



**AMAPI™ 3D**  
SHAPE YOUR MIND

v.  
**6**

# Reference Guide

**eovia**  
A **TGS** COMPANY

*19 March 2001*

# Summary

<b>1</b>	<b>SCREEN PRESENTATION.....</b>	<b>2</b>
<b>2</b>	<b>THE MODELING HELP TOOLS.....</b>	<b>3</b>
2.1	THE ASSISTANT PALETTE .....	3
2.2	THE CONTROL PANEL .....	3
2.3	THE SELECTION ACCESSORIES .....	3
<b>3</b>	<b>THE CATALOG (AMAPI 3D'S OWN FILE MANAGER) ...</b>	<b>4</b>
<b>4</b>	<b>THE NAVIGATION.....</b>	<b>4</b>
<b>5</b>	<b>THE 4 TOOLS PALETTES .....</b>	<b>5</b>
5.1	THE TOOLS PALETTES INTERFACE .....	5
5.2	THE CONSTRUCTION TOOL PALETTE .....	6
5.3	THE MODELING TOOL PALETTE.....	7
5.4	THE ASSEMBLY TOOL PALETTE.....	8
5.5	RENDER-ANIMATION TOOL PALETTE .....	9
<b>6</b>	<b>THE MATERIAL EDITOR.....</b>	<b>10</b>
6.1	GENERAL PRESENTATION .....	10
6.2	CURRENT MATERIAL/OBJECT.....	11
6.3	UPPER LEVEL LAYERS CONTROL DIALOG .....	11
6.4	COLORS RAMP.....	11
<b>7</b>	<b>THE ANIMATION EDITOR .....</b>	<b>12</b>
<b>8</b>	<b>THE 3SPACE DYNAMICS EDITOR .....</b>	<b>13</b>

# 1 Screen Presentation

**Menu**

**Assistant Palette**  
(guide you through your first projects)  
(For more details see chapter n°2.1)

**Catalog acces:**  
AMAPI 3D's own file manager  
(For more details see chapter n°3)

**The Data Window:**  
Displays the name of the current object and dynamic numerical values about the current operation.  
Editable data (click or « Tab » key)

**Control Panel:**  
It provides access to a variety of modeling aids  
(For more details see chapter n°2.2)

**The Work Space:**

- Display
- Graphical edition
- Navigation

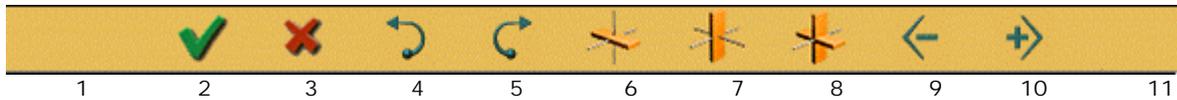
Rendering the scene: Press the « Enter » key

**Tool palette**  
Changing tool palette (for the construction, modeling, and assembly tool palette) :  
Exit and go back with the cursor by the right hand side of the screen.  
To toggle towards the 4<sup>th</sup> palette (animation/Render) :  
Press on the Space bar.  
(For more details see chapter n°4)

## 2 The Modeling help tools

### 2.1 The assistant palette

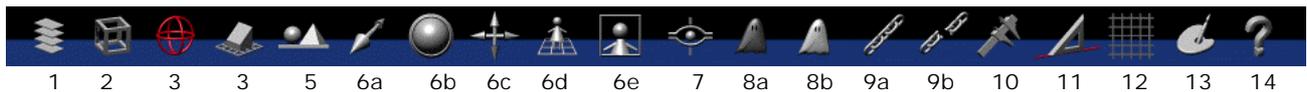
The Assistant Palette has been specifically designed to give you additional information and to guide you through your first projects with AMAPI 3D.



