Chapter 1

Exploring CINEMA 4D R18 Studio Interface

Learning Objectives

After completing this chapter, you will be able to:

- *Work with Viewport Navigation Tools in CINEMA 4D*
- *Understand various terms related to CINEMA 4D interface*
- *Work with tools in CINEMA 4D*

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INTRODUCTION

MAXON CINEMA 4D R18 Studio is a high-end 3D application developed by MAXON Computer. This application is used by professional 3D artists to create impressive 3D scenes, VFX, and broadcast artwork. CINEMA 4D comes in four versions: Prime, Visualize, Broadcast, and Studio. CINEMA 4D Prime is used to create stunning 3D graphics. CINEMA 4D Visualize provides fast and easy solution to architects, designers, and photographers to create realistic animations and for product visualization. It also has the ability to import models from all major 2D and 3D file formats. CINEMA 4D Broadcast is a perfect solution for creating high quality broadcast graphics. CINEMA 4D Studio contains all the features of CINEMA 4D Prime, CINEMA 4D Visualize, and CINEMA 4D Broadcast. Moreover, it includes character animation tools that makes it easier for its users to create rigs and character animations.

MAXON CINEMA 4D is a user-friendly application which is used for sculpting, creating particles using advance particle system, hair system, and for creating motion graphics using MoGraph. In this chapter, you will be introduced to MAXON CINEMA 4D Studio R18 interface elements.

STARTING MAXON CINEMA 4D R18 Studio

To start MAXON CINEMA 4D R18 Studio, choose the **Start** button on the taskbar; the **Start** menu will be displayed. Next, choose **All Programs > MAXON > CINEMA 4D** from the **Start** menu, as shown in Figure 1-1. The default interface of MAXON CINEMA 4D R18 Studio will be displayed, as shown in Figure 1-2.

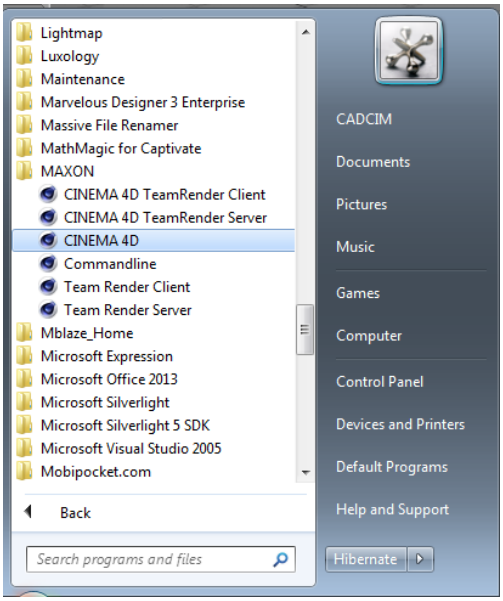

Figure 1-1 *Starting MAXON CINEMA 4D R18 Studio from the* ***Start*** *menu*

EXPLORING MAXON CINEMA 4D R18 Studio INTERFACE

CINEMA 4D interface consists of various components such as title bar, Viewport, Command Palette, Modes Palette, main menu, and so on, as shown in Figure 1-3. All these components are discussed next.

Viewport

Viewport is a part of the work area where you can create a 3D scene. Every viewport has a grid placed at the center. A grid is a framework of intersecting lines placed perpendicularly in the X-Z plane. At the center point (origin), the X, Y, and Z coordinates will be 0, 0, and 0, respectively.

Note

In CINEMA 4D, the X, Y, and Z axes are displayed in red, green, and blue colors, respectively, refer to Figure 1-3.

When you start CINEMA 4D, the Perspective viewport is displayed by default, as shown in Figure 1-3. This viewport displays objects from a perspective camera. You can also display other viewports such as Top, Right, Bottom, and Front in the work area. These viewports display objects from orthographic camera view and do not display the perspective view. To switch to the 4-view viewport arrangement, hover the cursor over the Perspective viewport and then press the middle-mouse button once. If you need to maximize any of the four viewports, hover the cursor over the required viewport and then press the middle-mouse button once.

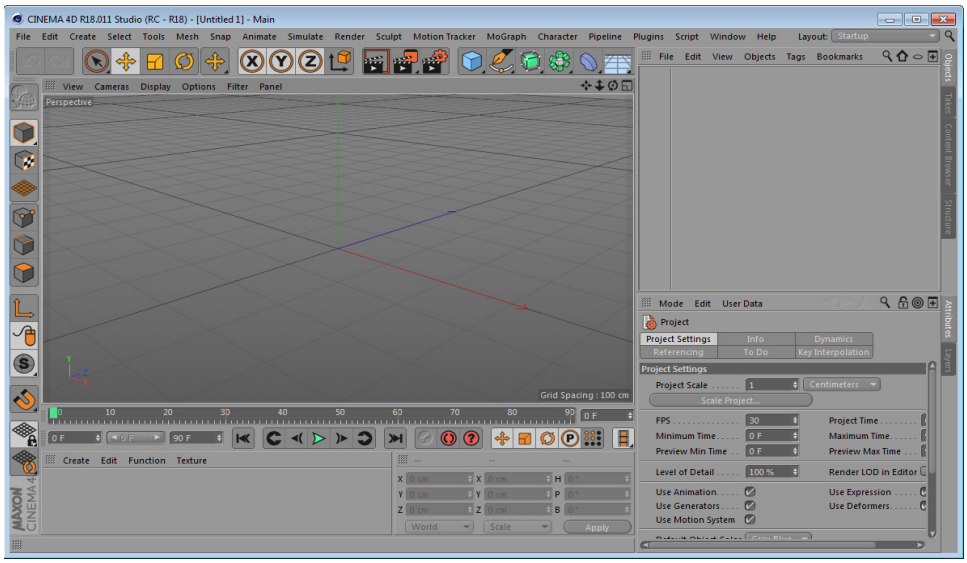

Figure 1-2 *The default interface of CINEMA 4D R18 Studio*

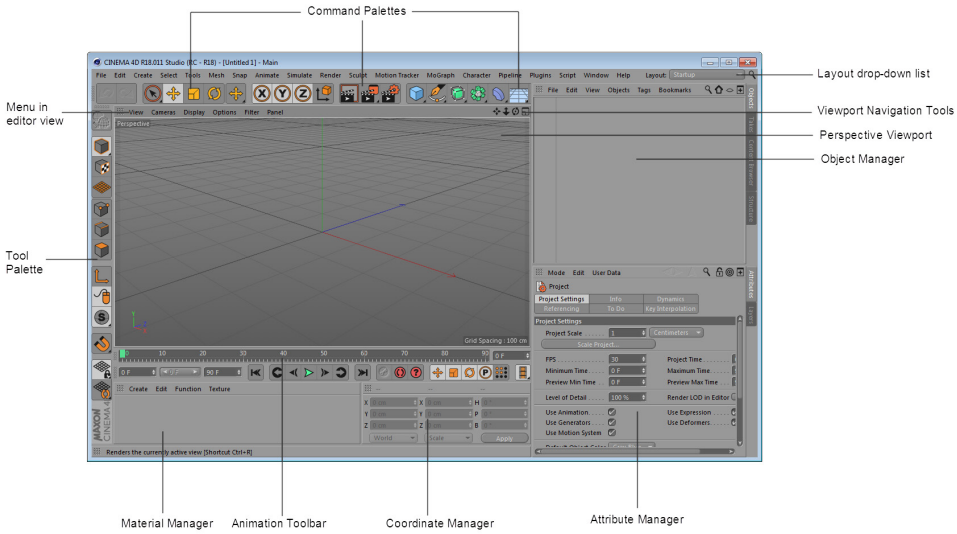

Figure 1-3 *Various components of CINEMA 4D R18 Studio interface*

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Title Bar

The title bar, located at the top of the interface, displays the name and version of the software, and the name of the opened file. A CINEMA 4D file is saved with the *.c4d* extension.

Tip
You can display different viewports by using the functional keys: F1 (Perspective), F2 (Top), F3 (Right), F4 (Front), and the F5 key (for all viewports).

Main Menu

The main menu is located just below the title bar, refer to Figure 1-3. The options in this menu are used to access tools, functions, or commands in CINEMA 4D.

Command Palette

The Command Palette is located below the main menu, refer to Figure 1-3. It is used to invoke the most commonly used tools in CINEMA 4D. The tools in the Command Palette are discussed next.

