure 9-7 The rendered image



Figure 9-8 The rendered image with materials assigned to the objects

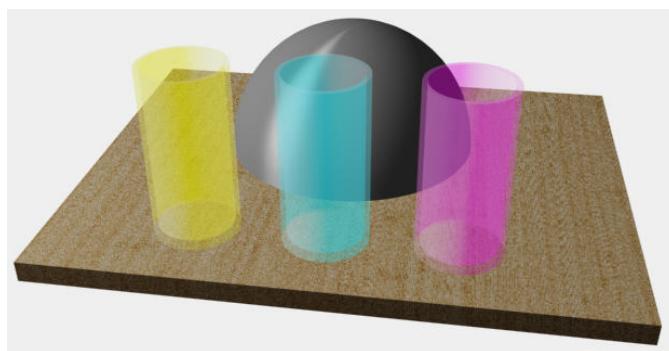
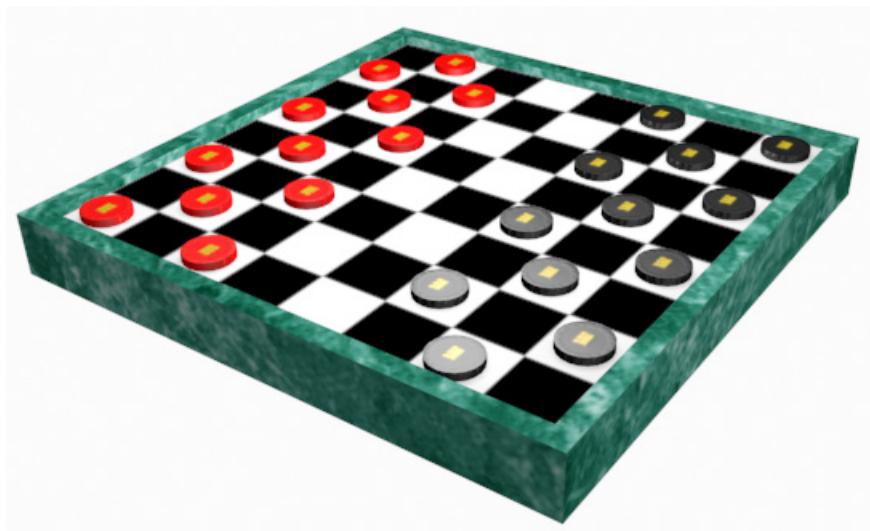


Figure 9-9 Three glasses with assigned materials

Chapter 8

Material Editor: Texture Maps-I



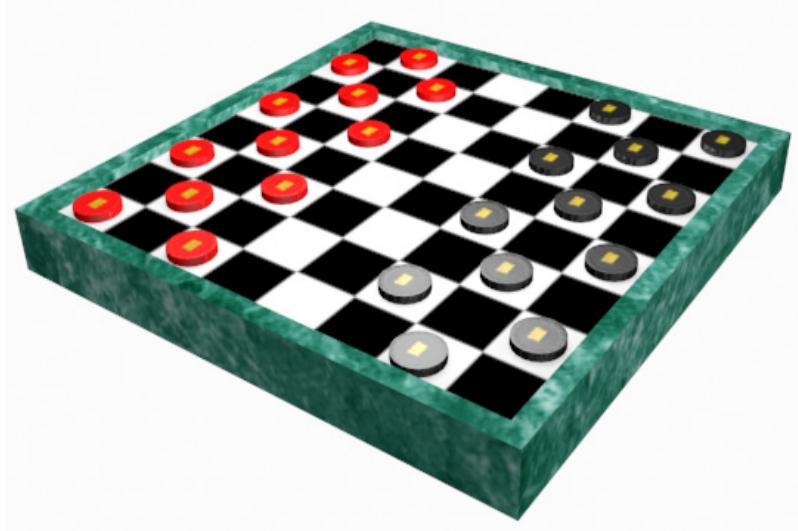


Figure 8-1 The checkerboard after applying materials

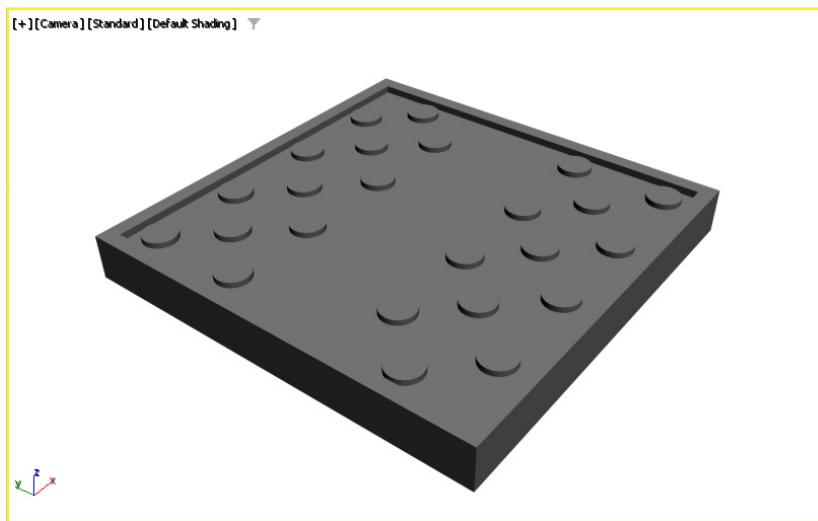


Figure 8-2 The c08_tut1_start file

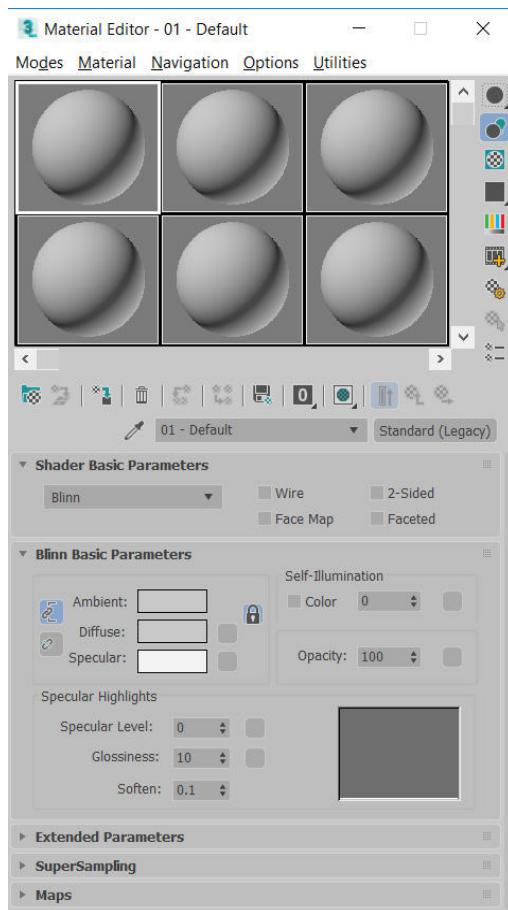


Figure 8-3 The **Material Editor** dialog box

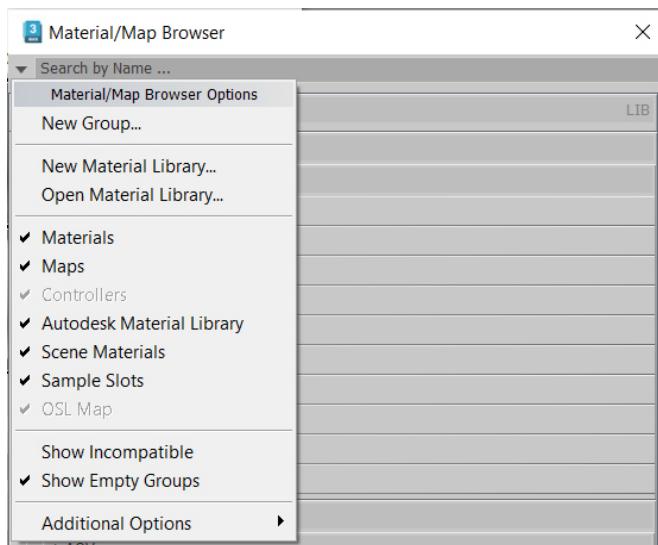


Figure 8-4 Choosing New Material Library from the flyout

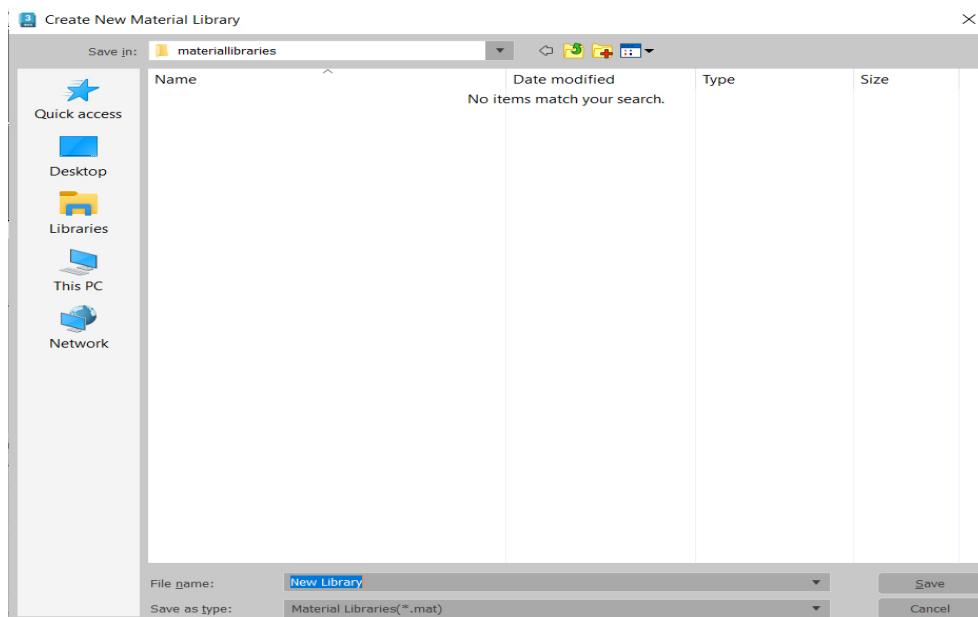


Figure 8-5 The Create New Material Library dialog box

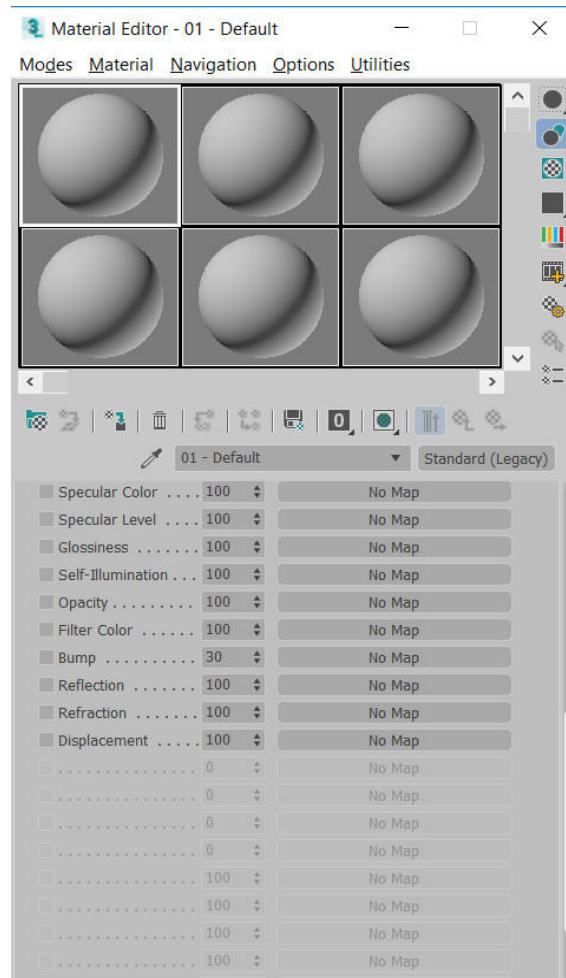


Figure 8-6 The *Maps* rollout expanded

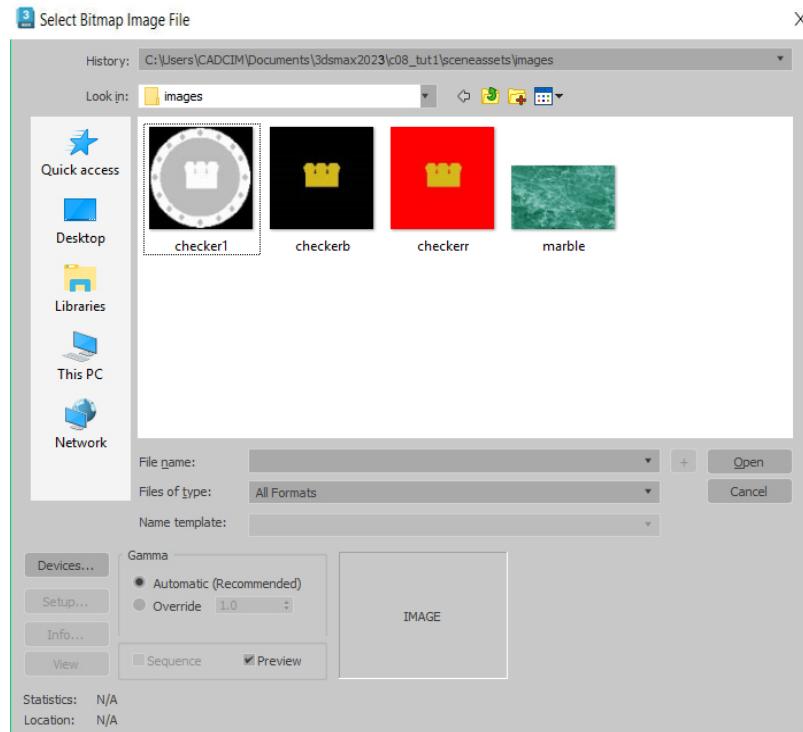


Figure 8-7 The Select Bitmap Image File dialog box

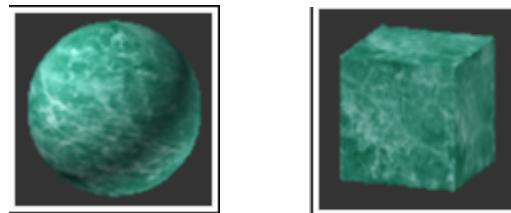


Figure 8-8 The sample switched from sphere to square in the **Material Editor** dialog box

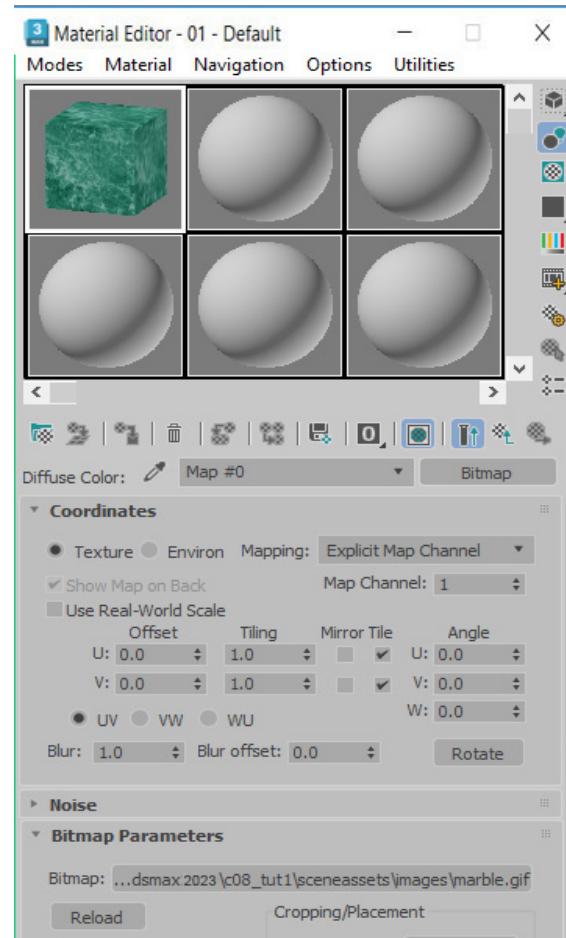


Figure 8-9 The **Coordinates** rollout after modifying the parameters

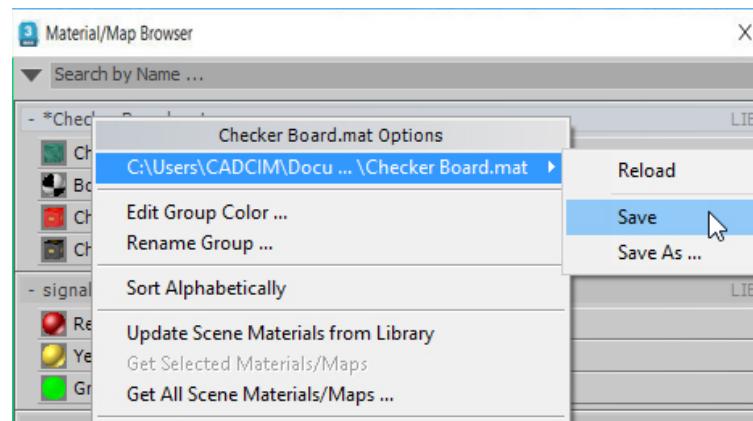


Figure 8-10 Saving the Material Library

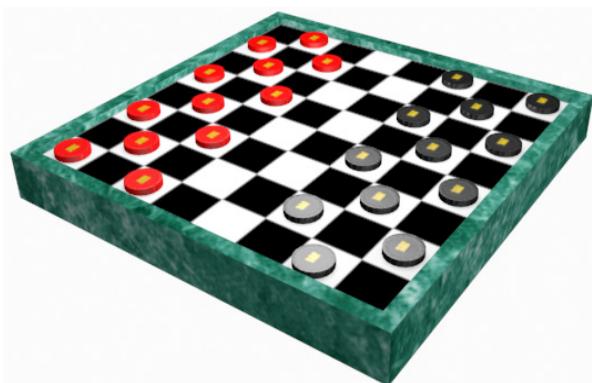


Figure 8-11 The rendered scene after assigning materials



Figure 8-12 Company Logo

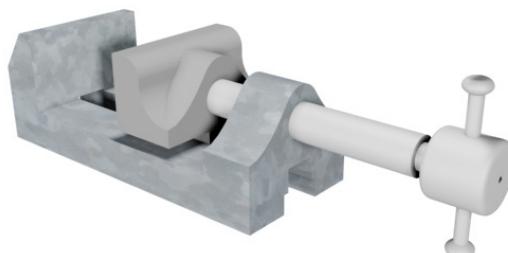


Figure 8-13 The model of a Vise

Chapter 10

Material Editor: Controlling Texture Maps

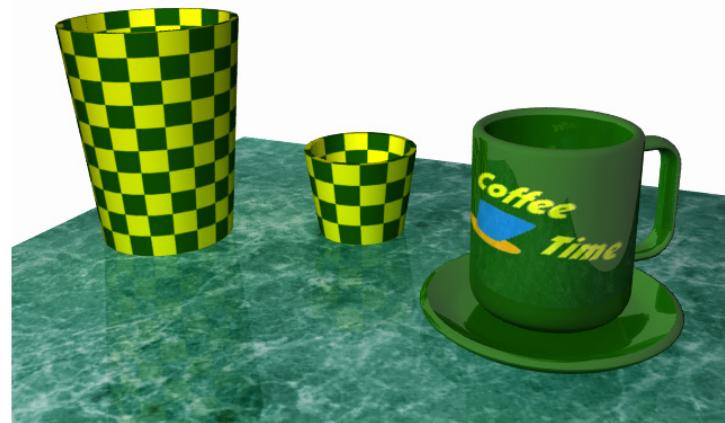




Figure 10-1 The textured scene

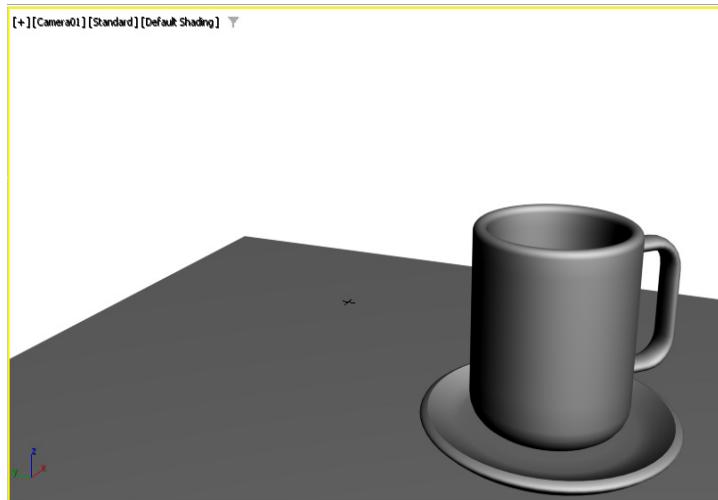


Figure 10-2 The c10_tut1_start file

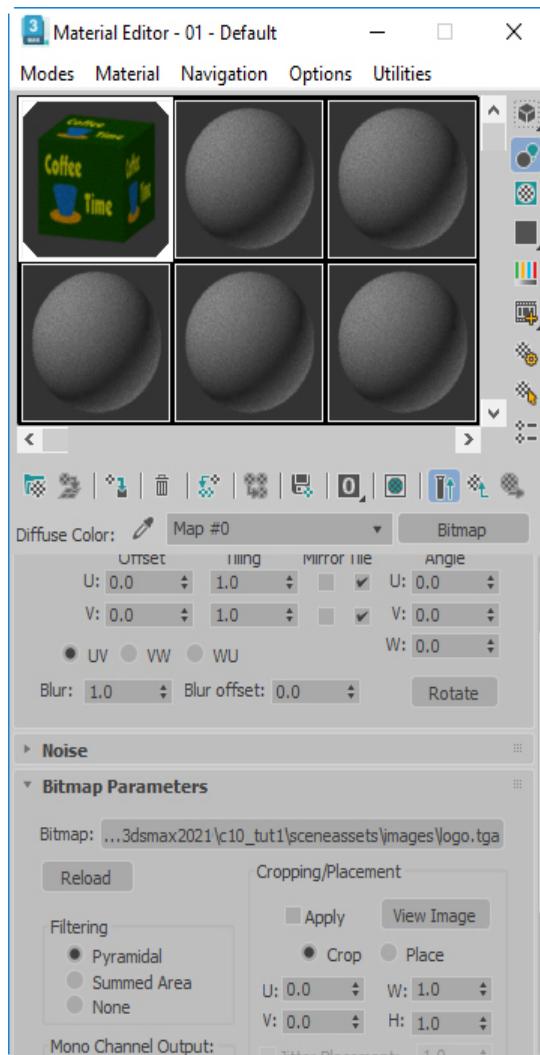


Figure 10-3 The *Coordinates* rollout in the *Material Editor* dialog box

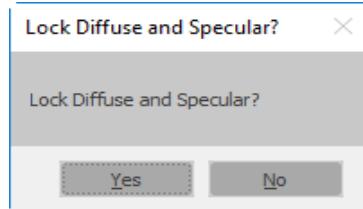


Figure 10-4 The Lock Diffuse and Specular? message box

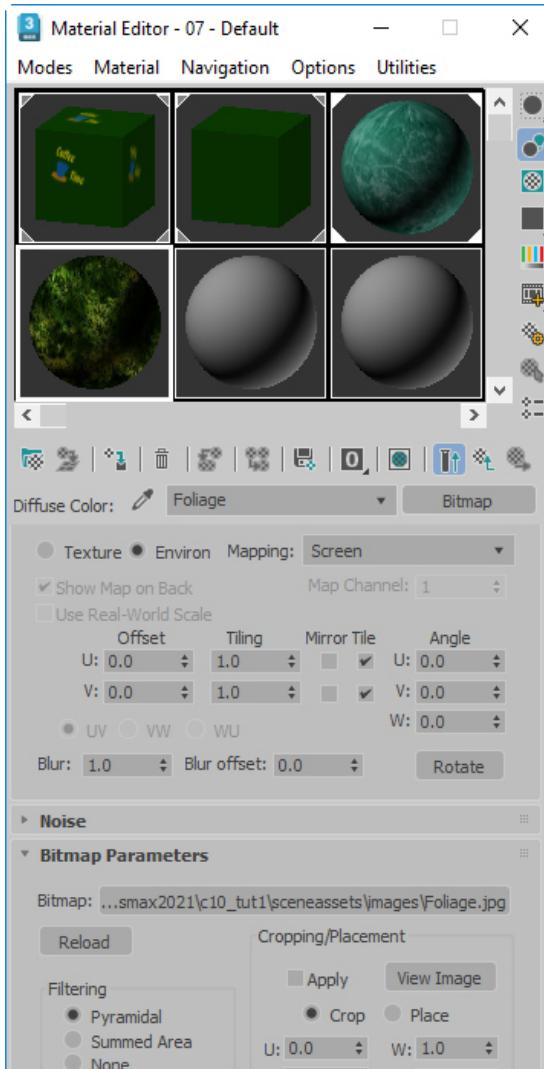


Figure 10-5 The settings displayed in the Coordinates rollout

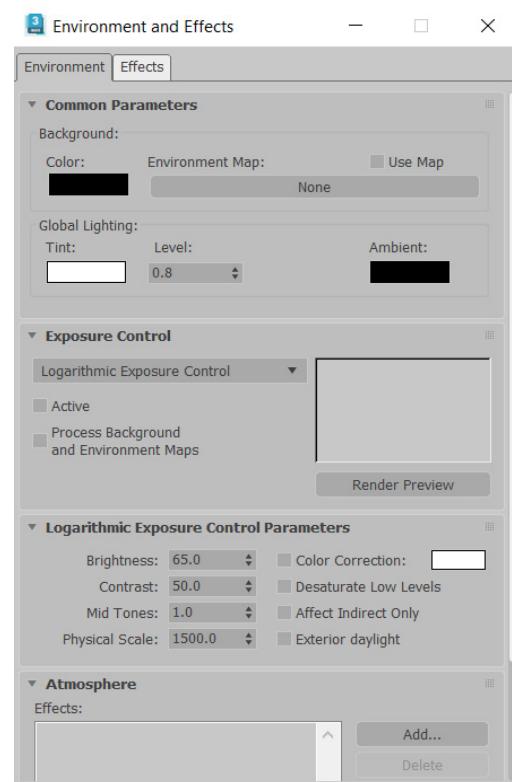


Figure 10-6 The Environment and Effects dialog box

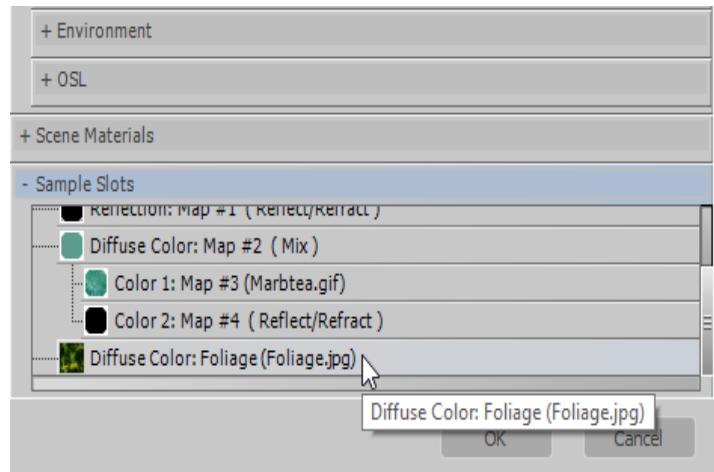


Figure 10-7 Selecting Diffuse Color: Foliage (Foliage.jpg) from the Sample Slots rollout

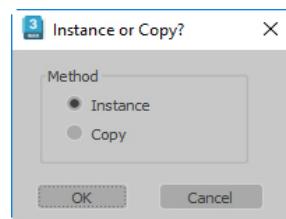


Figure 10-8 The Instance or Copy? dialog box

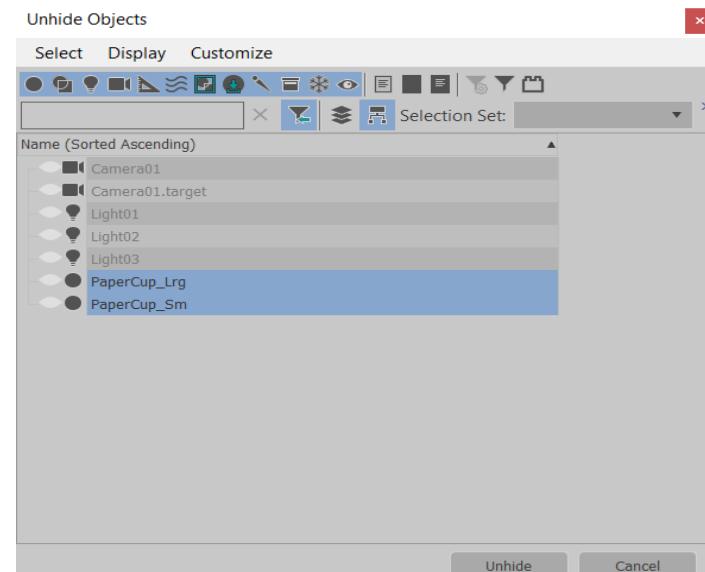


Figure 10-9 Selecting PaperCup_Lrg and PaperCup_Sm in the Unhide Objects dialog box

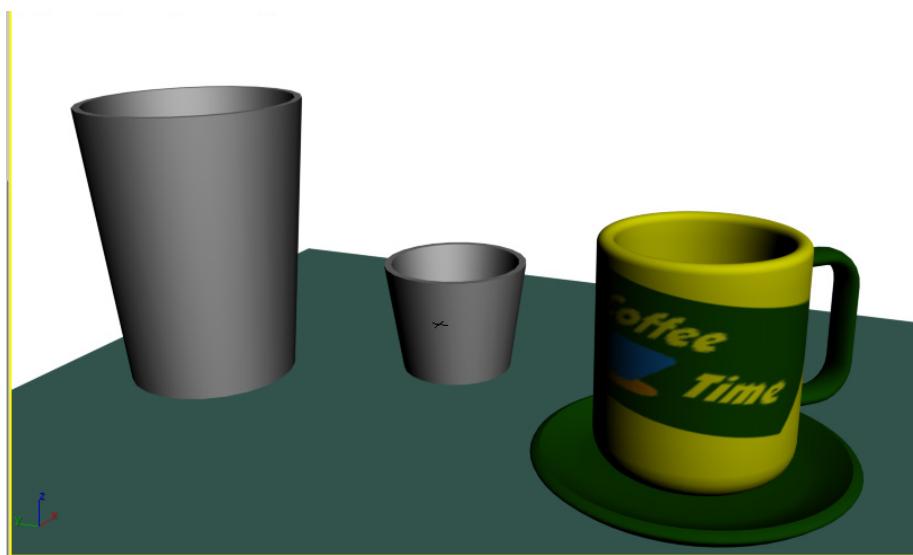


Figure 10-10 *PaperCup_Lrg* and *PaperCup_Sm* displayed in the viewport

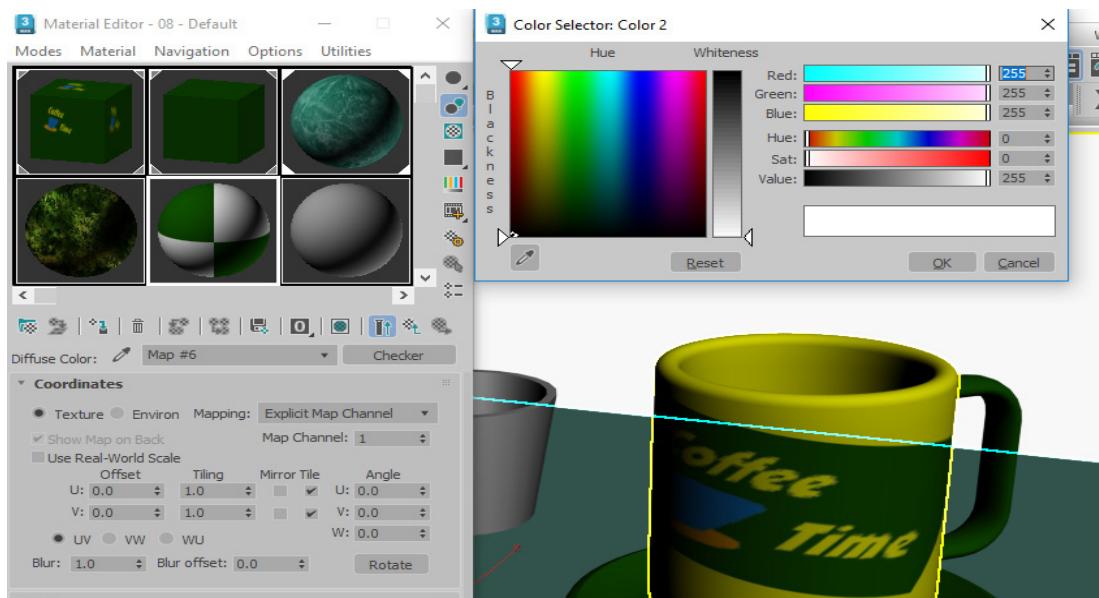


Figure 10-11 The *Color Selector: Color 2* dialog box displayed

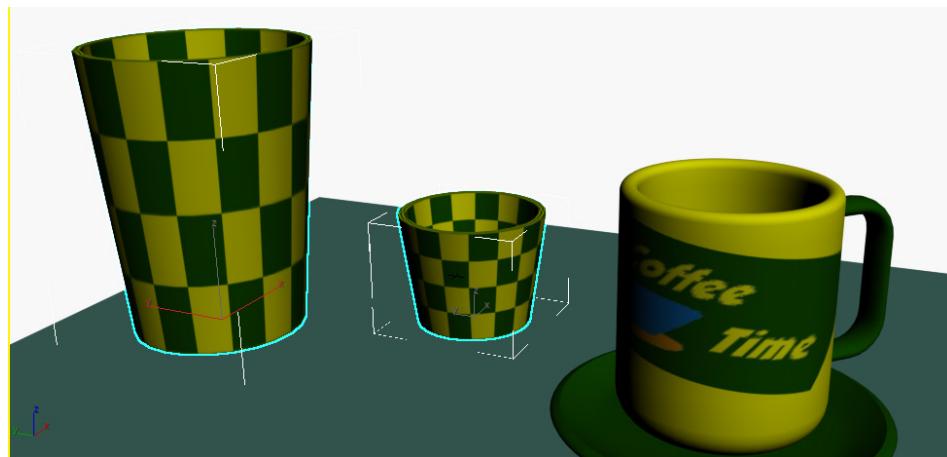


Figure 10-12 The textured material displayed on paper cups

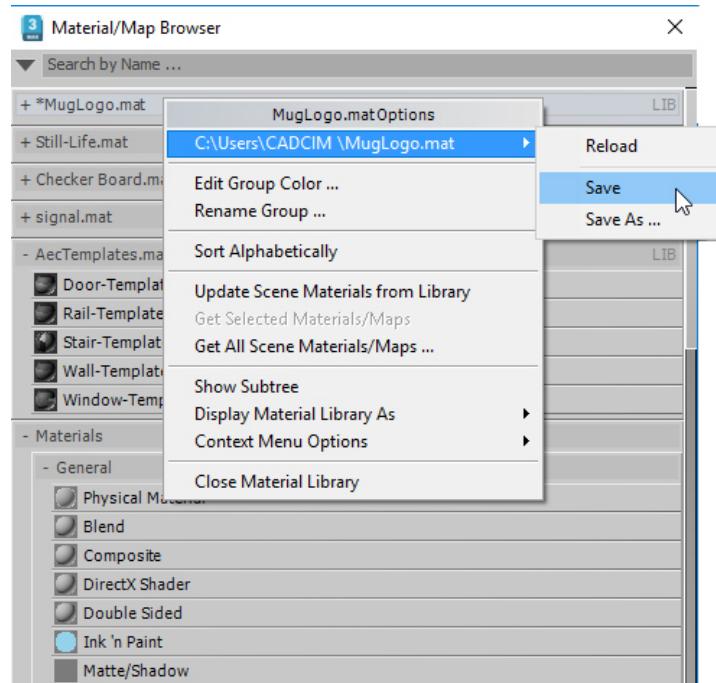


Figure 10-13 Saving the material library



Figure 10-14 The rendered image

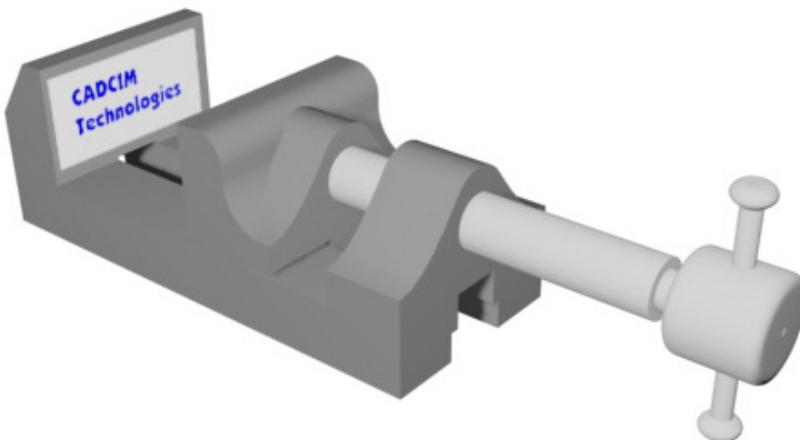


Figure 10-15 Vise with decal material

Chapter 11

Material Editor: Miscellaneous Materials





Figure 11-1 The textured model of the temple



Figure 11-2 The c11_tut1_start.max file

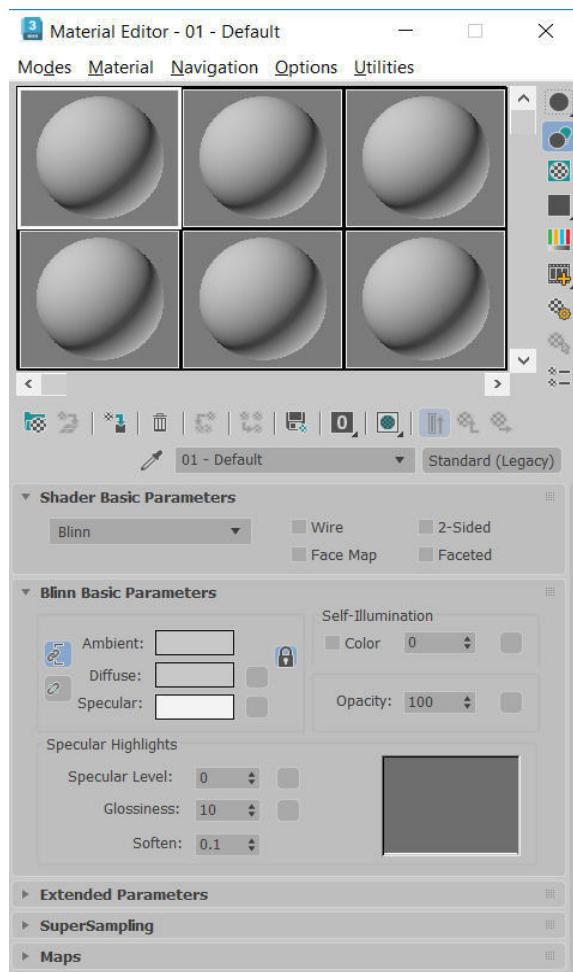


Figure 11-3 The Material Editor dialog box

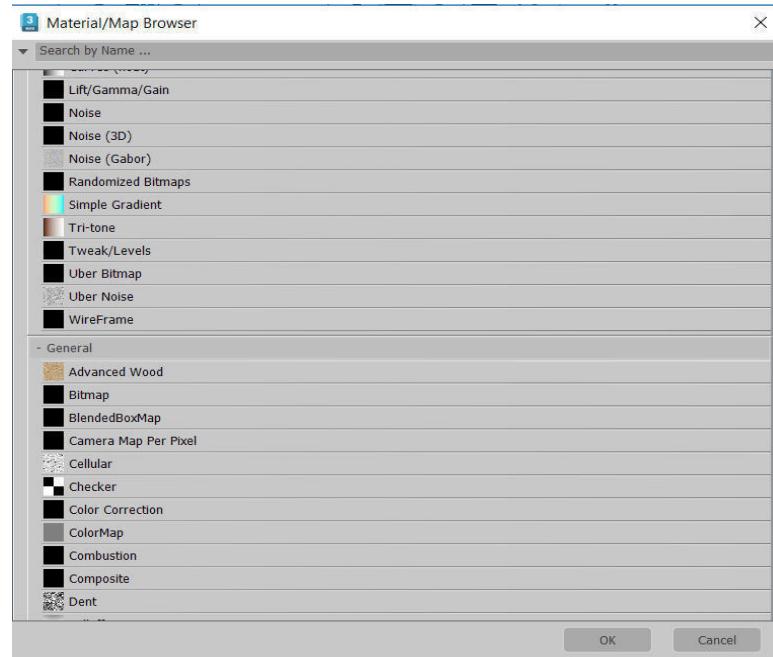


Figure 11-4 The Material/Map Browser dialog box

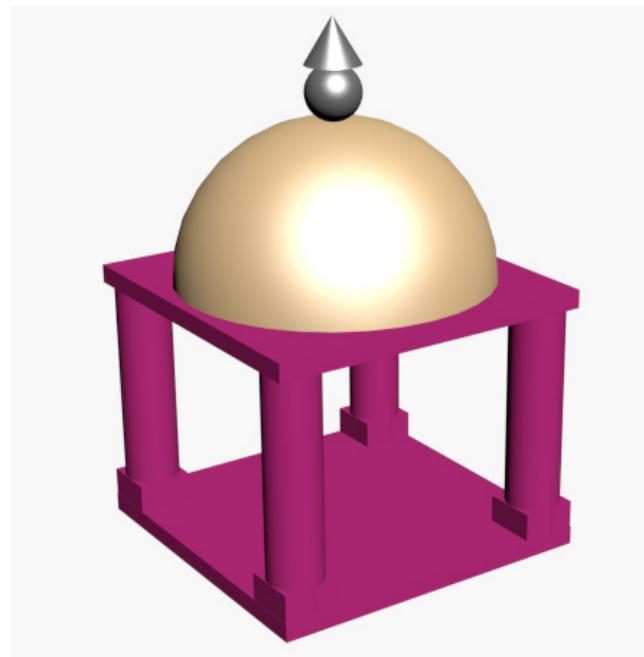


Figure 11-5 The Metal_Dark_Gold material assigned to Dome



Figure 11-6 The rendered image of the temple



Figure 11-7 The textured scene with Air balloon

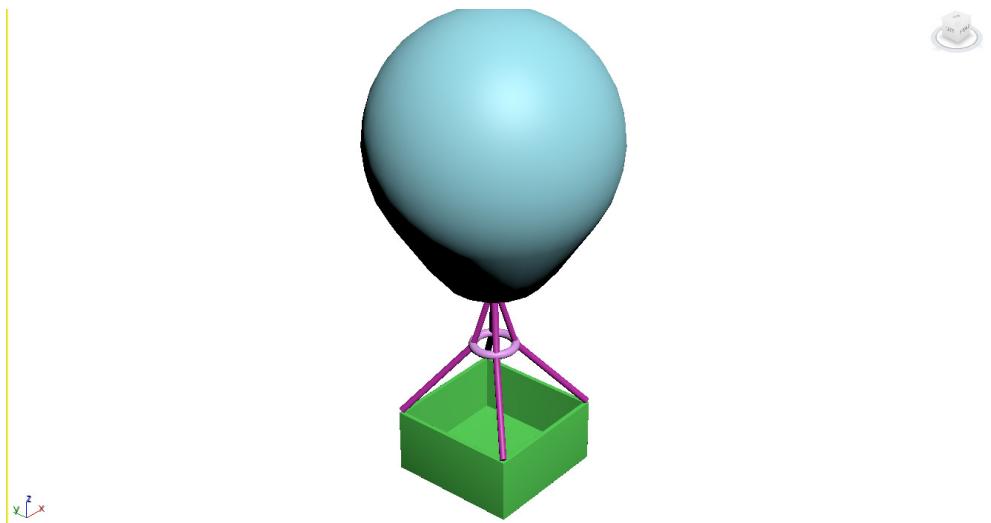


Figure 11-8 The c11_tut2_start.max file

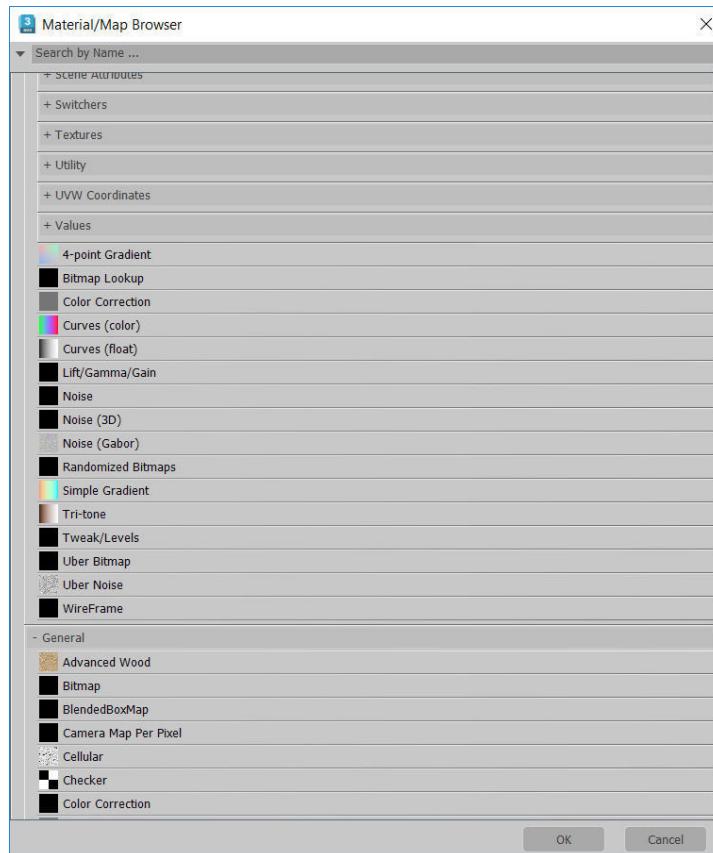


Figure 11-9 The Material/Map Browser dialog box

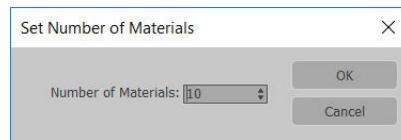


Figure 11-10 The Set Number of Materials dialog box

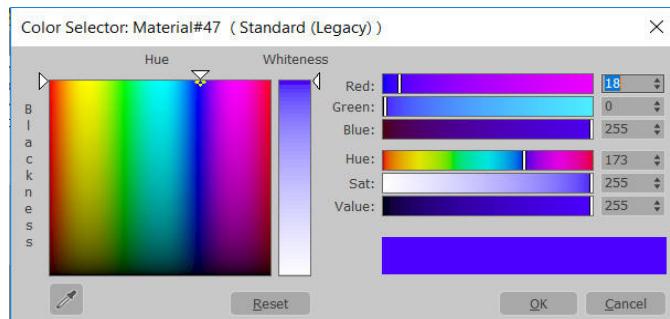


Figure 11-11 Setting the color of the material to blue using the Color Selector dialog box

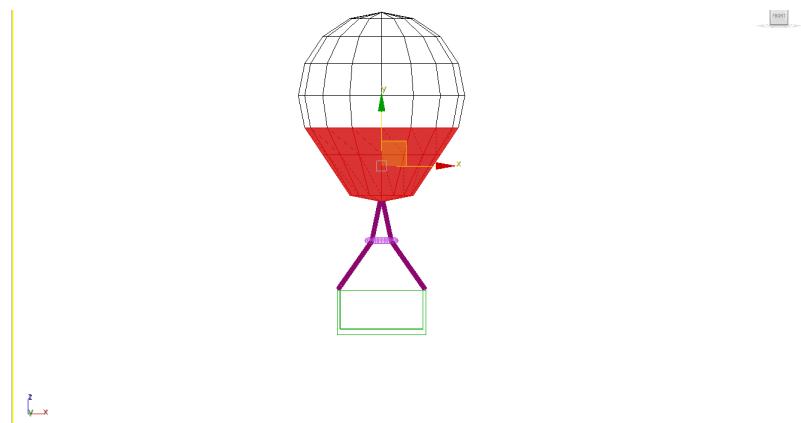


Figure 11-12 Selecting faces of bottom three rows

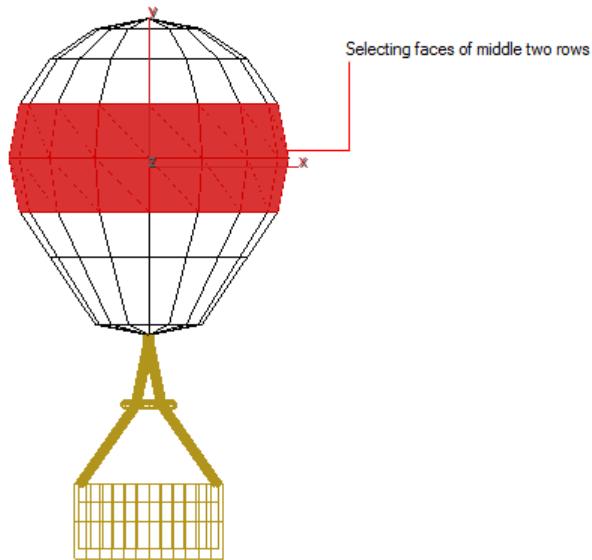


Figure 11-13 Selecting faces of middle two rows

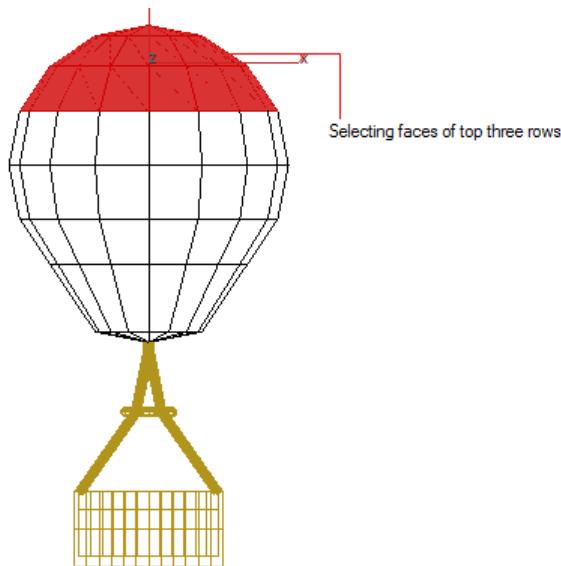


Figure 11-14 Selecting faces of top three rows

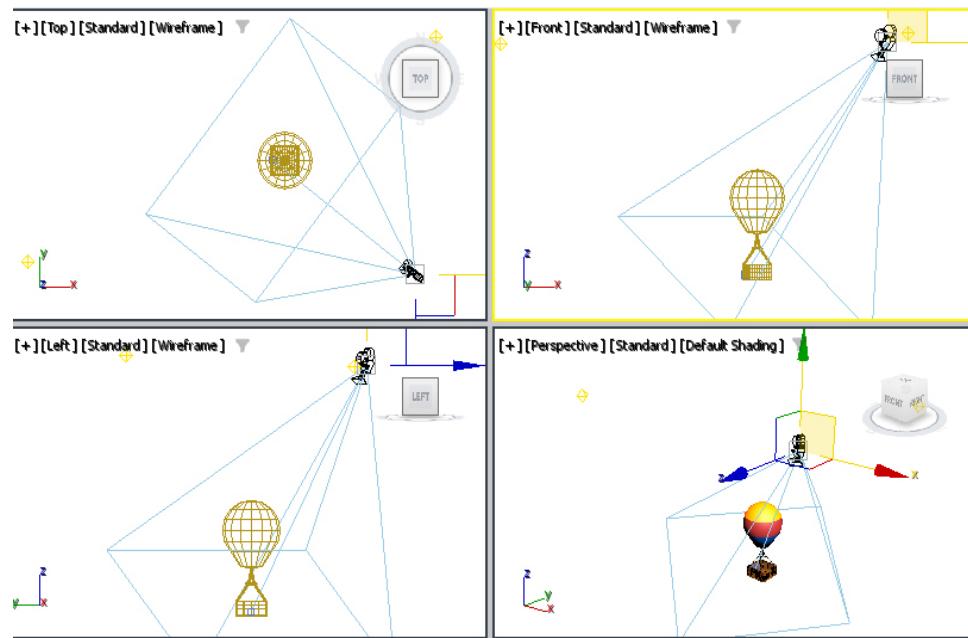


Figure 11-15 The camera placed and positioned in the Front viewport

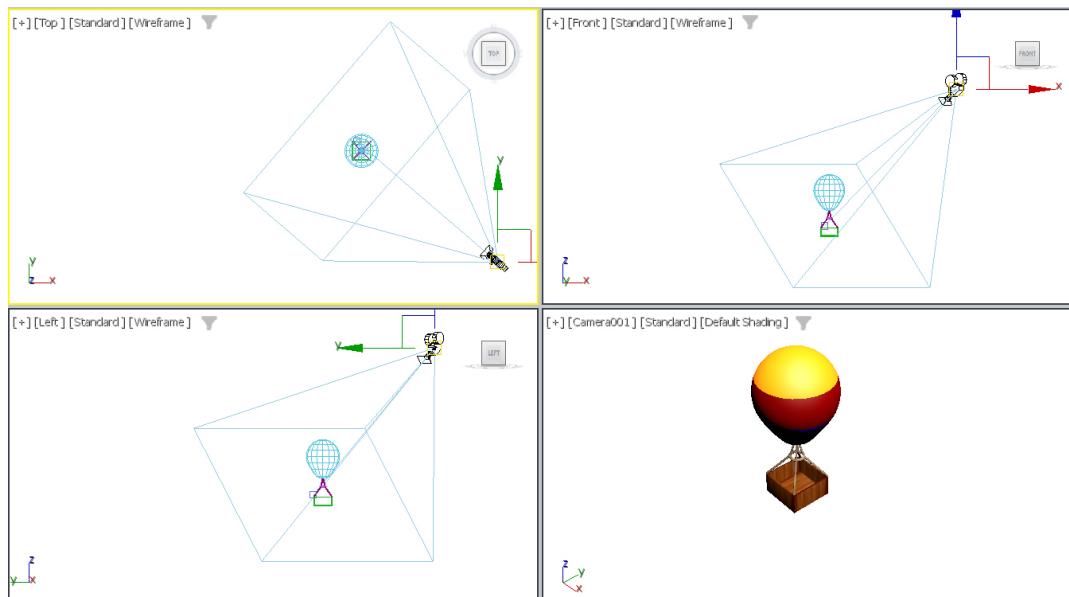


Figure 11-16 The view adjusted using the **Field-of-View** tool

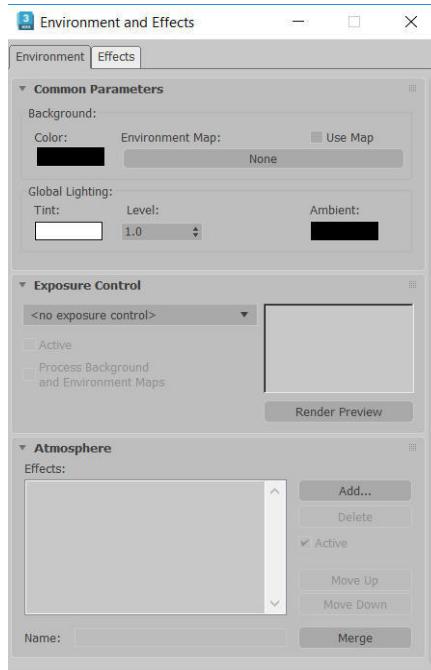


Figure 11-17 The **Environment and Effects** dialog box

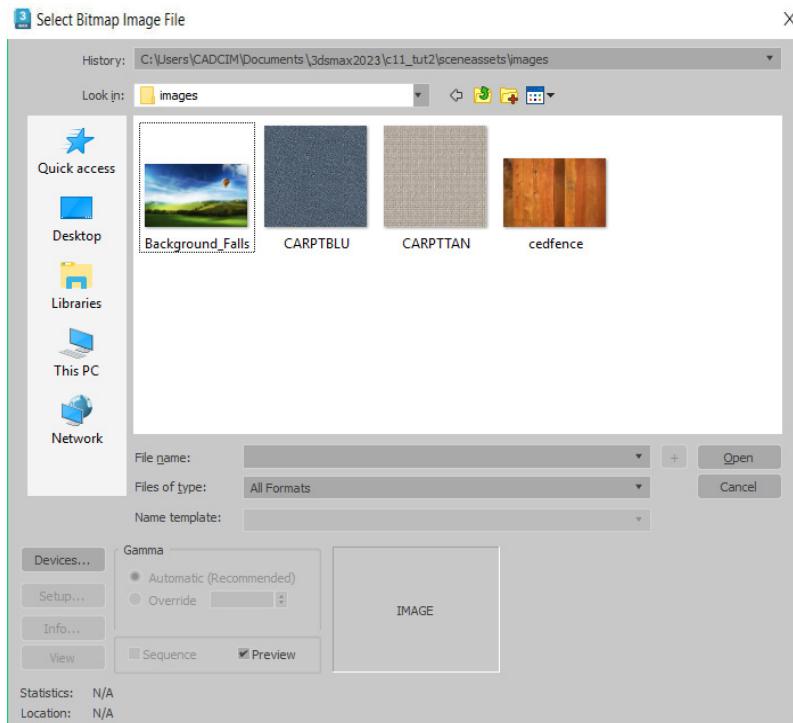


Figure 11-18 The **Select Bitmap Image File** dialog box



Figure 11-19 The rendered scene

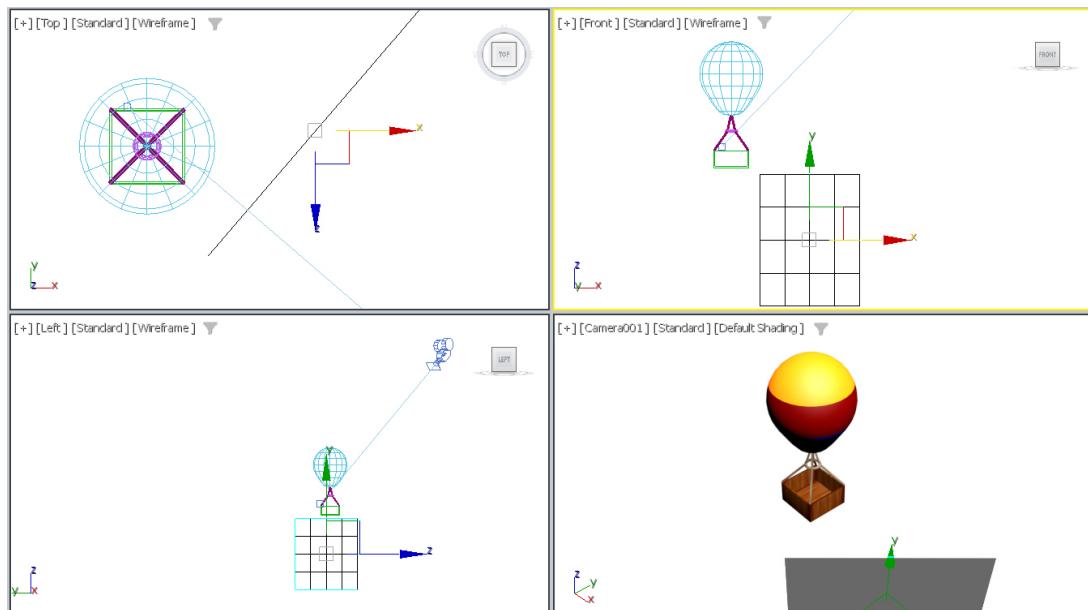


Figure 11-20 Plane001 aligned in all the viewports

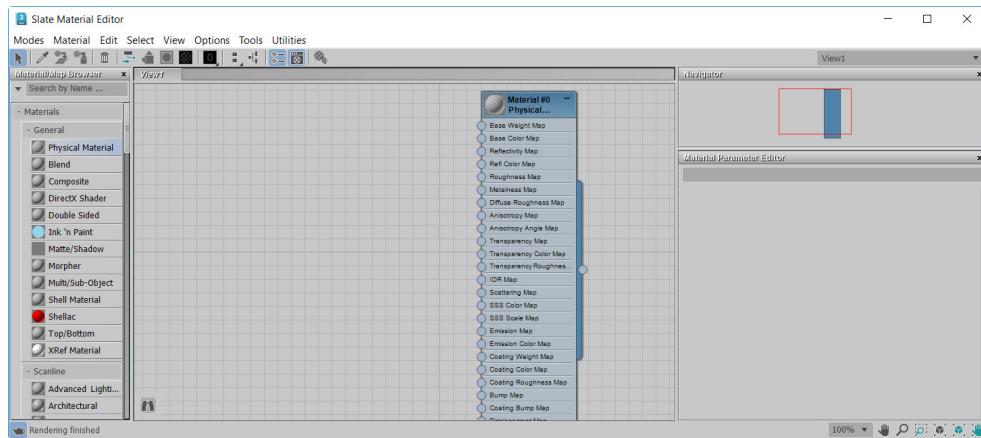


Figure 11-21 Physical Material dragged to the View1 area

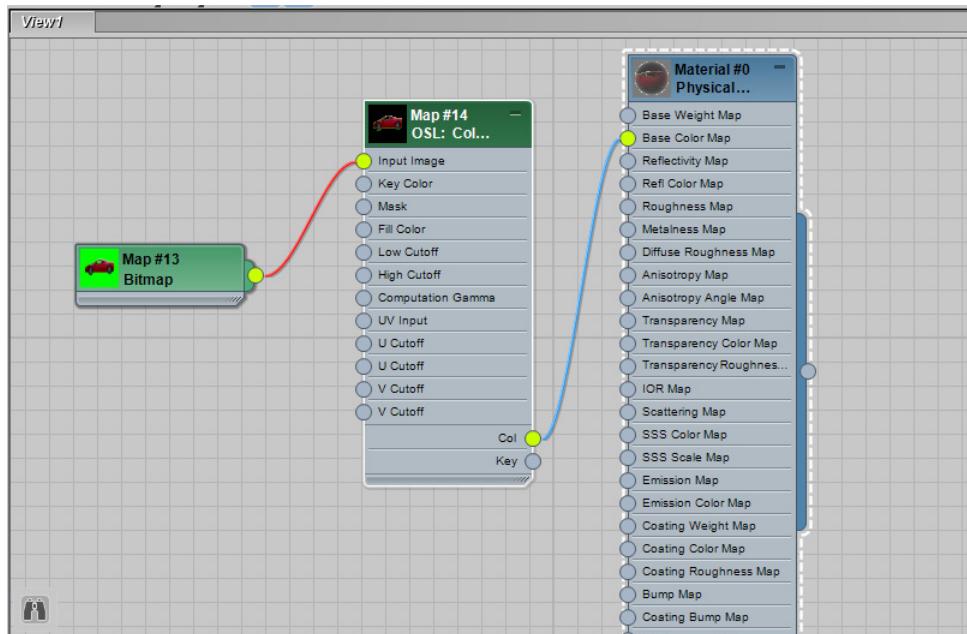


Figure 11-22 Connection between the **Bitmap**, **OSL: Color Key**, and **Physical Material** nodes



