Rhino Interface

Untitled - Rhinoceros (Educational)

File   Edit   View   Curve   Surface   Solid   Mesh   Dimension   Transform   Tools   Analyze   Render   Monkey   Plugins   Help ← **Menus**

Current render plug-in set to "Rhino Render" ← **Command History**

Command: ← **Command Prompt**

← **Toolbars**

Top

Perspective ← **Viewport Title**

LMB: activate viewport without losing selection

Double Click: maximise viewport

RMB: show viewport options:
wireframe, shaded, rendered changes display mode
Display Properties shows camera infomation

← **Viewports**

By default, 4 viewports are shown:
Top, Perspective, Front and *Right*

Navigation (Right Mouse Button):

RMB Drag = Rotate View
(this pans in top, left and right viewports)

Shift + RMB Drag = Pan View

Scroll Wheel = Zoom
(Ctrl + RMB Drag also works)

Ctrl + Alt + RMB Drag = Look around

Home/End = Undo/Redo View

Selecting Objects (Left Mouse Button):

Click + LMB Drag (left to right) = window select
Click + LMB Drag (right to left) = crossing select
(only selects objects completely inside selection box)

Front

Right

Common Shortcuts

Enter/RMB/Space = End or Repeat command
Hold Shift = orthogonal mode
Hold Ctrl = elevator mode
(draw out of the construction plane)
Press TAB = constrain angle

☑ End   ☑ Near   ☑ Point   ☑ Mid   ☐ Cen   ☑ Int   ☑ Perp   ☐ Tan   ☐ Quad   ☐ Knot   ☐ Project   ☐ STrack   ☐ Disable ← **Object Snaps**

CPlane   x 114.55   y 195.68   z 0.00   ■ Default   Snap   Ortho   Planar   **Osnap**   Record History ← **Status Bar**

Current Coordinates

Quick Layer Dialogue

Smart Track

Snap = Toggle Grid Snap on/off
Ortho = Toggle Orthogonal Snap on/off
Planar = Toggle Planar Drawing on/off
(eg when drawing a polyline, it doesn't keep reverting to the CPlane)
OSnap = Toggle Object Snap Bar on/off
Record History = remember how object was created
(eg a loft surface will update when you change the original curves)

General

| Command	Alias	Toolbar	Menu	Description
Layer			Edit > Layers > Edit Layers...	Shows layer dialogue box
Properties	P		Edit > Object Properties...	Shows information about selected object
Options	OP		Tools > Options...	Shows Document Properties and Rhino Options
Join	J		Edit > Join	Joins curves into polycurves; and surfaces into polysurfaces
Explode	X		Edit > Explode	Explodes polycurves and polysurfaces (opposite of Join)
Group			Edit > Groups > Group	Groups objects together for easy selection
Ungroup			Edit > Groups > Ungroup	Ungroups objects

Selection

Command	Alias	Toolbar	Menu	Description
SelAll	Ctrl +A		Edit > Select Object > All Objects	Selects all visible objects
SelDup			Edit > Select Object > Duplicate Objects	Selects duplicate objects
SelChain	SC			Selects a series of touching curves
SelLast			Edit > Select Object > Last Created Objects	Select the last object that rhino created

Navigation

Command	Alias	Toolbar	Menu	Description
Zoom Extents	ZE		View > Zoom > Zoom Extents	Zooms so that you can see all objects
Zoom Selected	ZS		View > Zoom > Zoom Selected	Zooms so that you can see selected objects