Undo

The **Undo** tool is used to revert the last action performed in the scene. By default, the user can undo maximum of 30 changes.

Tip
*You can increase or decrease the undo limit. To do so, choose **Edit > Preferences** from the main menu; the **Preferences** dialog box will be displayed. In this dialog box, choose **Memory** from the list of options on the left of the **Preferences** dialog box; the **Memory** area will be displayed. In this area, enter the required value in the **Undo Depth** spinner.*

Redo

The **Redo** tool is used to revert the last action performed by the **Undo** tool. The number of redo actions cannot exceed the number of times a change is made.

Live Selection

The **Live Selection** tool is used to select objects in the scene. You can also select elements (points, edges, and polygons) using this tool. It works like a paint brush where the user paints over points, edges, and polygons to be selected. When you press and hold the left mouse button on the **Live Selection** tool, a flyout will be displayed, as shown in Figure 1-4. The various types of selection tools in this flyout will be discussed in the later chapters.

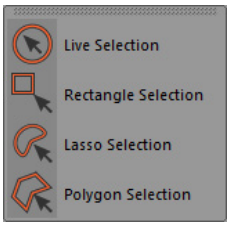

Figure 1-4 *The flyout displayed*

Tip
*You can interactively change the size of the **Live Selection** tool's brush by pressing and holding the middle mouse button and then dragging the cursor to the left or right. You can also use the { and } keys to increase and decrease the size of the **Live Selection** tool's brush.*

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Move

This tool is used to move an object in the viewport provided the axes are not locked. Moreover, this tool is used to select points, polygons, and edges by clicking on them. You can increase the selection by pressing and holding SHIFT and then clicking on the elements. You can also remove elements from the selection by pressing and holding CTRL and then clicking on the elements.

Scale

This tool is used to scale an object in the viewport.

Rotate

This tool is used to rotate an object in the viewport.

Active Tool

This tool displays the icon of the last used tool.

X-Axis/Heading

This tool is used to lock or unlock the transformation along the X axis. If this tool is chosen, the object will not move, scale, or rotate along the X axis. The shortcut key for invoking this tool is X.

Y-Axis/Pitch

This tool is used to lock or unlock the transformation along the Y axis. If this tool is chosen, the object will not move, scale, or rotate along the Y axis. The shortcut key for invoking this tool is Y.

Z-Axis/Bank

This tool is used to lock or unlock the transformation along the Z axis. If this tool is chosen, the object will not move, scale, or rotate along the Z axis. The shortcut key for invoking this tool is Z.

Coordinate System

This is a toggle tool and is used to switch between Object and World coordinate systems for the movement, scaling, or rotation of an object. By default, Object coordinate system is activated in CINEMA 4D. It operates using the HPB system (Heading, Pitch, and Banking). The shortcut for invoking this tool is W.

Render View

This tool is used to render the currently active view. On choosing this tool, the rendered output will be displayed in the active view. If you click in the rendered output, the active view will be displayed in the viewport. You can also choose this tool by pressing CTRL+R.

Render to Picture Viewer

This tool is used to render the scene in the **Picture Viewer** window. On choosing this tool, the **Picture Viewer** window will be displayed. The progress of the render and the frame

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number being rendered will be displayed in the status bar of the **Picture Viewer** window. In CINEMA 4D, you can also render a region, make previews of the animations, and add scene to the render queue. To access these rendering options, press and hold the left mouse button on the **Render to Picture Viewer** tool; a flyout with various rendering options will be displayed, as shown in Figure 1-5. Next, choose the desired option from the flyout.

Edit Render Settings

This tool is used to invoke the **Render Settings** window. The options in this window are used to specify various settings to control the rendering process. In this window, you can set the size, quality, and so on of the scene that has to be rendered.

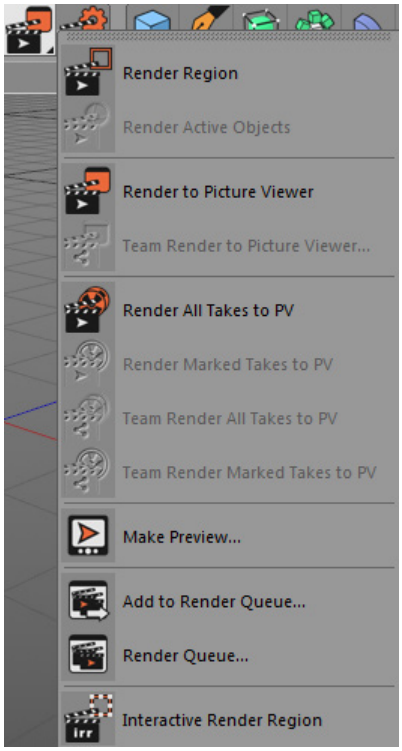

Figure 1-5 *The rendering options displayed in the flyout*

Cube

This tool is used to create a cube in the viewport. When you press and hold the left mouse button on the **Cube** tool, a flyout with various tools will be displayed, as shown in Figure 1-6. These tools are used to create the parametric objects in the scene.

Pen

The **Pen** tool also referred to as the Spline Pen tool replaces the previous versions of the **Bezier**, **B-Spline**, **Linear**, and **Akima Spline** tools and is equipped with new functions and used to draw spline curves in the viewport. When you press and hold the left mouse button on the **Pen** tool, a flyout with various spline modeling tools will be displayed, as shown in Figure 1-7.

Subdivision Surface

This tool is used to interactively subdivide and round the objects. This feature is very useful in organic modeling. When you press and hold the left mouse button on the **Subdivision Surface** tool, a flyout with various generators will be displayed, as shown in Figure 1-8.

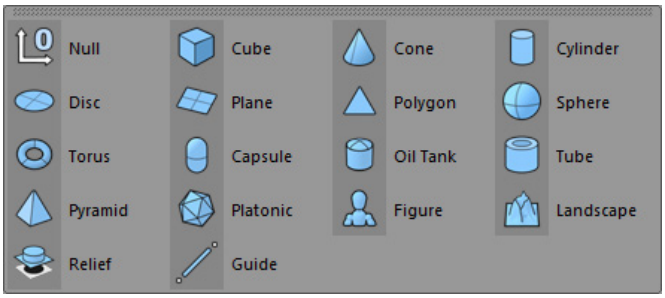

Figure 1-6 *The tools to create the parametric objects displayed in the flyout*

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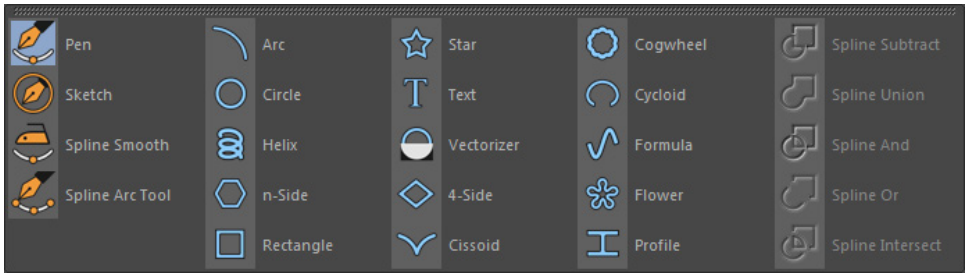

Figure 1-7 *The spline modeling tools displayed in the flyout*

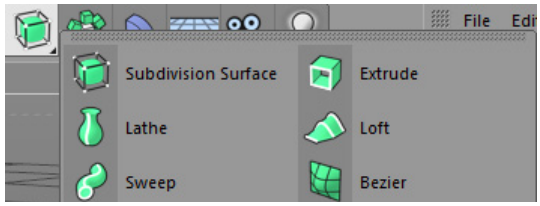

Figure 1-8 *The generators displayed in the flyout*

Array

This tool is used to create an array of objects in spherical or wave form. When you press and hold the left mouse button on the **Array** tool, a flyout with special modeling tools will be displayed, as shown in Figure 1-9. These tools will be discussed in the later chapters.

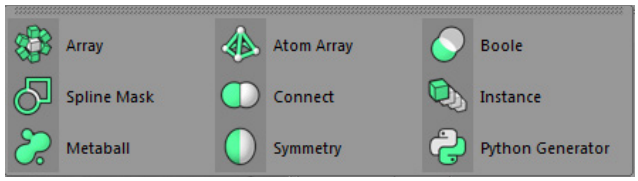

Figure 1-9 *The special modeling tools displayed in the flyout*

Bend

This tool is used to bend a selected object in the specified direction. When you press and hold the left mouse button on the **Bend** tool, a flyout with various deforming tools will be displayed, as shown in Figure 1-10.

