Pixel3D-Pro Version 2

Reviewed by R. Shamms Mortier

Over the years since its inception, Scott Thede (Axiom's CEO) has always wanted this software to do more, and to be very distinguishable from its competition. It's not only what the file format looks like when it is exported as different from its imported character, but what happens in between that makes this software unique. That's where this package differs from any other, so that at this point it has no competition at all.

Pixel-3D Pro 2.0 can import (read) nineteen different 3D object file types: 3D Pro, 3D Studio ASCII and Binary, AutoCAD DXF, IFF Bitmaps, Caligari, Draw 4D and Pro, Imagine, LightWave Objects and Scenes, PostScript ASCII and EPS, Scenery Animator DEMs, Sculpt 3D and 4D, Turbo Silver, VideoScape ASCII and Binary, VistaPro DEMs, and Wavefront. Absent is the long included support for PageRender-3D, a long-dead Amiga package.

It can output to (write) fifteen different formats: LightWave Object and Scene, Imagine, Turbo Silver, Sculpt 3D/4D, Caligari, Draw 4D/Pro, Aladdin (with the VideoScape ASCII option), 3D Pro, DXF AutoCAD, 3D Studio, Wavefront, VideoScape ASCII and Binary, and Digital Arts. My tests included importing from DXF, IFF Bitmaps, Caligari, Draw 4D Pro, LightWave, PostScript, Scenery Animator, Imagine and VideoScape. The Real-3D format is supported through the DXF file alternative.

This software can accomplish a lot more than mere file conversion. It has lightning fast drawing/rendering routines, most of them much faster as far as previewing 3D objects than any Amiga 3D rendering software. Pixel3D-Pro 2 allows you to render your objects in your choice of the following: Wireframe, ''Hidden'' (Wireframe with hidden lines), Flat (filled shaded polys), and ZBuffer 1 & 2 (''1'' is a bit less accurate than ''2''). You can toggle an objects color on or off (except for ZBuffer options). How much actual color you see on your display depends on the type of Amiga you have. If you have an AGA machine (A4000 or A1200), objects are rendered in 256 colors or shades of gray.

Editing 3D Objects

You can also ''double'' the polygons contained in an object, while ''points'' shows all editable vertices. ''Grid'' toggles a wireframe only grid display (like the ground grid in LightWave, Caligari, and Aladdin 4D). Most rendering/animation packages offer loads of editing tools so that objects can be altered almost infinitely. Pixel-3D Pro 2.0 gives you a selection of its own basic editing tools, so that you may choose to alter some aspects of the object before you export it.

