Review of KeyPro 2.02
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KeyPro 2.02 is a stand-alone program intended to "aid in the creation, development and implementation of character animation using LightWave 3D," to quote from the manual.

It generally costs as much in time and effort to create character animation with a computer as for a comparable level of quality in traditional clay, puppet or cel animation. The only significant benefit in using a computer is that you can edit, revise and tweak your animation without wasting a lot of your earlier efforts. If you are going to take full advantage of the computer, you need tools that make editing and revising your animations as simple and easy as possible. KeyPro 2.02 is a big step in the right direction for LightWave character animators. This program enables you to save, recall, edit and reuse your characters, motions and poses, using standard cut-and-paste functions that are fast, intuitive and easy to learn. If your time is worth anything, and you animate complex hierarchies, KeyPro 2.02 will be a valuable addition to your LightWave toolkit.

What You Get
The KeyPro package consists of a single 3.5" diskette, a registration postcard, and a half-size 3-ring binder containing a 46-page manual. Installation is easy, using the standard InstallShield Wizard. The application and associated files occupy less than a megabyte on the hard drive. The other system requirements are 3 Mb hard drive space (mostly for working files), 32 Mb RAM, and a minimal VGA graphics card, although OpenGL is recommended.

I installed KeyPro on two different machines, one under Win95a and the other WinNT4.0, each of which reliably run LightWave 5.5. Unfortunately, I found that the OLEAUT32.DLL for Win95a causes a fatal error when KeyPro attempts to launch. This means that the current release of KeyPro may only run on WinNT4.0, not necessarily all Intel machines capable of running LightWave. The System Requirements section of the manual doesn't say anything about operating system compatibility, so this could be a nasty surprise for users still limited to Win95. If you are running LightWave under Win95, you should check your system's version number and contact CineGraphics for an answer to this problem before you buy KeyPro. CineGraphics' tech support staff are knowledgable and helpful.

KeyPro's manual does not have an index, but the table of contents is adequate for finding any information you'll need. The manual is a short read, well-written, clear and to the point, with a logical structure following the layout of menu options and dialogs within the program. You should be able to go through the entire manual in half an hour to 45 minutes without straining.

The last eight pages of the manual contain a tutorial showing the basic editing functions of the software. Unfortunately, the tutorial files called for were not on the installation diskette. (Very sloppy, CineGraphics.) You can work around this by choosing two of the character animations included with LightWave, and substituting them for the KeywalkMed and KeywalkJump scenes called for in the tutorial. The goal of the exercise is to copy an action from each scene and paste them together in a third, new scene.

KeyPro is noticeably lacking in online help. Instead of calling the standard Windows Help function, which should at least describe the menu options and major dialogs, the Help menu only calls a splash screen with KeyPro's version number and the contact information for CineGraphics. You should definitely print out and read the KEYPRO_V2.TXT file, as it contains the keyboard shortcuts and other important tips.

What KeyPro Does
KeyPro enables you to load a series of LightWave scene files, select part or all of the scenes' hierarchies, and paste, append, or blend those hierarchies and/or their motions to another scene. This enables you to quickly assemble and edit complex animation sequences from a stock library, transfer actions from one character to another, or rapidly edit an existing action within a single scene. This is a very powerful set of tools.

KeyPro is designed to manipulate data from several LightWave scenes, so it uses its own Project window to hold them. Versions 2.02 and later allow you to save sets of scenes as KeyPro Project files. This feature is critical to saving your time and data when your system locks up. Saving project files is also useful to serious character animators and small studios, who need to recall groups of scene files over a long period of time or to share them among a production team. The structure of the project files is consistent with

LightWave's native files, a plain text file that is easy to
understand and edit:

```
KP_Project
C:\NEWTEK\SCENES\ROBOTS\APEWALK39.LWS
C:\NEWTEK\
C:\NEWTEK\SCENES\ROBOTS\Aperun52.lws
C:\NEWTEK\
```

The first line tells you this is a KeyPro project file. The
second line is the full path and filename of the first scene
loaded in the project. The third line is the content
directory path for the preceding scene file. Successive line
pairs provide the scene paths and filenames and the content
directory paths for the project's remaining scenes. If you
are careful, you can type up a KeyPro project file from
scratch, to include all your character's current scene
files. I believe this feature will be useful to many
character animators.

If you intend to build a library of character actions or
poses, the most efficient method is to save a duplicate
scene file (with an appropriate name) whenever you create a
new pose or action that seems reusable. This way, you can
preserve your data without interrupting your animation
workflow. It's simple, fast and intuitive to look at a list
of scenes with names like APEWALK32, knowing that the scene
contains a walk cycle for the Ape robot that hooks up at 32-
frame intervals.

With KeyPro, you can create a master project for each
character, containing a separate scene for each action and
pose. The project file (being easy to read) can serve as
summary notes for these scene files, as long as you choose
appropriate scene filenames that describe the actions,
poses, and hookup frames. This is a simple, logical system,
keeping all the labels for the character data in a single
place and tied to the actual data paths. This can be a big
help if you are sharing files across a network or through a
complex hierarchy of directories. I can't speak for all
LightWave animators, but I use a variety of drives and media
to archive my work. If I can't pull up a scene file directly
from a CD-R or Zip disk backup, but instead have to first
copy it (and all supporting files) to a particular
directory, that's inefficient and annoying. KeyPro has a
robust, reasonable approach I wish more software would
support.

To get some idea of KeyPro's display, take a look at Figure 1. This is a fully-expanded view of the APEWALK39.LWS scene file that ships with LightWave.

