

What's new in Amapi 3D 6.0

Friday, 23 February 2001

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1 Import/ Export

New formats have been added to the imports/exports of Amapi 3D:

- ◆ Open Inventor (import/export)
- ◆ VRML 1.0 and 2.0 (import/export)
- ◆ CARRARA (export)
- ◆ STL (import)
- ◆ Wavefront OBJ (import/export)

Some export modules have been updated to provide better support for certain formats. For example, support for IGES and DXF has been improved.

The Windows AVI animation export has been improved to allow keyframe extraction from imaging tools.

2 Dynamic Geometry

Several tools have been enhanced to support reconstructive geometry. Reconstructive geometry allows you to retain the construction shapes during successive operations.

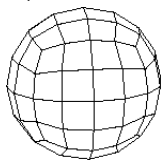
3 Tool Palettes

3.1 The Construction Palette

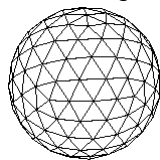
3.1.1 3D Primitives

☐ Spheres

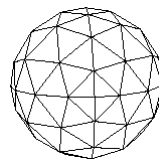
The Sphere tool allows you to create geodesic spheres as well as super-ellipsoids:



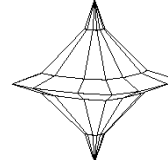
*Geodesic sphere
Based on a cube*



*Geodesic sphere
Based on an
icosahedron*



*Geodesic sphere
Based on an octahedron*



Super-ellipsoid

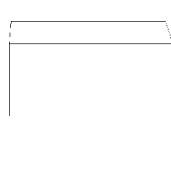
The super-ellipsoid is built by pressing the space bar after entering the base point of the sphere. Other types can be accessed by clicking on their icon after building the sphere.

☐ Platonic Solids

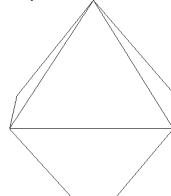
This new tool allows you to create the following 3D primitives:



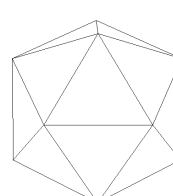
Tetrahedron



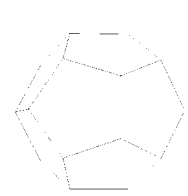
Cube



Octahedron



Icosahedron



Dodecahedron

You select the primitive type by pressing the space bar after entering the base point.

□ HeightFields

This tool allows you to convert a 2D image to a 3D object.

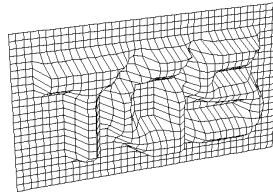
How it works:

Select an image and a shape.

Amapi 3D maps the picture onto the shape and then moves the points of the shape to give it relief. This displacement is done according to the color of the area: the lighter the color, the greater the altitude. The darker points will remain at zero altitude.

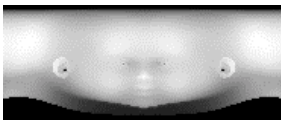


A = 2D gray scale picture

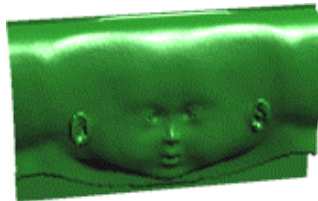


Picture A converted into a 3D object

⇒



B = 2D gray scale picture



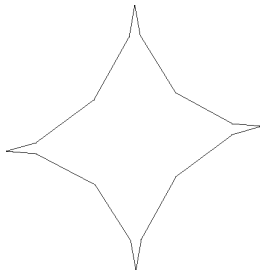
B' = Picture B converted into a 3D object and rendered



B' object wrapped on a cylinder

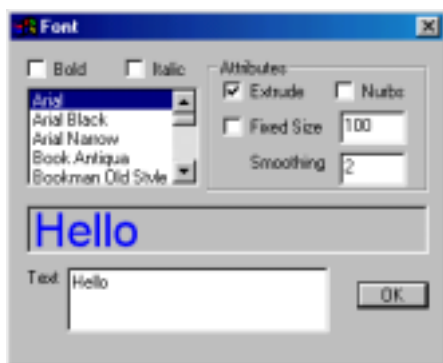
3.1.2 Drawing

□ Super-ellipse



With the circle tool, you can now draw a super-ellipse by pressing the space bar after building the circle and changing the super-ellipse coefficient.