Figure 11-23 The rendered image



Figure 11-24 The rendered image displayed after connecting the **OSL: Color Key** node to the **Physical Material** node



Figure 11-25 The model of the table

Chapter 12

Interior Lighting-I





Figure 12-1 The illuminated night interior scene



Figure 12-2 The c12_tut1_start.max file

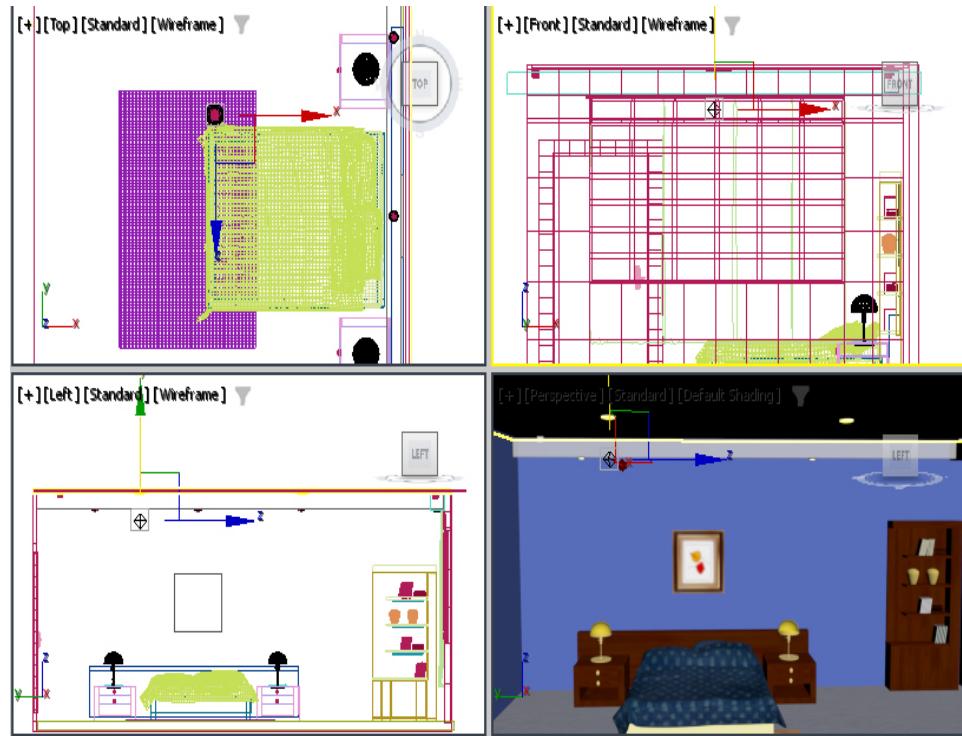


Figure 12-3 Omni001 aligned in all viewports

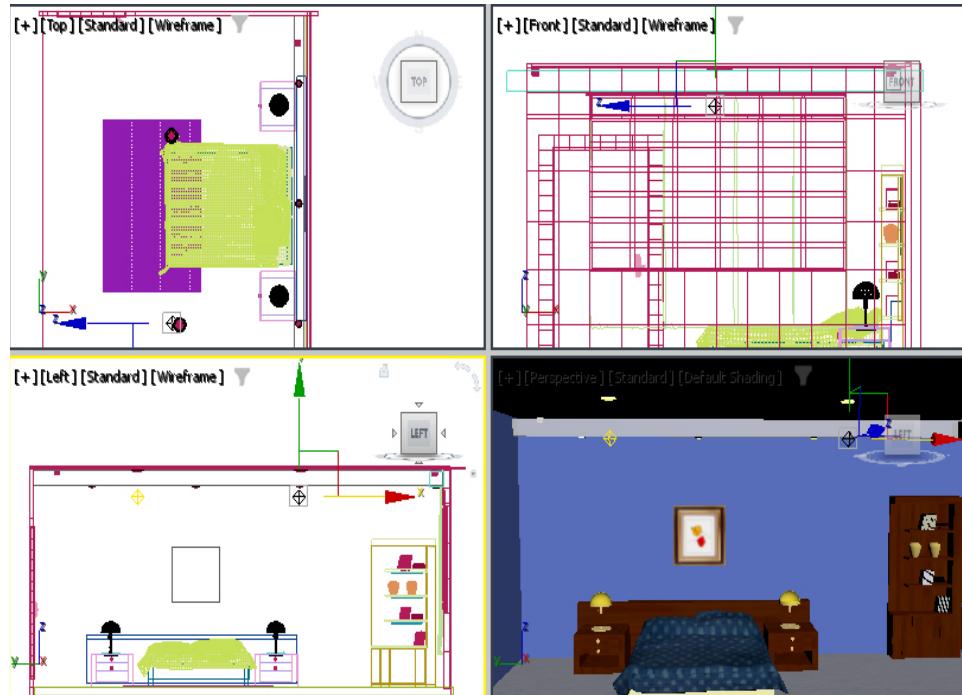


Figure 12-4 The copy of roof light1 aligned in all viewports



Figure 12-5 The rendered image

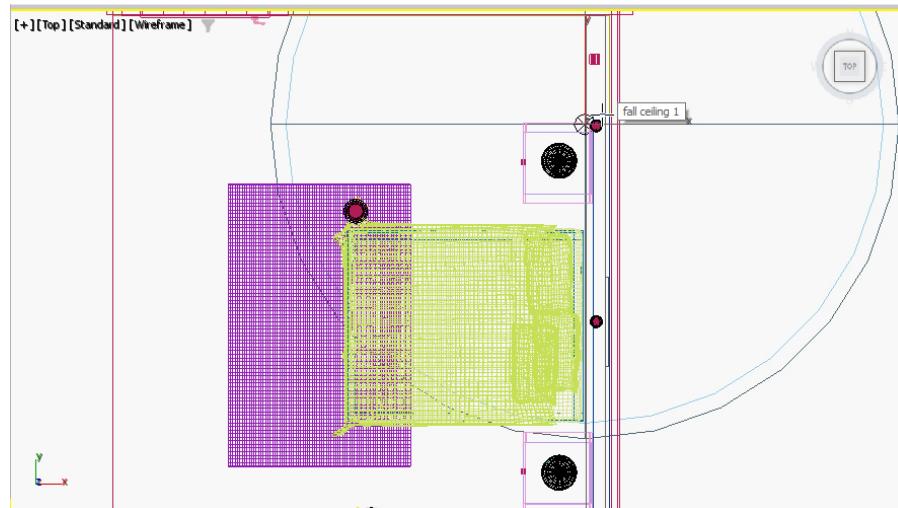


Figure 12-6 The spot light created

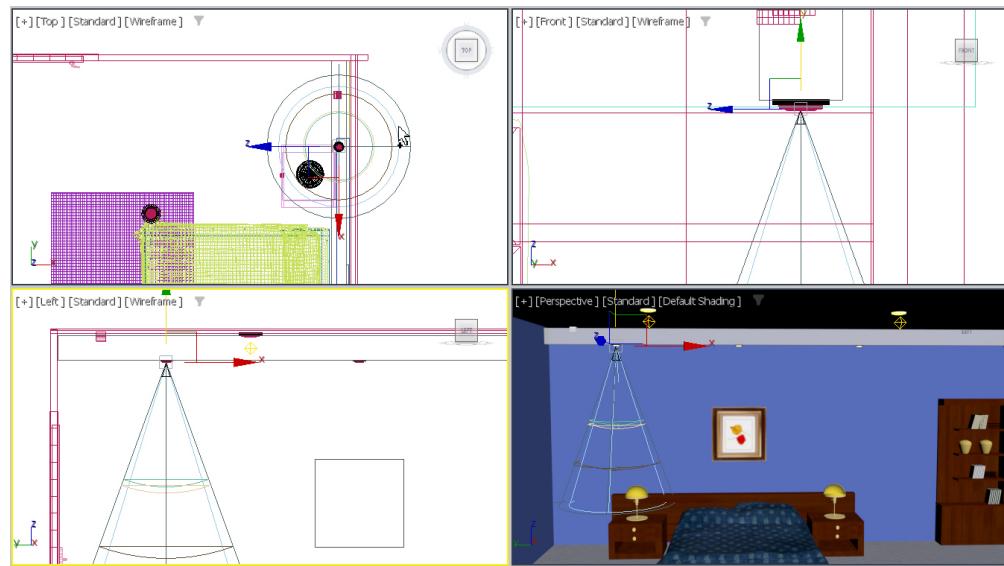


Figure 12-7 The spot light aligned



Figure 12-8 The rendered image

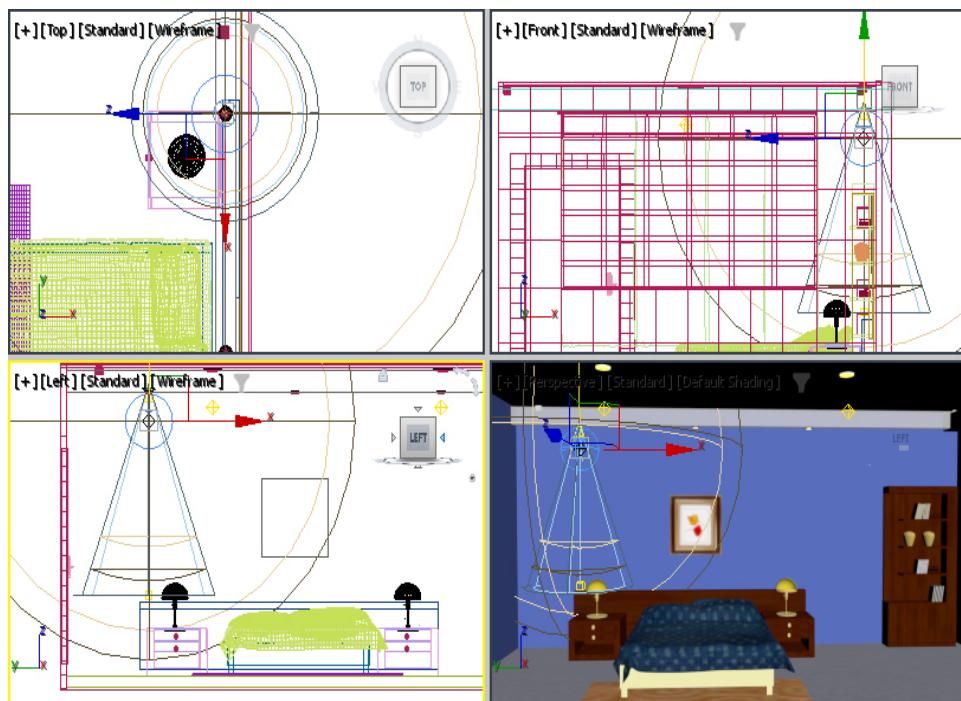


Figure 12-9 The glow light 1 aligned



Figure 12-10 The rendered image

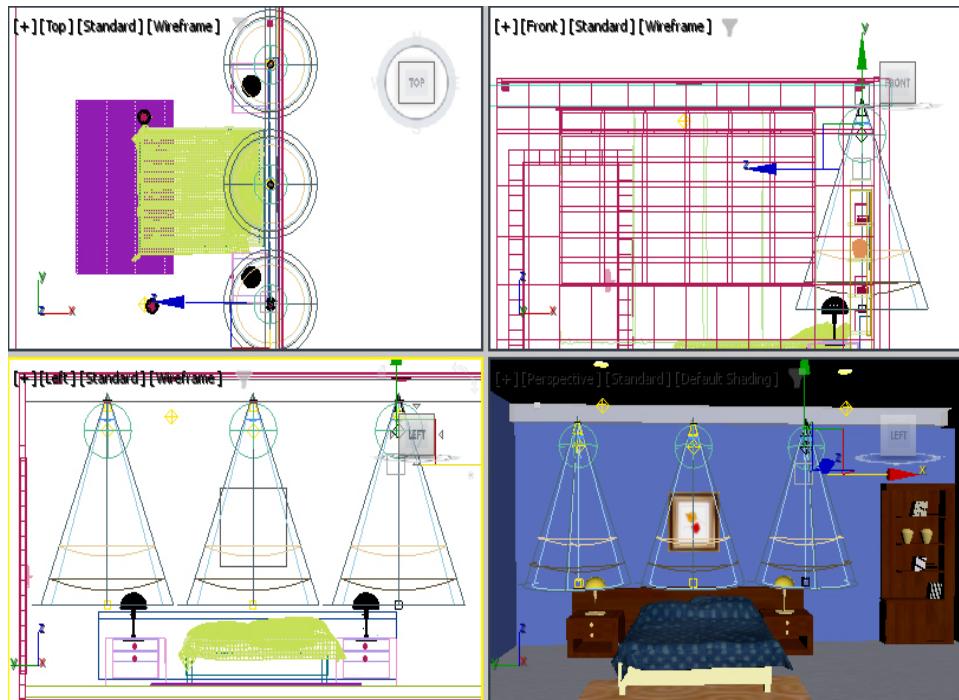


Figure 12-11 The copies of spot light 1 and glow light 1 created



Figure 12-12 The rendered image

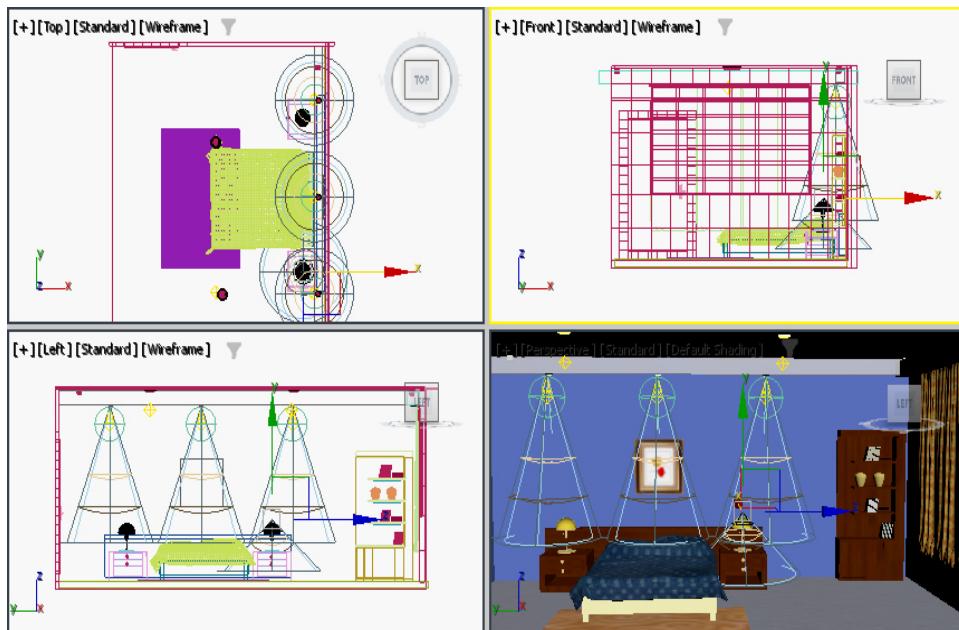


Figure 12-13 The lamp light 1 aligned in all viewports



Figure 12-14 The rendered image



Figure 12-15 The rendered image

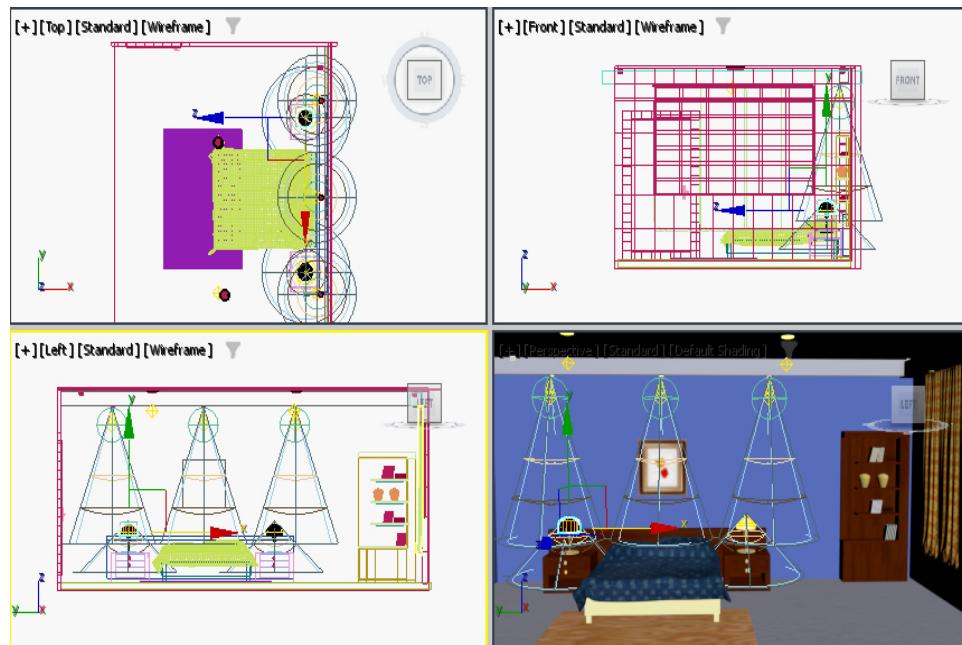


Figure 12-16 The copy of lamp light 1 aligned



Figure 12-17 The rendered image



Figure 12-18 The daylight interior scene

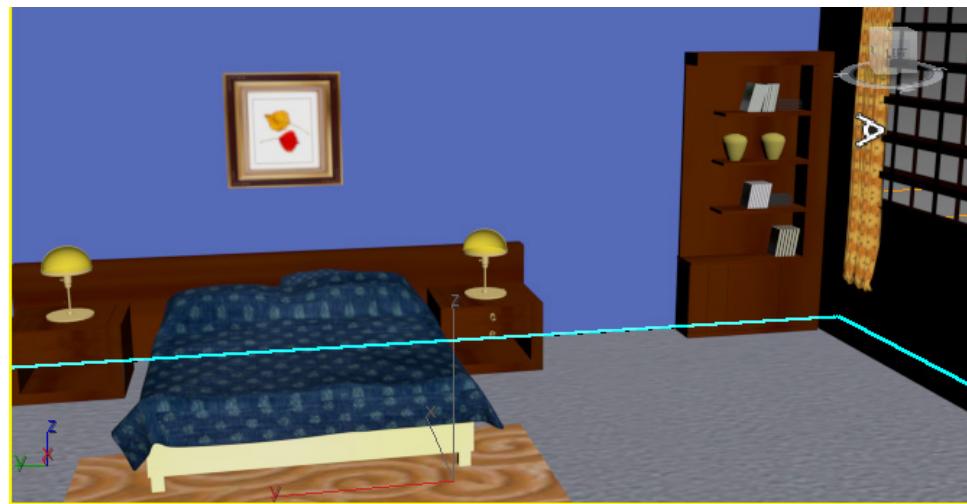


Figure 12-19 The c12_tut2_start file

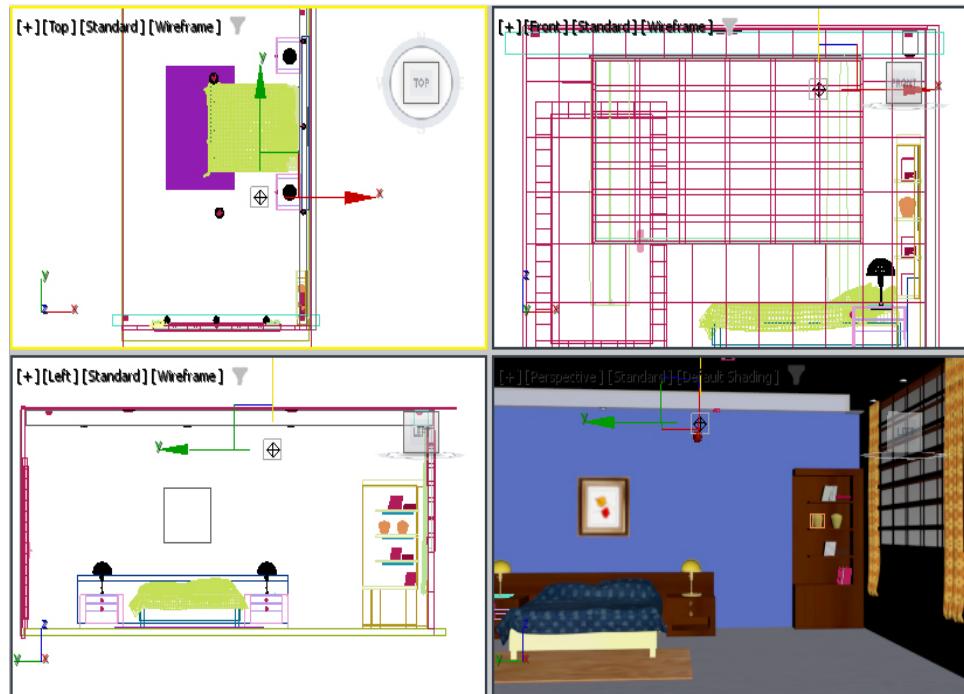


Figure 12-20 The omni 001 light aligned in all viewports

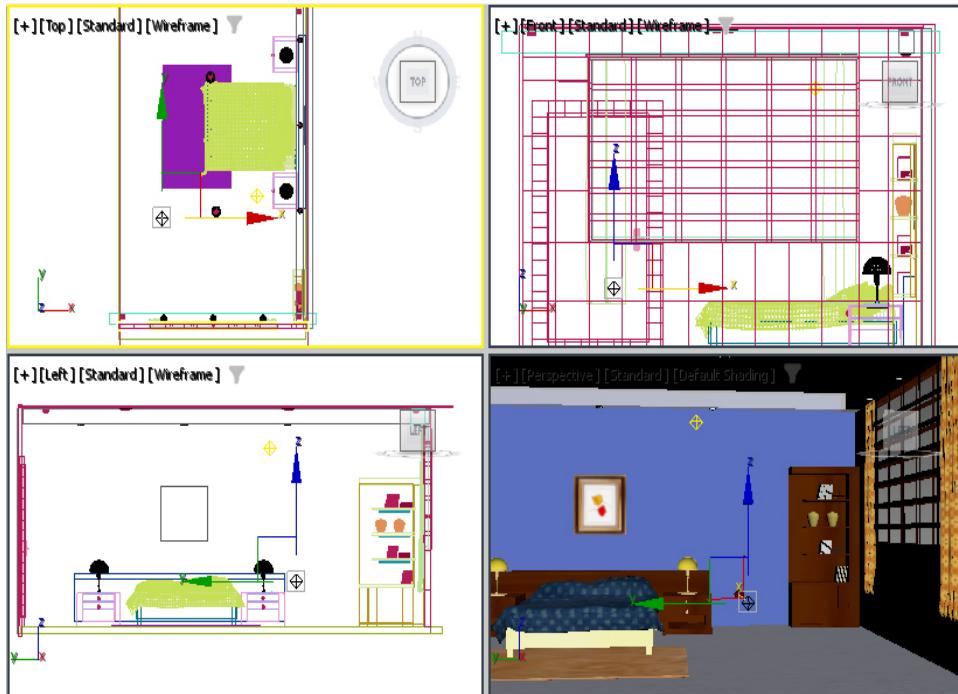


Figure 12-21 The Omni 002 aligned

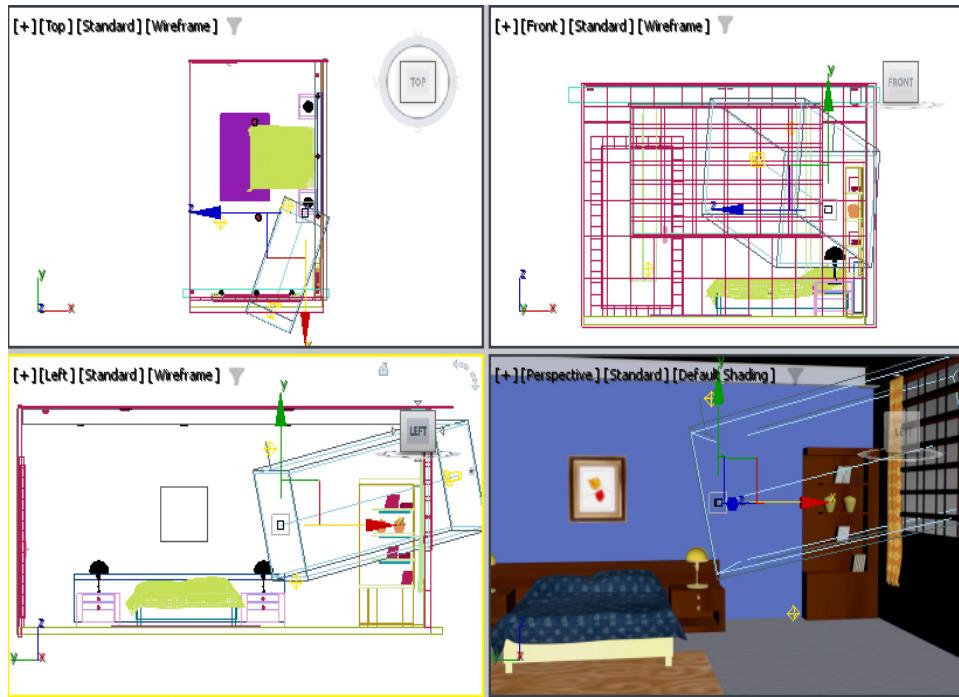


Figure 12-22 The Direct 001, Direct 001.Target aligned



Figure 12-23 The rendered image



Figure 12-24 The illuminated scene

Chapter 13

Interior Lighting-II





Figure 13-1 The illuminated night interior scene



Figure 13-2 The c13 tut1 start.max file

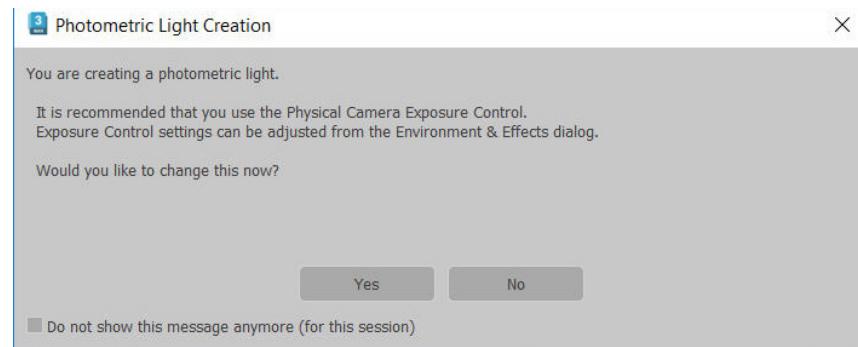


Figure 13-3 The Photometric Light Creation message box

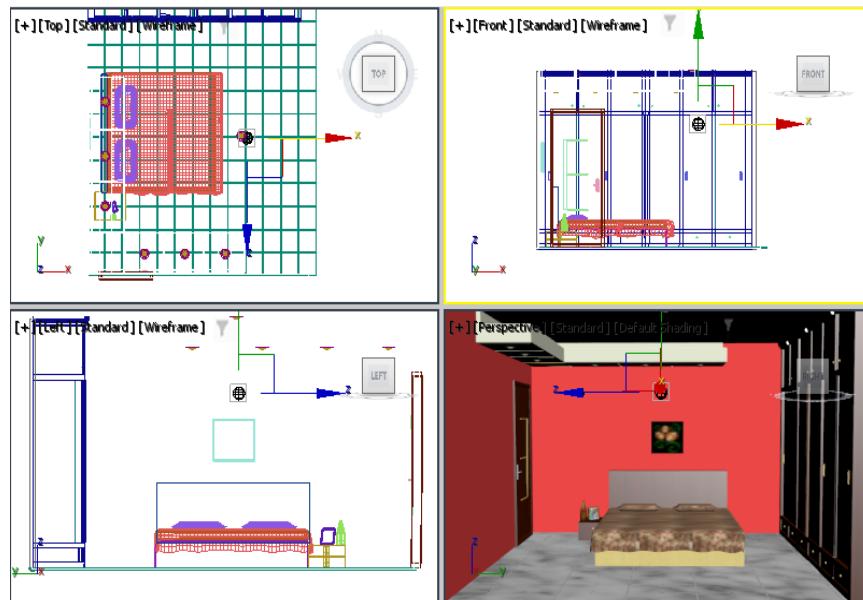


Figure 13-4 The rooflight1 aligned in all viewports

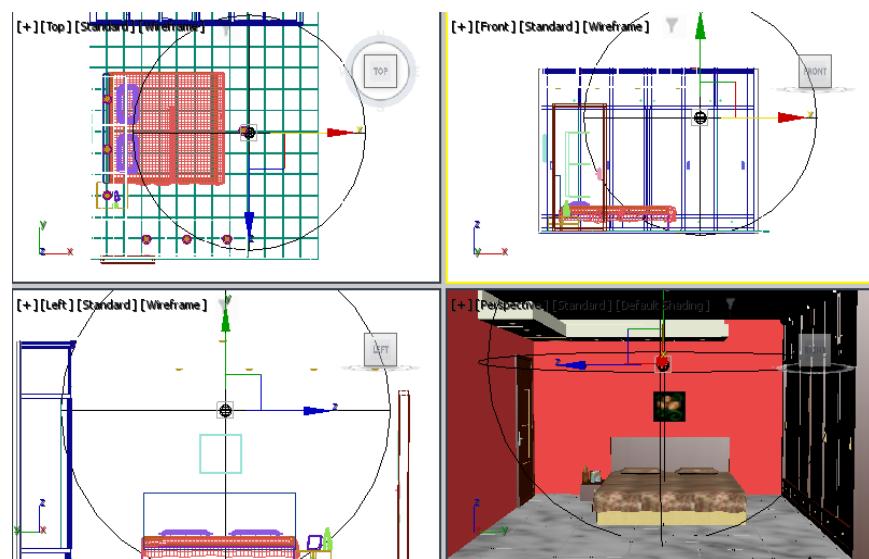


Figure 13-5 The shape of rooflight1 changed



Figure 13-6 The rendered image with grains



Figure 13-7 The rendered image without grains

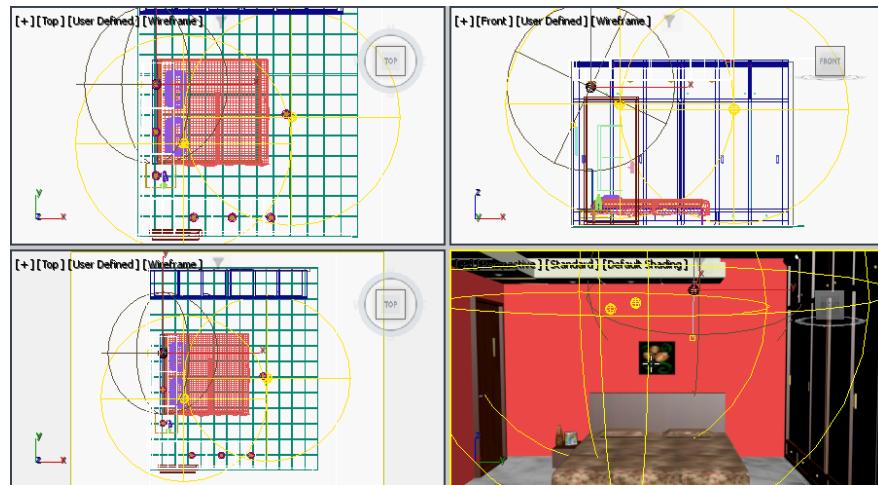


Figure 13-8 The spot light1 and spot light1.Target aligned in all viewports

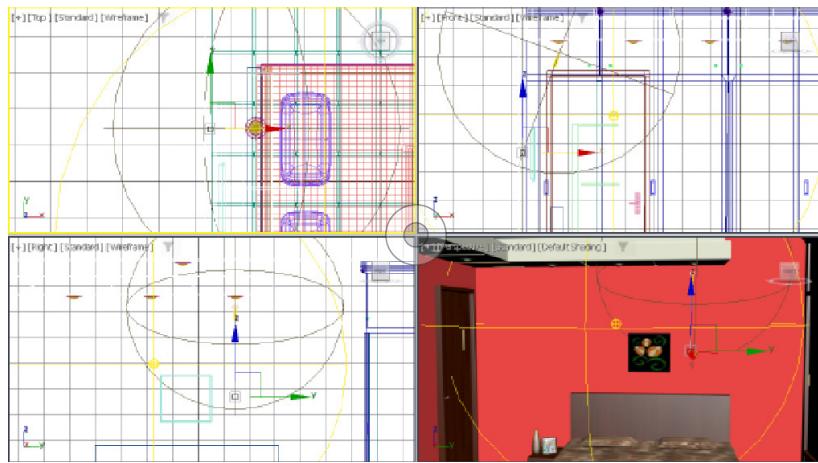


Figure 13-9 The spot light1.Target moved



Figure 13-10 The rendered image



Figure 13-11 The rendered image

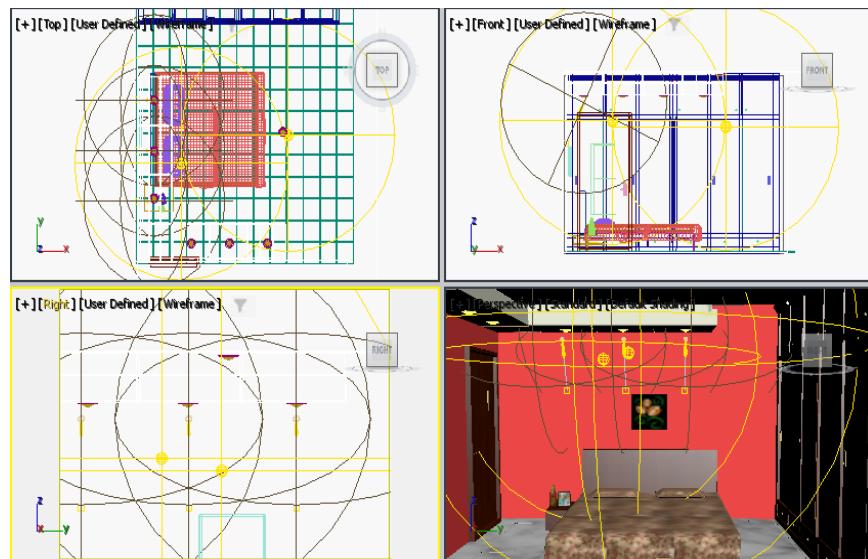


Figure 13-12 Copies of spot light1 and spot light1.Target aligned in all viewports



Figure 13-13 The rendered image



Figure 13-14 The scene with false ceiling lights



Figure 13-15 The c13_tut2_start.max file

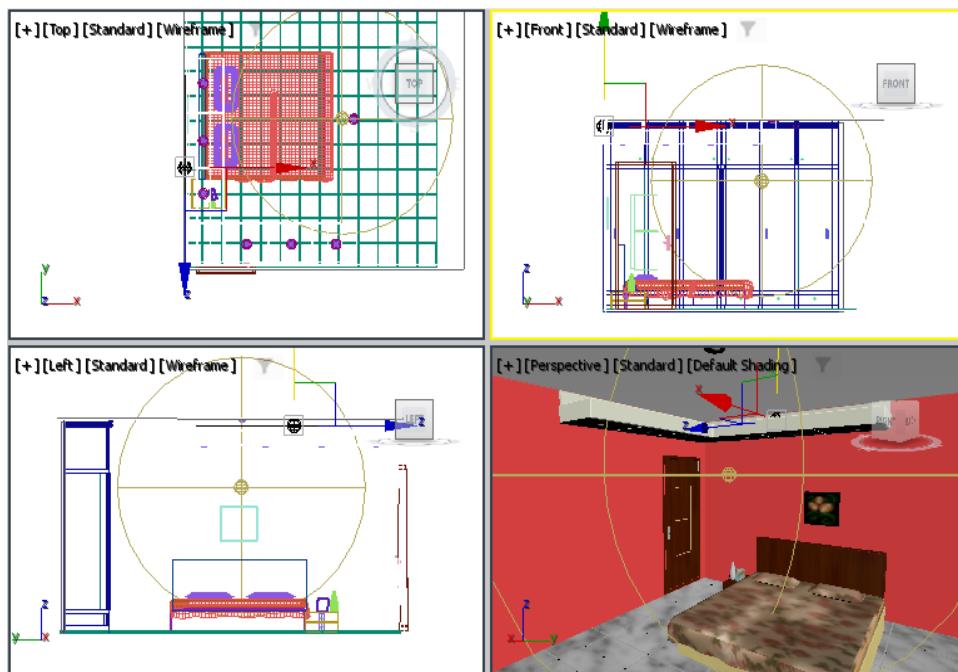


Figure 13-16 The fceilinglight1 aligned in all viewports



Figure 13-17 The rendered image

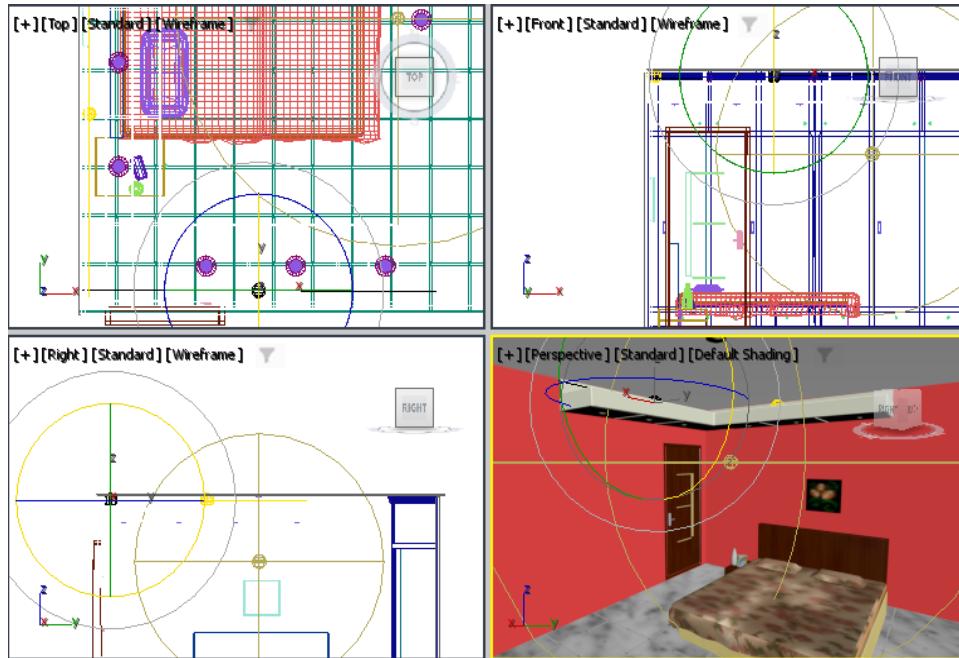


Figure 13-18 The ceilinglight002 aligned in all viewports



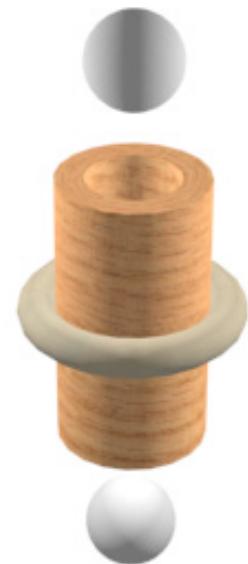
Figure 13-19 The rendered image



Figure 13-20 The illuminated scene

Chapter 14

Animation Basics



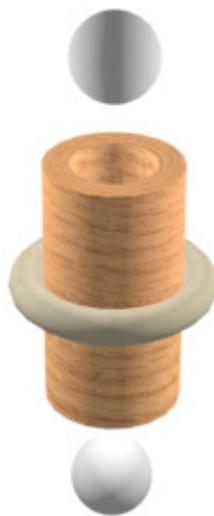


Figure 14-1 Animated scene at frame 12

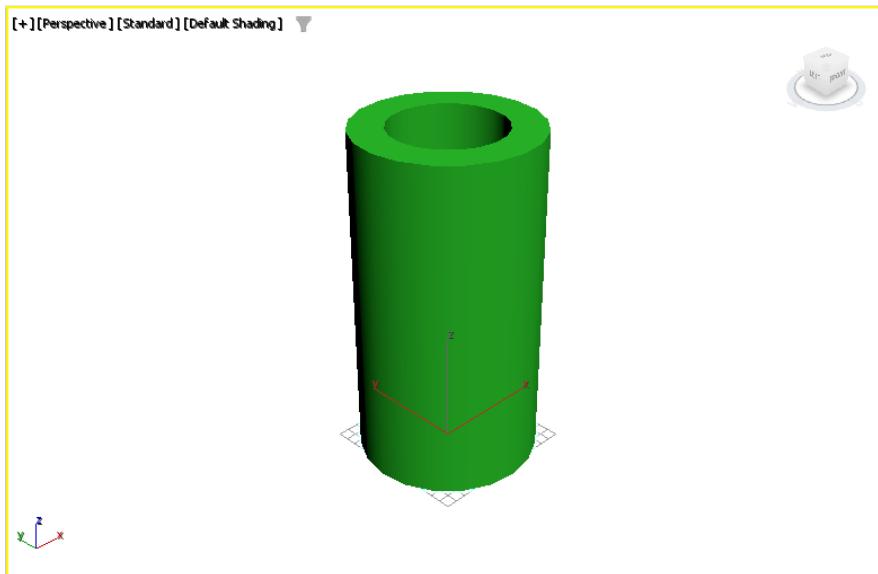


Figure 14-2 The Shaft zoomed

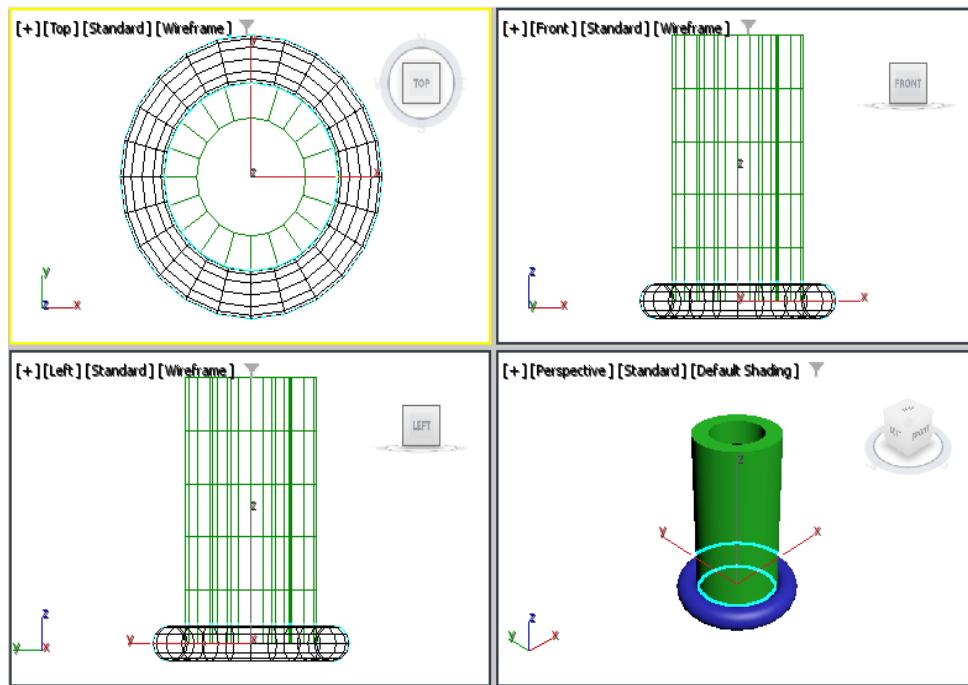


Figure 14-3 The objects zoomed to their extents

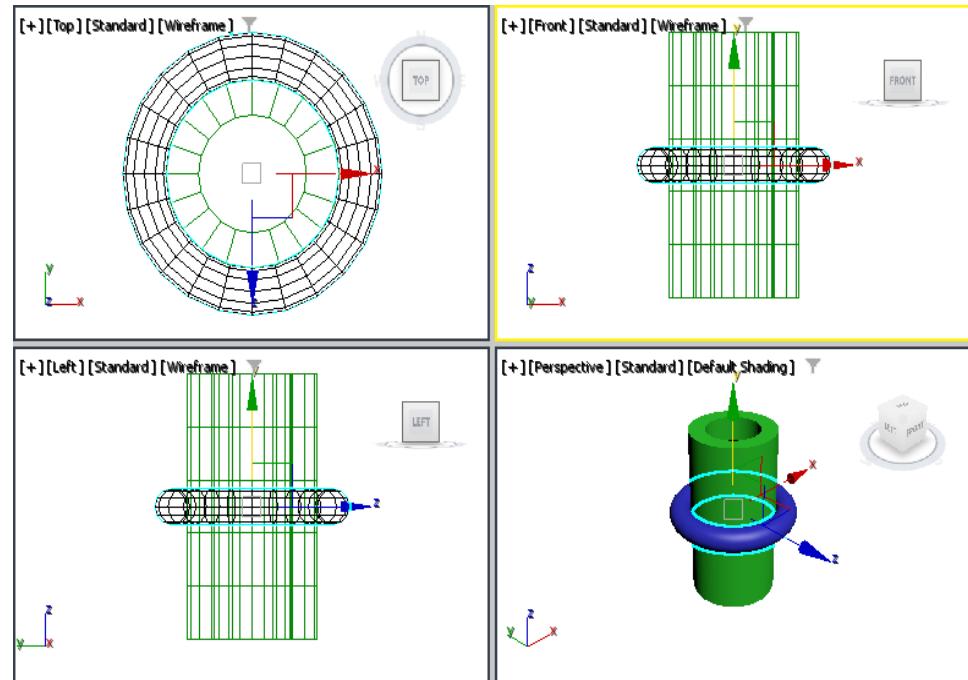


Figure 14-4 Bearing placed near the middle of Shaft

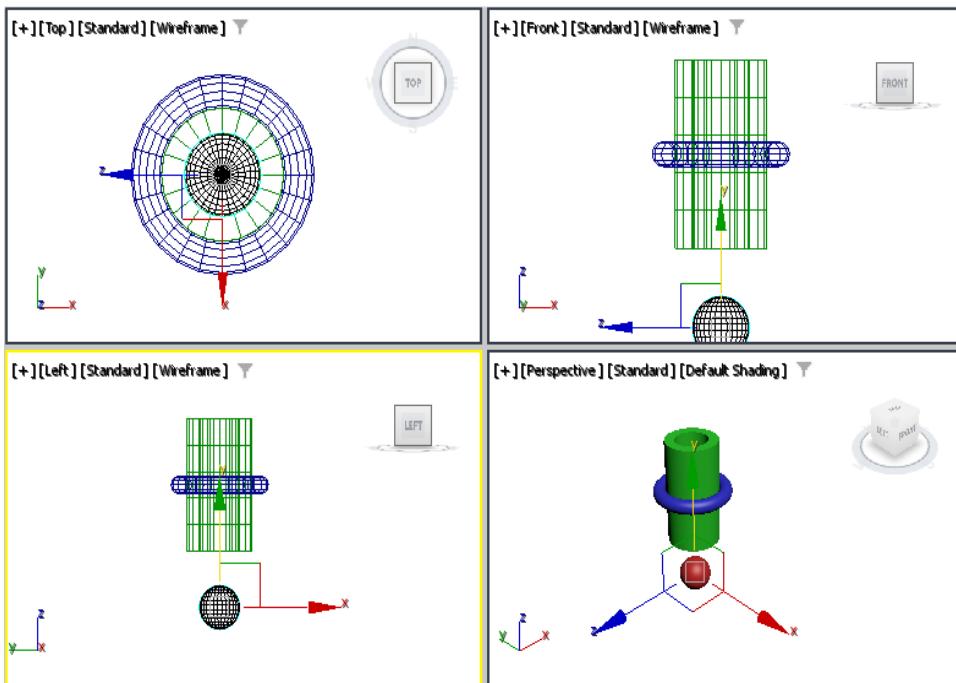


Figure 14-5 Ball01 created and moved down along the Y axis

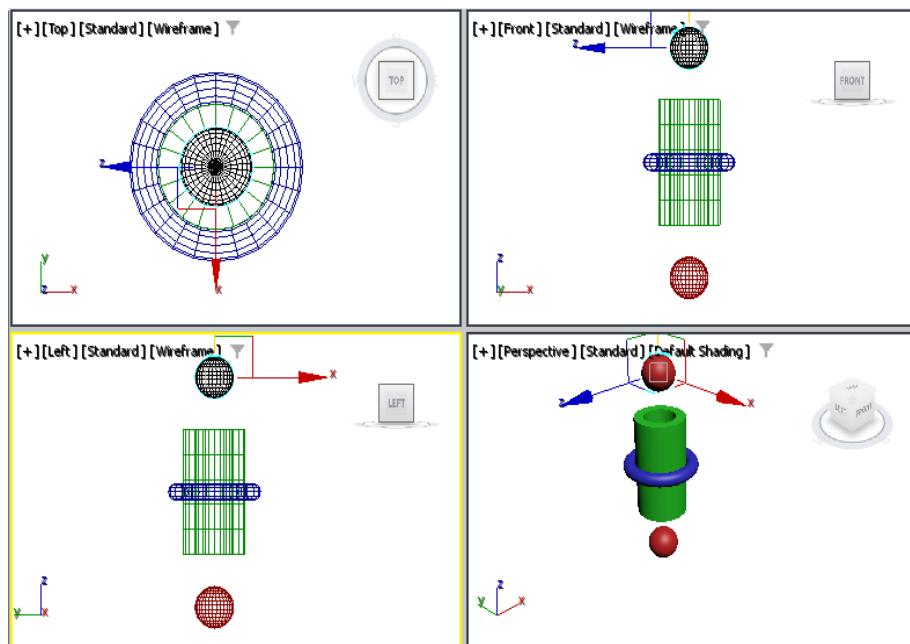


Figure 14-6 Ball02 created above Shaft

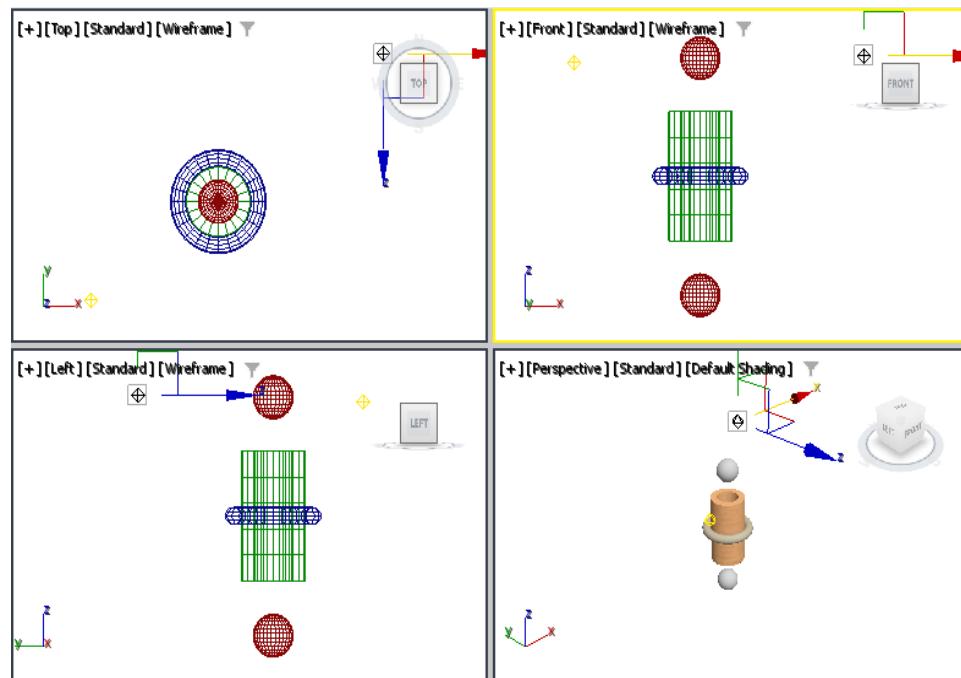


Figure 14-7 The two omni lights displayed in all viewports

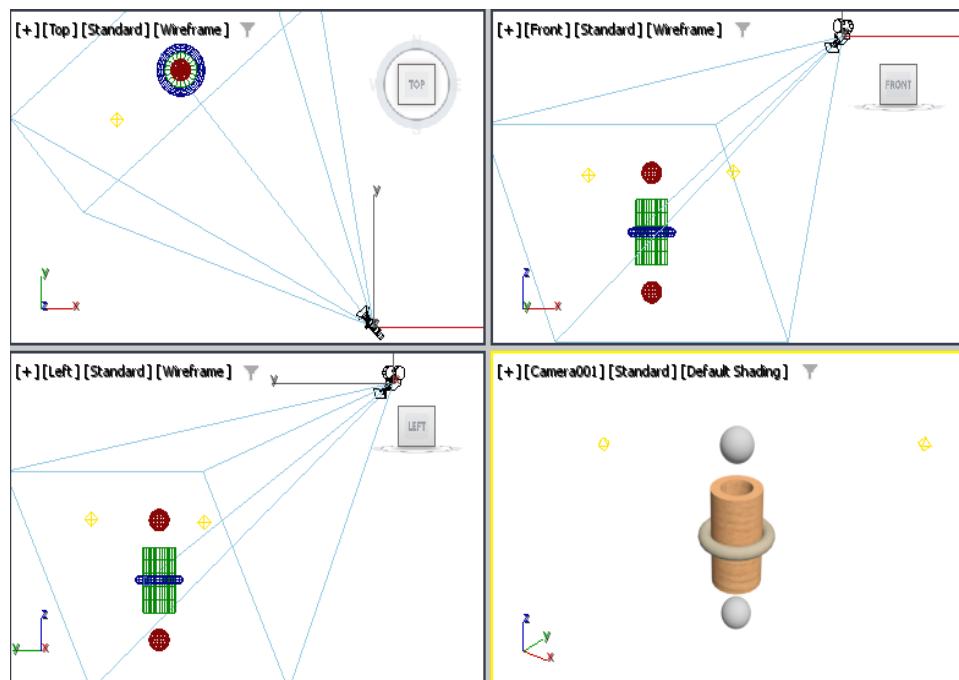


Figure 14-8 Placing the objects at the center of the Camera viewport

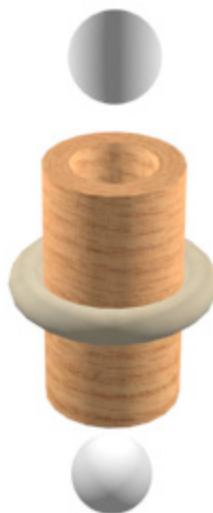


Figure 14-9 The rendered image

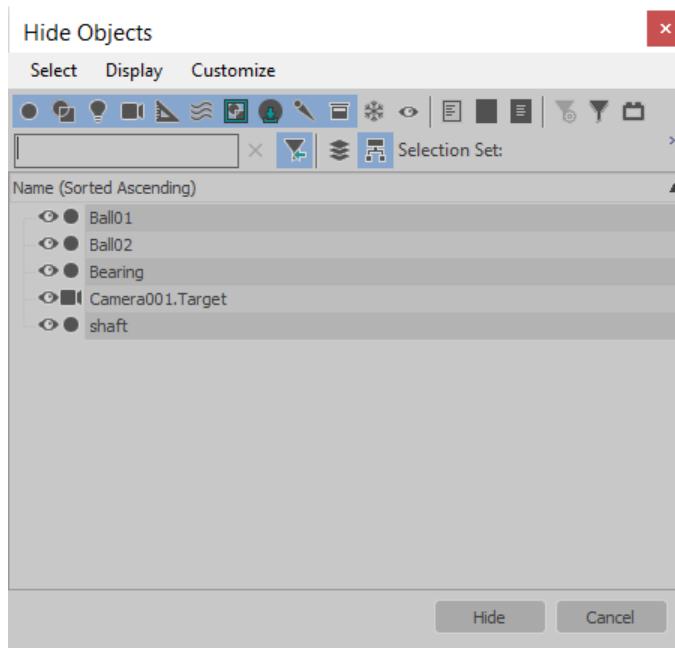


Figure 14-10 The **Hide Objects** dialog box

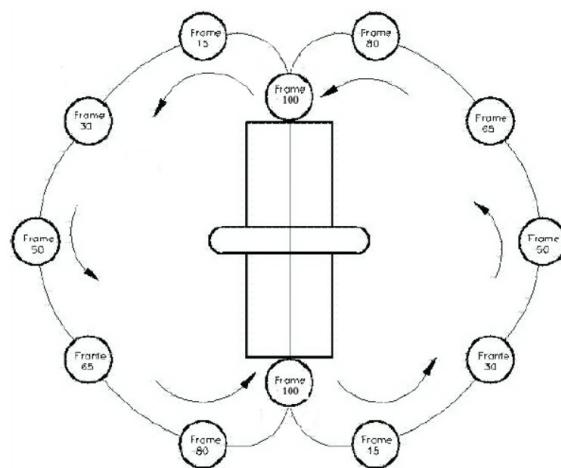


Figure 14-11 The image showing the suggested paths for the two balls

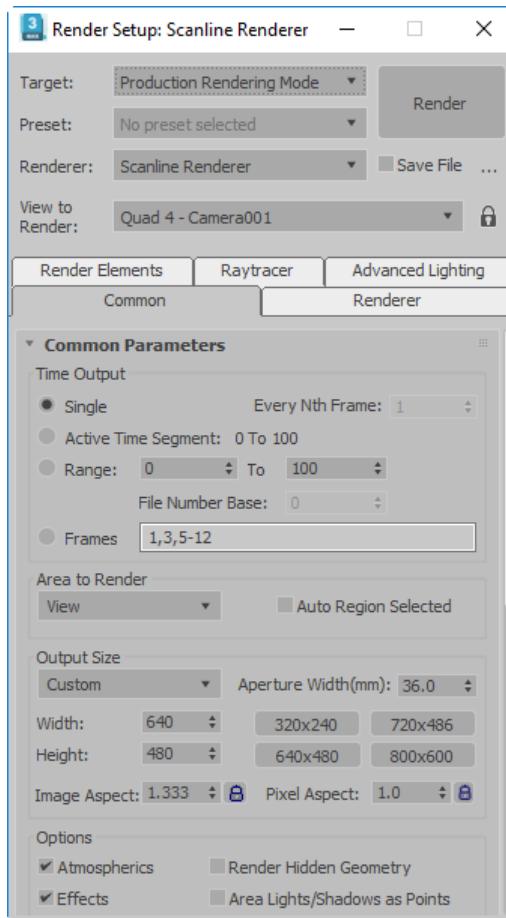


Figure 14-12 The partial view of **Render Setup: Default Scanline Renderer** dialog box

