Pixar Typestry 2

This program is dedicated To all
The Typefaces in The world.
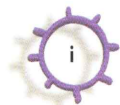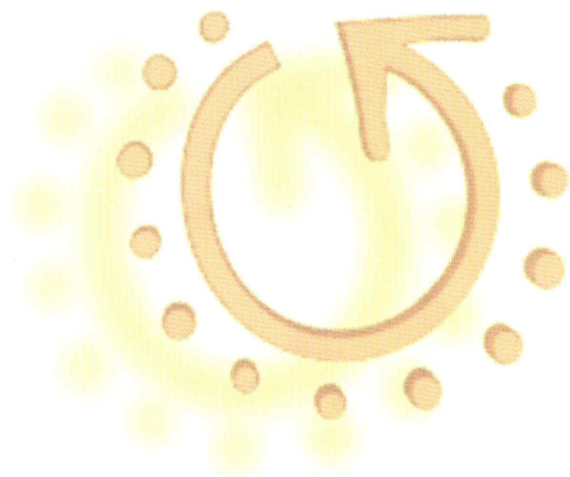
credits

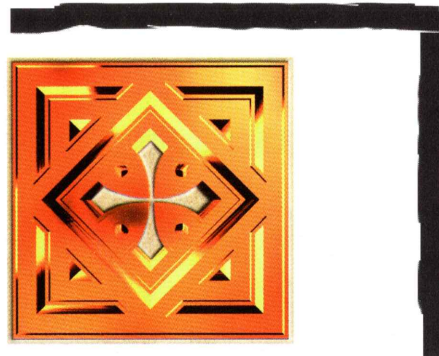|	
Mr. Typestry	Dana Batali
Other programers	Steve Johnson
	James Burgess
	Steve Davis
	Mitch Prater
Documentation Guy	Tom Deering
Art 'n' Doodles	Annabella Serra
Betazoids	Mark Sanford
	Mike Murdock
	David Catmull
	Ed Catmull
Proofreader	Beth Sullivan
Chief Negotiator	Dennis Jennings
VP of So Many Things	Pam Kerwin

Image: Annabella Serra

Build Method: Extrude

Bevel: preset from menu

Effects: Wall

Text Look: customized instance of Floofy

Wall Look: Pictures as Anything; texture
  and relief using an image of corrugated
  cardboard

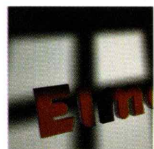*Lights:* #7 100%, spotlight; #2 70%, spotlight

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WhaT's TypesTry?

Ever wish you didn't have to go through all the work of figuring out perspective and shading for your lettering? Well, Typestry takes care of it automatically. Ever wish you could try out a different look on your lettering without having to repaint it all? With Typestry it's a simple point-and-click operation. How about changing the lighting? Easy — select a light and adjust its color and intensity. Typestry is simply the easiest way to get great-looking dimensional text!

We made Typestry with the goal of making 3D text incredibly easy: there are very few controls to master; the tools are practically self-explanatory and the interface is straightforward; and you can get an incredible range of lighting, perspective, and shading effects with the click of a mouse.

There are only five basic steps to making a picture with Typestry:

• Type in some text or import an Illustrator file.

• Position the text the way you want it — move, rotate, resize, or skew it.

• Apply a surface to the text — Typestry comes with an extensive library of surface appearances, or *Looks*.

• Add lights — spotlights, slide projectors, or distant lights.

• "Take a picture" of the text — render with Academy award-winning RenderMan technology.

You can use any Type 1 or TrueType font for typing in your text, or you can import Illustrator files to add interesting shapes and text effects. You can use font programs like Fontographer and FontMonger to create your own fonts for text, or to make special characters to add visual interest.

If you'd like, you can add effects like wind, particles, and motion blur. And to top it off, you can even make simple animations of your text, and turn them into QuickTime movies or use them as a series of frames.

After creating an image, you can import it into other programs, like Photoshop, QuarkXPress, PageMaker, Persuasion, or just about any paint or page-layout program.
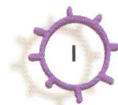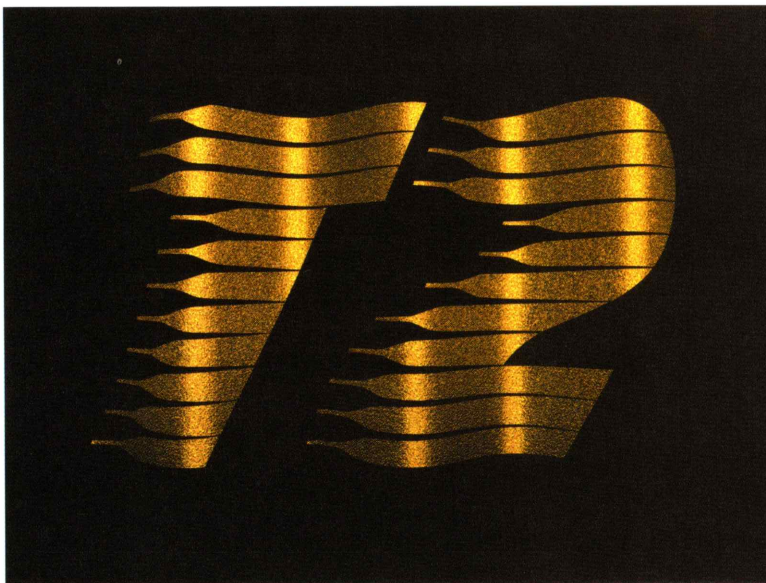
Image: Joy Folla

Font: Slipstream

Build Method: Rubber Sheets

Sheet Textiling: text only, no background

Sheet Style: waving flag

Wind Speed: 75%

Wind Gustiness: 75%

Effects: Wall

Text Look: ECGems Dented Jewel: Color gold, Scale 5%

Wall Look: Wall Plaster, black

Lights: #5 40%; #7 100%

TypesTry quick-sTart

Note: You must have completely installed all the elements of Pixar Typestry before trying this! Also, if you're using PostScript fonts you must have ATM version 2.0 or greater installed.

1. Double-click on the program to open it.

2. Resize the window by dragging the lower right corner and make it a few inches on a side.
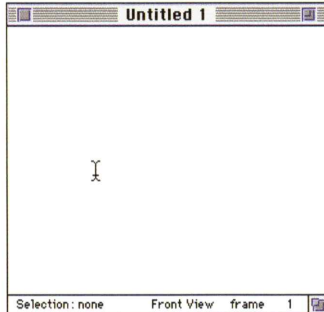
3. Click once in the window to the left of the window's center. This will bring up the text dialog. Type the name Elmo in the box, choose a font, and click on Build Object.

Note: Make sure the Build Object box is highlighted. If not, the font you selected is not properly installed in your system, or isn't the right kind of font. Select another font.
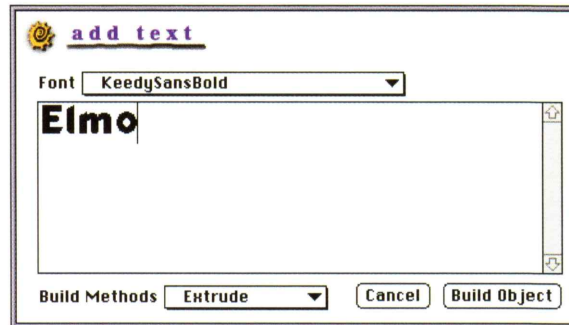
The Extrude dialog will appear. Just click on OK.

4. Now you should see the word "Elmo" in the Typestry window.
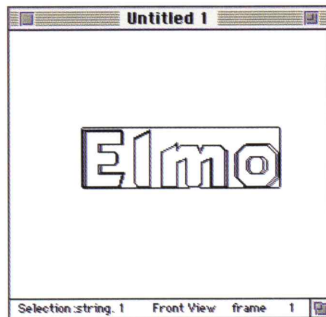
5. From the Render menu select Render to Screen, then Reasonable. You can get a sharper image by choosing Excellent 'n' Slow instead of Reasonable, but it will take longer.
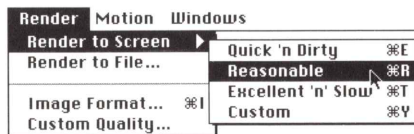
Et voila! Your first Typestry picture!

less quick sTarT

1. Do steps 1–3 from the Typestry quick-start.

2. Click on the Move tool in the slim toolbox.

3. Click and drag your text in the window to move it. If you accidentally deselect it, just click on it again.

Try rotating or resizing it using the Rotate and Resize (third and fourth) buttons in the toolbox. Remember: click and drag on the object itself, not near it. If you click and hold the button you'll get a pull-aside menu with various ways to constrain these two operations. (Don't worry, we'll talk more about these tools later in the *Getting Text In* chapter.)
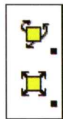
If you'd like to get the word reoriented so it is face-on again, select Reset Orientation from the Edit menu.

4. Select Show Looks in the Windows menu. In the Looks window click on the New Look button. This brings up the Browser (the "select a look" dialog).

5. In the Browser, use the menus to find and select the Plastic Rough Look for your text. The Browser should automatically go to *Pixar Applications:Look Instances*. From there, look in *Starter:Materials:Basic*. Click on the Select button.

6. Click on the Object Info button in the Looks toolbox. This brings up the Object Info dialog.

looks

○ string. ...
○ Sides
○ Wall
○ Floor

New Look...
Edit Look...
Object Info...
Detach Look
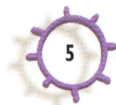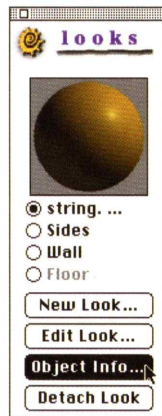
7. In the Object Info dialog, click on the Color Override box. This brings up the Color Picker.

object info

Object	string. 1
Look	Rough Plastic
Color Override	☐
Opacity Override	
Look Scale	100 %

☐ Scale Look with Object

Projection
AutoPlanar ▼

90° Rotate
Horizontal Flip
Vertical Flip

Cancel   OK
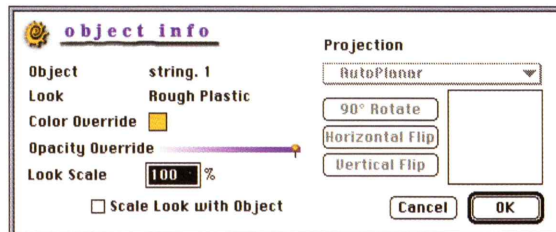
8. In the Color Picker, select a color for the plastic and click on OK. Then click on OK in the Object Info dialog to put it away.

9. Now from the Effects menu select Backgrounds, and then Wall. You won't see a wall appear, but it will show up in the rendered image.

Effects Render Motion Windows

Backgrounds   ▶ ✓None
Camera   ▶   Wall
Motion Blur   ▶   Floor
Particle System ▶   Floor and Wall
Atmosphere...   Wall Setup...
                     Floor Setup...
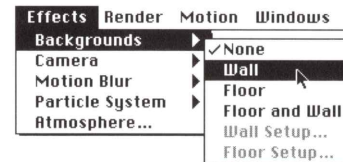
10. Select Show LIghts from the Windows menu.

11. In the Lights toolbox, click on the middle box next to light 7. This will bring up the Browser. If you click and hold on the box you'll get a popup menu. Selecting New Look is equivalent to just clicking on the box, and will likewise bring up the Browser.

6
7
8

12. In the Browser, use the menus to find and select the Windowspot light Look in *Pixar Applications:Look Instances:Lights*. Click on the Select button.

13. From the Render menu select Render to Screen, then Reasonable. You can get a sharper image by choosing Excellent 'n' Slow instead of Reasonable, but it will take longer.

Et voila! Your second Typestry picture!
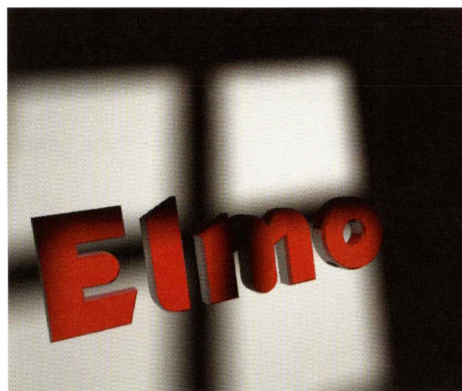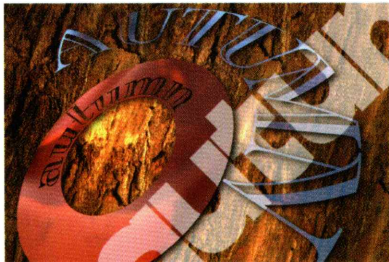
Image: Annabella Serra

Build Methods: 2 Rubber Sheet rings

Effects: Wall

Lights: #5 50%, and moved to the left of the image

Text Looks: customized Floofy instances; white text layer added later as a screen using Adobe Photoshop

Wall Look: Pictures as Anything using Pixar One Twenty Eight texture as color and bump

geTTing TexT in

Using the Text dialog

There are two ways to get shapes into Typestry: typing in text, and importing Illustrator files.

Regular text

1. To get text in the project window, first make sure the Text tool is selected.
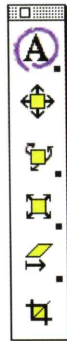
2. Click once in the project window; this brings up the text dialog. (If you click twice, after you're done with the text dialog it will appear a second time and you'll just have to cancel it.) Type in some text.

add text

Font: Chicago

abc

Build Methods: Extrude   Cancel   Build Object
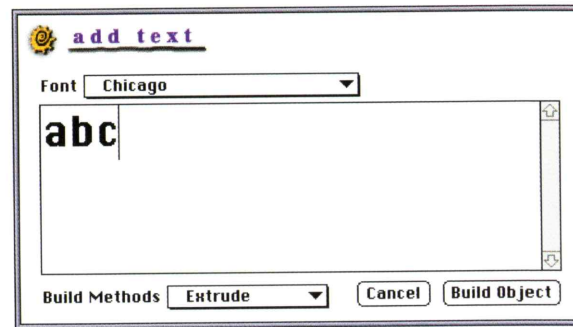
3. Choose a font by clicking and dragging the font menu. Remember, the font must either be a Type I PostScript outline font, or a TrueType font.

4. Select a Build Method and click on Build Object. See below for descriptions of the three Build Methods: Extrude, Rubber Sheet, and Tubes. This brings up a dialog associated with the Build Method you chose.

5. Click on OK to convert the text to 3D objects and put it into the Typestry window.

Importing Illustrator files

1. Select the Text import tool by clicking and holding on the Text tool.

2. Click once in the project window where you'd like your graphic to appear; this brings up the Import dialog. (If you click twice, after you're done with the text dialog it will appear a second time and you'll just have to cancel it.)

3. Select the file you want to import. This must be an Illustrator file created with version 3.0 or later.

4. Select a Build Method and click on Open. See below for descriptions of the three Build Methods: Extrude, Rubber Sheet, and Tubes. This brings up a dialog associated with the Build Method you chose.

5. Click on OK to convert the object to 3D and put it into the Typestry window.

Build Methods

There are three Build Methods: Extrude, Rubber Sheet, and Tubes. These are described below.

Extrude

This extrudes letters, beveling the edges according to the bevel style you choose, or create, in the dialog. See "Using the Bevel Editor" later in this section if you'd like to create your own bevel.
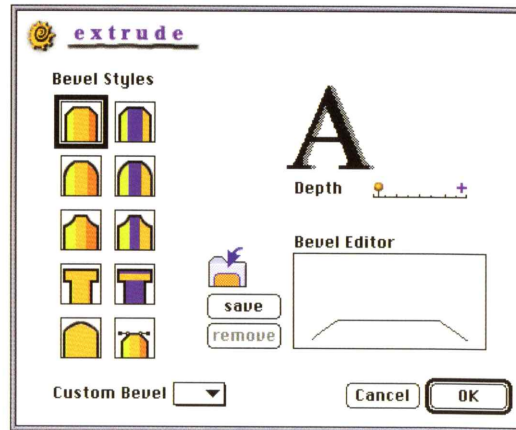
In the left column of Bevel Styles, when you apply a Look to the Sides (one of the choices in the Looks window), the Look controls the appearance of the whole bevel. In the right column, the middle of the bevel takes on the Look applied to the faces; the bevel edges are the Sides, and can have their own Look. Ordinarily, the whole bevel takes on the Look of the faces unless you specify a different Look for the Sides.

Custom Bevel. This allows you to select bevels you have previously saved.

Depth. This sets the thickness of the object. Of course, you can change this with the Scale tool once the object is in the project window. If you change just the object's depth with the Scale tool the bevel will get stretched or squeezed. If you'd like to redo the Depth setting in the Extrude dialog you'll have to repace the object (see the note below).

• Note: If you need to change the bevel style or depth after the object is in the project window just use Replace Selection (from the Edit menu). You'll get the Text dialog back with the text already typed in and the Build Method selected.

The following images show examples of the different bevel options, including some custom bevels. To the right of each image is its Bevel Style.
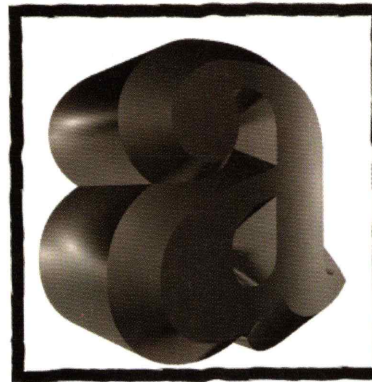
using the text dialog

getting text in
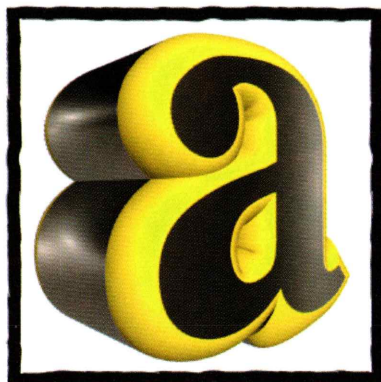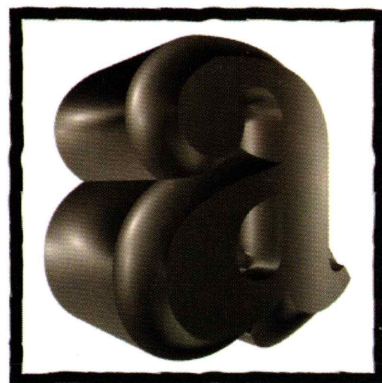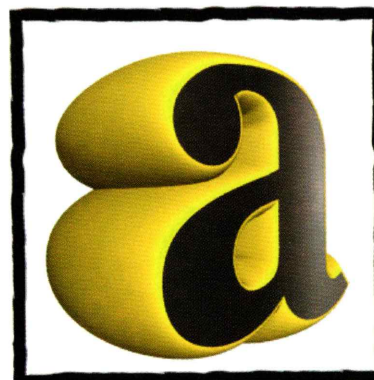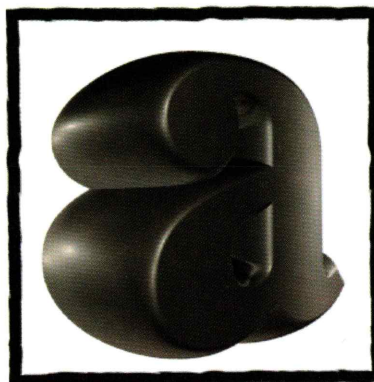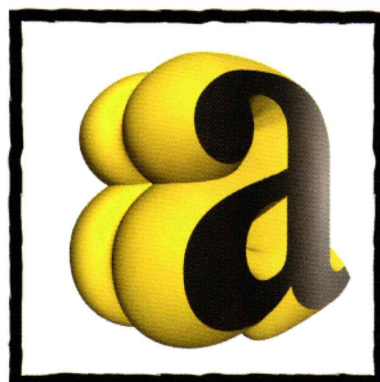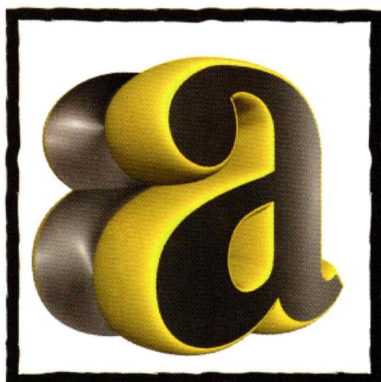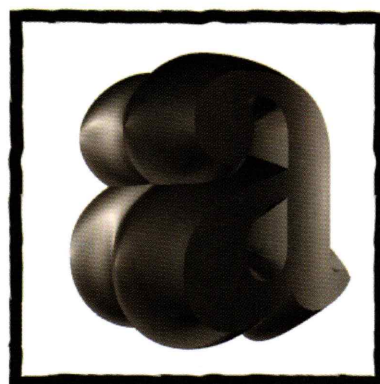
Rubber Sheet

This dialog allows you to put letters on six different objects.
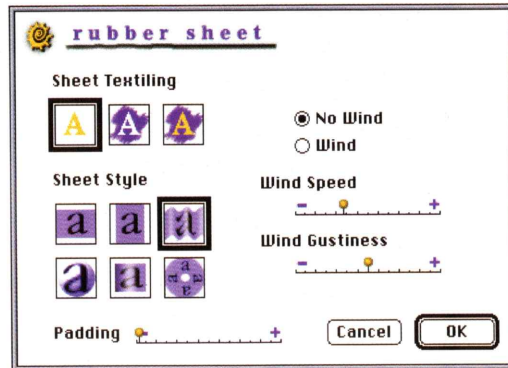
Use the Sheet Textiling to determine what part of the surface appears: just the parts where there's text, just the parts without text (creating holes where the text is), or everything.

• If you choose everything, be sure to give different Looks to the "flag" (the text) and to the "sides" (the rest of the surface). Otherwise you won't see the text at all.

Use the Sheet Style to put the text on a long, tall, or wavy rectangle, a sphere, a cylinder, or a ring. These shapes are flimsy and flexible — rubber-like, even — and can be blown by wind, which is controlled by

the controls on the right side of the dialog.

Here are some examples, along with their Sheet Textiling and Sheet Style settings:

1234567
2345678
3456789
4567890
5678901
6789012
89012

A a

ahhh...

umm...

A a

@

A a

aaaaa
aaaaa

A a
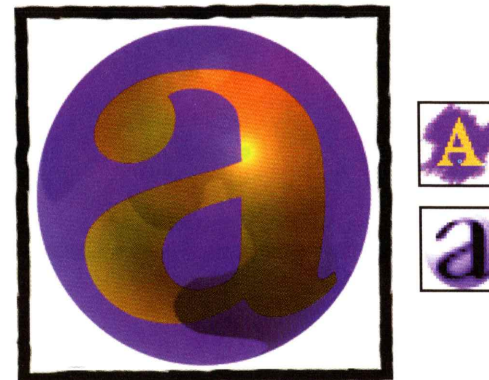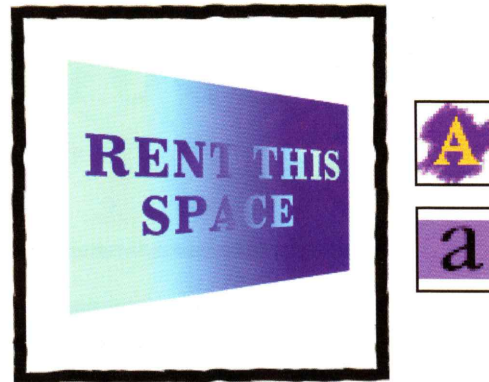
Padding. This adds space around the text vertically and horizontally. This is so you can avoid filling up all the available space on whatever Sheet Style you selected. On a sphere, for example, two letters would appear on opposite sides. Increasing the padding squeezes them together so you can have them both appear on the front. Of course, they'll be smaller, but you can always resize the sphere.

Use the wind controls on the right side of the dialog to allow the surface to act as if it's being blown by the wind.

No Wind. This is the default, creating rubber sheets that aren't blown by the wind.

Wind. Turning this on makes the wind blow, deforming the sheet appropriately in an animation.

Wind Speed. Blowing wind causes sheets to wave. The higher the Wind Speed, the faster the waves. The speed's variability is controlled by Wind Gustiness.

Wind Gustiness. Gusty wind produces variability in the waves. This control varies the wind's direction (it blows along the length of the sheet by default), and varies the Wind Speed somewhat as well. The Wind Speed then becomes an "average" speed.
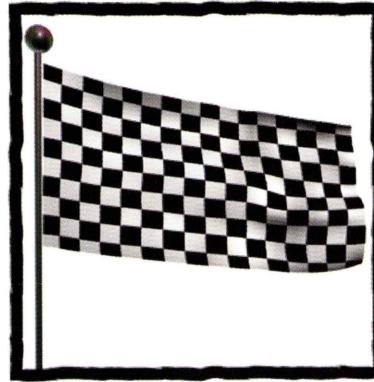
Remember, you'll only see the effects of the wind if you create an animation. However, you can create a still image using the effect by creating a 2-frame animation. To do this, see the section on "Creating a 2-frame animation" near the end of the Animation section.

Changing the wind controls

If you're not happy with the wind control settings and you want to change them, you must regenerate the whole object:

1. With the object selected, select Replace Selection from the Edit menu. This brings up the Text dialog.

2. The text will already be typed in, with the correct font and Build Method selected. If you'd like to preserve these, just click on Build Object. This brings up the Rubber Sheet dialog.

3. Adjust the controls and click on OK. The object will be recreated in the project window.

• Warning: For this to work the object must still be grouped as it was when you typed it in.

Tubes

You know how the lettering in neon signs looks? That's what this does — it's just the outline of the letters where the outline is a tube. There are three Tube Styles: tubes whose cross sections are circular, square, or scalloped. Use the Tube Radius slider to control the size of the tubes.
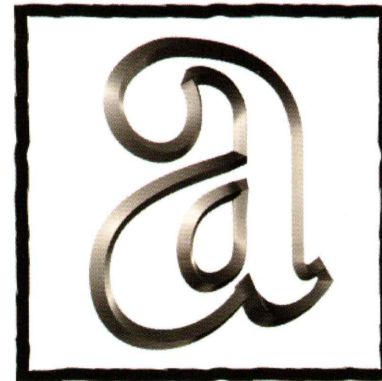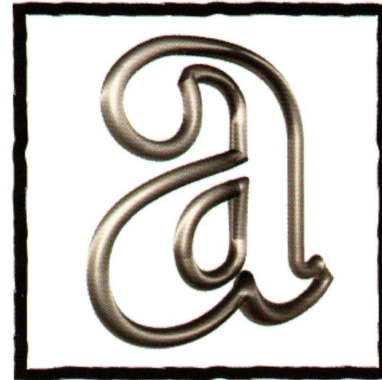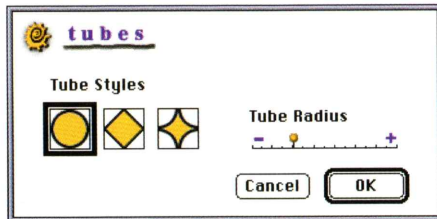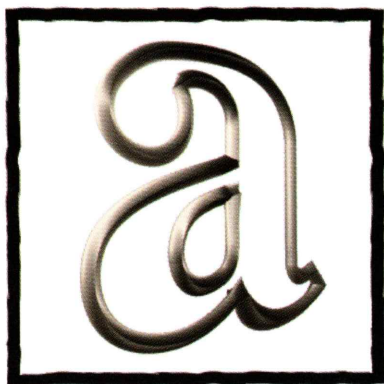
• Warning: Some fonts may appear slightly mis-shapen when you use a very large bevel size or Tube Radius. Although Pixar Typestry uses only the PostScript curves that already exist in the font, when these curves get greatly exaggerated they may create unexpected results.

Using the Bevel Editor

When a letter gets extruded into 3D, it has a front and a back face. The bevel is what connects the two faces. The Bevel Editor allows you to change the shape of the curves that make up a bevel. Selecting any bevel loads it into the Bevel Editor area. Here, the bevel's left side connects with the front face, the right side with the back face. The editor works simi-larly to drawing programs that edit curves. To wit:

There are two things you can adjust: points and handles. Your cursor must be in the Bevel Editor window for these to appear.
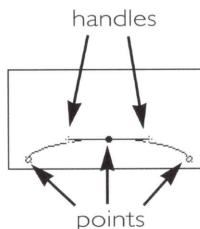
Every point has two handles. But you'll only see the handles of the point that's currently selected. If the handles move independently the point is represented by a square dot. If adjusting one handle affects the other the point is represented by a round dot. You can toggle between these two handle-moving modes simply by clicking on a point once it's selected.

A point and its associated handles become active when the cursor approaches it. You'll be able to edit whatever point the cursor is closest to.

Points control where the parts of the line are; handles control the shape of the line. The direction of a handle determines which way the curve goes, while its length controls the "amount" of curving: the shorter the handle, the straighter the line. Try select-

ing the bottom left bevel and playing with the middle point to get the feel of what handles and points do.

Here's the bottom left bevel choice, unedited :
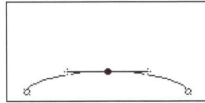
In the illustrations below, the bevel on the left has had its handles moved, adjusting the direction and amount of curving. On the right, the point itself was moved, taking that part of the curve with it.
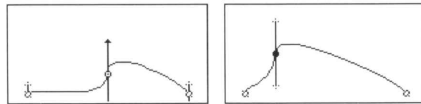
You can't add or delete points, so you might pick a bevel based on the number of points it has to offer. They have from 1 to 4 points in addition to the end points.

If you want to reset a bevel shape to its original state, just click on the bevel you originally loaded in.

Adjusting points

To move a point, just click and drag the point — don't click, then drag. You can select or deselect

additional points by holding down the Shift key and clicking on the point(s). Holding down the Shift key while moving a point constrains its movement to vertical, horizontal, or diagonal. You can also drag a selection box around a group of points to adjust all of them together.

Be careful selecting points. Remember, you'll toggle between the two types of points simply by clicking on a point once it's selected.

Holding down the Command key restricts operations to points only — you won't have access to the handles. This is handy where handles and points are very close together and one may interfere with selecting the other.

Adjusting handles

Ordinarily, you can adjust both the length and the direction of a handle. Holding down the Shift key while dragging a handle constrains the length if you change its direction, or its direction if you change its length.

Holding down the Option key restricts operations to handles — you won't be able to grab any points.

Using the Delete key on a handle doesn't actually get rid of it. It just makes its length 0, so you can pull the handle out again to lengthen it if necessary.

If you need to undo an operation, use Command-Z.

Warning: You can end up making some pretty crazy bevel shapes starting from the ones provided. If the line actually intersects itself somewhere, you'll get some unexpected results. But who knows, they may be just what you were looking for!

Tips: We've found that some of the most interesting bevel shapes result from treating the end of the bevel in two contrasting ways. One is to create a marked discontinuity where the bevel meets the face: an inward or outward bulge or "V" shape, for example. The other is to make a very smooth transition from the face, and then curving to catch highlights. Also, you can get more complex shapes if you don't make the bevel symmetrical front and back, but ignore the back of the bevel (if you won't be seeing it in the image). This allows you to drag some points to the front that would otherwise be used in the back.

• Note: You should design the bevel with the character's Depth setting in mind. If you later change a letter's thickness very much it will tend to exaggerate or diminish the effect of the bevel shape. For example, thickening a letter with a small bevel size will stretch out rounded bevels, tending to flatten them.

Let's take a look at a short bevel editing session, by way of example.