Curves

Command	Alias	Toolbar	Menu	Description
Polyline	PL		Curve > Polyline > Polyline	Draws a series of connected lines
Curve	CR		Curve > Free-Form > Control Points	Draws a smooth curve using a series of control points
InterpCrv	CRI		Curve > Free-Form > Interpolate Points	Draws a smooth curve through a series of control points
Rectangle	RE		Curve > Rectangle > Corner to Corner	Draws a rectangle from two points
Circle	CI		Curve > Circle > Centre, Radius	Draws a circle
Polygon			Curve > Polygon > Center, Radius	Draws a polygon with any number of sides
Length	LN		Analyze > Length	Measures the length of curves
Divide	DI		Curve > Pnt Object > Divide Curve by > Number of Segments	Creates a number of points along a curve
CurveBoolean	CB		Curve > Curve Edit Tools > Curve Boolean	Trims, splits, and joins overlapping curve regions

Transformation

Command	Alias	Toolbar	Menu	Description
Move	M		Transform > Move	Moves an object
Copy	C		Transform > Copy	Makes a copy of an object
Array	A		Transform > Array > Rectangular	Copies an object into a rectangular grid (there is also "PolarArray", which makes copies in a circle)
Rotate	R		Transform > Rotate	Rotates an object
Scale	S		Transform > Scale	Scales an object (there is also "Scale1D" and "Scale2D")
Extend	E		Curve > Extend Crv > Extend Curve	Extends the end of a curve
Trim	T		Edit > Trim	Removes part of an object
Split	SP		Edit > Split	Splits an object into two parts
Offset	o		Curve > Offset Curve	Offsets a curve (be careful of the tolerance) (there is also "OFfsetSrf" for surfaces)
Fillet	f		Curve > Fillet Curves	Draws a circular fillet between two curves
Rebuild	CR		Edit > Rebuild	Used to simplify change the number of control points on a curve or surface
PointsOn	F10		Edit > Control Pts > Control Points On	Shows control points (F11 or Esc turns them off)

Surfaces

Command	Alias	Toolbar	Menu	Description
Plane	P2		Surface > Plane > Corner to Corner	Creates a rectangular plane from two points
SrfPt			Surface > Corner Points	Creates a surface from 3 or 4 corner points
PlanarSrf	PS		Surface > Planar Curves	Creates a flat (planar) surface inside closed curves
ExtrudeCrv	EC		Surface > Extrude Curve > Straight	Extrudes a curve into a surface (there is also "ExtrudeSrf" for surfaces)
Loft			Surface > Loft	Blends two or more curves into a surface (be careful to select each curve near the same end)
Revolve			Surface > Revolve	Revolves a curve around an axis to create a surface
Sweep1			Surface > Sweep 1 Rail	Sweeps a curve along a rail curve (there is also "Sweep2" which uses two rail curves)
Patch			Surface > Patch	Drapes a surface over curves and points (used when no other method works)

Analysis

Command	Alias	Toolbar	Menu	Description
Distance	D		Analyze > Distance	Calculates the distance between two points
Area			Analyze > Mass Properties > Area	Calculates the area of a surface (also works on closed curves)
Volume			Analyze > Mass Properties > Volume	Calculates the volume of a solid (closed polysurface)

Solids

Command	Alias	Toolbar	Menu	Description
Box	B		Solid > Box > Corner to Corner, Height	Creates a box
Sphere			Solid > Sphere > Center, Radius	Creates a sphere
Cone			Solid > Cone	Creates a cone
Cylinder			Solid > Cylinder	Creates a cylinder
Torus			Solid > Torus	Creates a torus
Pipe			Solid > Pipe	Creates a tube along a curve
Cap			Solid > Cap Planar Holes	Fills in planar opening to create a closed solid
Boolean2Objects	B2		Solid > Boolean Two Objects	User can cycle through Boolean Union, Intersection, Difference and Inverse Difference

Advanced

Command	Alias	Toolbar	Menu	Description
Rotate3D	R3		Transform > Rotate 3-D	Rotates an object around an axis
Section			Curve > Curve From Objects > Section	Cuts a section through surfaces
Contour			Curve > Curve From Objects > Contour	Cuts sections through objects at regular intervals (this is the "Section" command's bigger brother)