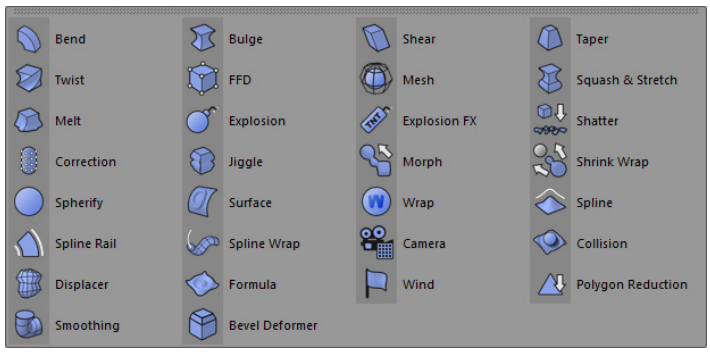

Figure 1-10 *Various deforming tools displayed in the flyout*

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Floor

This tool is used to create a floor object in the viewport. When you press and hold the left mouse button on the **Floor** tool, a flyout with various tools will be displayed, as shown in Figure 1-11.

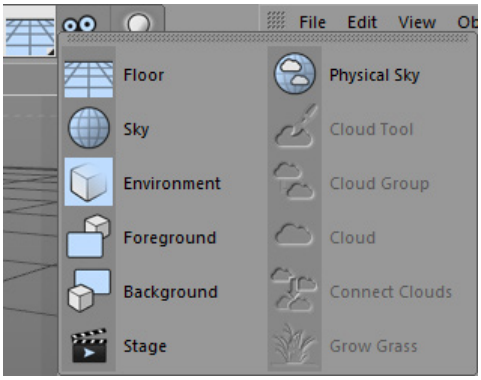

Figure 1-11 *Various tools displayed in the flyout*

Camera

This tool is used to add camera object to the scene. When you press and hold the left mouse button on the **Camera** tool, a flyout with various camera tools will be displayed, as shown in Figure 1-12.

Light

This tool is used to add light objects to the scene. When you press and hold the left mouse button on the **Light** tool, a flyout with various light tools will be displayed, as shown in Figure 1-13.

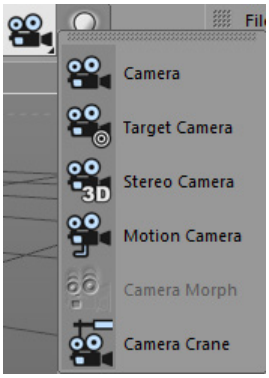

Figure 1-12 *Various camera tools displayed in the flyout*

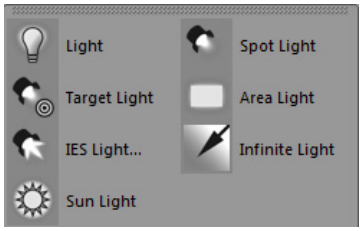

Figure 1-13 *Various light tools displayed in the flyout*

Tools Palette

The Tools Palette is located on the extreme left of the interface, refer to Figure 1-3. It consists of various tools. These tools are discussed next.

Make Editable

This tool is used to convert primitive objects into polygon objects. By default, all the primitive objects and splines are parametric. The shortcut key for this tool is C.

Model

The **Model** tool is used to activate the Model mode. In this mode, you can move, scale, and rotate an object. When you press and hold the left mouse button on this tool, a flyout will be displayed. Choose the **Object** tool from the flyout to activate the Object mode. In this mode, you can move, scale, or rotate the axes of the object. The Object Mode is used when the animations are created. You can use the **Animation** mode to transform entire animation path of an object.

Texture

This tool is used to edit the active texture. When this tool is chosen, the projection type is also considered. The grid lines are drawn in the viewport according to the projection type. The texture can be moved, scaled, or rotated by using the **Move**, **Scale**, and **Rotate** tools.

Workplane

This tool is used to modify the workplane manually by using the **Move**, **Rotate**, and **Scale** tools. A workplane in CINEMA 4D is a plane that can be positioned and rotated for arranging newly created objects, snapping spline points, and so on.

Points

This tool is used to display an object in the Point mode. In this mode, you can select and edit the points of an object. On choosing this tool, the points of the object are displayed. This tool can be used only when an object is converted into a polygonal object.

Edges

This tool is used to display an object in the Edge mode. In this mode, you can select and edit the edges of an object. This tool can be used only when an object is converted into a polygonal object.

Polygons

This tool is used to display an object in the Polygon mode. In this mode, you can select and edit the polygons of the selected object. This tool can be used only when an object is converted into a polygonal object.

Tip

To select one or more points, edges, or polygons, press and hold SHIFT and then click on them. To deselect one or more points, edges, or polygons, press and hold CTRL and then click on them.

Enable Axis

The **Enable Axis** tool is used to move, scale, and rotate the axis of an object. The shortcut key for this tool is L.

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Viewport Solo Off

This tool is helpful in complex scenes in hiding or displaying the selected objects. On choosing this tool, a flyout with various tools will be displayed, as shown in Figure 1-14. By default the **Viewport Solo mode off** tool is chosen. As a result, all the objects in the scene are visible.

Enable Snap

On choosing this tool, a flyout with various snapping tools will be displayed. You can snap objects, edges, points, and polygons.

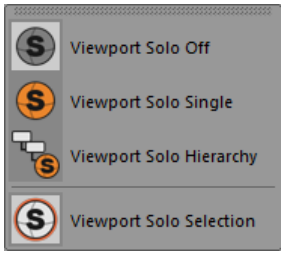

Figure 1-14 *Various options displayed in the flyout*

Locked Workplane

The **Locked Workplane** tool is used to disable any defined automatic workplane modes. When you press and hold the left mouse button on this tool, a flyout will be displayed, as shown in Figure 1-15. You can use the tools in this flyout to align the workplane on different axes.

Planar Workplane

The **Planar Workplane** tool is used to display one of the world coordinate planes as the workplane, depending on the angle of the view of the camera. When you press and hold the left mouse button on this tool, a flyout with various planar workplane tools will be displayed, as shown in Figure 1-16.

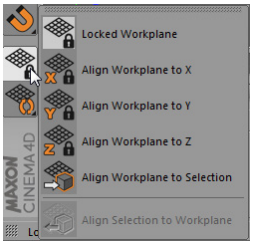

Figure 1-15 *Flyout displayed on choosing the* ***Locked Workplane*** *tool*

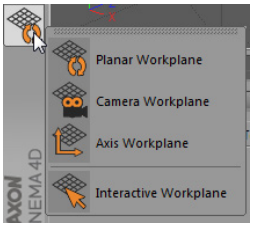

Figure 1-16 *Flyout displayed on choosing the* ***Planar Workplane*** *tool*

Animation Toolbar

The Animation toolbar is located below the viewport area. It consists of all the animation controls that are used to control animation in a scene, refer to Figure 1-17. These controls are discussed next.

Timeline Ruler

The Timeline Ruler is located at the top of the Animation toolbar. You can move the timeslider on the Timeline Ruler to view the animation at a particular frame in the viewport.

Start Frame

The **Start Frame** spinner is used to set the first frame of the animation displayed in the Timeline Ruler.

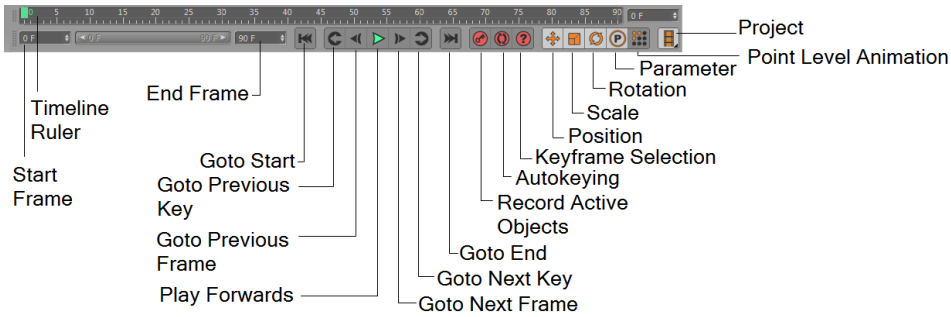

Figure 1-17 The Animation toolbar

End Frame

The **End Frame** spinner is used to set the last frame of the animation displayed in the Timeline Ruler.