Here's a simple bevel before anything's been done to it:
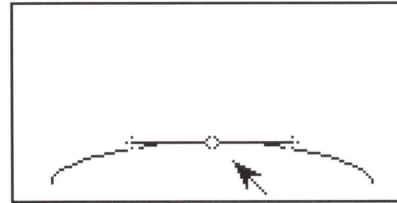
Next, the middle point has been dragged up and over slightly.
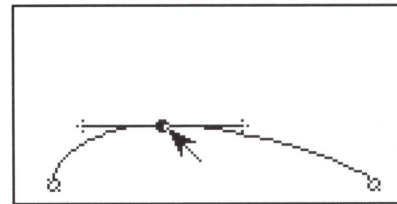
The point has been changed so the handles can move independently, so we can create a corner. The right handle has been made to point straight up:
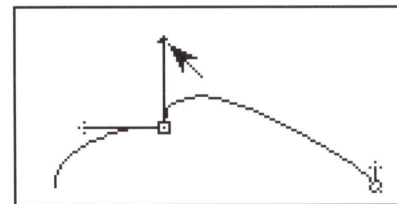
The lower left point's handle has been pulled way out to the right:
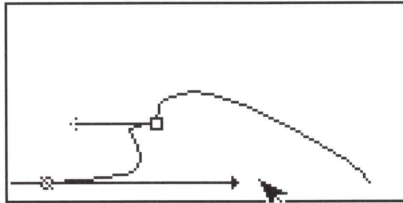
Now the middle point's other handle has been swung around more than 180°:
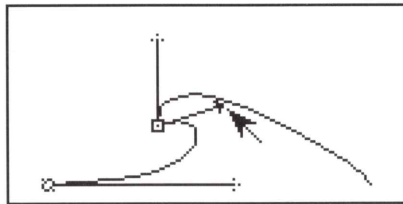
The finished bevel curve:
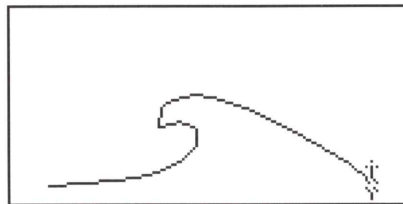
Saving finished bevels

Once you've got a bevel the way you want it, you can save it:

1. Click on the Save button. This brings up a dialog that allow you to type in a name for the bevel.

2. Type in a name and click on OK.

The saved bevel will be available in the Custom Bevel popup menu.

Replacing text

If you've gotten text in, but notice a typo or need to replace it for some reason, use Replace Selection from the Edit menu. All settings are preserved, allowing you to simply type in new text. Use this to change the text of a selected object.

•   Warning: For this to work the object must still be grouped as it was when you typed it in. This feature is disabled for subobjects (individual letters of a grouped word).
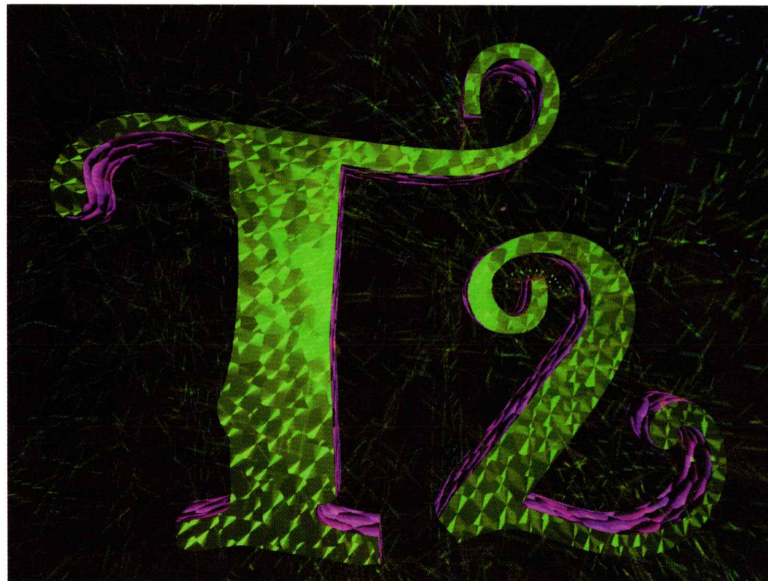
Image: Joy Folla

Font: Remedy Single

Build Method: Extrude

Bevel: custom (flat)

Effects: Particle System; Mass 2, Elasticity 12, Colors green and purple, Randomness 0, Particle Density 2, Ejection Speed 6

Text Look: ECGems Swirl Flat

Lights: #5 100%; #7 75%

Frame #17 rendered

getting text in

This image was created with Pixar Typestry

The Pixar One Twenty Eight CD contains Pixar's stunning collection of seamlessly tiling digital photographs. These exquisite high-quality textures are ideal converted into Looks for use in Pixar Typestry. You'll be delighted with the variety and the rich photorealistic detail these textures will add to your images. They ship as 512x 512x24 bit TIFF image with easy Photoshop and PhotoStyler compatible plug-ins. So in addition to using them as Looks you can add these dazzling textures to all of your 2D and 3D graphic projects. Macintosh, Windows, and Unix versions all on one CD.

PIXAR ONE TWENTY EIGHT
A COLLECTION OF PHOTOGRAPHIC TEXTURES

24

Making a PicTure

Rendering an image

You can create an image in two ways:

- Render to a screen window, which you can save to a file.

- Render to a file, which you can then display.

To render an image to a window just select Render to Screen from the Render menu, and select a quality setting:

Render	Motion	Windows
Render to Screen ▶		
Render to File...		
Image Format... ⌘I		
Custom Quality...		

Quick 'n Dirty	⌘E
Reasonable	**⌘R**
Excellent 'n' Slow	⌘T
Custom	⌘Y

Quick 'n Dirty produces a quick, low-quality image, good for checking position, general lighting, color, etc.
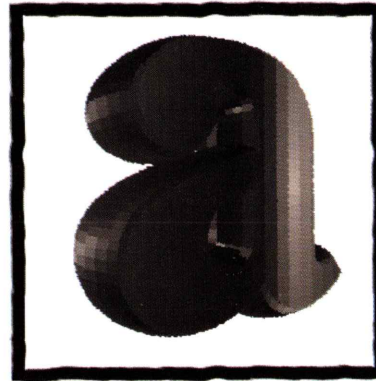
Reasonable produces a reasonable-quality image, in a "reasonable" amount of time. Use this to see more detail in an image: shading, beveling, effects, highlights, etc.

Excellent 'n' Slow produces the highest-quality images (apart from customizing the quality), but takes a little more time to do so. For this reason, this is the one to use for final images.
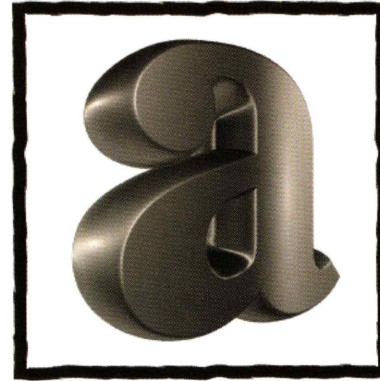
Custom renders with the settings in the Custom Setup dialog. See the section on "Customizing image quality" later in this chapter.

If you're using shadows that might need to be recomputed, you'll be prompted to choose from four options (you can read about how to have lights cast shadows in "Using the Lights window" in the *Adding Lights* chapter):

shadows

Some shadows may
need to be computed.

[**Compute Shadows**]
[**Render with old Shadows**]
[**Render without Shadows**]
[**Cancel Rendering**]

render status   [Cancel Rendering]

% done ▮▮▮▮▮▮▮▮   memory ▮▮▮▮▮▮▮▮

```
****************************
Starting to render.
Computing image : Untitled 1PICT.1
```
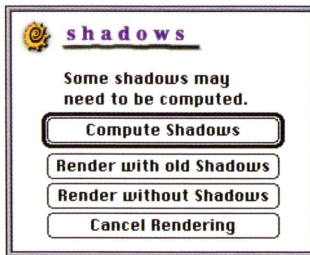
Compute Shadows proceeds with shadow calculations and when done, renders the image.

Render with old Shadows skips the shadow calculations and uses shadow information from previous renderings (if any) while rendering the image.

Render without Shadows skips shadow calculations altogether and just renders the image.

Cancel Rendering does just that.

To force shadows to be recomputed, just move an object and Undo the move. When you render, you'll be prompted to Compute Shadows.

• You can use the Render Status window (select Show Render Status from the Windows menu) to monitor the rendering's progress. Any messages from the renderer will appear there as well.
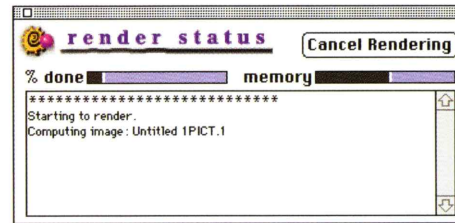
To render an image to a file:

1. Select Image Format from the Render menu. This brings up the Image Format dialog:

image format

Window Size	[>>]	Output File	☐ Constrain Aspect Ratio
[581] pixels	Width	[400.00]	[pixels ▼]
[419] pixels	Height	[300.00]	
72 pixels/in	Resolution	[72]	[pixels/in ▼]
	File Type	[PICT ▼]	
[Set Default]	File Size	468.8K	[Cancel] [OK]
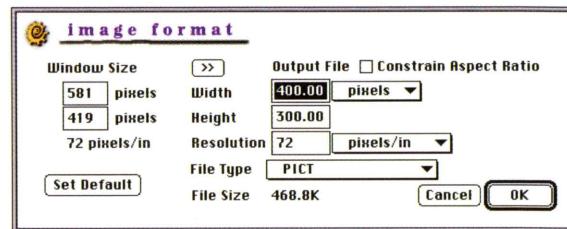
2. Check the Constrain box if you want to force the ratio of the width and height to remain the same. You can set either one and the other will be computed automatically to maintain the image's aspect ratio. When this is not checked, you can create an image of any rectangular shape.

3. To force the image to have the same dimensions and resolution as your on-screen project window, click on the ">>" button. This loads the Window

Size values into the Output File settings. Otherwise, type in a width and height for the image, and set the units with the pop-up menu.

Warning: It's easy to have different dimensions when you render to a file than the dimensions of your project window! If this happens either the sides or the top of your file's image may *seem* to have been cut off. Be sure the file's aspect ratio (shape) is the same as your window's. You can ensure this by first loading the window's dimensions into the file's by using the ">>" button, then checking the Constrain Aspect Ratio box. Now you can change either dimension for the file, and the other one will do the right thing.

4.   Type in a resolution, and set the units with the pop-up menu.

5.   Select a file format:

```
                    Tiff rgb
                    Tiff rgb (packed)
                    Tiff rgba
                    Tiff rgba (packed)
    File Type      √PICT
                    EPS
                    RIB
```
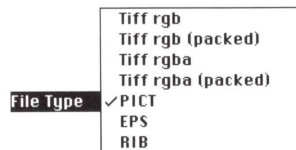
TIFF rgb. This is probably the most generally useful form of TIFF. No compression is used, and no alpha information is present (see TIFF rgba).

TIFF rgb (packed). This is the same as TIFF rgb, but is compressed using PackBits compression, saving disk space. Some software cannot handle compressed TIFF.

TIFF rgba. This is the same as TIFF rgb, but includes alpha information. Alpha information stores the coverage of the rendered picture, so that it may be used later as a foreground and composited seamlessly over a background.

TIFF rgba (packed). This is the same as TIFF rgba above, but packing is used to save disk space.

PICT. This creates a 32-bit RGBA PICT file. This format contains alpha information (commonly used to control transparency or masking in an image) in 8 of the 32 bits.

EPS. This creates a color Encapsulated PostScript (EPS) file. This format may not be readable by some non-color printers. If it is, it will simply appear in gray-scale.

RIB. Use this format to create a file you can import into Showplace or MacRenderMan.

6.   If you want the current settings to be the default settings, click on the Default button.

7.   Click on OK.

8.   Select Render to file... from the Render menu.

This brings up a save dialog allowing you to specify a name and location for the rendered file.

9. Type in a name and click on Save. This brings up the Render to file dialog.

```
🌀 render to file

Image Quality:  ○ Low  ○ Medium  ● High  ○ Custom

Image Format: TIFF, 280 н 210    pixels.

Shadows:        ● Compute Shadows
                ○ Render with old Shadows
                ○ Render without Shadows

                            [Cancel]  [ OK ]
```
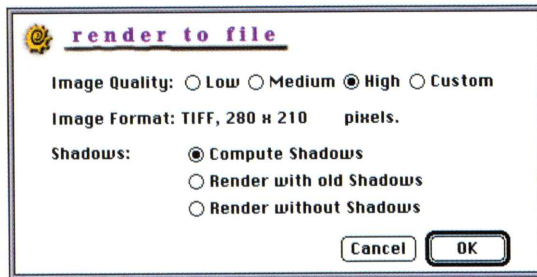
10. Select a rendering quality and shadow option (described earlier) and click on OK. If you're not using shadows, these options will be grayed out.

• You can use the Render Status box (select Show Render Status from the Windows menu) to monitor the rendering's progress. Any messages from the renderer will appear there as well.

Restricting the area to be rendered
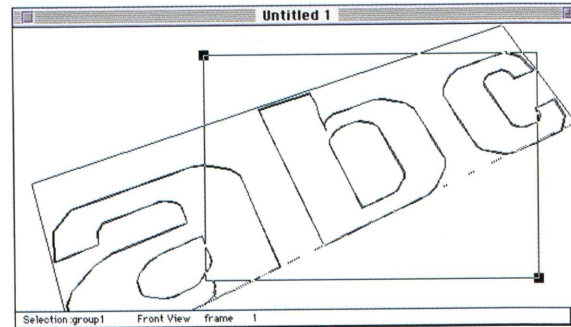
You don't always have to render the contents of the whole window. You can "crop out" areas you don't need to see by using a crop window; just the contents of the crop window will be rendered. That's what the Crop tool is for. See the section on "The Tools" in the *Manipulating Text* chapter for more on the Crop tool.

Customizing image quality

You can customize certain quality settings when you render. These settings appear in the Custom Quality dialog, which appears when you select Custom Quality from the Render menu. These settings control somewhat esoteric rendering "knobs;" you may get by quite well without ever using them at all.

custom quality

Pixel Samples	2	
Shading Rate	10.00	
Gamma	1.00	
Shading	○ Flat	
	● Smooth	
Memory Usage	○ Low	
	● Medium	
	○ High	
	○ El Gordo	

Hider Quality ○ Low
              ● High

☐ Binary Dicing

Load Values From:

[Excellent 'n' Slow]
[Reasonable]
[Quick 'n' Dirty]

[Cancel] [OK]
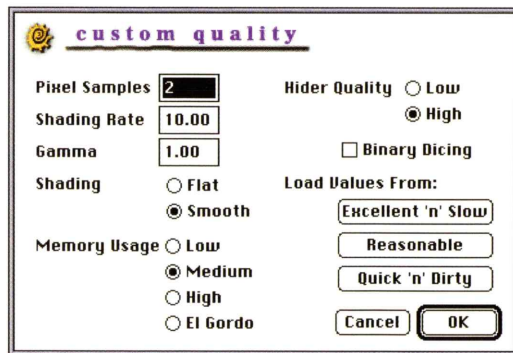
Pixel Samples controls the accuracy of a pixel's color. Higher numbers produce higher quality, but increases rendering time. You should never need to set this above 4.

Shading Rate controls the amount of detail you see. Numbers much below 1 can significantly increase rendering time; you'll probably never need to set this below .5.

Gamma controls essentially the contrast of an image. You can adjust this according to the final format in which the image will be displayed, whether that's a printed page or your monitor. On many monitors a gamma value of 1.0 (no gamma) will look dark; 1.8 might look more normal.

Shading controls how well small areas of the image are shaded. Smooth yields nicer results, and should be used for high quality images, but slightly increases rendering time and requires more memory.

Memory Usage controls what proportion of the program's memory to give the renderer. Complex images (e.g., ones with lots of letters, shadows, perforations, etc.) will probably render faster if you increase two memory settings. The first is this one. The second is the program's memory. If you can afford to do so, give the program as much memory as possible. To increase the program's memory, in the Finder select the Typestry icon and select Get Info from the Finder's File menu. Type a higher number in the "Current size" box, and close the window.

Hider Quality controls how well hidden surfaces are removed. High quality improves images at the expense of rendering time.

Binary Dicing controls how well joints between the pieces that make up the parts of the letters are handled. If you see what seem to be cracks in letters, try turning this on to eliminate them.

Load Values From sets the custom controls to the values used by the three normal quality settings. This is mainly for you to refer to when customizing your setting.

Manipulating TexT

Using the Grid

Use the grid to help you with aligning things in the project window. Select Toggle Grid from the Edit menu to turn the grid on and off. The dimensions of the grid are set in the Preferences dialog, available under the File menu. This is most profitably used in conjunction with the Telephoto setting, available in the Camera menu under Effects.
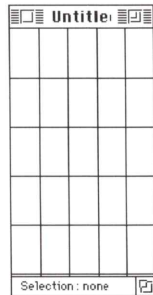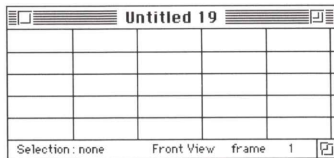
Note: The grid divides up the window itself, not the space in the window. This means that if you resize the window, the number of grid lines doesn't change — the grid resizes along with the window.

Use the toolbox to manipulate text in the project window. Click and drag on the text itself to manipulate it.

Selecting text

With any tool but the Text tool, double-clicking allows you to select objects at different levels (a grouped word, a letter, faces, etc.). Each double-click goes one level farther down. At the lowest level, double-clicking pops you back up to the top level.

At any level, a single click selects only other objects at that level: if you've selected a letter, single clicks will only select other letters, not the whole word. Click in an empty space to deselect everything. When you click again on text, you'll be at the highest level again.

In general, for extruded objects in Typestry there are three levels, or groupings, from which you can select. (Rubber Sheets have two, and Tubes have only one.) From highest level to lowest these are:

• The whole text object. When nothing is selected, clicking on a text object selects that object.

• One letter of the object (sides and faces together). When an object is selected, double-clicking on a letter selects just that letter.

• The faces of a letter (no sides). When a letter is selected, double-clicking on that letter selects just the letter's faces.

For more information on grouping and levels, see the chapter on *Group Therapy*.

Selecting hard-to-get text

You can select text in the project window that's obscured by other text, or otherwise hard to select:

1. If the Score window isn't showing, select Show Score from the Windows menu.

2. Find the object in the Score window on the left side and select it.

3. Hold down the Control key as you manipulate the object in the project window.

The Tools

Use the tools to manipulate text. Tools that have a square dot in the lower right have pull-aside menus with variants of that tool. Click and hold to display the menu.

The Text tool

Use the Text tool to get text into the project window and to import Adobe Illustrator files (see the chapter on *Getting Text In* for more on this). The tool on the right of the menu is for importing these.

The Move tool

Use the Move tool to move text around in the project window. You may see its perspective change as you move it.

Note: Holding the Shift key down while starting to move an object constrains its motion to the horizontal or vertical.

The Rotate tool

Use the Rotate tool to rotate text. This tool rotates the object as if it were enclosed in a sphere (the way a trackball works): side-to-side mouse motion spins the object around its vertical axis, forward-back motion spins it around the horizontal axis, etc.. If you'd like to use a rotation tool that constrains the rotation to one axis at a time, click and hold on the tool and a pull-aside menu will appear. You can pick the appropriate tool from there.

Note: If you get the text in a weird orientation that you can't get out of using Undo, use Reset Orientation from the Edit menu. This will get the selection straightened out and face-on.

Using the unconstrained rotation tool (and not the others in the pull-aside menu):

• Move the mouse to the right for east-to-west rotation (the right side of the text moves toward the back).

• Move the mouse away from you for south-to-

north rotation (the top of the text tips backwards).

• Holding down the Shift key *after* you've started to rotate text temporarily stops the rotation, allowing you to reposition the cursor. Let go of the Shift key to resume rotation.

With the Rotate tool selected, holding the Option key down while clicking on the text brings up this dialog:
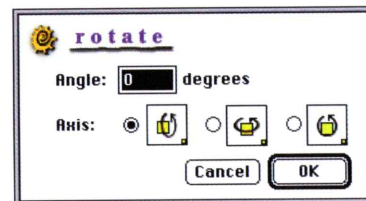
With this you can rotate a specified amount (from −360° to 360°) around any of the selection's three axes. The arrows in the dialog box show the direction of positive rotation.

The Scale tool

Use the Scale tool to resize text along one or more of its axes. This tool affects the text's width, height, and depth together. Use the pull-aside menu to get a tool that allows you to constrain the scale along one axis.
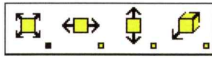
- Rightward mouse motion enlarges text, leftward shrinks it.

Holding down the Shift key while dragging constrains the resize to horizontal or vertical, depending on which direction you first move the mouse.

Holding down the Option key while clicking on the text brings up this dialog:
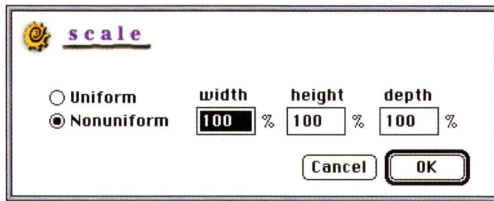
With this you can resize a selection in two ways:

- Uniform, which resizes an object as a whole.

- Nonuniform, which resizes width, height, and depth differently).

To use this, just select Uniform or Nonuniform, and enter a percentage by which to resize the selection.

Holding down the Option and Shift keys while dragging forces one dimension to grow while the other one shrinks by the same amount ("volume-preserv-ing" resize). This is useful in creating an object that looks "squashed and stretched," as a rubber ball does when it hits the floor.

Note: Changing some text's thickness will change the shape of a rounded bevel: thickening will tend to smooth it out, thinning will exaggerate it (see the images in section Getting Text In). You can restore an object's size to the size it was when you first created it using Reset Scale under the Edit menu.

Here are some examples of non-proportional scale:
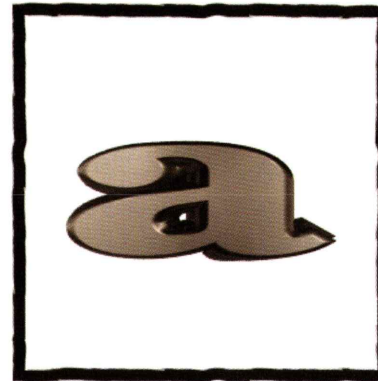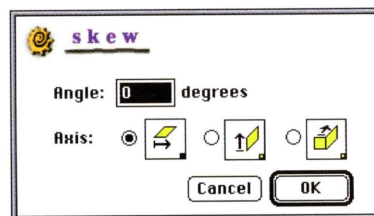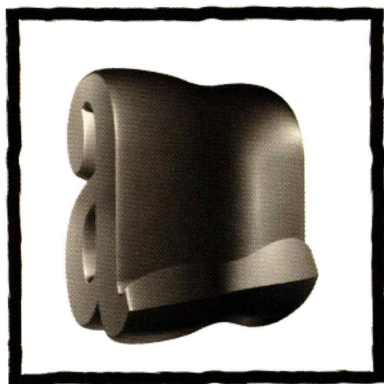
With this, you can skew a selection along any of its axes by any amount. To use this, just select an axis, and enter an angle by which to skew the selection.

The following images show the Skew tool being applied:
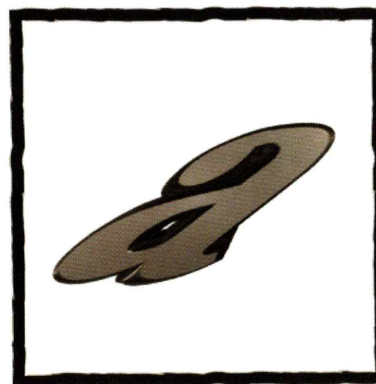
The Skew tool

Use the Skew tools to give text a slant along one of its axes. The pull-aside menu provides tools to skew along individual axes.
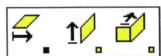
Holding down the Option key while clicking on an object brings up this dialog:
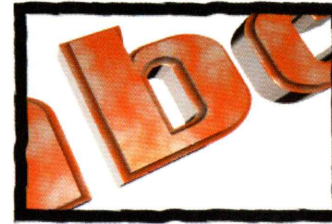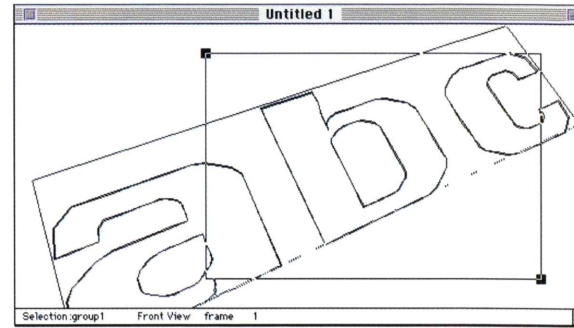
The Crop tool

 Use the Crop tool to restrict the area to be rendered: you don't always have to render the contents of the whole window. You can "crop out" areas you don't need to see by using this tool; just the contents of the crop window will be rendered. In the illustration at right, you only see the area within the crop box when you render.

To get rid of the crop window, just click somewhere else in the window.

With this tool selected, holding down the Option key and clicking in the project window brings up the Crop Window dialog.

render cropping

☒ **Active**

			Crop Mark Behavior
left	33	%	
right	92	%	⦿ Crop
top	10	%	○ Zoom
bottom	90	%	

[Cancel] [OK]
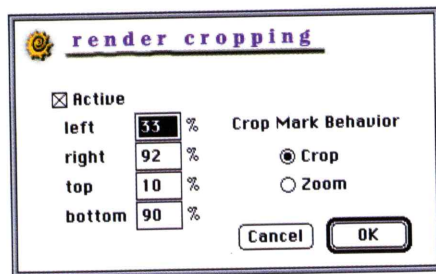
Here you can do three things:

• Make the crop window active or inactive.

• Determine numerically what area the window covers. Use percentages to specify where the edges of the window are. For example, values of 50, 100, 50, 100 specify an area that covers the bottom right quarter of the project window.

• Determine how the crop window should work.

The crop window works in two ways:

Crop. This the normal mode, where the partial image is rendered at the size of the crop window as you see it on your screen.

Zoom. The partial image is rendered "zoomed up:" the crop window is expanded proportionally so one of its dimensions matches the project window's. This is especially handy when you want to create an animation that has an object disappear from view. You

can have the object in your project window, and control the animation normally, but when it's outside the crop window it won't appear in the rendered frames with this option turned on.

• Click and drag the handles (in the upper left and lower right corners) to adjust the crop window.

• Click and drag anywhere inside the crop window to move it.

Only what's in the crop window will be rendered.

• To force the crop window to take the shape of the project window, hold the Shift key down while resizing the crop window. This is useful when used in conjunction with the Zoom setting: it allows you to create animations where objects enter the frame from one side.

Grouping

The *Group Therapy* chapter goes into some depth explaining grouping concepts. This section deals with the practical issues: how to group, what it's good for, etc.

Extruded text objects have a default grouping when you create them. Whatever characters you type in are automatically grouped into one object. Within this group, each letter is itself a group consisting of

two elements: 1) the front and back faces (which are a single object), and 2) the sides (also one object). Type in another text string and you have a new group. However, you can rearrange and regroup things quite simply.

If the Score window isn't already showing, select Show Score from the Windows menu. The left side of this window displays the groups' elements as if they were files and folders in the Finder. All "folders" are groups. And you can move things around just as you do in the Finder, by clicking and dragging. Use the grey bar at the left end of the "folder" as a handle for dragging. Drag an item into a different "folder" and the item and anything in it automatically becomes a member of that group. Additionally, you can change the order of things by dragging the elements or groups up or down. You'll see why this is useful in a moment.

When you click and drag an element (slowly) you'll see a purple cursor appear at the drag bar. This tells you where the element would end up if you were to release the mouse button. If you don't see the cursor, the element won't change places.
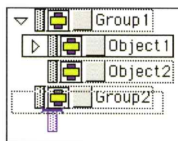
Why would you want to group things? Well, for four reasons.

- You can apply Looks to many objects at once.

- You can manipulate the position, orientation, scale, and skew of many things at once.

- You can perforate objects.

- You can gain incredible control over animations. You can read about this in the *Animation* chapter.

Groups and Looks

You can organize words and letters around Looks, if this serves your purpose. Applying a Look to a group makes it unnecessary to apply the Look to each of the group's elements. Additionally, once you have things positioned the way you want them you can regroup things into Look-based groups, putting pairs of letters together, for example, to apply Looks in groups of two.

Groups and the tools

If you've worked with any of the popular drawing programs, you're no stranger to grouping things to have one operation apply to many things at once. It's a simple idea. The Move, Rotate, Resize, and Skew tools operate on whatever's selected. If the

selection is a group that contains many objects, you can get a lot of work done at once. Use grouping to have an operation apply equally to multiple objects: when you resize a group, all its elements will have all three dimensions scaled exactly proportionally. When you rotate a group, some elements may end up *behind* others, which you can use as a tool to gain depth in a scene.

Creating a group

To create a new group:

1. Select Group from the Edit menu. This creates a new group. If an element was selected when you used the Group command, that element will be included in the new group.

2. If you wish, type in a name for the group by highlighting the name and typing in a new one.

To ungroup grouped elements:

1. Select the group you want to delete.

2. Select Ungroup from the Edit menu.

Warning: Don't use the Delete key to try to ungroup! This will delete the group and everything in it.

Perforating objects

You can get some quite interesting effects by combining objects in unusual ways. You can do various sorts of perforation, embossing, debossing, and overlapping. The all-too-familiar IBM logo is an easy effect to create. You're not limited to using a few shapes for these operations — you can use any object you can get into Typestry.

There are three basic steps. We'll lay them out here, and then explore them in detail in a tutorial:

1. Create one object that overlaps another. (An object can itself be a group.)

2. Group the objects.

3. Set the group's perforation (perf) mode.

The perf modes are available in a popup menu in the Score window. To display the menu, just click and hold on a group's perf icon, just to the right of the gray drag bar:
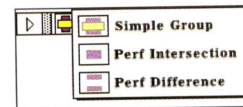
Once you've created a group in which two objects overlap, here's what you can do:

• Create a composite object from the two elements. This is the default behavior. The group's name will be preceded by the "Simple Group" icon, indicating that it's a simple group.
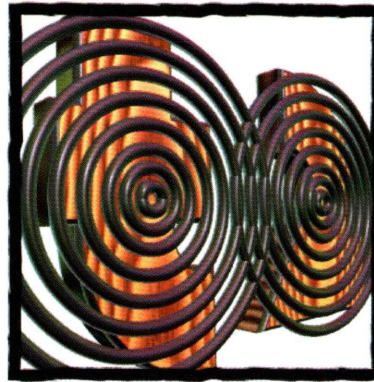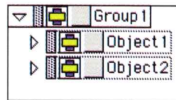
• Render only the overlapping areas. This is called an "intersection." For this effect, set the perf mode to Perfs Intersection. The group's name will be preceded by the Perfs Intersection icon (■).
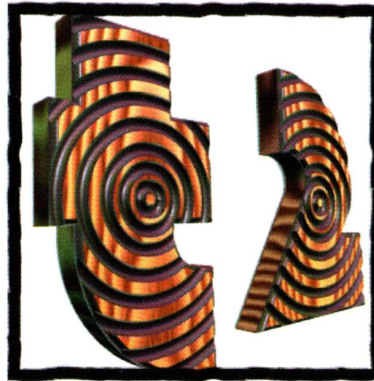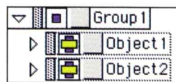
• Remove any overlapping areas. This is called a "difference." For this effect, set the perf mode to Perfs Difference. The group's name will be preceded by the Perfs Difference icon (▣). In the group you create to hold the objects, the second (lower) element in the group gets subtracted from the first (higher) element.
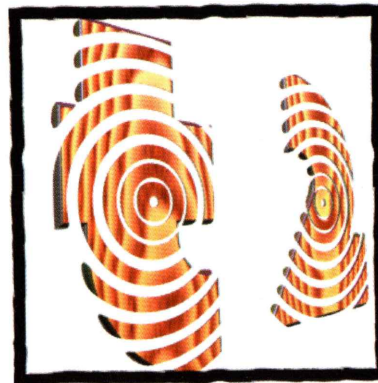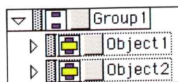
Warning: Using perforations increases rendering time. Using multiple characters for perforations can make a dramatic difference, slowing things down and increasing memory requirements significantly.

Perfs tutorial

Ok, let's try one. Let's make the N in the word "ONE" have the word "two" carved out of it. If your Score window isn't showing, bring it up now by selecting Show Score from the Windows menu.