Basic editing consists of either deleting or moving selected points on the object. Moves are accomplished by selecting points and dragging them via the mouse in the desired direction, with either a single or a group of points selected. Selecting points for editing can be done by either individual point-click methods or by using a ''lasso'' to encircle any number. I was able to easily transform a good number of 3D objects in this fashion, saving them out as new objects.
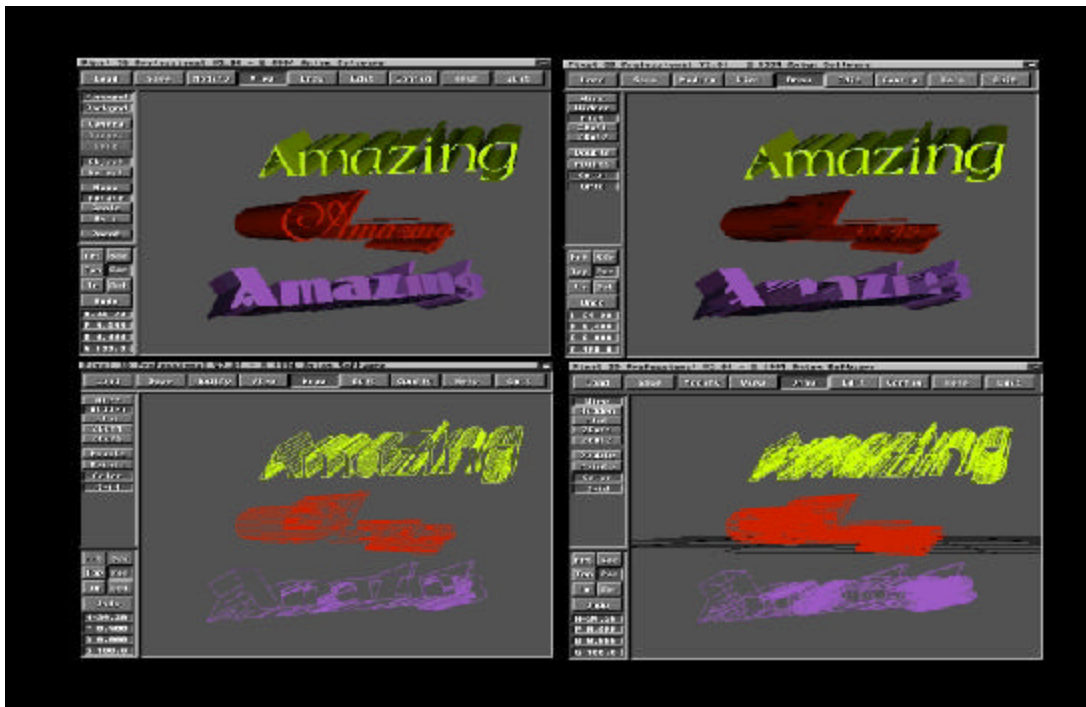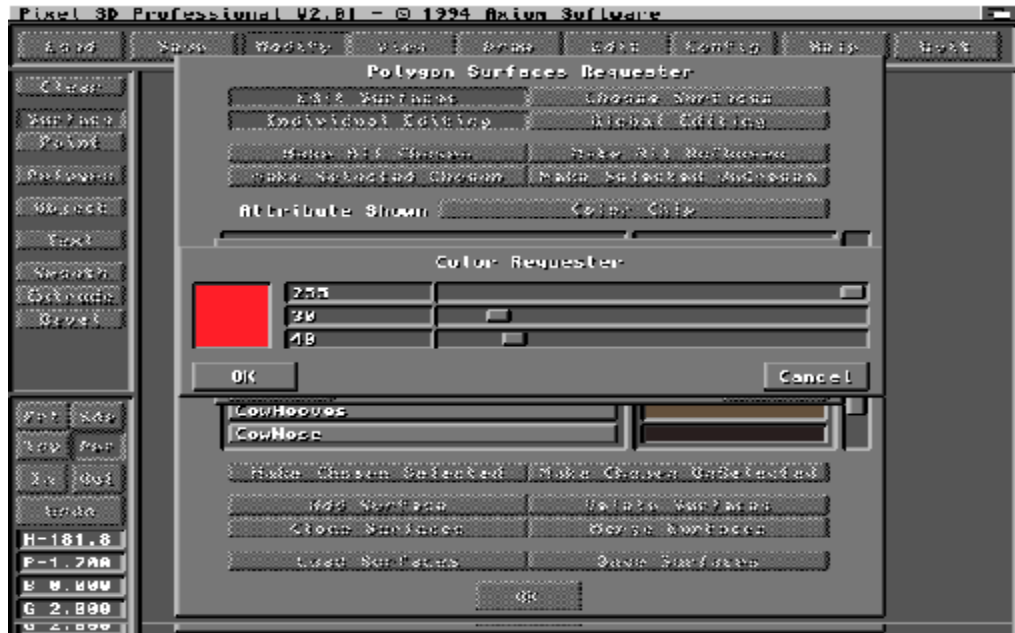

Figure 1. Pixel-3D 2.0's Text capabilities show in this graphic. L to R, T to B: ZBuffer2, Flat, Hidden, and Wireframe renders.

Figure 2. The Surfaces Requester is a suggested first step when coloring in 3D object elements.

The "Modify" Sub-menus:

Smoothing

''Smoothing'' makes the edges of your 3D objects less jagged, which is especially desirable when you import and expect to extrude bit-mapped fonts. Expect to spend a fair amount of time exploring what the best parameters are for each separate Bitmap that you want to smooth out using the Detail/Segment/and Horizontal-Vertical Elimination numerical input option. There are two additional spline fitting operations: coverage and vertice spacing. If you want to smooth out a lot of Bitmaps using these tools, I suggest you get ready for some long sessions. I recommend staying with the default settings until you get the hang of what you're doing. The setting that I found most useful for a typical jaggie bitmap font (a serif typeface at a thirty point size) was to set Detail Elimination at 60%, Segment Elimination at 25%, and Horiz/Vert Elimination at 20%. I kept the Spline Fitting off in most cases. All bitmaps differ, so you'll have to tweak these settings for your specific project.