1. The online help
2. Validate
3. Cancel
4. Undo
5. Redo
6. Movement constraint along an horizontal axis
7. Movement constraint along an vertical axis
8. No constraint
9. Decrease a value (tuner -)
10. Increase a value (tuner +)

### 2.2 The control Panel

The Control Panel is displayed at the bottom of the screen. It provides access to a variety of modeling aids.



1. Organize the different elements of your scene into groups and sub-groups of objects, layers, or materials with the **Scene Manager**. The feature is particularly useful when working on complex scenes.
2. The **Display Hidden Lines** command will help you visualize your objects as they would be seen in the real world.
3. You can request a simplified display of your objects. Complex objects will be clearer and the display speed faster.
4. You can change the **working plane**.
5. Use the **Perspective** tool to toggle between perspective and **orthogonal** viewing.
6. **You will be able to define the view** with tools such as the **Zoom** (6e) and the **See all** (6d) and tools used to **navigate** around the scene (6a, b, c).
7. Change the center of rotation of your scene with the **Viewpoint** tool which defines define the user point of view.
8. The **Hide** (8a) tool will make selected elements invisible. The **Unhide** (8b) tool will bring them back.
9. Use the **Group** (9a) tool so that different elements behave as one, until you **Ungroup** (9b) them.
10. Edit the **Measurements** (dimensions) of your objects. You can edit three types of measures with AMAPI 3D: length, angle, and volume / surface / circumference.
11. This palette allows you **to constrain your cursor movements along a specified axis**.
12. **Magnetization** allows you to choose if you want the cursor to be magnetized or not.
13. Use the **Material Editor** to assign a color to an object or to a material.
14. Get information about the current object with the **Get Info** command

### 2.3 The selection accessories

AMAPI 3D provides a set of selection accessories which allow you to select the object(s) you want.

The cursor takes the shape of the accessory you want; with it, you will select the objects.

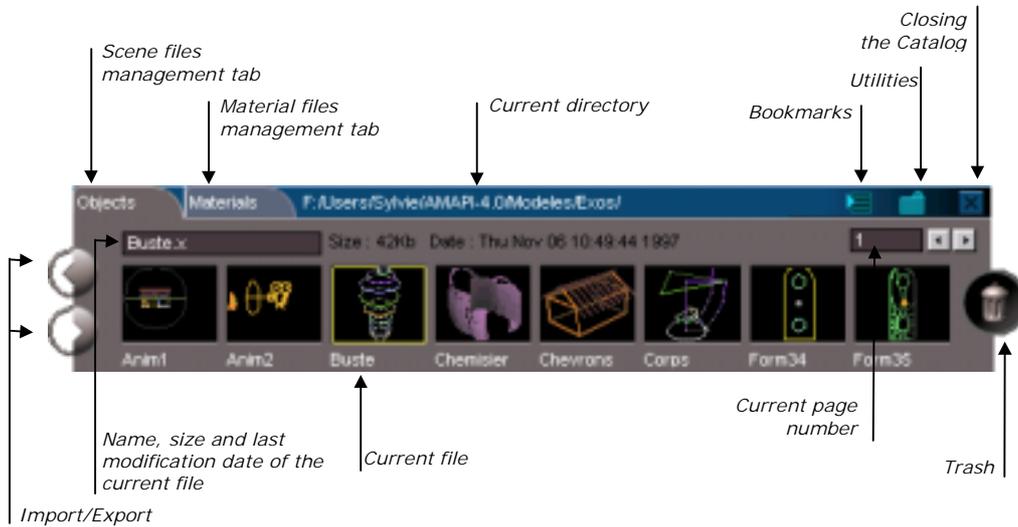
The icon depicting the selection accessory indicates:

- ◆ The kind of objects it selects.
- ◆ The way it selects.

	Object selection		Group selection
	One by one	Several objects (with the Shift key)	
Objects* (The Wand)			
Facets			
Edges			
Points			
Reference point			

### 3 The Catalog (AMAPI 3D's own file manager)

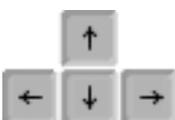
The Catalog is a **scene file management system**. It is also used to manage the **Materials Library**. Just click on the corresponding tab to switch from one system to another.