Go to Start

The **Go to Start** button is used to move the timeslider to the start frame of the animation in the Timeline Ruler. Alternatively, you can press SHIFT+F to move the timeslider to the start frame.

Go to Previous Key

The **Go to Previous Key** button is used to move the timeslider backward by one keyframe from the current keyframe in the Timeline Ruler. Alternatively, you can use CTRL+F to move to the previous key.

Go to Previous Frame

The **Go to Previous Frame** button is used to move the timeslider backward by one frame from the current frame in the Timeline Ruler. Alternatively, press F.

Play Forwards

The **Play Forwards** button is used to play the animation in the forward direction. Alternatively, you can press F8 to play the animation in the forward direction.

Go to Next Frame

The **Go to Next Frame** button is used to move the timeslider to the next frame in the Timeline Ruler. Alternatively, you can press G to move the timeslider to the next frame.

Go to Next Key

The **Go to Next Key** button is used to move the timeslider to the next keyframe in the Timeline Ruler. Alternatively, you can press CTRL+G to move the timeslider to the next keyframe.

Go to End

The **Go to End** button is used to move the timeslider to the last frame. Alternatively, you can press SHIFT+G to move the timeslider to the last frame.

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Record Active Objects

This button is used to create a key for the selected object on the current frame in the animation. By default, this button is not enabled. It is enabled only when an object is created in the viewport. Alternatively, you can press F9 to create a key for the selected object on the current frame.

Autokeying

The **Autokeying** button is used to set the keys automatically in the Timeline Ruler for the changes made in the animation. It saves the time of the user as the user need not manually choose the **Record Active Objects** button repeatedly to save the animation. Alternatively, you can press CTRL+F9 to set the keys automatically.

Keyframe Selection

On choosing this tool, a flyout will be displayed with the tools that makes it possible to restrict the recording of a key to a specific object selection.

Position

This button is used to record the position of the object on the current frame.

Scale

This button is used to record the scaling of the object on the current frame.

Rotation

This button is used to record the rotation of the object on the current frame.

Parameter

This button is chosen to ensure that only the selected parameters are applied while recording keyframes. It works in both **Automatic Keyframing** and **Record Active Objects** modes.

Point Level Animation

This button is used to record the position of the points in the object. This mode only works with the polygonal objects.

Project

This button is used to set the playback rate to the value that is specified in the project settings. This button is enabled by default. When you press and hold the left mouse button on this button, a flyout will be displayed, as shown in Figure 1-18. This flyout consists of options to determine the playback speed of the animation.

Material Manager

The Material Manager is located at the bottom left corner of the interface, as shown in Figure 1-19. It is used to create materials and shaders used in the scene.

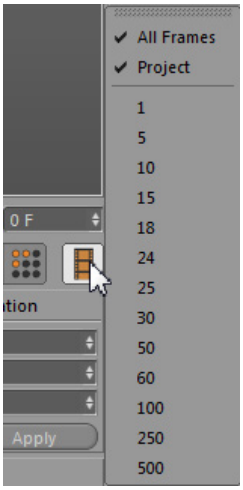

Figure 1-18 The flyout displayed on choosing the ***Project*** *button*

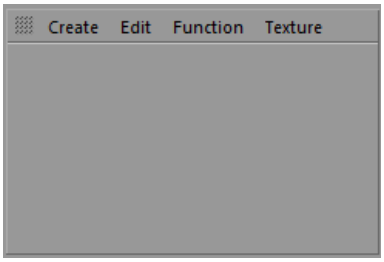

Figure 1-19 The Material Manager

Coordinate Manager

The Coordinate Manager is located at the right of the Material Manager, refer to Figure 1-20. It is used to position, rotate, and scale the objects created in the scene. You need to choose the **Apply** button to apply the values in the spinners of the Coordinate Manager.

Object Manager

The Object Manager is located at the upper right corner of the interface, as shown in Figure 1-21. It consists of a list of objects used in the scene. You can specify tags for objects, rename the objects, and select the objects in the Object Manager. Therefore, it is defined as the control center of the objects created in the scene.

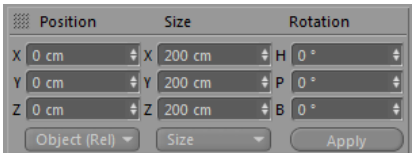

Figure 1-20 The Coordinate Manager

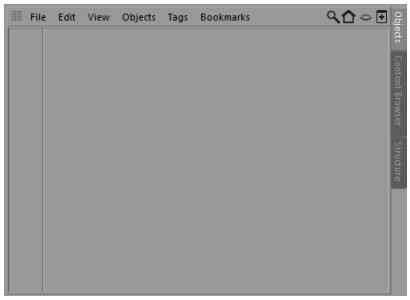

Figure 1-21 The Object Manager

Attribute Manager

The Attribute Manager is used to display the attributes of a selected tool or object in the scene. You can also modify the attributes of the objects and materials in it. Moreover, you can set keys for animation to the attributes that have a circle next to their name. By default, it displays the project settings, as shown in Figure 1-22.

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Layers Manager

The Layers Manager is used to manage the objects in layers when you need to work in complex scenes. To invoke the Layers Manager, choose the **Layers** tab in the Attribute Manager. The Layer Manager will be displayed, as shown in Figure 1-23.

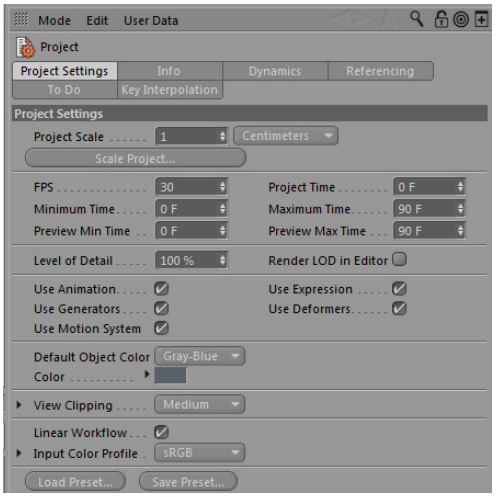

Figure 1-22 *The Attribute Manager*

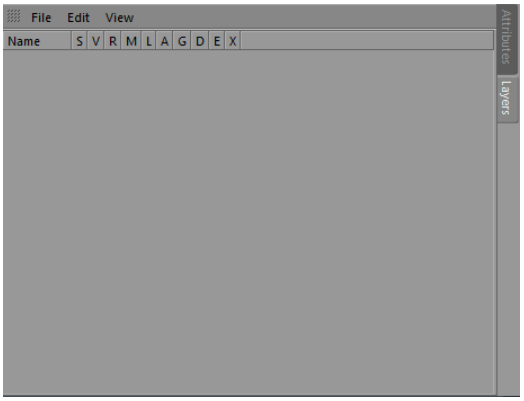

Figure 1-23 *The Layers Manager*

Viewport Navigation Tools

The Viewport Navigation Tools are located on the top right corner of each viewport, refer to Figure 1-3. These tools are used to pan, zoom, and rotate the camera in the viewport.

Pan Tool

The **Pan** tool is used to move the camera in X and Y directions in a scene. You can also pan the camera by pressing 1 along with the left mouse button or by pressing ALT along with the middle mouse button.

Zoom In/Out Tool

The **Zoom In/Out** tool is used to move the camera in the Z direction only. You can also zoom the camera by pressing 2 along with the left mouse button or by pressing ALT along with the right mouse button.

Orbit Tool

The **Orbit** tool is used to rotate the camera in all directions. You can also rotate the camera by pressing 3 along with the left mouse button or ALT along with the left mouse button.

Viewport Tool

The **Viewport** tool is used to toggle between four viewport and single viewport display.

Note

You can maximize a viewport by pressing the middle mouse button inside that viewport.

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Menu in editor view

The Menu in editor view is available in every viewport and is used to perform various tasks. It consists of **View**, **Cameras**, **Display**, **Options**, **Filter**, and **Panel** menus, refer to Figure 1-3. These menus are discussed next.

View Menu

On choosing the **View** menu, a flyout will be displayed, as shown in Figure 1-24. The options in this flyout are discussed next.