Extrude

Extrude operations ask one major question: how deep do you want the extrusion to be. Most any input will produce a 3D result (though the system balked when I attempted the number 999,999,999,999). Standard numbers lie between 1 and 10,000, with about 100 being the most common. You can choose to extrude the single selected object or all on-screen objects at once (a useful feature for multiple lines of text). Extrusion is used for 2D Bitmaps or Bitmap fonts as it gives depth to flat graphics, and animations of a virtual 3D world make flat objects look out of place. It took me about thirty seconds to create a simple 16 color graphic in DPaint, import it into Pixel3D-Pro 2 and develop an extruded 3D object from it. Pixel3D-Pro 2 extrudes objects much faster than any of the 3D packages that I might choose to use to accomplish the same thing.

Figure 3. In the Object Requester, we can see how easy it is to develop hiearchal trees that place all objects in relationship.
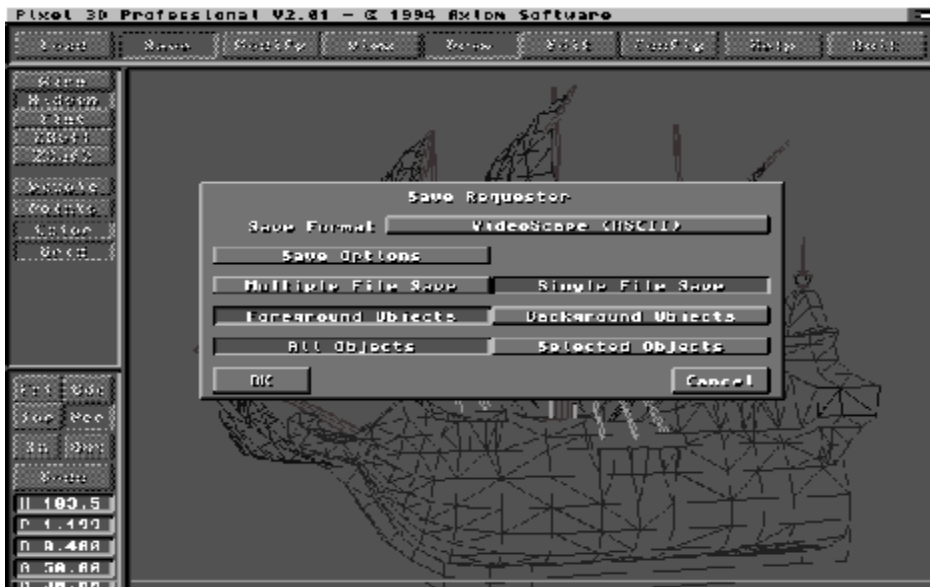
Figure 4. It's easy to select the object file format you want to save to.

Bevel

This is an operation meant for 3D fonts and logos that gives them a finished professional beveled edge look. Unique to Pixel3D-Pro 2 is the ability to apply ''router bit'' edges, constructed from your own saved-out graphic ''router bits'' (saved-out brushes of your own making). Very fancy edges can be created with a little experimentation.

3D Polygon Painting ?!

This is one of the newest buzz items to hit the computer graphics workplace, offered by such high end packages as Caligari Corporation's TrueSpace for Windows. After selecting polygons for painting, you turn them to whatever color is desirable. If the color you want isn't already in the object, you can add any number of colors by bringing up the Surfaces requester and adding them there. Pixel-3D Pro 2.0's actual 3D painting process is addressed by a 3D Painting Requester. The same requester allows you to see which colored polys are ''smoothed'' and the quantity of their appearance in the targeted object. 3D Polygon painting works best on large flat surfaces (like the front of letters), and is a little harder to manage on perspective curved sides.