Advanced Continued

| Command	Alias	Toolbar	Menu	Description
Project			Curve > Curve From Objects > Project	Projects curves on to a surface (curves are projected along the z-axis of the CPlane)
Intersect	I		Curve > Curve From Objects > Intersection	Calculates the intersecting curves of multiple objects
DupBorder			Curve > Curve From Objects > Duplicate Border	Extracts the curves which form the border of a surface (there is also "DupEdge" which extracts just one edge)
ExtractIsoCurve	XI		Curve > Curve From Objects > Extract Isocurve	Extracts a curve parallel to the edge of a surface
UnrollSrf			Surface > Unroll Developable Srf	Unfolds a surface Useful for making freeform models from flat materials (use "Smash" on doubly-curved surfaces, eg spheres)
SquishBack				Allows you to place curves on an unrolled surface and then re-roll it with the curves; useful for placing text on surfaces (http://wiki.mcneel.com/labs/advancedflattening)
BlendSrf			Surface > Blend Surface	Creates a smooth surface in between two other surfaces
Heightfield			Surface > Heightfield from Image	Converts an image into a surface (useful for making quick site models)
CPlane	C3		View > Set CPlane > 3 Points	Moves the construction plane, so that you can easily draw on a different plane (use command: "CPlane World Top" or alias: "CW" to restore the default CPlane)
ProjectToCPlane			Transform > ProjectToCPlane	Projects curves on to the construction plane
ExtractSrf	XS		Solid > Extract Surface	Explodes only the selected surfaces from a polysurface
Dir			Analyze > Direction	Shows which side of surface is considered 'outside' useful for reversing direction if boolean commands fail (also works on curves)

Deformation (UDT)

Command	Alias	Toolbar	Menu	Description
SoftMove			Transform > Soft Move	Moves objects relative to the center of a move using a falloff curve
CageEdit			Transform > Cage Editing > Cage Edit	Deforms a complex object using a simple cage
Flow			Transform > Flow along Curve	Deforms objects so they follow a curve
FlowAlongSrf			Transform > Flow along Surface	Deforms objects so they follow a surface
Stretch				Stretches objects in one direction
Bend			Transform > Bend	Bends objects
Twist			Transform > Twist	Twists objects around an axis
Splop				Wraps objects around a surface

Glossary

Curve	includes lines, arcs, circles, ellipses, free-form curves, rectangles	**Tolerance**	Default tolerance is 0.01 units. This means new objects will be created accurate to within 0.01 units.
Polycurve/ Polysurface	when multiple curves/surfaces are joined together		Objects will have **fewer control points** when a **lower tolerance** (0.1) is set.
Closed	Closed (periodic) curves form a loop. Closed surfaces form a solid.		Objects will have **more control points** when a **higher tolerance** (0.001) is set.

Installing Plugins/Aliases

Plugins:
There are hundreds of plugins available on the web, which extend rhino's functionaliy. Plugins developed by McNeel (the makers of rhino) can be found at:
http://en.wiki.mcneel.com/default.aspx/McNeel/RhinoHomeLabs.html

Most plugins can be installed by simply dragging and dropping the *.rhp file into the rhino window. A list of installed plugins can be viewed by typing "options" into the command prompt and selecting "Plug-ins" from the list.

Aliases:
Aliases are customisable shortcut commands. For example, instead of typing "Move" every time you want to move an object, you might set up the alias "M" for the move command.

Aliases can be imported and exported as text files (*.txt). To load an alias file, type "options" into the command prompt and then select "Aliases" from the list. Click on the "import" button and choose the file.

Where can I get more help?

Email me (Steven Janssen):
sjan8096@uni.sydney.edu.au

Rhino Forum:
The rhino forum has a very active group of rhino users, who usually answer your question within a couple of hours.

It can be viewed with a news reader such as outlook with this link:
news://news.rhino3d.com/rhino

It can also be viewed on the web at this address:
http://news2.mcneel.com/scripts/dnewsweb.exe?cmd=xover&group=rhino