### 4 The Navigation

You can easily rotate around the scene, zoom in on a detail or zoom out using the navigation tools. You can access these tools via the Control Panel or the hotkeys.

7	8	9	0	See all
4	5	6	1	See detail
1	2	3	2	Front view
0	.		3	Zoom in
			4	Left view
			5	Top view
			6	Right view
			8	Rear view
			.	Zoom out



Use the Up, Down, Left, and Right **arrow keys** of the numeric keypad to rotate the scene accordingly.

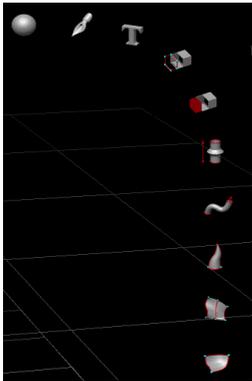
Press the **"Ctrl"** key while pressing the arrow keys to scroll the scene sideways or up and down.

You can change the point of view using using the **"Shift"** key and the keyboard arrows simultaneously

# 5 The 4 Tools Palettes

## 5.1 The tools palettes interface

AMAPI 3D offers you a series of tools dispatched within four specialized palettes.



**Construction Tool palette**

This tool palette contains the tools used to draw the shapes that will be the basis for subsequent modeling operations.

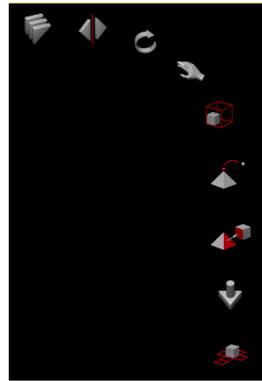
For more details see chapter n°5.2



**Modeling Tool palette**

This palette includes the tools with which you can model the primitives. With them, you can stretch, smooth, bevel, and so forth...

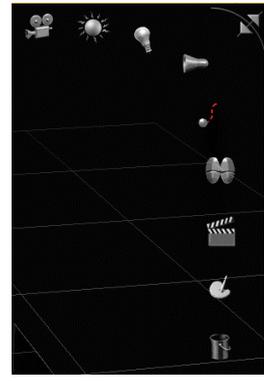
For more details see chapter n°5.3



**Assembly Tool palette**

This palette includes the tools to place and orient the elements. Rotate, Weld and Duplicate are examples of actions you can do with the Assembly tools.

For more details see chapter n°5.4



**Render/Animation Tool palette**

By pressing on the space bar you will toggle from the « Modeling » mode to the « Render-Animation » mode. The Render module is divided into tree parts: the « materials » part, The "lights" part and the "cameras" part.

For more details see chapter n°5.5

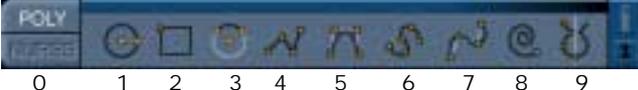
The user has access to three main tool palettes. AMAPI 3D provides two different interfaces for the display and use of these tools:

**Standard Interface**



**Workshop Interface**

## 5.2 The Construction Tool Palette

Icon	Tool name	Description
	3D Primitives	 Sphere  Cube  Grid  Cylinder  Cone  Platonic solids  Height Fields
	Drawings	 10 11 0. NURBS or polygonal mode Toggle-icon) 1. Circle, 2. Arc, 3. Rectangle, 4. Polyline, 5. Curve, 6. Interpolated Curve, 7. Sketch, 8. Helicoid, 9. Symmetry 10. Reverse the palette (Toggle-icon) 11. Lock the palette (Toggle-icon)
	Text Editor	The Text Editor allows you to insert 2D or 3D text (with a specified font) into the scene.
	Extract curves	The Extract curves tool creates a new curve from points you select from existing objects.
	Facet extraction	Create a facet. That is, generate a surface from several points.
	Extrusion	Curve extrusion. Facet, edge or vertex extrusion.
	Sweeping	Sweeping of a section Facet, edge or vertex sweeping
	Double sweeping	Generates a surface from a section and two profiles.
	Ruled Surface	Between curves. Between surfaces.
	Surfaces	 Coons  Gordon  Hull