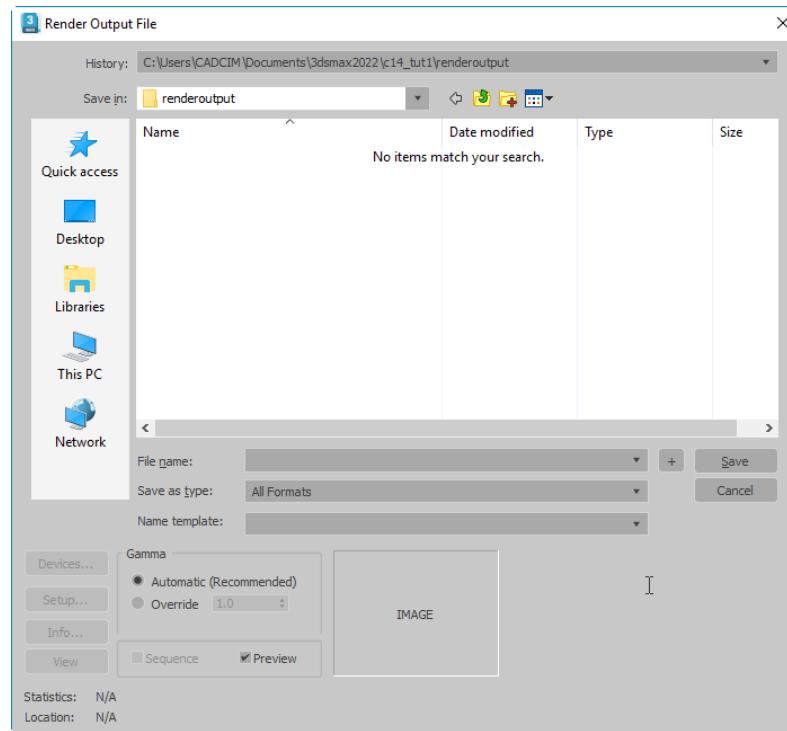


Figure 14-13 The **Render Output File** dialog box



Figure 14-14 Animated logo at frame 39

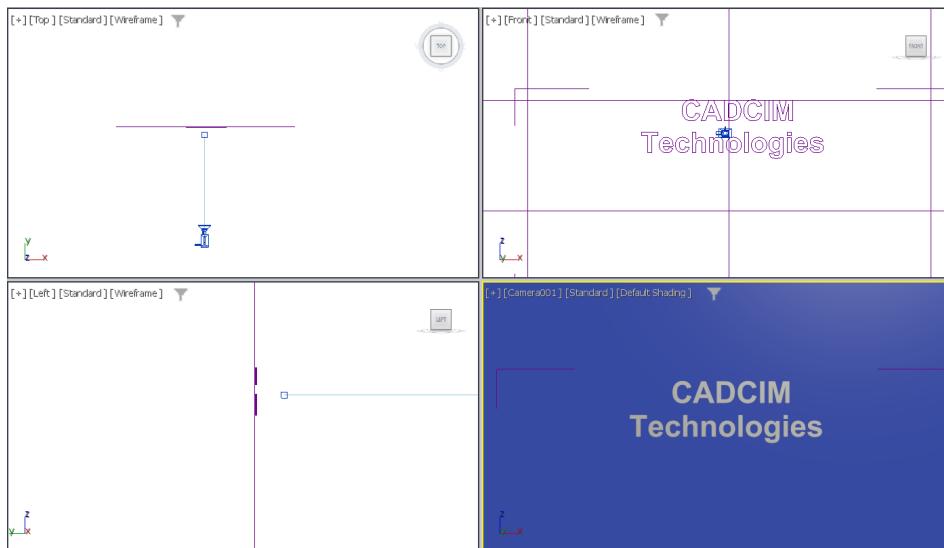


Figure 14-15 The c14_tut2_start.max file

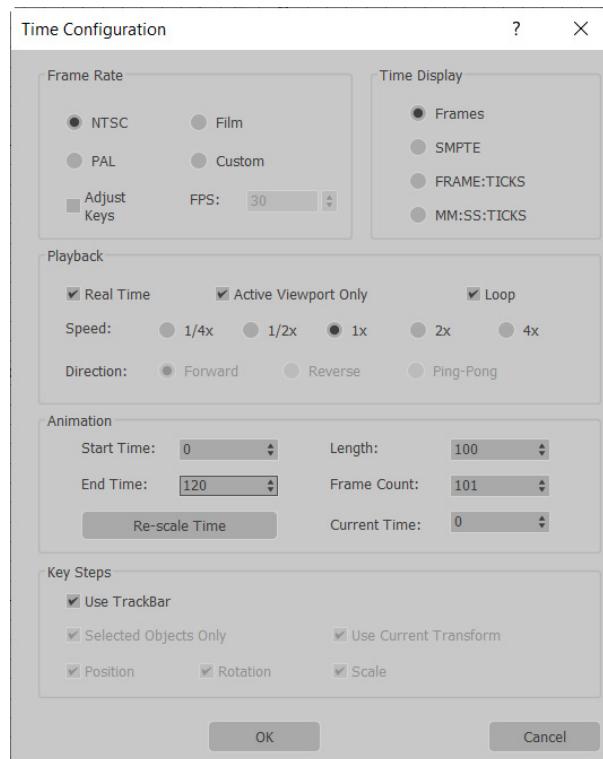


Figure 14-16 The Time Configuration dialog box



Figure 14-17 TextPlus001 modified



Figure 14-18 Textplus001 modified again



Figure 14-19 Size of TextPlus001 modified



Figure 14-20 TextPlus001 scaled



Figure 14-21 Bevel shape of TextPlus001 changed

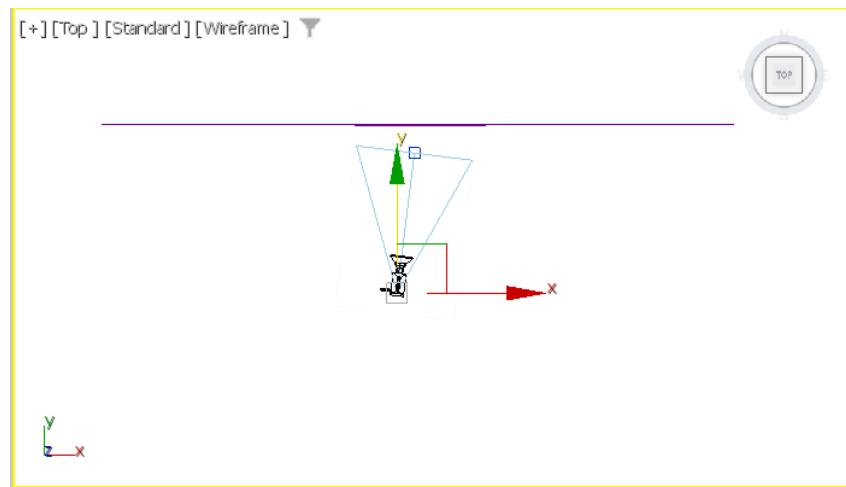


Figure 14-22 Camera001 moved



Figure 14-23 Animation at frame 15

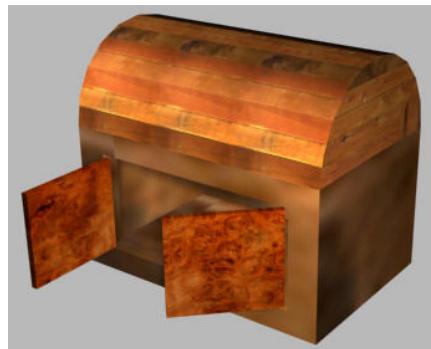


Figure 14-24 Animation at frame 30



Figure 14-25 Animation at frame 45



Figure 14-26 Animation at frame 60



Figure 14-27 Animation at frame 0



Figure 14-28 Animation at frame 10

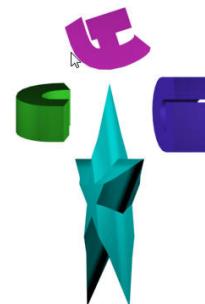


Figure 14-29 Animation at frame 30

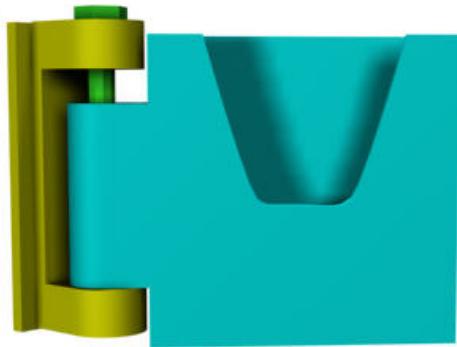


Figure 14-30 Animation at frame 0



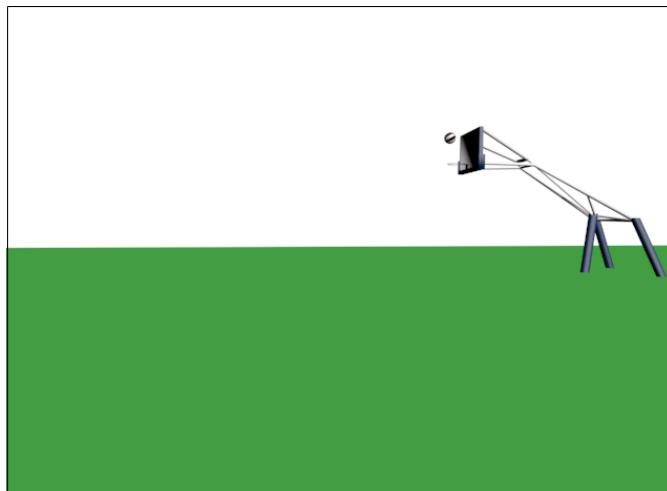
Figure 14-31 Animation at frame 30



Figure 14-32 Animation at frame 40

Chapter 15

Complex Animation



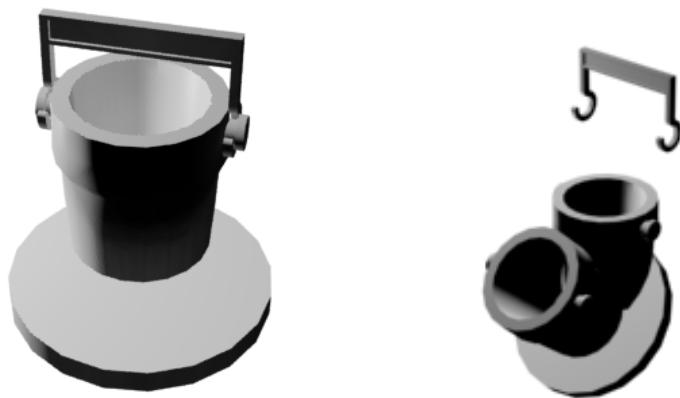


Figure 15-1 Animation at different frames

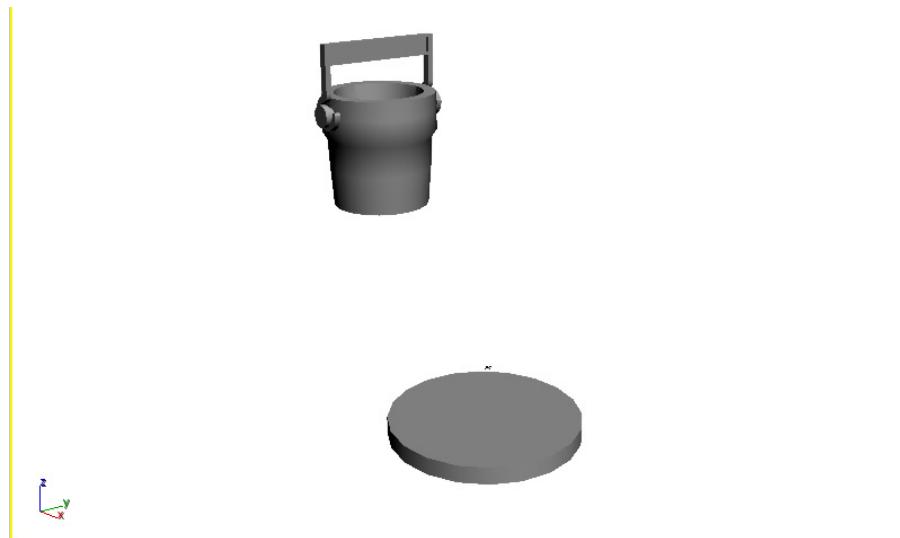


Figure 15-2 The c15_tut1_start.max file

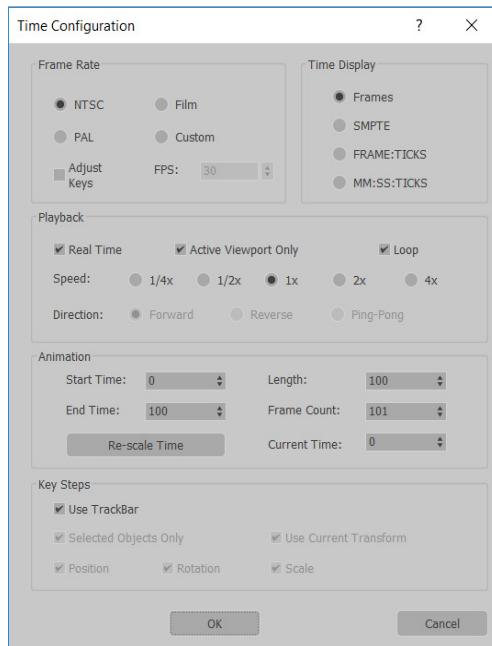


Figure 15-3 The Time Configuration dialog box

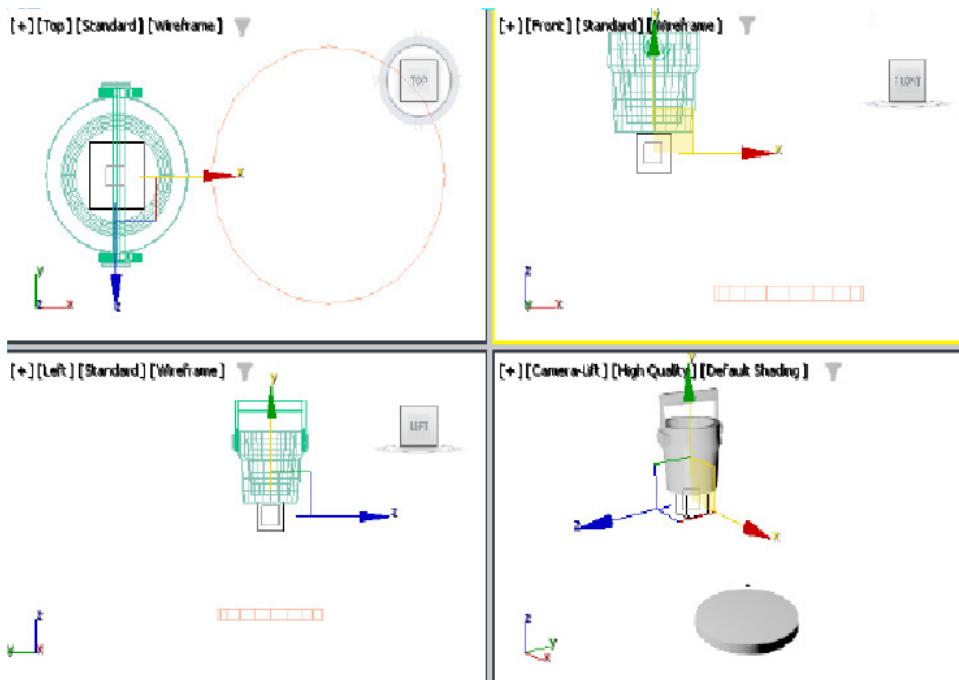


Figure 15-4 A dummy object created

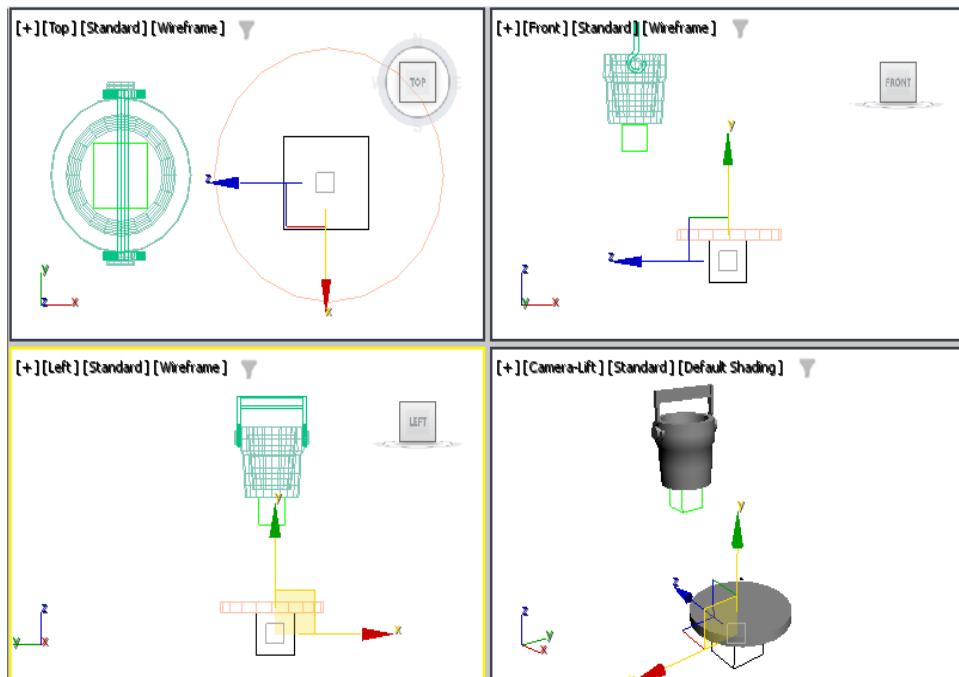


Figure 15-5 Adjusting the position of the cube below Base

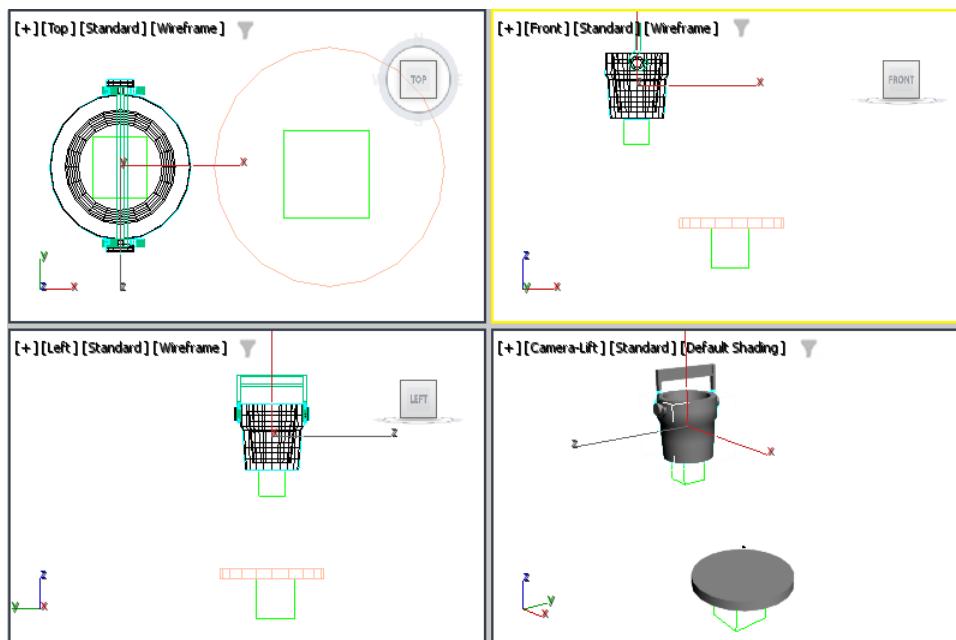


Figure 15-6 Linking Cauldron with Cal-Dummy

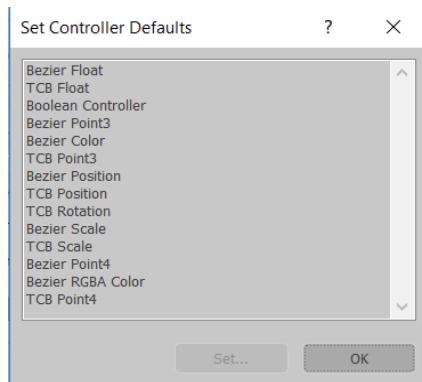


Figure 15-7 The Set Controller Defaults dialog box

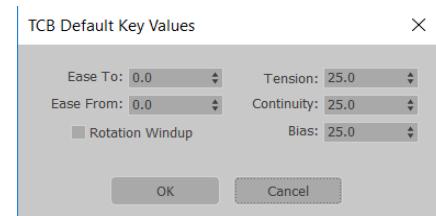


Figure 15-8 The TCB Default Key Values dialog box

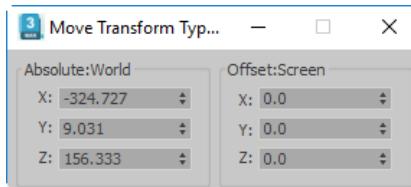


Figure 15-9 The Move Transform Type-In dialog box

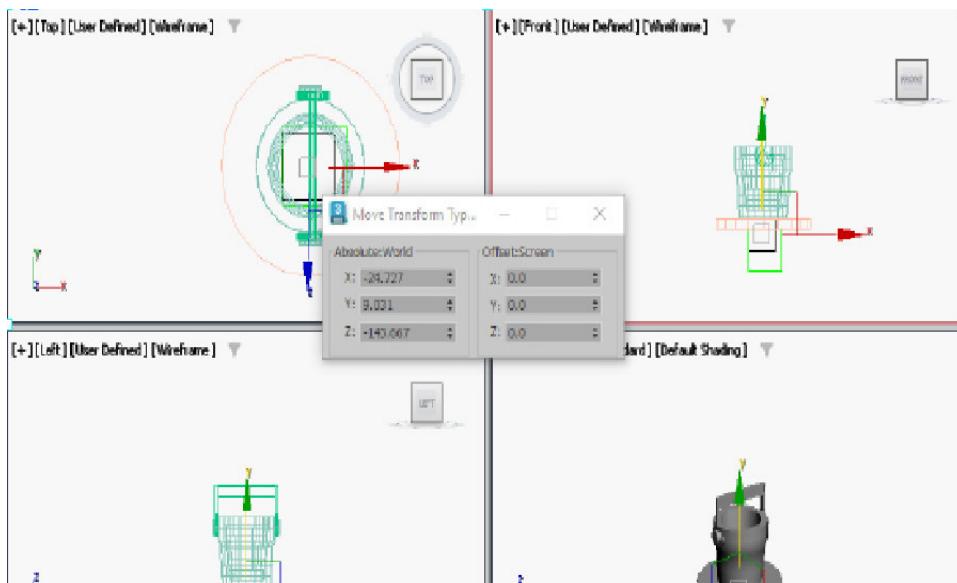


Figure 15-10 The Cauldron placed on the circular Base

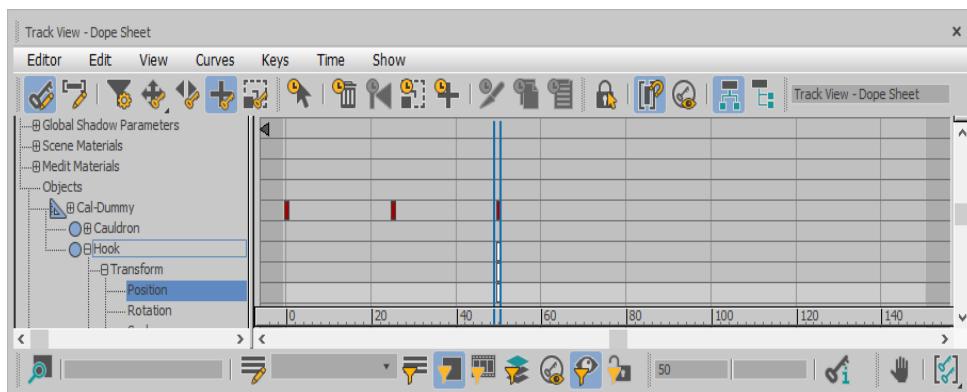


Figure 15-11 The new key added to the Hook's **Position** track

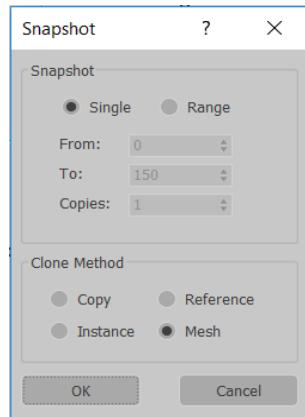


Figure 15-12 The Snapshot dialog box

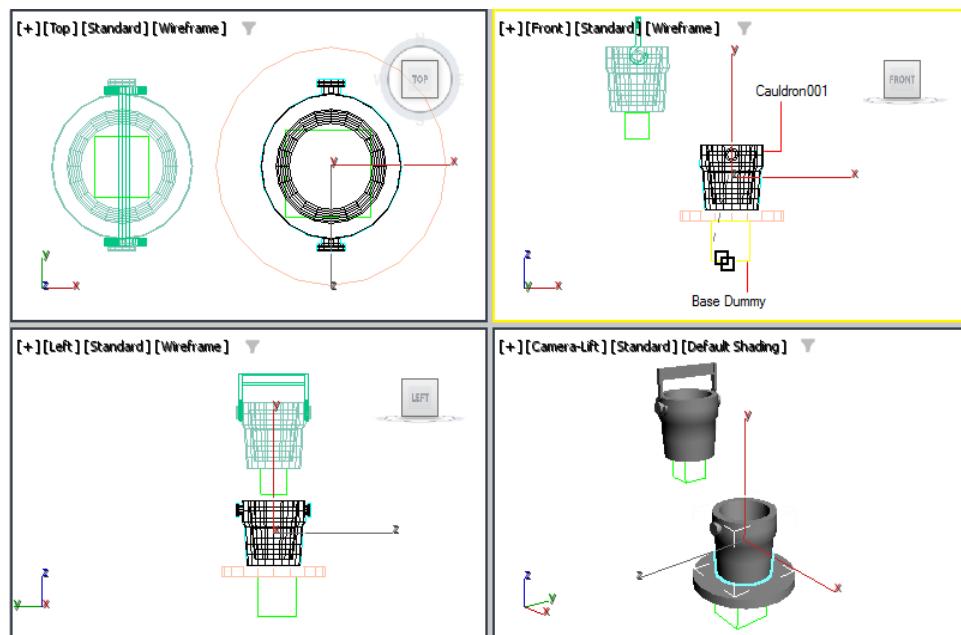


Figure 15-13 Linking Cauldron with Base-Dummy

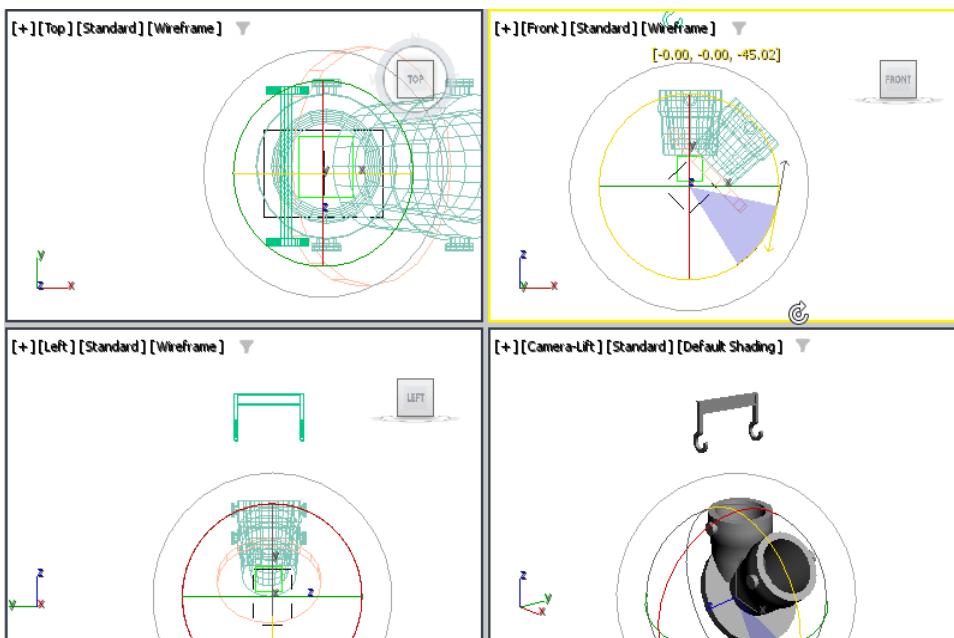


Figure 15-14 Rotating Base-Dummy -45 degrees on the Z axis

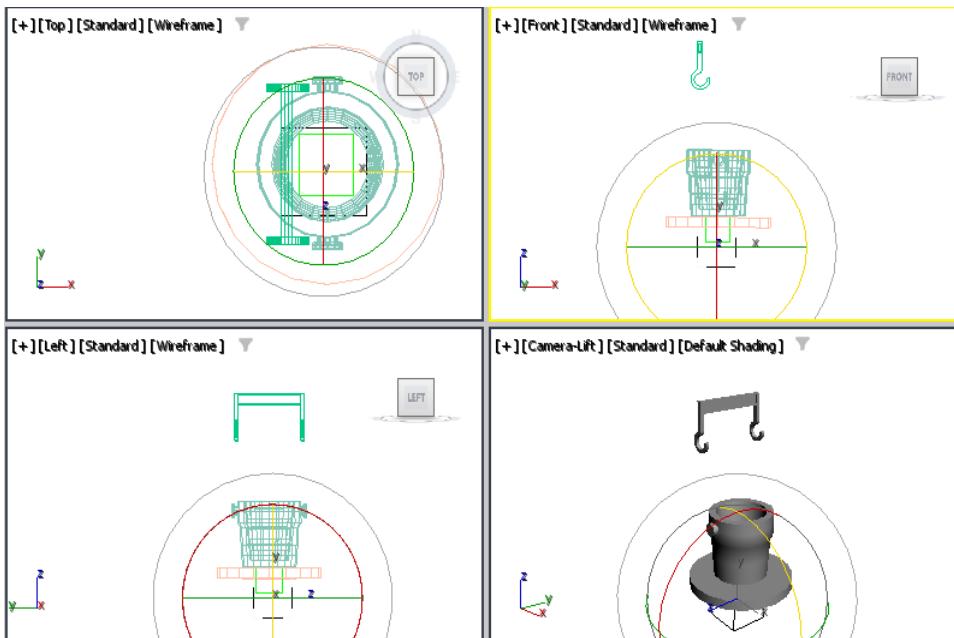


Figure 15-15 Rotating Base-Dummy +45 degrees on the Z axis

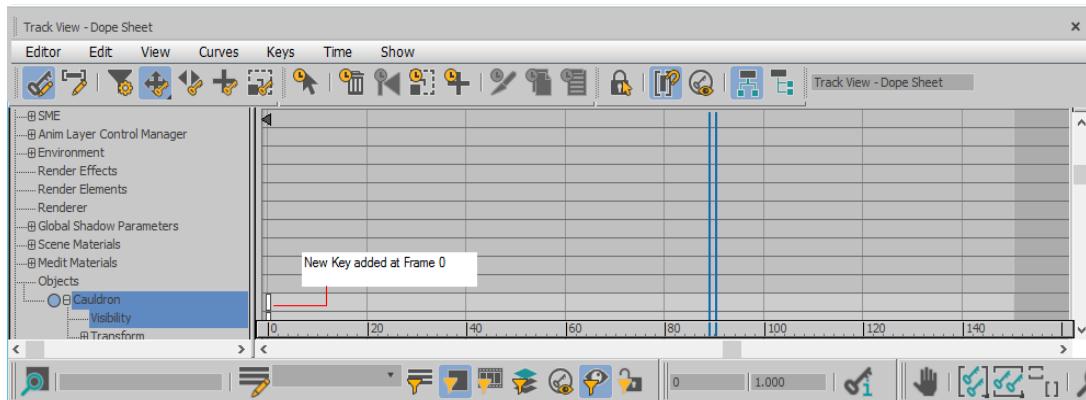


Figure 15-16 Adding a new key in the *Visibility* track at frame 0

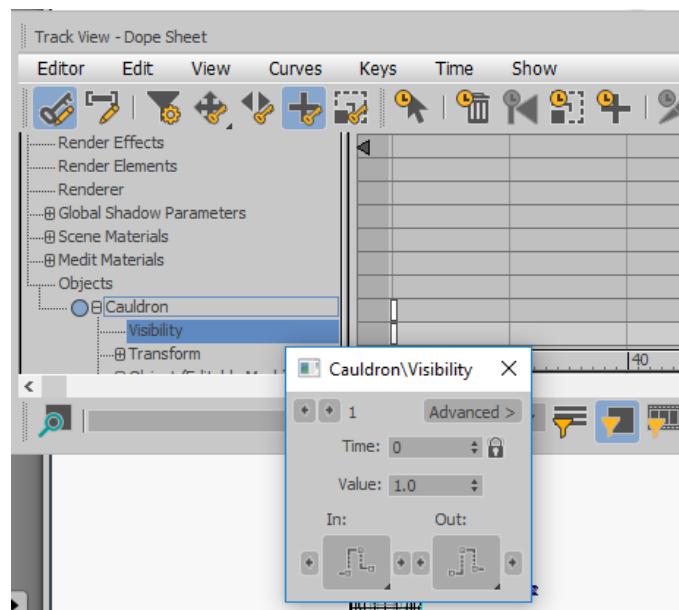


Figure 15-17 The *Cauldron|Visibility* dialog box

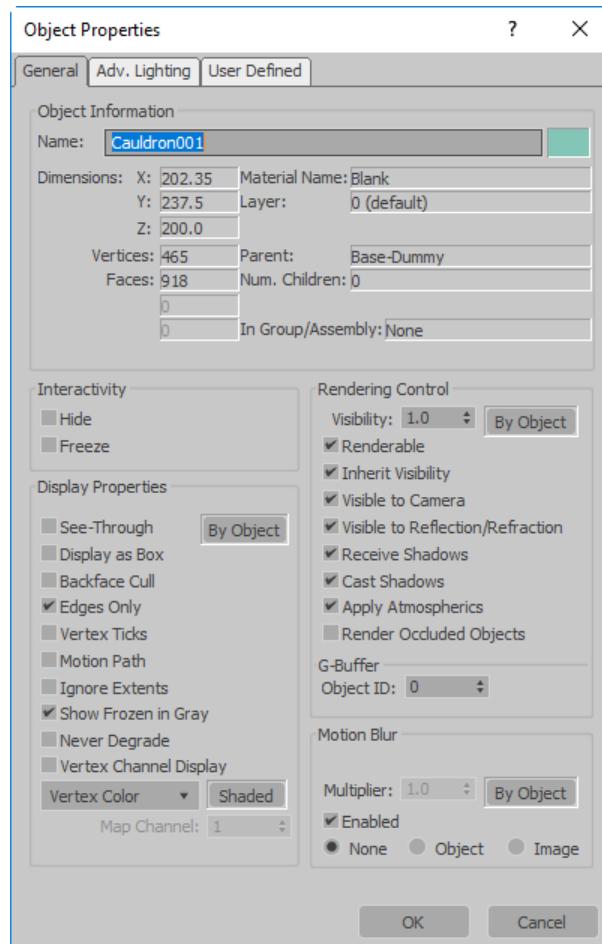


Figure 15-18 The Object Properties dialog box

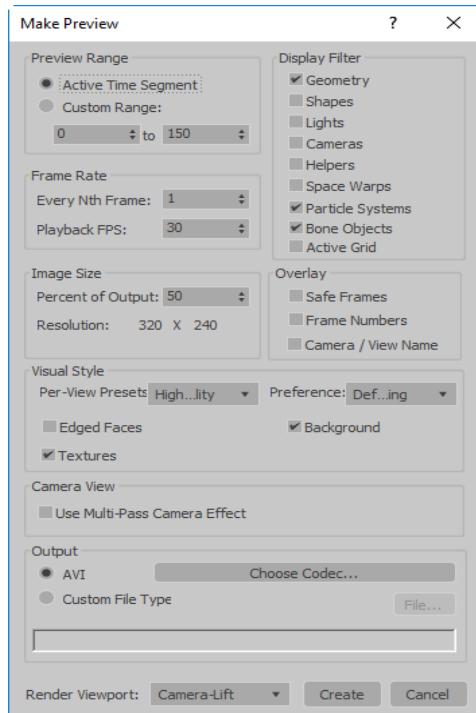


Figure 15-19 The Make Preview dialog box

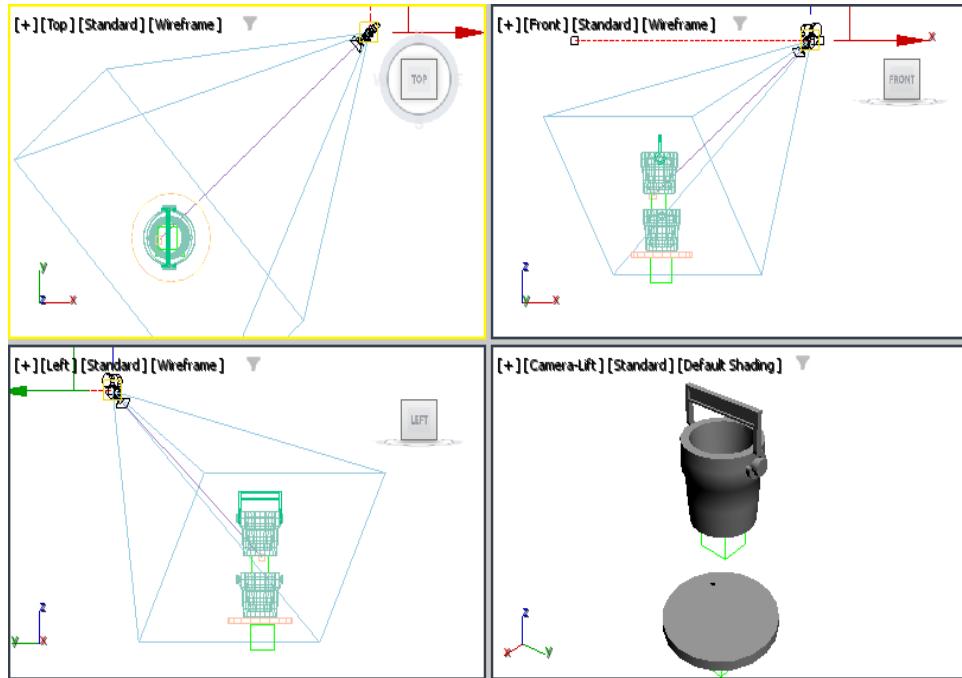


Figure 15-20 Adjusting the Camera-Lift and Camera-Lift.Target in all viewports

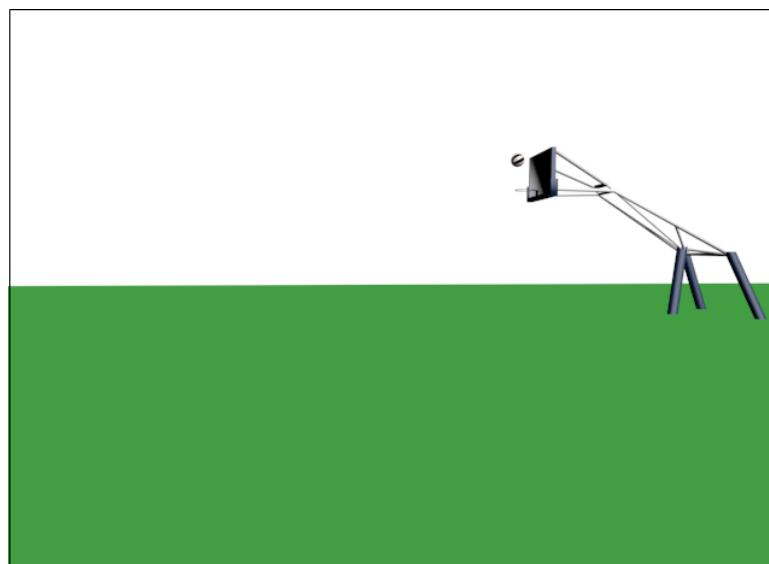


Figure 15-21 Basketball animation at frame11

The following steps are required to complete this tutorial:

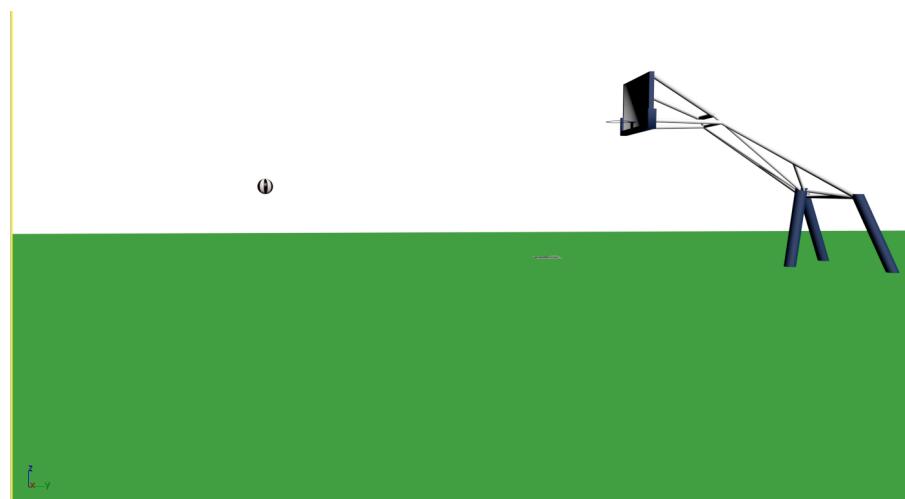


Figure 15-22 The c15_tut2_start.max file

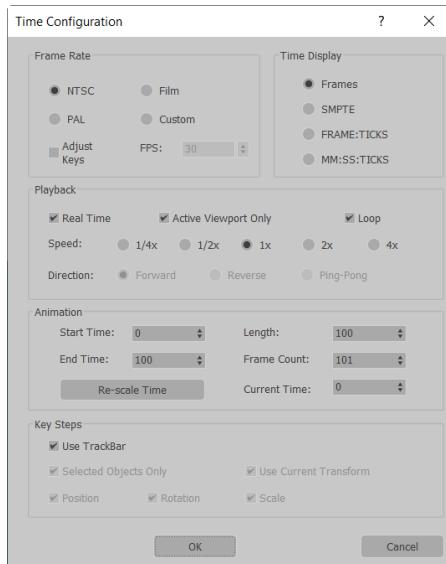


Figure 15-23 The Time Configuration dialog box

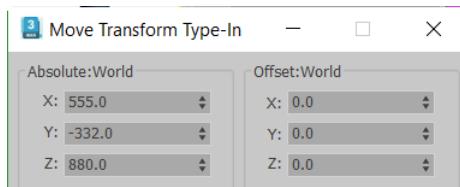


Figure 15-24 Values in the Move Transform Type-In dialog box

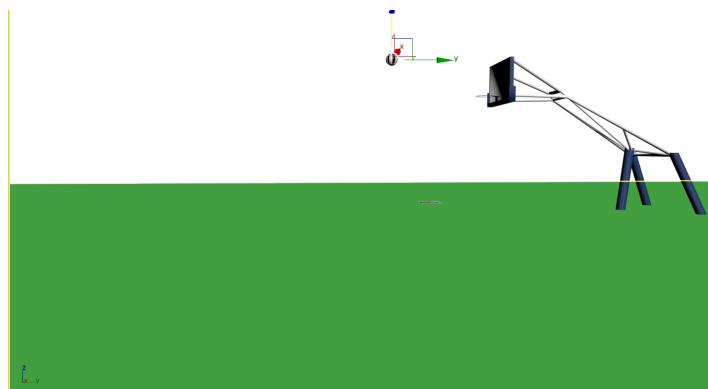


Figure 15-25 The basketball positioned at frame 5

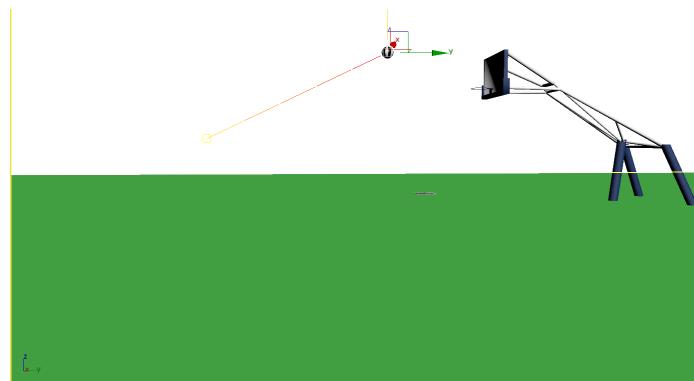


Figure 15-26 The basketball motion path displayed

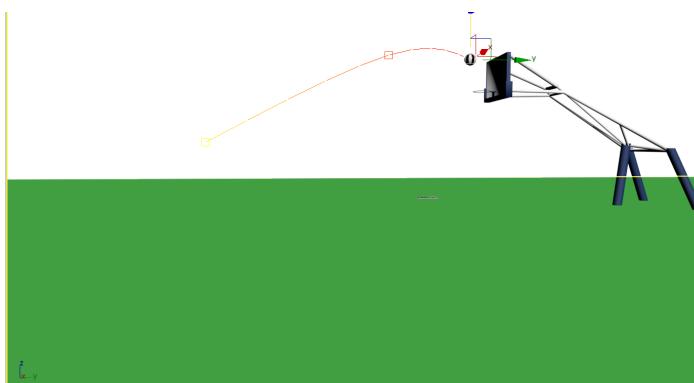


Figure 15-27 The basketball positioned at frame 10

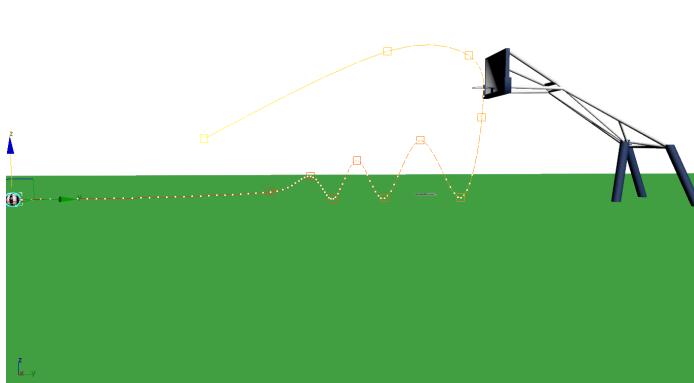


Figure 15-28 The basketball positioned at frame 120

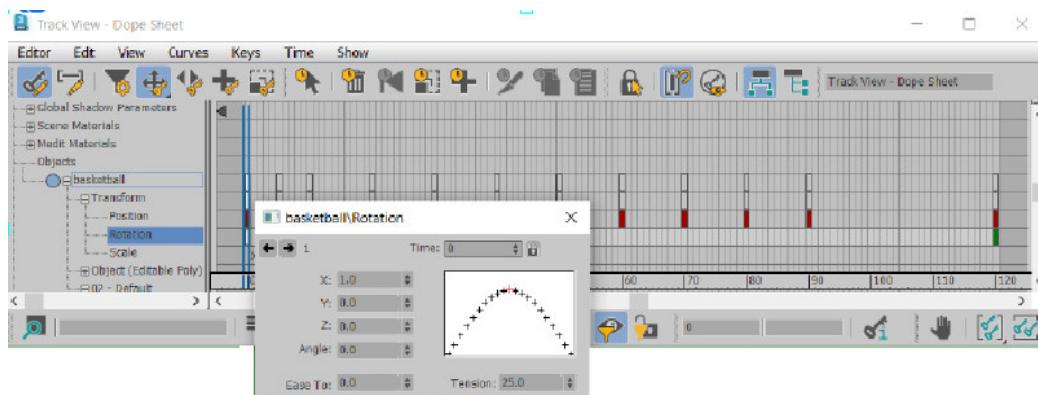


Figure 15-29 The *basketball/Rotation* dialog box

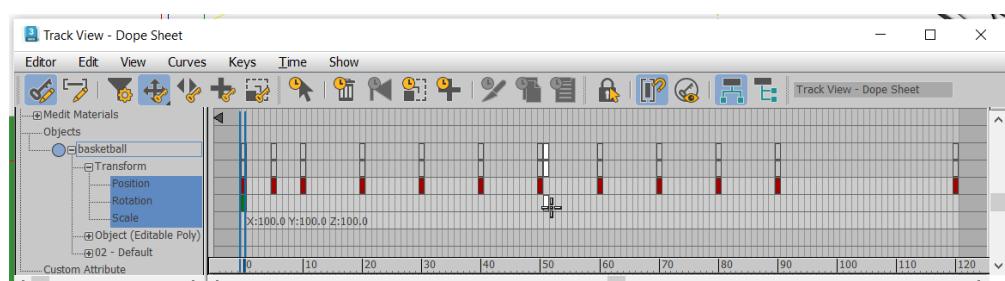


Figure 15-30 Keyframe dragged to frame 51

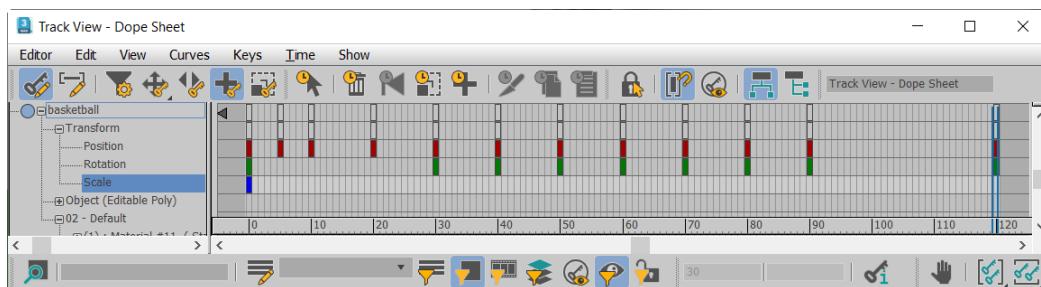


Figure 15-31 Keyframe created at frame 0

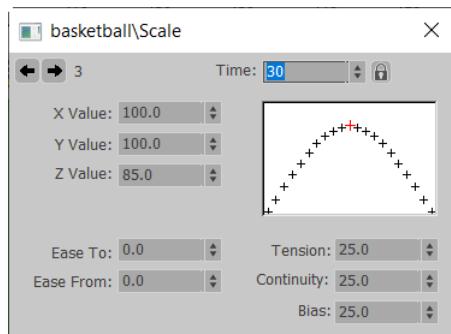


Figure 15-32 The basketball/Scale dialog box

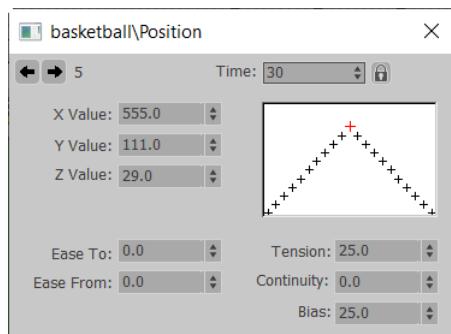


Figure 15-33 The basketball/Position dialog box

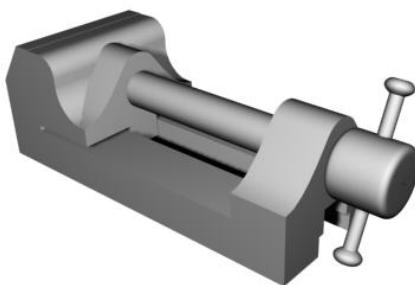


Figure 15-34 Animation at frame 50

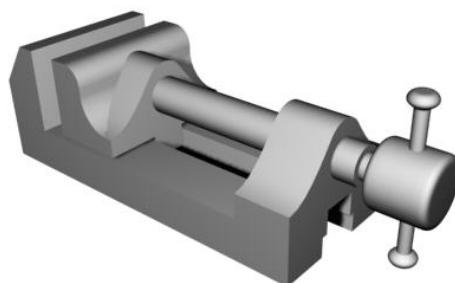


Figure 15-35 Animation at frame 75

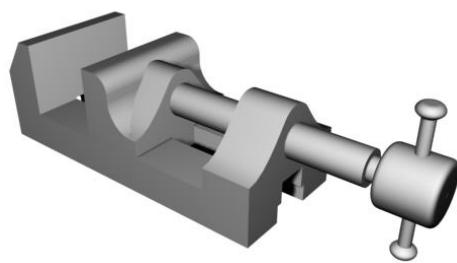


Figure 15-36 Animation at frame 125

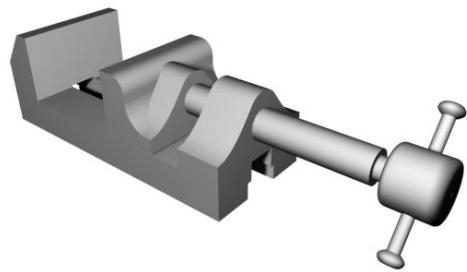


Figure 15-37 Animation at frame 150

Chapter 16

Arnold Materials, Lights, and Rendering

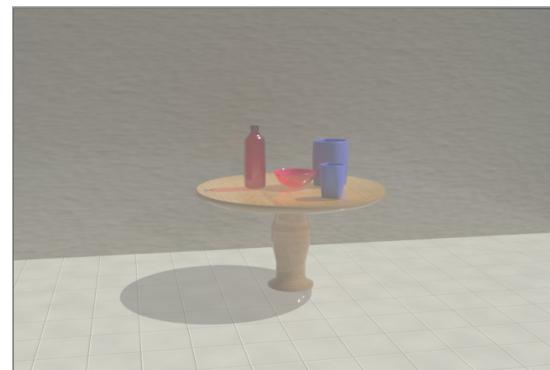




Figure 16-1 The illuminated scene with arnold quad lights

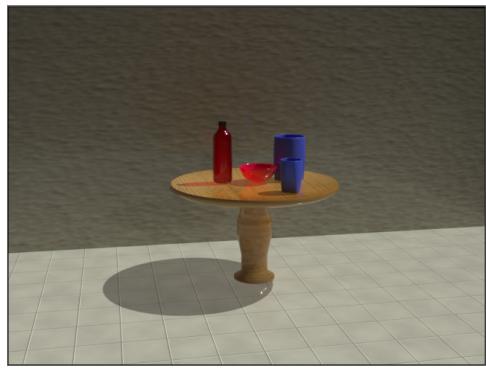


Figure 16-2 Simulated sunlight with arnold distant light

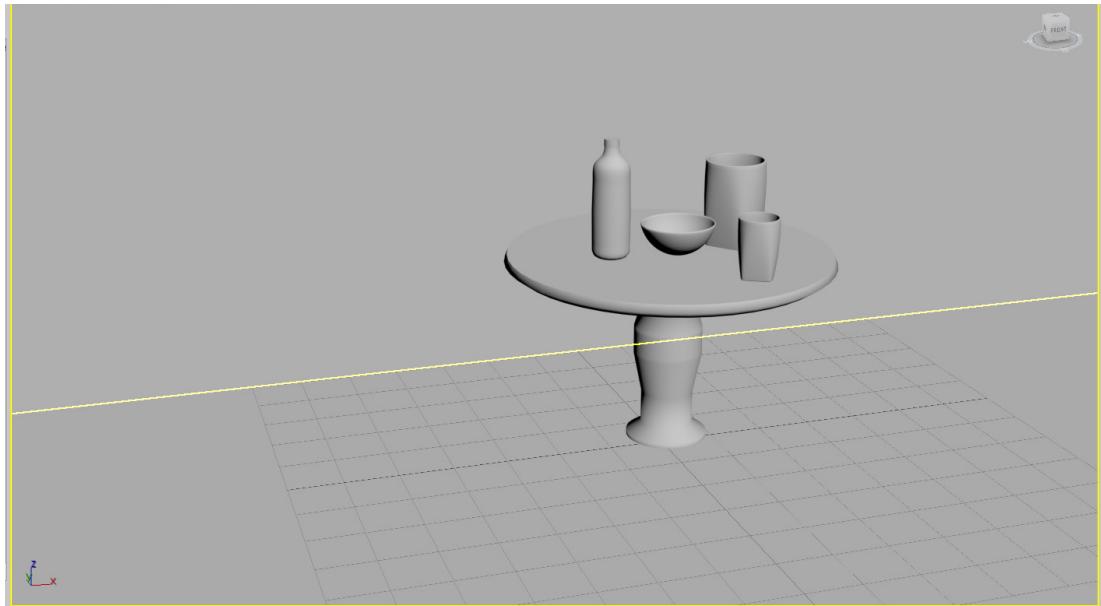


Figure 16-3 The c16_tut1_start.max file

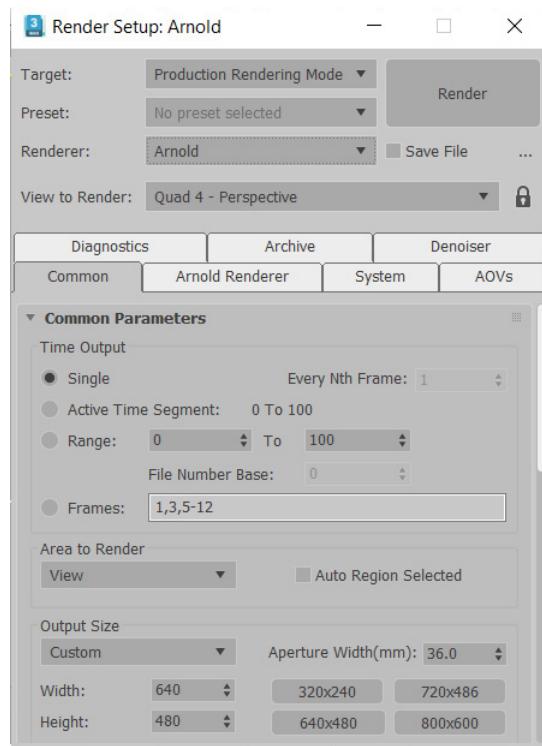


Figure 16-4 The *Render Setup: Arnold* dialog box

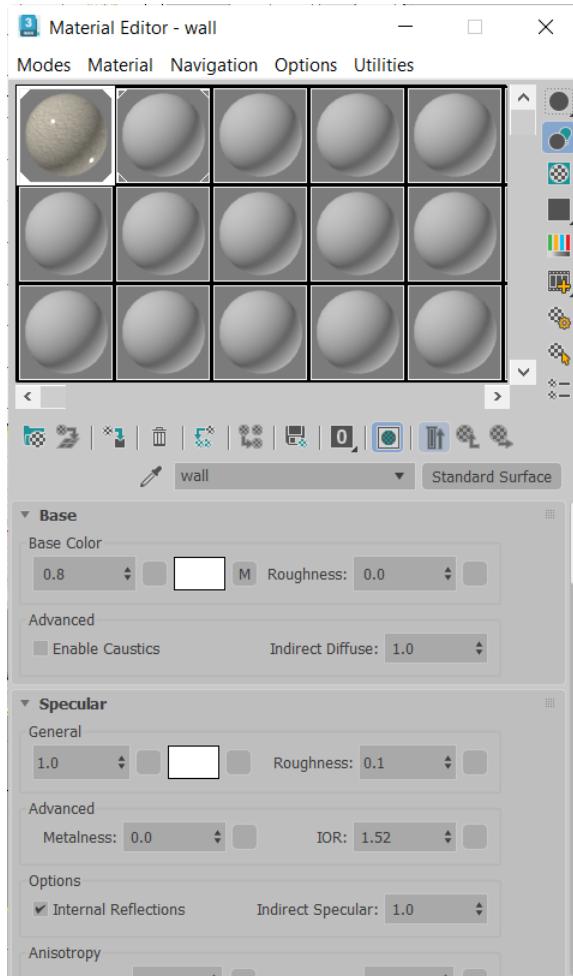


Figure 16-5 The **Material Editor** dialog box with the **wall** material displayed