1. In Typestry, type in the word "ONE" (all caps) in some fat font, as bold as possible. Use the Extrude Build Method, and any bevel you wish.

2. Type in the word "two" (in lower case) in a thinner font, also using Extrude, with any bevel.

3. Now you should have two words on your screen, something like this:
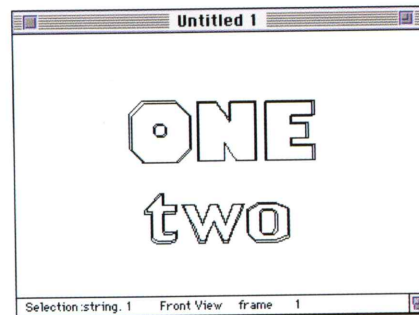
4. In the Score window, change "string. 1" to "ONE" by clicking on it (so it's highlighted), then typing. Change "string. 2" to "two."

5. In the project window, make the "ONE" big, and the "two" small: adjust the sizes of the words so the "two" is small enough to fit into the N in "ONE."

6. Place the "two" somewhere in the N:
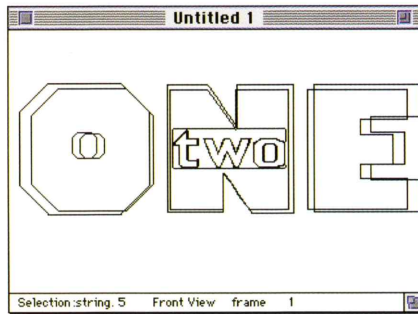
For the "two" to create a hole all the way through the N, it must stick out both the front and the back of the letter. If the front of the "two" is behind the front of the letter, all we'll see is the front of the letter, and not the hole inside where the "two" is. If it sticks out the front but not the back, it'll seem like the "two" doesn't poke all the way through.

7. So make the "two" thicker than the N. Be sure to use the Top and Left views, available under Camera in the Effects menu, to check that the "two" sticks out in front and back of the letter. (If you want, you can also use the Telephoto lens, available under Camera in the Effects menu to get rid of the perspective distortions. But don't forget to set this back to Normal when you're done.)

• If you're having trouble selecting the right object to scale, select it in the Score window, hold down the Control key, then click and drag in the project window.

Now for the subtraction.

• Remember, within a group the first element is the one subtracted from. All the other elements get subtracted from the first.

So we're going to have to group things carefully to get the effect we want: "two" subtracted from the N. To be safe, let's make a group that includes only the letter and the "two." It doesn't matter if this group is inside another group, or at some other level. The subtraction will apply only within the group we create. Just for practice, let's make the group at the level of the letters in "ONE."

8. We'll need to see the contents of the ONE string, so in the Score window click on the triangle to the left of the ONE string. Now you should see ONE's elements (the individual letters).

9. Select the N; then select Group from the Edit

menu. Now there's a group that has just the N in it.

Now let's add the "two" to the new group:

10. In the Score window select the "two" and drag it (by its gray bar) into the group. The purple cursor should be directly below the N's drag bar. Your Score should look something like this:

```
▽ 🟨 ONE
  ▷ 🔶 char O. 5
  ▽ 🟨 Group1
    ▷ 🔶 char N. 6
    ▷ 🟨 two
  ▷ 🔶 char E. 7
```
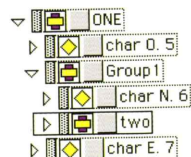
11. Now all you have to do is change the perf mode of the group holding the N and the "two:" click and hold on the group's perf icon, and select Perfs Difference in the popup menu.

Now you can render. Be forewarned though, perforations do increase rendering time, so just use the Reasonable rendering setting for this session, unless you can afford to use Excellent 'n' Slow.

• Don't forget, you're not restricted to using *letters* for doing perforations. You can use any character at all — characters in the PixarPerfs font (see below), characters in a dingbats font (e.g., Zapf Dingbats), or shapes in imported Adobe Illustrator files. (For more on importing Illustrator files see the section on "Importing Illustrator files" in the *Getting Text In*

chapter.) If one of the font creation packages are up your alley, you can make shapes in them, too.

The PixarPerfs font

We used Fontographer to build a font with special characters just for perforating objects (though you might also use some of them to add interest to your image). You really should try some of these, now that you know how to do perforations — they're much more fun than letters!

You should have installed this font in your system at the time you installed Typestry. The character set appears at the end of this manual. Alternatively, you can use the Key Caps desk accessory to view all the characters. These are just a small sample of the kinds of shapes you might want to use to get away from your basic "image with letters in it."
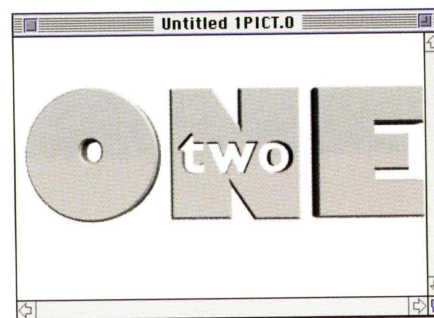
Image: Joy Folla

Fonts: Novarese Ultra, Gill Sans

Build Methods: Extrude; colored angled bevel for T, custom (flat) for Pixar...

Effects: Wall

Looks: Picture as Background with Pixar 128 White Oak; ECGems Dented Jewel, light blue, 5% scale; Matte, light blue

Lights: #2 65% spotlight, #8 100% spotlight with shadow, Ambient 20%

"Pixar Typestry" was typed on a line in Illustrator and imported

adding lighTs

Light types

Use the Lights toolbox to adjust the lighting.

To add or adjust lights, select Show Lights from the Windows menu. This displays the Lights toolbox.
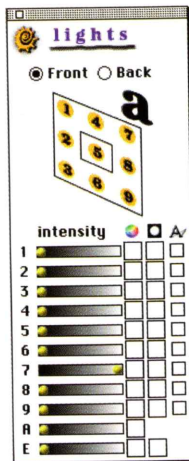
For the numbered lights you can change the look of the light to three things. These are called *Looks*:

Distant lights. This is the default — Typestry uses distant lights unless you choose some other light Look from the Browser. Light from a distant light source has a direction but no specific point of origin. This is like light emitted from a distant body such as the sun, where all the light rays are parallel throughout the scene (see the illustration at bottom).
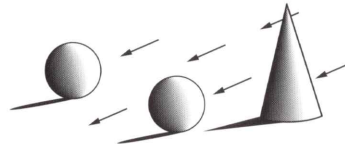
Spotlights. Light from a spotlight Look casts a cone of light from a specific location in a specific direction. Only surfaces that fall within the cone are illuminated. Some spotlights are "built" with stuff across their faces: slats (creating effects like window panes or blinds), hunks of gauze, and so on.
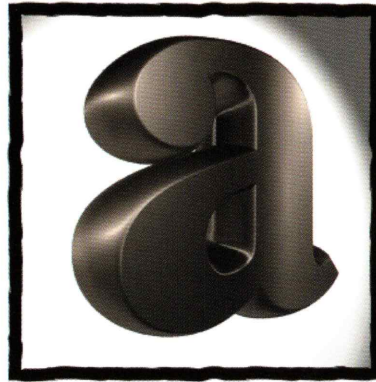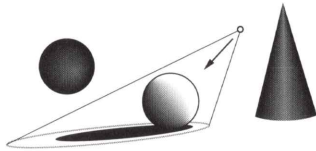
Slide projectors. These are like spotlights, but they cast an image (provided by you) onto objects. Apart from casting an image, these differ from spotlights in the shape of the lit area, which must be rectangular, since your image is rectangular. (Of course, with real slide projectors it's the slide's rectangular frame that shapes the lit area.) Since you can use your own image in the Look, you can create interesting variations of the Spotlights, for example. For more on getting your image into a Look see the section on "Getting a picture into an Instance" in the *Editing Looks* chapter.
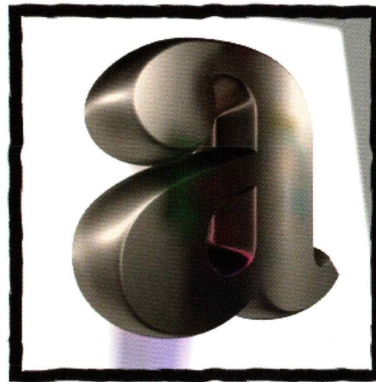
TV Screen. The TV Screen Look is special. This allows you to use your own image to put on something like a TV screen at the light's location. This shining "screen" will be reflected by any objects in the scene that are shiny enough to be reflective. Like a real TV screen, it shines light, but only at a relatively low intensity. Of course, images you use don't have to be exactly the same shape as a TV screen, they can be any rectangular shape. In fact, by having an image repeat endlessly, you can create a screen that's infinitely big, as in the picture below.
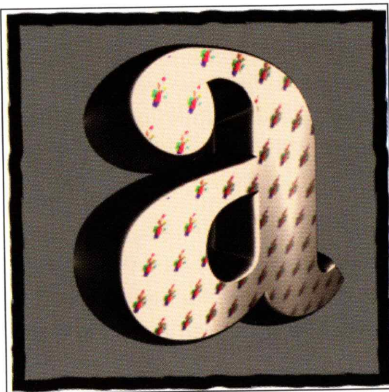
Using the Lights window

The illustration on the toolbox indicates the positions of the lights relative to the text.
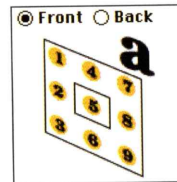
This is representative of a bank of lights in front of your monitor, pointing into the middle of the monitor, illuminating the text:
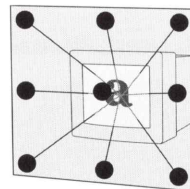
Note: Turning on too many lights can really wash out an image. One or two lights will often be sufficient!

The "A" (for Ambient) light near the bottom of the Lights window is a "global" light. It's as if its light comes from everywhere, as if there were an enormous sphere around the scene casting light from everywhere on its surface.

Note: Too much ambient light tends to "wash out" an image.
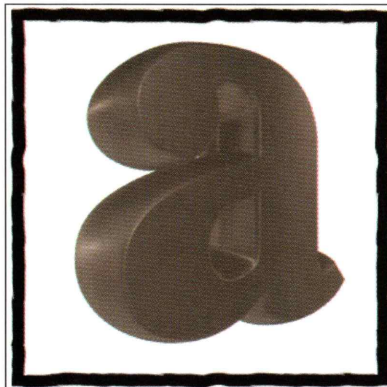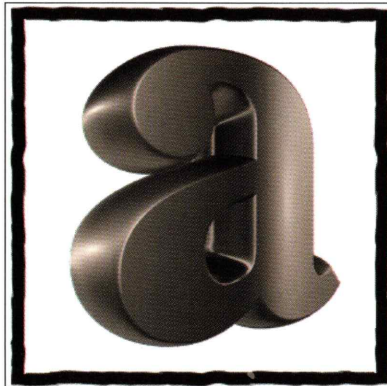
The "E" (for Environment) slider at the bottom of the window is used for reflections. These reflections will appear on all objects in the scene that are shiny enough to reflect. Clicking on the right-most box allows you to select a Reflection Look. By selecting the Use Your Picture Look in the *Environments* folder you can supply your own image to be used as a reflection. For more on using reflection pictures, see the section on "Reflection issues" in the *Editing Looks* chaper.

• Note: When you use the E slider, unless you turn off a Look's simulated reflection you'll get two reflections: the simulated one and the E one. These can add together to form an interesting reflection. However, if you'd like to turn off the Look's simulated reflections see the section on this at the end of this chapter.

Use the sliders to control the lights' intensity: all the way to the left effectively turns the light off (zero intensity), all the way to the right is "full" intensity. For the E light, the slider controls the intensity of the reflection.
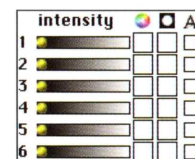
The boxes allow you to set a light's color, Look, and shadow-casting ability (see below).

Note: Some Looks ignore all light settings (e.g., Sky or Constant). Also, some Looks respond differently to light intensity: settings that work for one Look may be too bright for another. This means there's no magic formula for lighting that will work for every picture — you'll have to play with the lights to get things the way you want them. However, the default settings will produce a reasonable image.

Select front or back lights using the buttons at the top of the toolbox.
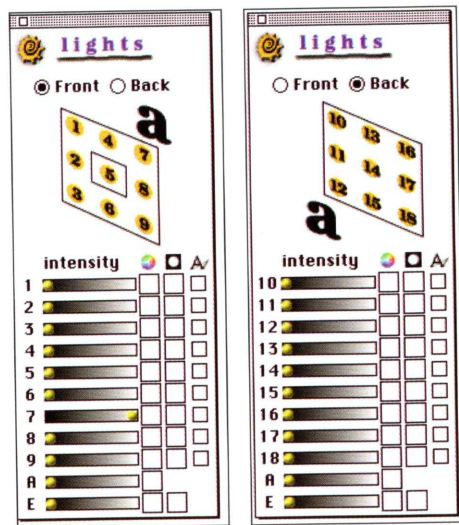
To set a light's color, click in the first box to the right of the light. This brings up the color picker. Click on the color you want, then on OK.

Click on the middle box to set the look of the light. This brings up the Browser, allowing you to select a Light Look. The default installation puts light Looks in the *Lights* folder in *Pixar Applications:Look Instances:Starter*. Clicking and holding on the box displays a popup menu:
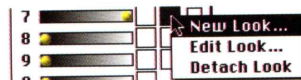
New Look. Selecting this brings up the Browser, allowing you to select a light Look.

Edit Look. Selecting this brings up the Looks Editor, allowing you to edit the Look's parameters. See the chapter on *Editing Looks* for more on this.

Detach Look. Selecting this removes the light's Look. The light will revert back to the default distant light.

Click on the third box to enable the light to cast shadows behind the objects. (Shadows increase rendering time.) Shadows cast by any light that's not a distant light will tend to spread out somewhat.

Note: In Typestry, shadow casting is a characteristic of a light, rather than of an object.
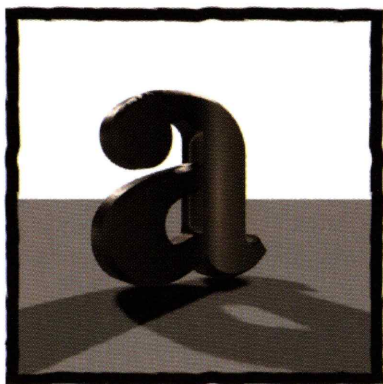
When using shadows, there are times when the shadows may need to be recomputed. When you render you will be prompted to allow this "prerendering." Shadows need recomputing when

• you have just checked Cast Shadows for one or more lights; or

• if you move, rotate, resize, or extrude a shadow-casting object (the shape or location of the shadow may change).

To force shadows to be recomputed, just move an object and Undo the move. When you render, you'll be prompted to Compute Shadows.

See the chapter on *Making a picture* for more information on rendering with shadows.

Special lighting features

Clicking on the diagram of the lights in the lights toolbox changes the diagram and allows you to adjust a light's position, orientation, and spread:
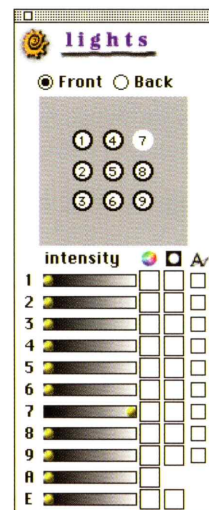
To move a light, just click and drag it. The light will remain pointed at the center of the image.

• To reset all lights to their default positions and settings, select Reset Lights from the Edit menu. This deletes any settings in the Light Info dialog, as well as lights' positions in poses where they are set!

Holding down the Option key while clicking on a light brings up this dialog:

If the light uses a spotlight Look, you'll see this dialog:

Use the Spot Cone Angle slider to narrow or widen a spotlight's cone of light:

View from Light

Spot Cone Angle
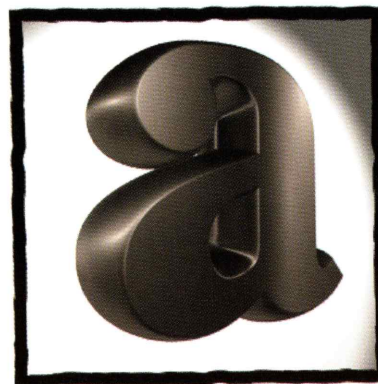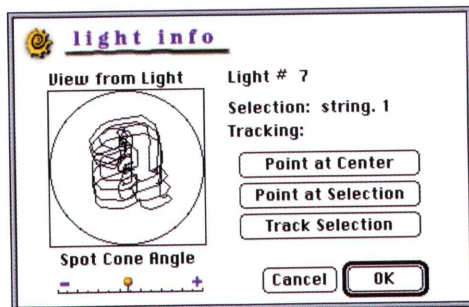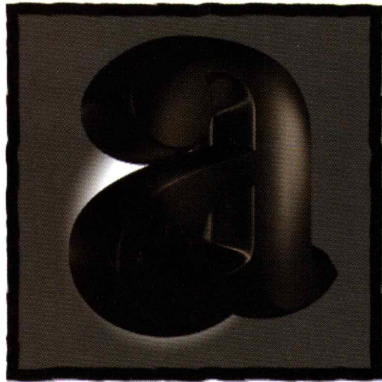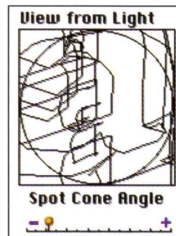
Point at Center

By default, a light points at the center of an image. If you have changed this, click on the top button to have the light point at the center again.

Point at Selection

Use the middle button to make the light point at the center of the selected object. You may need to group objects to get the light to point at the center of the group. You can also use this feature to train a light on an invisible object; this way you can point the light in an (almost) arbitrary direction. To do this, just turn the object's opacity all the way down; this makes the object invisible (and it won't cast a shadow either).

Track Selection

Use the bottom button to make the light track (follow) the selected object during an animation. You can also use this feature to have a light track an invisible object, so it looks like the light is moving independent of the objects in the scene. To do this, just turn the object's opacity all the way down.

Turning off simulated reflections

If you're using the E light to create reflections, you may want to turn off any simulated reflections. This is not a light operation, but rather a Look operation. To do this:

1. Select the object that has the Look you want to change.

2. In the Looks window, click on the Edit Look button. Or, in the Score window, click and hold on the object's Look icon and select Edit Look. This brings up the Edit Look dialog.

3. Look for the Reflection Type parameter and set it to None. This will turn off the simulated reflection, allowing the Look to use anything provided by the E light.

4. Save the Look.

Don't forget, if you used Save As to save your Look you'll have to apply the new Look you just created to any other objects that used the Look you changed. If you need to know how to apply a Look, see the chapter on *Applying Looks*.
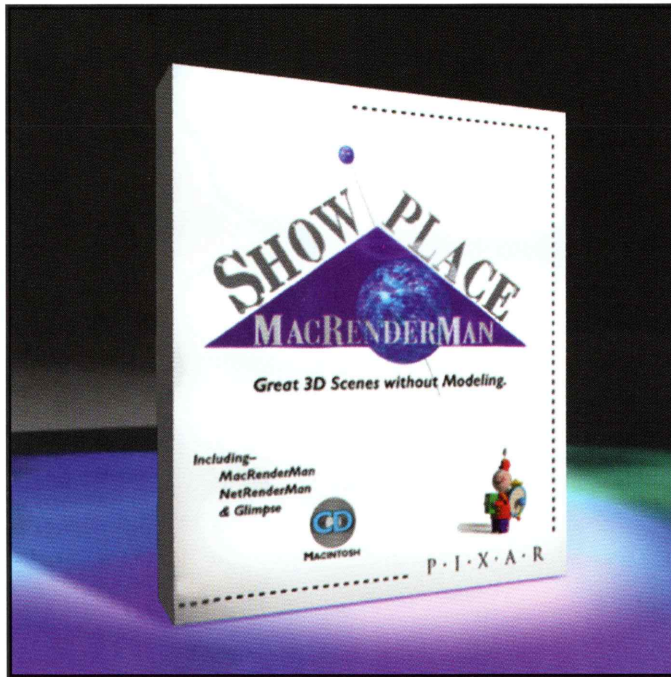
Image created with Pixar Typestry. Pixar Showplace is available for the Macintosh in disk or CD version.

Pixar Showplace is Pixar's powerful 3D scene composition software. With it you can create realistic 3D scenes on your Macintosh without modeling. With Pixar Showplace you simply select and import objects from a library of over 130 pre-designed ClipObjects, or you can import your DXF, Adobe Illustrator or RIB files. Pixar Showplace also features some amazing Plug-ins for creating editable models. Once you've select and placed your objects, cover them with any number of striking Looks. Then, set your Lights and view your image from any angle. Pixar Showplace includes: Photorealistic MacRenderMan, Glimpse, and NetRenderMan.

PIXAR SHOWPLACE
CREATE GREAT 3D SCENES WITHOUT MODELING

applying looks

Applying a Look

What's a Look, and why would you want to apply one? Well, in the real world we refer to the look of a material, or the look of the light, meaning the characteristics peculiar to the material, or light. Pixar Looks mimic these characteristics. When you want an object to be metallic, or rough, or red, you apply the appropriate Look.

To apply a Look to some text, or a wall or floor:

1. If you're applying a Look to some text, select the text object by clicking on it in the project window.

2. Select Show Looks from the Windows menu or click on the Looks window if it's already showing.

3. Select the radio button for the appropriate item: your text, the text's sides, the wall, or the floor.

4. Click on the New Look button. This brings up the Browser.

5. Use the dialog to find a Look; click on the Look to highlight it. An example of the Look will appear in the box in the upper left.

6. Click on the Select button. You'll see the selected Look appear in the Looks window.

7. If you don't need to adjust the Look, you're done: the Look will appear on the selection the next time you render.

You can also apply a Look to text (not the wall or floor) from within the Score window. With the Score window showing:
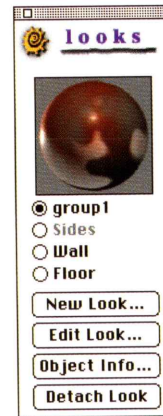
1. Click on the gray button just to the left of the name of the object you want to change, or click and hold, and select New Look from the popup menu that appears. (If a Look is already applied, this button will have a miniature icon of the Look on it.) This brings up the Browser.
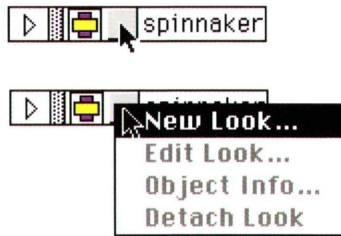
Then follow steps 5–7 above.

To adjust a Look, see the section on this below.

Copying a Look

To copy a Look from one object to another, you should be in the Score window. Here, you can just drag the little Look icon from one's Look field to the other's.

Using the Browser ("select a look" dialog)

Using the Browser, you can build up a palette of Looks to use in your projects. This palette will be available each time you open Typestry.

Click on a Look in the file name list to display it in the Look Example window.
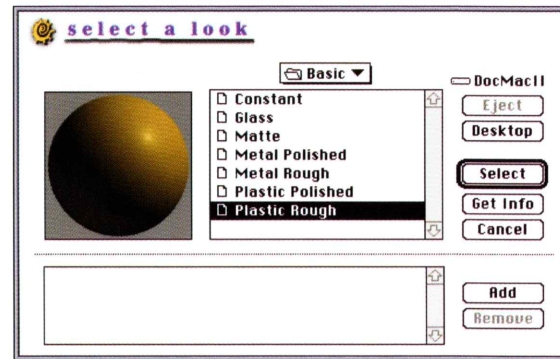
Click on the Add button to add a Look displayed in the Look Example window to the Look palette at the bottom. (Or just click and drag from the window to the palette.)

Click on the Remove button to remove a Look from the palette.

Clicking on a Look in the Palette displays it in the Look Example window.

The Look displayed in the Look Example window will be applied to the selected object (text, wall, or floor) when you click on the Select button.

Be sure to use the palette to save time. You can click and drag any example image into the palette. The next time you open the Browser, clicking on the image in the palette automatically takes you to the folder that contains the item and makes it available for selecting. If you have some favorite Looks that you use a lot, drag them into the palette. This way you won't have to search around your folders to get to the right one.
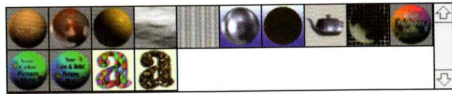
Another thing you can do is to put into the palette Looks from many different folders. To get to a particular folder, just click on the palette image of the Look that's in that folder. (Of course, you'll have to remember what Look is in which folder, but hey, we can't do everything for you!)

Use the Get Info button to get the lowdown on a Look. You can get interesting and important tidbits from these descriptions. Check them out.

Adjusting a Look

You can adjust a Look on a selection in two ways.

•   Clicking on the Edit Look button brings up the Look Editor. See the chapter on *Editing Looks* for details on using this. The Look Editor allows you to change almost everything about a Look that you might want to.

•   The other way to adjust the Look is to use the Object Info dialog (the effect of the adjustments will only appear when rendered). This contains the most commonly-used controls.

To use the Object Info controls:

1.   With an object selected, bring up the Object Info dialog by clicking on the Object Info button in the Looks window, or by selecting the Object Info menu item available by clicking on the object's Look icon in the Score window.

2.   If the Look allows you to set a color (you'll know because the Color Override box won't be grayed out), click on the Color box to pick a color from the color picker.

•   Warning: The Color Override control overrides whatever is the *first* color parameter in the Look Editor. So for Black Marble, for example, it would override the Veins color, not the Base Rock color.

3. Type a scale factor in the Scale box. 200% doubles the size of a Look's features; 50% makes them half as big.

object info

Object	Bobject
Look	White and Blue
Color Override	☐
Opacity Override	
Look Scale	100 %

☐ Scale Look with Object

Projection

Planar Z ▼

90° Rotate
Horizontal Flip
Vertical Flip

UP↑

Cancel   OK
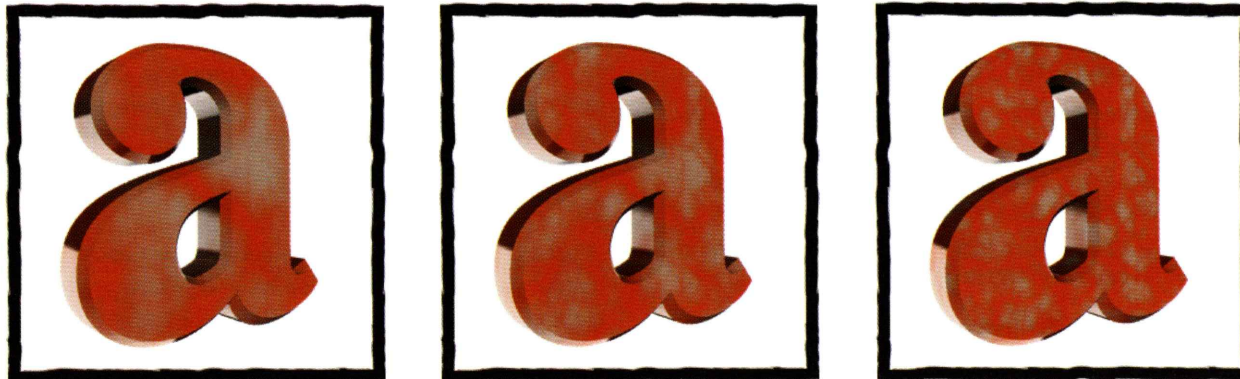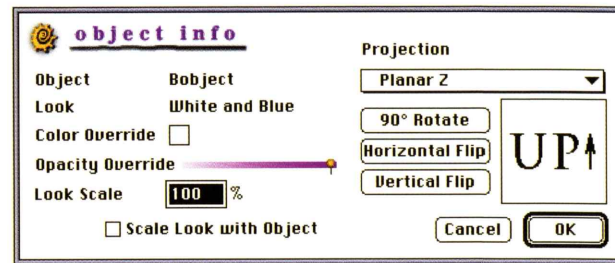
4. Set the opacity with the Opacity Override slider. The effect of this control will vary depending on the Look (e.g., a transparent glass Look will never be completely opaque).

Opacity determines how much a surface "exists." Don't get this confused with Transparency! An invisible object may as well not exist — it has no effect on light, and light has no effect on it. A transparent object can still color the light passing through it, and can still reflect, to a greater or lesser degree.

Note: The effects of the Opacity setting are best seen against a background other than black. A textured background (a wall with something other than a plain Look on it) works best.
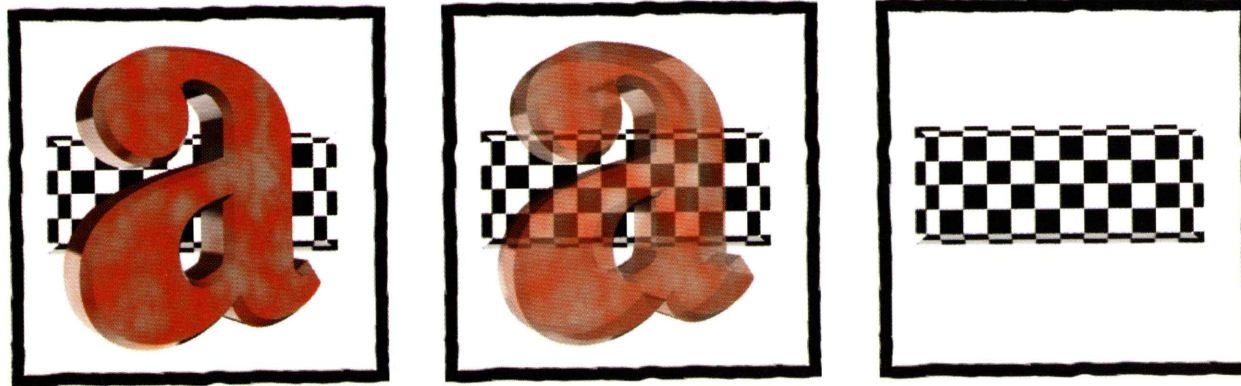
5. Set the orientation of the Look using the 90°
Rotate, Flip Vertically, and Flip Horizontally buttons.
If these controls are not supported by the Look,
they'll be grayed out.
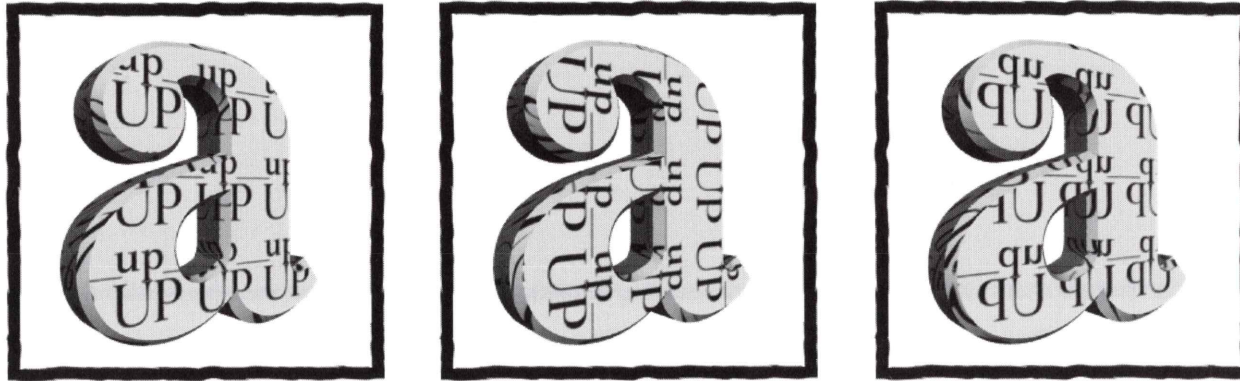
6. Click on Scale Look with object to have the
Look change size in proportion to the object. The
effect of this control will vary depending on the
Look.

7. Set the Projection. A description of these fol-
lows. If Projections are not supported by the Look,
this will be grayed out.

8. Click on OK to confirm the settings.

• Note: In the Object Info dialog, changing the
Color Override or Opacity Override controls does-
n't change any settings in the Look. This is so you
don't have to save a new Instance of a Look every
time you want to see it with a new color or opacity.
We made them available in the Object Info dialog
because they may be among the controls you use
the most. If you want to save these settings with the
Look you must make the same changes to the
Look's Color and Opacity parameters.