## 5.3 The Modeling Tool Palette

Icon	Tool name	Description
	<b>Deformers</b>	<p><b>Global deformers:</b></p> <p>They allow you to deform an entire object by moving or deforming one of the faces of the object's surrounding control box.</p> <div style="display: flex; align-items: center;">  Spherical   Taper   Twist   Bend </div> <p><b>Local deformers:</b></p> <p>They act on the control points of a bounding box to deform a specific area of an object.</p> <div style="display: flex; align-items: center;">  Mold   Stretch   Scale   Rotate </div>
	<b>Bend</b>	The Bend tool distorts the current object according to the path drawn by a reference curve.
	<b>Wrap</b>	The Wrap tool allows you to deform an object by mapping it onto a shape (Grid, Cylinder or Sphere).
	<b>Stretch</b>	The Stretch tool is used to move single vertices or a group of vertices, thus distorting the object.
	<b>Delete</b>	<p>The Delete tool supports four delete modes:</p> <ul style="list-style-type: none"> <li>◆ Deleting a facet.</li> <li>◆ Deleting an edge with generation of a new facet.</li> <li>◆ Deleting a point by removing all the adjacent facets to the point.</li> <li>◆ Deleting a point with generation of a new facet.</li> </ul>
	<b>Smooth</b>	<p>The Smooth tool is used to control the number of facets defining a surface and the number of points defining a curve.</p> <p>The higher the smoothing value, the smoother the object looks.</p>
	<b>Chamfer (Bevel)</b>	This tool allows you to create bevels.
	<b>Thickness</b>	<div style="display: flex; align-items: center;">  Apply a uniform thickness to a curve, surface, or volume.   Create an offset of the object, </div>
	<b>Cut</b>	<p>The Cut tool provides several ways of cutting an object:</p> <ul style="list-style-type: none"> <li>◆ Punch: Punching a surface or a volume using a reference curve.</li> <li>◆ Boolean: Performs Boolean operations between curves, surfaces, or volumes.</li> <li>◆ Extract: Extracts a part of the current object to make a new object.</li> </ul>
	<b>Decimate</b>	The Decimate tool allows you to reduce the complexity of an object and the size of the file while preserving the object's general appearance
	<b>Tessellate</b>	This function subdivides a facet into four facets.
	<b>Surface Relief</b>	<p>The Bump tool allows you to modify the surface relief. There are two subtools:</p> <div style="display: flex; align-items: center;">  Bump  Soften </div>

## 5.4 The Assembly Tool Palette

Icon	Tool name	Description
	<b>Duplicate</b> <b>Repeat</b>	Use the Duplicate tool to create copies of the current object. You can:  Duplicate: Create multiple copies of the current object  Repeat: Duplicate the current object along a path or on the facets of another object
	<b>Symmetry</b>	Use this tool to create a mirror image of an element.
	<b>Rotate</b>	Use the Rotate tool to rotate the current object.
	<b>Move</b>	Use the Move tool to change the position of an object.
	<b>Scale</b>	This tool is used to change an object's dimension, either keeping its original proportions or distorting it horizontally or vertically.
	<b>Snap</b>	Use this tool to: <ul style="list-style-type: none"> <li>◆ Move an object so that a point of this object is positioned exactly on a point of another object.</li> <li>◆ Move only a part of the object (a point or a group of points) so that a point of the selection is positioned exactly on a point of another object. Of course, this will distort the current object.</li> <li>◆ Align an object relative to another one. Specify a horizontal or vertical constraint for the Snap tool so as to align a point of the current object horizontally or vertically with the point of another object.</li> </ul>
	<b>Lay On</b>	Use this tool to lay a facet of an object onto the facet of another object.
	<b>Weld</b>	The Weld tool is used in two completely different cases: When you want to weld two or more objects together: the welded objects become a single entity. When you want to merge several points of the same object into a single point.
	<b>Unfold</b>	Use the Unfold tool to create a 2D flat, unfolded version of your 3D object.