3.1.3 Text



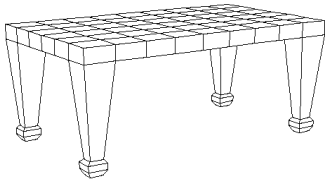
The text tool allows you to add 2D or 3D text to your scene. You can specify the font, the style, as well as the size. You can also smooth the characters.

3.1.4 New Polygon Creation Tool (Freehand Facet Tool)

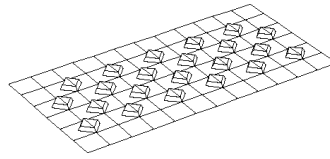
The Facet Extraction tool has a new sub-tool that allows you to create freehand facets without first creating lines.

3.1.5 Extrusion

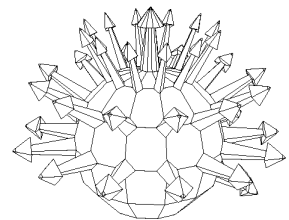
You can now extrude single or multiple facets, edges, and vertices.



Facet extrusion



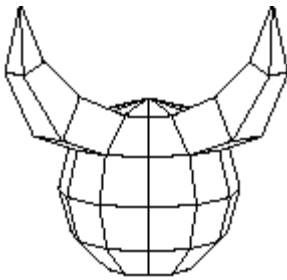
Edge extrusion



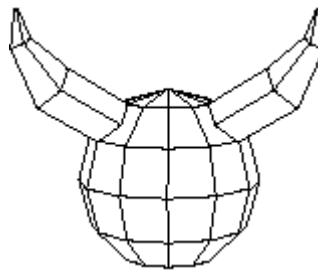
Vertex extrusion

3.1.6 Sweep

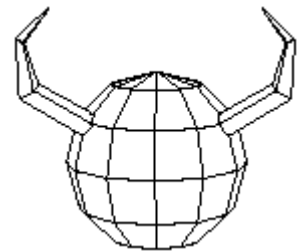
You can now sweep single or multiple facets, edges, and vertices.



Facet sweeping



Edge sweeping



Vertex sweeping

3.1.7 Gordon Surfaces

You can now (optionally) control the tensions of the U and V curves.

3.2 The Modelling Palette

3.2.1 Global Deformers

A new global deformer has been added: a spherical deformer. The purpose of this tool is to deform the object into a spherical shape.