Projections

Some Looks are really only the raw material for giving a surface a certain appearance. What actually gets such a Look onto a surface is a projection. You could think of a projection as a "sheet" through which light shines onto the object, as a slide projector shines light through a slide and onto a screen. Many Looks are designed to start out as one of these sheets. A sheet can be flat, or it can be wrapped around into a cylinder or sphere that encloses part or all of an object.

There are nine types of projections supported by Typestry in the Object Info dialog:

```
Projection
✓AutoPlanar
 Planar Z
 Box
 Box Spherical
 Spherical Shrinkwrap
 Spherical Wallpaper
 Cylindrical Shrinkwrap
 Cylindrical Wallpaper
 Natural (st)
```

Generally speaking, you should see how the default setting (Planar Z) works on your object. Then, if you'd like to try an alternative, use:

- For Extrusions, try Box

- For Tubes, try Natural.

- For Rubber Sheets, use the chart below.

a	**Planar Z**
a	**Planar Z**
ɑ	**Planar Z**
a	**Spherical Shrinkwrap**
a	**Cylindrical Shrinkwrap**
a	**Planar Z**

Ultimately, which of the projections you should select depends on the shape of the surface and the effect you are trying to create.

You should be able to get good results using the rules of thumb outlined above. But if you're interested in more detailed, more technical descriptions of the projections, read on.

Five of the projections use "sheets" that start out as spheres or cylinders. One unavoidable aspect of using any kind of cylindrical or spherical projection is seams. Obviously, when you wrap a sheet into a

cylinder you'll get one seam; and as you might imagine, wrapping a sheet into a sphere is trickier. A projection's behavior at seams is especially important if you want an image you're using in a Look to tile seamlessly. However, as in so many other things, there's a tradeoff involved. For spherical and cylindrical objects, there's always going to be some distortion somewhere, and you have to choose where.

Take a sphere, for example. While things can match perfectly at a seam running north–south, they would have to be distorted toward the sphere's poles. For things to look better at the poles, there will be distortion at the seam. So you should experiment with the various cylindrical and spherical projections to find the one that matches your needs most closely. When you do this, start with Box Spherical — this produces a pretty good compromise between the two extremes.

In the accompanying illustrations below, the following image is used for all the projections:
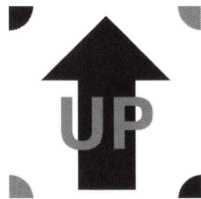
AutoPlanar

The Autoplanar projection treats the Look as a flat sheet that gets "pressed onto" every face of a surface. Suppose you want to apply a Look to a pyramid. Using this projection the Look would be applied individually to each of the pyramid's faces, based on the face's orientation.

However, in exchange for the generality of this projection, you sacrifice control over individual faces. Autoplanar projections can produce unexpected (but entertaining) effects when used on curved surfaces like bevels.
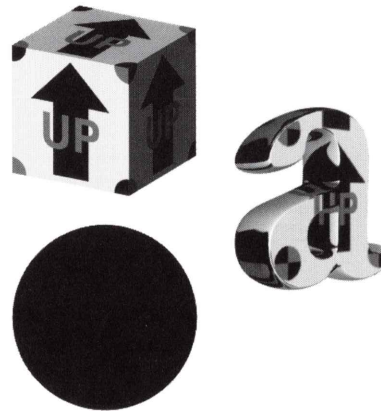
Planar Z

The Planar Z projection treats the Look as a flat sheet: a "slide" if you will, to be projected onto a surface's front. Another way of visualizing the effect on the object is this: if you imagine that the Look is a sheet of paint, using this projection is like pushing the object through the sheet. The top, bottom, and sides get "smeared," and the back face has the image reversed. Using the planar projection on an object whose shape is decidedly not flat (a sphere, for example) can produce unexpected (but entertaining) effects.
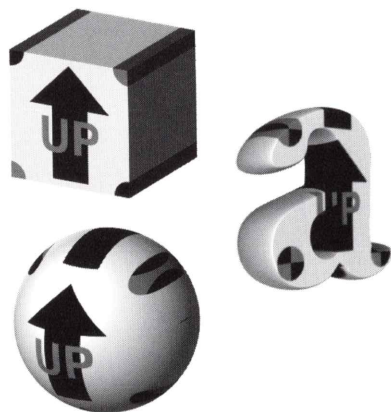
Box

This applies a Look from six directions, as if there were a large box around the object with a projector pointing inward attached to each side. The difference between this and Autoplanar is that Autoplanar applies a projection from as many directions as there are faces, instead of just six directions.
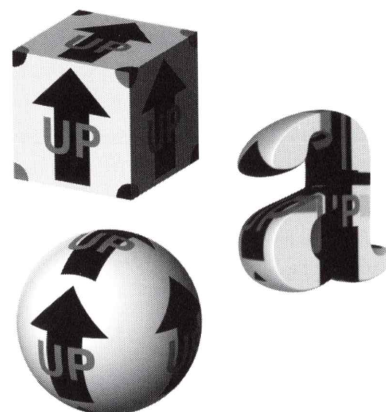
Box Spherical

Imagine a sphere with six copies of a texture on it, each texture occupying a sixth of the sphere. This then gets projected onto the surface. The size of the sphere is based on the largest dimension of the surface's bounding box. This dimension becomes the diameter of the sphere.

There are 12 seams, where the six copies of the texture abut each other. On spheroidal objects there will be some distortion at the seams, but in general this is noticable mostly when there are straight lines in the Look. This projection allows seamlessly tiling textures to match at the seams, and for spheroidal objects you should try using this first.
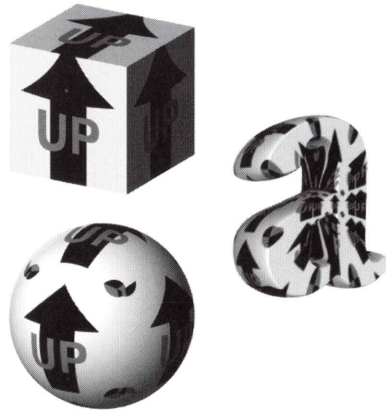
Spherical Shrinkwrap

This projection applies a Look as if it were a spherical sheet that got "shrink-wrapped" onto the object. It covers objects equally from all directions. The size of the sphere is based on the largest dimension of the surface's bounding box. This dimension becomes the diameter of the sphere.

There is one seam, at the back of the sphere. While there is no distortion at the seam, there is distortion toward the "poles." Using this projection on an object whose shape isn't really spherical can create unusual results.

This projection allows seamlessly tiling textures to match at the seams.
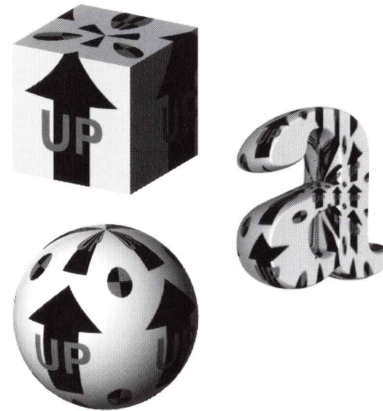
Spherical Wallpaper

This applies a texture as if it were a sheet of paper you were trying to wrap spherically around the object. Let's say there were small bricks on this paper. The bricks would be the same size all over the object, but you couldn't count on things matching up at the seam, and you'd have to cut some of the paper off to make it fit. This points up the difference between this projection and the Spherical Shrinkwrap projection. With that, the bricks' size would vary across the surface, but they would match at the seam, and the whole texture would be present. However, with Spherical Wallpaper the poles should look OK if the view is more or less toward the equator.

The projection sphere is oriented so that you see the object's front through the front of the sphere. The size of the sphere is based on the largest dimension of the surface's bounding box. This dimension becomes the diameter of the sphere.

There is one seam, at the back of the sphere. The farther you go from the seam, the less the distortion.
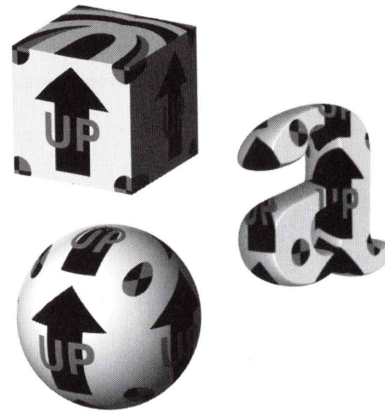
Cylindrical Shrinkwrap

This shrink-wraps a Look in the shape of a cylinder onto an object. As you would expect, the sides get covered equally, but the top and bottom get the very top of the Look smeared across them.

The cylinder is oriented so that you see the object's front through the front of the cylinder. The larger of the width and depth dimensions of the surface's bounding box determines the size of the cylinder on which the Look is wrapped.

There is one seam, at the back of the cylinder. While there is no distortion at the seam, there can

be distortion elsewhere on anything but a perfect cylinder.

This projection allows seamlessly tiling textures to match at the seams.
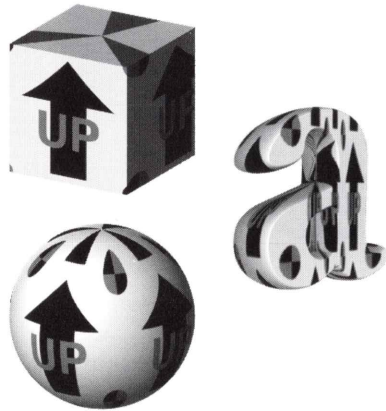
This is like the Spherical Wallpaper projection, but the top of the texture is left "open" when wrapped around the object, creating a cylindrical shape. And here again, areas of the texture are kept constant at the expense of things matching up at the seam. Use this on objects that are taller than they are wide.

The cylinder is oriented so that you see the object's front through the front of the cylinder. The larger of the width and depth dimensions of the surface's bounding box determines the size of the cylinder on which the Look is wrapped.

There is one seam, at the back of the cylinder. The farther you go from the seam, the less the distortion.
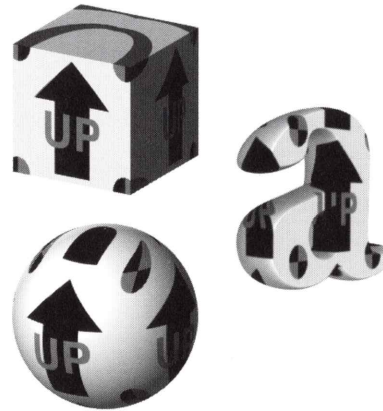
Natural (st)

The shape of this projection is tailor-made to work as well as possible for the object. For example, with the natural projection of an "s," a Look would be applied almost as if the projector itself were in the shape of an "s." The Look would be "custom fit" to the object.

When you use the natural projection to apply a Look with a texture map made in the Look Editor, the map gets scaled automatically so that its width matches that of the surface to which it is being applied.

Since a texture map gets scaled so that it has the same width as the surface it goes on, its height may not match that of the surface (the choice here is between losing part of the image and distorting it to fit, and we chose the former). The aspect ratio of the map is always preserved. If you were to apply the example image to a patch that had a shape different from that of the texture map, you would still see the full horizontal extent of the map, though

perhaps not the vertical extent. If the patch's aspect ratio were greater than the map's, the top and bottom of the map would be cut off. If the patch's aspect ratio were smaller than the map's there would be extra space above and below the map. The illustration below shows the situation.
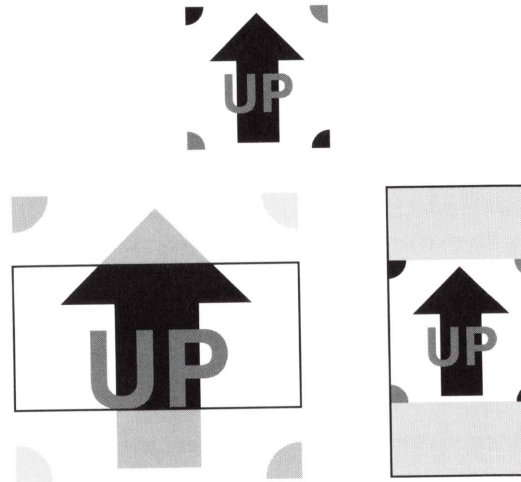
Transporting Looks

There may be times when you need to take Looks to another machine for rendering an image, much as you would take fonts to a service bureau for printing

a document. When you do this, you'll need to be aware of a few things.

• If you're using only the standard Looks that come with Typestry *and you haven't used the Look Editor on any of them*, you'll be fine — just take your project file.

• If you're using other Looks, or Instances you've made with the Look Editor you'll need to take some extra stuff. Read on...

There are actually two parts to a Look: the Master and the Instance. You should already know the location of the Instances you used in a project file because that's what you found when you selected your Looks with the Browser.

But how do you know what Masters you're using? Here's how. For each Look you use, do the following:

1. Bring up the Browser and select the Look.

2. In the Browser, click on Get Info. This brings up an info window with a pull-down menu at the top with the Look name showing.

3. Click on the menu. The name below the Look name is the master. Write this down and put the Browser away.

When you have your list of Masters you'll have to go find them. The default installation put them in your *System Folder* in *Pixar Stuff:Look Masters*. Look for them in the logical subfolders there.

If you put the Masters somewhere else, you probably already know where they are. If you've forgotten, you can always use the Find command in the Finder.

Now you should have all your Instances and all your Masters. When you get to the other machine, where do you put them? If you put them just anywhere, Typestry might not be able to find them. But there are a few rules you can follow to guarantee that they'll be found.

You can put Instances in three places:

• the folder containing the project file;

• a *Look Instances* folder structure identical to the one on your machine; but in this case, the *Look Instances* folder must be in the same folder that contains Typestry;

• the place specified in the Pixar Preferences file (in the *System Folder:Preferences* folder) on the line beginning "/General/LookInstancePath." You can open this file with any text editor. Instructions on what to do there are already in the file itself.

The Masters must go in a specific place. This location is specified in the Pixar Preferences file mentioned above. Look for a line beginning "/General/LooksMasterPath." The rest of that line tells you where Typestry looks for the Masters.

applying looks
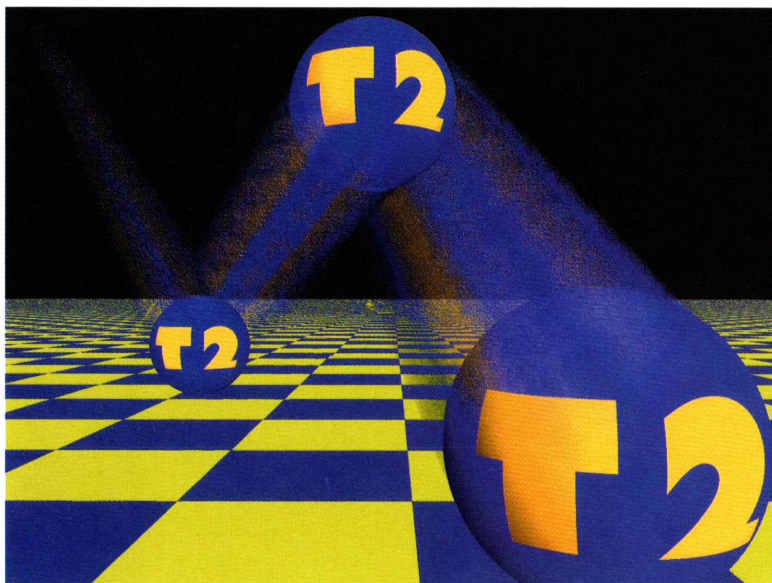
Image: Joy Folla

Font: Gill Sans Ultra Bold

Build Method: Rubber Sheet, sphere Style, solid letters and background Textiling

Looks: Matte, yellow; Matte, blue; Checkerboard Instance with yellow and blue

Effects: Motion Blur

Lights: #5 50%, #7 100%, Ambient 20%

Ball scaled and moved in 3 frames. Rendered all 3 frames; composited in Photoshop.

eDiTing Looks

Ever wish you could change things like the swirl in the grain of your Oak Look, or the brightness of your Sky, or the color of your Marble's veins? That's why we provided a Look editor. This allows you to save customized variations of your favorite Looks, called *Instances*. Let's make one now.

Make a new Look variation now!

1. In Typestry, get some text in the project window and apply the Black Marble Look to it. Black Marble is in the folder sequence *Pixar Applications:Look Instances:Starter:Materials:Stone:Marble*.

2. Click on the Edit Look button in the Looks window. The Look Editor dialog will appear.

3. Click on the black Veins color swatch. This brings up the Color Picker.

4. Select a color to replace the black marble veins and click on OK. (Very very dark green could be nice…)

5. Drag the Vein Density slider about halfway to

edit look

Black Marble

⚠	▬▬▬▬	**Veins**
	☐	**Base Rock**
	─┬─ +	**Vein Density**
	─ +│	**Polish**
	│─ +	**Metalness**
	│─ +	**Transparency**
	│─ +	**Glow**
	Simulated ▼	**Reflection Type**

Description…

Black Marble – Not much interesting to say – just shiny black marble.

[Cancel] [Save] [Save As…]

the left end. As you might suspect, this will produce wispier, less dramatic veining when you render.

6. Click on the Save As button. When the Save As dialog comes up, open the *User Instances* folder (in the *Look Instances* folder).

7. Type in a name for the new variation you just created and click on Save. Now, in Looks window the Look image has a big red "X" through it, indicating that it's been edited.

8. Now render using Excellent 'n' Slow, and watch the difference!

Now. If you want to cut to the chase and get to more serious Look editing, turn directly to "Basic surface controls" later in this chapter. However, the more circumspect among us will simply continue on, thank you.

What the heck is this thing for, anyway?

Well, as you just found out, the Look Editor is for making variations of a Look, called *Instances*. It doesn't make new Looks, just new Instances. One way to think about an Instance is to make an analogy between a Look and a font. Take the Times font for example. There's Times Roman, Times Bold, Times Italic, and so on. There's no plain Times: a font only

exists as one of its typefaces. And the typefaces are just closely-related variants. Similarly, a Look only exists as one or more variants — the Instances. These are variants of a Look "master." If fonts used this terminology, Times Bold would be an Instance of the Times master.

Each master provides you with controls over certain aspects of a Look, called parameters. The Look Editor allows you to change the parameter settings and save the result as a new Instance. When your application uses a Look, the thing that actually makes the picture appear is the renderer. For a given object, the renderer needs to know generally what sort of surface the object should have, and it also needs to know the specific details about the surface. A Look master supplies the general surface information, and the Look Instance provides the specifics.

Look Masters are referenced by Look Instances, and are never seen directly by the Look Editor. When you open a Look, you are actually opening an Instance, which contains a preset variation of its Master, and likewise when you save a Look, you are saving an Instance.

There are four kinds of Look masters:

Materials. A Material controls everything about a surface except its bumpiness. So it provides color and shininess, determines how it reacts to light, and so on.
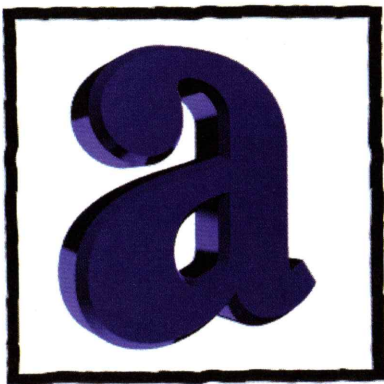
Reliefs. A Relief can create pits or cracks, waves, protrusions, bumps — it controls the shape of different areas of a surface. Obviously, a surface as a whole must have some shape to exist in the first place; a relief simply alters the basic underlying shape.

what the heck is this thing for, anyway?
editing looks

Lights. A Light, of course, controls how light from a light source behaves: whether its rays spread out or stay parallel, whether it can be used as a slide projector, whether it casts shadows, etc.
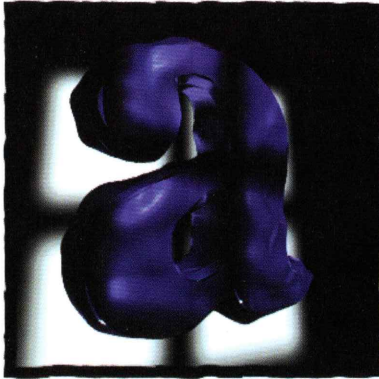
Environments. An environment determines what gets reflected by an object — what the environment around the object is.
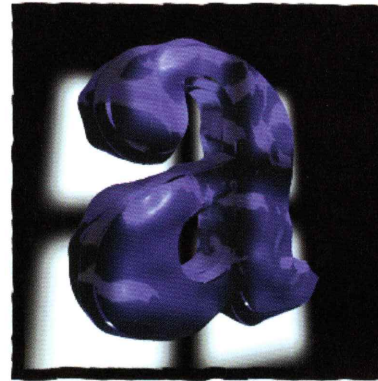
Many Looks have parameters that allow for the most extreme variations. Believe it or not, a bumpy glass Look can be made to look something like granite, or like wavy water. But while you may be able to bend a Look to your will and make it look like something totally different, the Look Editor is most profitably used to "tweak" a Look: to change one of its colors, to make it reflect what you want it to, or to vary its smoothness, for example. However, the power and flexibility of the Look Editor cut both ways. As easily as you can transform a surface at your whim, you can transform it into one that could

never exist in the real world. This is, after all, computer graphics.

If you have a particular surface in mind that you'd like to create, you'll need to find a Look that shares some key characteristics that you can vary to approximate the new surface. However there is a virtual infinitude of surfaces, and you may find that none of the Looks you have will transform into exactly what you have in mind — that you simply "can't get there from here." If you find yourself in this situation, take heart. You can scan in a picture of a surface, get the Pixar One Twenty Eight collection of seamlessly-tiling real-world textures, or create one with a paint program, and have the Look Editor apply it to an object, effectively giving the object a new appearance.

Be forewarned though — until you've gained some experience with the Look Editor, some controls may have unexpected results if you just play with them. But that's OK, go ahead and play — you might discover a new way to make an asphalt Look or something!

If you'd like a little more nerdy discussion of RenderMan issues like shaders and shading models, turn to the "RenderMan Expert Parameter Information for the Adventurous" at the end of this chapter.

How to make a new Instance

The process is pretty simple, really. First, create something *with a Look on it*. Then:

1. Select the object.

2. Make sure the Looks window is showing (select Show Looks from the Windows menu), and click on the Edit Look button. This brings up the the Look Editor dialog. This dialog will have the parameters for the Look. You can also get this dialog from the Score window by clicking and holding on the space between the object's name and its Perfs icon. This displays a popup from which you can select Edit Look.

3. In the Edit Look dialog you'll see a description of any parameter you select. Clicking on the Look name displays a description of the Look itself.

4. Adjust the parameters to change the Look. You won't see the results until you rerender.

5. When you're done, click on Save or Save As and render.

Danger, Will Robinson! If you're using a Look with a Relief, the Relief will affect the faces and sides of characters differently. You can minimize the differences by keeping the height of any bumps low.

More Danger, Will Robinson! Some parameters may have an override icon next to them (a yellow triangle with an exclamation mark in it). The Object Info dialog allows you to override some of a Look's parameters (Opacity, Color, and Scale, for example). Any parameter changes you make in the Object Info dialog overrides any settings you make within the Look Editor.

• Note: In the Object Info dialog, changing the Color Override or Opacity Override controls doesn't change any settings in the Look. This is so you don't have to save a new Instance of a Look every time you want to see it with a new color or opacity. We made them available in the Object Info dialog because they may be among the controls you use the most. If you want to save these settings with the Look you must make the same changes to the Look's Color and Opacity parameters.

• Warning: The Color Override control overrides whatever is the *first* color parameter in the Look Editor. So for Black Marble, for example, it would override the Veins color, not the Base Rock color.

Basic surface controls

Believe it or not, with no more than three parameters, you can create reflective properties that mimic surfaces as diverse as matte, plastic, shiny metal, and glass.

Shininess

The shinier a surface gets, the more it will take on the color of the light shining on it, both from light sources, and from any reflected objects as well. It takes on this color at the expense of the color of the object itself, which will eventually dwindle away to almost nothing. In fact, if the slider were all the way to the right, you would see areas that are mostly whitish (from the reflections of fake objects) and blackish (from the black space between the objects).
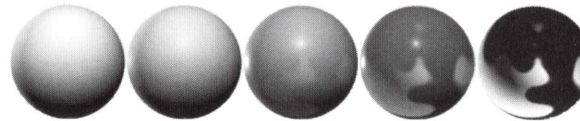
Increasing Shininess:

• Increases the degree to which the surface takes on the color of the light and any reflected objects — you'll see less of the Color parameter color.

• Increases the visibility of reflections.

• Decreases the size of highlights.

Metalness

When you look at a metal, you're actually seeing a rich combination of the color of the surface and the color of the light striking the surface. The Metalness parameter mixes surface color back into the mix of surface and light colors set by Shininess.

Increasing Metalness:

• Increases the amount of surface color (often set by a Color parameter) that appears in the surface.

If you have no Shininess, Metalness will have no effect. Remember that Shininess trades surface color for light color. If no light color is present, you'll just see all the surface color, so adding more with Metalness won't do anything.
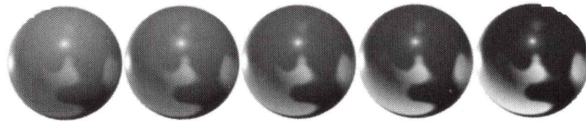
Transparency

With transparency, the important thing is to remember that something that's completely transparent can still change the color of things you see through it. So don't be surprised when you make something completely transparent (the slider would be all the way to the right) and you still see some color.

Glass, however, is not completely transparent. By definition, something that's completely transparent allows *all* the light through. And that doesn't leave any light left over to reflect off a surface. Weird, hunh? Only in computer graphics can you get a surface that's 100% transparent...
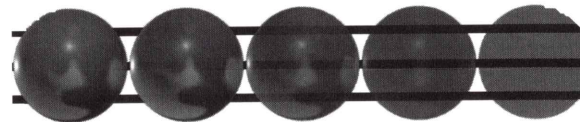
Increasing Transparency:

• Allows more background to show through, colored by the surface color.

• Decreases the visibility of reflections and highlights.

Don't get this confused with Opacity! Transparency controls how much light can get through an object. Opacity controls how "ghostly" an object is, how much it "exists." An object with no opacity may as well not exist — it has no effect on light, and light has no effect on it.

Using your own images in a Look: the Picture/Background Instance

Got an image you'd like to use in a Look? You can use your own image in any Instance that uses a "Color Picture" parameter.

• The Picture/Background Instance in the *Place My Pictures* folder (in the *Simple* folder) is designed specifically as a starting point for making Instances that contain your own images.

If you have a drawing program or paint program that saves files in PICT or TIFF format, you can create your own library of Instances that use your images.

What can you do with your own pictures?

Parameters generally affect a whole surface equally. If you change a plastic Look's Color parameter, the surface will be all that color. Change Transparency and the whole surface's transparency changes. But if you'd like the plastic to have colored dodecagons on it, or to have some partially-transparent areas, you'd need a way to control these parameters at different places on the surface. Well, you can use a picture to do this. You can use this as a way to control area by area a parameter that would otherwise apply to a whole surface equally.

You can supply two kinds of pictures: color or gray

scale. Color pictures can do the job of any parameter that is a color. In practice, you'll probably be using color pictures just to "paint" an image on a surface using the Color Picture parameter, or to use as a slide or reflection in a Light Look. Gray scale pictures can be used to control all sorts of things: bumps, metalness, transparency … just about anything you might have a slider for. See "Gray scale pictures" later in this chapter for more on this.

Picture considerations

Image type. You can use as a picture any file you create with a draw or paint program, or even an image you've rendered to a file. When your file is ready, you must save it in PICT or TIFF format. Look parameters will work only with these formats.

Size. When you create a picture to be used in a Look, you'll get the best results if you follow a simple rule:

• Make the picture at least as big (in pixels) as it will appear in your final rendered image.

Let's say you have some 3D letters in an image, and you want to put your own TIFF image on one character. If the character will take up a portion of the final image that's only about 100x100 pixels, that's how big your TIFF image should be. If you made it much smaller the renderer would have to blow up

your image to make it fit. And you know what happens when you scale up a bitmap image — that pesky blurriness starts creepin' in! If you made it much bigger, it would still look the same, but might take slightly longer to render.

• Using any picture in an Instance will increase the size of the Instance, sometimes dramatically. Practically speaking, using a color picture whose largest dimension is 128 pixels or less can add around 90K to the Instance. If that dimension is 129–256, add about 300K. If it's 257–512, add about 1000K. Gray scale pictures take up less space: 40K for a picture 128 pixels on a side, 100K for one that's 256-square, and 450K for one that's 512-square.

Shape (aspect ratio). You may want to create a picture whose shape approximates that of the bounding box of the surface on which you'll be using it. For example, if you want to use your image as if it were a picture in a frame you'll need to match the shape of your image to that of the frame — tall and skinny, square, short and wide, etc.

• When rendered, *any* picture used inside a Look is one "unit" high, (about the default size of a letter) until you change the scale, either in the Object Info dialog or in the Look Editor! The smaller dimension will depend on the shape of the picture.

Getting a picture into an Instance (making labels)

This process actually applies to pictures of any sort — color or gray scale pictures, or reflection or slide projector pictures. If you're wondering how to make something like a decal, with invisible areas, turn to the section on "Single-color decals" or "Multi-color decals" later in this chapter.

Once you have a PICT or TIFF image, apply the Look in which you want to use the picture. For color pictures a good place to start is the Picture/Background Instance in the *Simple* folder (in *Look Instances:Place My Pictures*). Then:

1. Click on the Edit Look button. This brings up the Look Editor dialog.

2. Click on the parameter that uses the picture (usually Color Picture). Select Other from the parameter's popup menu. This brings up the Browser.

3. Click on the name of the image (in PICT or TIFF format) you'd like to use.

4. Set Periodic Wrapping if you'd like the image to repeat vertically and horizontally across the surface.

5. Click on Select. The image will be copied into the Instance, and converted into a format directly usable by Typestry. The larger the image, the longer

this will take. When you render, you will see the picture repeat across the surface of the object, both horizontally and vertically, like rows of tiles.

Gray scale pictures

You already know about applying your own color pictures. However, gray scale pictures have their uses as well.

Using pictures instead of sliders

Theoretically, a gray scale picture could do the job of any parameter that is controlled by a slider. While a slider sets a value for all of the surface, a picture can effectively set different values at different places on the surface — it controls a parameter in two dimensions. Practically speaking, you would rarely want such a thing for most sliders. So there are a few "all-purpose" Looks that allow you to use a picture for the most important parameters. You'll find out about these later...

The two ends of a slider represent two extremes. In a gray scale picture these extremes are represented by black and white:

• For gray scale pictures, black is the left end of the slider, and white is the right end.

Take the Transparency parameter, for example. When the slider is all the way up, an object is completely transparent. But by using a Transparency picture you could control the transparency anywhere on the surface. You could make some areas completely transparent, some partially transparent, and others completely solid. All you would need is a black image with gray circles blending into white in the center. Or you could punch holes in an object by simply painting white circles on a black background and using this to control Opacity.

• While it's best to design a gray scale picture to be used in Typestry in gray scale, you can use any color image. It will automatically get converted to gray scale in the conversion process.

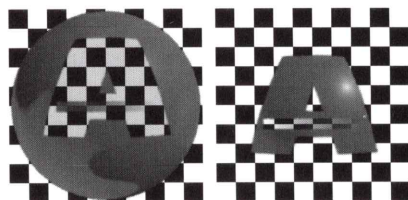Let's say you're using a gray scale picture like the one below on a plain plastic-like surface:
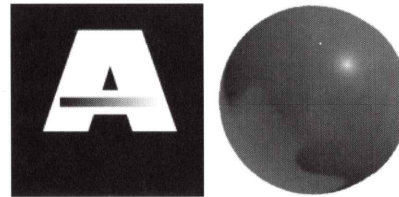
Here are a some examples showing what might happen using the image to control various parameters:
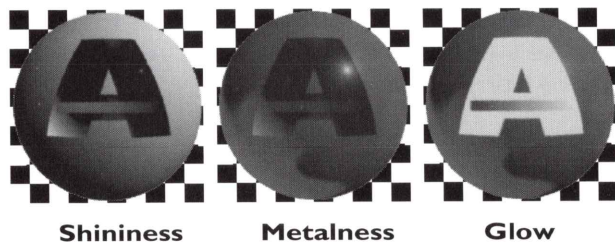
Shininess   **Metalness**   **Glow**

Transparency   **Opacity**

When you use a gray scale picture, its associated slider works slightly differently: it exaggerates or diminishes the effect created by the picture. The slider affects the whole picture, effectively making it brighter or darker.