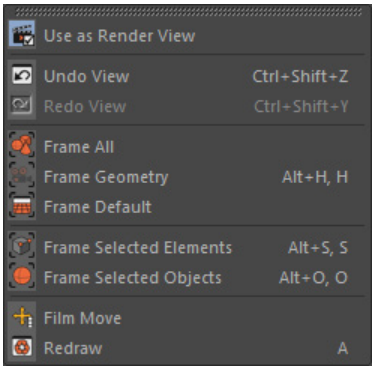

Figure 1-24 *The flyout displayed on choosing the* ***View*** *menu*

Use as Render View

The **Use as Render View** option is used to set the active viewport for rendering in the **Picture Viewer** window.

Undo View

The **Undo View** option is used to undo the last change made to the view angle in the viewport.

Redo View

The **Redo View** option is used to redo the last change made to the view angle in the viewport.

Frame All

The **Frame All** option is used to position the camera such that all the objects including the lights and cameras fill the active viewport and are centered in it.

Frame Geometry

The **Frame Geometry** option is used to position the camera such that objects (excluding the lights and camera) are at the center of the viewport.

Frame Default

The **Frame Default** option is used to reset the viewport to its default value.

Frame Selected Elements

The **Frame Selected Elements** option is used to move the camera such that the selected objects and polygons are at the center of the viewport.

Frame Selected Objects

The **Frame Selected Objects** option is used to position the camera such that the active objects are at the center of the viewport.

Film Move

The **Film Move** option is used to move the camera in the viewport.

Redraw

Usually CINEMA 4D updates the viewport automatically. However, sometimes it is not possible. In such a case, the **Redraw** tool is used to redraw the scene.

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Cameras Menu

On choosing the **Cameras** menu, a flyout will be displayed, as shown in Figure 1-25. The options in this flyout are discussed next.

Navigation

On choosing the **Navigation** option, a cascading menu will be displayed, as shown in Figure 1-26. It displays various modes of the camera which are discussed next.

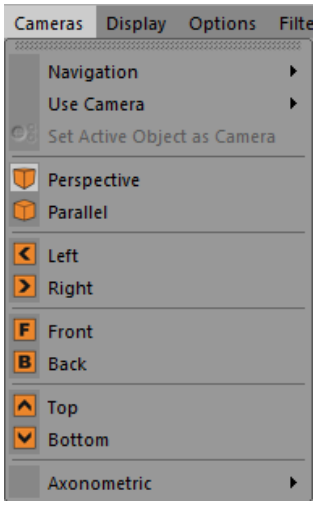

*Figure 1-25 The flyout displayed on choosing the **Cameras** menu*

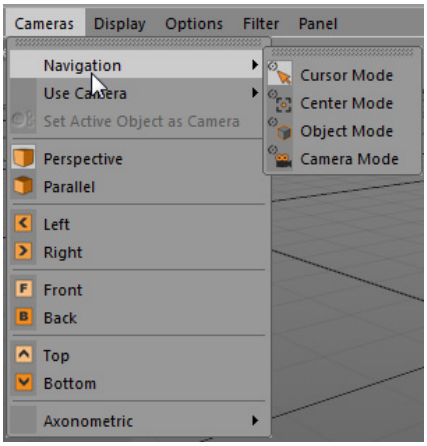

*Figure 1-26 The cascading menu displayed on choosing the **Navigation** option from the **Cameras** menu*

Cursor Mode: On choosing the **Cursor Mode** option, the camera will rotate around the selected point of the object.

Center Mode: On choosing the **Center Mode** option, the camera will rotate around the screen center only.

Object Mode: On choosing the **Object Mode** option, the camera will rotate around the center of the selected objects or elements in the viewport.

Camera Mode: On choosing the **Camera Mode** option, the camera will rotate around its own axis only.

Use Camera

The **Use Camera** option is used to set the camera present in the scene to view the scene through this camera. On placing the cursor on the **Use Camera** option in the **Cameras** menu, a cascading menu will be displayed, as shown in Figure 1-27.

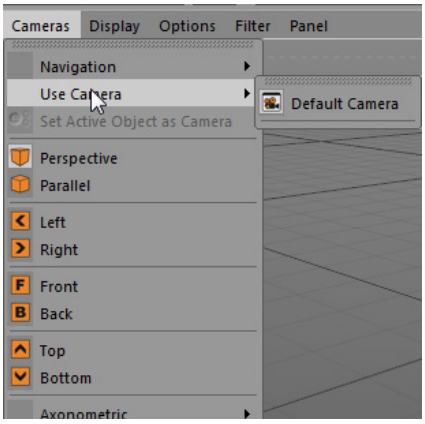

*Figure 1-27 The cascading menu displayed on choosing the **Use Camera** option*

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The **Default Camera** option is used to set the viewport back to the default camera settings.

Set Active Object as Camera

The **Set Active Object as Camera** option is used to orient the view of the scene along the z-axis of the active object.

Perspective

The **Perspective** option is used to view the scene using the default perspective projection mode, as shown in Figure 1-28. The Perspective viewport shows a horizon line which represents the horizon at infinity.

Parallel

The **Parallel** option is used to view the scene using the parallel camera projection mode, as shown in Figure 1-29. In this type of camera projection, the projection lines are parallel to each other with an infinite focal length.

Figure 1-28 *The perspective camera projection mode*

Figure 1-29 *The parallel camera projection mode*

Left

The **Left** option is used to display the YZ view, as shown in Figure 1-30.

Right

The **Right** option is used to display the ZY view, as shown in Figure 1-31.

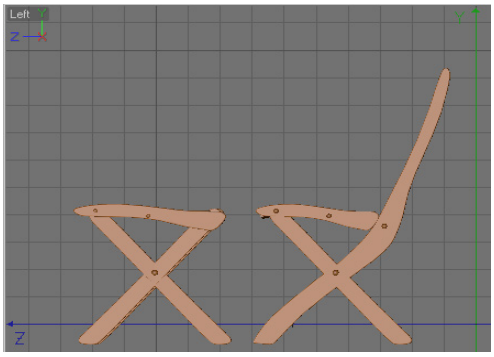

Figure 1-30 *The left camera projection*

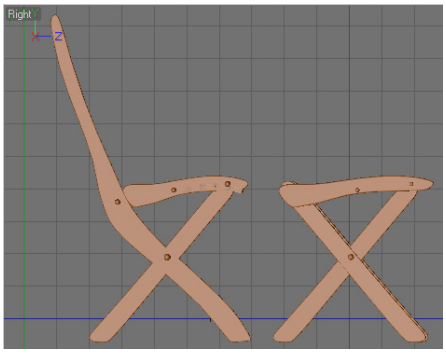

Figure 1-31 *The right camera projection*

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Front

The **Front** option is used to display the XY view, as shown in Figure 1-32.

Back

The **Back** option is used to display the YZ view, as shown in Figure 1-33.

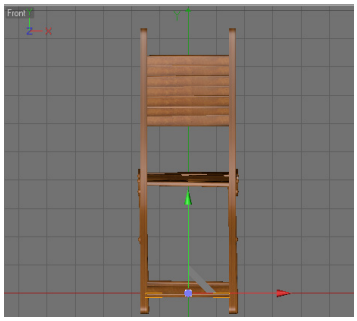

Figure 1-32 *The front camera projection*

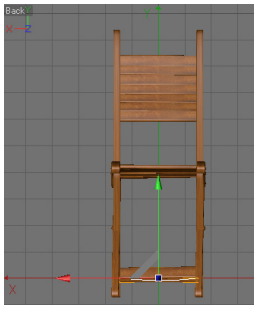

Figure 1-33 *The back camera projection*

Top

The **Top** option is used to display the XZ view, as shown in Figure 1-34.

Bottom

The **Bottom** option is used to display the ZX view, as shown in Figure 1-35.

Figure 1-34 *The top camera projection*

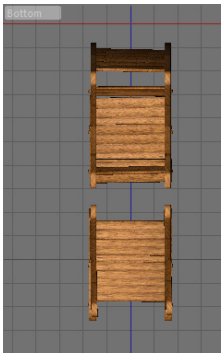

Figure 1-35 *The bottom camera projection*

Axonometric

The **Axonometric** option is used to display the scene using the advanced views other than the Perspective, Top, Left, and Right views. On placing the cursor on this option, a cascading menu will be displayed, as shown in Figure 1-36. The options in the cascading menu are discussed next.