Original object



Bent object



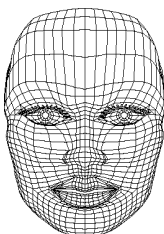
Twisted object



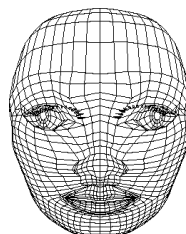
Tapered object



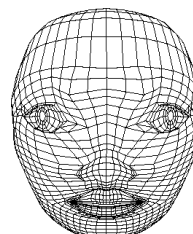
Spherically deformed object



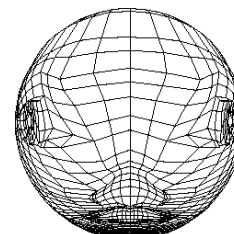
Original object



Object lightly deformed with spherical deformer



Object strongly deformed

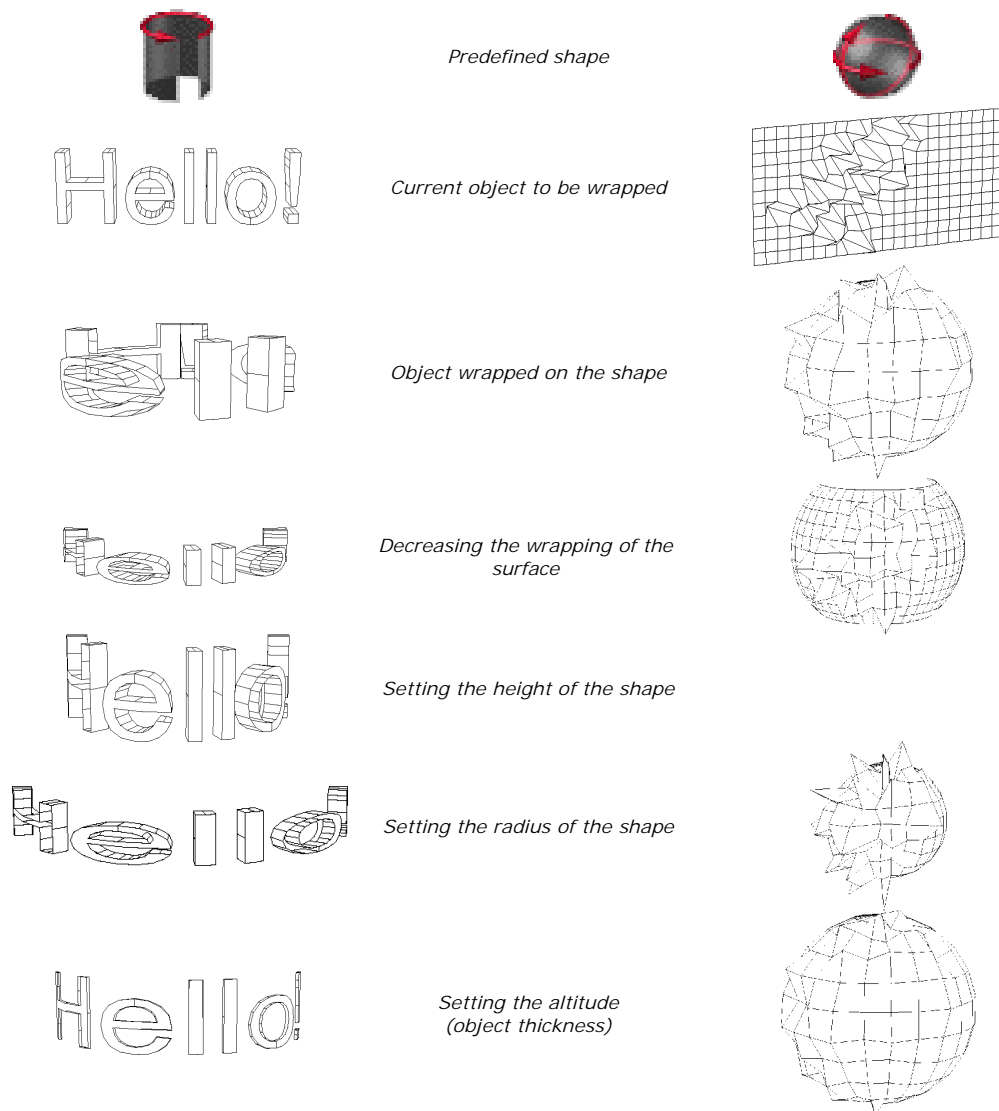


Object fully "spherized"

3.2.2 Wrap

The Wrap tool allows you to deform an object by mapping it onto a predefined shape (Grid, Cylinder, or Sphere).

Examples:



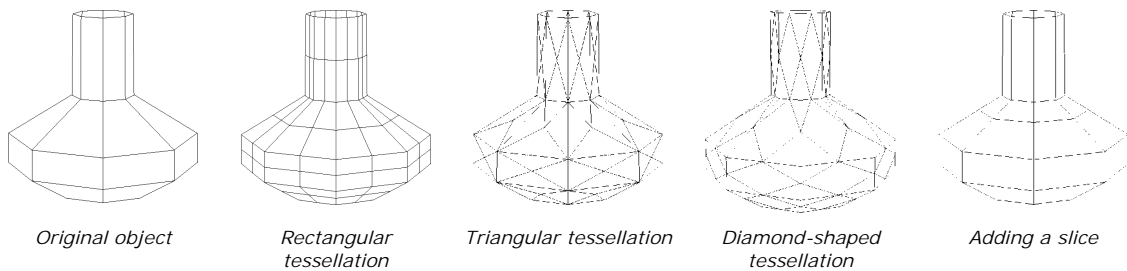
3.2.3 Smooth

- ◆ You can now control the local or global tensions of the smoothing.
- ◆ **Two new curve smoothing methods have been added:**
 - ◆ Chaikin smoothing
 - ◆ Cubic smoothing
- ◆ The user interface of the smoothing tool has changed.