## 5.5 Render-Animation Tool Palette

Icon	Tool name
	Add a Camera
	Add a « Sun »
	Add a « Bulb »
	Add a « Spotlight »
	Edit a path
	Play an animation
	Edit an animation
	Edit materials
	Rendering the scene

# 6 The Material Editor

## 6.1 General Presentation

With the Material Editor, you can:

Assign a material to one or several objects of the scene.

- Create a brand new material.
- Create a new material by modifying an existing material in the Material Catalog.
- Control the assignment of materials in the scene.
- At all times you can see the resulting effect in the real-time rendering preview window.

To select the Material Editor, click on the icon depicting the "Animation & Rendering" palette or in the Control Panel.



*Saving of the current material in the catalog*

*Name and image of the selected material in the catalog*

*Changing the directory*

*Catalog page*

*Browsing the catalog*

*Suppress the selected material in the catalog*

**Catalog of Materials**

**Current material/object**  
(See details chapter n° 6.2)

**Preview**

*Toggle To Graphical actuators*

**Colors ramp**  
(See details chapter n° 6.4)

**Uniform level zero layer**

**Upper level layers control dialog**  
(See details chapter n° 6.3)

**Materials parameters tuning**

**Active styles**

**Functions panel**

*Object scene list: allow to change the current material-object*

*To reduce the display time of the Preview, (Ray Tracing Shadows display)*

*Repaint*

*Point of view*

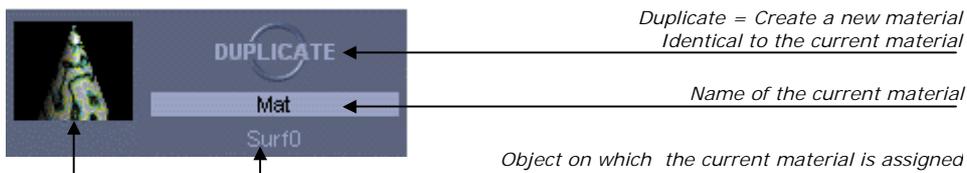
*Compute and display the rendering*

*Rendering parameters*

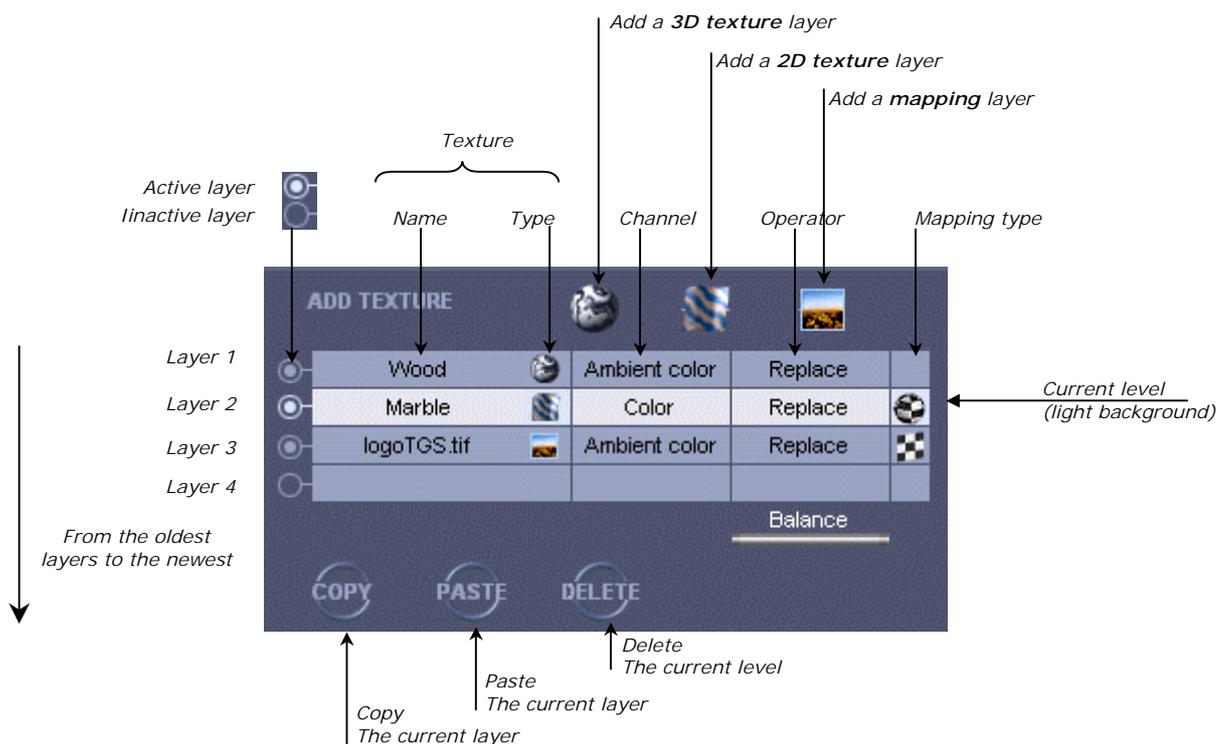
*Cancel*

*Validate*

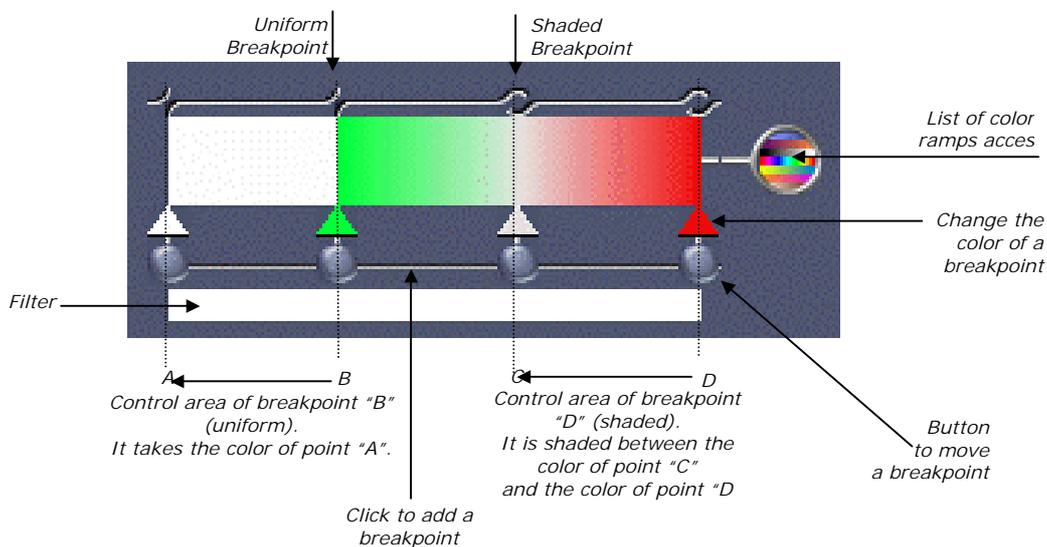
## 6.2 Current material/object



## 6.3 Upper level layers control dialog



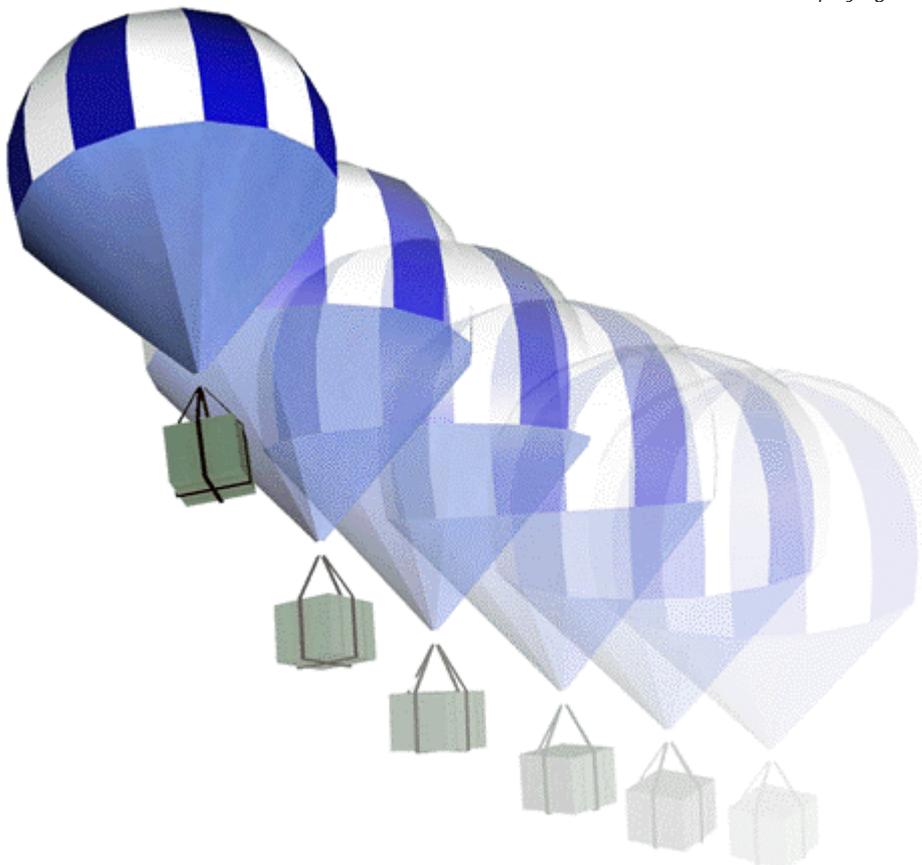
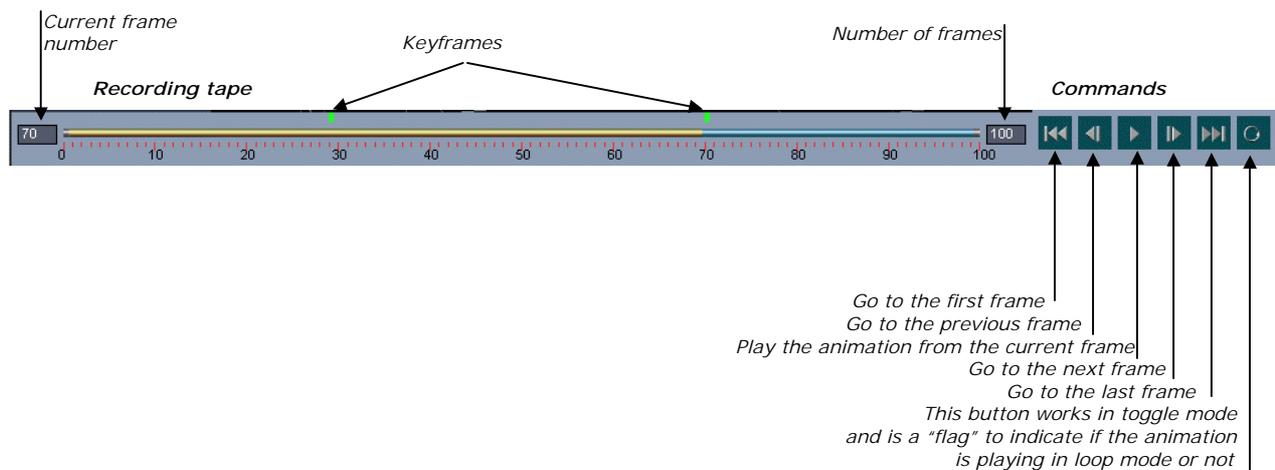
## 6.4 Colors ramp