Text

Most users will want to use this software to manipulate and extrude text strings and bitmap logos. First design your logos in a high-end vector drawing package like Soft Logik's Art Expression, or import it from a previously scanned image. Pixel-3D Pro 2.0's Text Requester is divided into two sections, one for PostScript fonts and the other for standard Amiga bitmap fonts. Bitmapped fonts require a selected size as well. I always choose the largest Bitmap size to minimize jaggies, since the curved sections will have more points to work with. PostScript fonts always produce better 3D images, and should be used whenever possible. I had great success with both Toaster fonts and ones that I found on the Micro R & D CD-ROM collection. With this option, you are no longer limited to a small selection of 3D font strings for your animations.

You'll have to reconfigure Adobe Illustrator PostScript imports. One solution is to import Adobe files into Soft Logik's Art Expression, then save them out as standard PostScript files. From there, Pixel-3D Pro 2.0 can import them. If you colorize them in Art Expression, Pixel-3D Pro 2.0 will also bring in the color (which will show on-screen on AGA machines). I also found that Pixel-3D Pro 2.0 doesn't like importing PostScript over the network from a CD-ROM. The files should be copied to RAM on the machine you're working on first.

3D Object Data Adjustment

In addition to viewing all relevant data concerning the selected object, you can interactively modify it. Redundant vertices can be deleted, and a ''Polygon Reduction'' tool deletes polygons that are co-planar (on the same plane), which is best when saving objects to LightWave (though not suggested if the target format is Imagine). You can also alter the maximum number of sides that a polygon has (some rendering packages don't care how many sides a to-be-rendered polygon contains, while others demand triangles). ''Divide Polygons'' divides all polys into triangles, a necessity when exacting rendering is to occur in most renderers. You can also set this operation to however many sides you desire for the polys. Many renderers expect the polys to be ordered in a clockwise fashion, otherwise incomplete rendering may occur (I've always found this to be especially true for VideoScape objects that are ported to other formats). ''Flip Polys'' will make a valiant attempt to perform this operation for you. Sometimes it's best to ''Double'' the polys first, another process that Pixel-3D Pro 2.0 can accomplish. ''Apply Surface'' allows you to globally change any or all of the objects surfaces as to color or smoothing attributes, and is a great help when you decide to apply alternate surfaces to an object in LightWave.

My Personal 3.0 Desires

I would like to have the ability to move requesters around, to drag them to parts of the screen that don't obstruct my view of the object. Pixel-3D Pro 2.0 assumes that your Bitmapped fonts are in a drawer called ''Fonts'', and you cannot change the path of the drawer name (except by a complicated series of assign statements in the CLI), and because I have several Font drawers (like many of you), it would be useful to be able to change bitmap font paths. The manual needs to have some visuals that depict what happens when the Smoothing operator is used on a bitmap. This would be better than pages of words. The docs should also have an index added.

Figure 5. Here's a 256 color rendering of a LightWave 3D object. It can be turned on any XYZ axis and resized as well.

Eventually, I'd like to see everything that gets imported come in as a Bezier curve, so absolutely no jaggies appear in any output once adjustments take place (perhaps this could be done by emulating Aladdin-4D's excellent ''SpoToPol'' tool, which turns a spline back into a poly curve or vice-versa for extruding and lathing). Lathing, turning a selected poly object on a selected axis, is another thing that I would like to see re-added in the software. This capability was present in the last version. I would also like to have the ability to copy (clone) and paste selected objects from a menu item.

Conclusions

From the looks of the interface, Pixel-3D Pro 2.0 has been redesigned with the LightWave user in mind, right down to the familiar 3D ground grid and object/camera moves. The software requires Workbench 2.x or 3.0 in addition to an accelerator with a math coprocessor and though it'll work with only 512K of CHIP RAM, more RAM of every kind is much better (and required for extensive operations). All of my tests were done on an Amiga 4000 with 18MB of RAM (2MBs of CHIP RAM).

For a software package to be called an ''upgrade'', it has to differ significantly from its preceding version. Otherwise the term to be used is ''revision''. Is Pixel 3D Pro 2.0 really an upgrade? I consider the 2.0 version of this software to be not only an upgrade, but a very significant one. Axiom is committed to adding even more features when the Amiga is rolling again.

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Figure 6. Even very polygon intensive multiple objects like this Triceratops and Cow can appear simultaneously in 256 colors on the Pixel-3D Pro 2.0 editing screen.