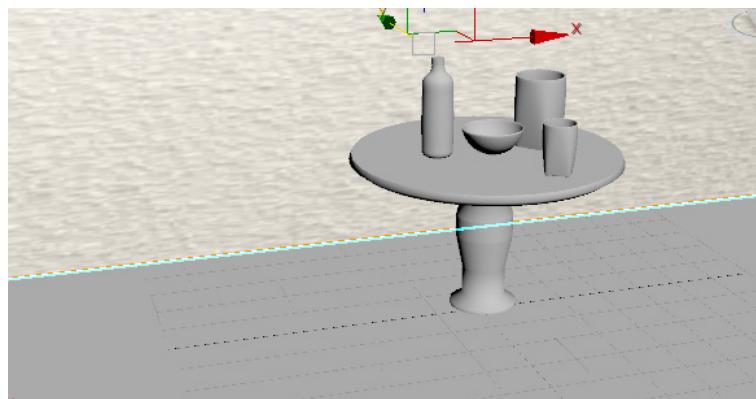


Figure 16-6 The **wall** material assigned to wall

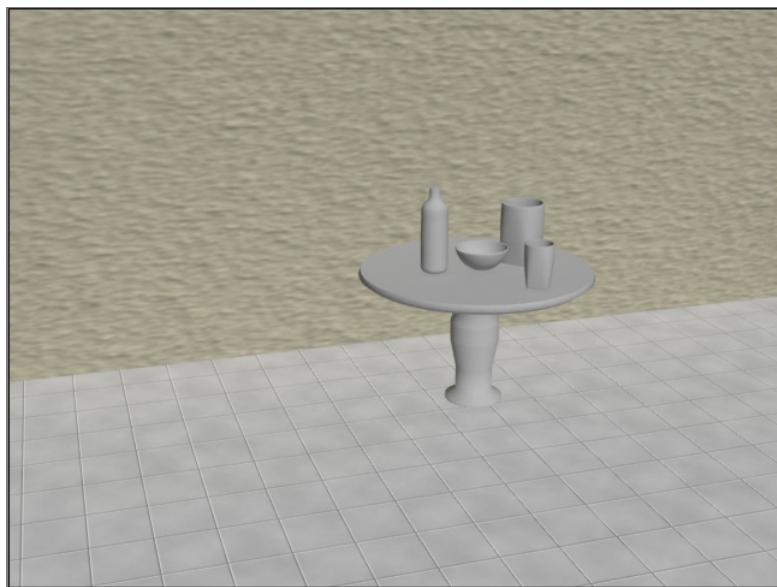


Figure 16-7 The rendered image with the **wall** and **floor** material displayed

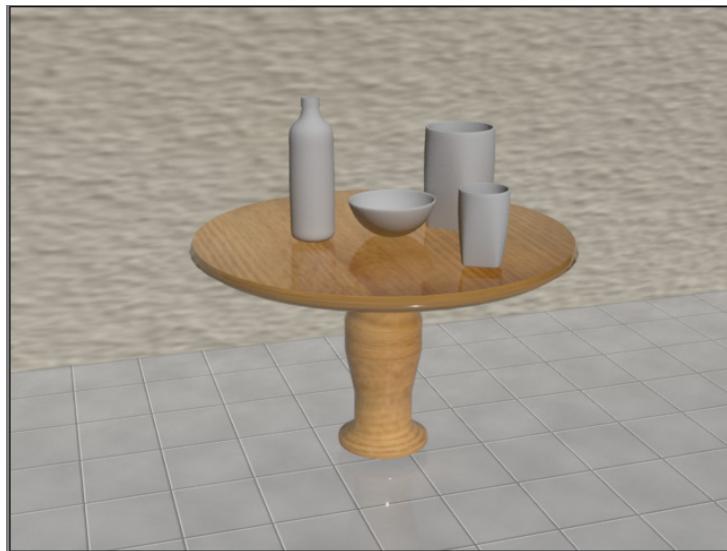


Figure 16-8 The rendered image with the **table** material displayed

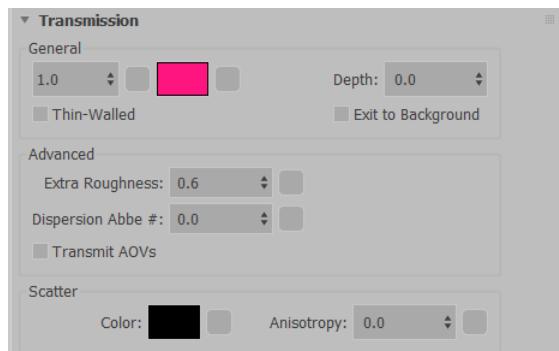


Figure 16-9 Parameters set in the **Transmission** rollout

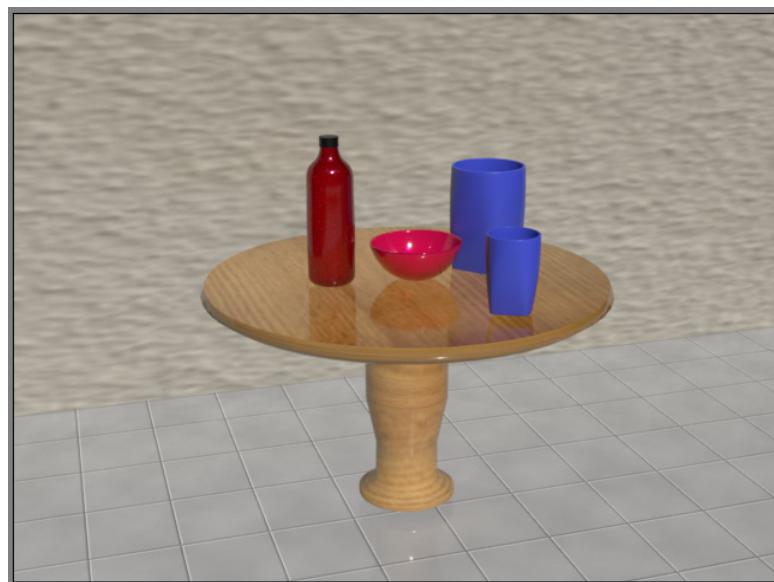


Figure 16-10 The rendered image with all the materials displayed

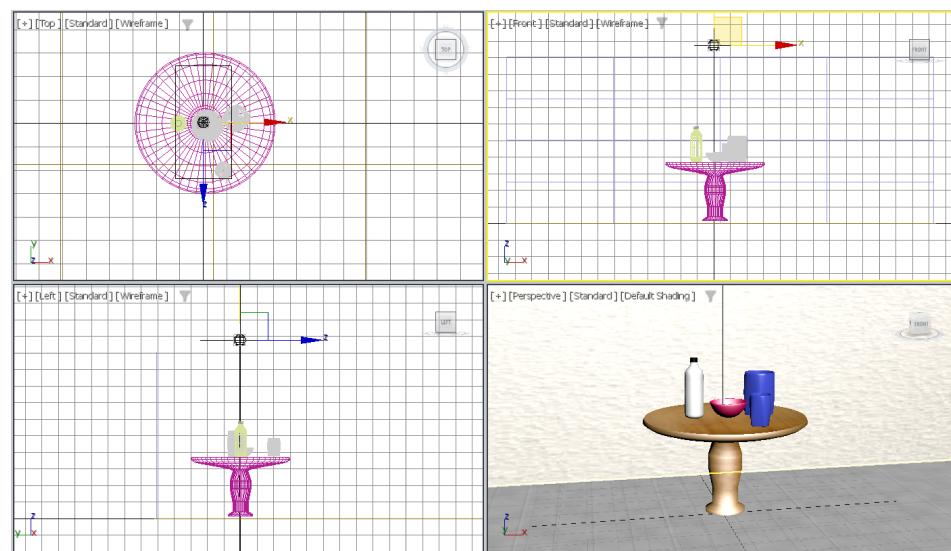


Figure 16-11 ArnoldLight001 aligned in all the viewports



Figure 16-12 The rendered image

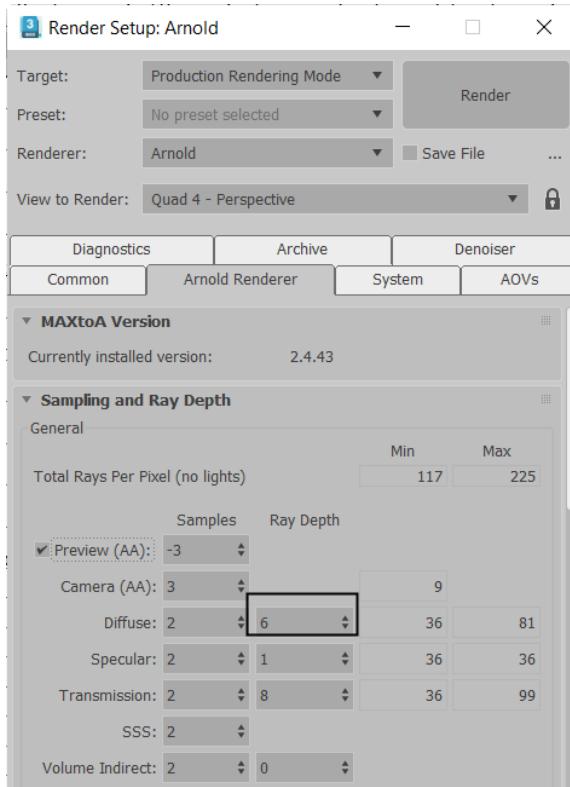


Figure 16-13 Value set in the Ray Depth spinner

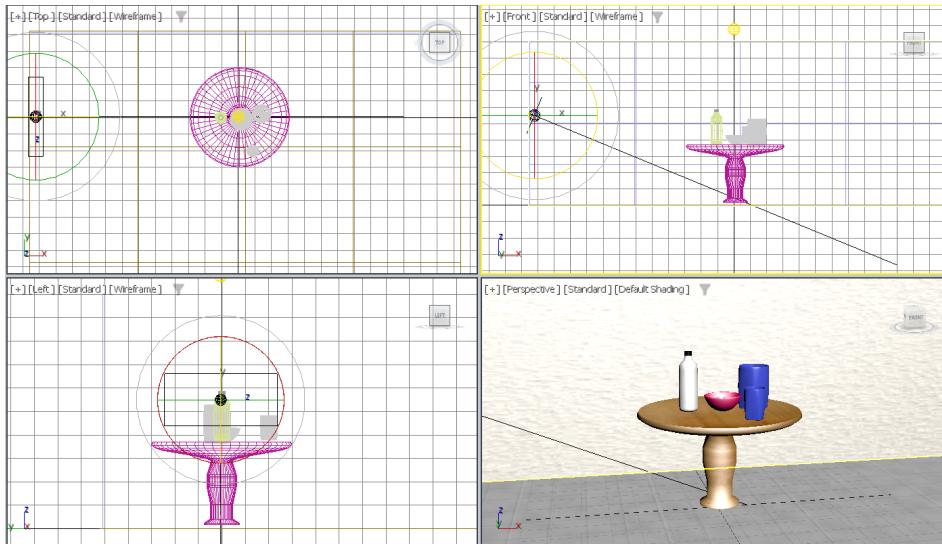


Figure 16-14 The quadlight02 aligned in all the viewports



Figure 16-15 The rendered image

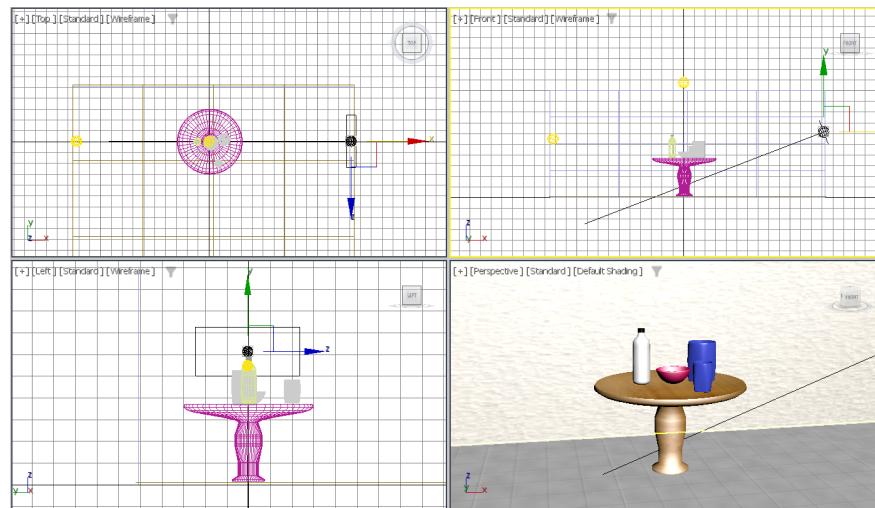


Figure 16-16 The quadlight03 aligned in all the viewports



Figure 16-17 The final render

Chapter 17

Creating a Walkthrough





Figure 17-1 The final walkthrough at frame 70

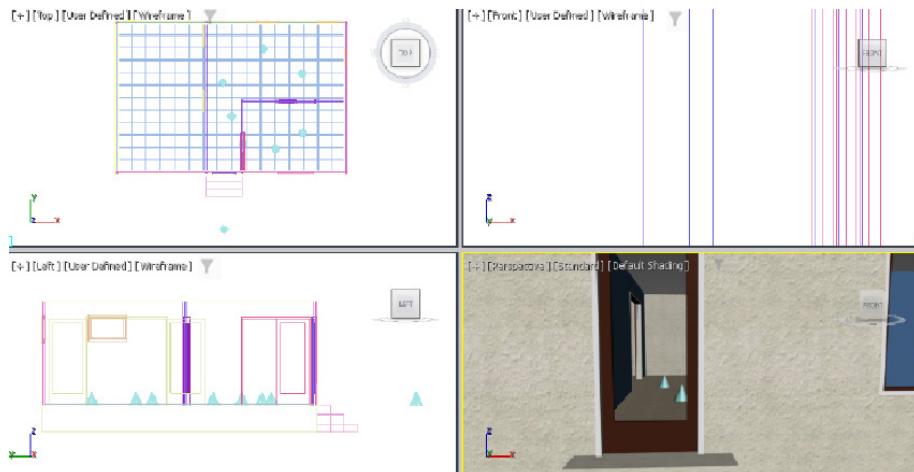


Figure 17-2 The c17_tut1_start file

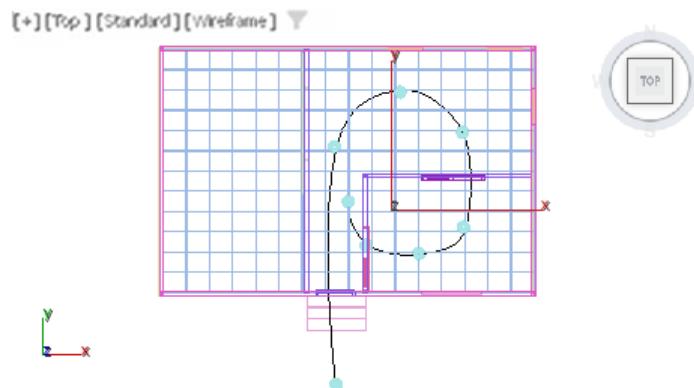


Figure 17-3 A line created to be used as a path

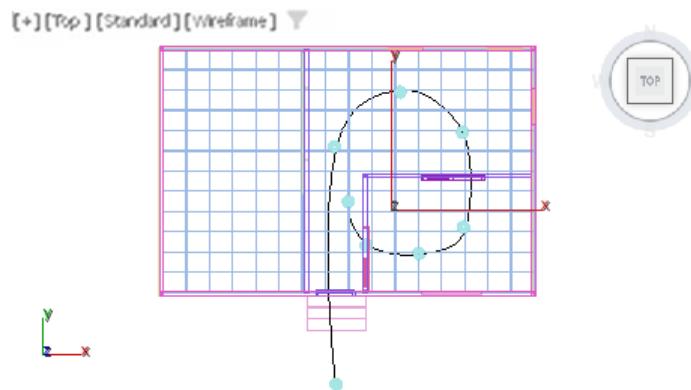


Figure 17-4 A new vertex added to the path

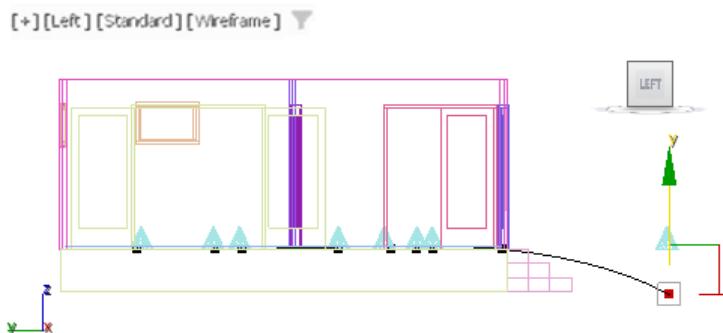


Figure 17-5 The first vertex moved down

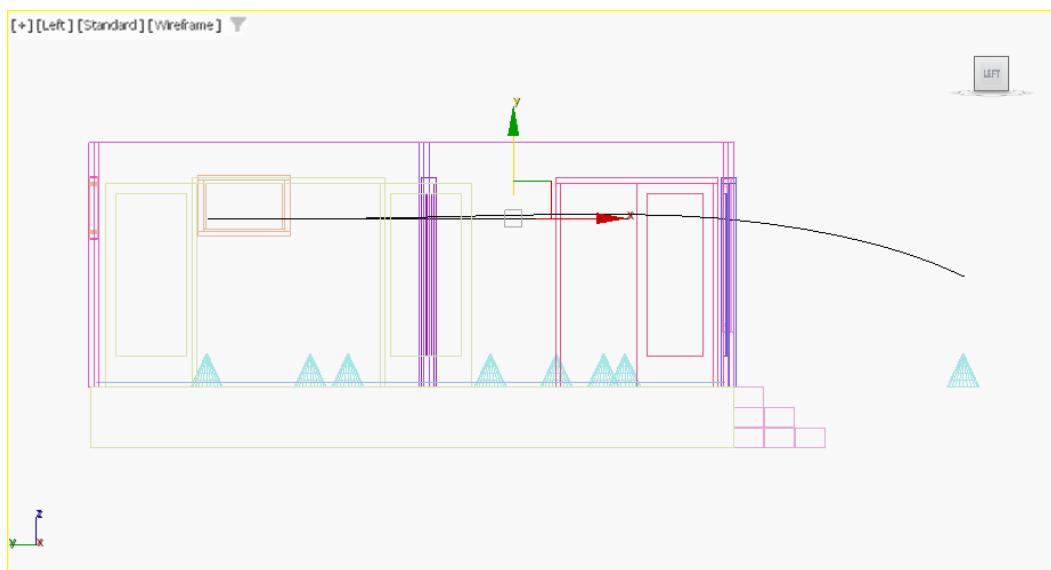


Figure 17-6 The motion path moved up to the height of an average person's line of sight

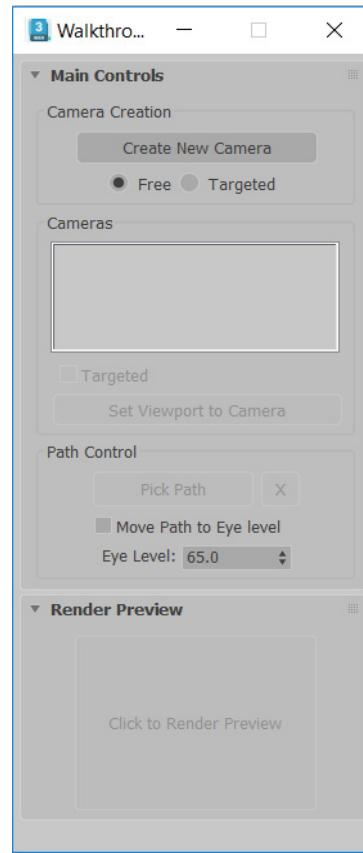


Figure 17-7 The Walkthrough Assistant dialog box

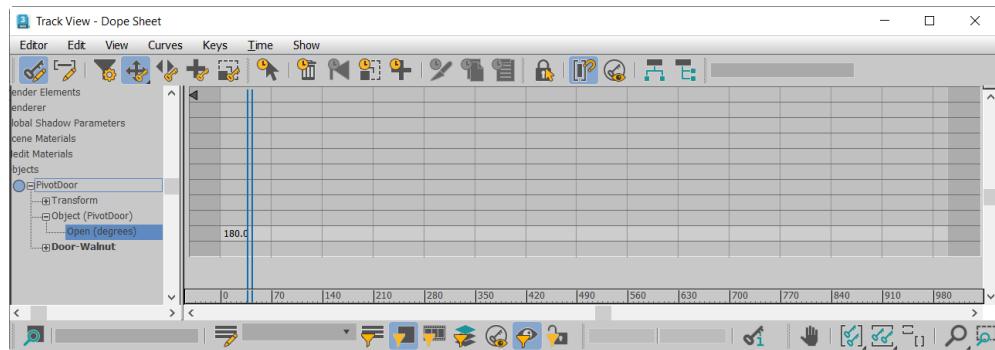


Figure 17-8 The Track View - Dope Sheet window

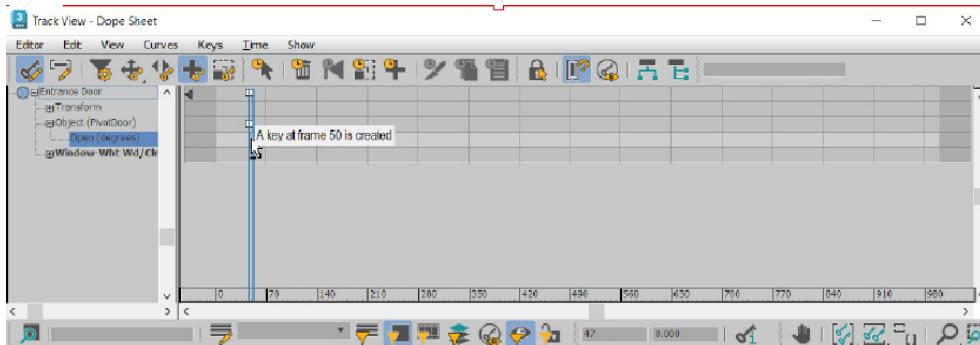


Figure 17-9 The new key created at frame 50 for **Entrance Door**

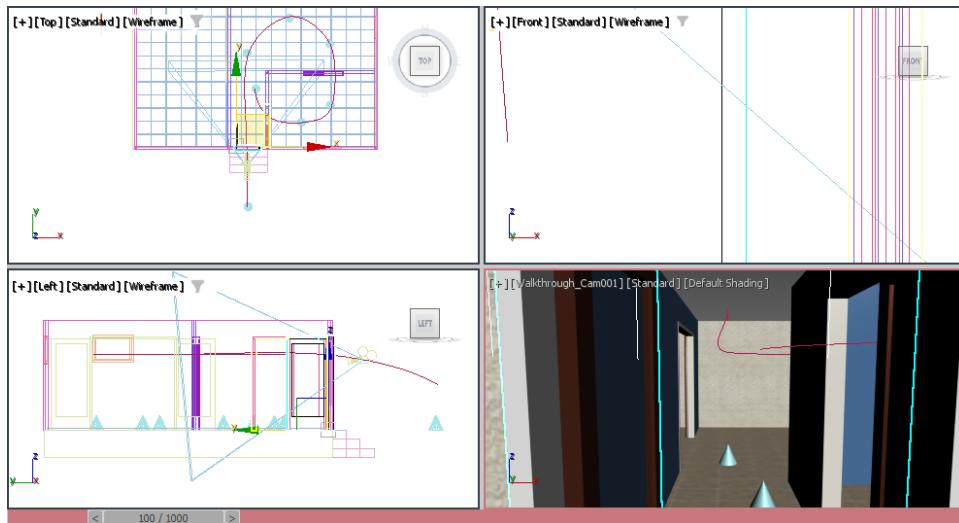


Figure 17-10 The **Entrance Door** is opened 90 degrees at frame 100

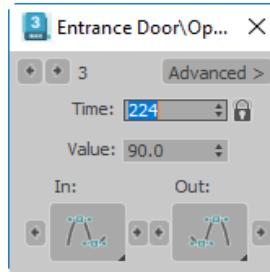


Figure 17-11 The **Entrance Door**|
Open (degrees) dialog box

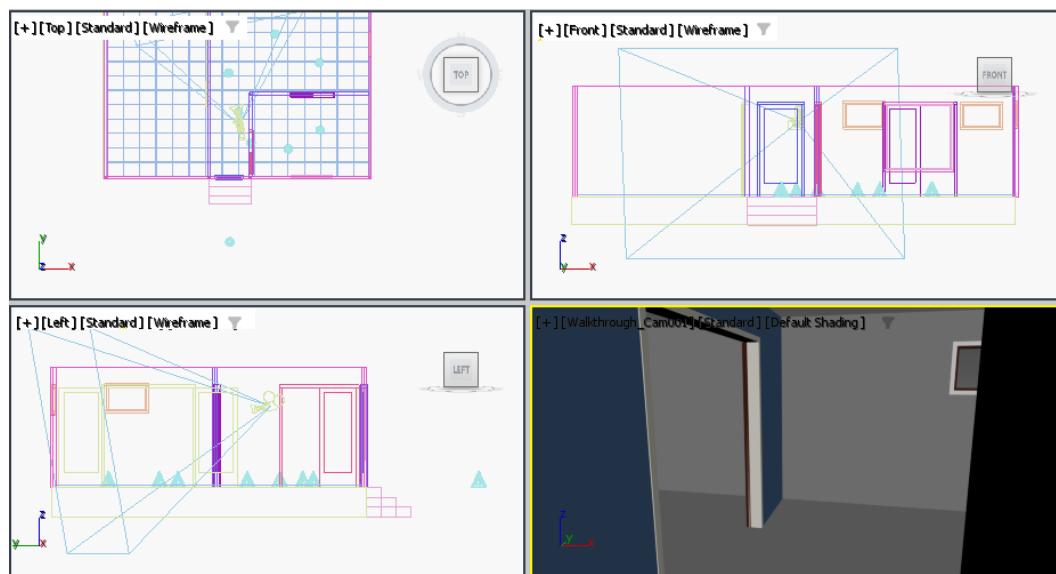


Figure 17-12 The motion path hidden in the viewports



Figure 17-13 Walkthrough for the lobby

Project 1

Creating a Windmill



Figure P1-1 The model of the windmill

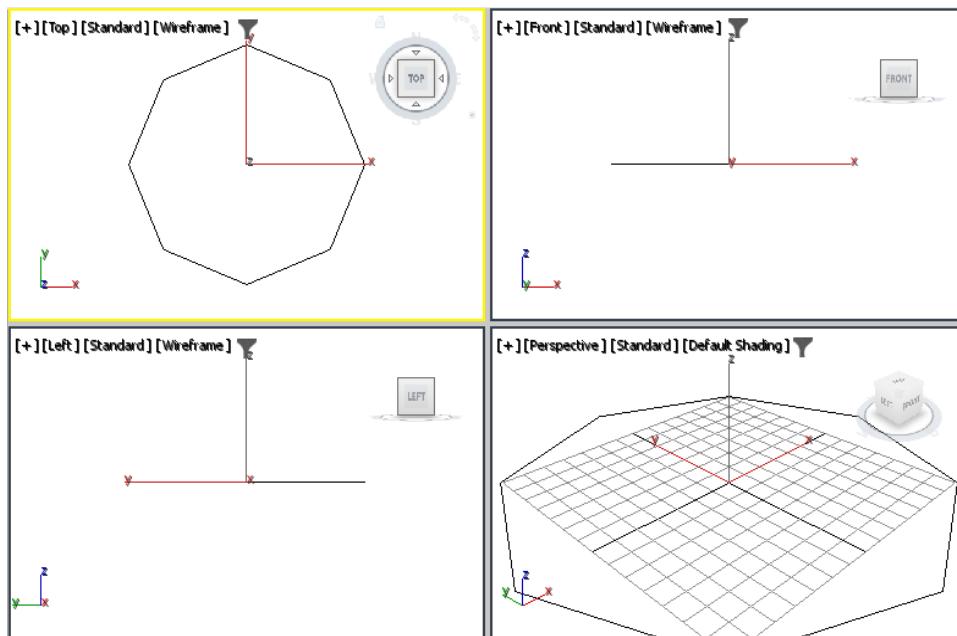


Figure P1-2 The shape created with the name *NGon001*

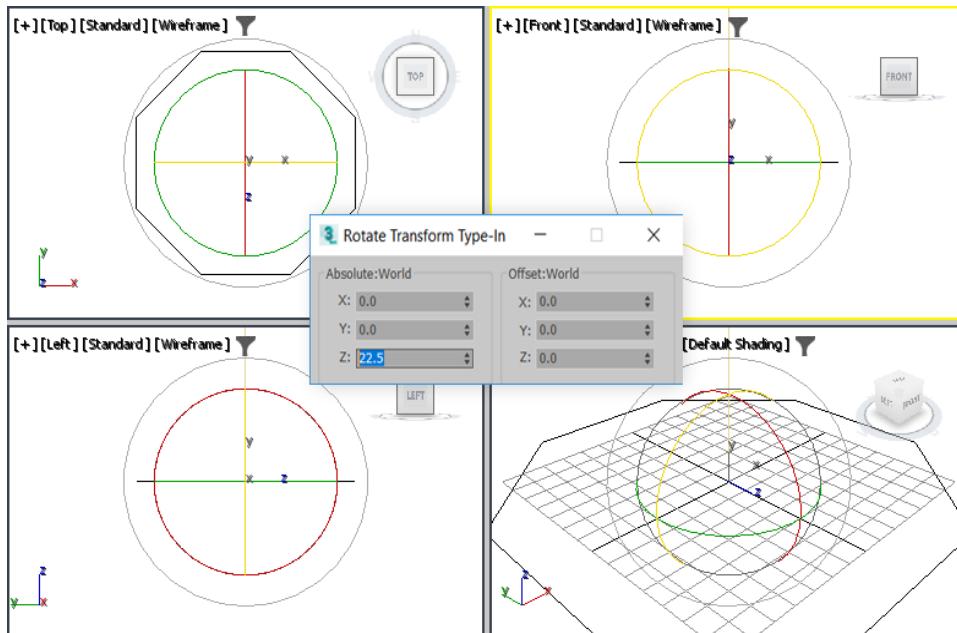


Figure P1-3 Rotating *NGon001*

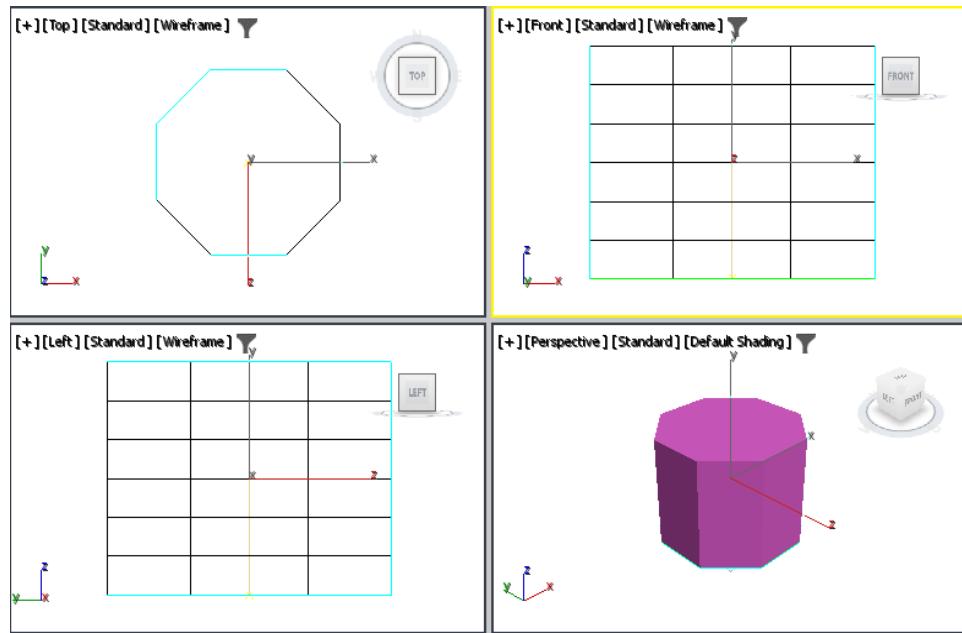


Figure P1-4 NGon001 lofted along the line in all viewports

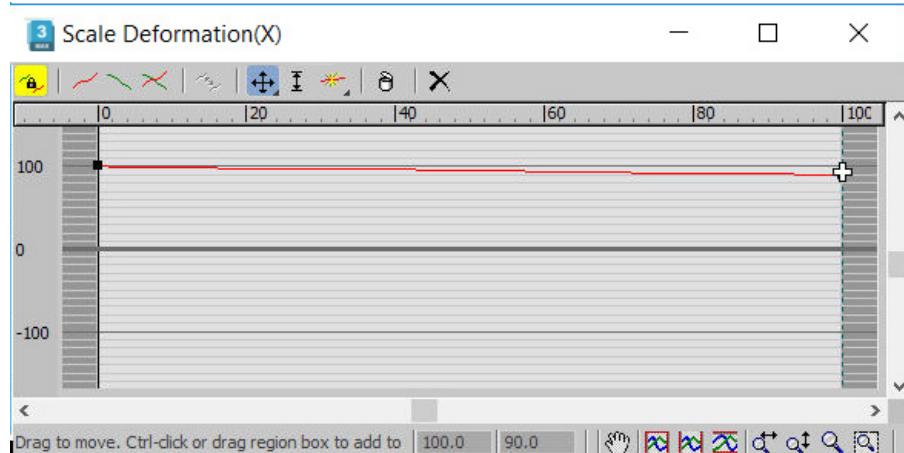


Figure P1-5 The Scale Deformation(X) dialog box

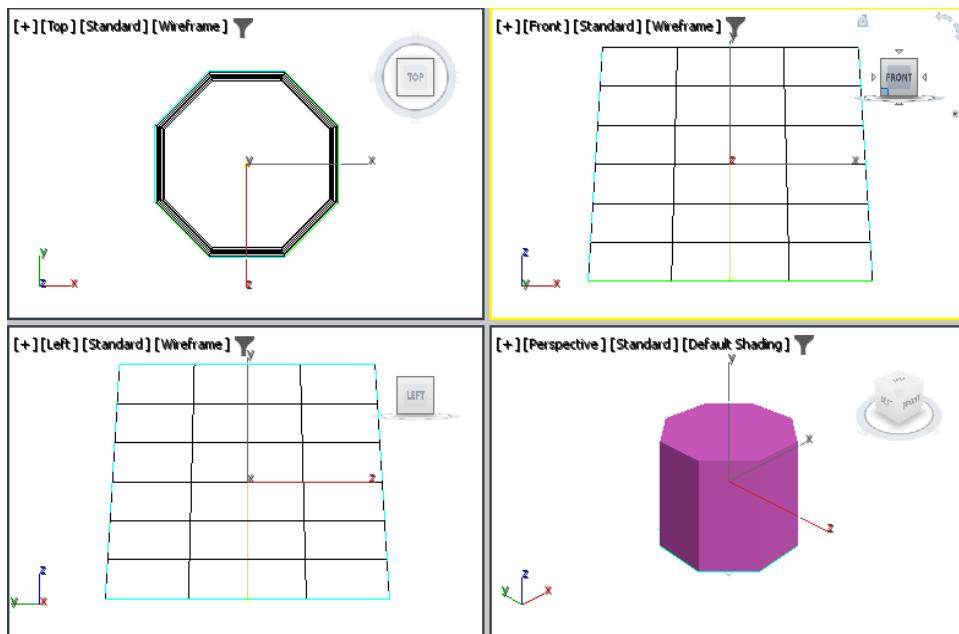


Figure P1-6 Loft001 tapered at its top

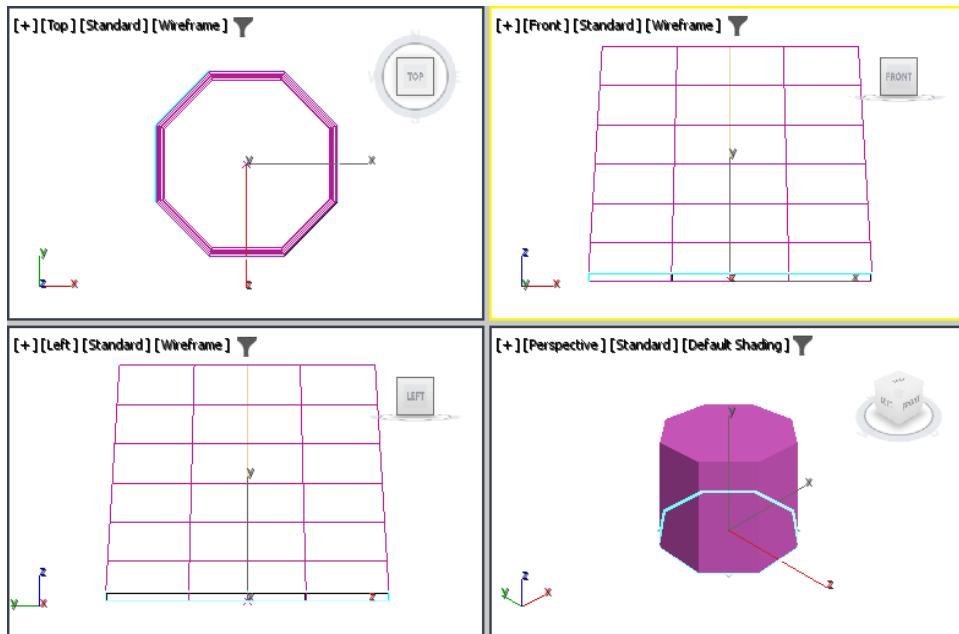


Figure P1-7 Floor created with a thickness of five units

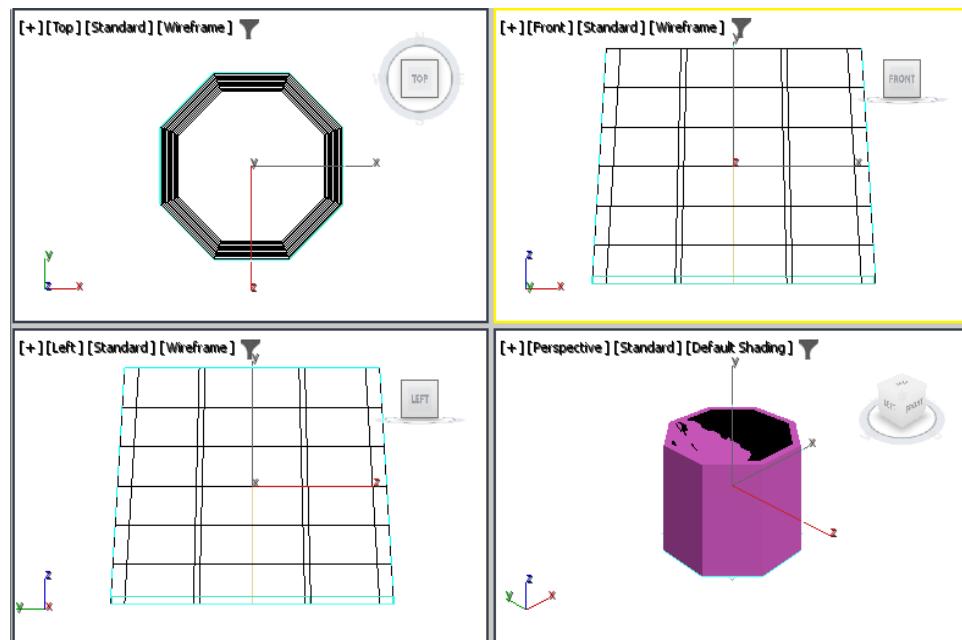


Figure P1-8 Loft001 displayed after performing the Boolean operation

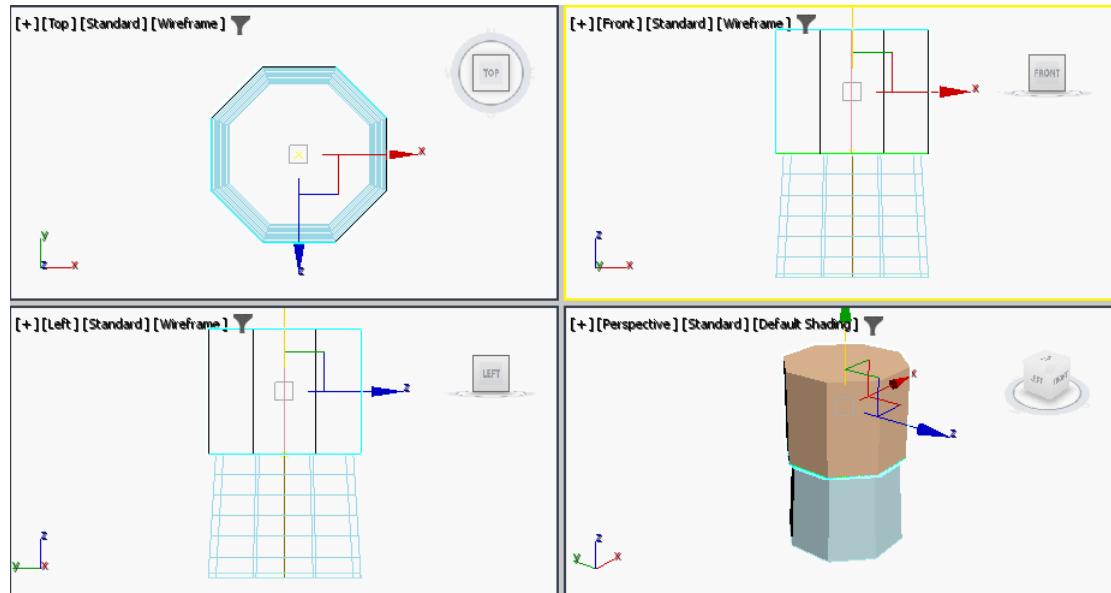


Figure P1-9 NGon003 lofted along the line

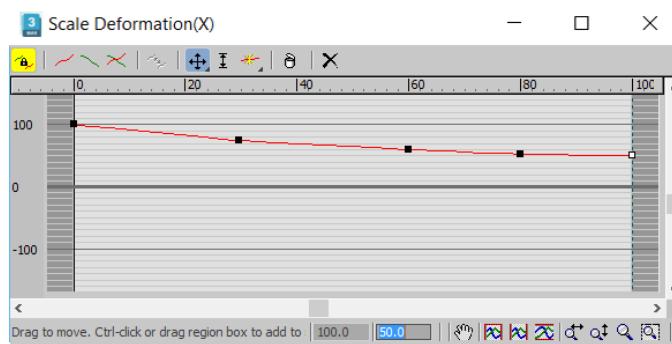


Figure P1-10 Inserting and moving the control points in the Scale Deformation(X) dialog box