FIGURE 1. KeyPro 2.02 interface

The Project window displays the scenes that are loaded in the current project. If the globe icon for a scene is dimmed, it won't appear in the Perspective View. In Figure 1, only the first scene, APEWALK39, is made visible. The Perspective View window shows a wireframe of the active scene, similar to LightWave's own perspective view. There are no options for shaded, Camera or Light views, but the most useful view editing options are available, including Zoom, Rotate, Move, and Play Bounded. The Perspective View playback seems to be a function of system speed and window size; you can interactively scale the window during playback to get the frame rate you want. This is pretty slick, especially when you consider that this is a standalone program, not a LightWave plugin. You can be running KeyPro on one machine, editing and tweaking animations, while your LightWave dongle is busy elsewhere.

If you open one of the scene files from the Project window, it displays in the Scene View window (labeled APEWALK39, at the right of Figure 1). You can choose what information to display from the Hierarchy Tree dialog, Figure 2. Figure 1 shows one of the simpler selections; Figure 3 shows everything. This is a nice way of controlling the amount of information you have to deal with, providing easy access to the details you need while hiding the extraneous distractions.

FIGURE 2. Hierarchy Dialog, set for Scene View options shown in Figure 1.

FIGURE 3. Hierarchy Dialog for the same scene as Figure 1, with all Scene View options turned on.

You can open a separate Scene View window for each scene in a project. This enables you to see, for example, all the Left Hip channels for a number of scenes. KeyPro enables you to select a channel, object, Bone or hierarchy, copy its motion, then select a comparable item in another scene and paste (replace entire action), append (add to the end of

existing actions), or blend the copied data with the selected items.

KeyPro manages data according to hierarchies. If you want to transfer motions from one character to another, or even between different instances of the same character, you must make sure that both character hierarchies are identical. For example, the Ape robot provided with LightWave has several scene files, including both walk and run cycles. The hierarchy for the walk is different from the hierarchy for the run, so you can't directly copy-and-paste motions for the entire hierarchy. You might end up with the actions for an arm being used to move a leg.

The advantage to this approach is that you don't have to worry about naming items consistently. For example, suppose you have several characters in a scene, and you consistently named their parts. Since LightWave automatically renames duplicates, you'll end up with item names like LTHIP, LTHIP(2), and LTHIP(3) as labels for the same part on three separate characters. If KeyPro insisted on editing actions by item name, you couldn't make changes to any character but the first one loaded. KeyPro's managment of motion data by hierarchy bypasses LightWave's renaming problem, and enables you to edit as many characters in a scene as you like. If you want to use KeyPro, keep your character hierarchies consistent.

The Blend Motion option captured my interest when I first spotted it. The KeyPro manual states it "blends or interpolates motion between the original and new motion data." For a character animator with a deadline, the prospect of being able to blend several actions from a motion library is very attractive. Unfortunately, Blend works by dropping a key on every frame, for every item. The action is impossible to edit efficiently after the blend; it's like working with motion capture files. If you have actions that are already keyed on every frame, blend might be useful for mixing them; otherwise, I think it causes more trouble than it's worth.

One of the problems with animating a complex character hierarchy in LightWave is the load order. The items you need to manipulate most often are seemingly never the ones near the top of the Selected Item list. You can either waste time scrolling, or try to pick out the item from a spaghetti-mess of object and Bones. KeyPro removes this problem by enabling

you to edit the load order of a scene. You can use Current
Object|Load Earlier to move the animation handles you use
most to the top of the list, and Load Later to bury the
least-used items at the bottom. This is also handy for
ordering lights, since OpenGL uses the first lights in the
list. You can simply shift the key light(s) to the top of
the list, so OpenGL shading renders a more accurate picture
of your revised lighting.

KeyPro also has basic editing tools for adding items to a
scene. Combined with drag-and-drop hierarchy editing, this
is the easiest and fastest way to assemble a complex scene
for LightWave. You'll still need to tweak a lot of details
in LightWave itself, but for the initial setup KeyPro is the
way to go.

Pesky Details
The designers of KeyPro seem to have a spotty grasp of the
LightWave animator's needs. On the positive side, instead of
requiring the user to return to the menu bar again and
again, they have enabled the right mouse button to pop up a
tools menu appropriate to the active window. This cuts the
therbligs (separate, definable actions) for each operation
in half, making your work easier and faster. The more you
work with KeyPro, the more you'll appreciate this "minor"
enhancement. Another nice touch is that most of the
program's functions are duplicated in the menu bar,
toolbars, and pop-up menus, so you can use whichever method
is more comfortable or faster for you. KeyPro also maintains
the Windows-standard keyboard equivalents for undo, open,
new, save, delete, copy and paste.

On the negative side, CineGraphics has committed several
oversights in the design of the KeyPro user interface. One
is the Toolbars menu; each toolbar toggle should be check-
marked when the toolbar is visible. They aren't. Also, many
of the keyboard shortcuts listed in the KeyPro_v2.txt file
are not marked, either in the menus or on the toolbars. This
makes it just a little harder for new users to become
experts by using the keyboard to work more efficiently.
CineGraphics also decided to use Q for Select All, when the
more common equivalent is Ctrl-A, which KeyPro uses for
Append Key Frames. I think that particular gem is often
going to be followed immediately by a Ctrl-Z.

Cinegraphics seems to have the right idea in developing
software: give the people what they need, when they need it.

KeyPro's ongoing improvement makes this review a snapshot of a moving target. By the time you read this, there are sure to be major improvements and new features in the latest version of KeyPro. If you think you may have use for KeyPro, I encourage you to contact CineGraphics for the latest information. I know I'll be using KeyPro, and you can expect to read about it in future Character Shop columns.

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