If you need the utmost flexibility in using pictures to control things, use the "Pictures as Anything" Instance in the *Place My Pictures:Expert* folder. In addition to using pictures for many of the most common parameters, this Look uses a picture for Opacity, which is ordinarily set within the Object Info dialog.

Using Opacity

Opacity determines how much a surface "exists." Don't get this confused with Transparency! An invisible object may as well not exist — it has no effect on light, and light has no effect on it. A transparent object can still color the light passing through it, and can still reflect, to a greater or lesser degree.

Decreasing Opacity:

• Increases the visibility of the background; turning Opacity all the way off makes a surface completely invisible.

• Decreases the "existence" of a surface, making it more "ghostly."
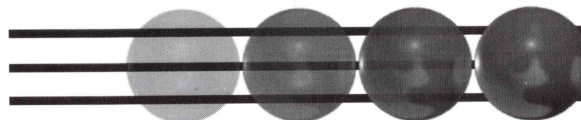
Using two or more pictures together

If you're using two or more pictures in conjunction with each other in the same Look, you'll need to bear a few points in mind.

• It's best to make all the pictures exactly the same size. This way they'll all match up at every point, and

you won't be confused about what might be overlapping what.

• There's only one Size control, and it scales all the pictures together! If you want to change the scale of one picture independently of the rest, you'll have to do it in a paint package. But remember — reducing the size of the picture itself is different from reducing the size of the individual elements of the picture. In the latter case there will be more "empty space."

Consider the shapes in this image:
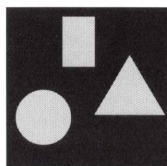
There are three ways of reducing their size:
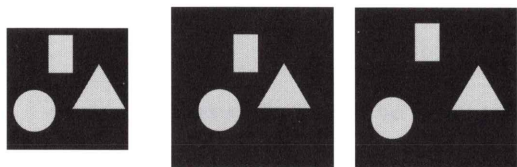
In the first image, the whole original image has simply been scaled down 75%. However, remember that it will still cover the same area as the original image, since within Typestry all images are one unit

wide. This effectively provides fewer pixels to try to achieve the same effect as the original. As a result, it will be blurry where edges line up.

In the middle image the overall size is the same, but the shapes have shrunk 75% as a group and moved toward the center, relative to their original positions. So they're out of alignment with their counterparts in the original image.

In the right image the overall size is the same, and the shapes haven't moved, they're just 75% smaller. Their centers will match those of the original image, but they'll just be smaller.

So be sure to consider what effect you're trying to achieve when you resize one of a group of gray scale pictures.

Relief pictures

Sometimes, instead of using a Relief calculated by an Instance you might want to customize the bumping of a surface. If the Combination Look you're using doesn't supply enough control in this regard, use the Pictures As Anything Look in the *Place My Pictures:Expert* folder. This allows you to use a gray scale picture in the Relief Picture parameter.

• For a Relief picture, white means "bump out," black means "bump in," and 50% gray means "no

bump" will appear on the surface.

- The Relief Height slider sets the distance (in "units") to bump the surface.

Danger, Will Robinson! When you use a Relief on an object, the joint between the faces and sides may have cracks or holes. If you see this, try either lowering the Relief Height or using a bevel that doesn't make a sharp corner at the face.

Multi-color decals

One thing you can do with an Opacity picture is make a decal. This is an image with areas that are invisible. You can get interesting effects by applying a decal to a wall, or, scaled down, to letters.

You need two pictures: one for the colored areas, and one to create the invisible areas where there is no color. But the good news is that the second picture is a simple variation of the first. Ordinarily, you would create your color image first. Then you'd need to alter it in a program like Photoshop to create the Opacity picture. All you need to do is make any colored areas white, and the rest of the image black.

Here are a few considerations to bear in mind as you convert your image to an Opacity picture:

- If the colored areas are antialiased, be sure to try

to preserve this when you convert the image to gray scale.

- Do not resize the image at all — the color and gray scale versions must match each other precisely, except for color.

- If you want the colored areas to be only partially visible, be sure to use a shade of gray instead of black. The darker the gray, the less visible things will be.

To make a multi-colored decal:

1. In Typestry, apply the Decal - Multicolored Instance in the *Simple* folder (in the *Place My Pictures* folder) to the selected object(s).

2. Make sure the Looks window is showing (Show Looks from the Windows menu). Click on the Edit Look button. This brings up the Look Editor.

3. Pull down the "Color picture" parameter and select Other Picture. This brings up the Browser.

4. Click on the name of the image (in PICT or TIFF format) you'd like to use.

5. Set Periodic Wrapping if you'd like the image to repeat vertically and horizontally across the surface.

6. Click on Select. This converts the image into a format the Look can use, which may take a few seconds.

Now you need to get the Opacity picture so the right parts of the image will go away.

7.   Pull down the "Opacity Mask Picture - gray scale" parameter and select Other Picture. This brings up the Browser.

8.   Select a grayscale TIFF or PICT file to be used as the Opacity Picture.

9.   Set Periodic Wrapping if you set it for the Color Picture, and click on Select. This converts the image into a format the Look can use.

If you use colors other than black, white, and gray in the image to used for the Opacity Picture, they will automatically get converted to their gray scale equivalents.

Notice that you still have control over the material parameters, so you can make your decal shiny, or metallic, for example.

Single-color decals

Here's how you make a single-color decal:

1.   In the Look Editor, open the Decal - Single Color Instance in the *Simple* folder (in *Place My Pictures*).

2.   Pull down the "Opacity mask picture - gray

scale" parameter and select Other Picture. This brings up the Browser.

4.   Click on the name of the image (in PICT or TIFF format) you'd like to use to control the visibility.

5.   Set Periodic Wrapping if you'd like the image to repeat vertically and horizontally across the surface.

3.   Click on Select. This will convert the picture to a format Typestry can use, which may take a few seconds.

4.   Use the general material parameters to control the type of surface used for the decal.

5.   Be sure to set the color in the Object Info dialog, available by clicking on the Object Info button in the Looks window.

6.   Save the Instance.

Reflection issues

In many Looks, you'll notice some Reflection parameters:

Reflection Type. This determines whether the surface has any reflections, and if so, what type. Simulated creates light blobby areas on the surface. These are fake reflections, computed by the Instance. They are meant to give the impression of

there being some surrounding environment other than blank featureless space. Reflection Picture uses the picture selected by the Reflection Picture parameter as the reflection. (See the Reflection Picture parameter description below.)

Simulated Reflection Complexity. This controls the size and number of "blobs" in the fake reflection. It works only when Reflection Type is Simulated; otherwise it has no effect. Increasing this:

• Increases the number of blobs.

• Decreases the average size of the blobs.
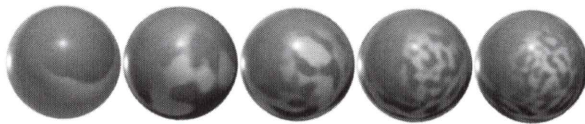
Reflection Picture. This allows you to select a color picture to get wrapped into a sphere and "shrink-wrapped" onto the surface to serve as the reflections. This is an image constructed something like a world map (which uses a Mercator projection), with distortions created so that when it gets wrapped into a sphere things look "normal."
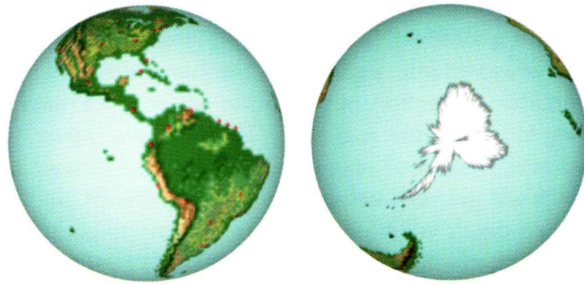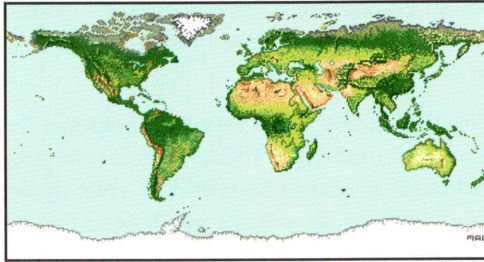
Danger, Will Robinson! When you use a Reflection picture you won't see anything until you set Reflection Type to "Reflection Picture." Also, if

you use an Environment light to create a reflection, you'll see that reflection as well as a reflection picture or simulated reflection.

• We've provided a few reflection pictures for you to use in your Instances. These will provide you with different sorts of scenes to reflect in your objects. You can find them all in the *Look Reflection Pictures* folder.

If you're feeling adventurous, you can try your hand at making a reflection picture. This is an image that gets wrapped into a sphere in the same way as a Mercator projection of the world would. The main thing to remember is that the farther toward the top and bottom of your image you go, the more things will get scrunched. The very top line of an image's pixels will be squeezed into a single pixel. It's difficult to create an image and get really predictable results, but if you just need some custom blobs or shapes you'll do just fine. Also, small shapes near the "equator" should look pretty reasonable, since they'll suffer less from scrunching. Below you can see what happens at the top and bottom of a picture when it gets wrapped into a sphere — the view from the equator is what you'd expect, but notice what happens to Antarctica:

reflect. Simulated reflections and reflection pictures, on the other hand, appear only on the objects that use them.

Approximating a new surface

If you need to create an altogether new surface, you have two choices, each of which has its pros and cons:

1) Use an Instance with a picture (scan in a photo, create an image in a paint program).

Pros	Cons
Great realism from scanned images	Limited to what you can paint or scan
If you can paint, you can get just what you want	Can look bad if scaled up
	Always have to worry about correct wrapping
	Lighting is already present in the image
	Have to edit image to change the contents
	Can use lots of disk space

• The process for making any picture is described in "Getting a picture into an Instance (making labels)" in this chapter.

Environments and other reflections

Remember, you can also get reflections by using a TV Screen or Environment Look in the Lights window. These Looks create reflections that will appear on every object in the scene that's shiny enough to

2. Find an Instance that already shares some key characteristics that you can vary to approximate the new surface.

Pros

Control over a Look's characteristics (including colors!)

Responds to lights in scene

Scales correctly

May animate

Cons

May not be exactly what you had in mind

May not have the "right" parameters

May have to worry about correct wrapping

If you use a picture in an Instance, the process is relatively straightforward (see the section on "Getting a picture into an Instance (making labels)" in this chapter).

If you start with an existing Look, you can't escape the limitations of the parameters of the Looks you have on hand. The idea is to know your Looks and their parameters well enough to know which one shares the key characteristics of the surface you want to create. When you're experimenting with Looks, play with the parameters, explore the extremes: what's the effect of turning a wood's swirl all the way up, of increasing a glass's Metalness, of making a tiny checkerboard of white and off-white, etc.?

Get the idea? You may have to do some creative parameter tweaking to get close to what you have in mind. But remember, it just may be the case that "you can't get there from here."

RenderMan Expert parameter information for the adventurous

Ok, here's the deal. If you're reading this, we're assuming you're a bona fide hard-core computer graphics type. You've been warned…

Looks and "shaders"

A Look is actually a collection of text, bitmaps, other stuff, and a thing called a shader. The shader is the essence of a Look, the *sine qua non* for any image.

A shader is a small program that creates a synthetic surface. More accurately, it is in some ways a mathematical simulation of how a particular group of surface characteristics affects light. In the real world we usually see only light reflected from objects' surfaces. Naturally, this light is affected by the angle of the surface, the position of the light, and the position of the viewer. But what really makes a surface look the way it does are properties unique to the surface, for example its patterns of color and large- and small-scale bumps. It is aspects like these that are represented and manipulated in a shader by parameters.

Adjusting the whole set of available parameters allows literally millions of surface appearances.

The RenderMan Expert parameters

In RenderMan, the light you see coming from an object has six components:

- Ambient

- Diffuse

- Highlight Strength

- Highlight Spread

- Reflection Strength

- Reflection Spread

These are mixed together so as to mimic the reflection characteristics of a particular surface, each component contributing some percentage of the whole. (They often, but not always, add up to 100%.) These percentages are set initially in one of two ways:

- by the shader, internally;

- by higher-level controls — (Shininess and Transparency, for example)

When you move a slider for one of the six components, what you're really doing is changing the percentage of that component's contribution. In fact,

the preset percentage is multiplied by the number you see in the parameter's info window. It is most useful to think of these controls as fine-tuning values that are set elsewhere.

Ambient light in a scene gets used for one thing only: to control a surface's brightness uniformly in all the light and dark areas. The Ambient parameter multiplies the amount of *ambient* light (only!) that gets used to lighten the surface. Increasing ambient when there are 100 lights in your scene, but no ambient light, will have no effect!

Any other light can get used for two things:

- to get spread out (diffused) over the parts of a surface on which the light falls. The light gets used in proportion to the angle at which the light is striking it. Areas of the surface on which light is falling directly will be brighter than areas where the light is striking obliquely or not at all.

- to get concentrated in areas of a surface that are at a particular angle to the viewer, creating highlights.

The Diffuse parameter controls how much of the light gets spread around. The Highlight Strength parameter controls how much of the light gets used to form highlights. It often makes sense to vary these two parameters oppositely from each other, increasing one while decreasing the other. This way, when you make a surface "duller" the hightlights diminish as

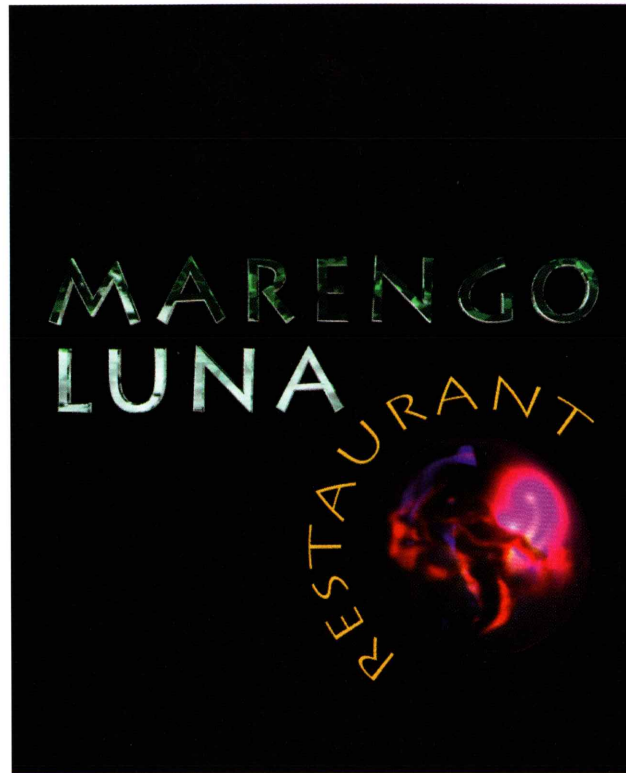Image: Annabella Serra

Photography: Michael Johnson

MARENGO LUNA RESTAURANT

Image: Annabella Serra

Photography: Michael Johnson

the swimming pool library

Image: Annabella Serra

well. However, since this is computer graphics and not the real world you can effectively make a surface duller and shinier at the same time!

The values multiplied by the sliders basically specify a percentage. This is the contribution made by that component to the total light. The sum of all the percentages can be more than 100, which simply intensifies the effects of the light. If the sum is 0, you can have a thousand lights in your scene, but the surface won't respond to them, and may look like a black hole.

Ambient

This multiplies the contribution of the component that controls the overall brightness of a surface.

Ambient light is light that is "everywhere" in a scene, light that doesn't come from a single direction. It is all the light reflected and rereflected around the scene by all the various objects. You already know about this kind of light: it's the reason you don't need to turn on any lights in your house on a sunny day, even though the sun may not be shining directly into your room. There's enough ambient light to light the whole room adequately.

The Ambient parameter controls how much of this light the surface responds to. If you think of this as a percentage, 0 would mean the surface "sees" none

of the ambient light, 50 would mean the surface sees half of it, and so on.

If there is ambient light in a scene, increasing this number:

- makes the surface uniformly brighter;

- tends to wash the surface out somewhat — makes the colors "flatter" with less contrast.

If there is no ambient light in a scene, this parameter will have no effect!

Diffuse

This multiplies the contribution of the of the component that controls the dull, unpolished part of the surface reflection.

Diffusely-reflecting surfaces are ones like chalk, racquetballs, or flat paint. The light that hits a spot on a diffusely-reflecting surface gets scattered in many directions, instead of bouncing off in a single, predictable direction, the way a billiard ball bounces (like light reflecting off a mirror or a shiny polished surface). This has the effect of "spreading the light around" the surface.

This parameter determines how much of the available light gets used for spreading around on a surface. If the Diffuse and Specular parameters are both

present in a Look, usually as the value of Diffuse increases, Specular should decrease proportionally — things aren't usually shiny and dull at the same time.

Increasing this number:

- makes the surface brighter;

- "spreads the light around" more.

Highlight Strength

This multiplies the contribution of the component that controls the brightness of the highlights you see on shiny surfaces caused by light sources (not by simulated reflections or pictures).

Shiny surfaces look the way they do because the light hitting them gets bounced off at a very consistent angle.

This parameter determines how much of the available light gets used for creating highlights on a surface. If the Diffuse and Specular parameters are both present in a Look, usually as the value of Highlight Strength increases, Diffuse decreases proportionally — things aren't usually shiny and dull at the same time. Use the Highlight Spread parameter to control the size of the highlights.

Increasing this number:

- increases the brightness of highlights only.

Highlight Spread

This multiplies the contribution of the component that controls the size of the specular highlight. Naturally, if Highlight Strength is 0, this parameter will have no effect.

Increasing this number:

- increases the size of highlights, spreading them out across a surface,

- makes highlights' edges less sharp, more diffuse.

Reflection Strength

This multiplies the contribution of the component that controls the brightness of the reflections. This is a parameter that you'll just have to play with until the reflection looks the way you want.

Increasing this number:

- increases the visibility of reflections.

Reflection Spread

This multiplies the contribution of the component that controls the sharpness of the reflections.

Naturally, if Reflection Strength is 0, this parameter will have no effect.

Increasing this number:

- makes reflections' edges less sharp, more diffuse.

Displacement

When you use a Relief to bump a surface, you have two choices. You can actually change the shape of the surface (Displacement On), or you can use a trick of shading to make the surface just *seem* like it changes (Displacement Off). In the latter case, the surface remains flat, but areas are rendered darker or lighter to simulate changes in height. This can be very useful for prevent cracking problems at the edges of letters caused by too much displacement. Calculating new positions for points on the surface slows down rendering more than the simple shading calculations, so you might choose which method to use based on how obvious the bumping will be in your image.

For example, if you're bumping stucco on a back wall, your image might look perfectly fine if the stucco doesn't actually stick out from the wall that millimeter, but just *looks* like it does. On the other hand, if you have some bumps that need to cast shadows, be sure to turn Displacement on!

Turning this on:

- allows surfaces to change shape according to the Relief used.

Antialias

This makes surface patterns blurrier, reducing any jaggy, stair-step (aliasing) effects, if any.

Under some circumstances, some parts of a surface pattern may exhibit "aliasing." When this happens, any lines or patterns that aren't perfectly horizontal or vertical may have jaggy stair-steps at the edges. This parameter blurs the surface slightly (or lots) to make the aliasing less noticeable.

Note: Before you use this, you should try rendering with Smooth Shading turned on (in the dialog available by selecting Custom Setup from the Render menu).

Increasing this number:

- blurs the surface more.

Image: Joy Folla

Font: Gill Sans Bold Condensed

Build Method: Extrude, custom (flat) bevel

Effects: Wall and Floor

Looks: ECShiny Sunhills; Matte, brown

Lights: #4 25%, #6 20%, #16 100% spotlight with shadow, moved down and out

Floor made into a gradient in Photoshop

adding effects

A number of interesting effects are possible with Pixar Typestry.

Backgrounds

You can include a wall, a floor, or both (shown below) in your images by selecting these from the Backgrounds menu under Effects.
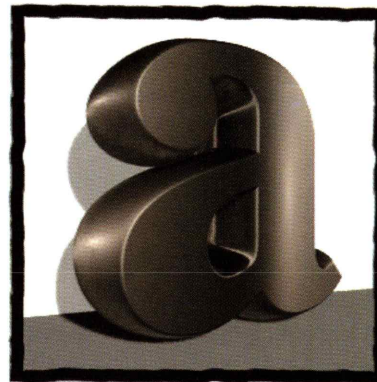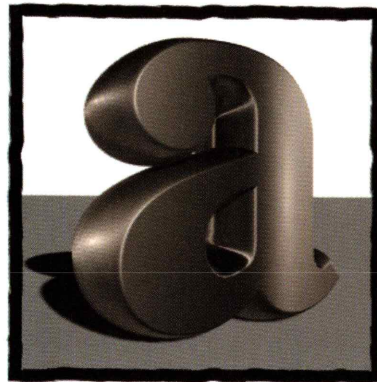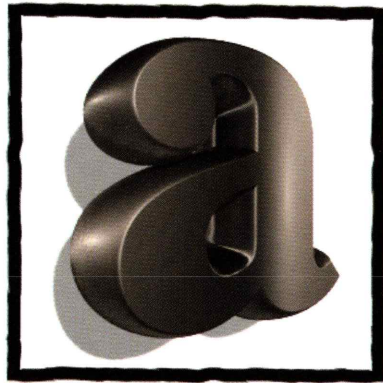
You can also adjust the orientation of the wall and floor. The process is the same for both. Below are

the steps to take to adjust the wall; to adjust the floor use the Floor Setup instead of Wall Setup:

1. Once you have a wall, select Wall Setup from the submenu in Backgrounds under the Effects menu. This brings up the Wall Setup dialog.

2. Click on Manual. A dot will appear at each end of the wall.

3. Click and drag the dots to adjust the angle of the wall.

In the Setup dialogs the text is represented by a simple wireframe. You see the wall from above, and the floor from the side. The camera represents the point of view when looking at the project window. Below are the wall and floor setups showing manual adjustment of their positions, and the resulting image.
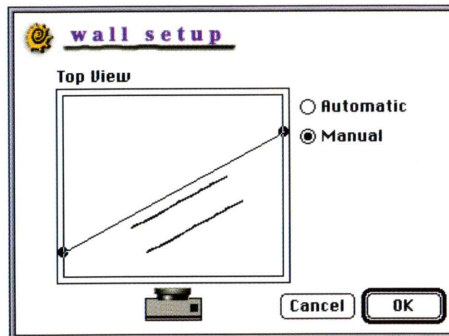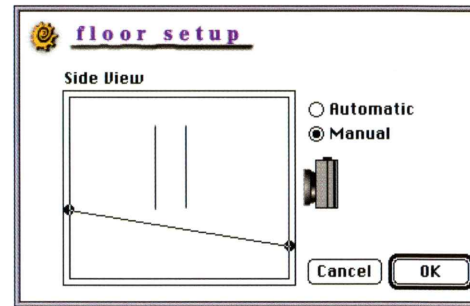
Caution: It's possible to get the wall or floor in front of the text, or to sink objects into the floor. Be sure to use the Wall/Floor Setup dialog to check the position of the wall/floor. Also, if your object is near the top of the window, your view may be from

under the floor, so you won't see the object. You may be able to fix this by adding an object lower down whose Opacity is 0.

Camera

Normal. This creates a view of the object that has a "natural" amount of perspective — a 90° field of view.
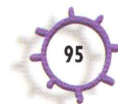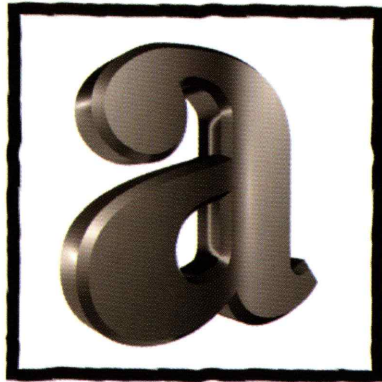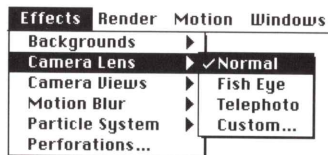
Fish Eye. This creates a view of the object that exaggerates the perspective. This may not appear obvious unless the object is turned or extruded somewhat. The field of view is 160°.
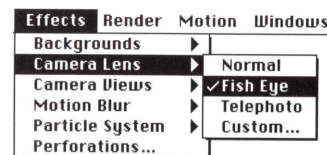
Telephoto. This creates a view of the object that eliminates perspective. This may not appear obvious unless the object is turned or extruded somewhat. This setting is great for aligning objects. The field of view is 10°.
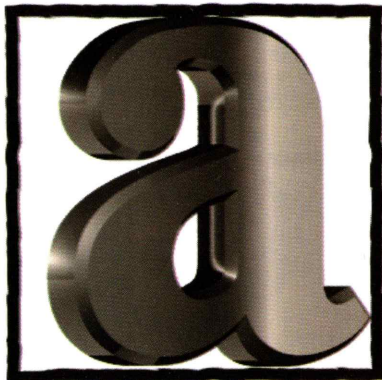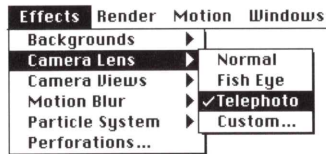
- Warning: Some Looks, especially those with a reflection or environment picture, may not work correctly with this setting.

Custom. This brings up a dialog allowing you to set your own angle for the Field of View. Higher angles widen the view, allowing you to see more of the world at once; smaller angles narrow your view.
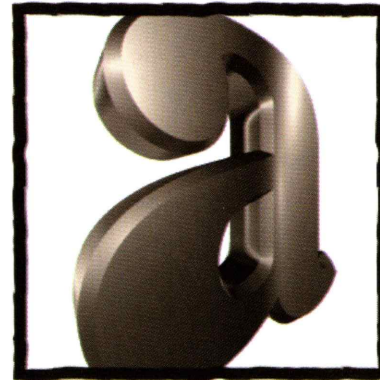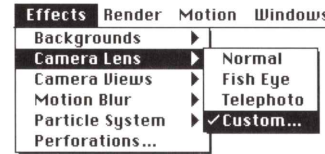
Use the Camera Views to get a different view of the scene. View to Fit moves the current "camera" (Front, Left, or Top) in such a way as to fit everything in the scene. So if you find you've moved some text off-screen, or made it too large to see the

whole thing, just use View to Fit to see everything. If you've used View to Fit and need to get the original view back, select Reset View under the Edit menu.

The views are also useful when you want to move text in front of or behind other text. Using the Top or Side view lets you see exactly where things are.

Motion Blur

Normal Blur creates a streak based on the shape, direction, and speed of objects.
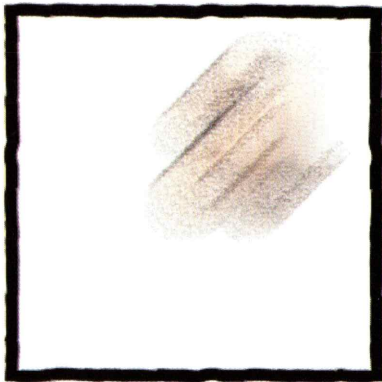
Blur and Strobe creates the same streak, and includes the objects at the end of the streak.
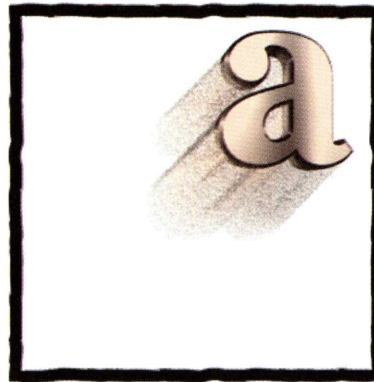
To blur a still image you must create a 2-frame animation:

1. Select a blur option from the Effects menu.

2. Move the object to the place where the blur should start.

3. If the Score window isn't showing, select Show Score in the Windows menu.

4. In the Score window, move the Time Marker to the second tick mark (frame 2). The Time Marker is the pinkish ball with a triangle on it under the notched timeline:

timeline, marked in frames

Time Thingy — click and drag
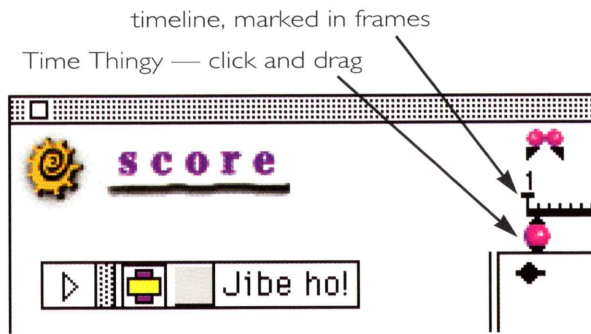
5. In the project window, move the object to the place where the blur should end.

6. Render.

• Warning: Unless you render at Excellent 'n' Slow, you won't see the full effect of motion blur.

Particle System

You can make objects look like they're spraying things out from their edges using this feature. This allows you to get effects like sparks flying off letters, or spray, or fireworks, or explosions, or a splash, or oh, ever so many interesting things. This works on any object you can select: a letter, a group of letters, or all objects in the scene, but not a wall or floor. This is an effect for animations, but of course you can use it in a single frame. The basic process is easy:

1. With some object selected, select Add Generator from the Effects menu.

2. Adjust the settings for the generator. These are described in the rest of this section.

2. Make a simple 2-frame animation. To do this, see the section on "Creating a 2-frame animation" near the end of the *Animation* chapter. *Use Update Simulations on the second frame*, and render that frame.

Warning: It's very easy to generate an enormous number of particles in a single frame. If you're doing hundreds of frames things can get out of control. *The more particles in a frame, the longer it will take both to send the frame to the renderer, and to render the frame.* The default limit to the number of particles in a single frame is 2000, but you can adjust this in the Particle Physics dialog (see below).

Note: Particles don't come from an object's faces, only its sides (including the bevels). For Rubber Sheets the particles come from the character edges. For Tubes they come from everywhere on the tube.

To turn this on, select Add Generator from the Particle System menu. This brings up the Particle Generator dialog described below.

To change the way a generator works, select Edit Generator. This brings up the Particle Generator dialog, divided into two sections:
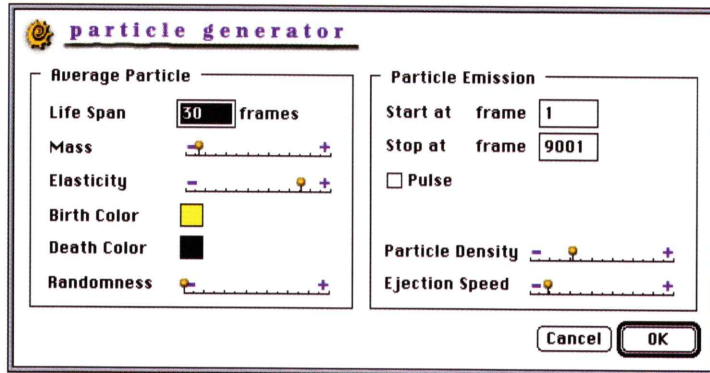
The Average Particle controls affect individual particles coming from the selected object(s):

Life Span. This controls how many frames individual particles last. If you're simulating sparks, you'd want a relatively short life span. Sawdust, of course, should last until the termites arrive.

Mass. This determines how heavy the particles are. For a given Viscosity (see below), heavier particles won't go as high or as far as lighter ones.