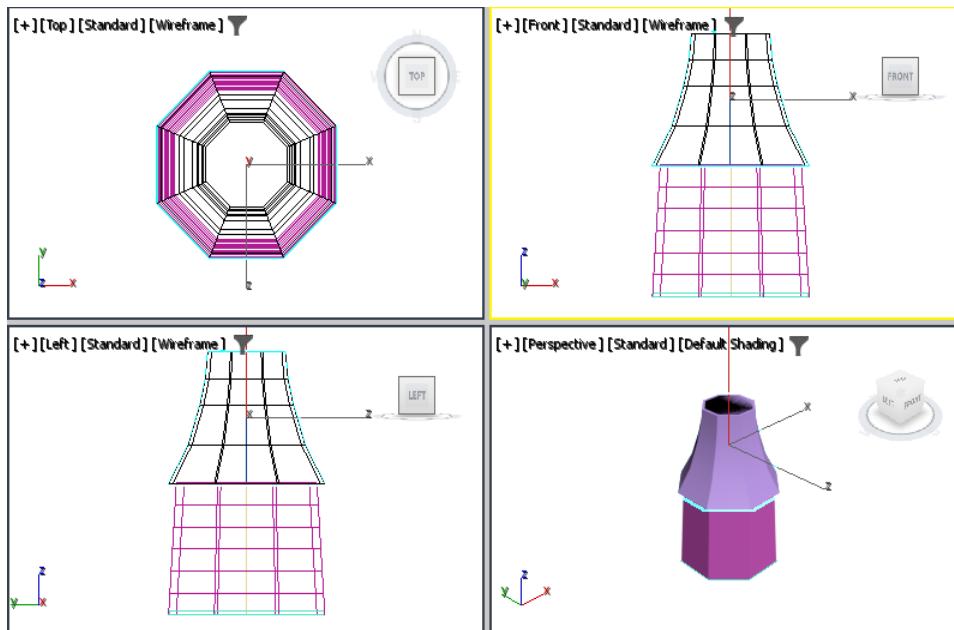


Figure P1-11 Walls created for the middle structure of the windmill

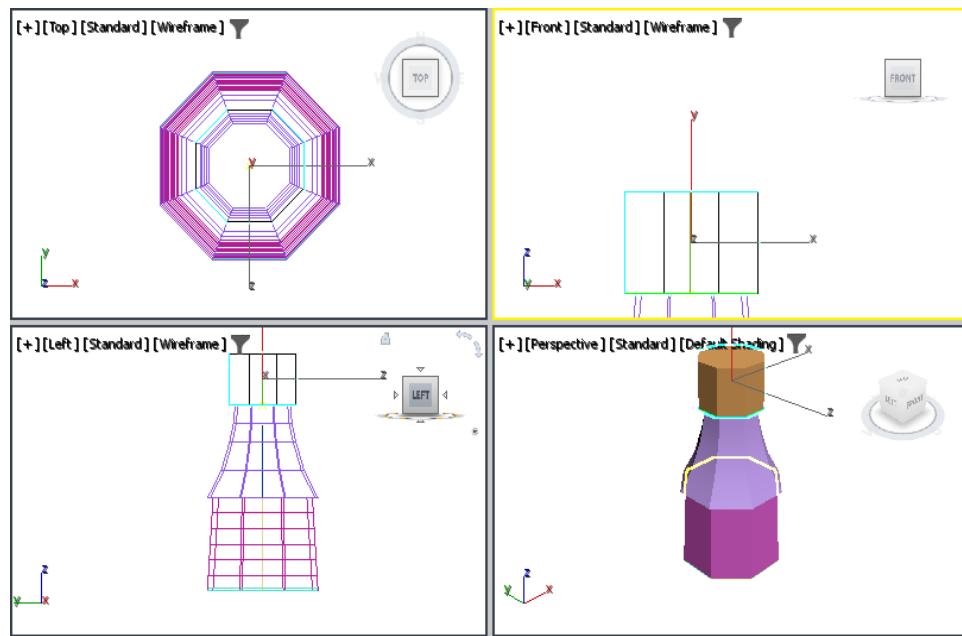


Figure P1-12 NGon002 lofted along the line

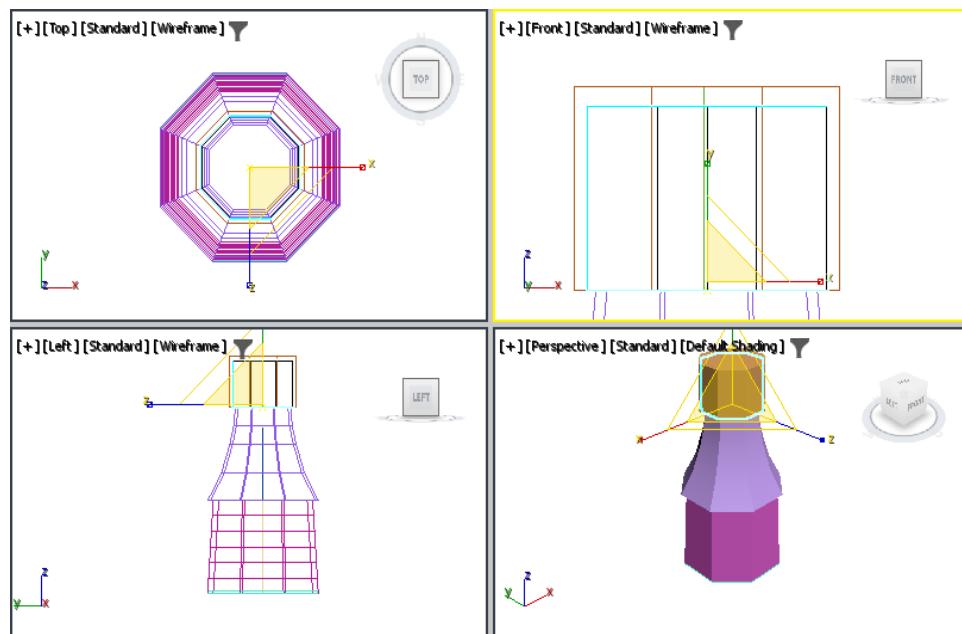


Figure P1-13 Top_drill scaled uniformly

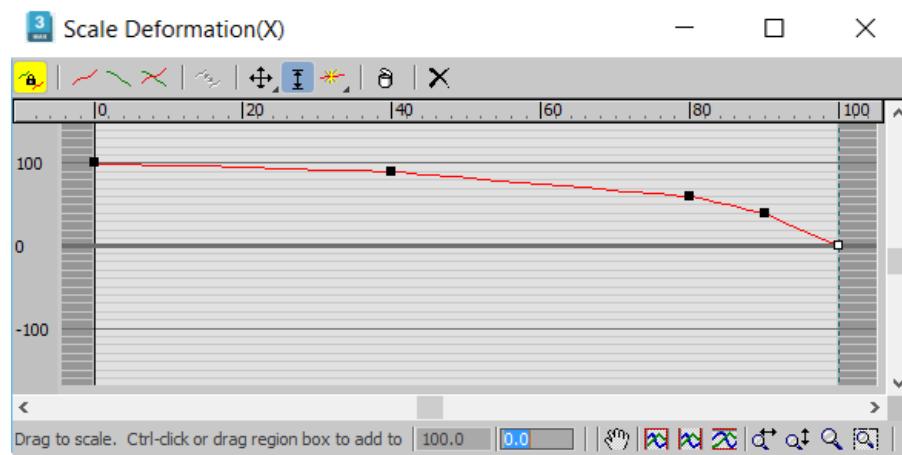


Figure P1-14 Top_drill modified using the **Scale Deformation(X)** dialog box

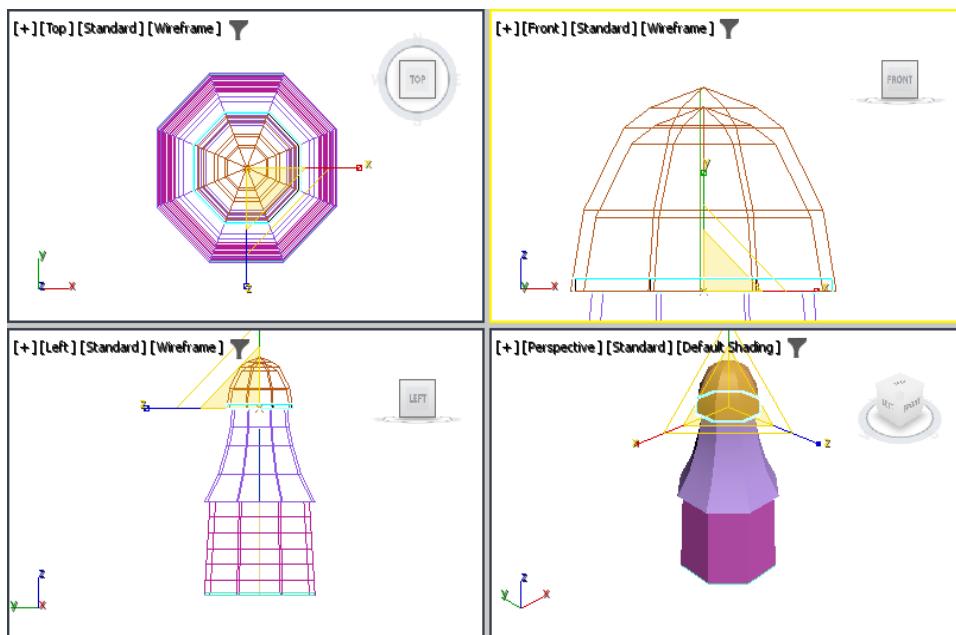


Figure P1-15 Floor_top extruded

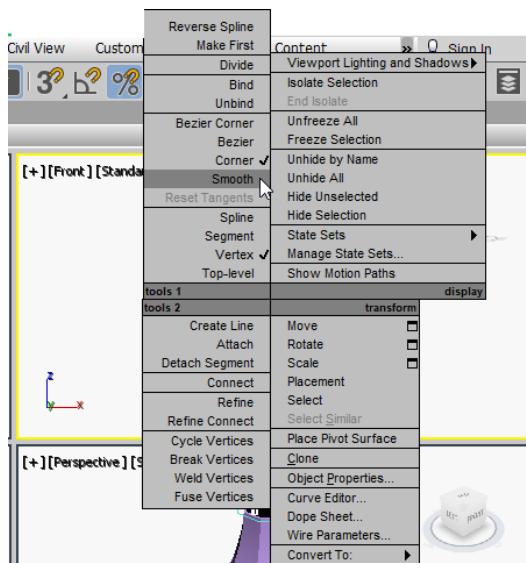


Figure P1-16 The quad menu displayed

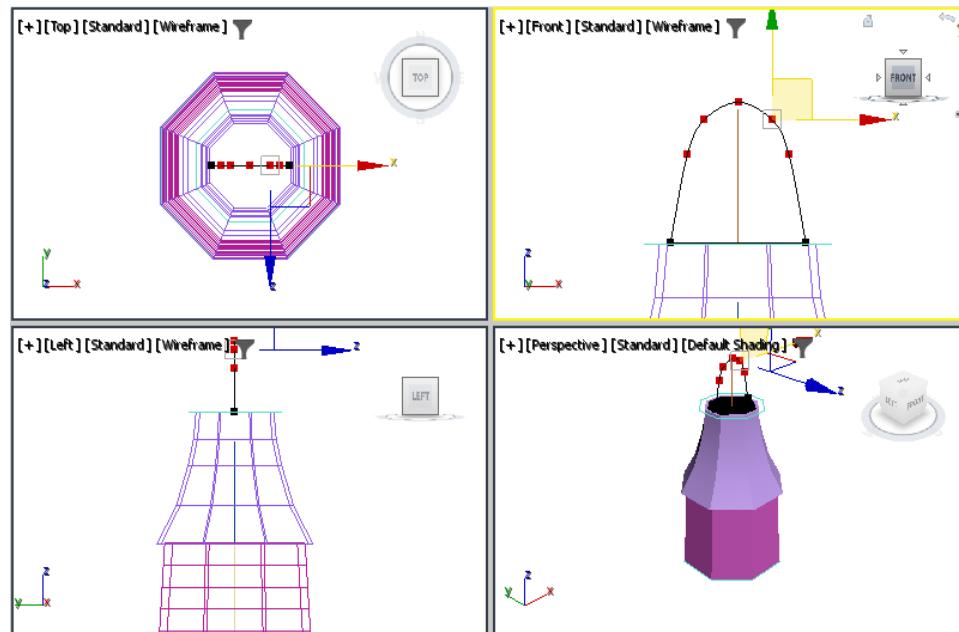


Figure P1-17 Ext01 line smoothed

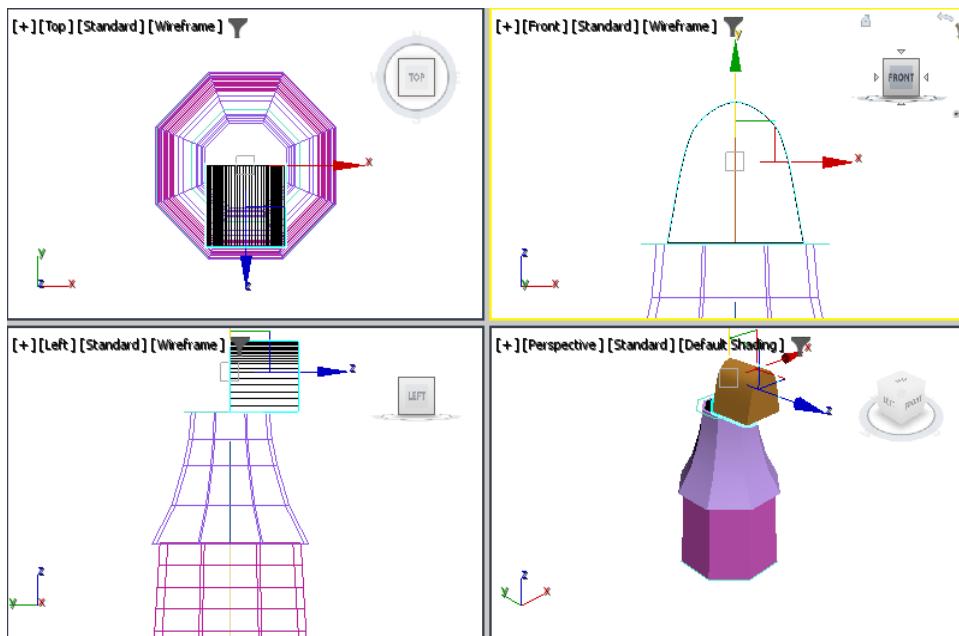


Figure P1-18 Ext01 line extruded

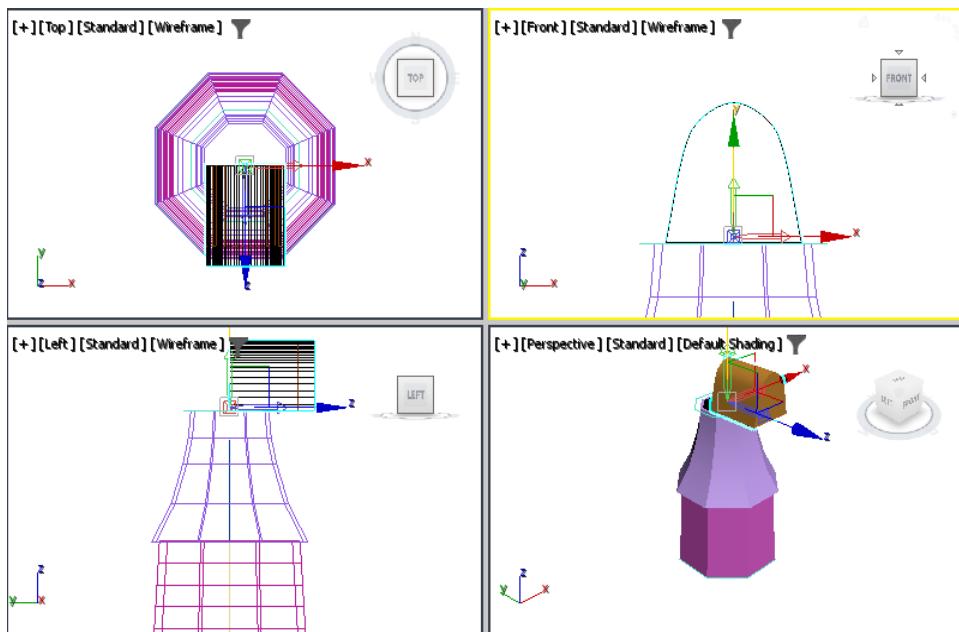


Figure P1-19 The pivot point aligned at the bottom of Drill02

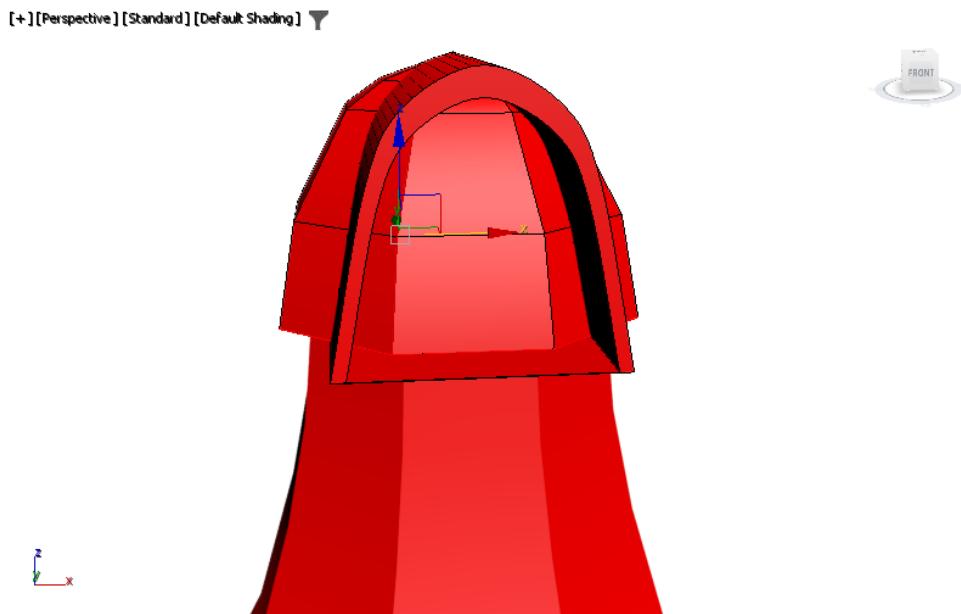


Figure P1-20 Moving edges of Base_top

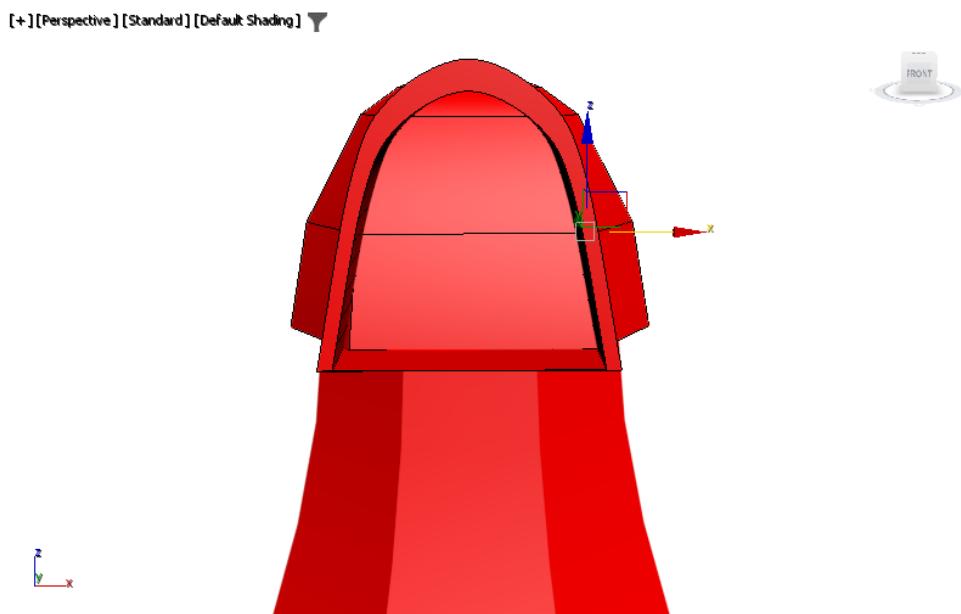


Figure P1-21 Selecting the inner polygons of Base_top

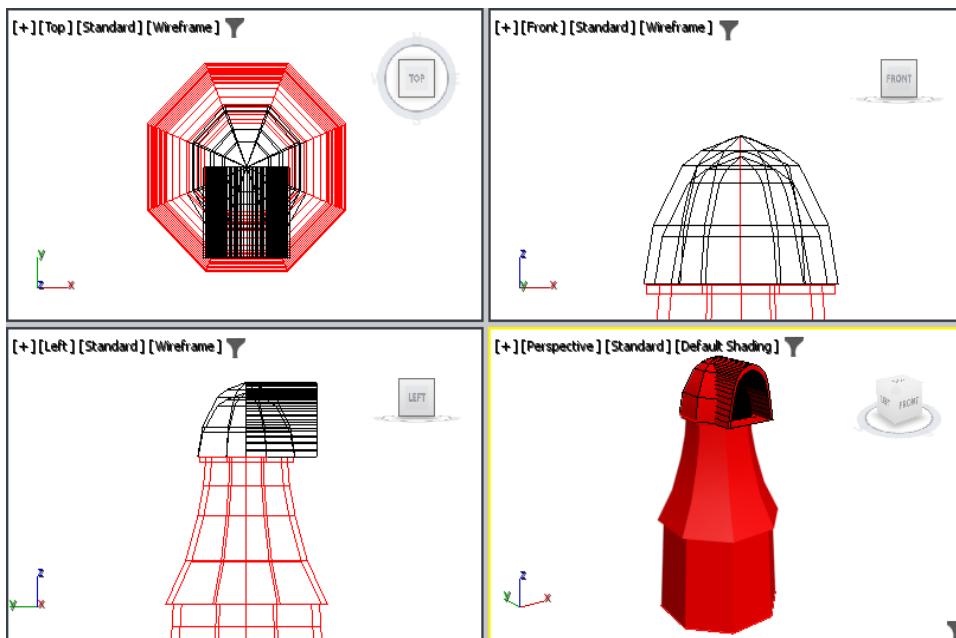


Figure P1-22 Deleting the inner polygons of the *Base_top*

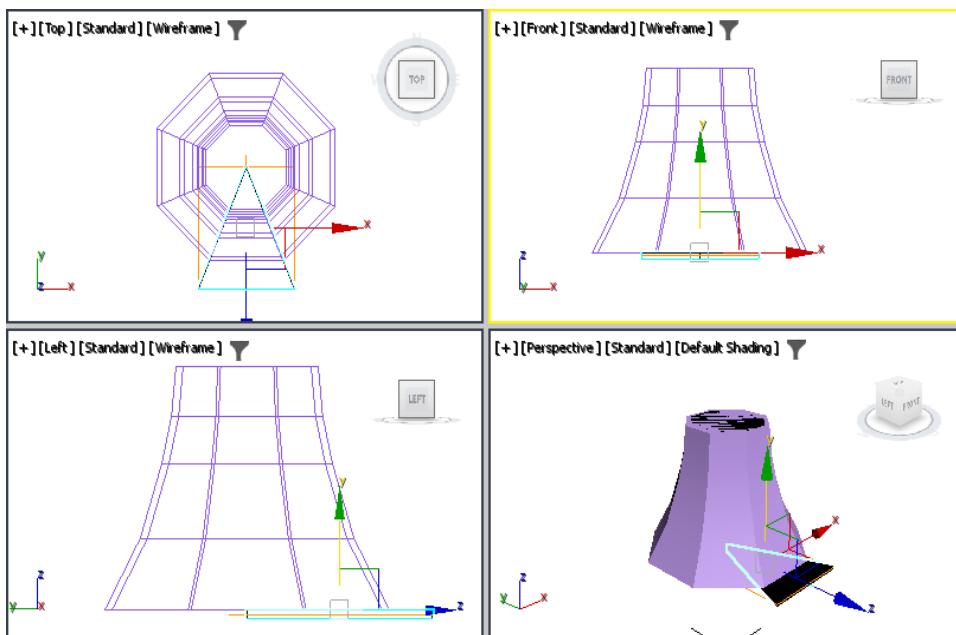


Figure P1-23 Deck01 extruded in all viewports

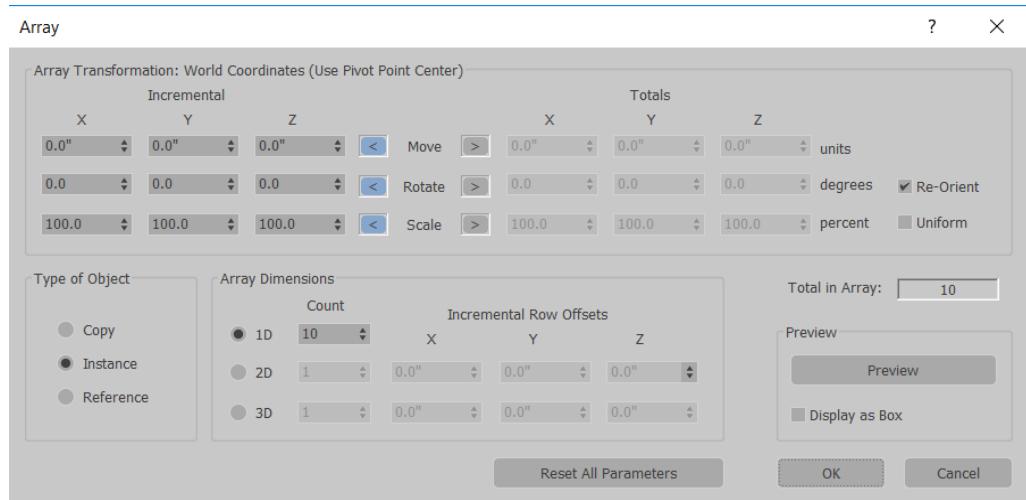


Figure P1-24 The Array dialog box

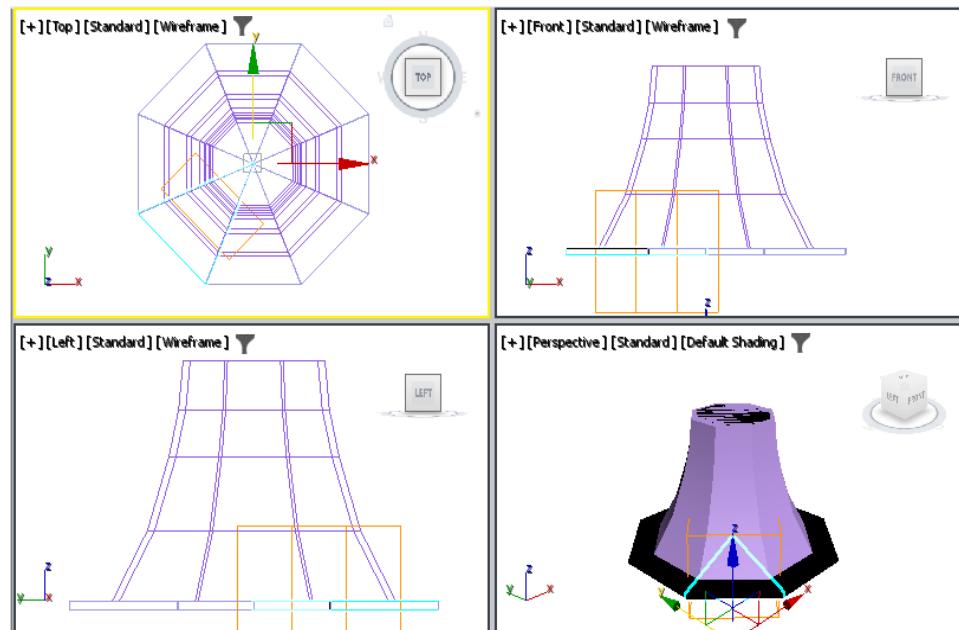


Figure P1-25 The array created

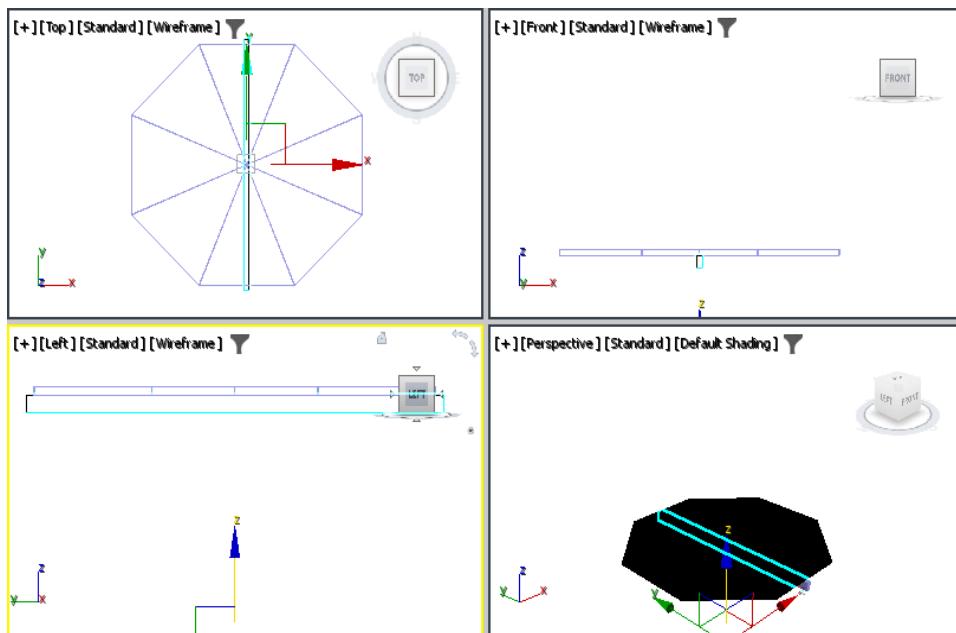


Figure P1-26 DeckBeam01 created and aligned

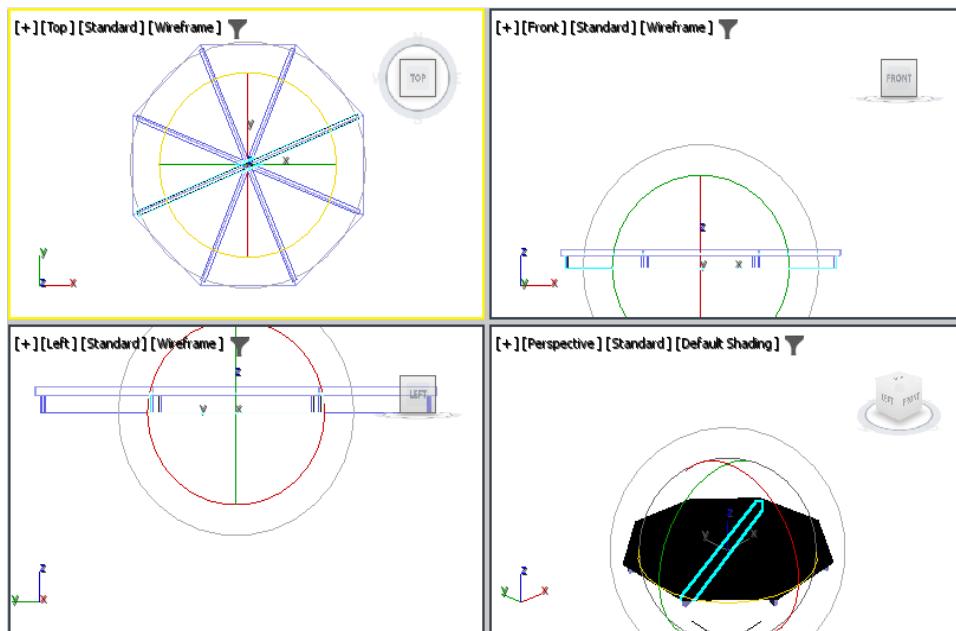


Figure P1-27 The copies of DeckBeam01 created

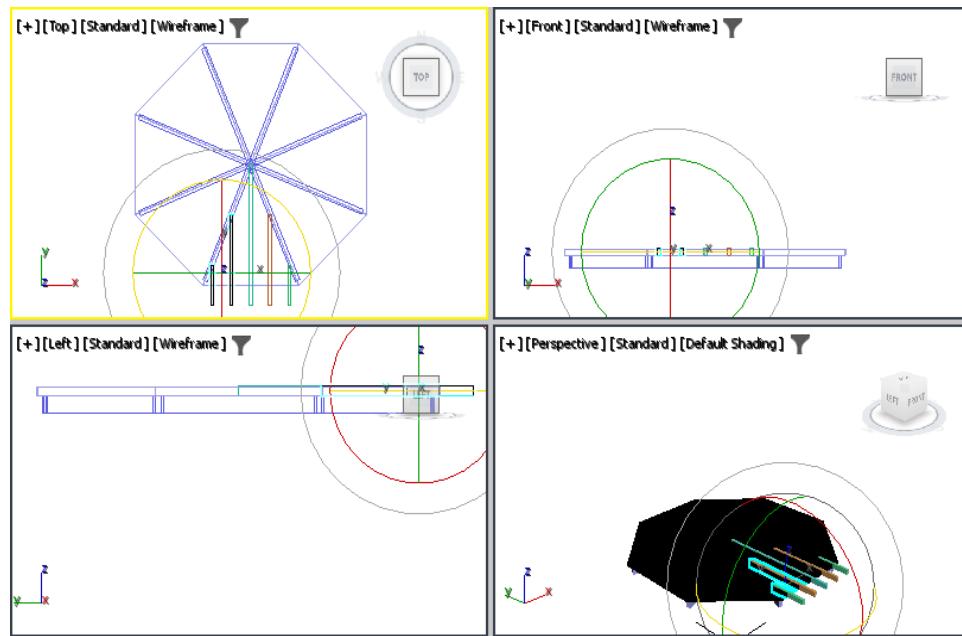


Figure P1-28 Two more deck boards created

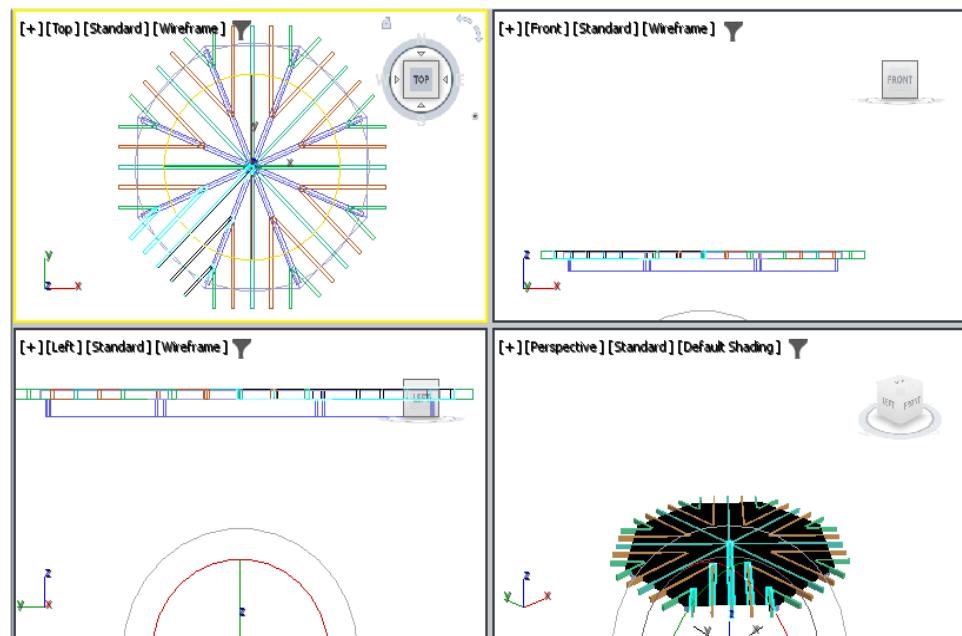


Figure P1-29 The array of deck support boards created using the *Array* tool

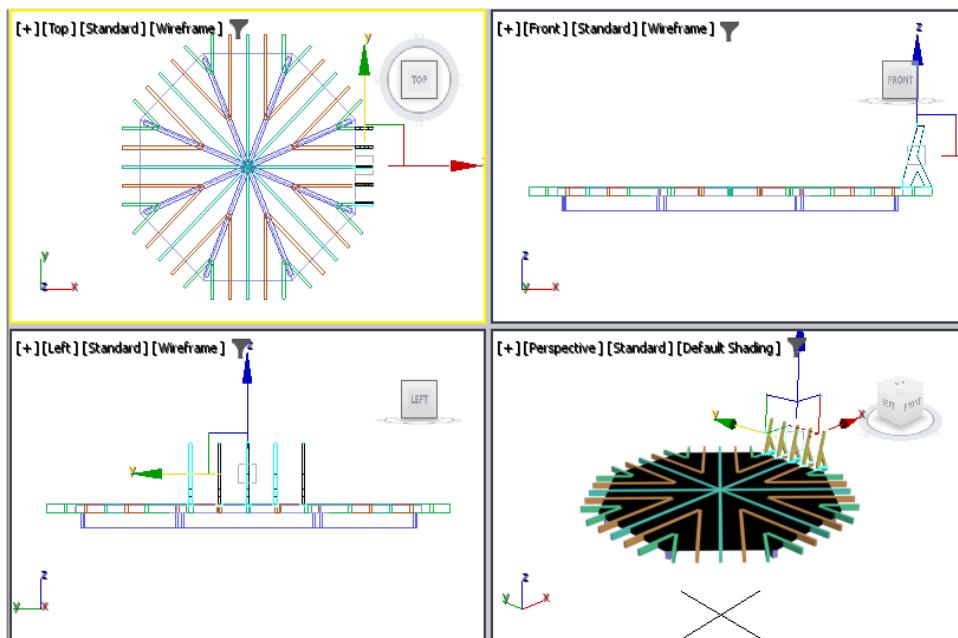


Figure P1-30 DeckRail_Group01 created in all viewports

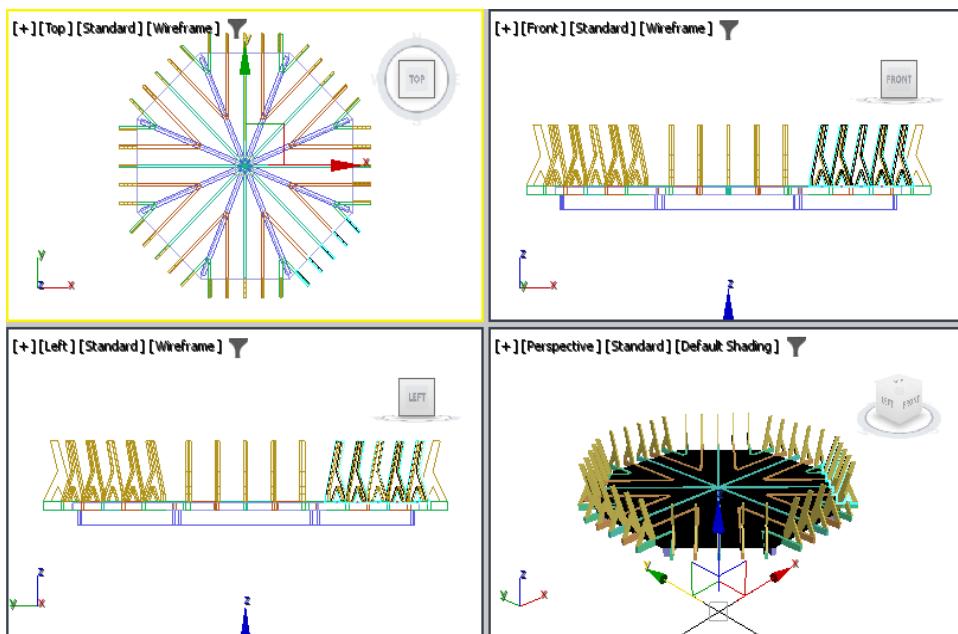


Figure P1-31 The set of DeckRail_Group objects created

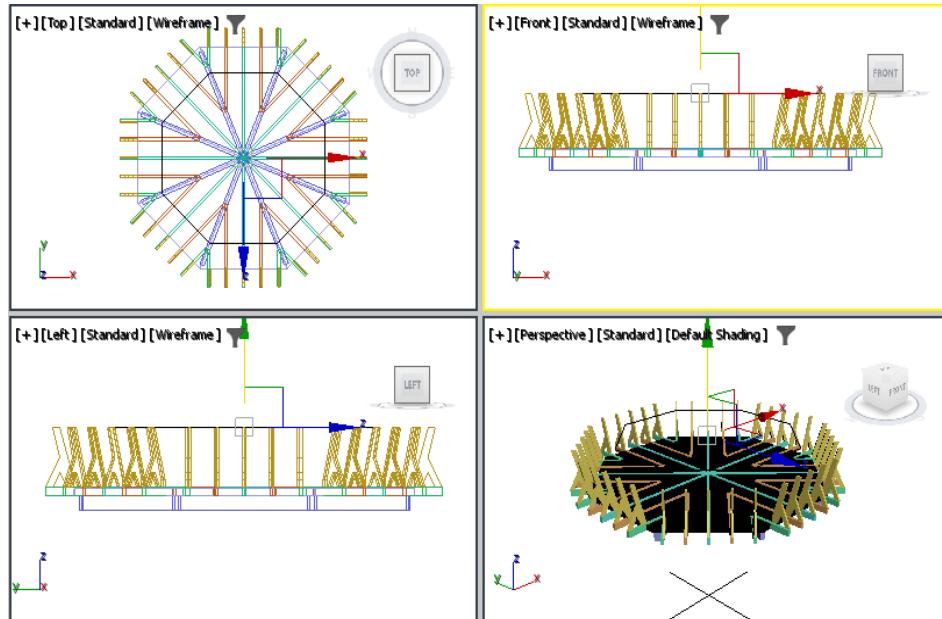


Figure P1-32 NGon004 created and positioned

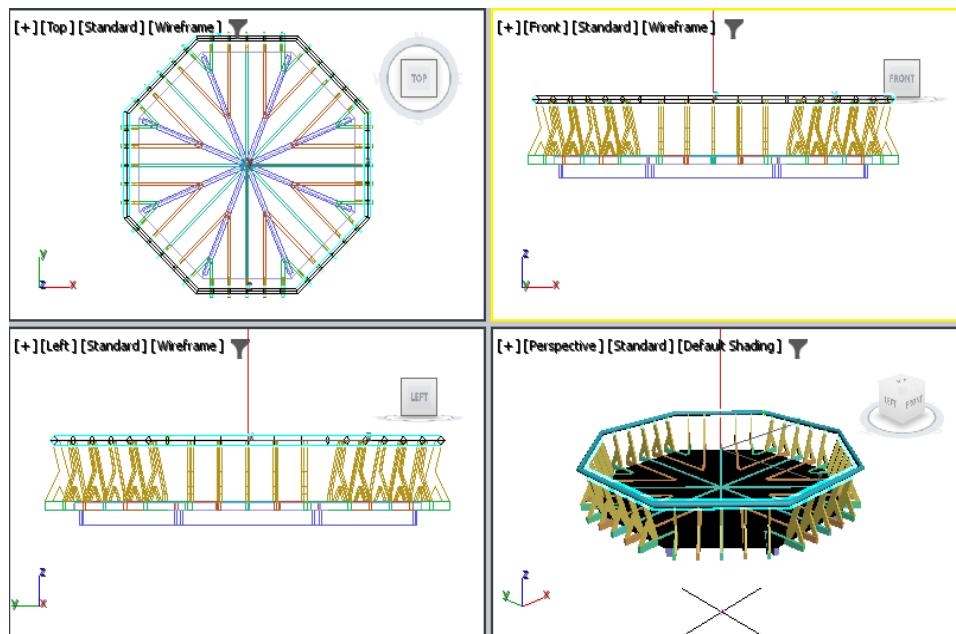


Figure P1-33 Handrail created in viewports

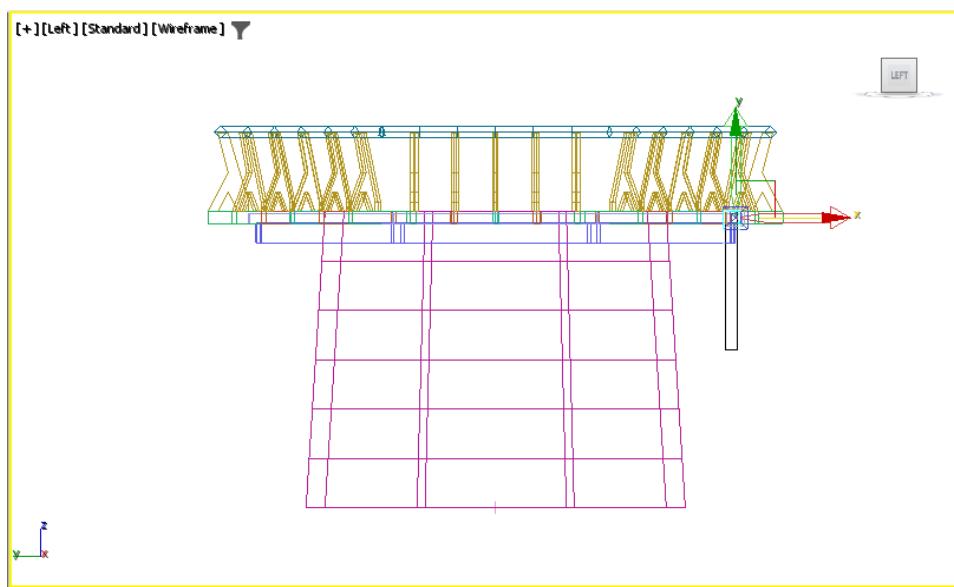


Figure P1-34 The pivot point of DeckBrace01 moved to the top right corner

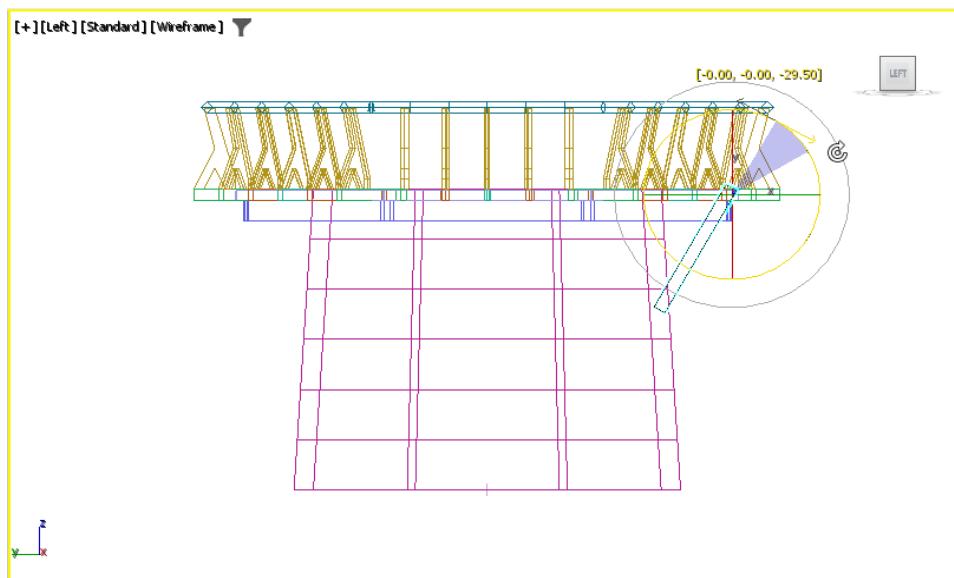


Figure P1-35 DeckBrace01 rotated in the Left viewport

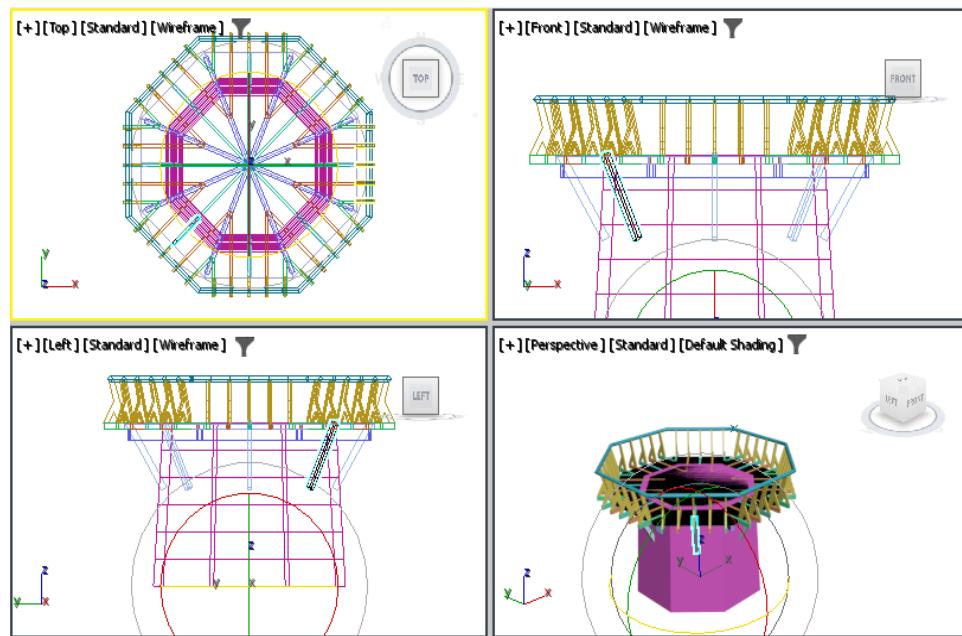


Figure P1-36 The clones of DeckBrace01 created

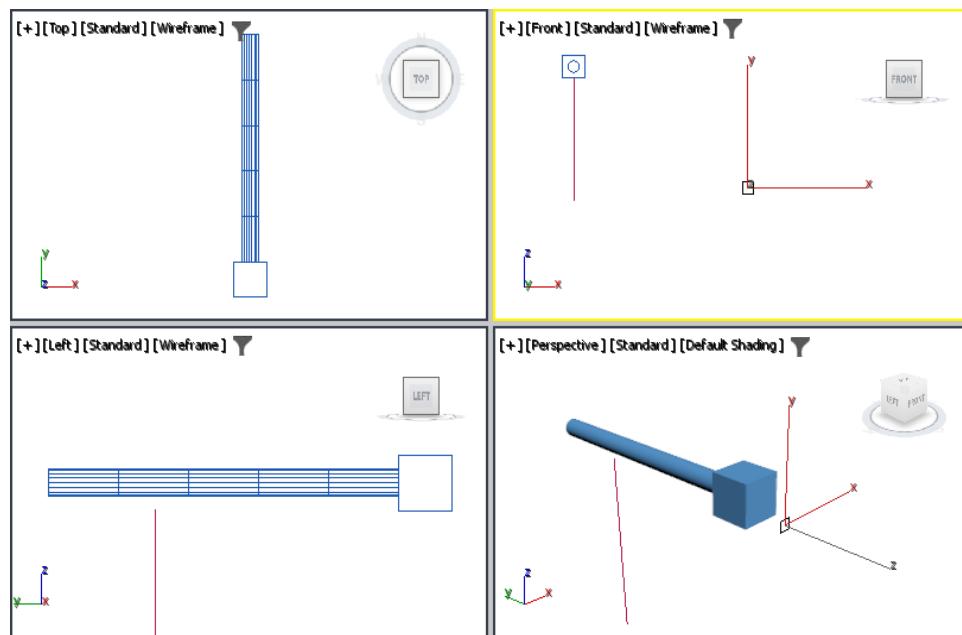


Figure P1-37 A line and a square created

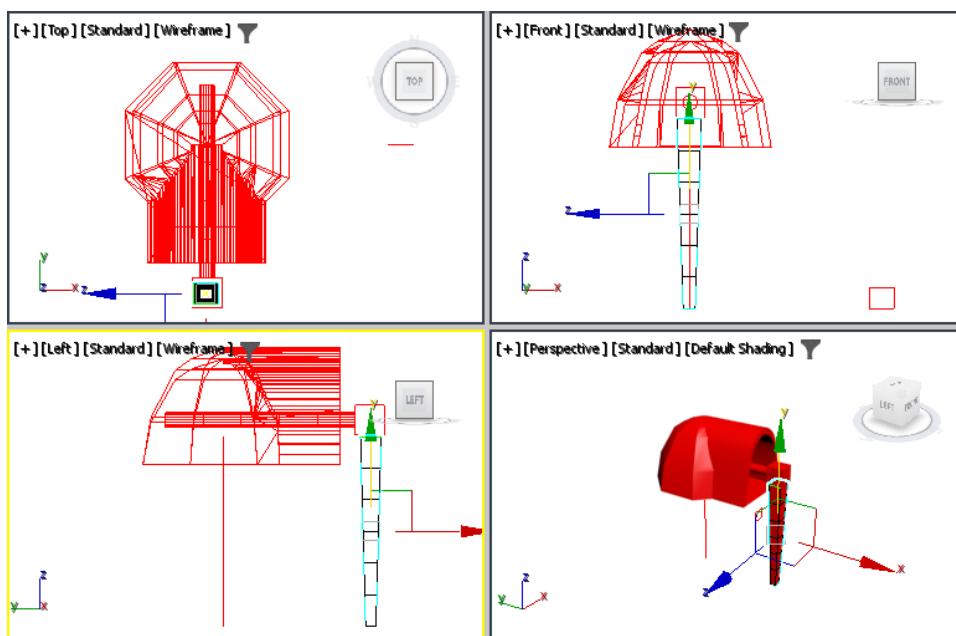


Figure P1-38 Hidden objects displayed in the viewports

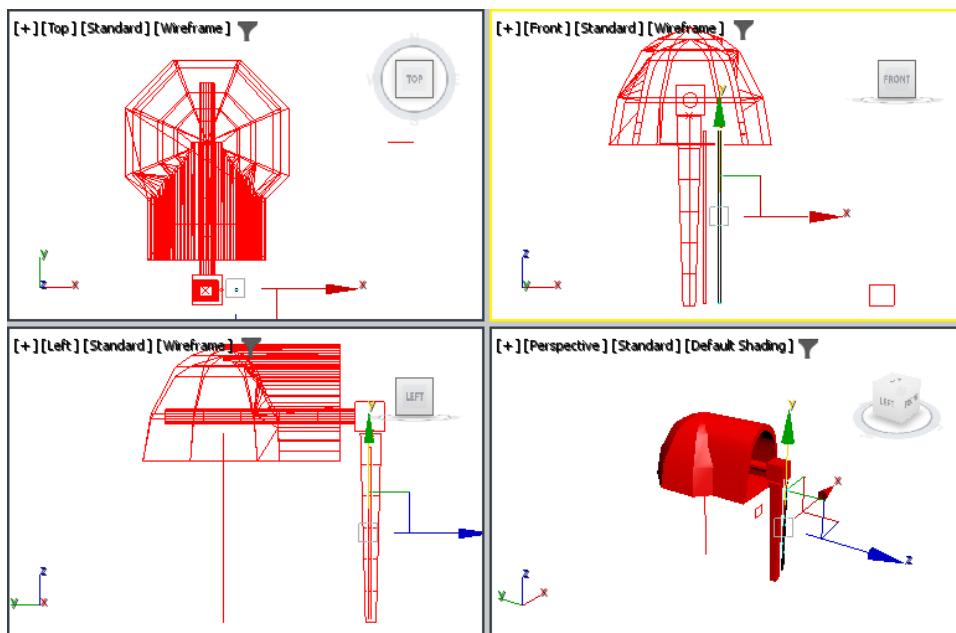


Figure P1-39 Rib01 and Rib02 created in viewports

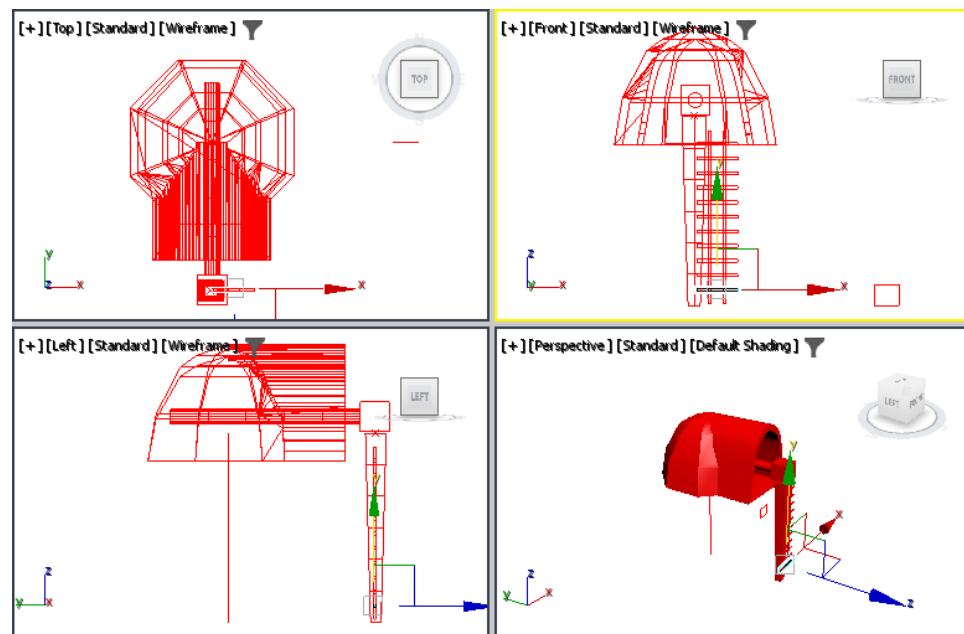


Figure P1-40 The array of horizontal ribs created

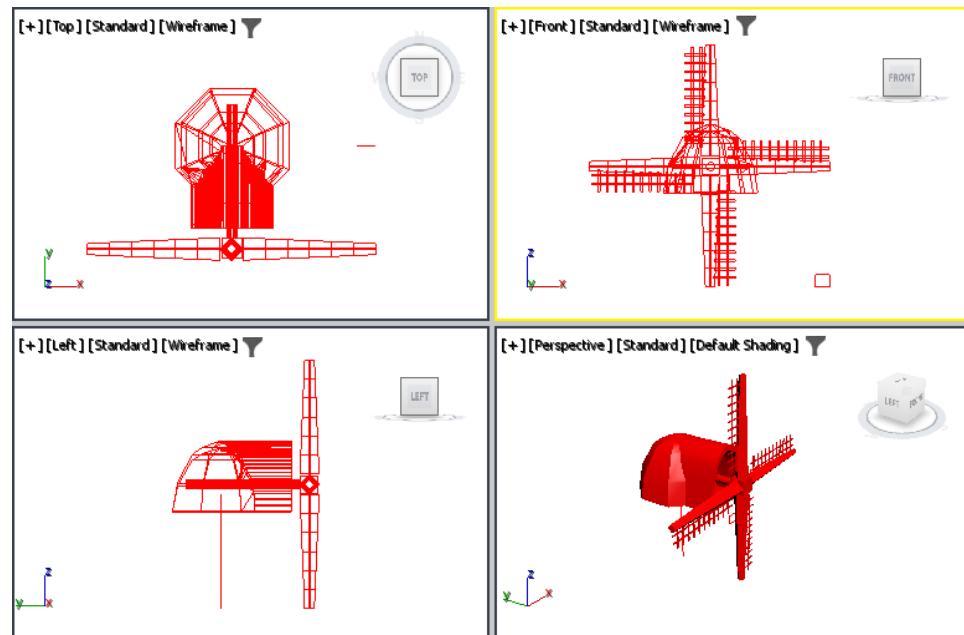


Figure P1-41 The blades of the windmill created

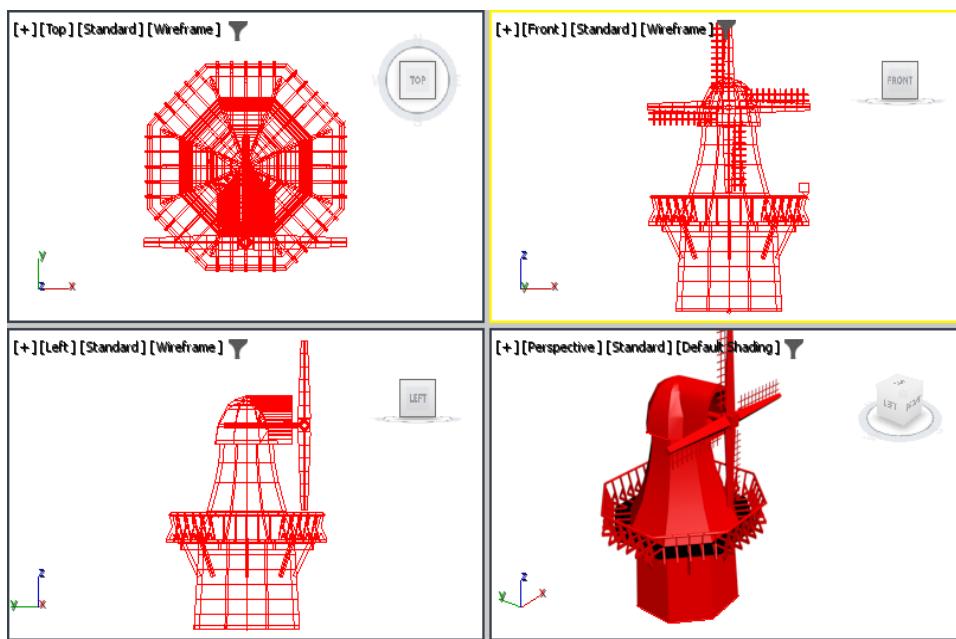


Figure P1-42 All objects of the windmill displayed

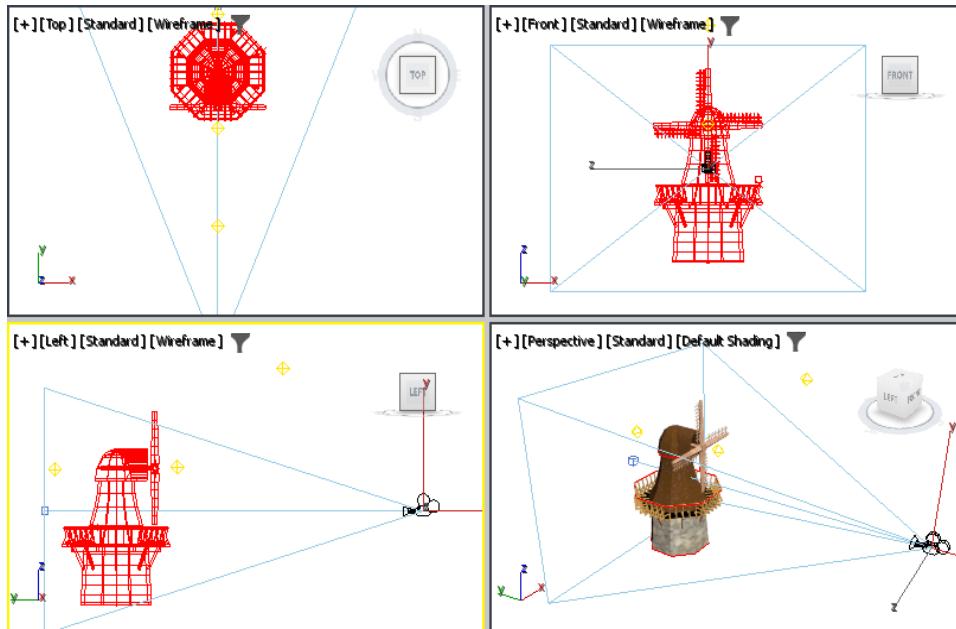


Figure P1-43 Lights and Camera created and positioned in the scene

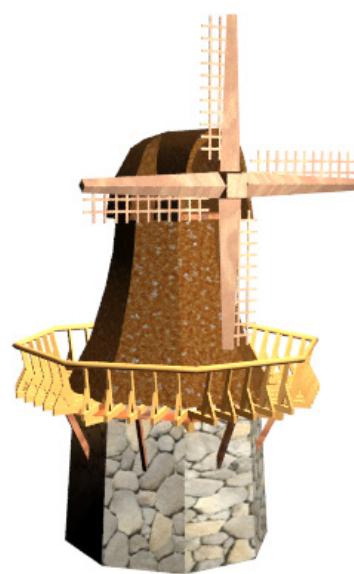


Figure P1-44 The scene displayed after rendering at frame 1

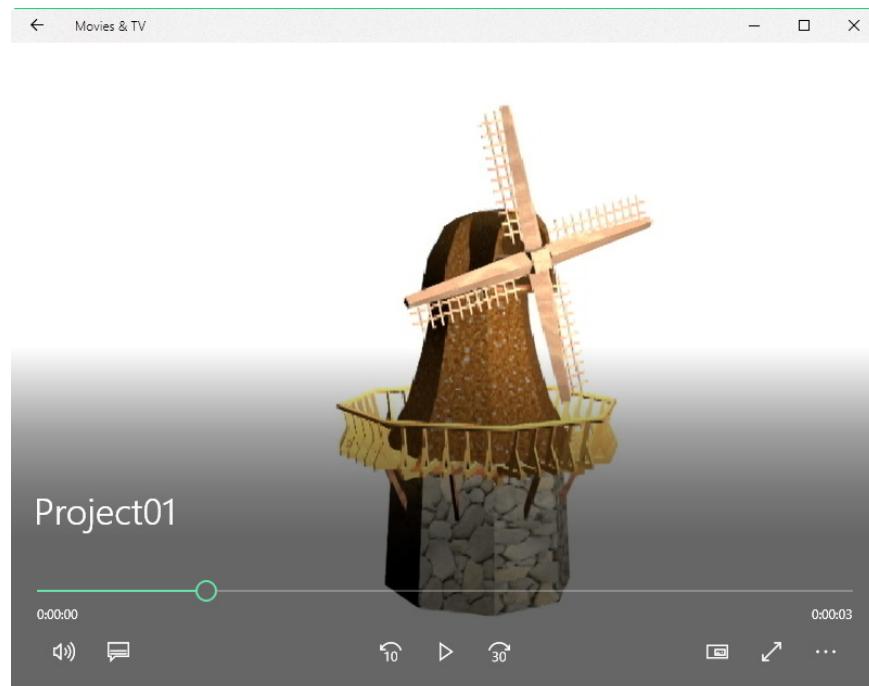


Figure P1-45 The animation played in Movies & TV Player



Figure P1-46 The animation played in Windows Media Player

Project 2

Creating a Diner



Figure P2-1 The scene of the diner

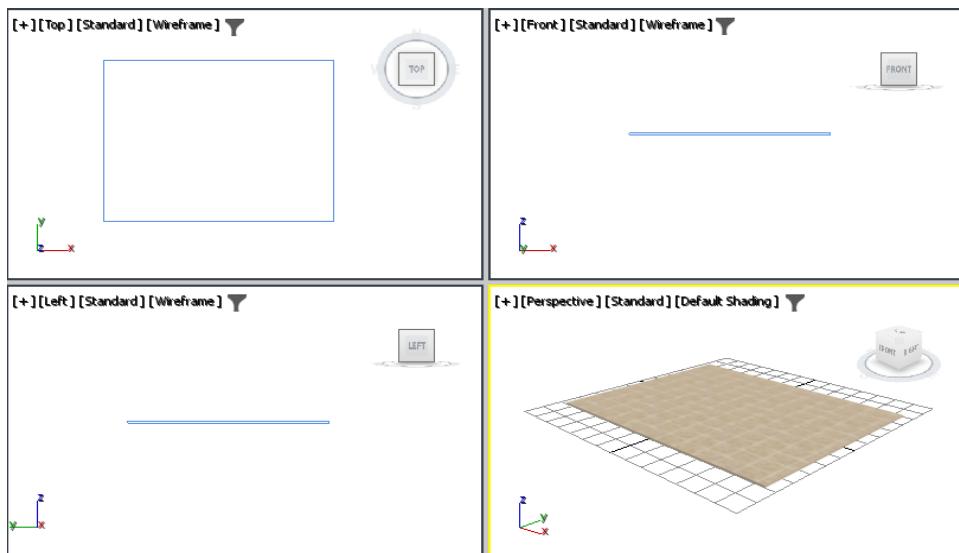


Figure P2-2 Floor created and a material assigned to it

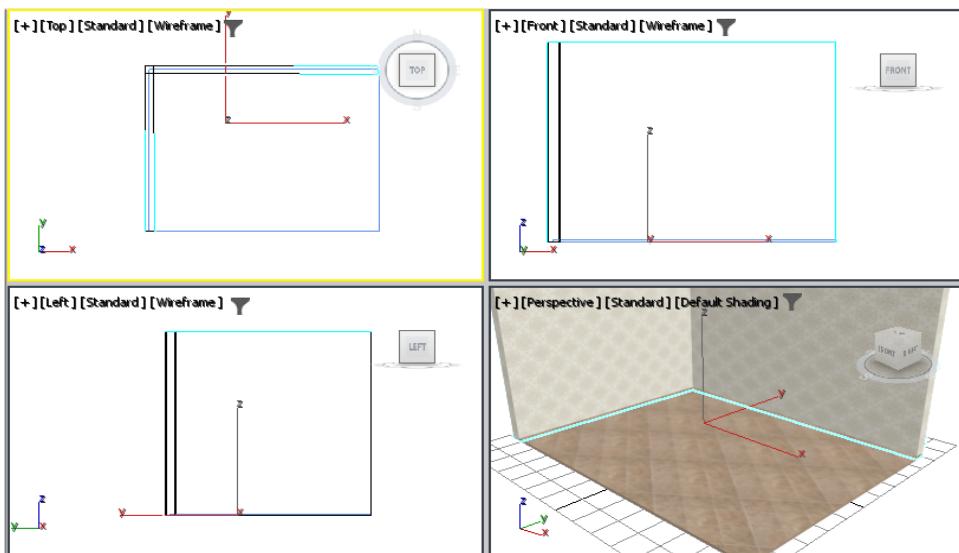


Figure P2-3 The wall01 in the viewports

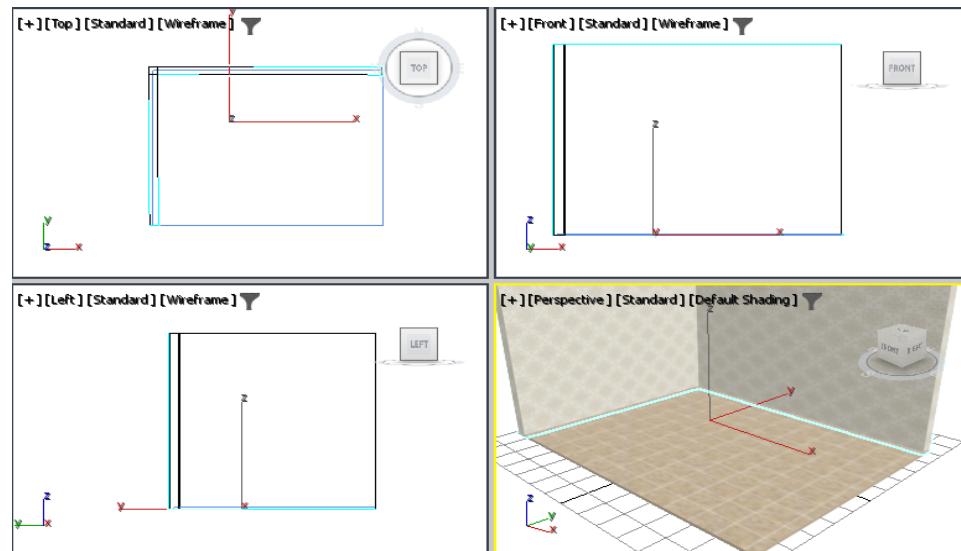


Figure P2-4 The material assigned to wall01 displayed in the viewport

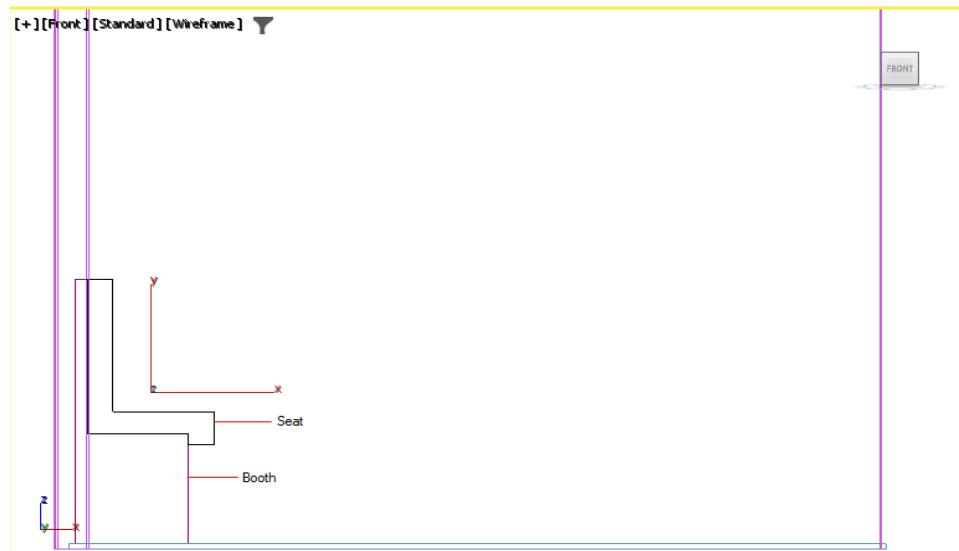


Figure P2-5 The profile of seat created

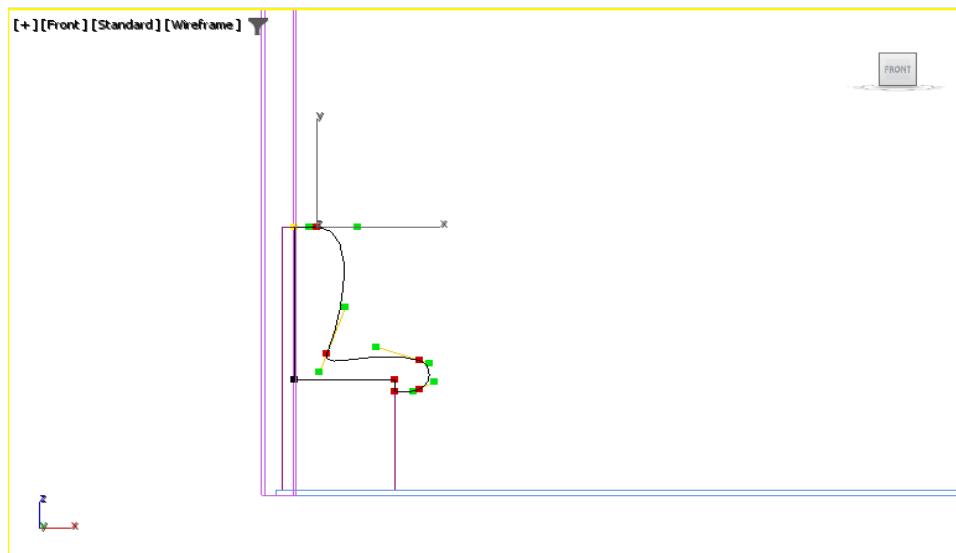


Figure P2-6 The vertices of Seat modified using the bezier handles

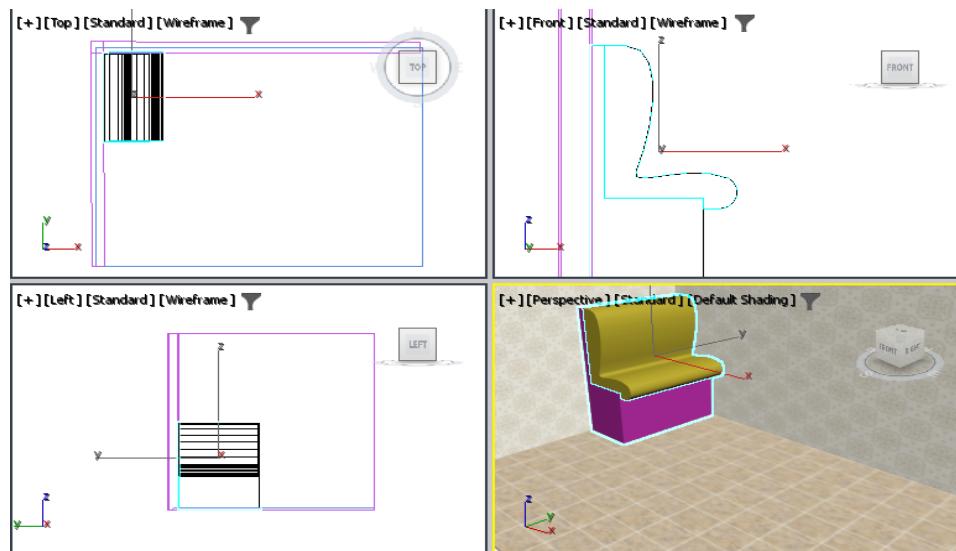


Figure P2-7 Booth and Seat created in the viewport

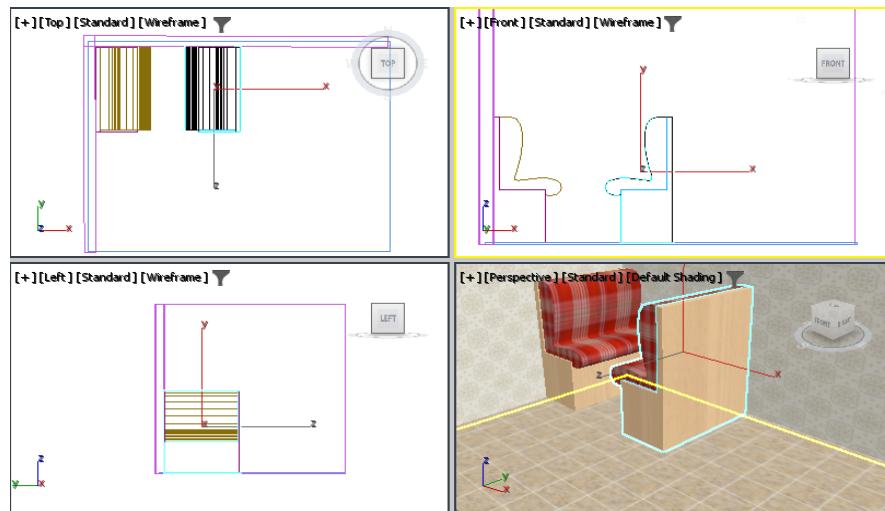


Figure P2-8 Mirror image created 40 units to the right of Booth01

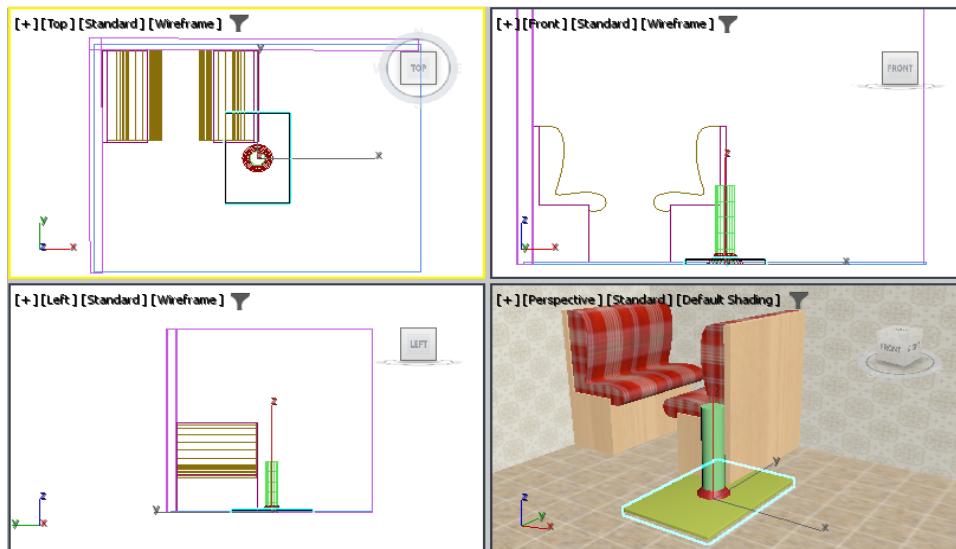


Figure P2-9 Top created

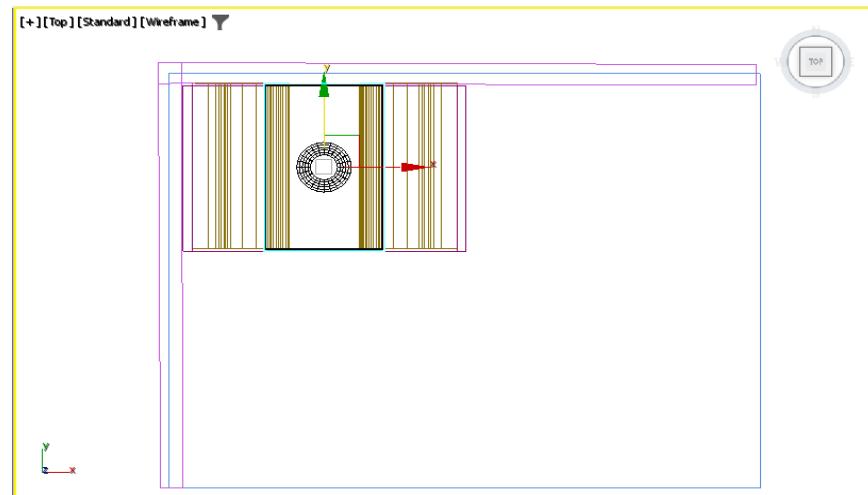


Figure P2-10 The table components aligned

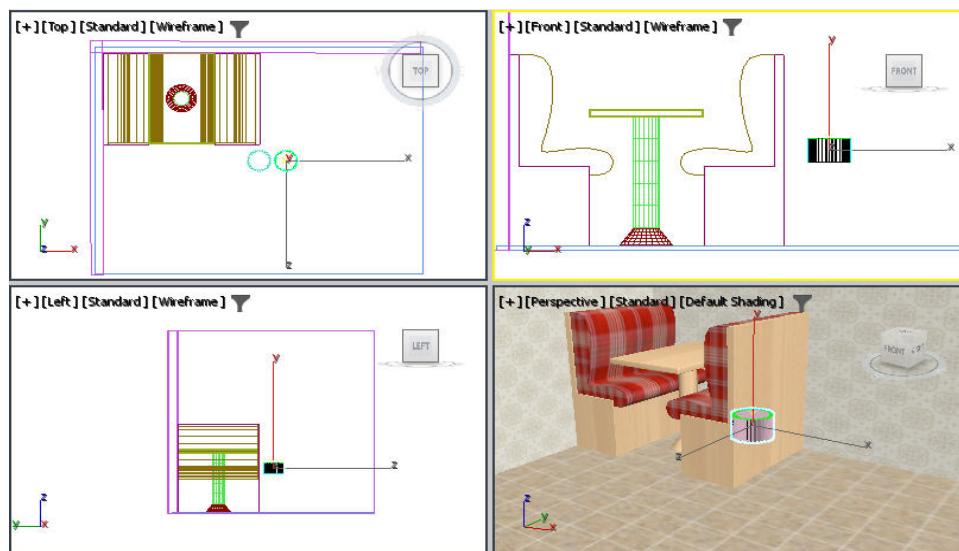


Figure P2-11 The lofted star shape

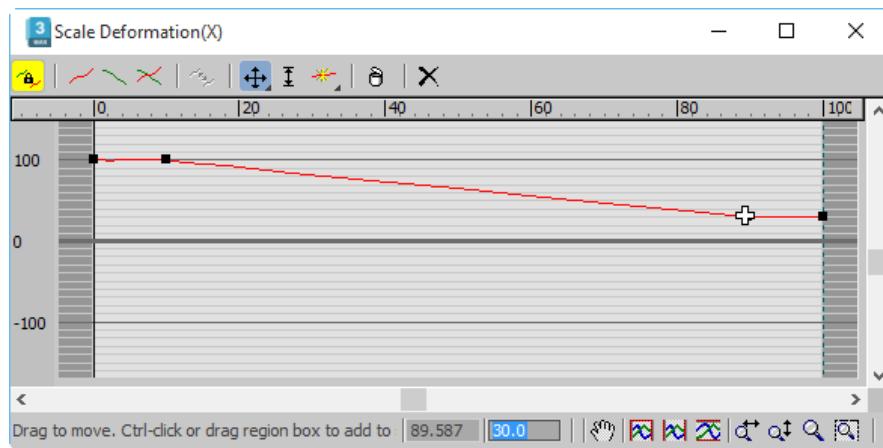


Figure P2-12 The vertices created and moved in the Scale Deformation(X) dialog box