Isometric: The **Isometric** option is used to view the scene using the isometric camera projection, as shown in Figure 1-37. In this type of camera projection, the projection lines are in exact proportion. This projection is mostly used for technical objects.

Dimetric: The **Dimetric** option is used to view the scene using the dimetric camera projection, as shown in Figure 1-38.

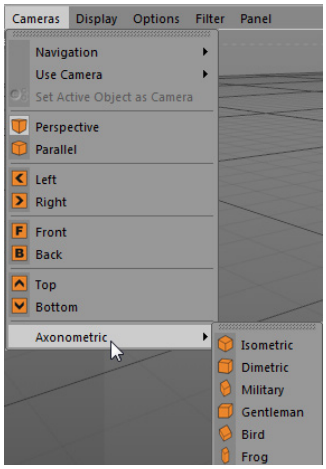

Figure 1-36 *The cascading menu displayed on choosing the* ***Axonometric*** *option from the* ***Cameras*** *menu*

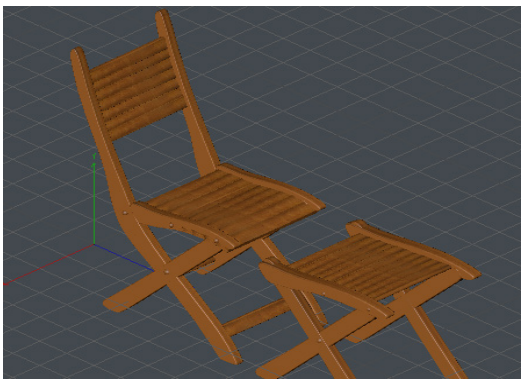

Figure 1-37 *The isometric camera projection*

Figure 1-38 *The dimetric camera projection*

Military: The **Military** option is used to view the scene using the military camera projection, as shown in Figure 1-39. The proportion of XYZ in this case is 1:1:1.

Gentleman: The **Gentleman** option is used to view the scene using the gentleman camera projection, as shown in Figure 1-40.

This type of projection is suitable for architecture. The proportion of the XYZ in this case is 1:1:0.5.

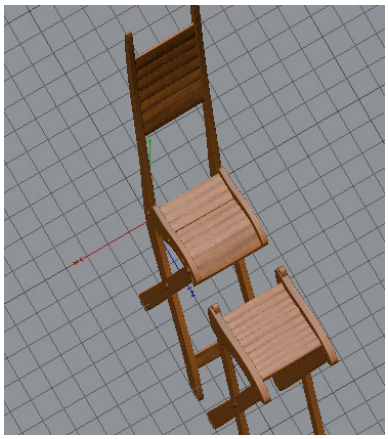

Figure 1-39 *The military camera projection*

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Bird: The **Bird** option is used to view the scene using the bird camera projection, as shown in Figure 1-41. In this type of camera projection, the projection lines will have no perspective distortion and the objects are not scaled. The proportion of XYZ in this case is 1:0.5:1.

Frog: The **Frog** option is used to view the scene using the frog camera projection, as shown in Figure 1-42. In this type of camera projection, the projection lines are not parallel to each other. The proportion of XYZ in this case is 1:2:1.

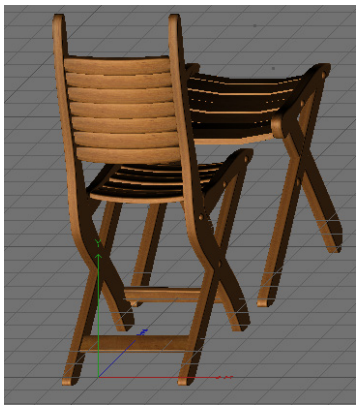

Figure 1-40 *The gentleman camera projection*

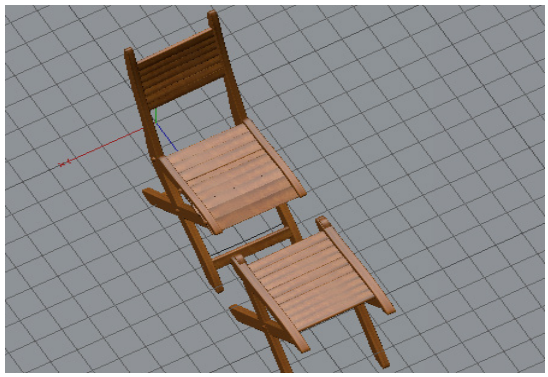

Figure 1-41 *The bird camera projection*

Display Menu

On choosing the **Display** menu, a flyout will be displayed, as shown in Figure 1-43. It consists of various options that are used to manipulate the preview of the model in the viewport. These options are discussed next.

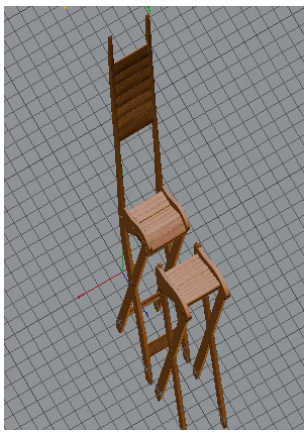

Figure 1-42 *The frog camera projection*

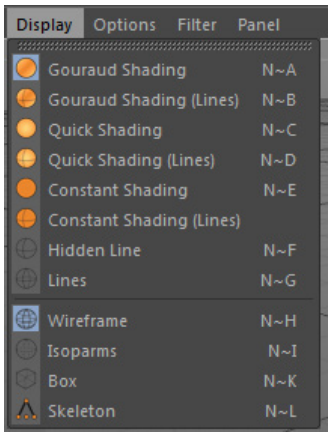

Figure 1-43 *The flyout displayed on choosing the **Display** menu*

Gouraud Shading

The **Gouraud Shading** option is used to display the object in best quality possible. On choosing this option, the object in the viewport will be displayed with smooth shading and lights, as shown in Figure 1-44.

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Gouraud Shading (Lines)

The **Gouraud Shading (Lines)** option is used to display the object with smooth shading and with wireframes or isoparms, as shown in Figure 1-45.

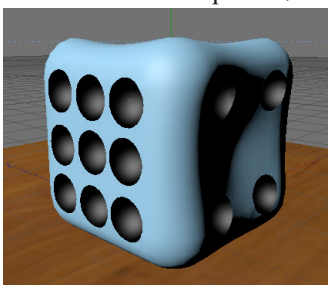

Figure 1-44 *The object displayed in the viewport on choosing the* ***Gouraud Shading*** *option*

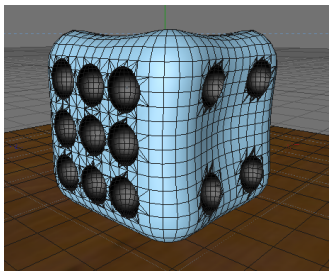

Figure 1-45 *The object displayed in the viewport on choosing the* ***Gouraud Shading (Lines)*** *option*

Quick Shading

The **Quick Shading** option is used to display the object with smooth shading and default lights instead of the scene lights in the viewport, as shown in Figure 1-46.

Quick Shading (Lines)

The **Quick Shading (Lines)** option is used to display the object with smooth shading, wireframes or isoparms, and default lights instead of the scene lights, as shown in Figure 1-47.

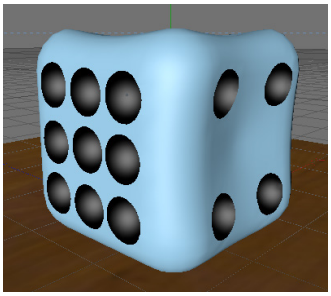

Figure 1-46 *The object displayed in the viewport on choosing the* ***Quick Shading*** *option*

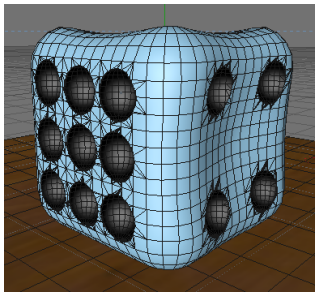

Figure 1-47 *The object displayed in the viewport on choosing the* ***Quick Shading (Lines)*** *option*

Constant Shading

The **Constant Shading** option is used to illuminate an object with flat shades, as shown in Figure 1-48.

Constant Shading (Lines)

The **Constant Shading (Lines)** option is used to display the object with flat shades along with the wireframes added to it, as shown in Figure 1-49.