## 7 The Animation Editor

Create a keyframe:

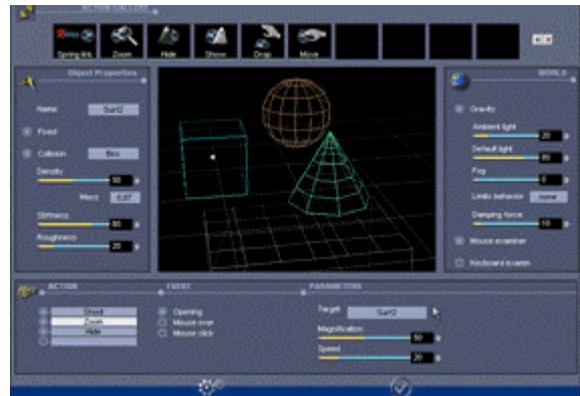
1. Move the cursor on the desired graduation of the ruler
2. Move or deform the object to be animated using one of the following tools:
  - ◆ Move
  - ◆ Rotate
  - ◆ Scale
  - ◆ Deform
  - ◆ Mold
  - ◆ Stretch
  - ◆ Bend



# 8 The 3Space Dynamics Editor

The 3Space technology is an outstanding solution which allows you to put **3D interactive dynamics** into your HTML documents, making them more user-friendly and able to communicate more efficiently and effectively.

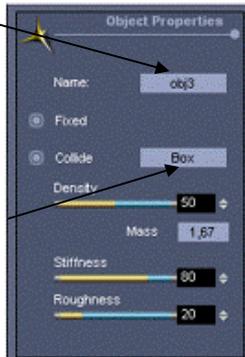
To open the 3Space Dynamics Editor, select it on the menu bar at the top of the screen.



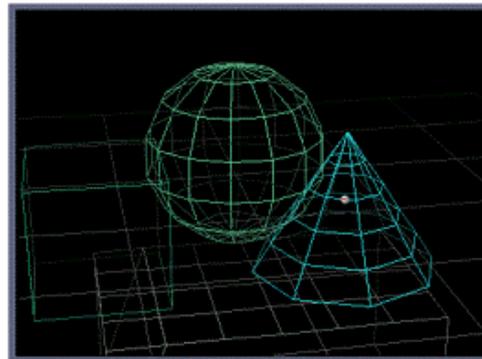
### Gallery of actions



### Object properties



### Display window



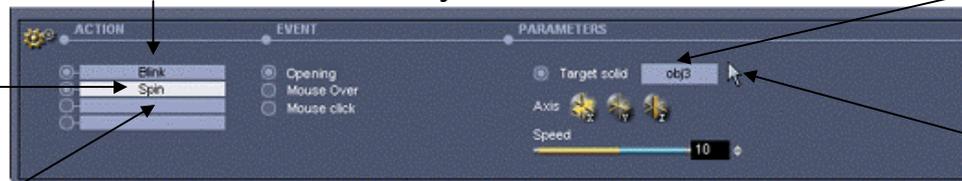
### World properties



**Current object name**  
Changing object :  
Click on the name and select in the list.  
Or click on the object in the display window.

Changing the **colliding geometry** :  
Click on the name and select it in the list.

### Current object behavior



**Actions list**  
Describes the current object behavior

**Current Action**  
(light background)

**Add an action into the behavior** :  
Click and select in the list.

The event will set up the current action

Current action parameters

**Target object of the current action**:  
Changing target :  
Click on the name and select it in the list.  
Or click on the arrow and select the object in the display window.

### Command bar



Control the "dynamized" scene in the Player

Saving the "dynamized" scene

Validation and leaving