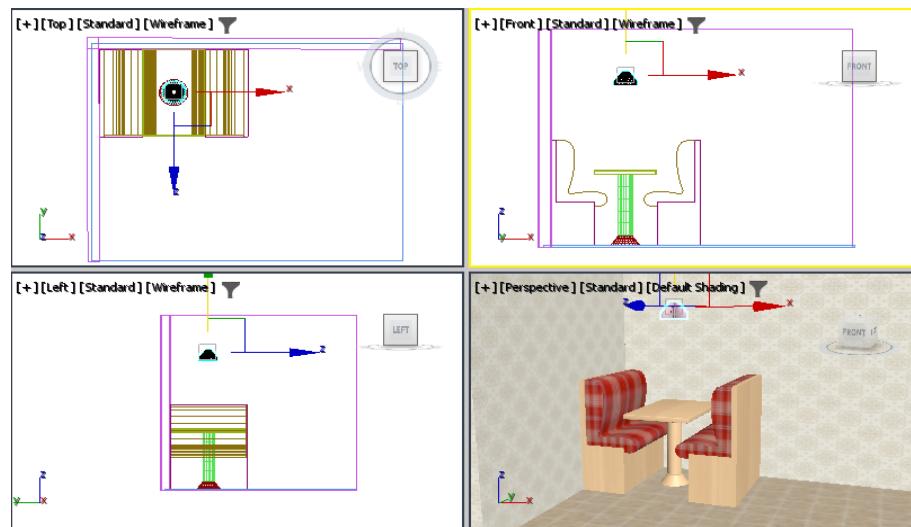


Figure P2-13(a) Shade moved into position

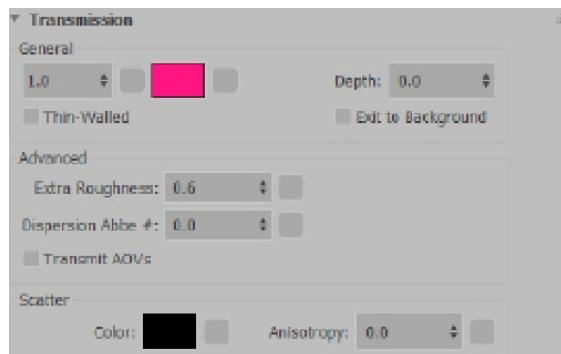


Figure P2-13 (b) Parameters set in the **Transmission** rollout

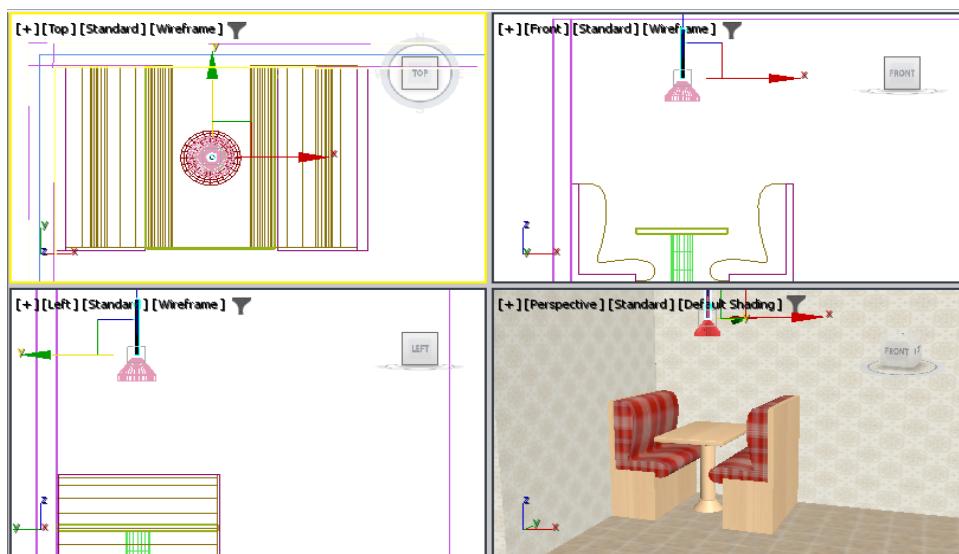


Figure P2-14 A suspension cylinder created

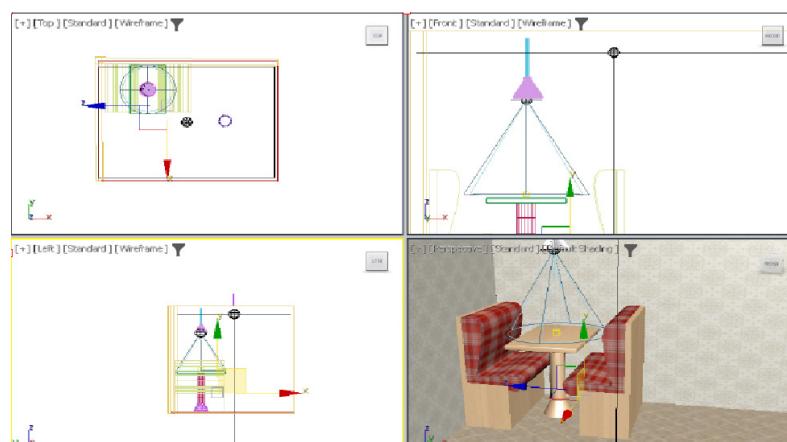


Figure P2-15 A light placed inside the lamp shade

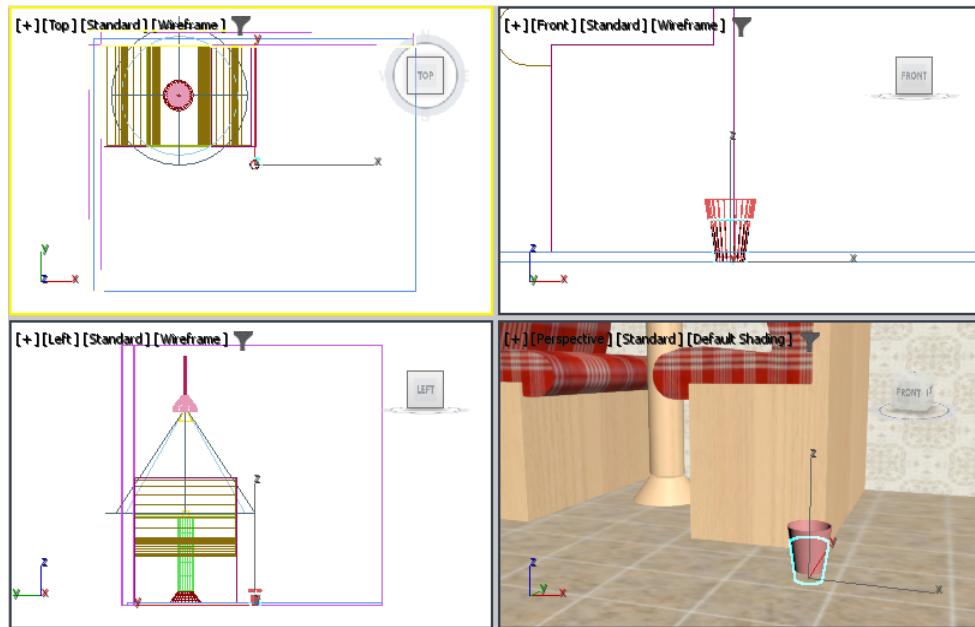


Figure P2-16 A glass with water created

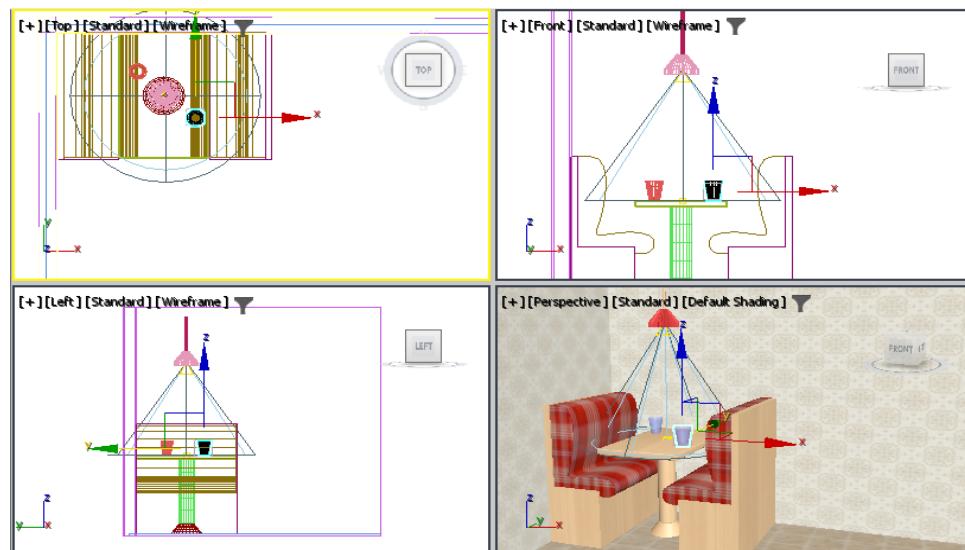


Figure P2-17 Drink02 created and positioned

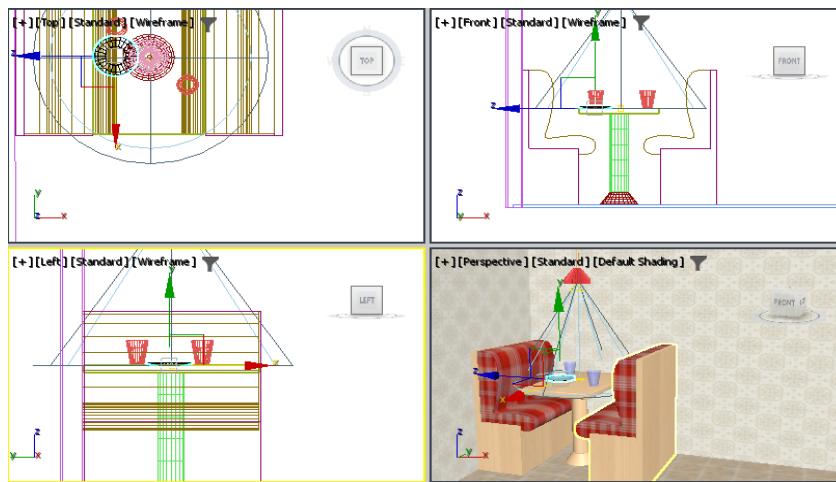


Figure P2-18 Plate01 created and positioned

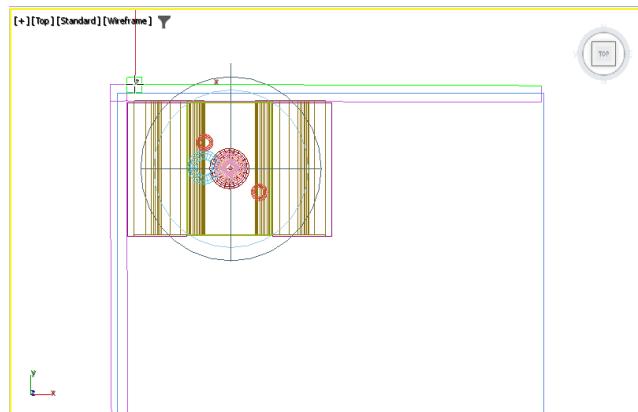


Figure P2-19 Clicking on the upper edge of wall01

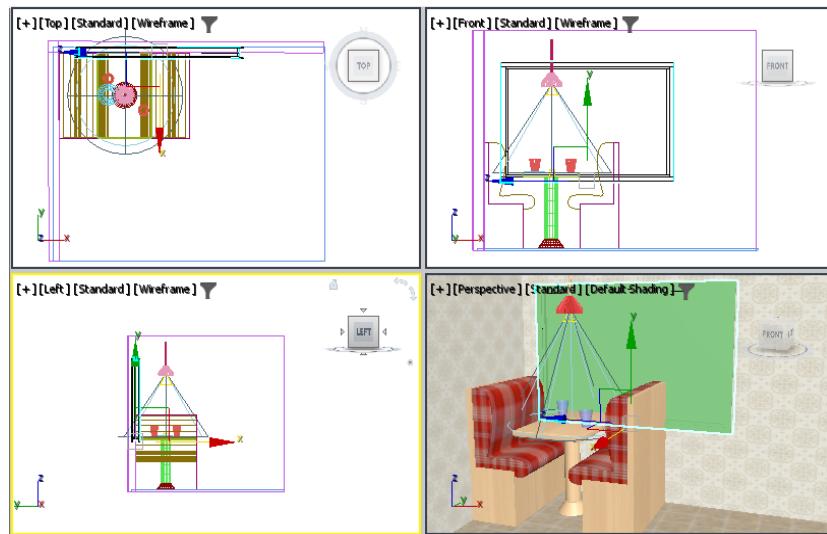


Figure P2-20 window01 aligned in the viewports

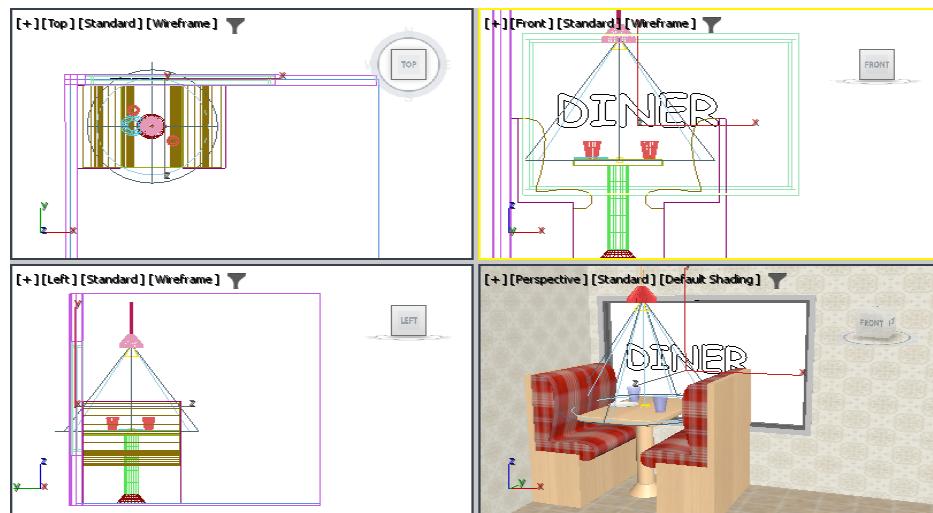


Figure P2-21 The text created

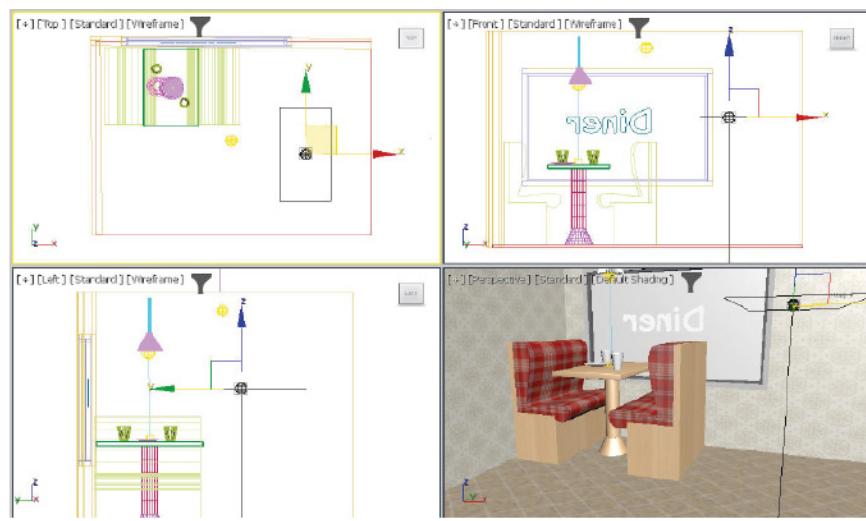


Figure P2-22 Arnold light created and positioned

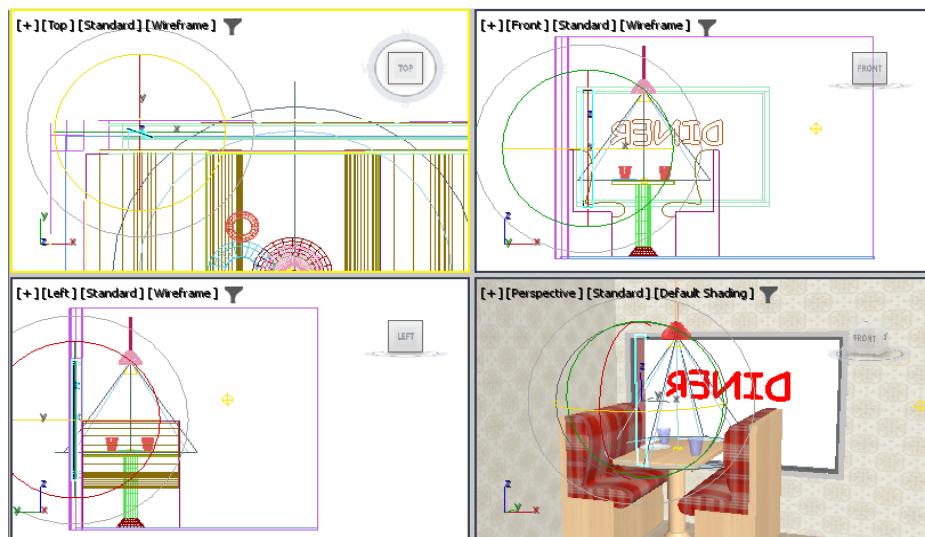


Figure P2-23 Blind01 created and positioned

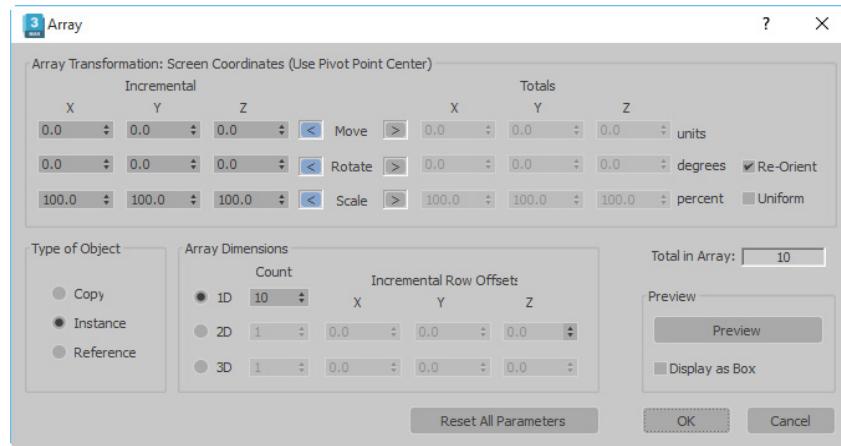


Figure P2-24 The Array dialog box

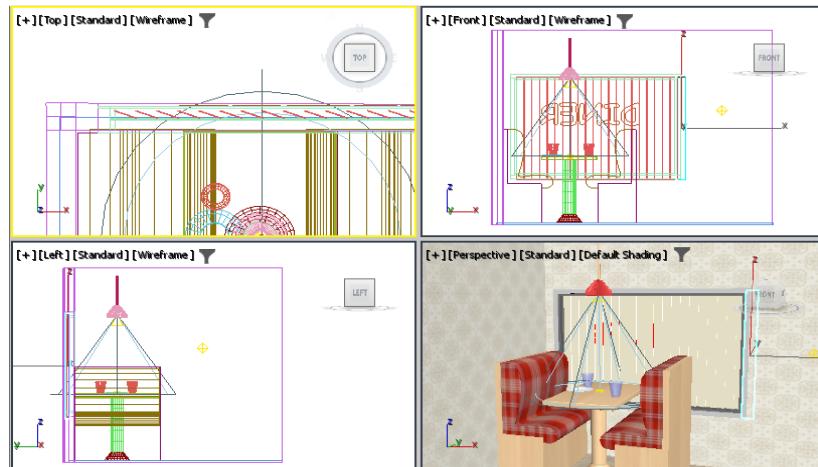


Figure P2-25 The blinds created using the Array tool

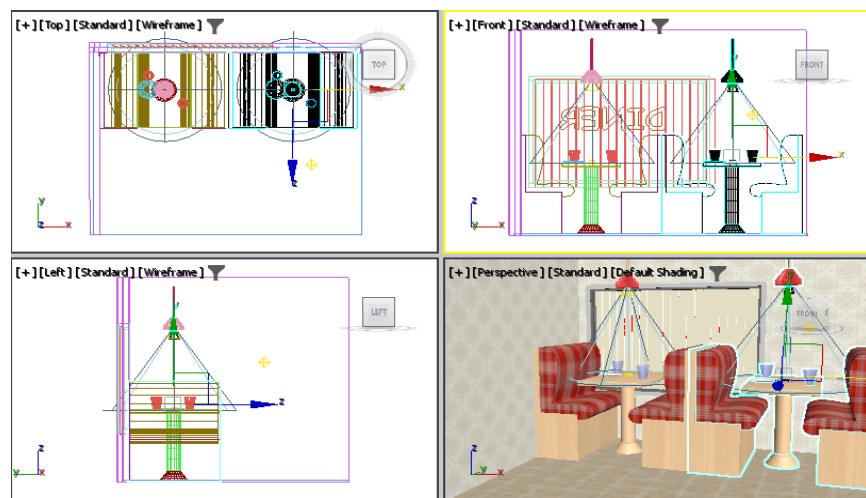


Figure P2-26 The selected objects copied and positioned

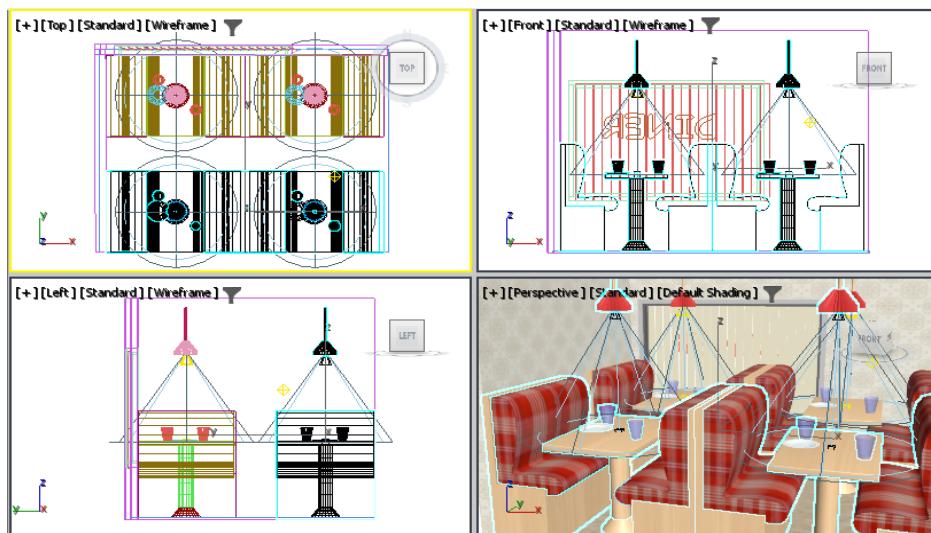


Figure P2-27 DinerSet03 created and aligned in the Top viewport

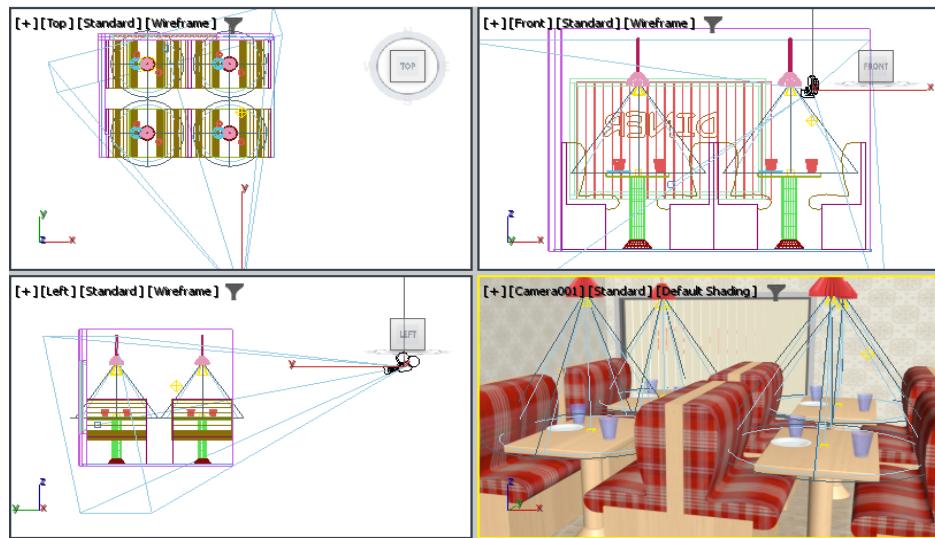


Figure P2-28 Aligning objects at the center of the *PhysCamera001* viewport

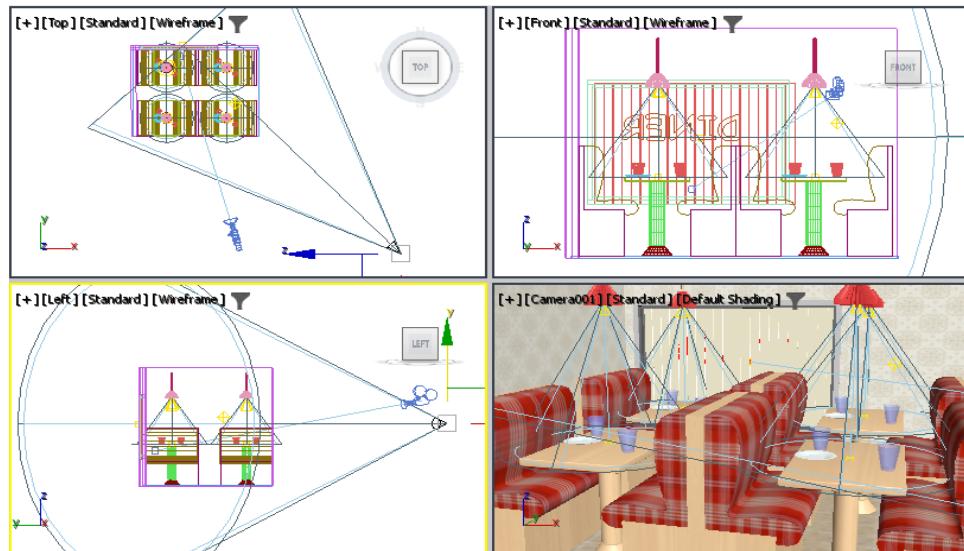


Figure P2-29 The spotlight target moved and placed in the middle of the window



Figure P2-30 The rendered view of the scene

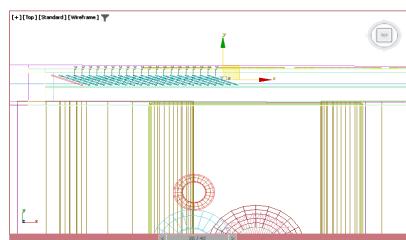


Figure P2-31 The blinds at the midpoint of the animation

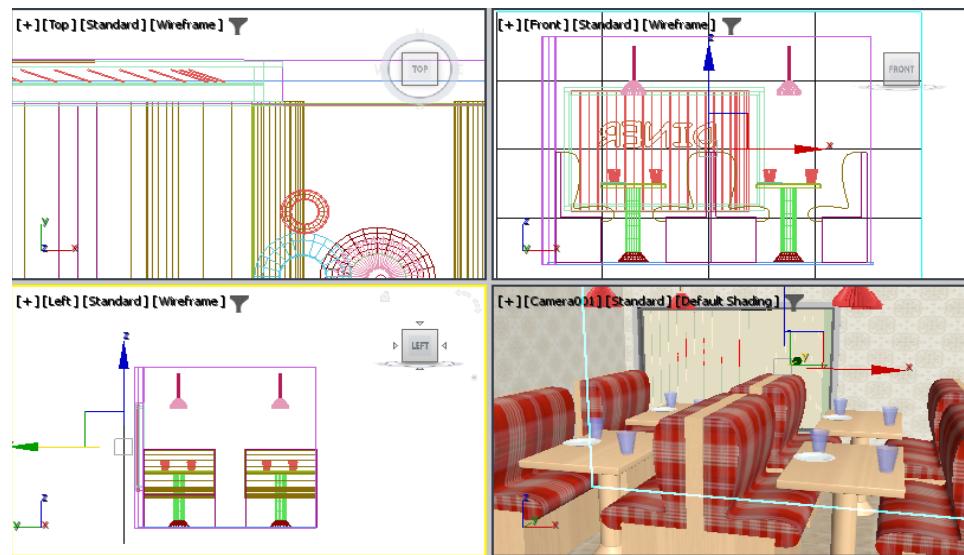


Figure P2-32 The Plane created and aligned on back of Wall01



Figure P2-33 The final animation rendered at frame 20

Project 3

Architectural Project



Figure P3-1 The structure of a residential garage

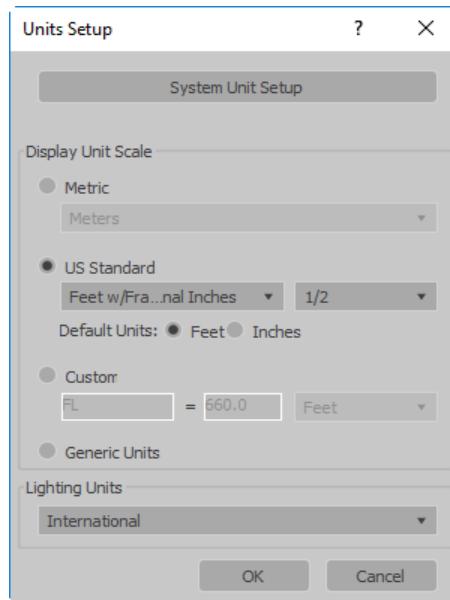


Figure P3-2 The **Units Setup** dialog box

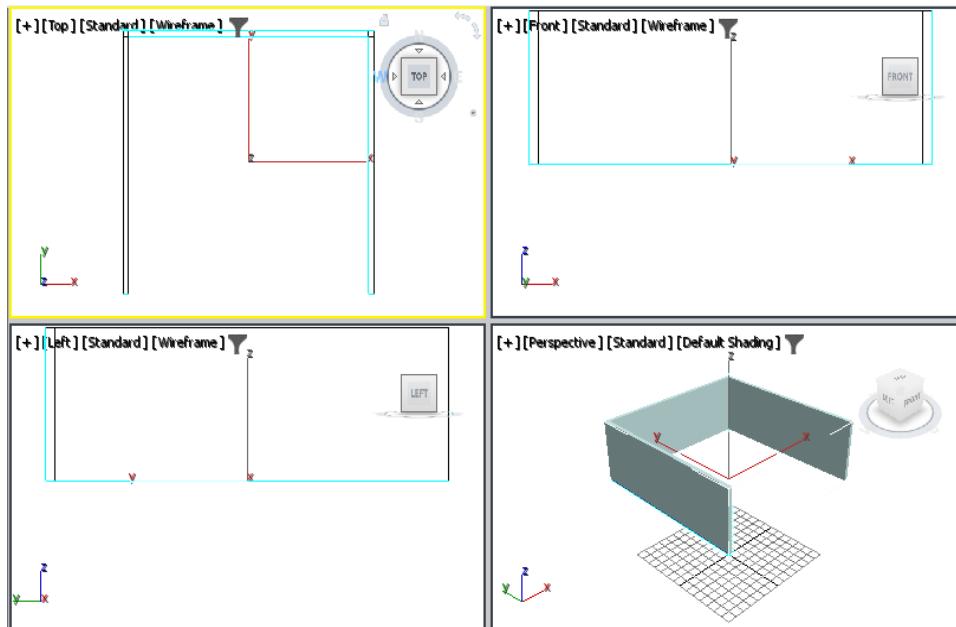


Figure P3-3 The 3D Wall001 created on top of the selected path

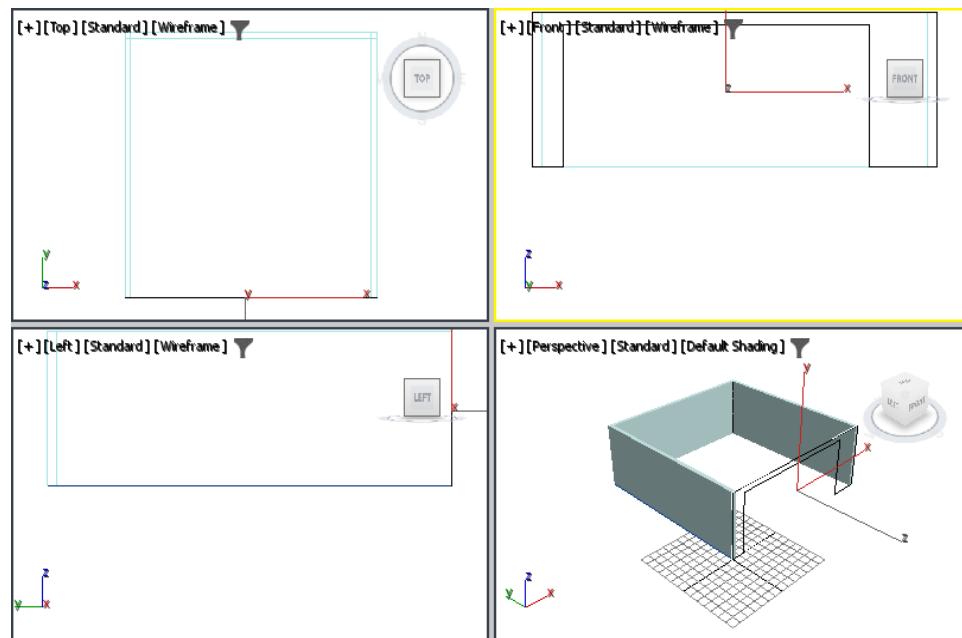


Figure P3-4 The front wall created

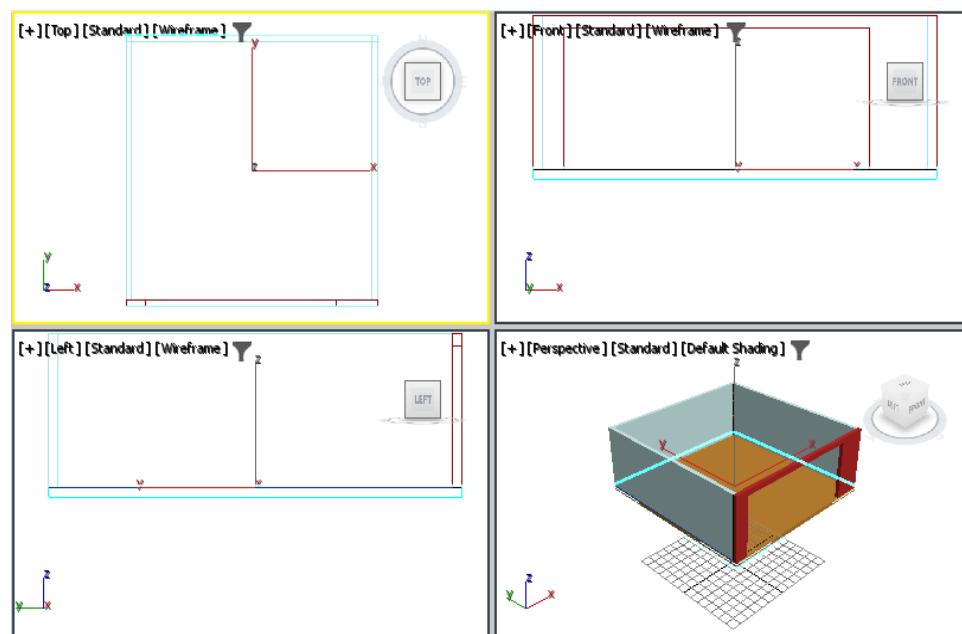


Figure P3-5 The floor and walls created

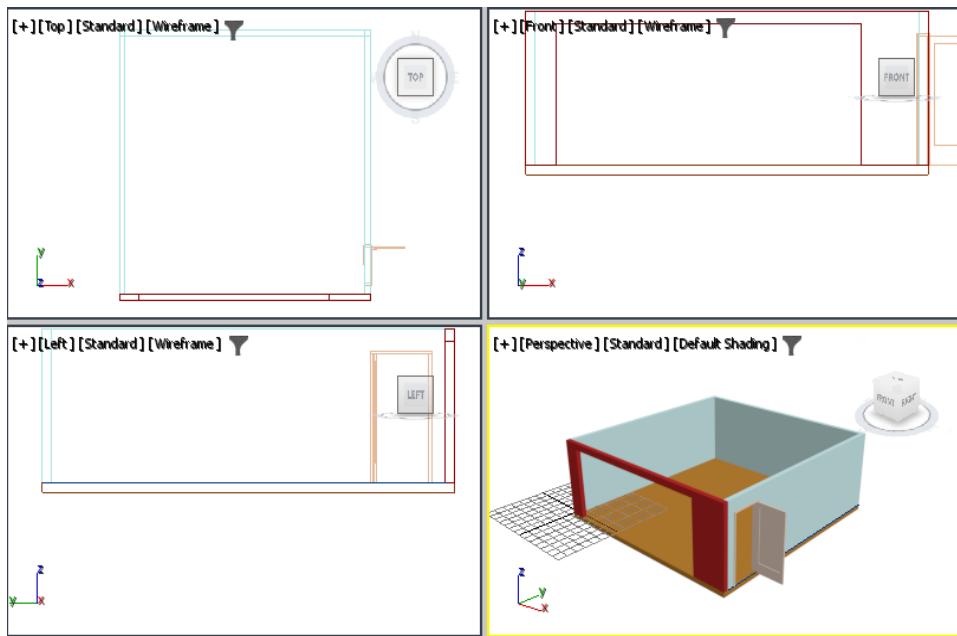


Figure P3-6 The door created

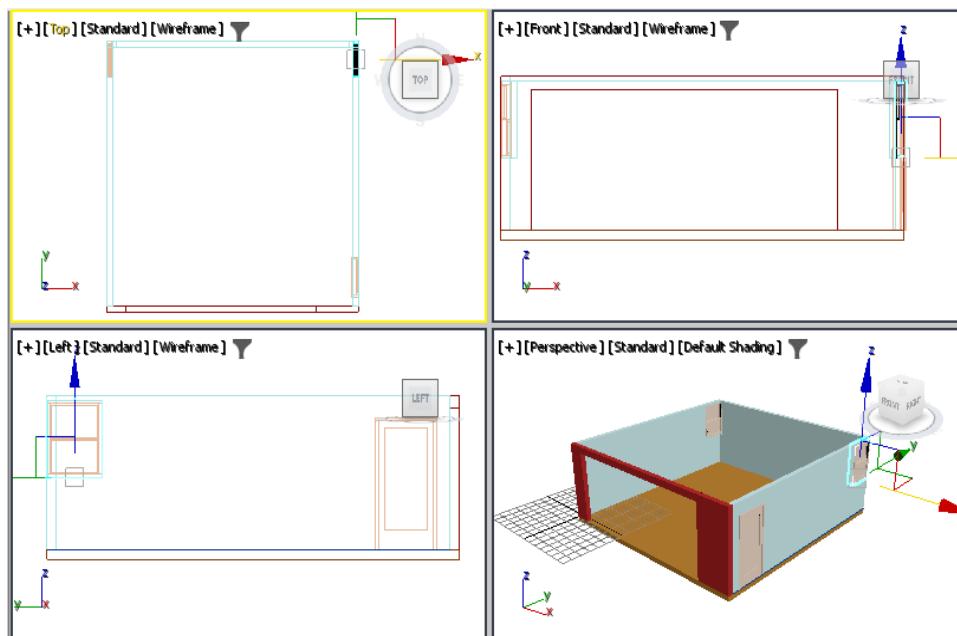


Figure P3-7 The sliding windows created

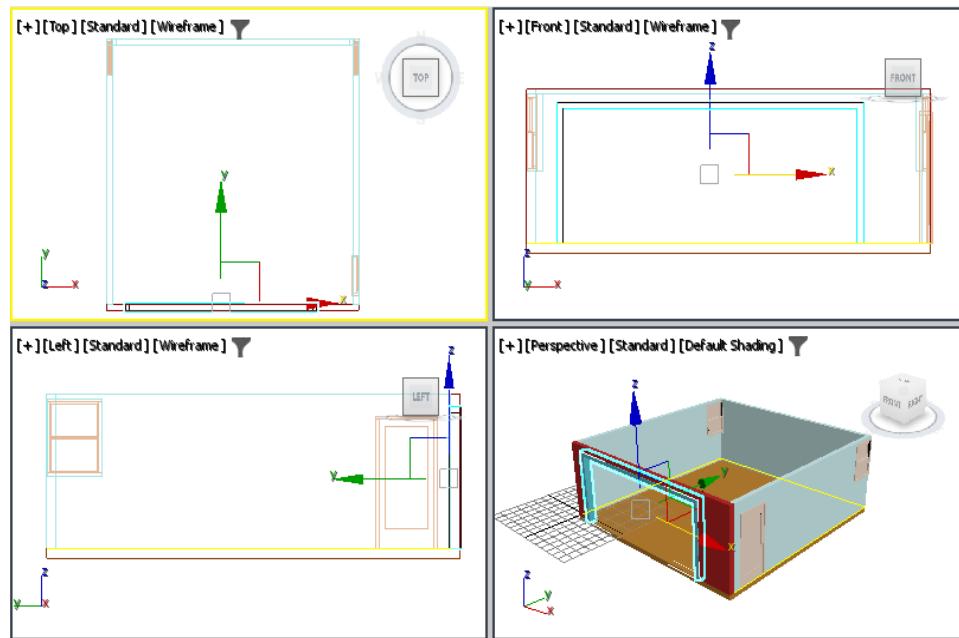


Figure P3-8 Overhead Door Frame created and positioned

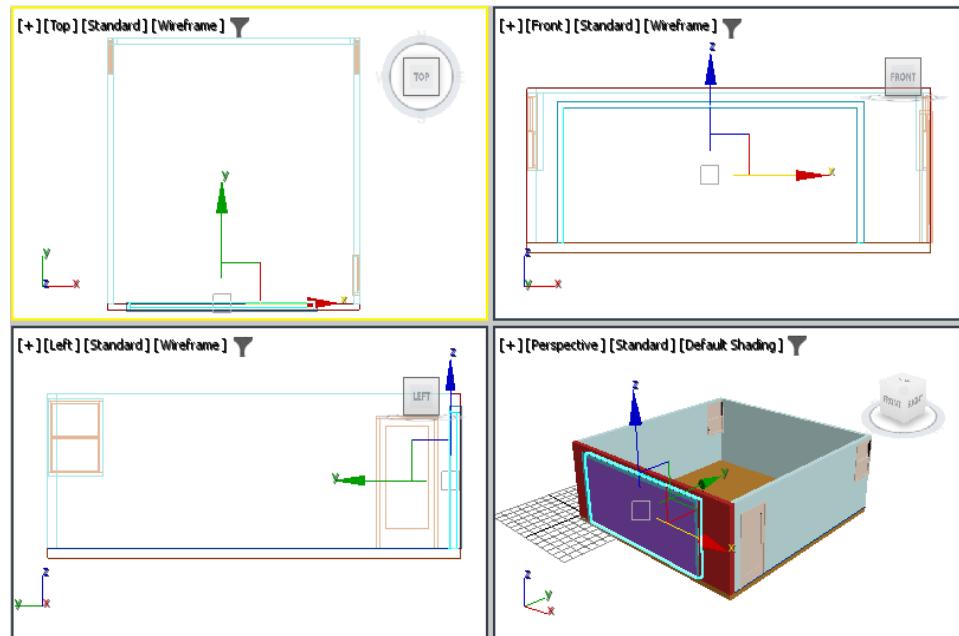


Figure P3-9 Overhead Door created and positioned

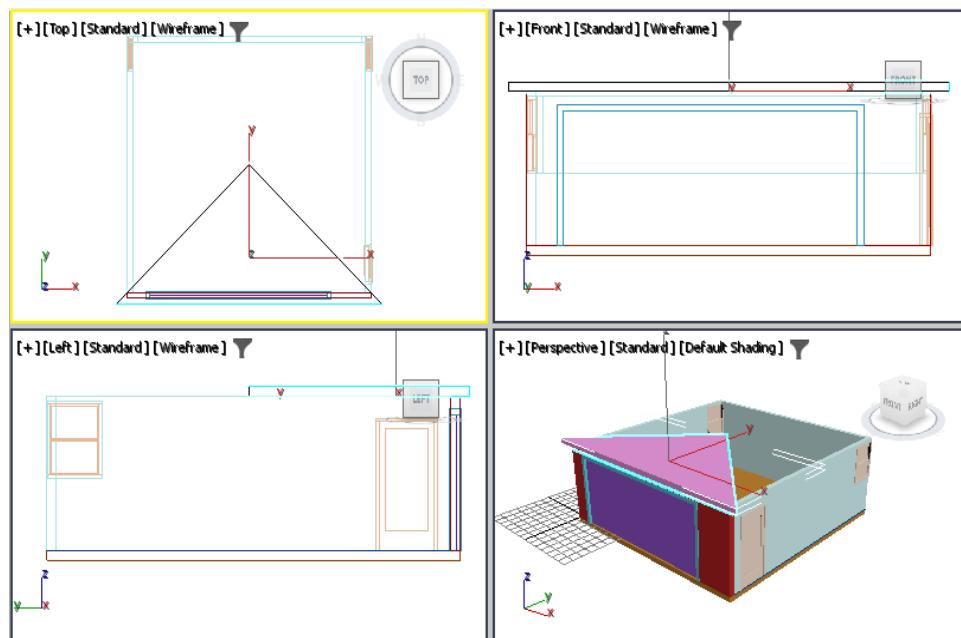


Figure P3-10 Roof Section01 modified

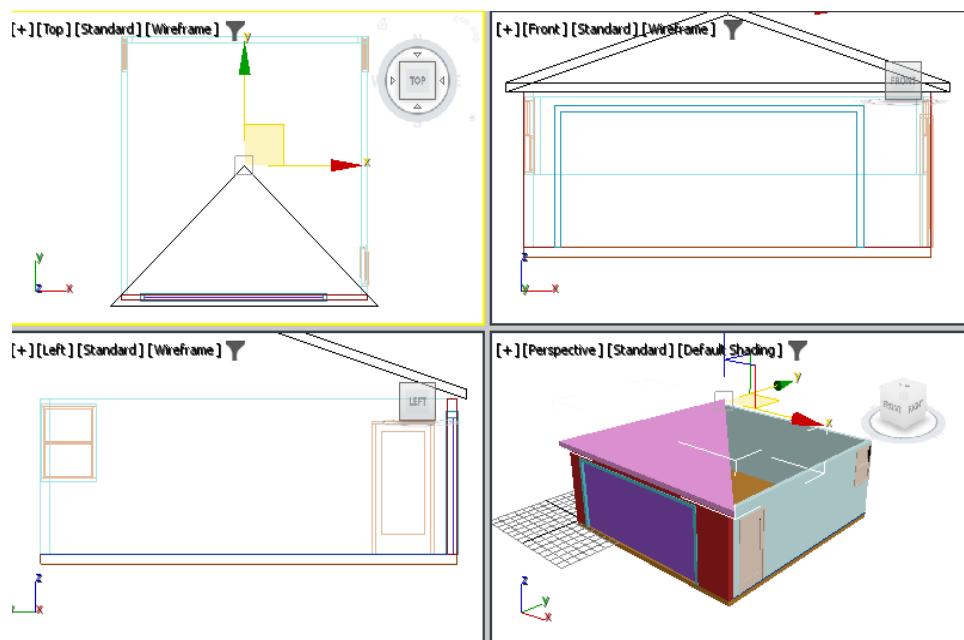


Figure P3-11 The peak of Roof Section01 moved