Hidden Line

The **Hidden Line** option is used to display the polygon mesh excluding the hidden lines of the object, as shown in Figure 1-50.

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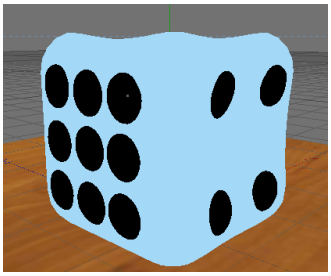

Figure 1-48 *The object displayed in the viewport on choosing the* ***Constant Shading*** *option*

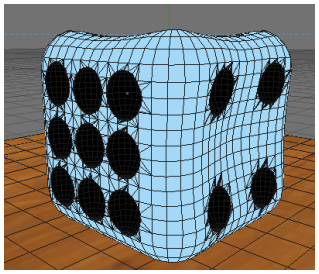

Figure 1-49 *The object displayed in the viewport on choosing the* ***Constant Shading (Lines)*** *option*

Lines

The **Lines** option is used to display the polygon mesh in the wireframe mode, including the hidden lines of the object, as shown in Figure 1-51.

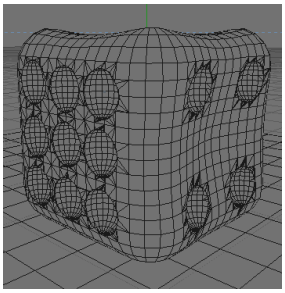

Figure 1-50 *The object displayed in the viewport on choosing the* ***Hidden Line*** *option*

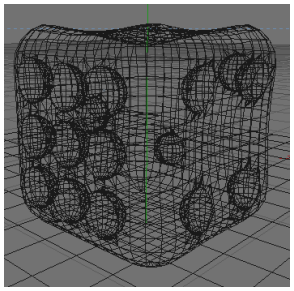

Figure 1-51 *The object displayed in the viewport on choosing the* ***Lines*** *option*

Wireframe

The **Wireframe** option is used to display the polygon mesh along with the lines so that the object is displayed with the combination of other shading modes. To activate this option, you need to choose any of the display options along with it. Figure 1-52 displays the object in the **Quick Shading (Lines)** and **Wireframe** shading modes.

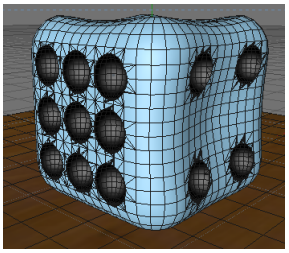

Figure 1-52 *The object displayed in the* ***Wireframe*** *and* ***Quick Shading (Lines)*** *shading modes*

Isoparms

The **Isoparms** option is used to display the isoparms lines for the object that use them such as the Generators.

Box

The **Box** option is used to display each object in a box shape having same dimensions as that of the object.

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Skeleton

The **Skeleton** option is used to display the objects in the form of dots. This option is the fastest display mode and is used to display the hierarchical structure. This mode is used in character animation.

Options Menu

On choosing the **Options** menu, a flyout will be displayed, as shown in Figure 1-53. It consists of various options that are used to display the detail view of a model. These options are discussed next.

Level of Detail

The **Level of Detail** option is used to affect the display quality of the object in the viewport. On placing the cursor on the **Level of Detail** option, a cascading menu will be displayed, as shown in Figure 1-54. The options in this cascading menu are discussed next.

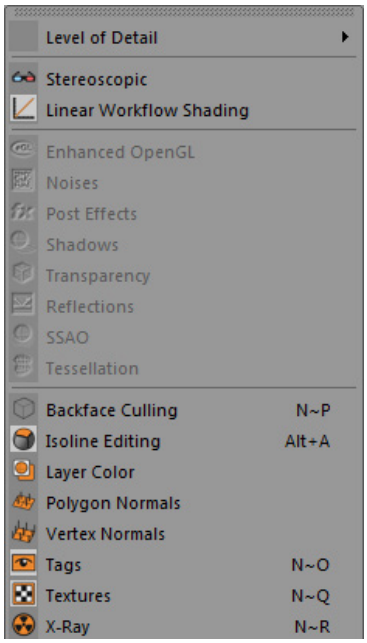

Figure 1-53 *The partial view of the flyout displayed on choosing the* ***Options*** *menu*

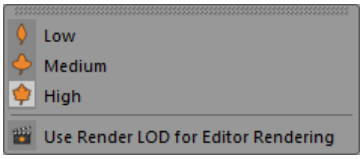

Figure 1-54 *The cascading menu displayed on placing the cursor on the* ***Level of Detail*** *option*

Low: This option is used to display the objects with low details, upto 25% maximum. When you choose this option, the object takes very less time in getting displayed in the viewport.

Medium: This option is used to display the objects with medium detail, upto 50% maximum.

High: This option is used to display the objects with highest details upto 100 %. When you choose this option, the object takes more time in getting displayed in the viewport.

Use Render LOD for Editor Rendering: This option is used to render the object in the viewport with the same level of detailing as specified in the **Level of Detail** option for that viewport.

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Stereoscopic

The **Stereoscopic** option is used to enable stereoscopic display for viewport. This option is activated only in the Perspective and Parallel viewports.

Linear Workflow Shading

The **Linear Workflow Shading** option is used to control the display of colors and shaders in the viewport while following the linear workflow.

Enhanced OpenGL

This option is used to display objects in the scene with Enhanced OpenGL quality. This option is dependent on the type of graphics card and drivers installed in the system. There are five OpenGL display modes available in the viewport in CINEMA 4D.

Noises

The **Noises** option is used to display the Noise shader when the **Enhanced OpenGL** option is enabled.

Post Effects

The **Post Effects** option is used to display post effects when the **Enhanced OpenGL** option is enabled.

Shadows

The **Shadows** option is used to display the shadow when the **Enhanced OpenGL** option is enabled.

Transparency

The **Transparency** option is used to display the transparency in high quality when **Enhanced OpenGL** option is enabled.

Reflections

The **Reflections** option is used to display sky reflections when the **Enhanced OpenGL** option is enabled.

Tessellation

The **Tessellation** option is used to display the tessellation on an object when the **Enhanced OpenGL** option is enabled.

SSAO

The **SSAO** option is used to display ambient occlusion approximation when the **Enhanced OpenGL** option is enabled.

Backface Culling

The **Backface Culling** option is used to toggle the backface culling on or off in the lines mode. It makes the editing of the objects easier. Figure 1-55 displays the object with **Backface Culling** on and off.

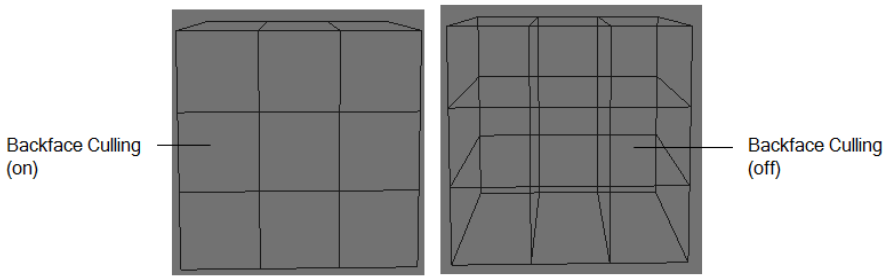

Figure 1-55 *The object displayed with the* ***Backface Culling*** *option on and off*

Isoline Editing

The **Isoline Editing** option is used to project all subdivision surface cage objects onto the smooth subdivision surface object such that these elements can be selected directly on the smoothened object. Figure 1-56 displays the object with the **Isoline Editing** option on and off.

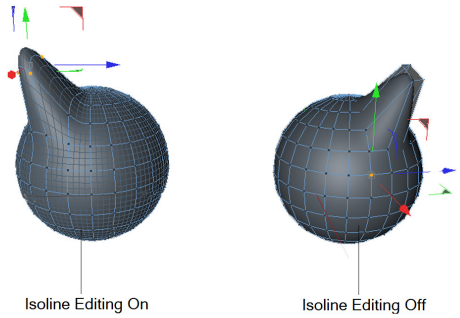

Figure 1-56 *The object displayed with the* ***Isoline Editing*** *option on and off*

Layer Color

The **Layer Color** option makes the color of the object in the viewport same as the color of the layer to which it belongs. For example, if the color of the layer is green, then the object belonging to that layer will be displayed in green color, refer to Figure 1-57. This makes the selection of the objects easier.