3.2.4 Tessellate

Two new methods have been added to the Tessellate tool:

- ◆ The "Diamond-shaped" tessellation
- ◆ The "Adding a slice" tessellation



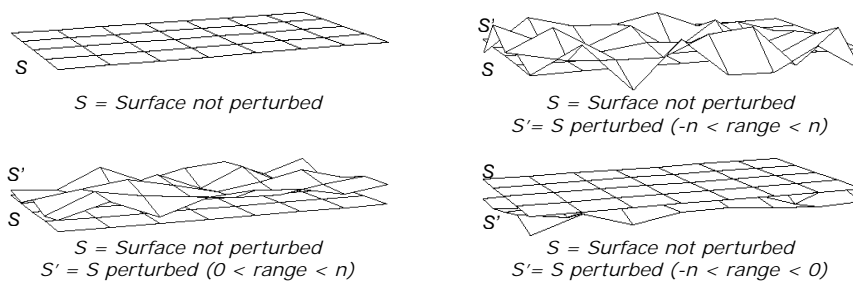
3.2.5 Relief (Bump and Soften) Tool

This tool allows you to perturb a surface. There are two sub-tools:

- ◆ **Bump**
- ◆ **Soften**

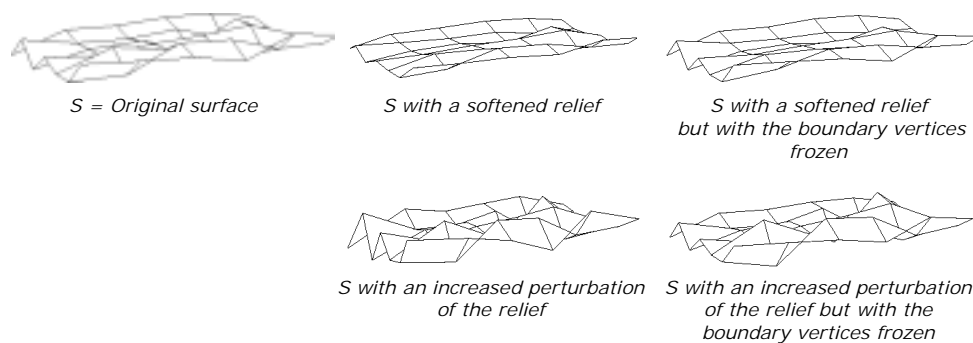
□ Bump

The Bump tool moves the points of a surface, on the both sides of it, in order to give it some relief. The points are randomly displaced (up and down). The perturbed points will always stay within the range that you specify.



□ Soften

The Soften tool allows you to decrease or increase the perturbations of a surface.



3.3 The Assembly Palette

3.3.1 Scale













You can now scale an object by specifying:

- ◆ A scaling percentage
- ◆ A target surface area
- ◆ A target volume
- ◆ A target curve length

To access these options, press Ctrl-Space bar from within the tool.

4 Selection Accessories

The ergonomics of selecting objects has been improved: A set of new selection cursors provide detailed visual feedback about the kind of selection operation currently in progress.

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

5 Rendering

The Material Editor has been completely redesigned, making it easier to work with materials and rendering. Unlike in previous versions, the material editor works now on the whole scene.

The rendering engine has been improved to provide more realistic visual effects:

- UV mapping support
- Environment mapping
- Fog
- Soft shadows with attenuation
- Ray-traced shadows
- Improved bump mapping
- New texture parameters (gain, bias)
- Transparent object shadows



6 3Space Dynamics

3Space is a technology that enables you to create 3D dynamic animations for the web. Amapi 3D lets you specify physical properties (mass, stiffness, etc.) and interactive behaviors for objects, and then generate corresponding HTML, XML, and ZAP. They may be viewed with a web browser (Internet Explorer 5.x or Netscape Navigator 4.x). For more information, see www.tgs.com/3Space. The 3Space documents replace the former ZAP export provided in Amapi 3D 5.



7 Miscellaneous

The help messages displayed in the Assistant Palette have been improved. They now provide more details and are more consistent. Many bugs have been fixed in order to improve the overall quality of the software. A new gallery of 3D models made entirely with Amapi 3D replaces the old model gallery. The documentation is now in PDF file format in order to improve its readability.