Elasticity. If particles hit a surface they will bounce if they're elastic enough. The higher you set this, the bouncier they'll be. Note: For this to work, Collision Behavior (in the Particle Physics dialog described below) must be set to Bounce.

particle system
adding effects
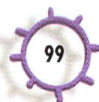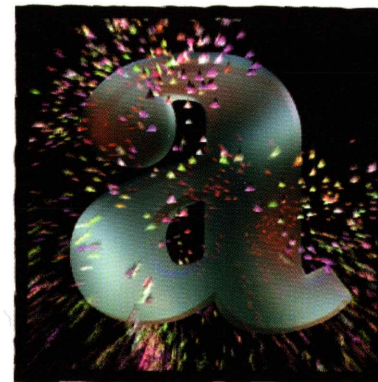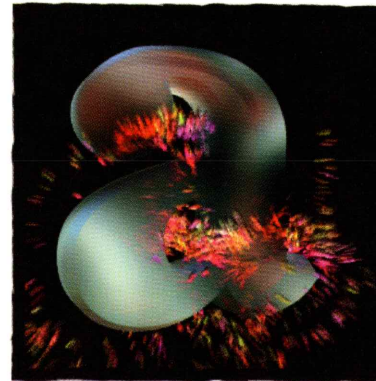
Birth/Death Color. Using these you can make the particles change color as they age. To control exactly how they go from one color to the other, use the Color 'Tweening control in the Particle Physics dialog, described below.

Randomness. With this turned off (all the way to the left), every particle for the selected object(s) will have exactly the same Life Span, Mass, Elasticity, and Colors. The higher this setting is, the more variation you'll see in these characteristics. You'll see some particles with short Life Spans, some with long ones, some heavy ones, some light ones, etc. The settings will become average settings. So this slider controls the amount by which particles vary from the average represented by the setting.

The Particle Emission controls affect how the particles get thrown off:

Start at/Stop at. These determine the frames at which the effect starts and stops. Stop at is set to 9001 frames by default. So if your animation is longer than 9001 frames, you'll have to enter a new number. This is useful when you want an effect to start at some point into an animation, or to stop before the animation ends.

Pulse. Checking this allows you to have the particles come out in spurts. You'll see an On and an Off box. These control the frames for which the effect is on and off. Using values of 30 and 15 turns the effect on for 30 frames, then off for 15 frames, then on for 30 frames, and so on. Pulsing only occurs between the Start at and Stop at frames.

Particle Density. This controls the number of particles emitted in a given time — a lot or a few.

Ejection Speed. This sets the speed the particles have when they leave the object. Use this in conjunction with Gravity (in Particle Physics dialog described below). Low Ejection Speeds can make particles seem to just fall off an object.
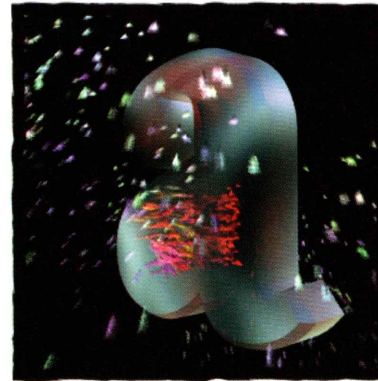
There are some controls that apply to all particles in a scene. You can think of these as properties of the scene, into which the particles emerge. Select Particle Physics from the Particle System menu item to get at these. This brings up the Particle Physics dialog:
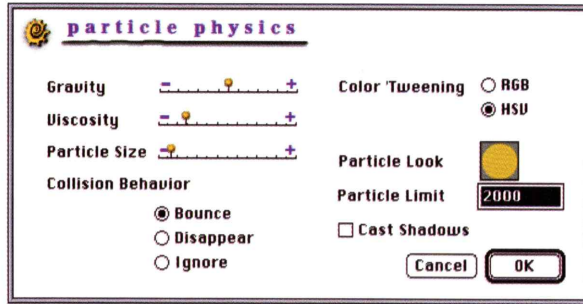
Gravity. As you might imagine, this controls the downward force felt by particles. Turning Gravity off (setting the slider all the way to the left) will have the effect of making particles fly off in straight lines.

Viscosity. This puts the brakes on particles' speed, constantly slowing them down. The less a particle's Mass, the faster this will slow it down.

Particle Size. We'll leave this one to your imagination... But beware of setting this too low. You may not see anything when you render.

Collision Behavior. When particles meet a floor or wall (but not a text character!) they will bounce with Bounce selected. Their "bounciness" is controlled by the Elasticity you set in the Particle Generator dialog (described above). Disappear makes particles, uh, go away when they touch a surface. Try using an invisible wall or floor (with Opacity turned all the way down) to make some particles disappear in unusual ways! Using Ignore, particles will simply pass through the wall or floor unaffected.

Color 'Tweening. When you have the Birth and Death Colors set to different colors (in the Particle Generator dialog) you can have the colors change in two ways. Take a look at the Mac's Color Picker. Imagine two points on opposite sides of the circle, the Birth and Death Colors in the Particle Generator dialog. Checking RGB (which stands for Red-Green-Blue, which is one color model) will make the particles go from the first color to the second in a straight line, so they will pass through white halfway through. Checking HSV (which stands for Hue-Saturation-Value, which is another color model) will make them go from the first to the second around the edge of the circle, and will never be white. Of course, if you were to move one point over to the other side of the center, so the two points are on the same side, and still in line with the center, the two behaviors will be identical.

Particle Look. Use this to apply a Look to all the particles in the scene. (A couple of useful Looks are Constant, for creating things like sparks, that are unaffected by light, and Matte, for things like confetti.)

Particle Limit. This sets the maximum number of particles that can be generated in a single frame. For frames with particles in them, this number can have an effect on how long it takes to write out frames prior to rendering them, and on how long the rendering itself takes — the more particles, the more time it takes to create and render them.

Cast Shadows. This makes the particles cast shadows. Of course, you might leave this off for effects like sparks, which are more like light sources than objects, or for particles with a very low Particle Size, whose shadows you might not even see.

Note: The control you have over particle systems with these dialogs is rather extensive. As you experiment with them, you might make small wireframe movies to see the results, rather than take the time to try to render all the frames. Or, if you need to see the colors, just render a few small frames from different points in the animation.

Atmosphere

You can add a foggy or hazy atmosphere to your scene using the Atmosphere dialog. If you're animating, you can make the fog swirl.

To use this:

1. Select Atmosphere from the Effects menu. This brings up the Atmosphere dialog:
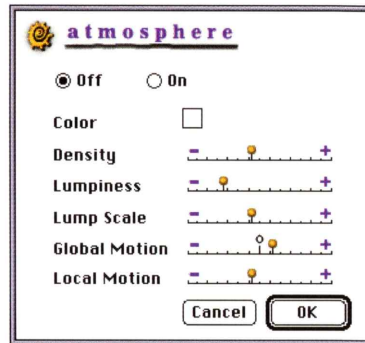
2. Click on On to turn on the atmosphere effect.

3. Set the controls to your liking (see below) and click on OK. When you render you'll see the results.

Off/On. This disables/enables the effect. Be sure to turn it off if you don't need it!

Color. This sets the color of the atmosphere. (White or light gray usually works best to simulate fog.)

**Density.** This controls how thick the fog is.

Lumpiness. This controls how uniformly thick the fog is. Turning this up makes the fog "lumpier."

Lump Scale. This controls the size of the "lumps" in the fog.

Global Motion. This controls the motion of the "fog bank." The farther the slider is from the 0 in the middle, the faster the fog bank will move — to the left, or to the right.

Local Motion. This controls how much the "lumps" move around and interact with each other.

atmosphere
adding effects
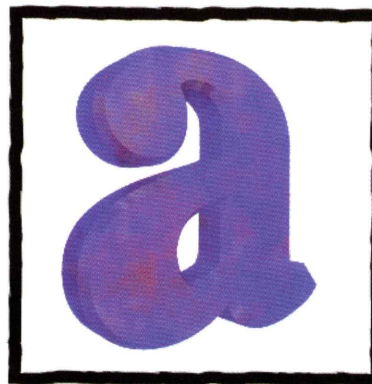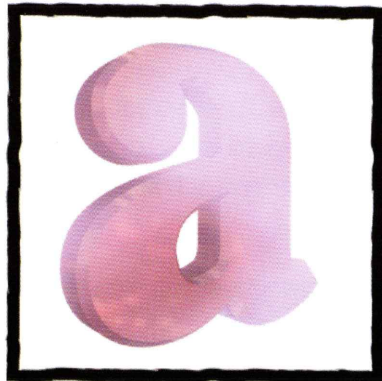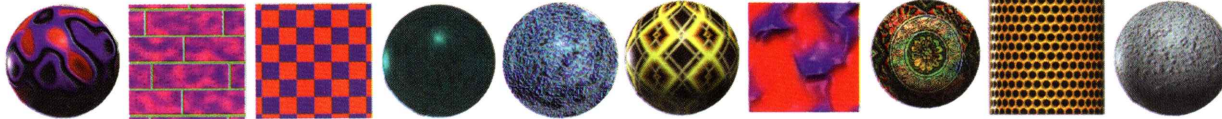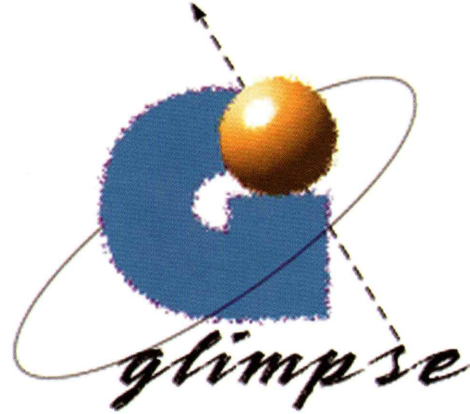
Using Glimpse you can tailor the Looks of the objects in your scene to create new Instances of the Look. Manipulating one or many parameters of a Look can result in subtle to dramatic changes in appearance. With Glimpse you can change the color, shininess, metalness, add a soft glow, add reflections, and so on. You can even combine your Materials Look with a Relief Look to add pits, cracks, waves, protrusions, etc. Glimpse also allows you to make texture map Materials and Relief Looks from your own PICT or TIFF files.

GLIMPSE
THE LOOKS EDITOR

Group Therapy

As you found out in the chapter on Manipulating Text, grouping can be a useful tool for making perforations, and for making your life easier as well. The more you feel comfortable with grouping, the more you'll discover things you can do with it. This chapter will help you get on more intimate terms with the concept.

The short (terse, actually) explanation

All Typestry objects created using the Extruded Build Method are structured "hierarchically" — they have different levels. Each level represents a grouping of objects. Text you type in already has three levels of grouping by default: 1) text object, containing all the letters you typed in the Text dialog; 2) the individual components of the text object (the letters), containing faces and sides; 3) faces and sides, always the bottom level. The exception to this rule is when you type in more than one line of text in the Text dialog. This adds a fourth level just under

the text object level. Think of a level as a group. These groups appear in the Score window.

You can create a new level (group), by using the Group command, available under the Edit menu. This takes the selected object and puts it in a new group. For example, grouping letters creates a level between the text object level and the letter level.

You can use any of the Transform tools on any level but the bottommost — the faces and side.s. (If you could move those separately you'd no longer have 3D characters, and we wouldn't like that, would we?) This means you could move one letter of one word (if you had made a "word level"), resize just that word, and rotate the text object containing the word. Faces and sides are locked together. You can also apply a different Look to any level. So you could make the text object plastic, change one word to marble, make one of the word's letters metal, and make that letter's sides checkerboard. 'Gad!

Double-clicking on an object allows you to move down the levels: each successive double-click moves you down a level.

Using the "tree"

The left side of the Score window is the area in which you control grouping. It contains a hierarchical "tree" of all the objects in the scene and their elements. If you need more room to see the full names of items, you can click and drag the bar separating the tree from the rest of the window.

Using this tree is a little like using System 7's Finder in View by Name mode. Just as you can open a folder by clicking on its triangle, you can open a group by clicking on *its* triangle. To change an object's name, just select the current name and start typing.

Click and drag to move bar

Click and type to edit name

Click and drag to move in/out of groups, up/down in list

Click to show/hide contents
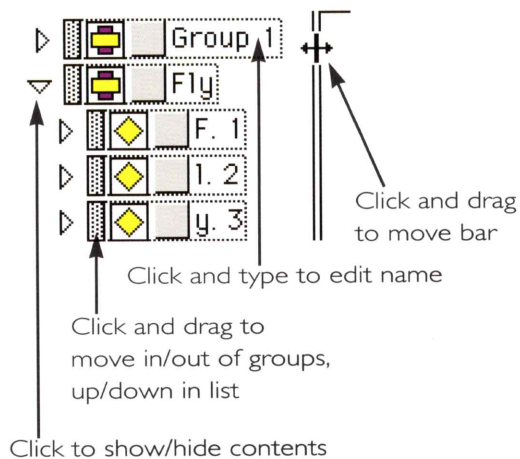
But there is one thing you can do that you can't do in the Finder. By dragging an item up or down you can change its position in the list of items. (Recall the importance of order when you're perforating objects, as you learned in the *Manipulating Text* chapter.) A purple cursor appears, indicating where the item will end up when you release the mouse button. Let's look at a few examples. Let's say our tree starts out looking out like the one above.

To move the "y" to first place within its group:
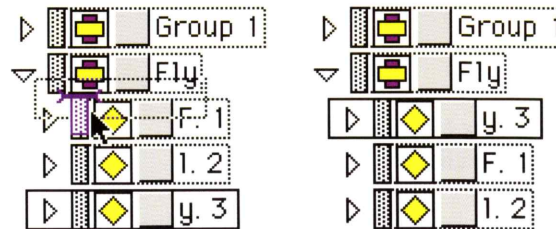
To move it out one level, and last in position:
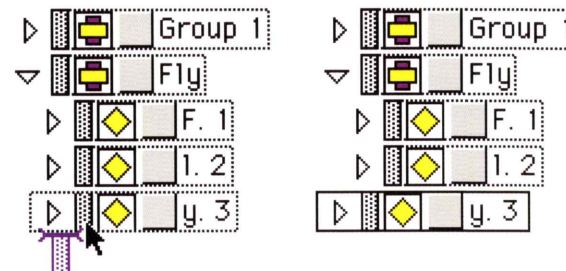
To move it up one level, and above its current group:
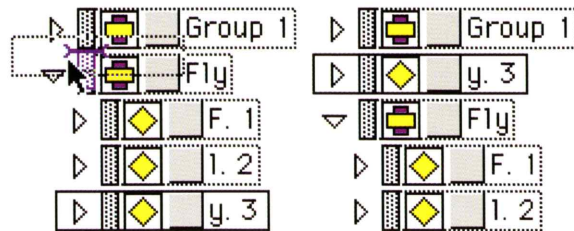
To move it directly into the other group:
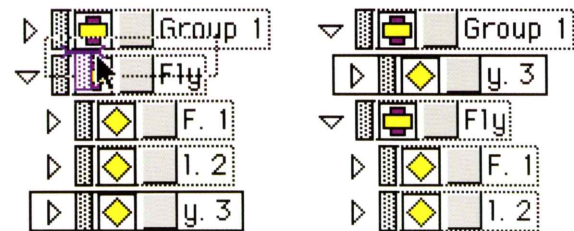
The long explanation

Now let's flesh things out a little. When you click on Build Object to get letters into Typestry, the program automatically groups objects into different levels, which you can see in the Score window. Faces and sides are grouped into letters, or "letter objects," and letters are grouped into a "text object." So there are always three levels to start out

with. If you have more than one line of text, each line will be a group as well.

No doubt you're used to having folders within folders within folders on your machine. You can think of a grouping as a folder. A text object would be a folder with other folders (letters) in it. And like opening and closing folders (under System 7's View by Name function) you can open and close groups by clicking on the triangle to the left of the item.

Each of the letter folders has two "files" in it (faces, and sides). The files are where the information lives: they are what actually describe the letters' surfaces. The folders are just a way of organizing the files. You can select both folders and files, but selecting a folder selects everything in the folder as well, just like on your computer.

Once a text object is created, you can then ungroup letters or text objects, or you can add your own groupings. Try this. Create a Typestry file with a text object that says "Can do:"

1. With the Text tool selected, click in the middle of the window to bring up the text dialog.

2. Select a font and type Can do.

3. Click on Build Object, select any bevel, and click on OK.

You should have a tree that looks like this:
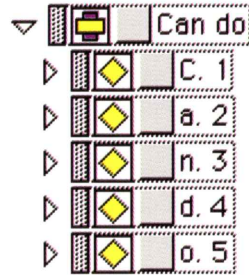
Now let's group the five letters into two words:

1. If the Score window isn't showing, select Show Score from the Windows menu.

2. In the Score window, click on the "Can do" object's triangle. You should see all the letters in the text object.

3. Select the Move tool from the tool palette, and in the project window, click on the text object to select it.

4. Now double-click on the letter C, or click on the letter in the Score window. This will select just that letter and put us at the "letter level." Now we can group letters.

5. Select Group from the Edit menu. This creates a new group that appears at the letter level in the

Score window. Right now the group includes only the C.

6. Type "Can" in the Group Name box.

7. Add the "a" to the group by dragging its gray handle into the Can folder. Drag it so the purple cursor is directly below the "C."

8. Add the "n" to the group similarly.

9. Now select the "d."

10. Select Group and name the group "do." This will put the "d" into the group.

11 Add the "o" to the "do" group.

Now your tree should look like this:
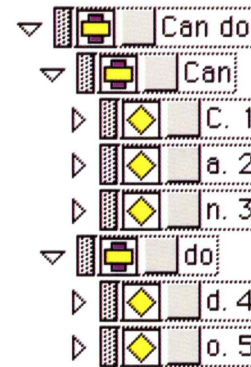
Where the text object had two levels below it before (letters, and faces and sides), it now has three levels below (the faces and sides aren't showing): two groups, each of which has groups of its own (letters). We've added a new level to the structure. Using the folder analogy, we put the contents of the *Can do* folder into two new folders, *Can* and *do*.

The power of this organizational scheme is that it allows you to do different things at different levels.

1. With the Scale tool selected, click on the text object: you've selected the highest level. Click and drag to make the whole object bigger — the top level and everything in it.

2. Double-click on "Can": you've selected a word, which is at the next lower level. Get the Move tool and drag the word somewhere else.

3. Double-click on the "a": you've selected the letter. Get the Rotate tool and rotate the letter.

4. Double-click on the "a" again: you've selected the letter's faces, which is the lowest level. These are "locked," and can't be manipulated (but they can have a separate Look).

5. Double-click on the "a" once more: you've popped back up to the highest level.

6. Get the Rotate tool and rotate the whole group.

Just think of the implications of this for animation! (And just read about it in the chapter on *Animation*).

Remember, anything that you do to an item in the tree is is done to all of the items inside it. This includes applying Looks. If you apply a Look to the word "Can" then it automatically applies to the letters "C," "a" and "n" both to their faces and their sides.

•   Unless an item has its own Look, it will have the Look of the group that contains it.

Next, if you change the Look of the letter "C," then it will get the new Look but the letter "a" and "n" will be unaffected. They will still have the Look given to "Can."

Thus you can override any Look that was applied higher up the tree. If you want to get rid of the Look that you just gave "C," then click on the Detach Look button and it will "inherit" its Look from the next higher box in the tree.

Let's look at the "Can do" example to make this clearer.

Making the "Can do" text object yellow will make all the letters yellow because no group or letters below it have an assigned Look.

Changing the "C" Look to red will make the "Can do" have a red "C" while the rest of the letters will remain yellow.

Changing the "do" group to blue would change that whole word to blue.

The cumulative effect would be something like this:
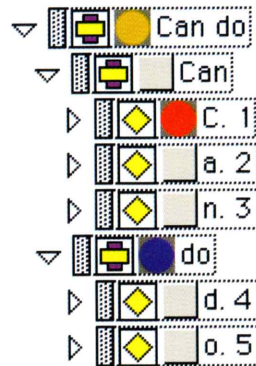
In this particular example the advantage is obviously small, since there are so few letters, but you can see that the longer the words, the more time you might save applying Looks.

So, when you think you might want your text object organized by whole words (and/or by smaller groups of letters) be sure to use Group to organize the letters!

Copying Looks from one object to another

If you'd like to avoid having to use the Browser to apply the same Look to a number of objects, there's a solution. To do this, in the Score window find the object whose Look you want to copy. Just click and drag the little Look image next to the object name to the same place on another object in the Score window. This copies the Look to the object.

"Inheriting" a Look

If you've used different Looks at different levels, you can use the Detach Look button in the Looks window to "unassign" the Look of the selected level. This means that any files in the selected folder will get their Look from the next higher folder that has a Look applied — it will "inherit" the Look of the level above it. In the example above, selecting the red "C" and clicking on Detach Look would change the "C" to yellow, since that's the color assigned to the next higher folder that has a Look.

Applications

This hierarchical scheme allows you to create some interesting effects. Since you can select a text object as a single object or select components of it as separate objects, you can use this to good advantage.

• Applying a Look to a word as a single entity makes the word look like it was made from a single piece of the material. Applying it to each letter individually makes each letter look like it was made out of its own piece.
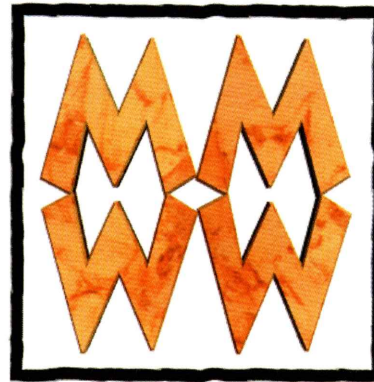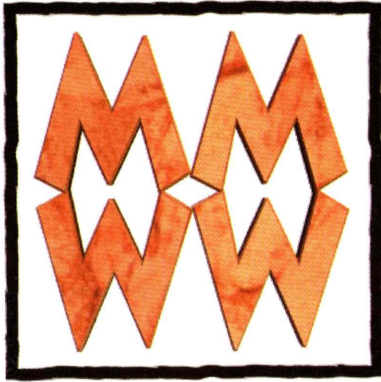
• Similarly, in animations you can have an object move "through" a Look. If a group has a wood Look applied to it and an object within the group moves, the object will seem to move through the wood.
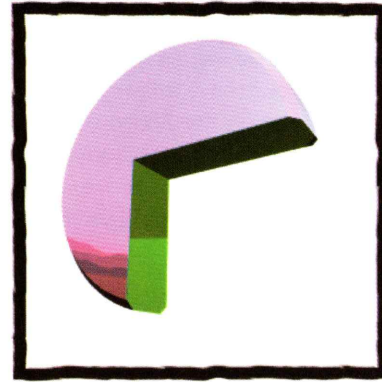
• When you use the Difference perforation you can create objects with holes whose sides have a Look that's different from that of the rest of the object. Just make the characters that are being cut out have their own Look.

animaTion

A short animation

Let's make a short animation. Here are the names of the things you'll be using this time around — you can find a complete chart at the end of this chapter.

Score window

Time Marker

object timeline

pose nib

animation bracket

[Score window illustration with labels]

Play button
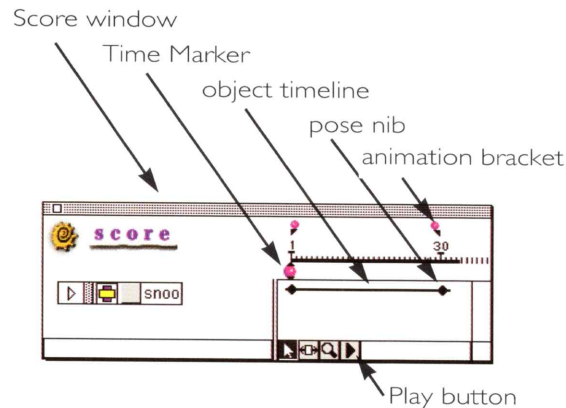
1. Get a word into Pixar Typestry and position it at the left side of the project window.

2. If the Score window's not showing, select Show Score from the Windows menu. Make the Score

window wide enough to see the rightmost animation bracket.

3. Drag the animation bracket to the "1:1" tick mark.

4. In the Score window, drag the pose nib (little black diamond box to the right of the double line) over to the tick mark just before the "1:1" tick mark.

You've just set the length of the animation to 30 frames, or one second.

5. Double-click on the pose nib you created. This moves the Time Marker to where the nib is, letting you set what's happening at the time represented by the position of the nib.

6. Move the text to the right side of the project window. Now the text will start out at the left and end up at the right.

Remember this: move the Time Marker first, then move the text. Whenever you do something in the project window, you do it only at the time represented by the Time Marker.

7. Move the Time Marker about halfway in between the two nibs.

8. In the project window, move the word to the bottom of the screen. You'll see a new nib appear on the word's timeline.

•   Wherever you see a nib on an object's timeline it means "the object has an appointment at this time to be somewhere."

9. Using the Rotate tool, rotate the word a bunch.

If the word gets in a weird position, just use Undo, or Reset Orientation from the Edit menu.

10. Click on the Play button at the bottom of the Score window. You should see a box moving around the screen where the word would be, twirling as it moves down and across the screen from one side to the other, over and over. Click anywhere to stop the animation.

That's it. It would be a simple step to render all the frames and make a QuickTime movie, but we just wanted to show you how easy it is to set up a simple animation.

Now if you're the type who's ready to plunge ahead expecting to be the next Walt Disney without further ado, hang on just a little while longer.

So, class, what have we learned in our introductory lesson?

•   Use the Time Marker to show you where you are in time.

•   Using one of the tools on an object freezes it in space (in the project window), and in time (as a nib in the Score window).

•   How to play a rough version of an animation (with the Play button).

What you did was to pick a few points in time, and then determine where an object should be at those times. Typestry then calculated where the object should be in between those times. This is called "tweening" (or "interpolation" if that makes you feel better).

As you can see, you can create simple animations of your text with the controls in the Score window. A finished animation consists of a series of rendered frames, which can be used either as the raw material for a QuickTime movie, video, or for some other animation software.

proj1	proj1	proj1	proj1	proj1
TO				
	TO			
		TO		
				TO
			TO	
Selection :text	Selection :text	Selection :text	Selection :text	Selection :text
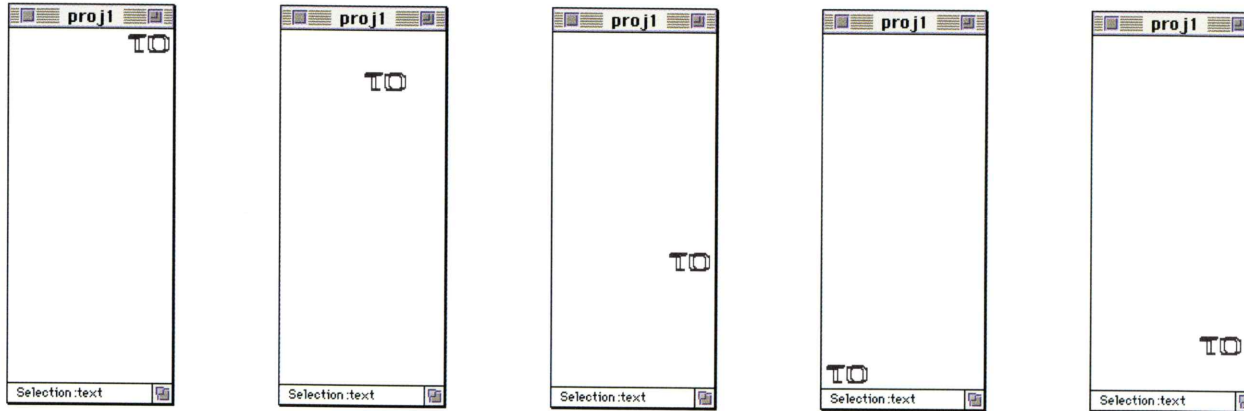
The Pose

Each pose nib (little black box) in an object's time-line implies four things about the object, corresponding to the four tools that allow you to change an object:

- position

- orientation

- size

- slant (skew)

These four characteristics define an object's *pose*. The way poses change over time defines an animation.

- In the Score window, each pose nib on a time-line represents a pose.

The path an animated object takes is defined by its position in some number of poses. Let's say you have five poses, equally spaced in time, that look like the ones above.

The object will follow a path that passes though all five of the object's poses. The *shape* of this path is determined in a popup menu. To get this menu, click and hold on a pose nib.

1:1
Linear
✓ Smooth
No Ease
Ease In
Ease Out
Ease In&Out
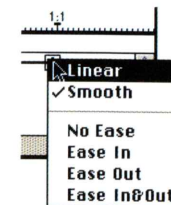
Linear. This moves the object in a straight line from pose to pose, creating sharp corners where it changes direction.
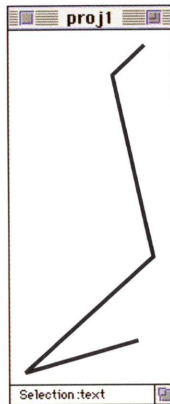
Smooth. This moves the object in a tight curve as it changes direction. The shape of the curve is affected both by where the object is coming from, and by where it's going.
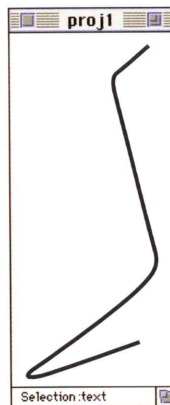
The four bottom items on the menu control not the shape of the path, but an object's *speed* near a pose.

No Ease. This moves the object at a constant speed as it passes through the pose.

Ease In. This decelerates the object as it arrives at the pose. At the moment of the pose it speeds up to its previous speed (before the deceleration). As it leaves the pose, the object moves at a constant speed. This is often useful when an object arrives somewhere (so you never see the speed jump as it leaves).

Ease Out. This moves the object at a constant speed approaching the pose. At the moment of the pose the object slows down, and is accelerated back to its previous speed as it leaves the pose. This is often useful when an object is leaving somewhere (so you never see the speed jump as it arrives).

Ease In&Out. This decelerates the object as it arrives at the pose, and accelerates it leaving the pose.

Each pose type has its own nib shape. Below, the nibs shown are, from left to right: No Ease, Ease Out, Ease In&Out, Ease In and No Ease.
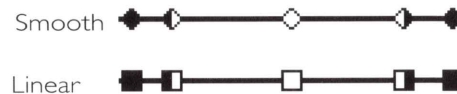
When would you want to ease in or out? Well, easing is often perceived as a more "natural" motion for many things. It's impossible, for example, for things to reach some speed without accelerating to get there. But, as usual, in computer graphics the impossible is not only possible, it's all too easy. Similarly, unless you're trying for a crash effect, decelerating to a stop is often desirable. However, there is a place for everything — if you're simulating the billiard ball effect, you'll want no easing and linear motion. For this situation, those settings will make for a more "natural" motion. Be sure to play around with different types of motion when you create your animations. They can add subtle effects that heighten the sense of motion.

While it's quite easy to make an object move in Typestry just by changing its position in some poses, you can also change the other characteristics of the object's pose. Resizing it in another pose will make it grow or shrink, and rotating it will make it twirl. In any pose you can change any or all of the object's characteristics.

Don't forget that since you can move a light's position in the Lights window, you can animate lights, too. You can make them track objects, or make the sun seem to rise.

• Note: Typestry provides a good way to get started doing simple animations. If you'd like to do fancier animations, you may need to look at packages designed specifically for animation. Also, if you would like to get an animation into video, you'll have to think about a number of issues Typestry was not intended to address, for example NTSC vs. PAL formats, NTSC "forbidden" colors, and so on.

Before we move on, there's something you must remember as you start to make animations, or you will surely curse yourself. You must *first* move the Time Marker to where you want it, and *then* set the object's pose (move the object). So now repeat this mantra:

• "First move the Time Marker, then set the pose. First move the Time Marker, *then* set the pose."

A common mistake to make when doing animation in Typestry is to move something, then move it somewhere else, then somewhere else, all the while leaving the Time Marker in one place. Nothing will animate unless an object changes position *over time*. The way to go to a new time is to move the Time Marker, or to select Jump Forward from the Motion menu.

Jump Forward skips ahead by the number of frames set in the Animation Settings dialog, available by selecting Animation Settings from the Motion menu. Naturally, you can go back the same number of frames by using Jump Backward, also under the Motion menu.

the pose
animation

Poses and groups

As we said before, an object's four characteristics define its pose. Well, the fundamental thing to understand about a pose is that *it defines a relationship*.