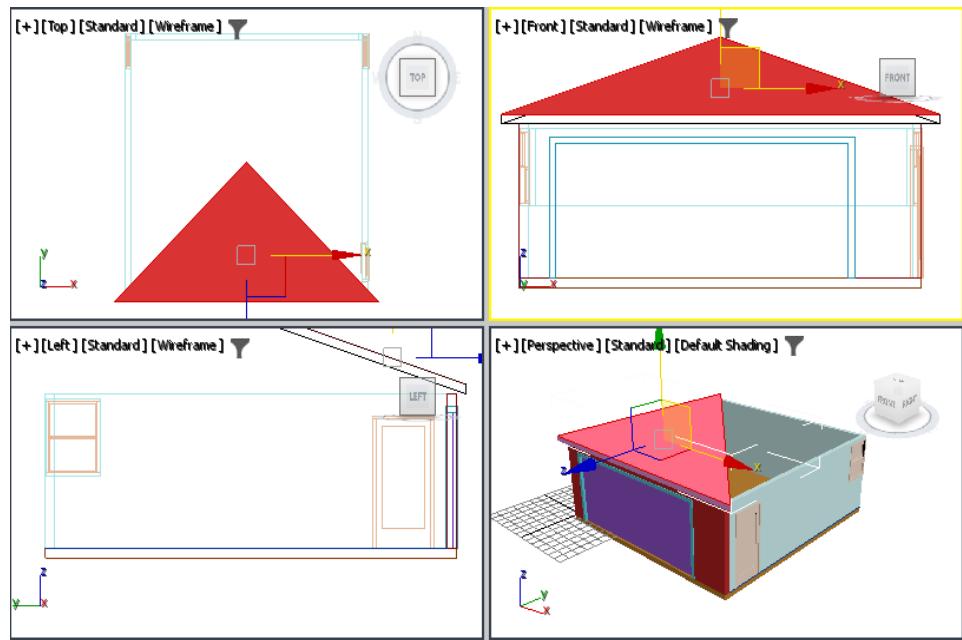


Figure P3-12 The front face of the Roof Section01 selected

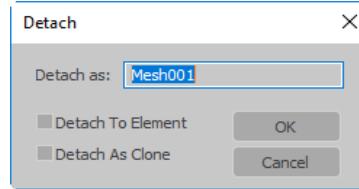


Figure P3-13 The **Detach** dialog box

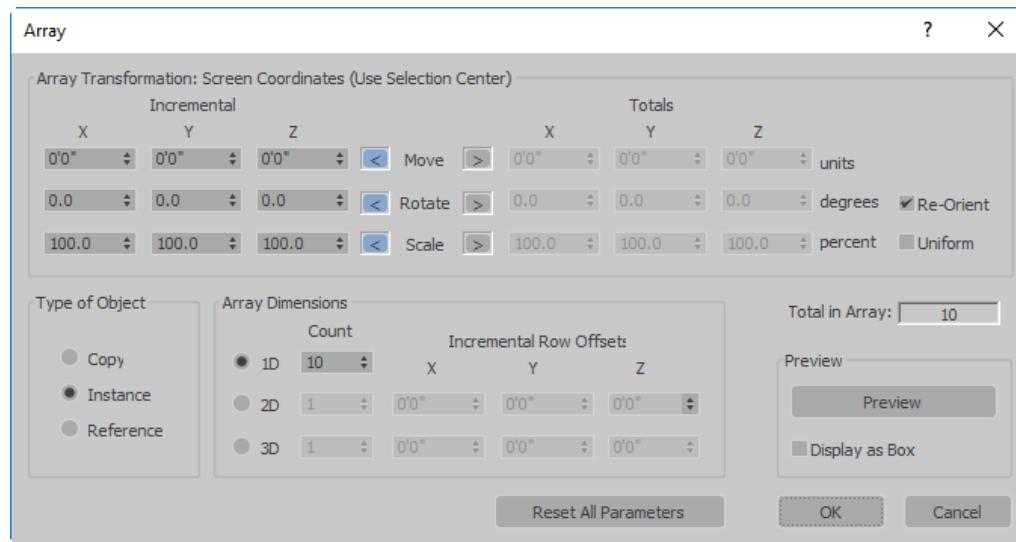


Figure P3-14 The Array dialog box

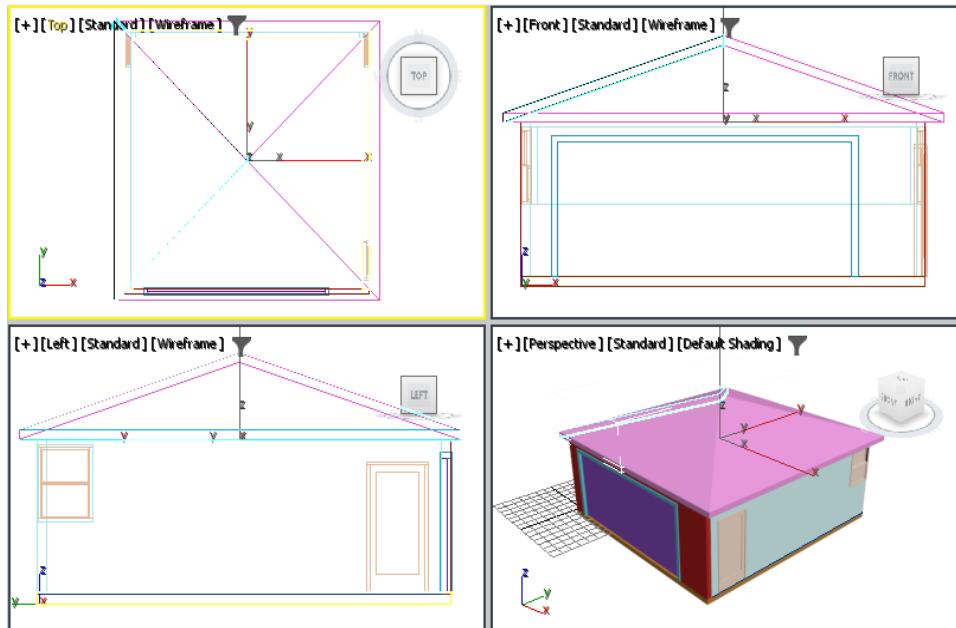


Figure P3-15 The array created to complete the roof

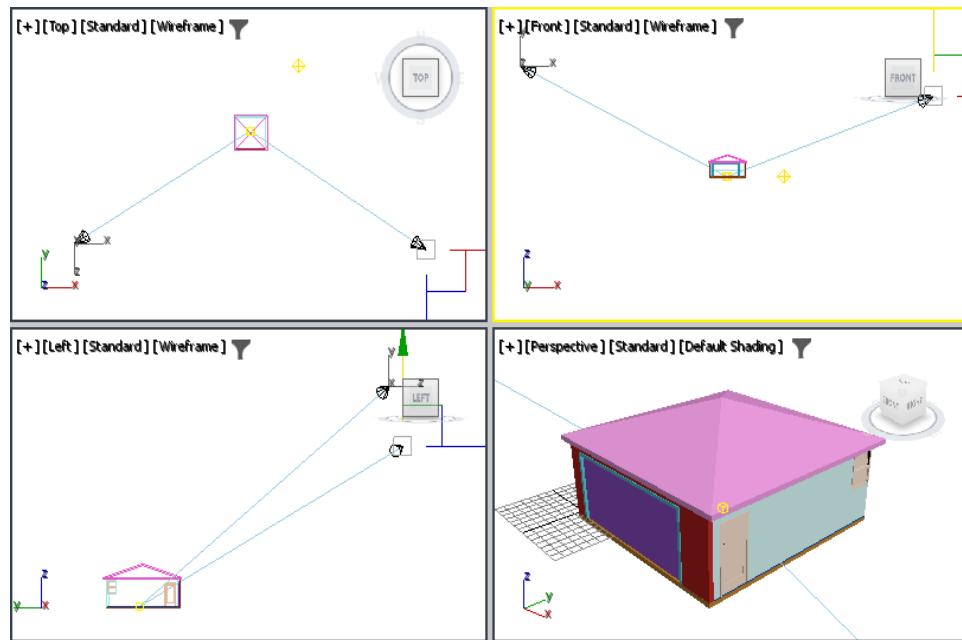


Figure P3-16 The lights displayed and positioned in all viewports

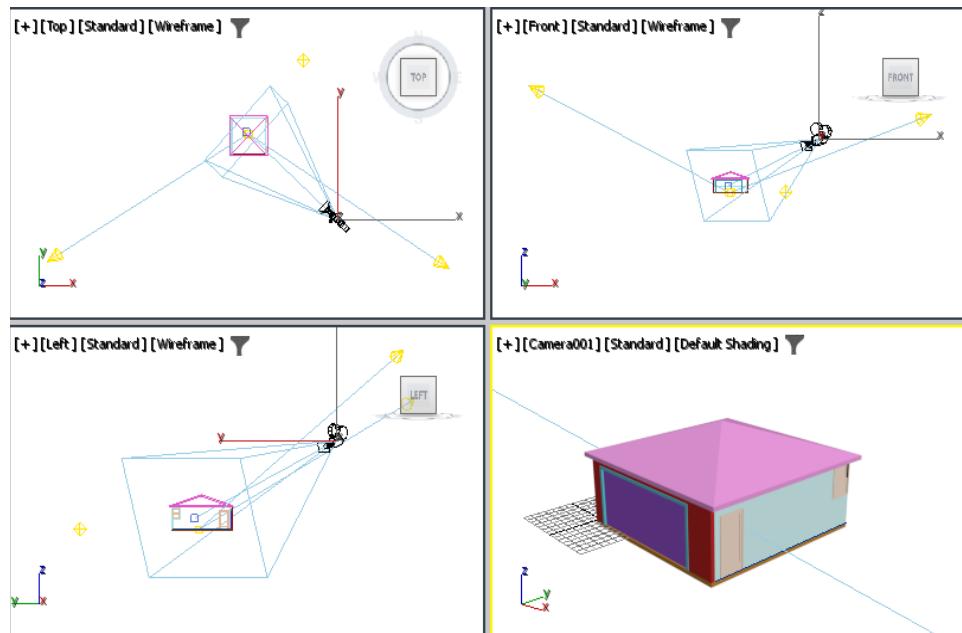


Figure P3-17 The view displayed in the Camera001 viewport

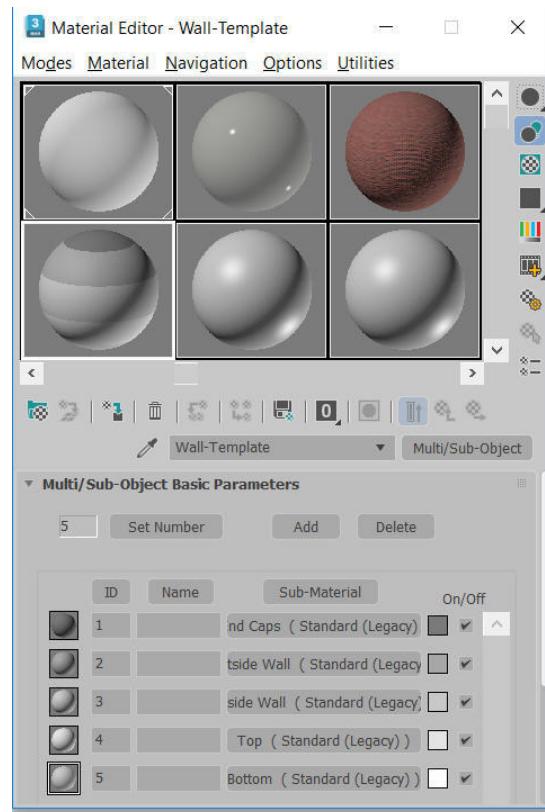


Figure P3-18 The Multi/Sub-Object material created

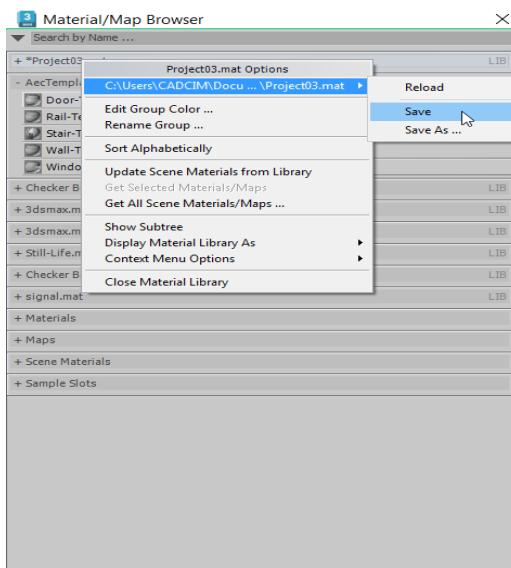


Figure P3-19 Saving the material library

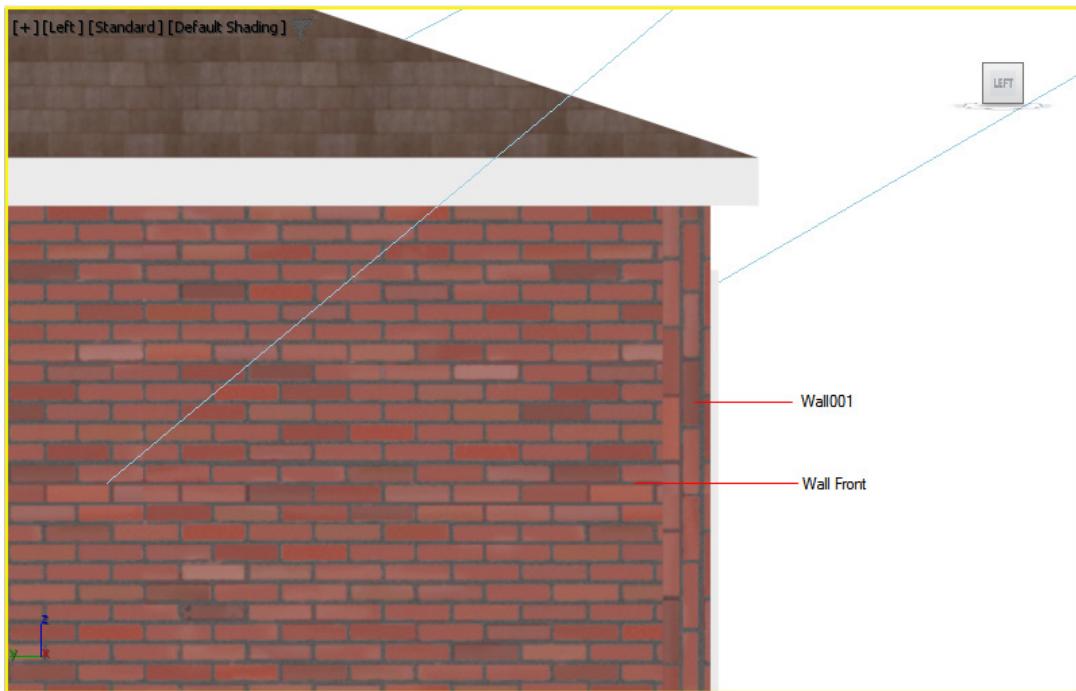


Figure P3-20 Wall001 and Wall Front zoomed in the Left viewport

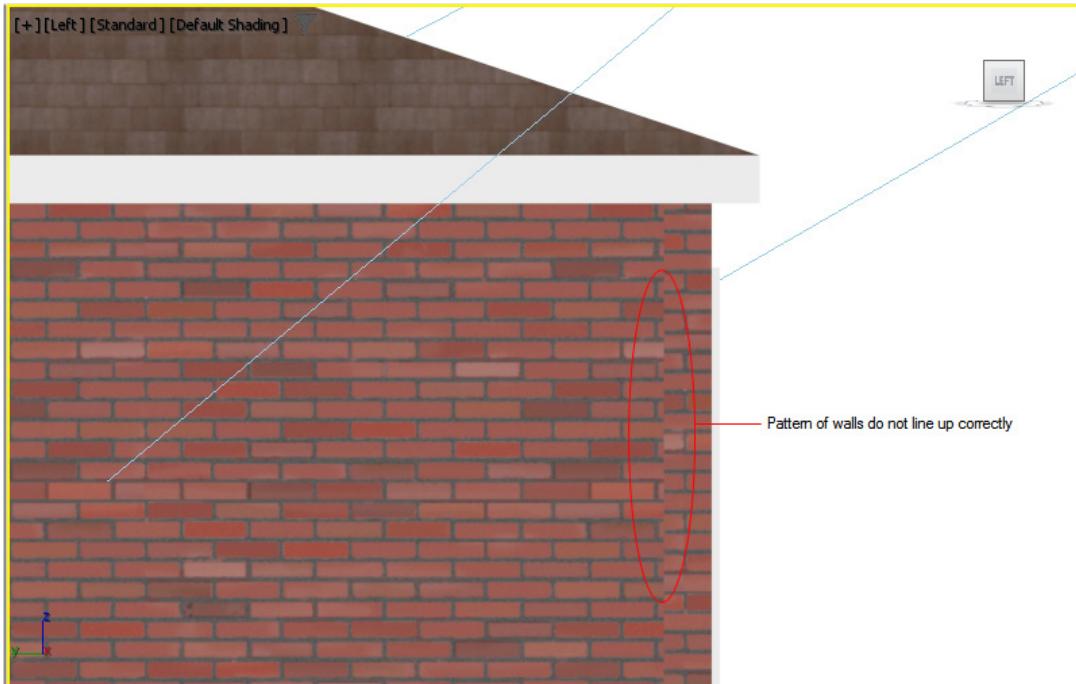


Figure P3-21 Pattern of Wall001 and Wall Front not lined up correctly

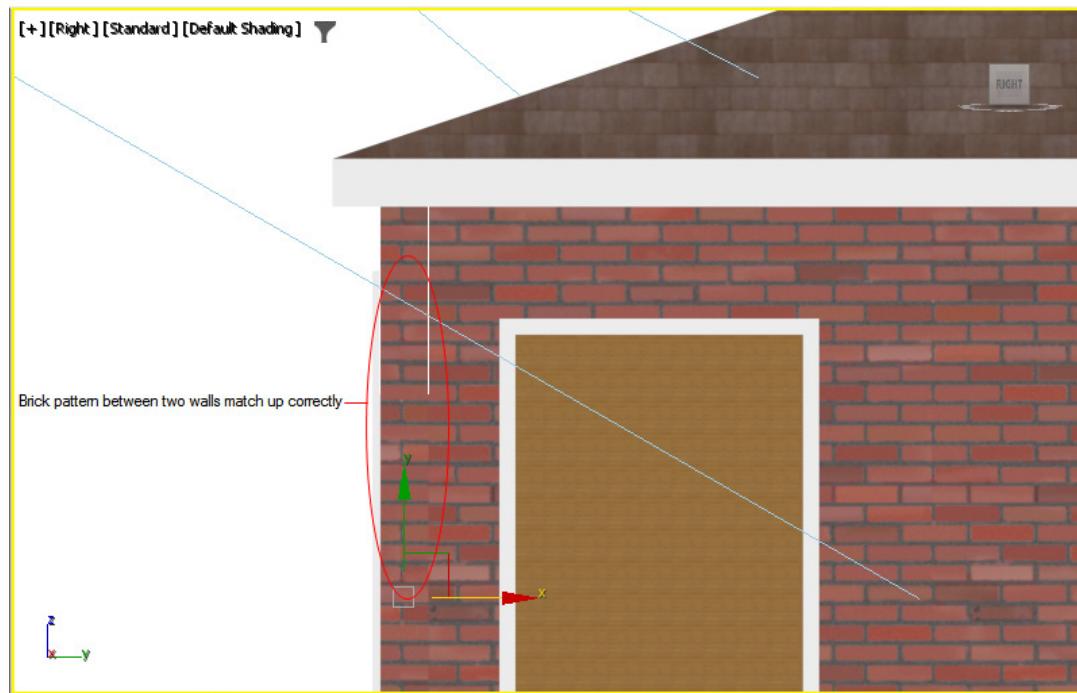


Figure P3-22 The brick pattern between two walls matched up correctly

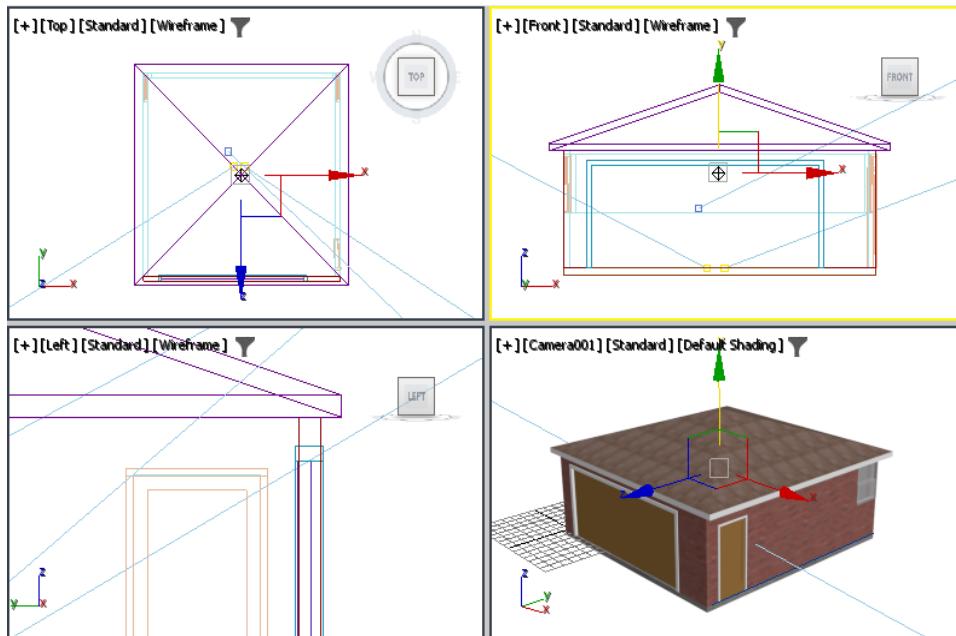


Figure P3-23 The light aligned on the top of walls

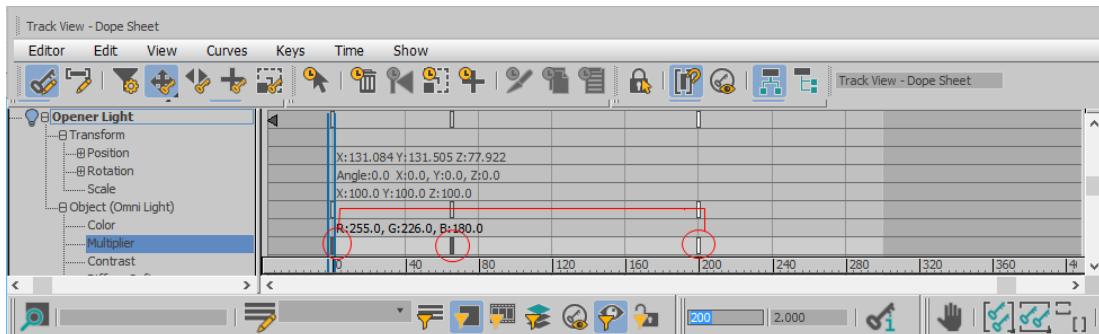


Figure P3-24 Keys inserted at frames 0, 65, and 200 in the *Multiplier* track

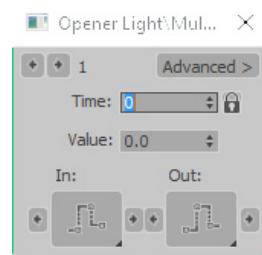


Figure P3-25 The *Opener Light|Multiplier* dialog box

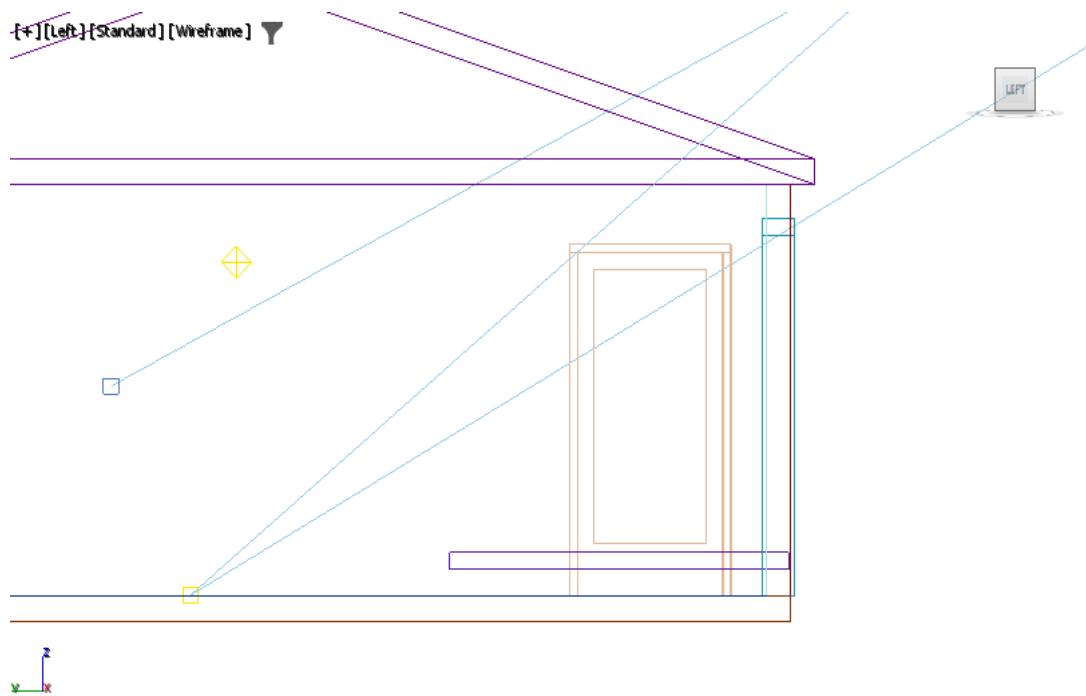


Figure P3-26 The door rotated 90 degrees about the local Z axis

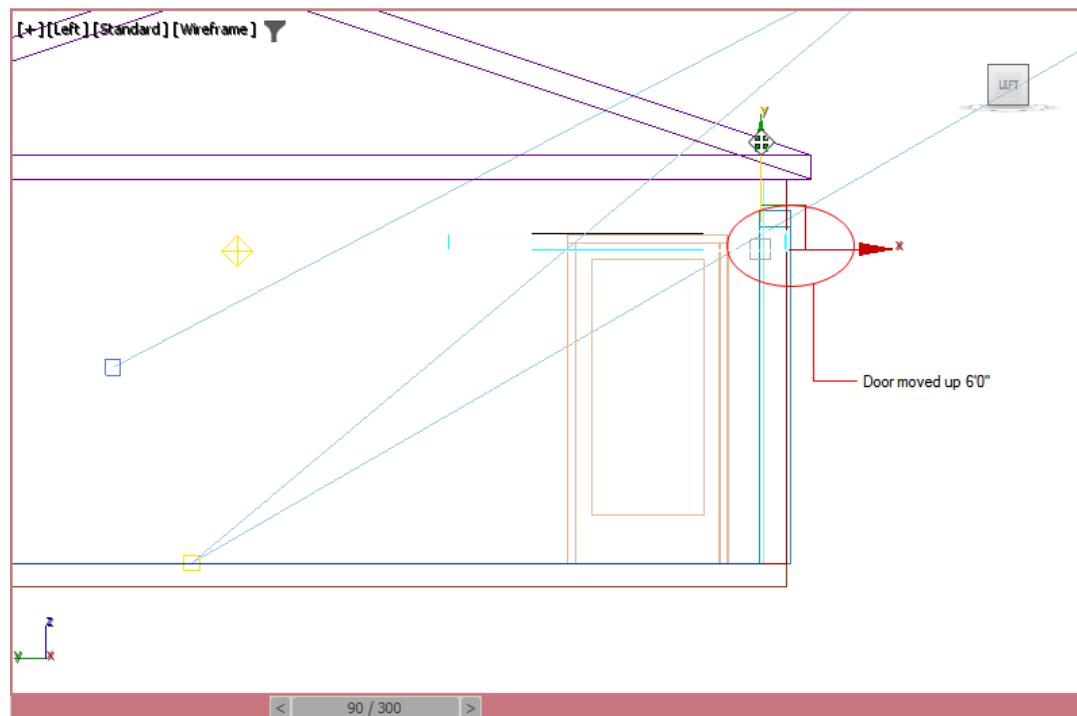


Figure P3-27 The door moved up 6'0"(1.82m) on the Y axis

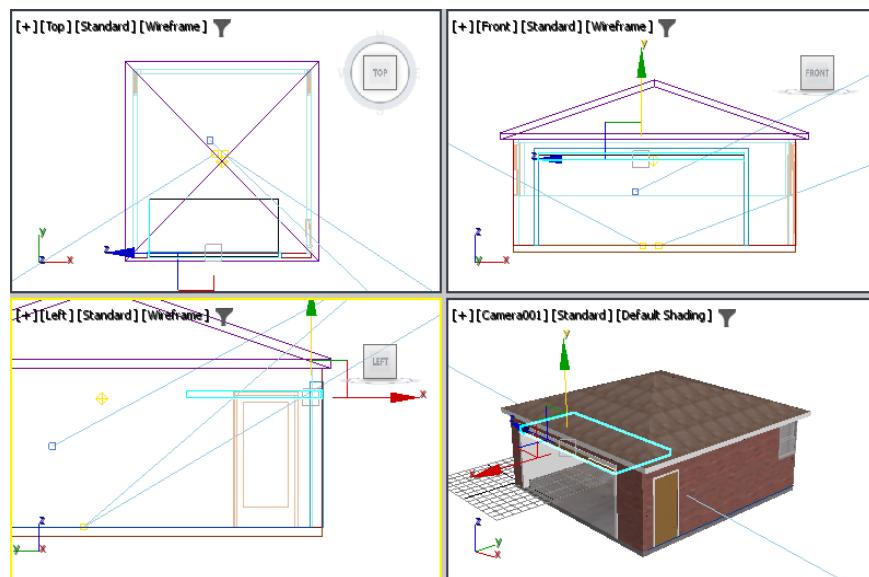


Figure P3-28 The movement of the Overhead Door

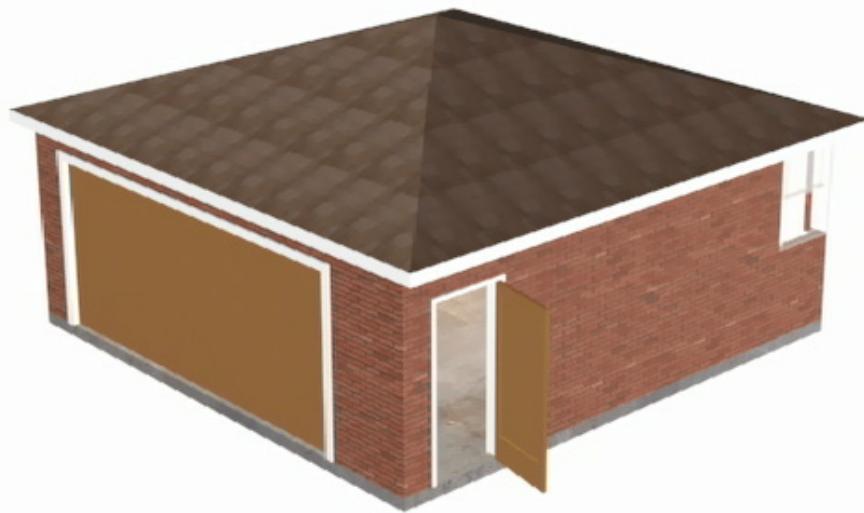


Figure P3-29 The rendered image at frame 180

Project 4

Corporate Design Project



Figure P4-1 The model of the logo

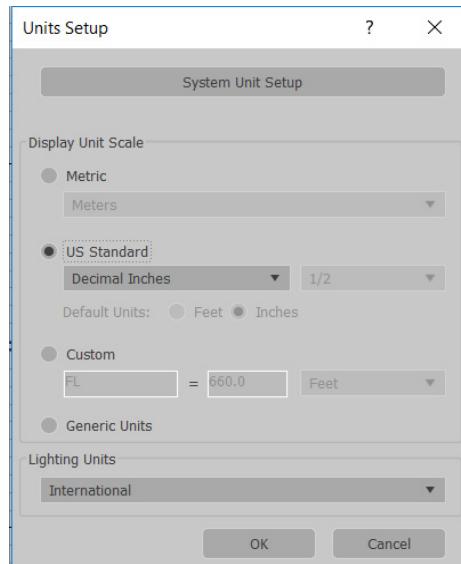


Figure P4-2 The *Units Setup* dialog box

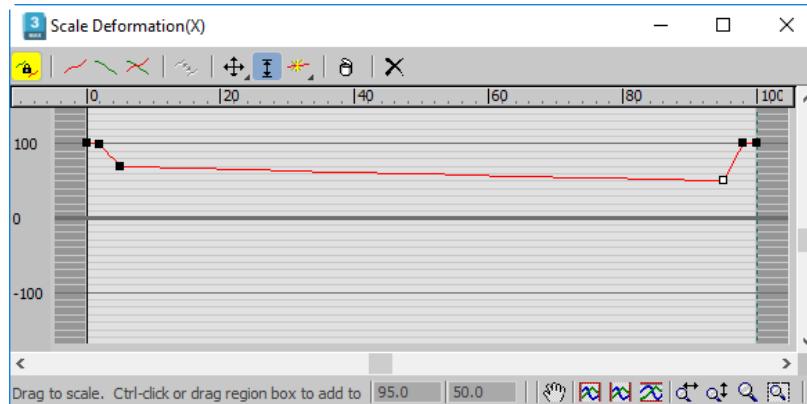


Figure P4-3 The *Scale Deformation(X)* dialog box after scaling at different points

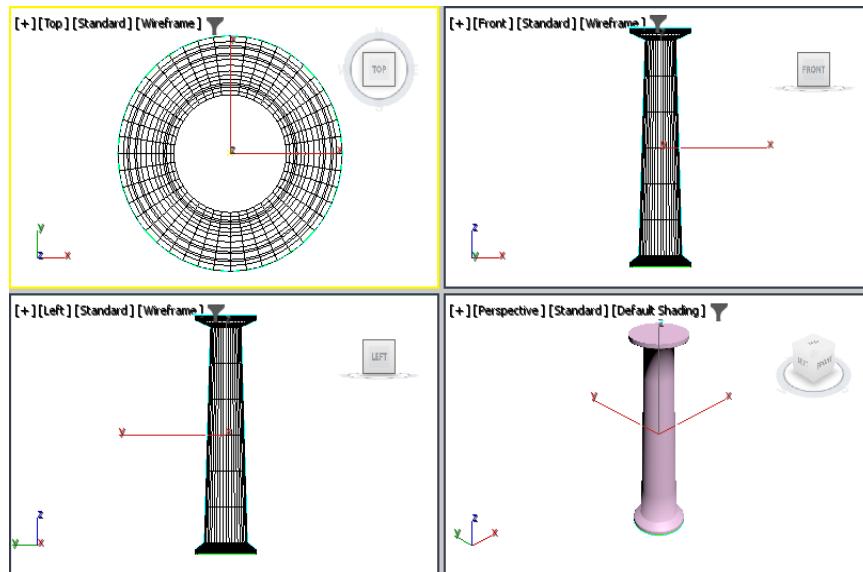


Figure P4-4 Column01 modified using the **Scale Deformation(X)** dialog box

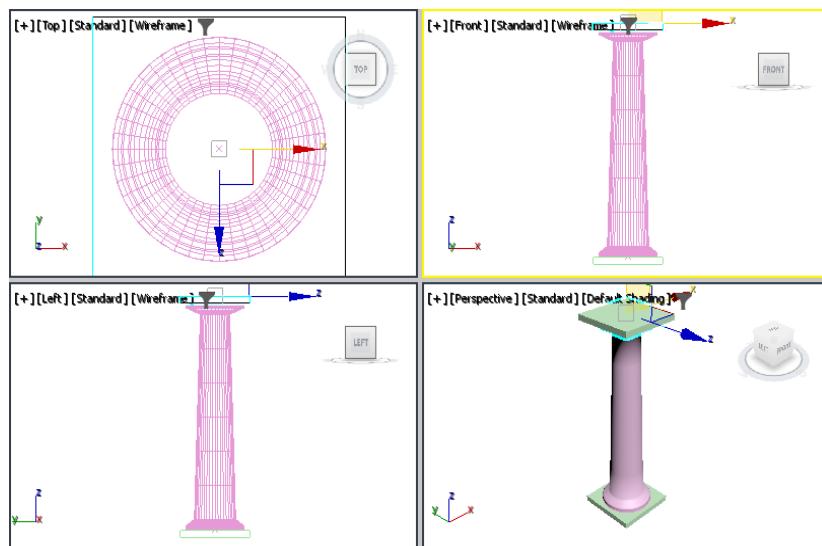


Figure P4-5 Column01Top is aligned with the top of Column01

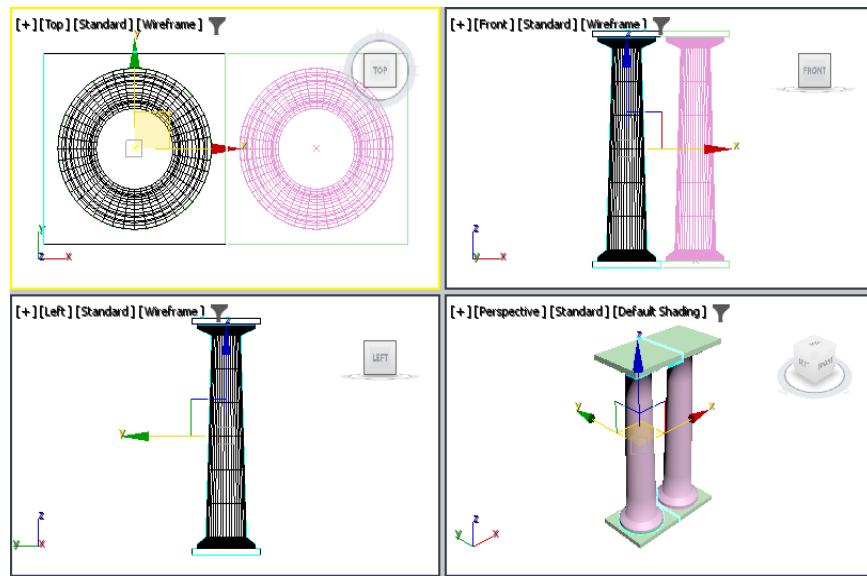


Figure P4-6 Column02 Assembly created

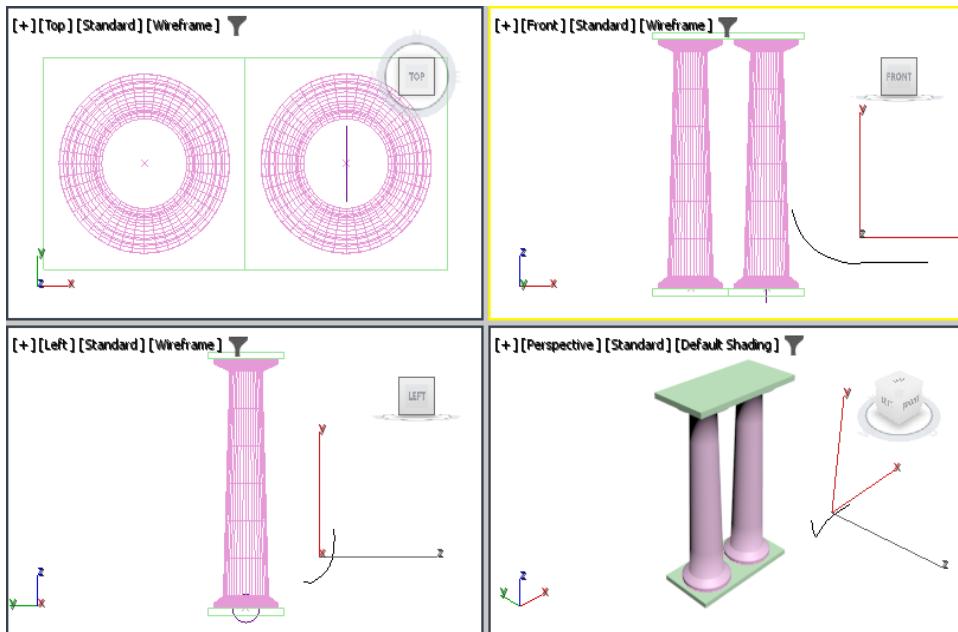


Figure P4-7 The path created for the left-hand horn

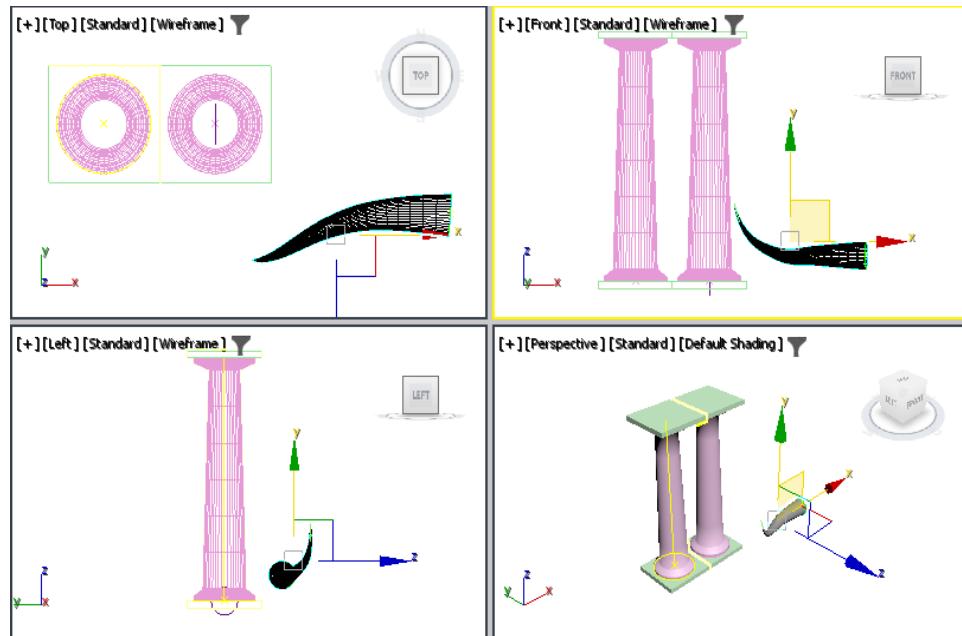


Figure P4-8 Horn-Left modified using the **Scale Deformation(X)** dialog box

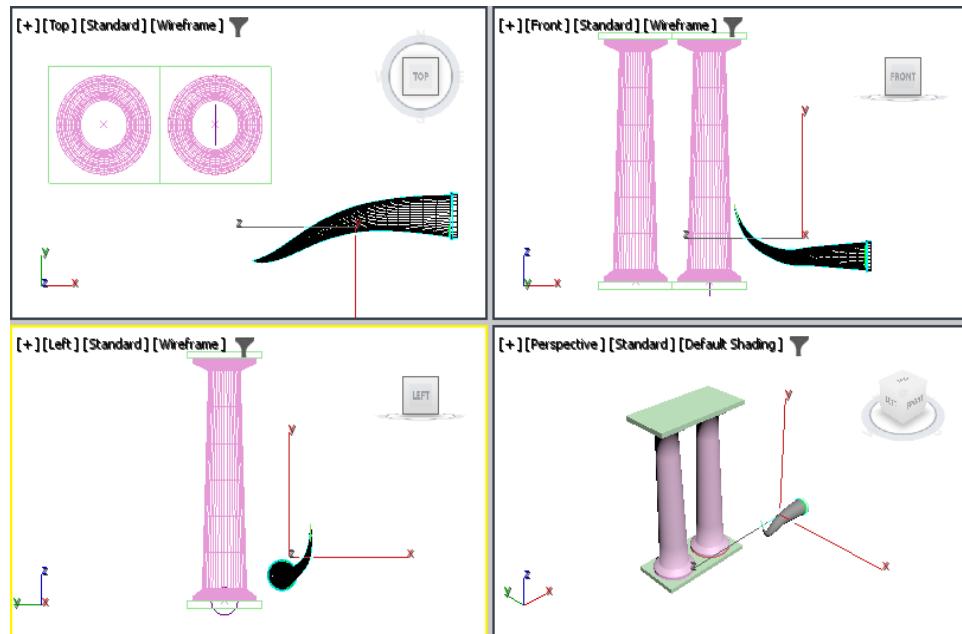


Figure P4-9 HornAssemblyLeft created

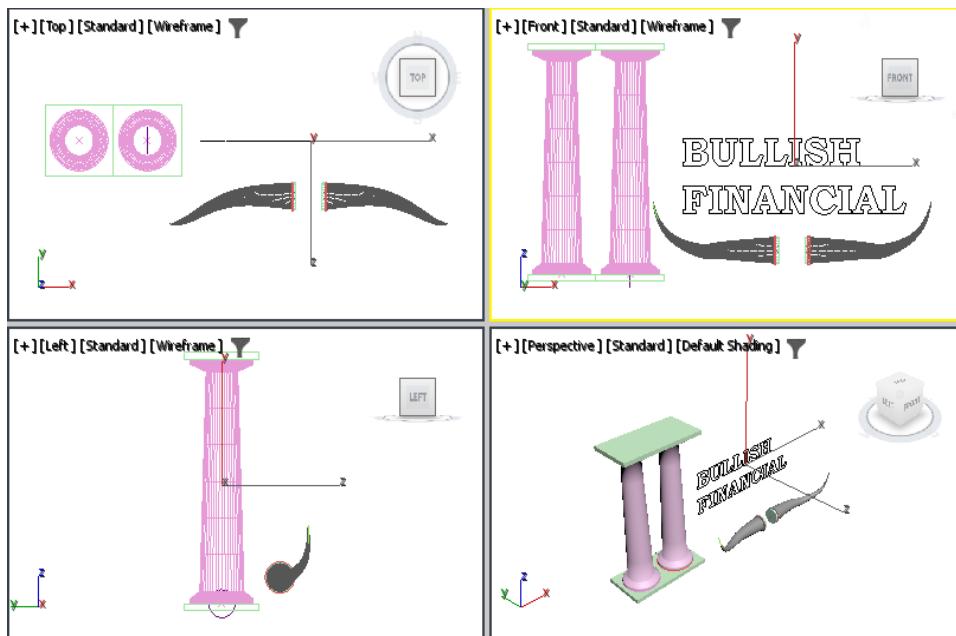


Figure P4-10 The text displayed as a single object

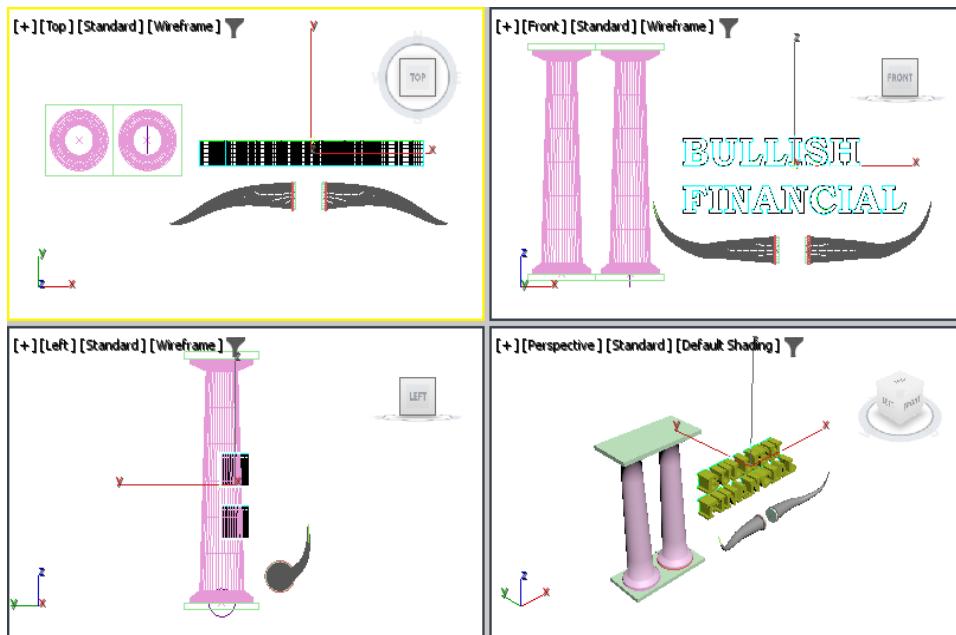


Figure P4-11 The logo text lofted

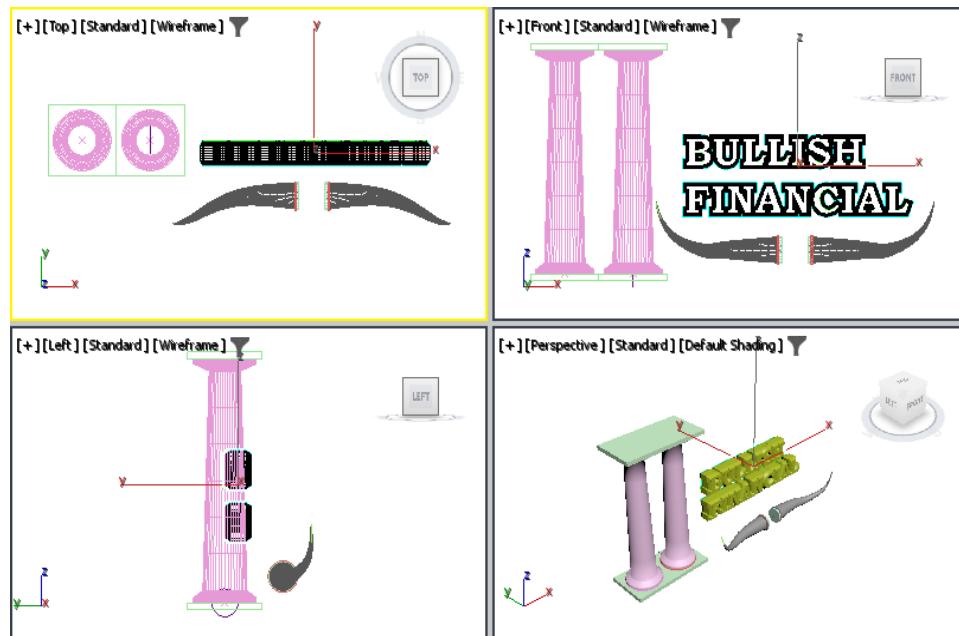


Figure P4-12 The bevel deformation applied to Logo Text and the text centered over the horns