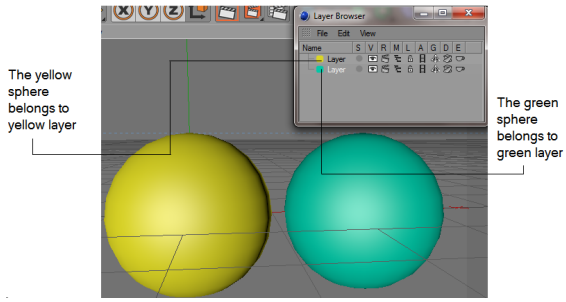

Figure 1-57 *The color of the objects displayed same as the color of layers on choosing the* ***Layer Color*** *option*

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Polygon Normals

The **Polygon Normals** option is used to toggle the display of normals in the polygon mode. When this option is activated, normals of the selected polygons of the object are displayed in the viewport, as shown in Figure 1-58.

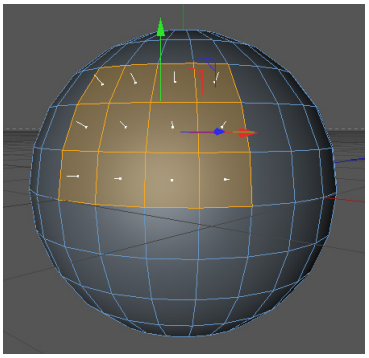

Figure 1-58 *Displaying the normals of the selected polygons*

Vertex Normals

The **Vertex Normals** option is used to display the vertex normals in the point, edge, and polygon modes.

Tags

The **Tags** option is used to display the selected object in the display mode defined in their display tag. On choosing this option, you can edit the display settings of a selected object individually in the Attribute Manager. To add a tag to the Object Manager, right-click on the object, a shortcut menu will be displayed. From the shortcut menu, choose **CINEMA 4D Tags > Display**; a display tag will be added to the Object Manager. Now, select the **Display Tag** in the Object Manager to edit the display settings.

Textures

The **Textures** option is used to toggle the view of the textures in the viewport. Realtime Texture Mapping (RTTM) allows the viewing of the texture applied to the object in the viewport.

X-Ray

The **X-Ray** option is used to display the polygon objects in a semi-transparent color so that the points and edges can be tweaked easily in the polygon based modeling.

Default Light

The **Default Light** option is used to illuminate the object easily from any angle. Each viewport has its own independent default lighting system. On choosing this option, the **Default Light** window will be displayed, as shown in Figure 1-59. Click and drag the sphere in the **Default Light** window to adjust the light in the viewport. When you choose this option, the display mode automatically changes to **Quick Shading**.

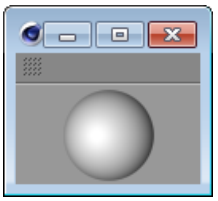

Figure 1-59 *The* ***Default Light*** *window*

Configure

The **Configure** option is used to edit or control the parameters of a particular viewport in the Attribute Manager.

Configure All

The **Configure All** option is used to edit or control the parameters of all viewports in the Attribute Manager.

Filter Menu

On choosing the **Filter** menu, a flyout will be displayed. The options in this flyout are used to select the objects to be displayed in the respective viewports.

Panel Menu

On choosing the **Panel** menu, a flyout will be displayed, as shown in Figure 1-60. The options in this menu are used to choose between single or multiple views of viewports. By default, the Perspective viewport will be displayed.

Layout

The **Layout** drop-down list is located on the top right corner of the interface, as shown in Figure 1-61. The options in this drop-down list are used to switch between various layouts available in CINEMA 4D. You can select the required layout from this drop-down list.

Content Browser

The Content Browser is an integral part of CINEMA 4D. It is used to manage scenes, images, materials, shaders, and presets. The Content Browser is docked with the Object Manager in CINEMA 4D interface.

Structure Manager

The Structure Manager is a type of spreadsheet that is used to calculate the data. It displays the data of the polygon objects only. On converting the parametric object into a polygon object, the data of the points, polygons, UVW coordinates, and so on will be displayed in the rows and columns of the Structure Manager. The Structure Manager is docked with the Object Manager and Content Browser in CINEMA 4D interface.

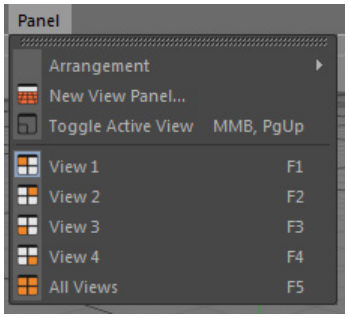

Figure 1-60 *The flyout displayed on choosing the* ***Panel*** *menu*

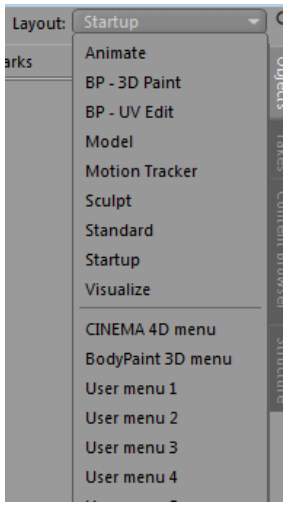

Figure 1-61 *The* ***Layout*** *drop-down list*

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HOT KEYS

Table 1-1 displays the hot keys of tools used in CINEMA 4D.

Table 1-1 *The tools and their hot keys*

Tool	Hot keys
Undo	CTRL+Z
Redo	CTRL+Y
Move	E
Scale	T
Rotate	R
X-Axis / Heading	X
Y-Axis / Pitch	Y
Z-Axis / Bank	Z
Coordinate System	W
Render View	CTRL+R
Render to Picture Viewer	SHIFT+R
Edit Render Settings	CTRL+B
Make Editable	C
Undo View	CTRL+SHIFT+Z
Redo View	CTRL+SHIFT+Y

Tip

If you want to view the documentation of a tool or option in CINEMA 4D, place the cursor over that tool or option and then press CTRL+F1; the ***Help*** *window will be displayed with the documentation.*

Self-Evaluation Test

Answer the following questions and then compare them to those given at the end of this chapter:

1. Which of the following options is used to display the polygon objects in a semi-transparent mode?

   (a) **Display Tags** (b) **Textures**
   (c) **X-Ray** (d) **Default Light**

2. Which of the following shortcut keys is used to convert the primitive objects into editable objects?

   (a) A (b) C
   (c) B (d) D

3. Which of the following combinations of shortcut keys is used to render the current view?

(a) CTRL+W (b) CTRL+D
(c) CTRL+R (d) CTRL+ J

4. The _____ tool is used to add light objects to a scene.

5. The _____ tool is used to select sub-objects of an editable object like a paint brush in the viewport.

6. The _____ button is used to move the timeslider to the start of the animation.

7. The shortcut key for the **Autokeying** button is _____ .

8. The shortcut key for the **Redo** tool is CTRL+Z. (T/F)

9. The **Bend** tool is used to create an array of objects in spherical or wave form. (T/F)

10. The Object Manager is defined as the control center of the objects created in the scene. (T/F)

Review Questions

Answer the following questions:

1. Which of the following tools from the Tools Palette is used to edit the polygons of the selected object?

(a) **Points** (b) **Edges**
(c) **Polygons** (d) **Model**

2. Which of the following keys is the shortcut for the **Rotate** tool?

(a) E (b) R
(c) T (d) W

3. Which of the following options in the **Options** menu is used to edit or control the parameters of all viewports in the Attribute Manager?

(a) **Configure All** (b) **Normals**
(c) **Backface Culling** (d) **Configure**

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4. The _____ option in the **Options** menu is used to enable the stereoscopic display in the viewport individually.

5. The _____ tool is used to move the camera horizontally.

6. The Attribute Manager is used to control the attributes of a selected tool or object in the scene. (T/F)

7. Snapping cannot be performed on objects, edges, points, polygons, and model. (T/F)

8. You can use the **Frog** camera projection in the **Cameras** menu to view the parallel camera projection in a scene. (T/F)

9. The shortcut key to invoke the **Render Settings** window is CTRL+B. (T/F)

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Answers to Self-Evaluation Test

1. c, **2.** b, **3.** c, **4. Light**, **5. Live Selection**, **6. Go to Start**, **7.** CTRL+F9, **8.** F, **9.** F, **10.** T