Let's look at the characteristic of position. Perhaps the most obvious way of describing a word's position is by saying something like, "It's in the middle of the window." But if we're talking about a letter in a word, you might say something like, "It's at the end of the word." In the first case the description was relative to the window; in the second it was relative to the word. This is exactly analogous to the way Typestry keeps track of things.

Now let's do a little experiment. This will prove that:

• Objects that are members of a group move relative to the *group*.

• Objects that are *not* members of a group move relative to the *window*. (For example, a word that's the only group in the scene isn't a member of another group, so it moves relative to the window.)

1. Get the word "test" into Typestry, near the middle of a squarish project window.
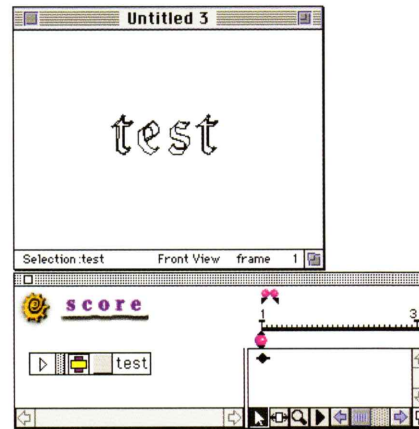
2. With the Score window showing, move the Time Marker about 3/4 of the way to the "1:1" mark, then move the word down to the bottom of the project window.
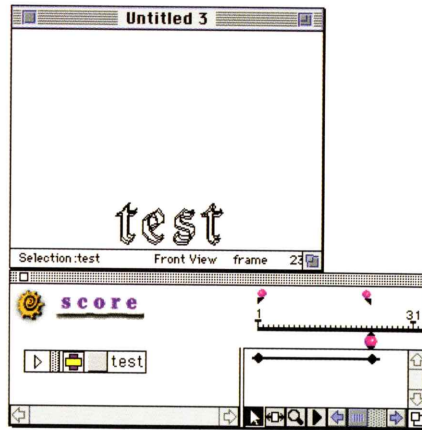
3. Run the animation by clicking on the Play button at the bottom of the Score window. (Make sure the animation brackets are placed appropriately.) You should see the word move from its initial position down to the bottom of the window.

4. Now open the word group by clicking on its triangle in the Score window.

Notice that although you created a new pose for the group, there are no new poses for the individual letters. You don't see new poses for the letters because their position, orientation, etc. *relative to the group* haven't changed — they're all still in their proper place within the word.

5. Move the Time Marker most of the way back to the first frame.

6. In the project window, select the "s" by double-clicking on it, and move it up to the top of the window.
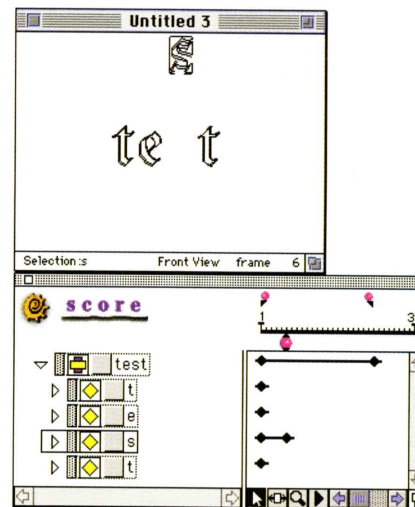
7. Run the animation again. As the word moves down you should see the box representing the "s" shoot upwards, then drift down as the rest of the word does.

Rather than thinking you moved the letter higher in the window, since it's a member of a group you should think that you made that part of the group higher than the rest of the group. You changed the letter's position *relative to the group*, not relative to the window. That's why when the letter finished its own motion, the word's motion affected it.

If the word were twirling in place instead of falling, the "s" would be twirling too, of course — it's part of the word. It would just be higher than the rest of the word.

Leave this project window as it is — you'll need it in a minute.

So, to review:

•   The characteristics (pose) of an object that is not a member of a group are relative to the 3-dimensional "space" inside your project window.

•   The characteristics of an object that is a member of a group (e.g., a letter in a word) are relative to those of its group.

Grouping and ungrouping

Now that you know about the motion of groups and their elements, the next step is to realize that you can:

•   separate an element from its group to allow the element to move independently;

•   control two objects at once by combining them into a group.

In addition to the above, in this section you'll learn a handy trick:

•   how to delay movements

So, what if we wanted the "s" to stay at the top of the window? Well, we could just move it there in the very last pose, but how could we be sure it wasn't just a little too high or too low in that pose? Instead, let's just remove it from the word and treat it as a separate object:

1.   Take it out of the word group by dragging it (by its gray drag bar) up above the "test" group in the Score window. Now there are two objects at the highest level: the "s" and the "tet."
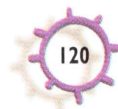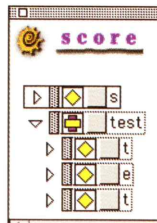
2. Run the animation.

The "s" moves up and stays there. Its movement is no longer relative to the rest of the word. But if we ever want the "s" to be part of the word again we're hosed — there's no connection between the two. So let's say we want to twirl the whole word when the "te t" reaches the bottom. What do we do?

Here's where the tricky part comes in. We can't just stick the "s" in the word again, because it will fall along with the word, after it reaches the top. We already know that. The trick is to have everything, all the letters, really be parts of one object again — one group. All we need to do is create a new group that contains both the "s" and the "tet" group, and twirl *that*:

3. In the Score window, select the "s," then select Group from the Edit menu. This creates a group with just the "s" in it.

4. Move the "tet" group into the new group by *slowly* dragging it to the right, and slightly upward until the purple cursor is under the drag bar of the "s." (If you'd like to review how to reorganize groups, and the behavior of the cursor, see the section on "Using the tree" in the *Group Therapy* chapter.)
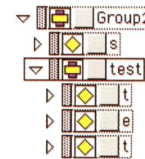
5. Move the Time Marker all the way to the "1:1" mark.

6. In the project window click on some empty space to ensure that you have nothing selected, then click on any of the letters to select the new group and twirl it some using one of the Rotate tools.

7. Run the animation again.

Uh-oh! We wanted the group to twirl *after* the "te t" reached the bottom, not while it was on its way there. We need to keep the *group* stationary until the right time. How do we delay it's rotation until later?

Remember, the group isn't moving relative to anything but the space in the window. And at time 0
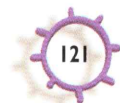
the *group* was just the way we want it to be when the rest of the word reaches the bottom of the window. All we need to do is copy that first pose over to the time when the rest of the word reaches the bottom of the window. That will prevent the group from twirling until that point:

8.   In the Score window, hold the Option key down and drag the group's initial pose even with the last pose of the "tet" group. This makes a copy of that pose.
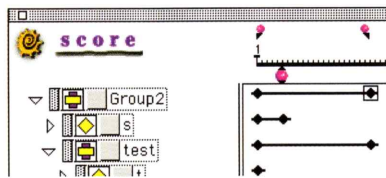
9.   Run the animation again.

So don't forget, when you need to change relationships for a while, ungroup an element, and then create a group that contains both the element and old group.

Save or close your project now.

And now for the "really big shew..."

Ok, now that you're warmed up, let's try making a more complete animation using a combination of tools and poses. Then you'll *really* be the next Walt Disney. First, get a new project window and make it wider than it is tall. Then:

1.   Get the Text tool, click once in the project window to bring up the Text dialog, and type in the word "Fly." Use the Extrude build method with the default Bevel Style and Depth.

2.   Use the Scale tool to make the word about half an inch high on your screen.

Let's have the large-scale movement be from upper left to middle bottom to upper right. And let's have the word get bigger as it nears the bottom. After all, you can have more than one kind of motion at once:

3.   Using the Move tool, move the word into the upper left quarter of the window.

4.   In the Score window, move the Time Marker halfway to the "1:1" tick mark.

5.   In the project window, scale the word so it's about twice as big, and move it to the bottom in the middle of the window.

6. Now move the Time Marker all the way to the "1:1" mark, and move the word into the upper right quarter of the window.

7. Run the animation by selecting Run Animation from the Motion menu. You should see the word move down as it grows, and then move up to the upper right.

You with me so far? Good. Now let's take advantage of the ability to move things at different levels and overlay some movement by individual letters. We'll have the "y" get lost and catch up with the word, while the "F" twirls on its way down. Let's do the "F" first:

1. In the Score window, open up the word by clicking on its triangle. Now you can see the timelines for the individual letters.

2. Slide the Time Marker halfway between the word's first and second poses.

3. In the project window get the Rotate tool and double-click on the "F." This selects the letter.

4. Holding down the Option key, click once on the "F." This brings up the Rotate dialog. Type "180" in the dialog and click on the left-most axis, then on OK. This rotates the letter forward so it's upside down.

To get the "F" to twirl the rest of the way we could rotate it 180° again when it reaches the bottom (where the word's middle pose is). But there's a more elegant way. Did you notice that what we want is for the letter to have the same *relationship* it had with the rest of the *group* at the beginning — same position, size, and orientation? I knew you did. Same relationship = same pose:

5. In the Score window select the "F's" first pose. Holding down the Option key, drag the pose directly underneath the word's middle pose. This copies the pose, restoring the letter's original (right-side up) relationship with the word.

Run the animation (Command-L) to check this out. Now for that poor "y." Like the "F," let's have the "y" be back to normal by the time it reaches the bottom:

6. Drag the "y's" initial pose out to, oh, just before the word's middle pose. This way it will rejoin the word just before it reaches bottom.

7. Set the Time Marker about where the "F's" middle pose is.

8. In the project window use the Move tool to move the "y" near to the upper left corner of the window.

and now for the reallybig shew...
animation

9. Move the Time Marker so it's halfway between the "y's" last two poses, and move the "y" so it's just above and to the right of the "l."

Run the animation again to view the fruits of your labor. And now for the finishing touch. After the word arrives at the upper right, let's have the "y" fall on the floor. We'll build in a pause before the fall for dramatic effect:

1. The final position of the "y" will be on the floor. This is the end of the animation. Since it's some time after the arrival of the word in the upper right, set the Time Marker about halfway between the "1:1" and "2:1" tick marks.

2. Move the "y" straight down (using the Shift key to constrain its movement) to the bottom of the window.

3. Using the Rotate tool and the Option key, rotate the "y" forward 90° (use the left-most axis in the Rotate dialog again).

4. Now take a look at the scene from the Left View — pull down the Effects menu, then select Camera, then Left (or Command-2).

(Don't let those camera views go begging to be used. Use them with abandon!)

5. The letter is *underneath* the word. This is because an object rotates around its center, not its base.

6. Using the Move tool move the letter to the right so it's just barely out from under the rest of the word. You'll have to sort of eyeball this. (But you might be able to use the Top View to check it — Command-3.) When you're done go back to the Front View (Command-1).

Run the animation again.

Surprise! We forgot to make sure that the "y" doesn't start to fall until *after* the word arrives on the right. Instead, it starts when it rejoins the word halfway through. What to do, oh *what* to do?

Well, remember, we want its *relationship to the word* to continue unchanged until sometime after the "1:1" mark. So we'll copy the pose where it's joined up with the word (currently the word's next-to-last pose) over to around 40:

7. Select the "y's" fourth pose; holding down the Option key, drag it to around 40, just a couple of frames before the very last pose.

Now. Run the animation, sit back with a cold one and survey your work. Ahhh, a job well done! What?! The pause before the "y's" fall is too long?

Piece of cake — moving a pose along the timeline adjusts the timing of the move:

1. Select the "y's" last two poses (using the Shift key to add the second one), and drag them to the left some.

Why not render it to a wireframe movie? It's only about 45 frames. Be sure to try the Play All Frames option under Playback in the Pixar MovieTool application. If you have a fast machine you may need to play it back at half speed. Or...

You could change the length of the animation! It's easy — you can use the pose scaling tool to resize the length of all the lines at once:

2. In the Score window, drag a selection box around all the poses *except* for the initial ones.

3. Set the Time Marker to the very first frame.

4. Select the Score window's pose scaling tool (to the left of the zoom tool).

5. Click and drag the last pose to the left or right. Dragging right lengthens the animation, left shortens it.

For extra credit you could:

•   Add eases (in and out) where appropriate — at the beginnings and ends of movements. Click and hold on a pose nib to bring up the ease popup menu.

•   Adjust the path of the "y" as it catches up to the word by adding poses. You could make it travel in a circle by positioning the letter at a few key points evenly spaced in time. Don't forget — move the Time Marker, then move the letter.

•   Adjust the timing of the various segments. Select the group of poses associated with a segment by dragging a selection box around them, or by holding down the Shift key while clicking on individual pose nibs. Then drag them left or right, earlier or later in time.

•   Delay the scaling of the word until it reaches the bottom. Hint: use Reset Scale from the Edit menu on the pose at which the word reaches the bottom.

Organizing poses

Most of the time you're dealing with poses you'll need to have the Score window's Pick tool selected. If you have the Zoom tool selected, the more you click trying to select a pose, the more you'll zoom in! To zoom back out, hold down the Option key while zooming.

Whenever you need to alter poses, you'll have to click and drag *on* a pose, not *near* it.

Pick   Scale pose   Zoom   Play animation
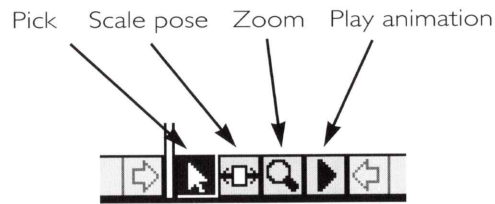
Creating a new pose — "freezing" an object

There are two ways to create a new pose for an object:

•   In the Score window, set the Time Marker to a time in the timeline, then select the object and adjust it in the project window.

•   In the Score window, select the object, then hold the Option key down and click on a time in the timeline for the object.

A new pose nib will appear in the Score window, indicating a pose for that object at that time. This ensures that the object will remain as it is at that time, no matter what happens in the previous or subsequent frames. (Just delete the pose nib to allow the object to resume the pose implied by the frame before and after.)

•   Note: Using any of the tools in the Transform toolbox on an object automatically "freezes" that object into a pose.

If you want to allow an object to take on a pose implied by poses before and after, all you need to do is unfreeze the object. Just delete the pose from the timeline. For example, deleting the third pose above would result in a path something like the one below right.

•   Warning: Remember, the Delete key deletes whatever you have selected in either the project window or the Score window. Hitting Delete when the project window is active will delete any selected *objects*! Likewise, in the Score window hitting it with an object selected deletes the object. However, with a pose nib selected, the *pose* will be deleted, not the object.

Selecting poses

To select a pose, just click on a pose nib on the object's timeline. You can select multiple poses to work on by dragging a selection box around them. Holding down the Shift key while clicking on a nib adds or removes it from the selection.

•   Warning: When you select a pose you won't see how the scene looks at that time. To do that you must double-click on the pose (or hold down the

Shift key while sliding the Time Marker, so it snaps to poses). This moves the Time Marker to the time of the pose.

Moving a pose — adjusting timing

Moving a pose is one of the most useful animation features of Typestry. It provides an easy way to change an object's speed.

You can move one or more poses anywhere along a timeline by clicking and dragging them. Beware though: moving one pose beyond another one can play havoc with the already-established movements.

Consider the case of two poses that make an object move from left to right in 24 frames. Let's say you create a new pose at frame 12, halfway through the animation. Then you move the pose to frame 20. The object is still going to be halfway across the screen in this frame (you haven't moved the object); it will just take longer to get there — 20 frames instead of 12. And the rest of the distance will be covered in just four frames. So the object will appear to move slower for the first half of the distance, and faster for the second half.

Remember: Click and drag *on* a pose, not *near* it.

Scaling poses — adjusting duration

You might want to stretch or squeeze the action in a part of an animation. There are a couple of ways you can do this. One is by dragging the beginning and ending poses of the section out some, until they run into other poses. However, there are tools to stretch and squeeze in more interesting ways. You can effectively resize just a portion of an object's timeline. The Time Marker acts as a reference point, controlling how the resizing behaves — whether one end is stationary while the rest of the line section moves, whether the middle stays where it is while both ends move, and so on. The farther from the Marker a nib is, the larger its motion is.

Here's how you do it. With two or more poses selected:

1. Select the Pose Scale tool in the Score window (to the left of the Zoom tool).

2. Drag the Time Marker to the point around which you'd like the line to scale.

3. Click and drag the poses along the timeline. This will resize only the selected section of the timeline without regard for points on the rest of the line. This may mean that the selected poses expand out beyond other ones.

-or-

3. Hold down the Option key while clicking and drag the poses left or right. This resizes the selected portion, and pushes out (or pulls in) the right-hand unselected portion of the line (without scaling it) as needed. The left-hand unselected portion is untouched. The whole timeline's length will change. In other words, the selected poses expand out (or in), moving some outer points out as well. This is the "smart scale" mode.

Duplicating a pose

Duplicating a pose is especially useful when you want an animation to end up exactly where it started. To duplicate poses:

1. Select all the poses you want to duplicate.

2. Hold down the Option key and drag one of the poses to a new place on the timeline. This creates copies of the selected poses and drags them all at the same time.

Deleting a pose

To delete a pose, just select the pose, and hit the Delete key.

Animation settings

You can customize the way the Score window works with the controls in the Animation Settings dialog. This is available by selecting Animation Settings from the Motion menu.
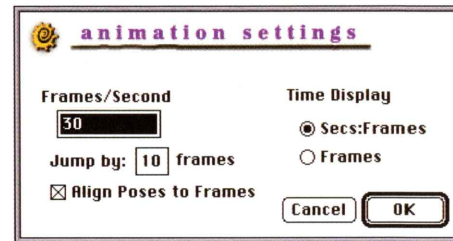
Frames/Second. This sets the number of frames per second. You'll want to adjust this based on whether you're going out to regular video, a QuickTime movie, etc.

Jump by. This sets the number of frames by which to jump when you use Jump Forward or Jump Backward under the Motion menu.

Align Poses to Frames. With this on, pose nibs and the Time Marker both snap to frame boundaries. Turning it off allows them to be between frames.

Time Display. This determines the meaning of the numbered tick marks in the Score window. The

default is Secs:Frames. This displays the current time and frame number. For example, 3:17 means the 17th frame after the 3rd second. Unnumbered tick marks are frames.

Rendering/viewing an animation

Typestry provides four ways to create an animation.

• You can see a simplified version of an animation (one with boxes representing letters) within Typestry.

• You can create a wireframe QuickTime version of the animation.

• You can create a full image QuickTime movie.

• You can create all the frames in a file format for use in other programs.

To view a simplified version of an animation within Typestry:

1. Set the animation stoppers at the top of the Score window to set the beginning and ending of the animation.

2. Select Run Animation from the Motion menu.

3. Click in the window to stop the animation.

Typestry runs the animation in the Motion Drawing Mode selected in the Preferences dialog. These modes are:

Burn In. This draws each frame, one on top of the other, beginning to end, creating a "trail" so you can see the objects' paths.

Loop Forward. This simply runs the animation from beginning to end, over and over, until you stop it.

Loop To and Fro. This runs the animation forward, and then backward, over and over, until you stop it.

Note: When Typestry animates objects on-screen, it always displays the required frames as fast as it can. For complex objects, this may be slower than you expect; for simple objects it may be faster than you expect. To see a "draft" of the animation at the right speed, make a wireframe movie (see below).

To create a QuickTime wireframe animation:

1. Select Make Movie from the Motion menu. This brings up a Save dialog.

2. Select a folder and type a name in the Make Movie box.

3. Click on Save. This brings up the Make Movie dialog.

4. Select Wireframe QuickTime movie under the Movie format; click on OK. This creates a QuickTime movie file directly. To view this file use the Pixar MovieTool (see the *Movie Tool* chapter, following this one).

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│  ⚙ m a k e   m o v i e                        │
│  ────────────────────────                      │
│                                                │
│  Name:         Untitled      ☐ Compute Shadows │
│  Image Quality: ○ Low ○ Medium ⦿ High ○ Custom │
│  Movie Format: ⦿ Wireframe Quicktime movie     │
│                ○ PICT files                    │
│                ○ Use Image Format Dialog (TIFF)│
│                  280 x 210  pixels             │
│  Frames:       ○ All      52   frames  ┌──────┐│
│                ⦿ From  [1] to [30]     │  OK  ││
│                ○ Keyframes (2)         └──────┘│
│                                        ┌──────┐│
│                                        │Cancel│││
│                                        └──────┘│
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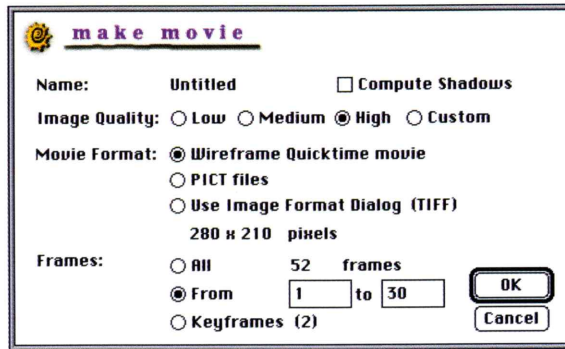
To create a full image QuickTime movie:

1. Select Make Movie from the Motion menu. This brings up a Save dialog.

2. Select a folder and type a name in the Make Movie box.

3. Click on Save. This brings up the Make Movie dialog.

4. Select PICT Files under the Movie format if you want the dimensions of the movie frames to be the same as your window. Otherwise select Use Image Format Dialog to specify that you want the settings found in the Image Format dialog to determine the dimensions of each frame.

5. Select an image quality. You can use lower quality settings to make a quick "draft" of an animation. Higher quality animations will take longer to render. If you've set any lights to cast shadows, check Compute Shadows to have them appear in the animation.

6. Click on OK. This creates a series of PICT files.

7. Use the Pixar MovieTool to build and view the movie (see the *Movie Tool* chapter, following this one).

To create just frames for use elsewhere:

1. Select Image Format from the Render menu. This brings up the Image Format dialog.

2. In the dialog., set the image dimensions, resolution, and File Type, and click on OK.

3. Select Make Movie from the Motion menu. This brings up a Save dialog.

4. Select a folder and type a name in the Make Movie box.

3. Click on Save. This brings up the Make Movie dialog.

5. Under the Movie format, select Use Image Format Dialog to specify that you want the settings found in the Image Format dialog to determine the dimensions, resolution, and file type of each frame.

6. Select an image quality. You can use lower quality settings to make a quick "draft" of an animation. Higher quality animations will take longer to render. If you've set any lights to cast shadows, check Compute Shadows to have them appear in the animation.

7. Click on OK. This creates a series of PICT files.

The nature of Typestry animation

In Typestry, an animation is really a sort of a table, like this:

Objects have a certain pose at each frame. If they're not in the table, they're not in the animation. If they are in the table, they're in the whole animation. They can't be in the table in one frame, and not in the table in another. This means that if you create an object in a certain keyframe, you've created it for the whole animation. Likewise, if you delete an object in any keyframe, it's gone for the whole thing.

What to avoid

That having been said, here are a few things you should avoid in an animation. They are all characteristics that are permanently in place.

•   Adding or deleting objects. An object exists (or not) for the complete animation. Likewise, when you group objects, they're grouped for the whole thing. If you want to make objects seem to disappear, you can use a trick: shrink the object almost to nothing in the space of a single frame.

•   Changing an object's Look, or changing any of the Object Info dialog settings (color, opacity, scale, etc.).

•   Changing anything in the Effects menu.

•   Changing a light's Look, color, or shadow-casting ability. (But there's a trick you can use to give the illusion of animating a light's Look and color. Read on...)

What to remember

And speaking of lights, don't forget — there are a couple of things that you *can* play with and animate

to good effect: any light's position and intensity, and any spotlight's coneangle as well. The Lights window shows you the state of the lights *at the time indicated by the Time Marker*. Since you can animate intensity, you can get the *illusion* of animating a light's color or Look using a trick. Use two lights in the same position, each with a different color or Look. Turn one's intensity down and the other's up. It will look like one light, since they're both in the same place.

Tradeoffs

When you set some poses for an object, Typestry moves the object through those poses using certain tweening (interpolation) schemes. Think of this as drawing curves through a series of points (poses). Different animation packages use different kinds of curves. Each has its advantages and disadvantages.

The tradeoff with Typestry's curves is that although the curve goes through all the points so you can see exactly where the object will be at a given pose, the *shape* of the curve may not be exactly what you want. Everything depends on the positions of the various poses. Some situations may cause an object to go through a point, and then beyond it, before starting to curve around, rather than curving exactly as it reaches the point. For rotations, sometimes you may see a "preparation" for the rotation. Here the object may rotate slightly the wrong way just before it starts the real rotation.

If you notice any of these subtle idiosyncracies you can fix the situation pretty easily. The general idea is to identify the pose where things seem "off," make a copy of that pose, and move it right next to the original. The closer the better — one frame away isn't too close.

An animation checklist

If you think you need to establish a new relationship between elements, you'll probably need to group or regroup things. Think about what needs to move relative to what. Remember, when we say move, we mean move, rotate, scale, skew, or any combination thereof.

If you need to move something independently of other things, try moving it out of the group it's in.

If you need to move something in conjunction with something else, try creating a new group that includes both things.

If you need to delay an object's movement, find the pose where the delay should *begin*. Copy that pose (using Option-drag) to the time at which the delay should end. The object won't change between the two poses.

If things are moving too quickly or too slowly, select the affected poses and use "smart" pose scaling.

If you need to change the length of a whole animation, just select *all* the poses and use the Pose Scale tool in the Score window to move them all at once, lengthening or shortening the whole animation.

If things start too early or too late, just move the pose(s) down the timeline.

If you need to reset an object's orientation, scale, or skew in the middle of things, just use one of the Reset... functions under the Edit menu.

If you need to tweak the movement of a group, you may benefit from creating a new group that includes the one you want to tweak. Tweaking the new group leaves the old one to act as it has been, so you don't have to go back and change other parts of the animation.

Rendering a loop

If you're doing an animated loop you may have to make a small adjustment to your animation. First of all, you should have the first pose duplicated at the end of the animation, so things end up where they start. Now, when you go to render the frames, render all but the first frame, since it's already duplicat-ed at the end. This is especially important if you're using particles, wind, or motion blur.

• And remember: It's not every piece of software that allows you to do motion blur. If you can afford the extra rendering time, be sure to turn this on: it adds a powerful bit of realism. You'll probably want to use the Normal Blur setting (for the Motion Blur item under the Effects menu) for an animation, unless you're shooting for an unusual effect.

Creating a 2-frame animation

To use particles or wind (Physical Simulation) in a still image you must create a an animation, since these both depend on motion. However, you may need only two frames to achieve the desired effect. In any case, you should never need more than two poses.

When you use particles or wind, Typestry has to calculate the position of the particles or the sheet in every frame of the animation. For this reason, the fewer frames you have, the smaller the number of calculations that will have to be made, speeding things up.

• This means that you should use the Animation Settings dialog (available from the Motion menu) to set a low number of Frames/Second. Two may be

sufficient — this will allow you to see things at intervals of half a second.

1. With the Score window showing, drag the object's initial pose nib out. The farther you drag it, the later in time the rendered frame will be.

2. Double-click on the pose nib you just dragged out. This sets the Time Marker to that time.

3. Select Update Simulations from the Motion menu. Typestry will then calculate things for that frame. The more intermediate frames there are, the longer this will take.

4. If you need to, move the pose nib to a different time, double-click on it again to see the pose at that time, and select Update Simulations again. Repeat this until you reach a time that gives you the results you like.

Danger, Will Robinson! To see the effect of the particles or wind in a given frame, you *must* select Update Simulations from the Motion menu. Otherwise, the calculations for the object's shape won't get done.

5. Now you can render.

Summary of Score window operations

- "First move the Time Marker, then move the object. Move the Time Marker, *then* move the object."

Click and hold to show
Perfs menu

Click and hold to show
Looks menu; click and
drag to copy Look to
another object

Click to open/close

Fly

F. 1

1. 2

y. 3

Drag bar: click and
drag to move in/out of
groups, up/down in list

Click and type to edit name

summary of score window operations

animation

Animation brackets

Second:frame

0:1   1:1

Time Marker: shows
the time and frame
of the current view

Pose nib: click and
hold to show Pose
type menu; Option-
click to create new
pose nib; Option-
drag to copy nib

Linear
✓ Smooth

No Ease
Ease In
Ease Out
Ease In&Out

Pose/ease type menu

Pick tool

Play animation

Pose Scale;
  +Option key = smart scale

Zoom in;
  +Option key = zoom out

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movie Tool

Pixar MovieTool is a simple utility for playing and building QuickTime movies. If you've used Pixar Typestry to create a wireframe QuickTime movie you will use this tool to playback the movie. Once you've rendered a sequence of PICT files from Typestry, use Pixar MovieTool to convert them into a single QuickTime movie file and to play it back.

Playback

To playback a QuickTime movie, simply open the movie (using Open in the File menu). This will bring up your movie within the QuickTime standard movie controller.
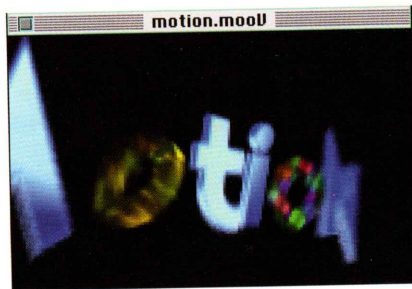
This interface consists of 5 simple controls which are modeled after a typical consumer VCR.

The play/pause button allows you to start your movie running or pause it if it's already running. While paused on any single frame you can copy it to the clipboard using Copy Frame in the Edit menu.

The scrollbar indicates your progress through the movie and allows you to shuttle forward and backward.

The frame forward and frame backward buttons allow you to step through your movie frame by frame.

The resize button allows you to resize the playback window.

Pixar MovieTool provides additional control over playback through the Playback menu.

Playback	
Loop	⌘L
Loop To and Fro	⌘P
Half Speed	
✓Full Speed	
Double Speed	
Play All Frames	
Half Size	⌘0
Normal Size	⌘1
Double Size	⌘2

Looping

• Loop causes your movie to be replayed continuously.

• If Loop To and Fro is set AND Loop is on, your movie will play forward until the end, then play backward until the beginning (and so on).

Playback Speed

Pixar MovieTool provides several controls over the speed at which a movie is played. When a

QuickTime movie is constructed, it is assigned a preferred, or "natural," playback rate. When playing your movie, QuickTime does its best to preserve this natural playback rate. In doing so it may need to skip individual frames in order to assure that things happen at their "natural" time. This is great for live video, but when developing an animation you are probably more interested in experimenting with the playback timing or in seeing every frame that you've rendered. If you want to change the playback rate, use the controls to set Half Speed, Full Speed or Double Speed playback. If you want to see every frame of your animation choose Play All Frames.

Playback Size

The dimensions of your movie have a significant impact on QuickTime's ability to play it back. The larger the images, the more likely QuickTime will need to skip frames and cause jerky motion. There are some internal optimizations in QuickTime for playback into windows which are Half Size, Normal Size and Double Size. Pixar MovieTool will automatically set your movie window to the size you choose. Use the resize control on the window itself for other dimensions.

Build Movie

Use Build Movie to construct a QuickTime movie file. Build Movie asks you to specify the first and last frames in a sequence of frames that were rendered with Typestry.

Here are the rules for building a movie:

- the frames must be in PICT file format.

- the file names must follow a naming convention where the movie name is followed by a period which is followed by the frame number (movie.1 movie.2, movie.3, ...).

- all frames must be located in the same folder.

QuickTime movie files can be quite large. In order to reduce the size of your movies and to increase their playback rate, Pixar MovieTool uses the compression scheme specified in the Compression Setup dialog.