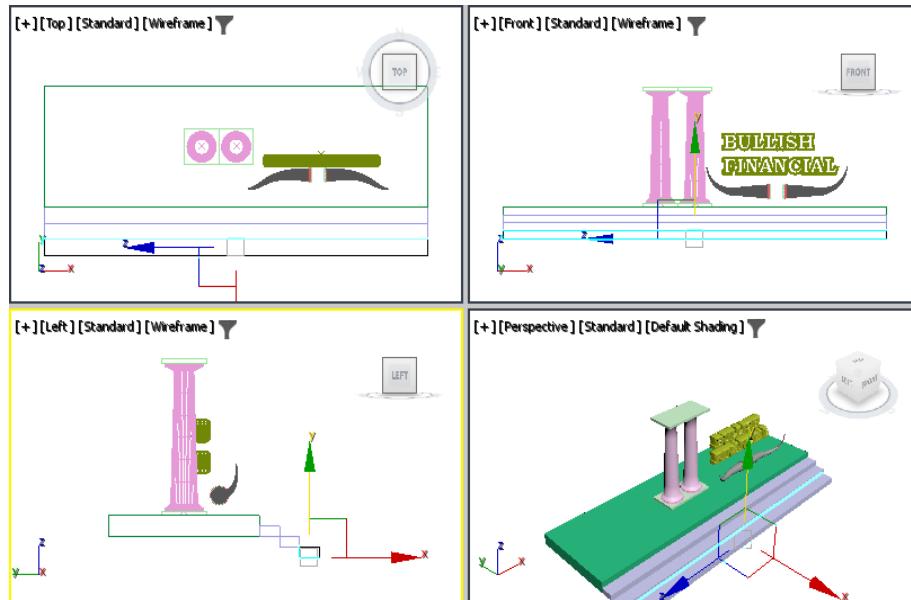


Figure P4-13 The floor and three stairs created and aligned

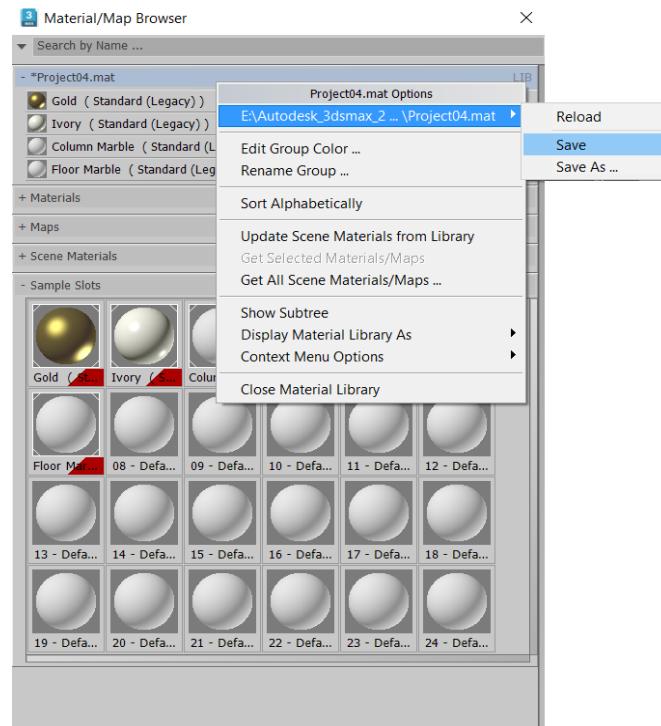


Figure P4-14 Saving the material library

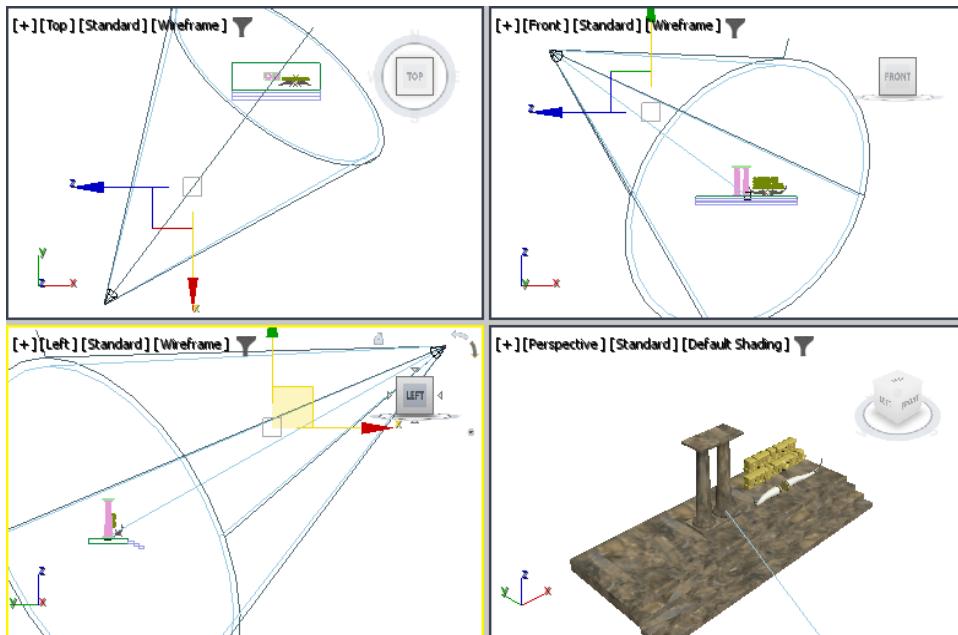


Figure P4-15 The spotlights created and positioned

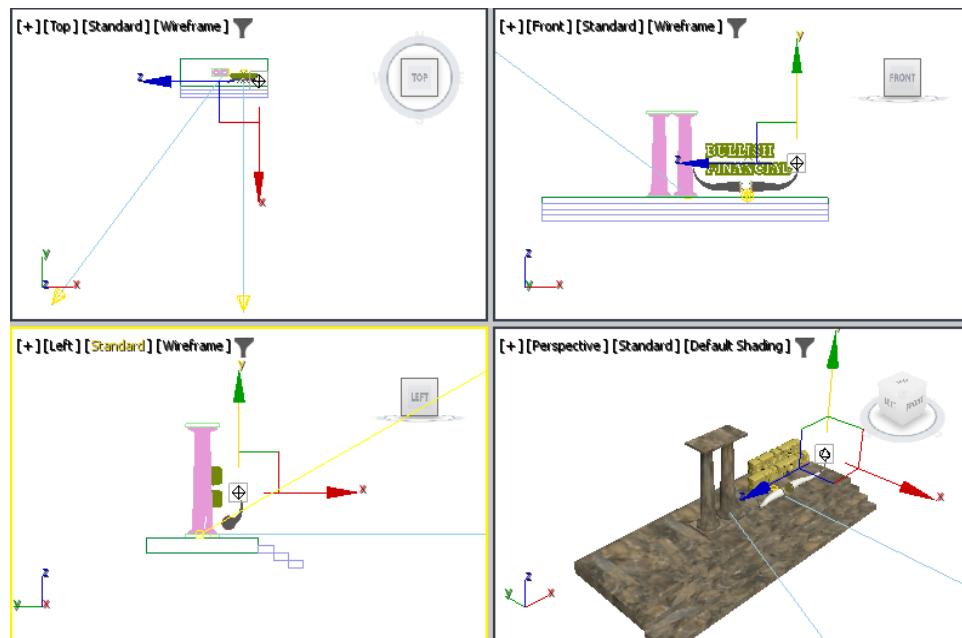


Figure P4-16 The omni light positioned

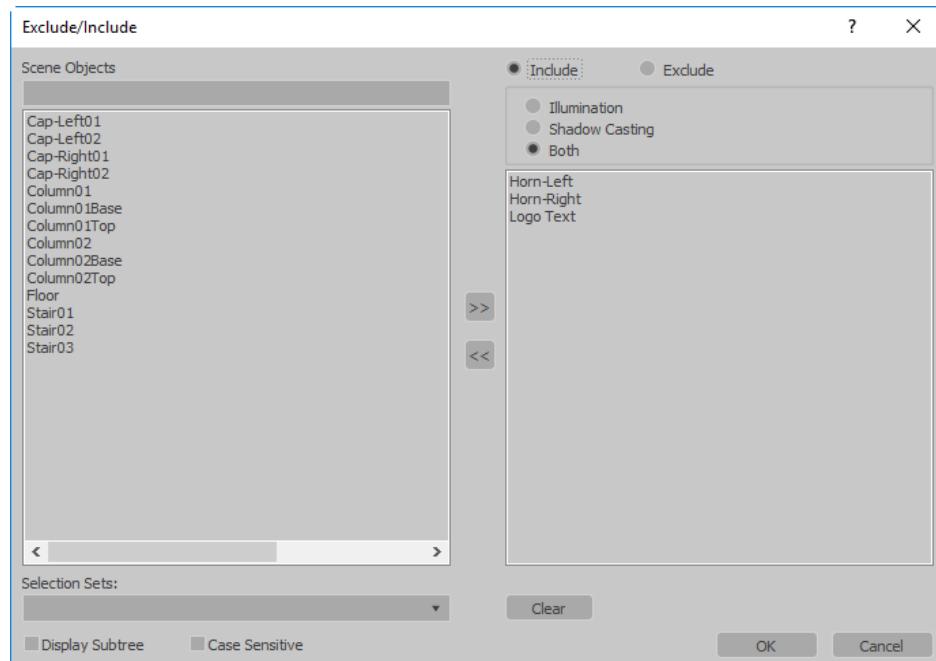


Figure P4-17 The Exclude/Include dialog box

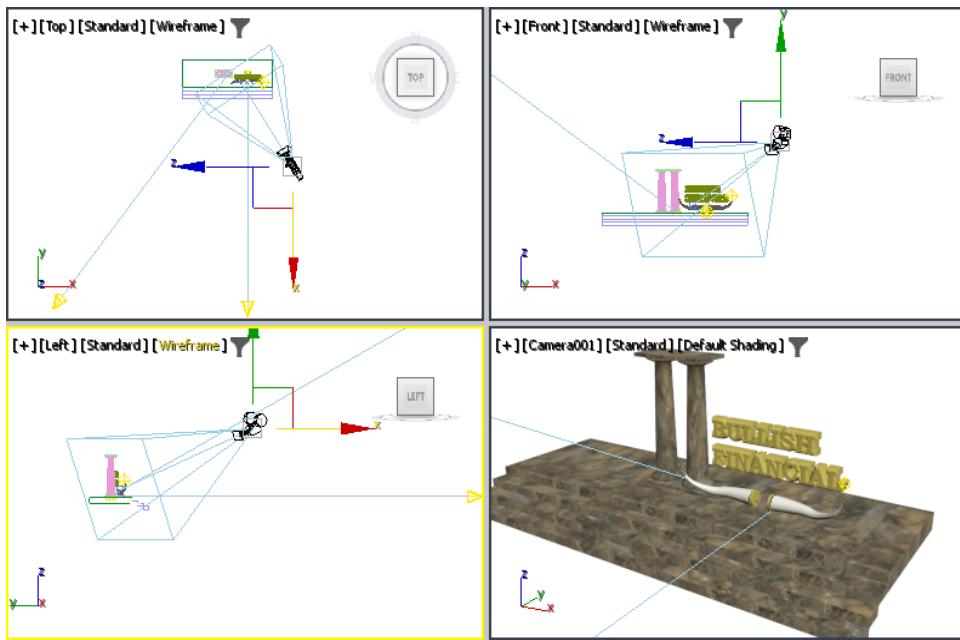


Figure P4-18 The camera created and aligned



Figure P4-19 The scene rendered after creating the lights and camera

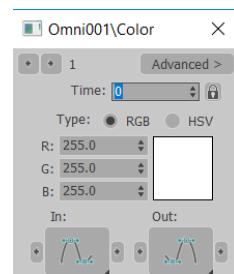


Figure P4-20 The *Omni001\Color* dialog box



Figure P4-21 A rendered image of the final animation at frame 0

Project 5

Creating a Computer Center



Figure P5-1 Walkthrough towards the computer center

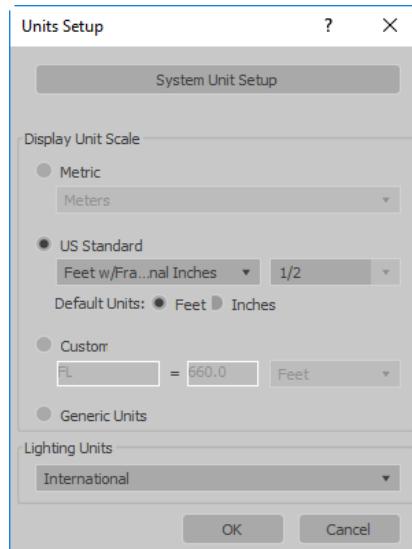


Figure P5-2 The **Units Setup** dialog box

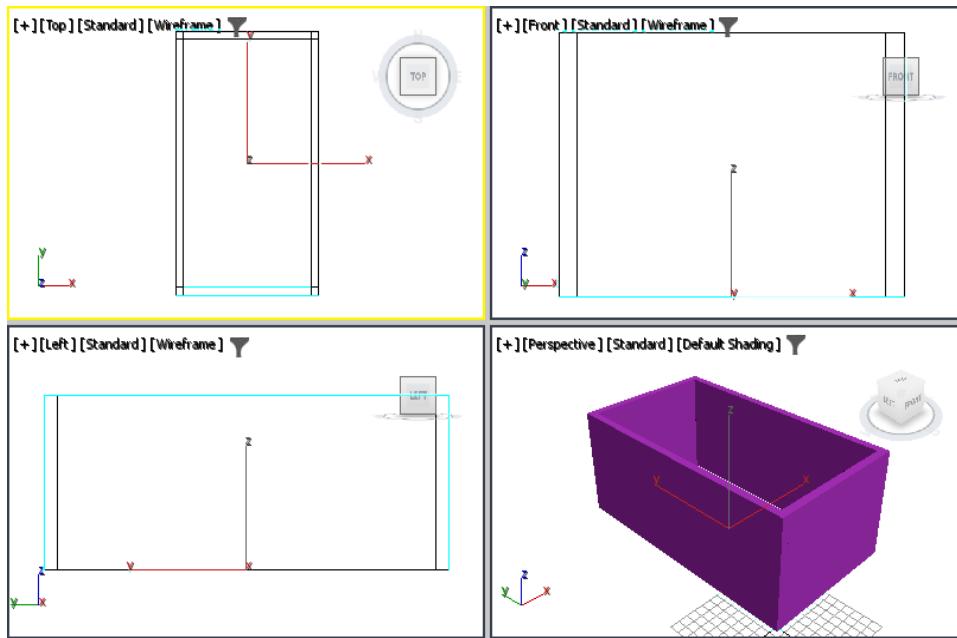


Figure P5-3 Walls of the computer center

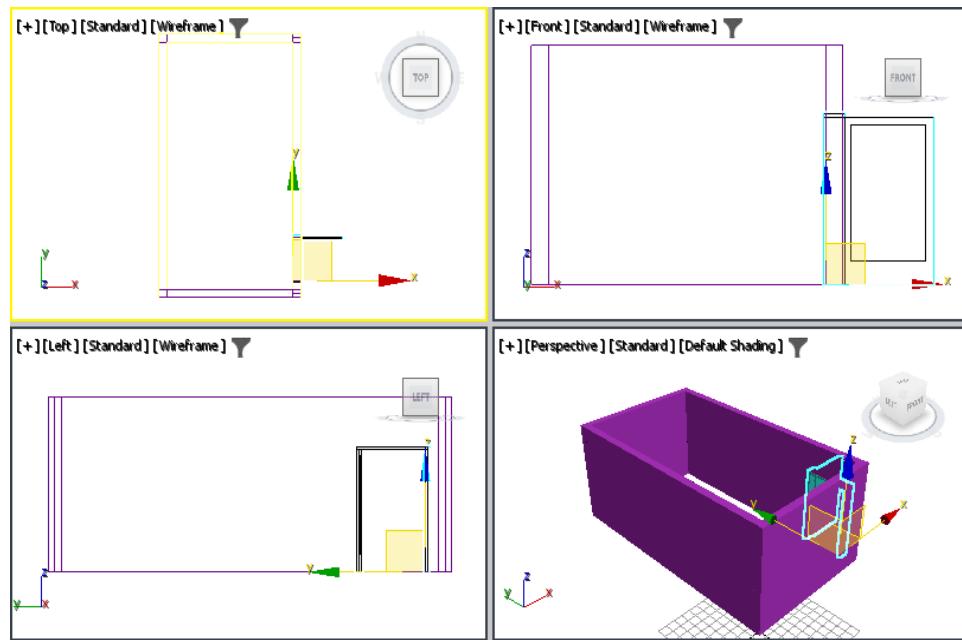


Figure P5-5 The door created on the right wall

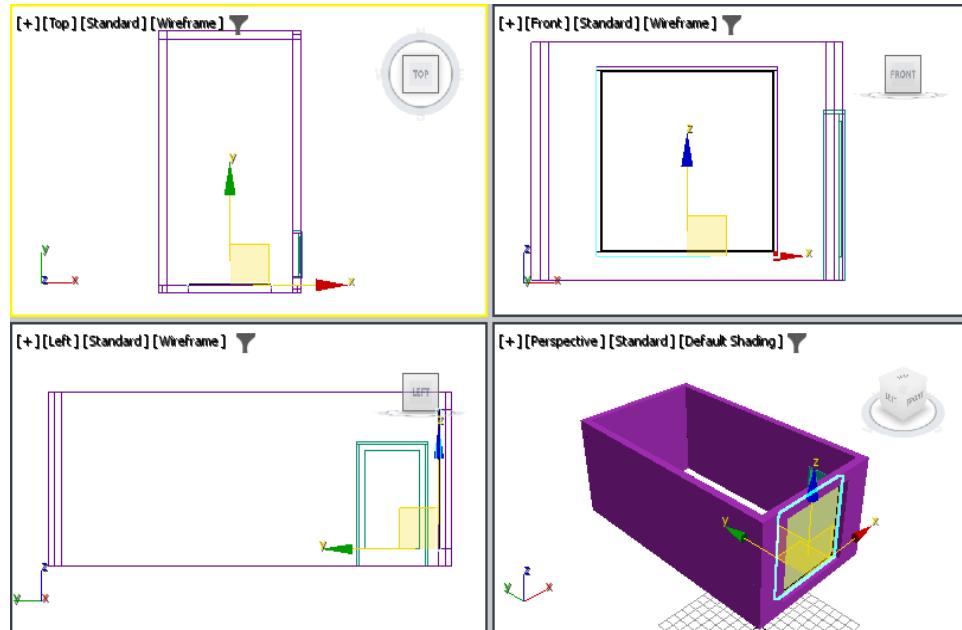


Figure P5-6 The alignment of the window on the front wall

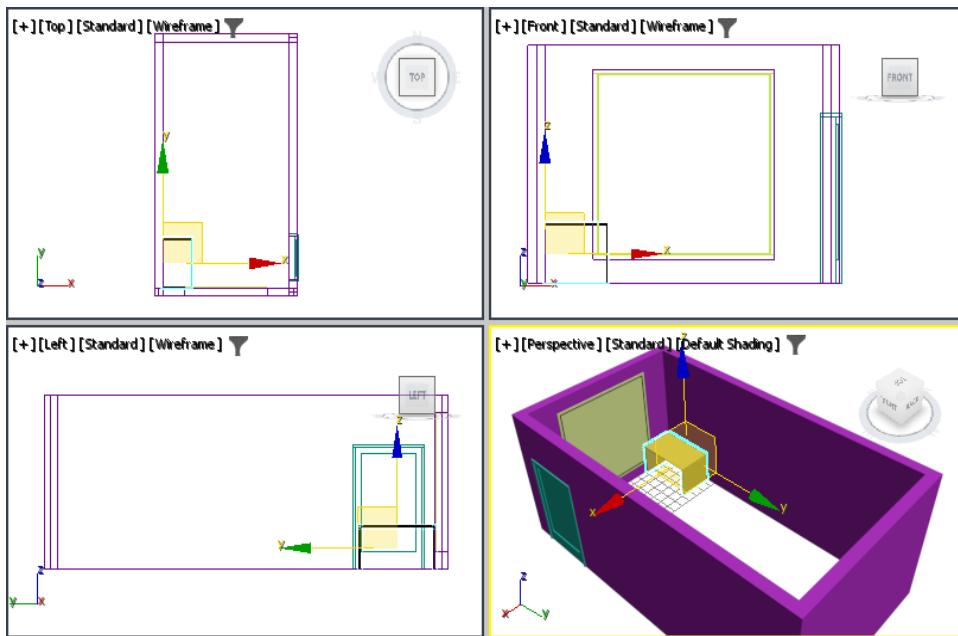


Figure P5-7 The top and sides of the first computer station

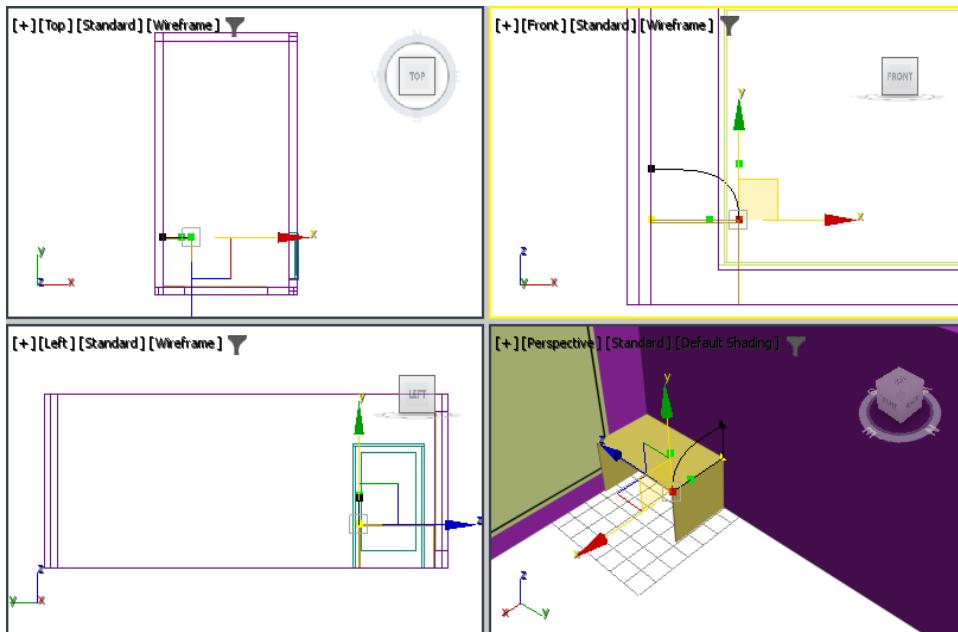


Figure P5-8 Side01 spline modified in the Front viewport

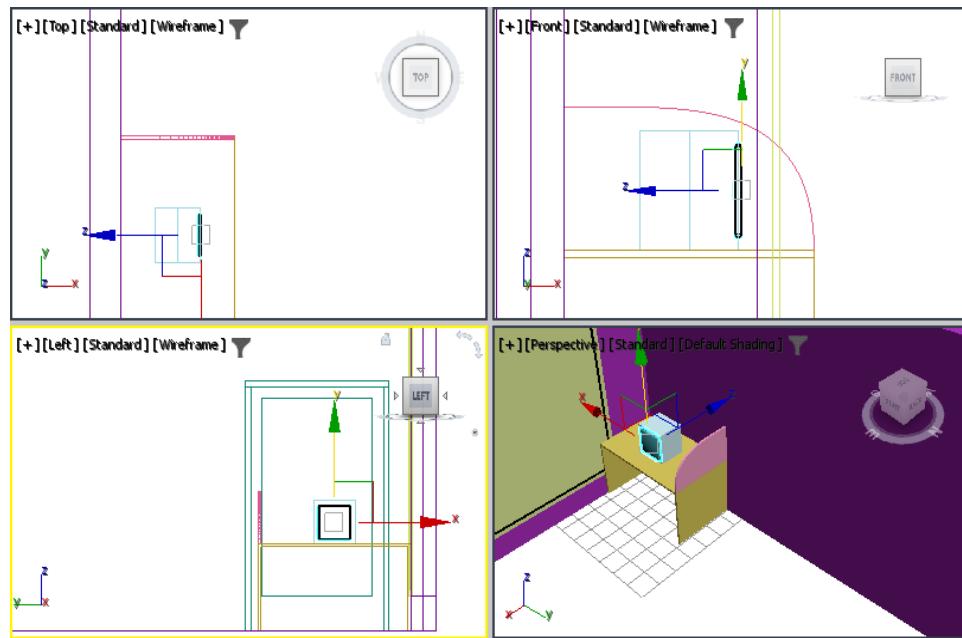


Figure P5-9 The chamfer box created and centered on the monitor

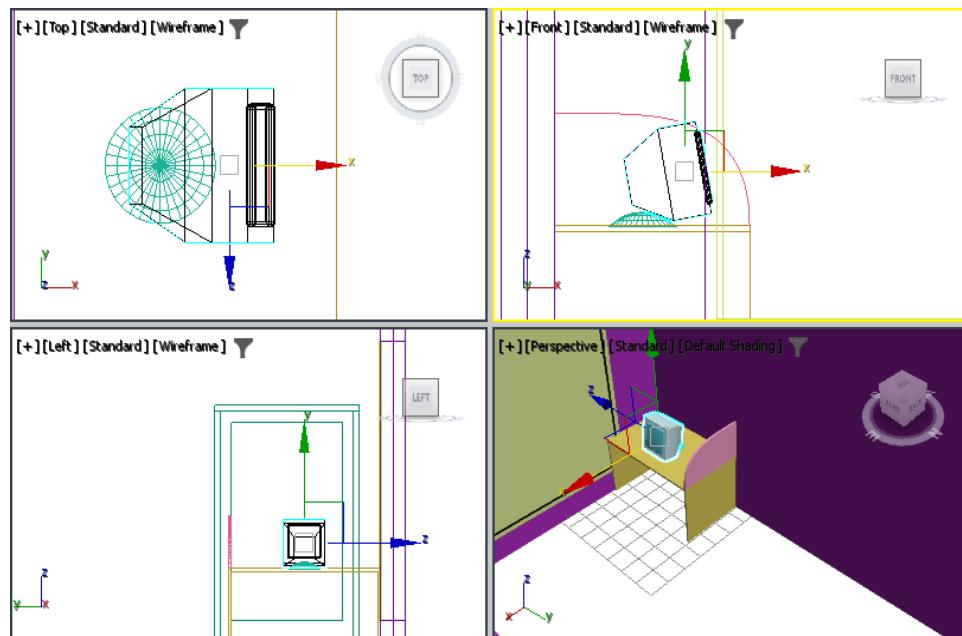


Figure P5-10 The shape of the monitor modified and the base created

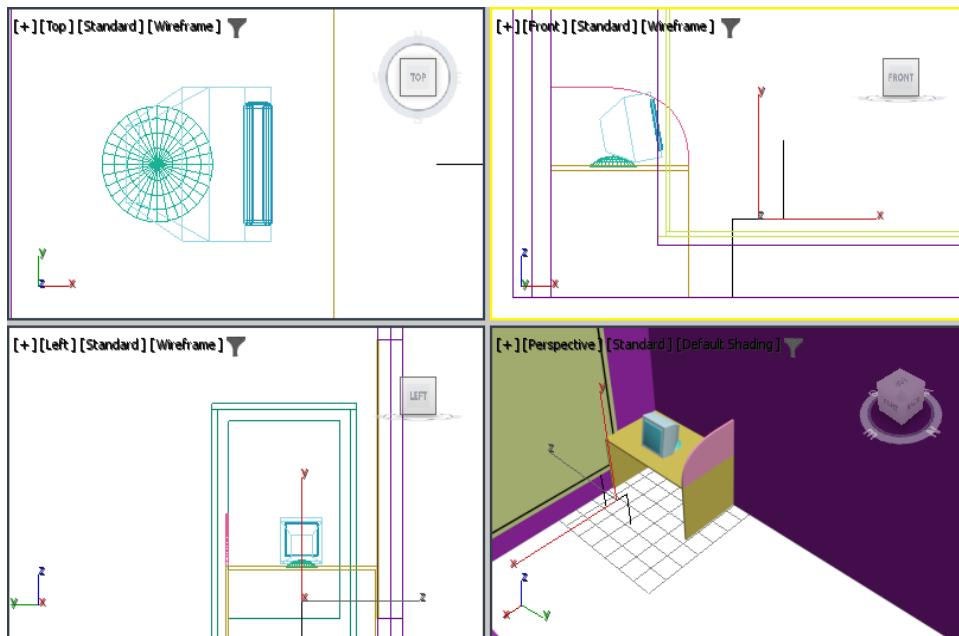


Figure P5-11 The path created for the chair frame

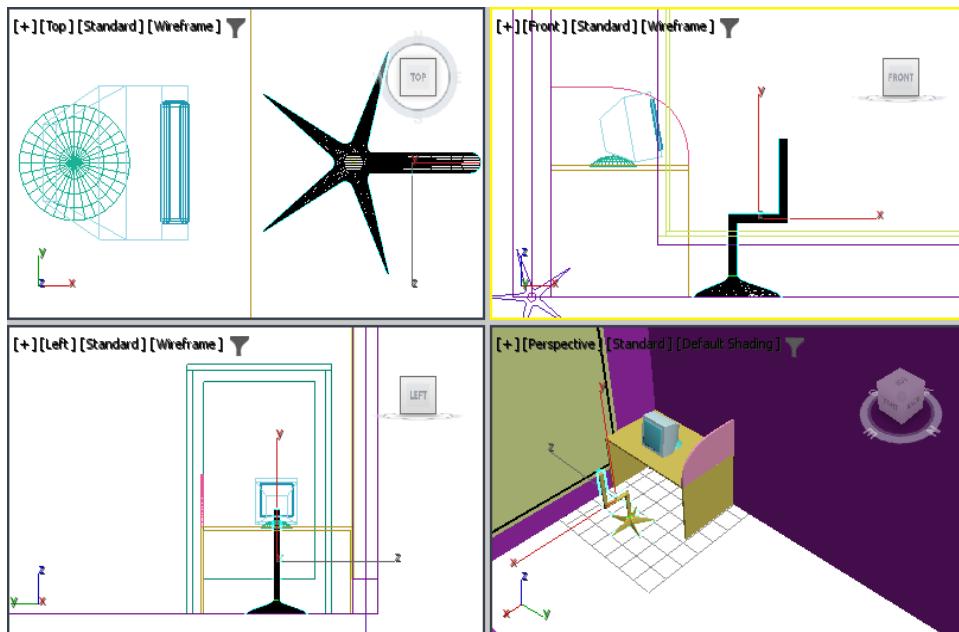


Figure P5-12 The Chair Frame created

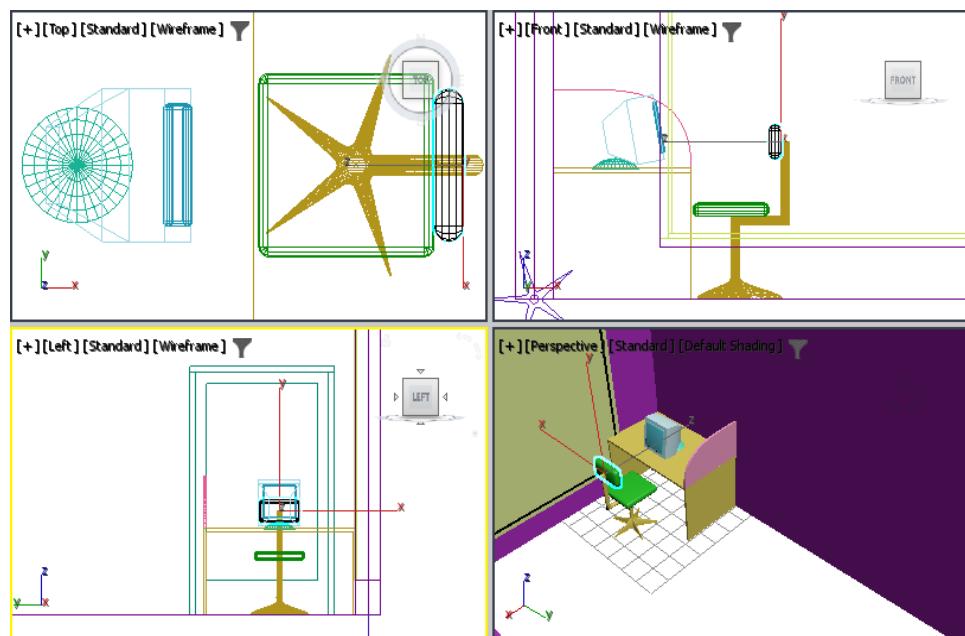


Figure P5-13 The chair created

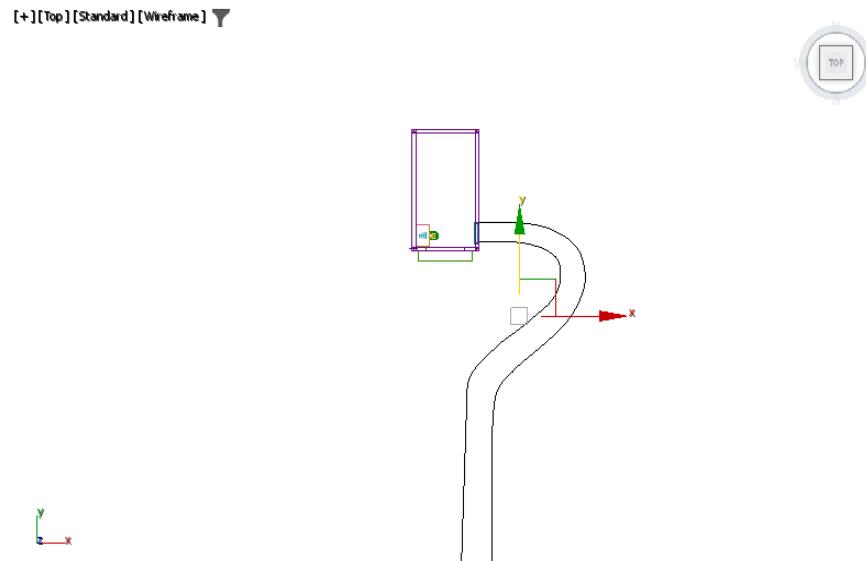


Figure P5-14 Path leading to computer center

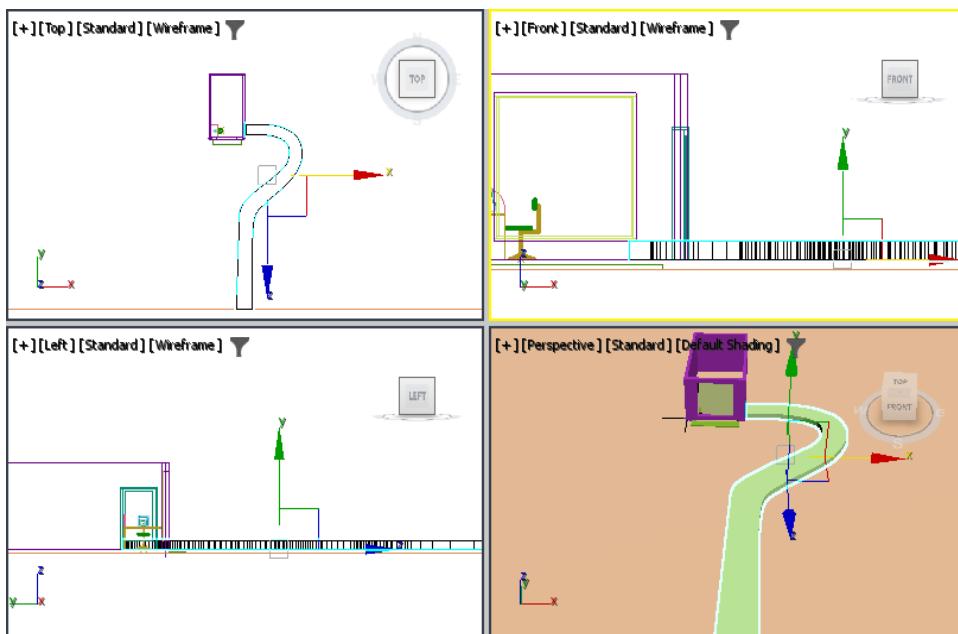


Figure P5-15 Path extruded

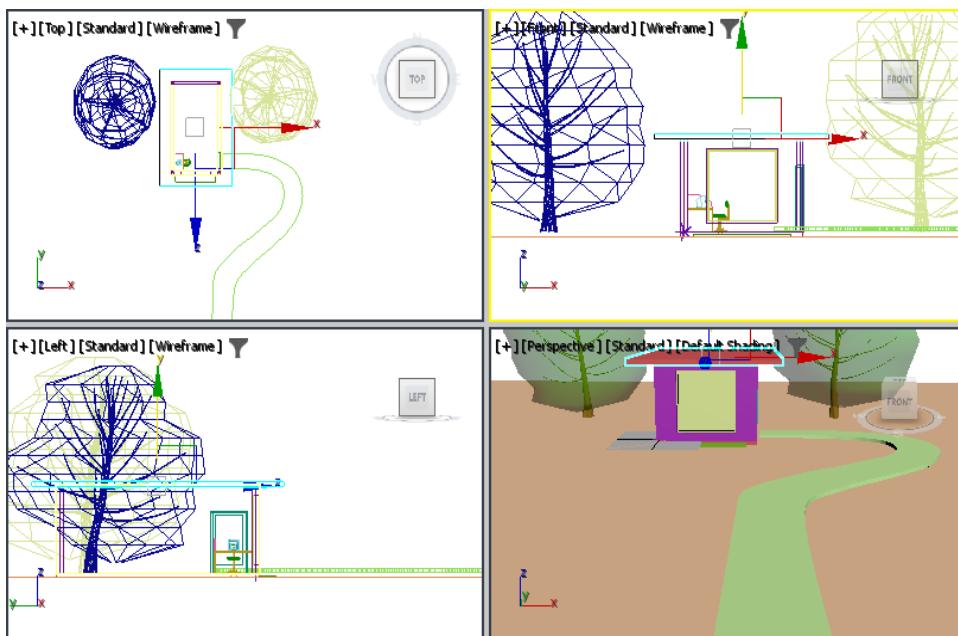


Figure P5-16 The roof aligned on the top of walls

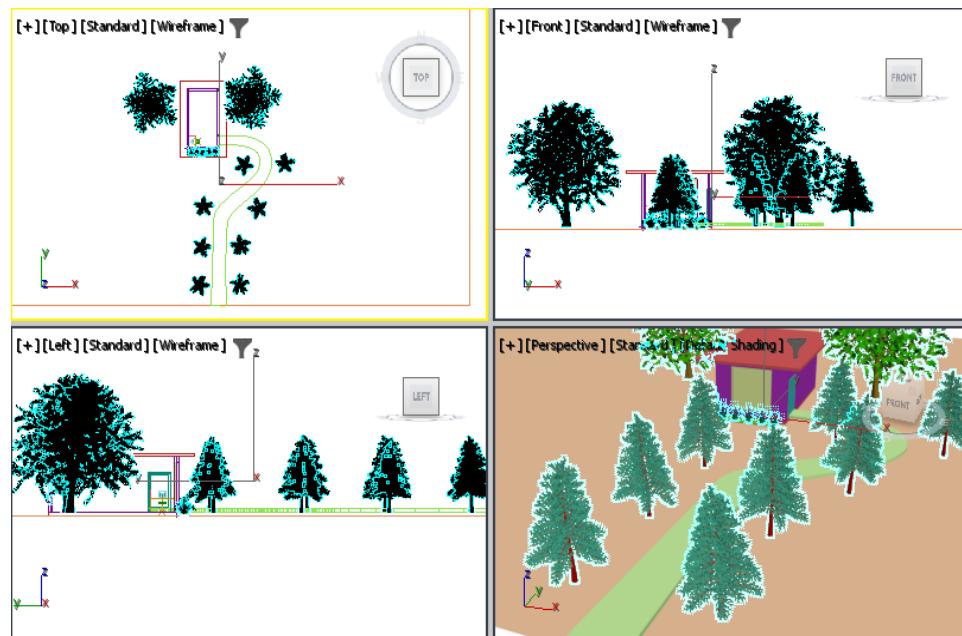


Figure P5-17 The trees aligned around Path

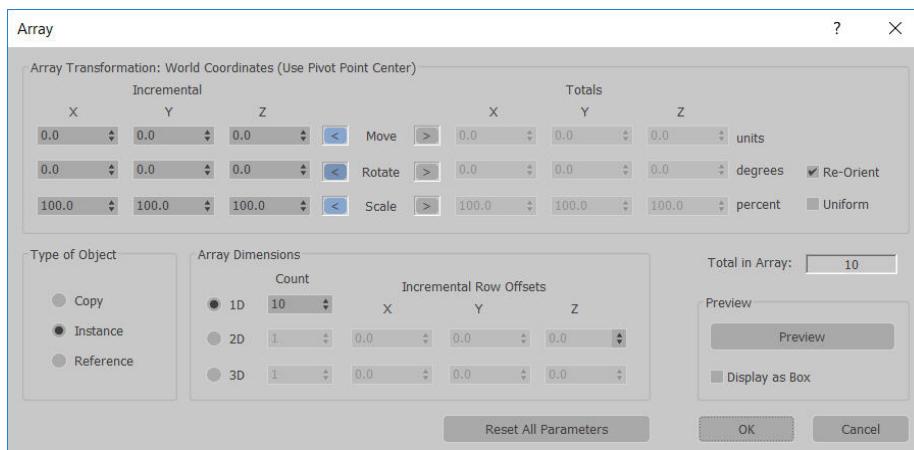


Figure P5-18 The Array dialog box

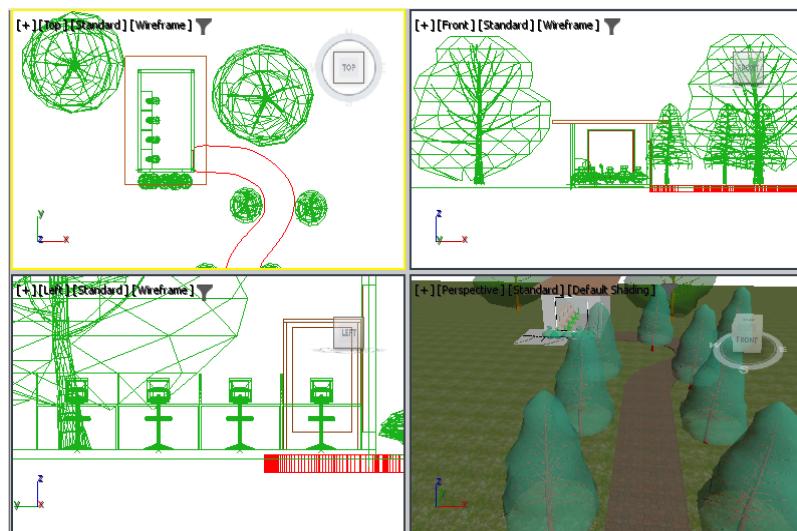


Figure P5-19 The first row of computer stations created

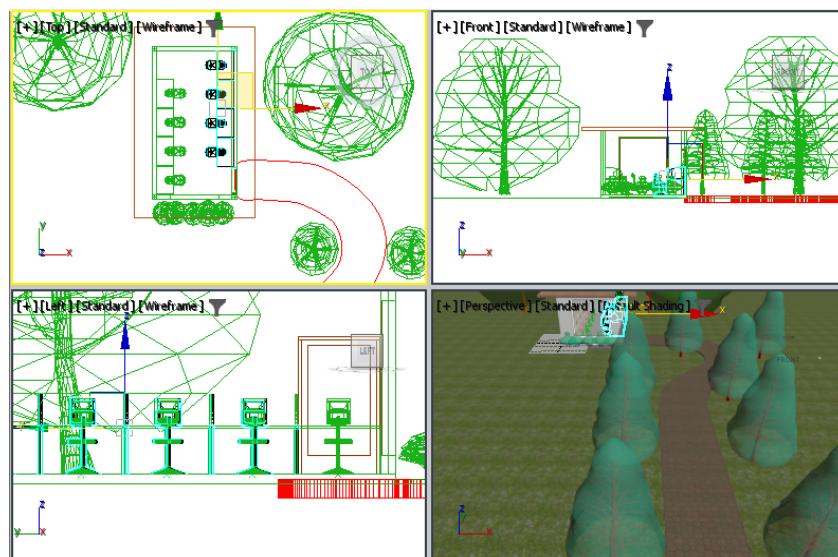


Figure P5-20 The second row of computer stations created and aligned

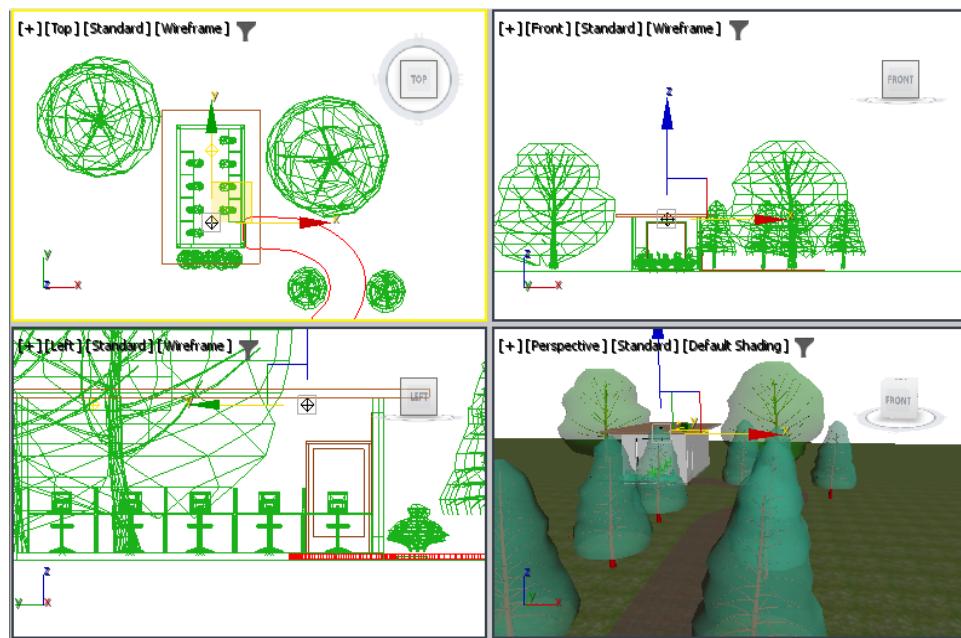


Figure P5-21 The omni lights created and aligned in the viewports

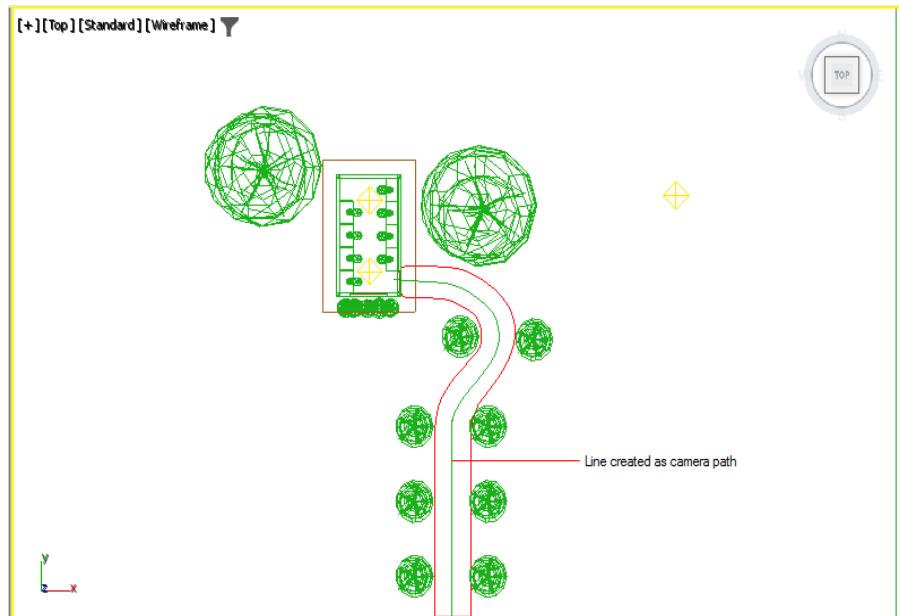


Figure P5-22 Line created as Camera Path

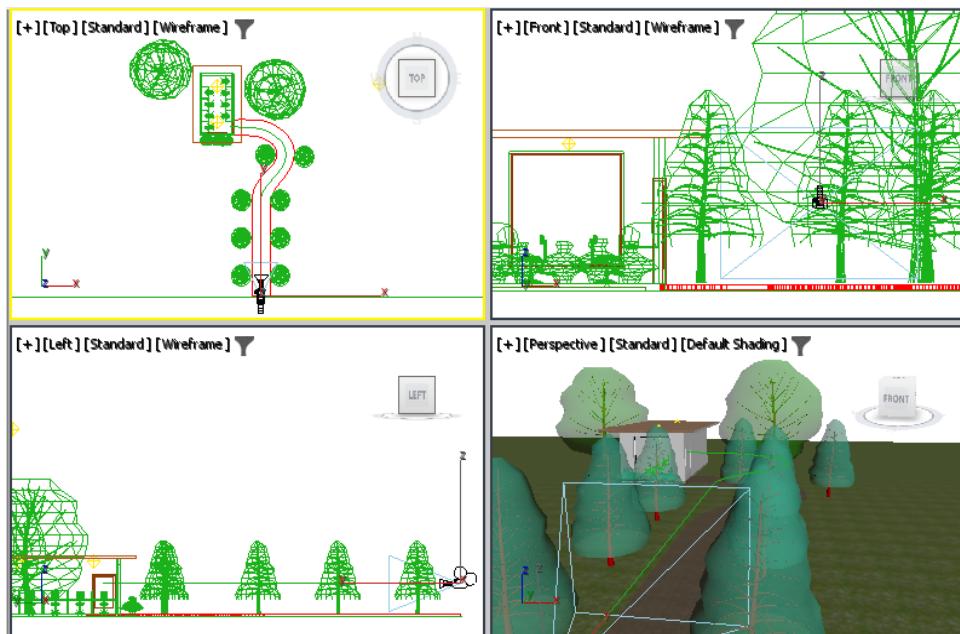


Figure P5-23 The camera placed at the start point of Camera Path

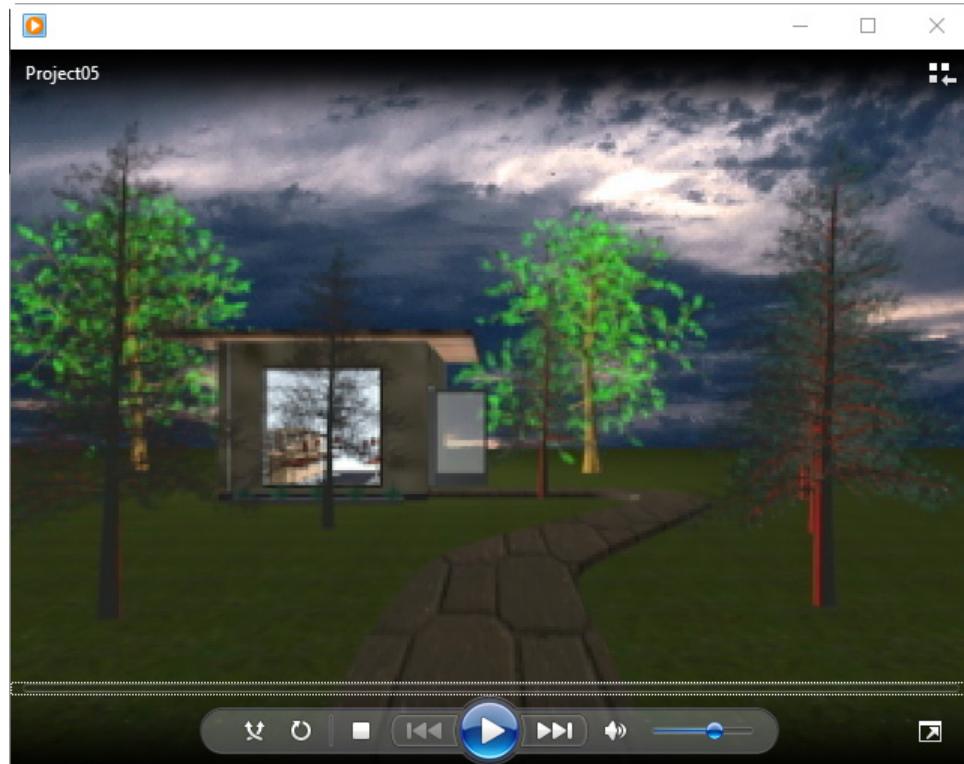


Figure P5-24 The final animation being played leading the path to the computer center

Student Project

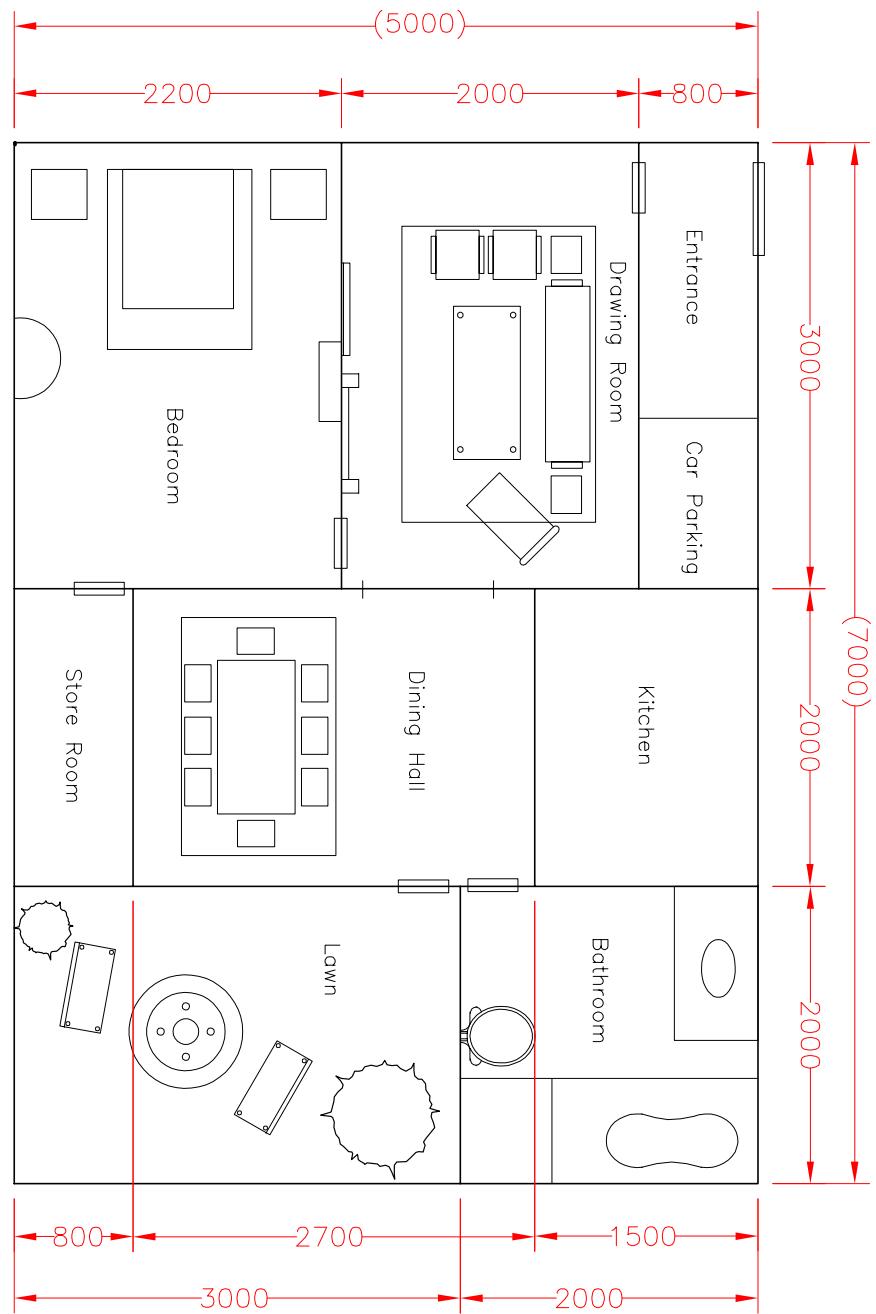


Figure SP-1 The AutoCAD drawing for the student project (house)

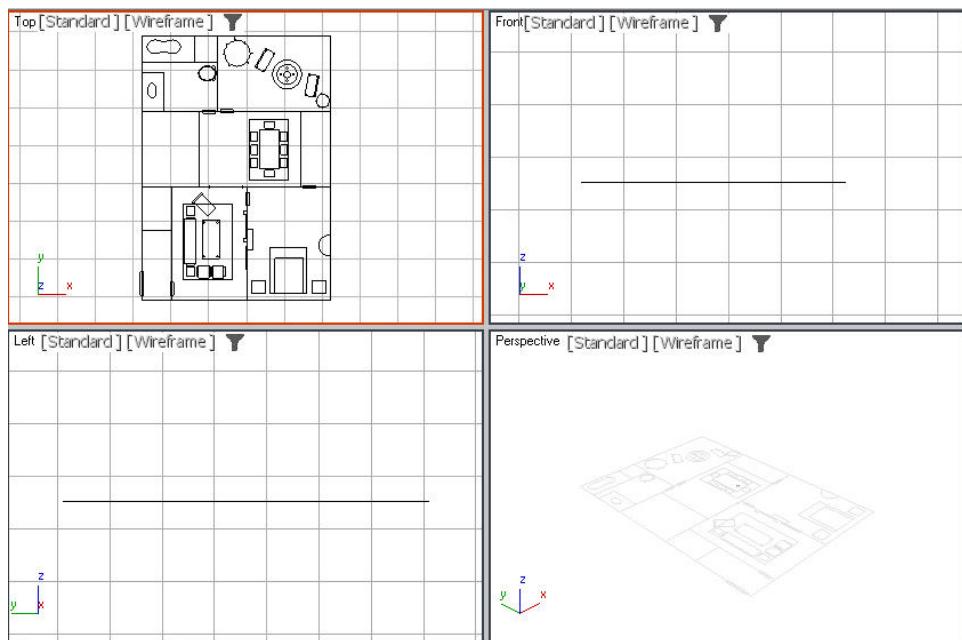


Figure SP-2 The drawing file imported to Autodesk 3ds Max 2023



Figure SP-3 Bedroom (View 1)



Figure SP-4 Bedroom (View 2)

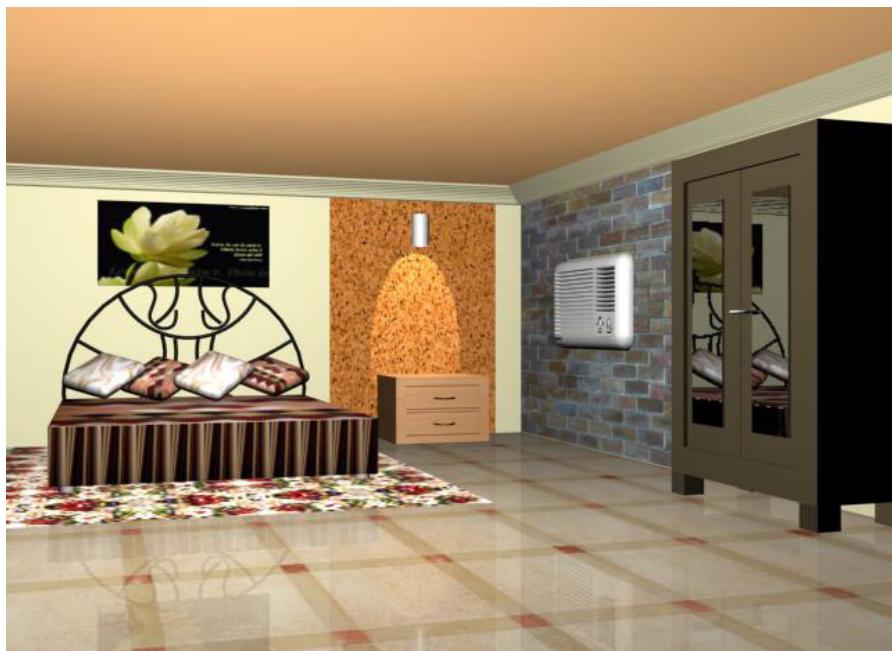


Figure SP-5 Bedroom (View 3)



Figure SP-6 Kitchen

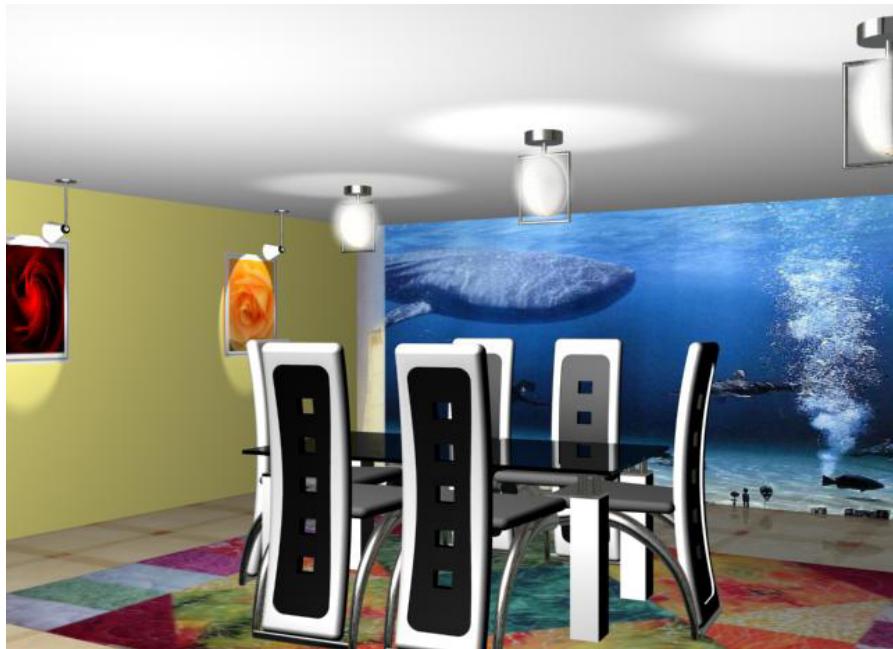


Figure SP-7 Dining room (View 1)

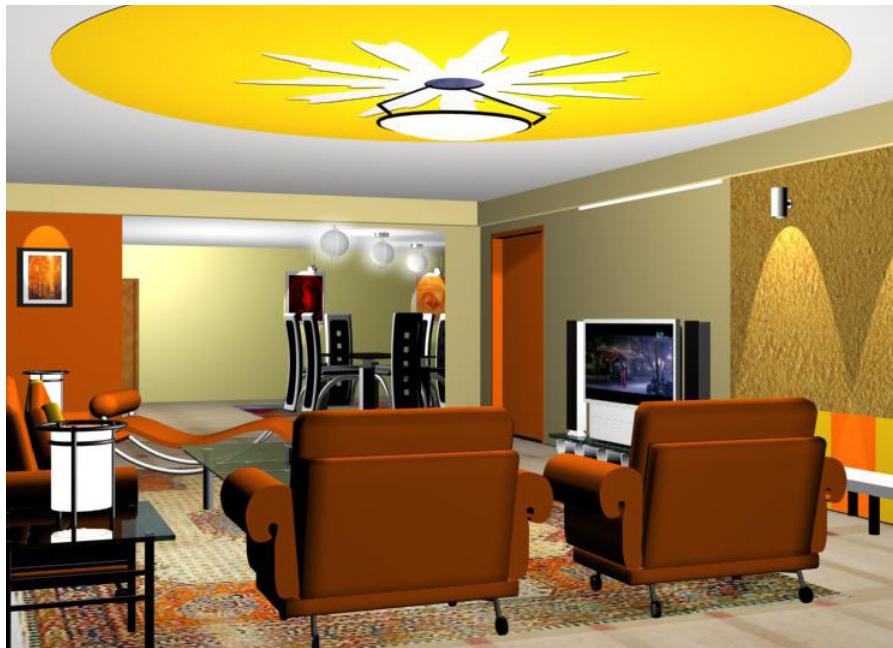


Figure SP-8 Dining room (View 2)

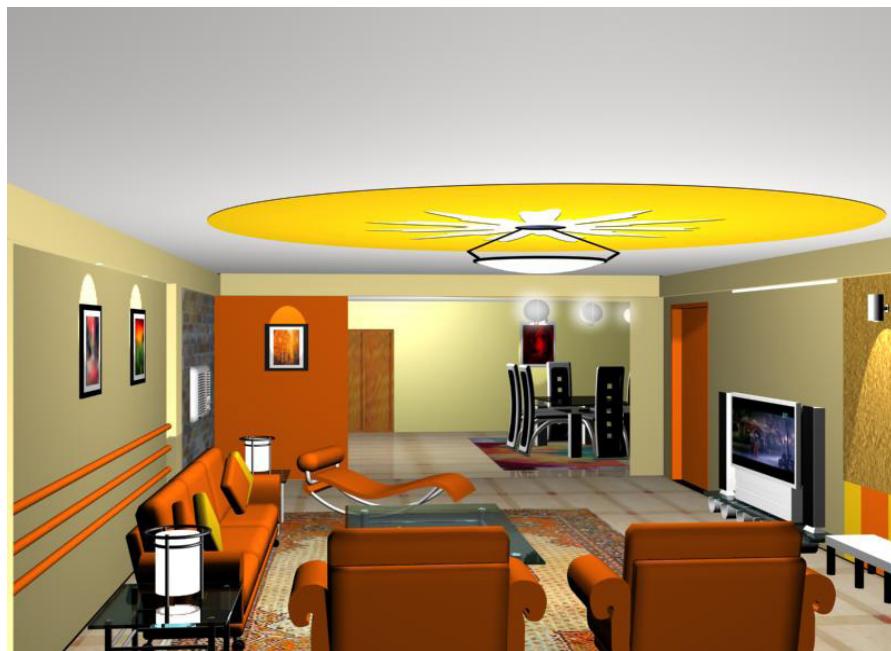


Figure SP-9 Dining room (View 3)



Figure SP-10 Drawing room (View 1)



Figure SP-11 Drawing room (View 2)



Figure SP-12 Drawing room (View 3)



Figure SP-13 Bathroom (View 1)



Figure SP-14 Bathroom (View 2)

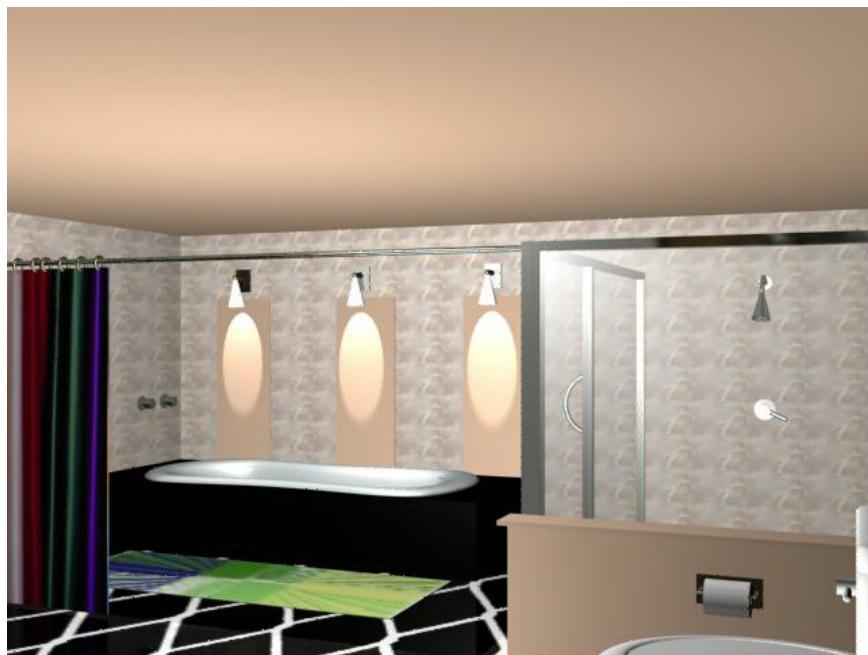


Figure SP-15 Bathroom (View 3)

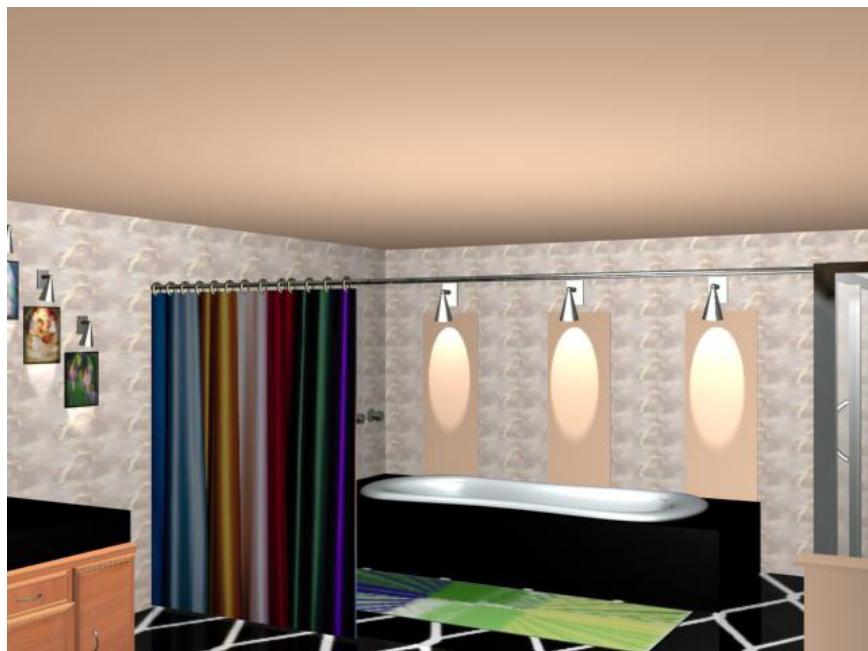


Figure SP-16 Bathroom (View 4)

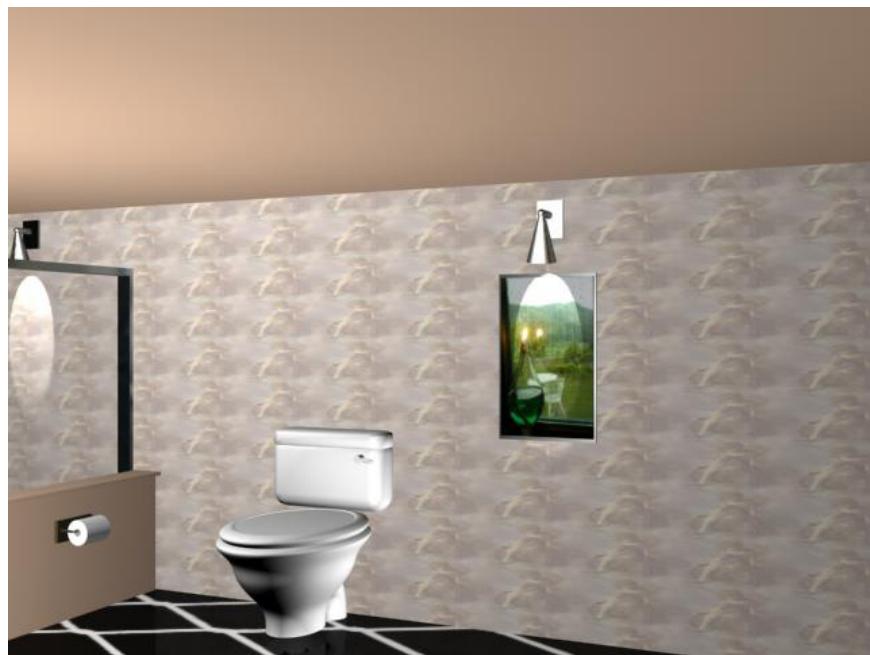


Figure SP-17 Bathroom (View 5)



Figure SP-18 Bathroom (View 6)



Figure SP-19 The lawn