The Compression Setup dialog is a standard compression dialog which is uniform across QuickTime applications (just like the standard file selection dialog). It allows you to choose which compression scheme to use when building your movie. The contents of this compressor popup menu will depend on which compression components you have installed on your system.
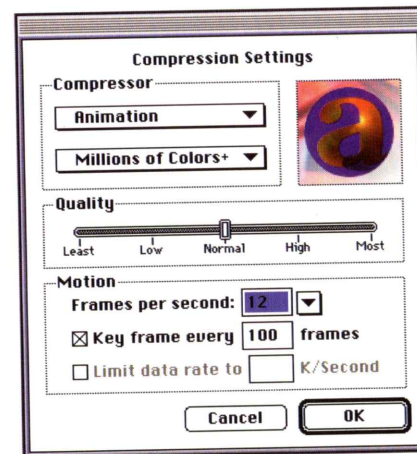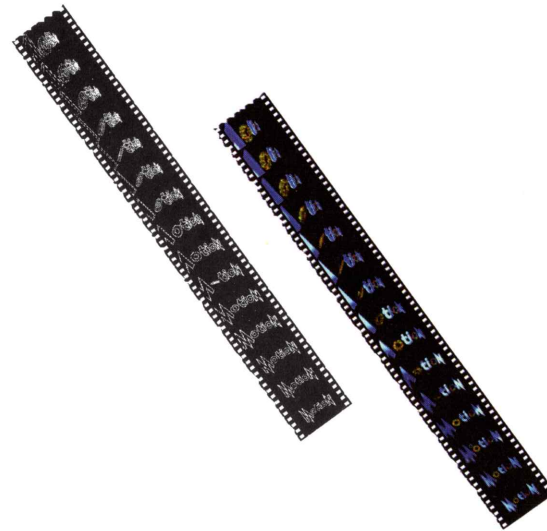
Compressor

Apple supplies a few standard compressors with QuickTime and these are:

Animation. Your best choice for a compressor. This compressor has the best characteristic for synthetic imagery. It shouldn't cause your image to deteriorate and it should reduce the file size. For highest quality, use Millions of Colors.

Graphics. This compressor doesn't provide you with much control over the quality of the image so it's generally unsuitable for our purposes.

None. This doesn't do any compression. It will playback slower than the Animation compressor.

Video. This compressor is intended for live video movies. It compresses files quite well, has a good playback rate, but introduces many artifacts into your images.

Photo-JPEG. This compressor offers the highest compression rates for the highest quality. Unfortunately it takes the longest to compress or decompress yielding slow playback rates.

Quality

This slider gives you some control over the quality vs. size trade off for compressors. This slider has no or minimal effect for certain compressors.

Motion

You can control the "natural" playback rate of your movie by setting its Frames per Second before building it.

When building a highly compressed movie you may wish to insert an uncompressed reference frame every so often. Use the Key Frame every… field to specify how often you'd like these frames to appear. This field will be dimmed for certain compressors which don't actually compress your image.

simple Things

Working with a Typestry window

You might want to make your project window the same size as your final rendered image so you'll see things at the correct scale. To make a Pixar Typestry window a particular size:

1. Select Image Format from the Render menu. This brings up the Image Format dialog.

image format

Window Size		Output File ☐ Constrain Aspect Ratio
581 pixels	Width	**400.00** pixels ▼
419 pixels	Height	300.00
72 pixels/in	Resolution	72 pixels/in ▼
	File Type	PICT ▼
[Set Default]	File Size	468.8K [Cancel] [OK]
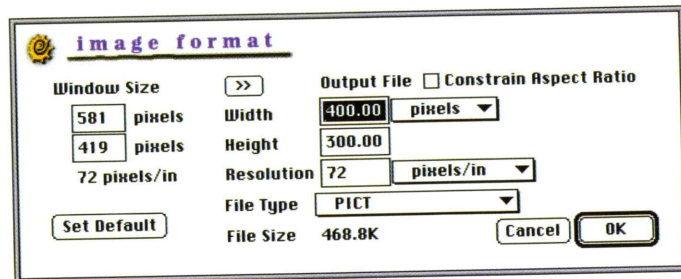
2. Under Window Size, type in the dimensions you'd like to use.

3. Click on OK.

working with a Typestry window
simple things

Warning: If you render to a file rather than to the screen, the dimensions used are those under Output File instead of Window Size. If you want these to be the same, just click on the ">>" button. This loads the Window Size dimensions into the Output File dimensions.

Basic Preferences

Some items in the Preferences dialog are useful at any time. This is available by selecting Preferences from the File menu. These are described here. Descriptions of the other items appear later in this manual.

```
┌─────────────────────────────────────────────┐
│  ⚙ preferences                              │
│  ─────────                                   │
│  Wireframe Complexity    Motion Drawing Mode │
│  ┼·········+               ⦿ Loop Forward    │
│  Line Color   ■            ○ Loop To and Fro │
│  Empty Space               ○ Burn In         │
│    ⦿ Colored    □        Grid                │
│    ○ Transparent         [10] by [10]        │
│  Nudging Distance        Renderer            │
│    -·······+               ⦿ Internal RenderMan │
│  Look Editing Level        ○ MacRenderMan    │
│    ⦿ Standard                                │
│    ○ RenderMan Expert    [Cancel] [ OK ]     │
└─────────────────────────────────────────────┘
```
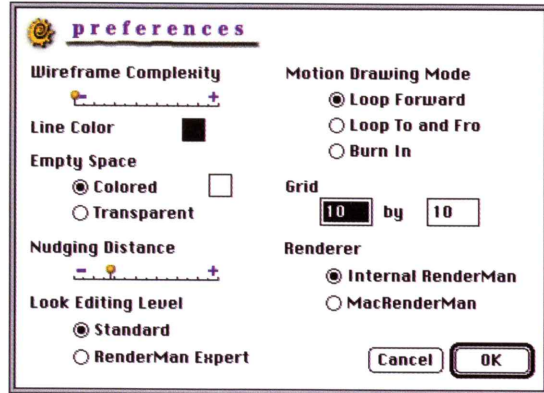
Wireframe Complexity. This controls the accuracy with which letters are displayed. Setting the accuracy higher slows down screen redraw.

Line Color. This controls the color of the wireframe lines in your window. Just click on the box and pick a color from the color picker. Be sure to make this contrast with the Empty Space color (see below), otherwise you won't see the lines against the background.

Empty Space. In the project window, the Colored button controls the color of the background on which the wireframe lines are drawn. In a rendering, it controls any "empty" areas in the image: those not covered by a wall, floor, or letters. Just click on the box and pick a color from the color picker. Choosing Transparent will have the effect of making these areas look black, but in fact, they'll be completely transparent when used by programs that support an alpha channel.

Nudging Distance. When you use the Move, Rotate, Scale, and Skew tools you can use the arrow keys on your keyboard to affect the selected object in small increments. This control sets the size of an increment.

Look Editing Level. Some Looks have many controls. These are what you see in the Edit Look dialog. By clicking on RenderMan Expert you can see some parameters that are normally hidden from

view. These low-level parameters, at the heart of the RenderMan shading model, act somewhat differently from the other parameters. You can get along perfectly well without ever touching them. If you're still interested, they are described in "RenderMan Expert Parameter Information for the Adventurous" in the *Editing Looks* chapter.

Grid. This sets the number of grid lines you see in the grid displayed in the project window by the Toggle Grid command under the Edit menu.

Renderer. If you have Pixar's NetRenderMan, you can bypass Typestry's internal renderer and render across your network. Just set this to MacRenderMan and select a renderer in the Chooser.

Printing

To print an image, just select Print or Print One Copy from the File menu. If the image was rendered to the screen, it gets printed at the size and resolution you see on your screen. This means the resolution will usually be 72 pixels, or dots, per inch.

If you need a higher resolution, you'll need to render the image to a file and print it from some other application, like Photoshop, that deals with resolution in conjunction with printing.
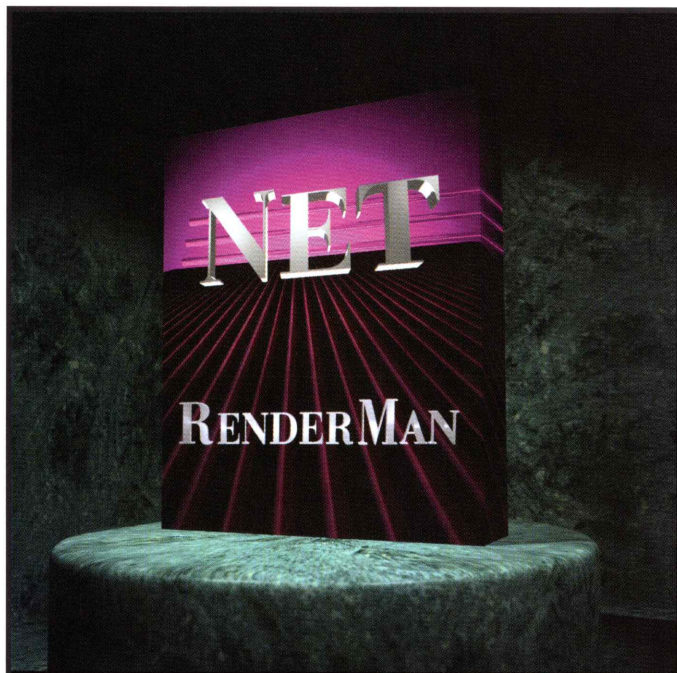
This image was created with Pixar Showplace using Pixar One Twenty Eight Textures.

Pixar's NetRenderMan brings dramatic speed improvements to the 3D computer picture making process by allowing you to utilize remote CPUs for rendering. NetRenderMan allows Pixar Typestry users easy access to networked rendering using Pixar's PhotoRealistic RenderMan software. Once installed, rendering a high-quality Pixar Typestry color image from a networked UNIX workstation, or a network of Macintosh CPUs is as straightforward as printing a document. This is ideal for anyone rendering large print-quality images. With NetRenderMan you can render your finished high-resolution image overnight and have it ready for you in the morning!

NETRENDERMAN
A Macintosh with the power of a UNIX workstation or multiple Macintosh CPUs

Tasks

Can I use Fontographer and Illustrator output both in the same Typestry file?

Ahhh. We were hoping you would ask that. See this picture? It uses both. Here's the story.

First, a nice fat little star was created in Fontographer.

Three separate star "words" consisting of 4, 11, and 5 star characters (top, middle, and bottom, respectively) were brought into Pixar Typestry 2. The stars were sized and positioned. The wall background was added and the file rendered. This rendered Black and White EPS file was imported into Adobe Illustrator and the strings were drawn in. The star image was deleted

and the strings were saved in three files (top, middle, bottom). Each Adobe Illustrator string was imported into Pixar Typestry 2, sized and positioned through the appropriate set of stars.

The Christmas ornament was created using three of the snowflakes in the Zapf Dingbats font and the Rubber Sheets option. The top of the ornament is simply an extruded Gill Sans capital "O" with no bevel. The hook eye is the upper case "U" from the Charlemagne font.

Grouping was extremely handy for this project. All the stars and strings were grouped as were the ornament parts.

Looks: The stars are EC Gems Dented Jewel with the highlight strength and spread turned up and the

Pits relief added. The string is a new Relief, Threads, combined with a shiny red Instance of the Metal Look. The snowflakes on the ornament were created with EC Gems-Corrosion, again with the highlight spread and strength turned up. To this point all the Looks were customized in Glimpse.

The blue ornament background is the Starter: Shiny Chrome with the highlight strength and spread turned up and the color set in Typestry 2. The ornament top is Starter: Combinations:Engraved metal and the hook eye is Starter: Shiny Metal set to gold.

Last but not least, the back wall is Pixar 128 Belizan Mahogany.

Lights: #8 at 100% with a spot and shadows. #5 at 100% with a spot, focused tightly on the ornament only.

Rendering time on a Mac IIci with a YARC accelerator board was 2 hours and 22 minutes. Final rendered size was 7x5 inches at 300 dpi, because it was intended to be used as a Christmas card.

How do I change a word's bevel?

You must use the Edit menu's Replace Selection command for this. But the command is available only for whole objects that remain as they were generated in the text dialog. This means that you can't type

in a word, and change the bevel of one of its letters. You must change the whole object. If you need to change the bevel of a letter, you should type in the letter separately and group it with the rest of the word.

But to change an object's bevel:

1. Select the object.

2. Select Replace Selection from the Edit menu.

3. Click on Build Object.

4. Set the Bevel Style or Depth.

5. Click on OK.

How do I kern letters in Typestry 2?

There are no facilities specifically designed to do kerning *per se*, but you do have two options. First, you can use Illustrator to adjust almost anything you'd like about your text, and import that file. Second, within Typestry you can always move individual letters to adjust their spacing. This is best done with the Camera (in the Effects menu) set to Telephoto:

1. Select Telephoto from the Camera menu (under Effects).

2. Select a letter (double-clicking to select the letter as a subelement of a text object, if necessary).

3. Select the Move tool.

4. Hold down the Shift key to constrain the direction of motion while starting to drag the letter horizontally.

5. Don't forget to set the Camera view back to Normal, if that's what you were using.

How do I use my own texture on a word (or wall or floor)?

1. With the object selected in the Looks window, click on the New Look button.

2. Use the Browser to find the Picture/Background Look in the *Look Instances:Place My Pictures:Simple* folder; then click on Select.

3. Click on the Edit Look button in the Looks window.

4. Find the Color Picture parameter in the Look Editor dialog and select Other Picture from the popup.

5. Use the Browser to find your image, and click on Select. Your image must be in RGB TIFF or PICT format.

6. In the Look Editor, click on Save As and save the Look.

7. Render! You may need to adjust the scale in the Object Info dialog, available by clicking on the Object Info button in the Looks window.

How do I avoid having letters run together?

If you use a large bevel size this may be unavoidable. Using a smaller bevel size will help, but otherwise:

• Move the letters one at a time using the Shift key to constrain motion to the horizontal (see the kerning task above); or

• Type a space between each letter as you type in the text dialog.

Can I use any font at all?

Typestry can only use a font if:

• it is a Type 1 outline font located in the System folder's Extensions folder, or in a folder containing an open Suitcase file, which can be anywhere in your system.

• it is a TrueType font in the System file itself.

Warning: Some TrueType and Type 1 fonts (typically shareware or freeware) are poorly or illegally con-

structed. If this is the case, Typestry may not be able to properly convert characters into 3D.

How do I adjust Looks (change color, size, orientation, etc.)?

1. Select the text with the Look on it.

2. Click on the Object Info button in the Looks toolbox.

3. Use the Object Info dialog to change the Look's size, color, orientation, opacity, and projection.

If you'd like to make more extensive changes you should click on the Edit Look button in the Looks window and use the Look Editor.

See the chapter on *Applying Looks* for more information on both of these procedures.

How can I use NetRenderMan with Pixar Typestry?

If you have NetRenderMan and would like to use a renderer on the network:

1. Select Preferences… from the File menu.

2. Click on the MacRenderMan button.

Make sure you have a network renderer selected in the Chooser (not Local!).

How can I speed up rendering?

• Use lower quality settings when appropriate (to check on position, orientation, preliminary lighting, etc.).

• Make your window smaller: larger images take longer to render than smaller ones — you may not always need to see things at full screen size.

• Use the crop window liberally. If you apply a Look to some text, you may not need to see all of it — a single letter might suffice.

• Use effects judiciously. Motion blur, perforations, and shadows can all slow down rendering, and the more perforations and shadows there are, the slower the speed. Using your own pictures in Looks will tend to slow things down somewhat, too.

• The more shadow-casting lights you have turned on, the slower the rendering. Your image may need a lot of lights, but you may not need all of them every time you render.

If you've done all this, and you're willing to spend money to buy more speed you should consider either accelerator boards, a faster machine, or rendering across a network either to a UNIX machine

or to other Macs on the network using NetRenderMan.

Some accelerator boards are designed specifically for speeding up RenderMan renderers. Most generic accelerator boards will also speed things up.

How do I guarantee enough memory to render?

You can't guarantee it, but you can try increasing the application's memory.

To increase the application's memory, first quit Typestry. Then:

1. Select the Pixar Typestry icon.

2. Select Get Info from the File menu. This brings up the Get Info window.

3. Type in a higher number in the "Current size" box in the lower right corner of the window. Be sure not to exceed the available memory in your system.

4. Close the window.

How do I improve the quality of my shadows?

Shadows are computed for an image of a particular size. If you have computed shadows for a small screen image, and then render to a file (or window) of larger dimensions without recomputing shadows, you may get poor results.

When rendering to a file, always use "Compute Shadows" instead of "Render with old Shadows," unless you know the old shadows are both correct and an appropriate size.

How can I correct typos?

1. Select the object to be changed.

2. Select Replace Selection from the Edit menu.

3. Type the correct text in the text dialog (using the same font and bevel settings!).

4. Click on Build Object.

How can I get one word behind another?

1. For this you'll probably want to make sure the words are in separate groups. Use the Tree window to do this.

2. Then select Left or Top from the Camera popup, available under the Effects menu. These

allow you to see the words from a more convenient perspective.

3. Use the Move tool to move the words into the right positions.

4. Get the Front view back from the Camera popup under Effects.

How can I get reflections?

In a nutshell, to reflect on a floor, make a duplicate of the object, reverse it, put it under the floor, and make the floor semi-transparent. The process is rather inexact, and is kind of cheating, but hey, whatever it takes... Here are the steps:

1. Create two identical versions of the text object.

2. Superimpose one on top of the other as accurately as possible (see the next task).

3. Bring up the Scale dialog by holding down the Option key while clicking on the object with the Scale tool.

4. Click on Nonuniform and type −100 (that's negative 100!) in the Height box.

5. Drag the reversed object down (using the Shift key to constrain movement) so its top meets the bottom of the regular object. This will be the reflec-

tion. (If you want the object to look like it's floating in air, the reflection won't meet it, so move the bottom one farther away.)

6. Group the two objects. This way you can adjust them (move, rotate, etc.) together.

7. Select Floor from the Backgrounds menu item under the Effects menu.

8. Now select Floor Setup from the same menu.

9. Click on the Manual setting and try to line the floor up so it falls exactly halfway between the two objects; click on OK.

10. After you've applied a Look to the floor, get the Object Info dialog by clicking on the More Info button in the Looks toolbox.

11. Turn down the Opacity a little so it's around 80 or 90%, and click on OK. (You'll have to experiment with this setting to get just the reflective effect you want.)

12. Render.

This trick has its limits. Since the "reflection" is really just another object, its surface won't look upside down with respect to its counterpart (though you may be able to adjust this by flipping the Look in the Surface Info dialog, depending on the Look). But you may not see enough of it to really notice.

Also, if the object is tilted forward or back, its reflection will have to be tilted in the opposite direction. You should do this before you group the words.

To reflect on a wall, you'll have to put a copy of the object (not reversed, as for the floor) behind the wall. See the "How can I get one word behind another" task for this procedure. Check the Wall Setup dialog (from Backgrounds under the Effects menu) for placement of the wall and the objects in relation to it.

What's the best way to align things?

1. Select Telephoto from the Camera menu item under the Effects menu.

2. Select Preferences from the Edit menu and increase Wireframe Complexity to the maximum. Also, set the grid dimensions to some number that will give you enough grid marks to help line things up: 25x25, 40x40, whatever works for you.

3. Make your window as big as possible.

4. Select Toggle Grid from the Edit menu.

5. Line your objects up.

5. When you're done, set the Camera back to what it was!

How can I get a light to track by itself?

A light can only track an object, but you can create an invisible object (maybe just a single character) for the light to track, so it looks like it's tracking by itself. To make an object invisible, just turn its Opacity setting all the way down in the Object Info dialog, available by clicking on the Object Info button in the Looks toolbox. (You must first apply a Look to it.)

I rendered a word and brought it into my page layout program, and I got the word on a black background. How do I get rid of the background?

The short answer is you can't, unless like Adobe Photoshop, your page layout program (or whatever) uses an alpha, or matte, channel. If an alpha channel is supported, then:

1. In Typestry, select Preferences from the File menu.

2. Make sure the "Transparent" Colored button is selected.

3. Click on OK.

But if you just need a white background in your image so it blends in with a white page, the solution is simple. Use the steps above, but make sure the

"Empty Space" Colored button is selected, and that the color is pure white.

When you rerender, you'll have a white background. Of course, the Empty Space color can be anything, and so can match any solid background you may have.

But what if you want the word to lie on top of an image you already have on a page? Well, the fact of the matter is, you're stuck with importing a rectangular area. But despair not, for Typestry is capable of making empty areas of an image disappear using "coverage."

The theory is, modify the idea of a pixel so that in addition to color information, it includes an amount of coverage. Now, when you bring in an image over a background, for each pixel in your image you can ask the question, "Should this pixel cover what's under it?" If the answer is yes, you see the regular dot of color in the image. If the answer is no, you see the background. Voila! A rectangular image covering a non-rectangular area!

Using the alpha channel, not only can we turn coverage on and off, we can also turn it on a little, a lot, or anywhere in between. Turning it on completely for a part of an image makes that part completely opaque. Turning it off makes it completely transparent. Anywhere in between makes it semi-transparent.

In those programs that know what to do with alpha information ("support" an alpha channel), each pixel of an image is described by four values, three for color (RGB) and one for coverage (alpha). In those programs that don't support alpha, an image's pixels have only RGB values, and all the pixels are just there, covering everything.

Currently, there's a problem. We're in one of those transition times where some software supports an alpha channel, and some doesn't. Unfortunately, most page layout and paint programs don't yet support alpha. So where's this leave us?

Well, it depends on what you need to do. If you want to include a Typestry word in an image you've made, buy a program that supports a matte, or mask channel and just copy the "covered" part of the Typestry image into your image. No unsightly rectangle, no extra pixels, just the word.

If you want to put a Typestry word over your text, you'll either have to plan on having a rectangle around the word or lobby for your application to support an alpha channel!

How do I know what size and resolution and stuff like that to use if I'm printing to a LaserWriter (or Lino, etc.)?

OK. We'll assume you've made your project window the shape you want your image to be. Additionally, you must know what linescreen you'll be using when you go to print. If you don't know about this, read on. If you're printing on a LaserWriter, figure on 60. Then:

1. In the Image Format dialog (under the Render menu), click on the ">>" button to load these values into the Output File boxes.

2. Check the Constrain Aspect Ratio box.

3. Change the popup from pixels to inches.

4. Enter the Width and Height of the image as it should appear on the printed page.

5. Multiply your linescreen number by 1.5 and type this in the Resolution box.

6. Render to file.

And now a little explanation. No matter what printer you're going to use, you need only decide on a linescreen value to know what numbers to use in Typestry. The linescreen number is typically something like 60 for a 300 dpi LaserWriter, and more like 120–150 when going to Lino or high-resolution imagesetters. The linescreen basically determines how coarse the image looks.

Bear in mind that the higher the linescreen number, the less color subtlety you'll see in any but the highest-resolution imagesetters (2400 dpi or more).

For the Resolution you can actually use a number that's between 1 and 2 times the linescreen number, and you may want to try a test or two to see what you like best. But 1.5 should work pretty well.

How can I get my animations out to video?

If you want to see your animation in real time, you're probably going to have to get fancy and spend money. QuickTime is useful for many purposes, but to get real speed and large frame capabilities, you may want to look at video systems. These can consist of a board to plug in your machine and software that allows you to record a series of images onto frames of videotape. You can then edit frames, add special effects, and so on. And of course, you'll be able to play them back at video rates, just like you see on your television. Some packages (Diaquest, for example) can record either individual frames, or whole QuickTime movies to video disk or tape.

Are there any rules of thumb for getting good results in Typestry?

While there are a lot of ways to make a good picture using Pixar Typestry, there are also a lot of ways to make a bad one. To help you avoid some of the pitfalls in the process we've come up with some tips and caveats.

• Lighting from above (lights 1, 4, and 7) tends to look most "natural."

• A reasonable light setup could have all lights off, except for light 7, which should be all the way on. (An unreasonable setup would have all the lights on.)

• When using perforations, usually a small bevel size will help readability.

• Avoid using transparency when bevel size is large unless you want to see the internal structure of a letter's beveling.

• When using motion blur, the longer the streak, the more dissipated it will look.

• To get highlights on objects where you want them, think of the surface as a mirror; tilt the object (or move the light) so you could see the light in the mirror.

Troubleshooting

Letters aren't beveled as much as I expected.

This can happen for two reasons:

• The letters appear too small for you to notice much beveling. Depending on the bevel style and size, the effect can be subtle enough to be apparent only when the letters are relatively large.

• The letters' depth has been scaled, stretching out the bevel so it's not as apparent. You can use Replace Selection from the Edit menu to redo the Depth of the bevel so it's closer to what you want. Then once it's in the project window you can tweak its depth with the Scale tool.

I edited a bevel but it looks all crazy in the rendered version.

If you've edited a bevel so the line curves around and intersects itself, or does something exceedingly weird, Typestry may get confused. Try making the bevel a little simpler.

I turned on a shadow, but I don't see it anywhere.

Could be one of the following:

• There's nothing for the shadow to fall on (a floor, wall, other characters, etc.).

• The light is shining at a low angle, and casts a shadow above the floor.

• The light is a back light, and casts a shadow in a direction opposite the wall.

• The wall is right up against the back of thin letters, so it's difficult to see.

• There are other lights on, drowning out any shadows.

Shadow looks funny on floor/wall

This can happen if the wall or floor is in an orientation that makes shadows fall in an unexpected way. Check the Wall Setup or Floor Setup in the Effects Backgrounds menu.

I have a lot of lights turned on, but the floor is still pretty dark. Why?

Since Typestry lights shine in a particular direction, if a surface is facing away from the light it will be relatively dark. If your image uses lights 3, 6, or 9, which shine up from below, the floor's surface (and tops of letters as well) will not be lit by these lights — they're shining on the floor's underside. Either increase the ambient light, or use any of the other lights, which shine from higher up.

How do I avoid having "washed out" areas in my image?

This is usually the result of too much light.

• Before you try turning lights down, first try reorienting the affected elements so the light falls more obliquely, if you can.

• If you can identify a particular light that's having the most effect on the area, try reducing that one first.

• Try a different combination of lights.

• Reduce all the lights gradually until the area looks more normal.

• If the ambient light intensity is more than about a quarter of the way up, your whole image may seem "flat." Just reduce the ambient intensity to improve this.

I only see a wall in my picture, but I know there's text there. What happened?

You probably got the wall in front of the text by manually adjusting it using the Wall Setup dialog in the Effects menu. Use the dialog to reset the wall.

I just can't seem to get things as shiny as I want them. What's the deal?

The desire for shiny things is an ancient one. There's just one small trick you should know to help you make things shiny. If you're using any Look that has a simulated reflection (and you can check this in the Look Editor dialog) you need to turn on some back lights.

This is because the simulated reflection comes from a simulated object that faces the *front* of your text. Back lights, shining on the back of your text, shine on the *front* of the simulated object, making it brighter. This will have the effect of making the reflection brighter and more pronounced. Try adding 3 or 4 back lights at medium intensity and see if things don't improve.

You can also turn up a Look's Shininess parameter in the Look Editor dialog (available when you click on the Edit Look button in the Looks window). Save this Instance and use it instead. One caveat here. It's easy to think that something doesn't look shiny enough because it looks very dark. You might also try turning *down* Shininess and seeing if that has the effect you're looking for. This will, in fact, make the dark areas lighter, and may make it *seem* like it's reflecting more.

Another thing to try is turning on an environment with the E light in the Lights window, or using an environment picture in the object's Look.

I perforated an object, but the perforations don't go all the way through the object (or I don't see some or all of the perforations).

If the perforator is thinner than the perforatee, as it were, all the perforation will occur inside the perforatee, and you won't see any perforations. If the perforator doesn't go all the way through the perforatee you'll get a carved out effect. Just make the perforator thicker so it sticks out both sides of the perforatee.

I applied a Look, but I don't see its effects.

• The Look's scale is too low or too high. Try 50% and 250% in the Object Info dialog's Scale box.

• There's not enough light. Try adding more.

• It got applied to the object's sides instead of to the whole thing.

• Rendering quality is too low to see the detail. Try using Excellent 'n' Slow.

I turned the floor on, but I don't see it.

It's right in the middle of the picture, so it's edge on. Check the Floor Setup dialog and check its position and orientation or, camera is set to Telephoto and you're seeing the floor "edge on."

Why can't I choose Object Info after typing in some text?

When letters are created as part of a group, they take on the Look of the group. You can only get Object Info for something that actually has a Look on it. The letters don't — they "inherit" their Look from the group. To adjust the Look on a letter you have to actually apply a Look to the letter. Then you can use the Object Info dialog to adjust its Look.

troubleshooting

What if I move my text out of the picture?

If you've lost sight of something, just use a different Camera view, available under the Effects menu, and move it so it's visible in the view you want to use.

I just keep getting things mixed up when I try to do an animation. Help!

Remember the animation mantra: "First move the Time Marker, then move the object." Since an animation consists of things moving in time, you must be sure you're at the right time *before you move anything*. Otherwise things can get awfully confusing. So check where the Time Marker is before you do things, and use it to show you what's happening in successive frames. And don't be afraid to delete some pose nibs and redo things if necessary.

My text is obscured by something and I just can't select it.

1. Select the object in the Score window.

2. Hold down the Control key as you manipulate the object in the project window.

The PixarPerfs Font

Below are the shapes in the PixarPerfs font. The column on the left contains the characters you would type on your keyboard. The middle column is what you'll get in the PixarPerfs font.

Char.	Shape	Description
1 2 3 4 5		Use combinations of these shapes to make lots of interesting patterns.
6 7 8 9 0		Use combinations of these shapes to make lots of interesting patterns.
q w e r		Circles. Use the smaller ones if you need more.
t y u i		Five-pointed stars.
a s d f		Bars. To cover large areas, make a single line with as many bars as you need, then stretch them out.
g h j k		Squares.
z x c v		Diamonds.
b n m		A hexagonal pattern of circles.
Q W E R		Hearts.
T Y U I		Wave shapes.
A S		Concentric circles, suitable for a bullseye. To make a solid shape, fit the second shape inside the first.
D F		Same as above, only with more circles.
G H J K		A square checkerboard pattern.
Z X C V		A diamond checkerboard pattern.
B N M		Burst shapes.

o	◖	For taking bites out of your words.
p	·	A bullet hole.
O	✦	A four-pointed star.
P	▦	A plaid pattern.
L I	☯ ☯	The two halves of a yin-yang symbol. Put them together, and put a different Look on each one for the full effect.
\ I	▯ ▪	Yet another way to make movies with Typestry. The second character is the same shape as the film frame.
[ ]	▨ ◼	A halftone kind of dissolve.
{ } - =	▤ ▤ ▤	More dissolve shapes.
, . < >	▥ ▥ ▥	Another dissolve shape, this time with two variations.
;	◣	Another wave shape.
/ ?	◼ ▮	Solid pieces that can be added to the above shapes for more solid area.
_ +	▬ ▬	Irregular edges for achieving the torn look.
! @ #	∿ ∿ ≈	Sort of sine waves.
$	▪	A round-cornered rectangle.
&	⊘	Don't do this.
% ^ *	⬠ ⬡ ⯃	Pentagon, hexagon, octagon.
( )	⣿ ⣿	Hexagons on a hexagonal grid, inverted and not.
' ''	▫ ▭	Square and rectangular frames.

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how we did iT

To produce this manual, we had to do exactly what you'd have to do if you wanted to get some Typestry text into print. And it really was surprisingly easy: it was almost as easy as pi. All the reference illustrations were rendered with Typestry 2 at 150 pixels per inch against a black background as TIFF RGBA files. This creates an alpha (matte) channel, which includes everything that isn't background. We used this channel to determine the selection in Photoshop (using Load Selection), copied it, and pasted it over a pre-painted border background.

These files had their mode changed to CMYK and were then saved in TIFF format. We imported them into QuarkXPress and had color separations printed with a line screen of 150.

We made no color adjustments in Photoshop or Quark, and had very few matchprints made. But we did do some tests to make sure we were sane. We failed most of those. On the other hand, some color tests confirmed our guess that we could get away with default settings in Photoshop and Quark. This saved a LOT of time and money, since there were

absolutely no color corrections made.

The other big savings was in using Quark to separate whole pages. This meant that we didn't have to get separations for every image. We were able to go from a whole page of images directly to separated film for the page, without any stripping in of individual pictures.

The greaTesT
so€Tware
€or creaTing
dimensional Type

€or macinTosh

P·I·X·A·R

1001 West Cutting Boulevard
Richmond, CA 94804

510 · 236 · 4000