

Tcl3D demos at a glance

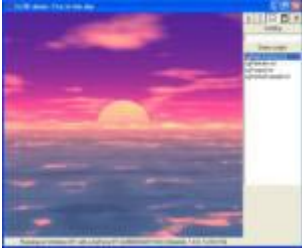

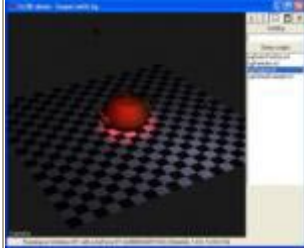
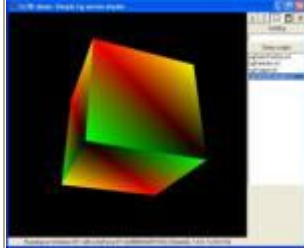
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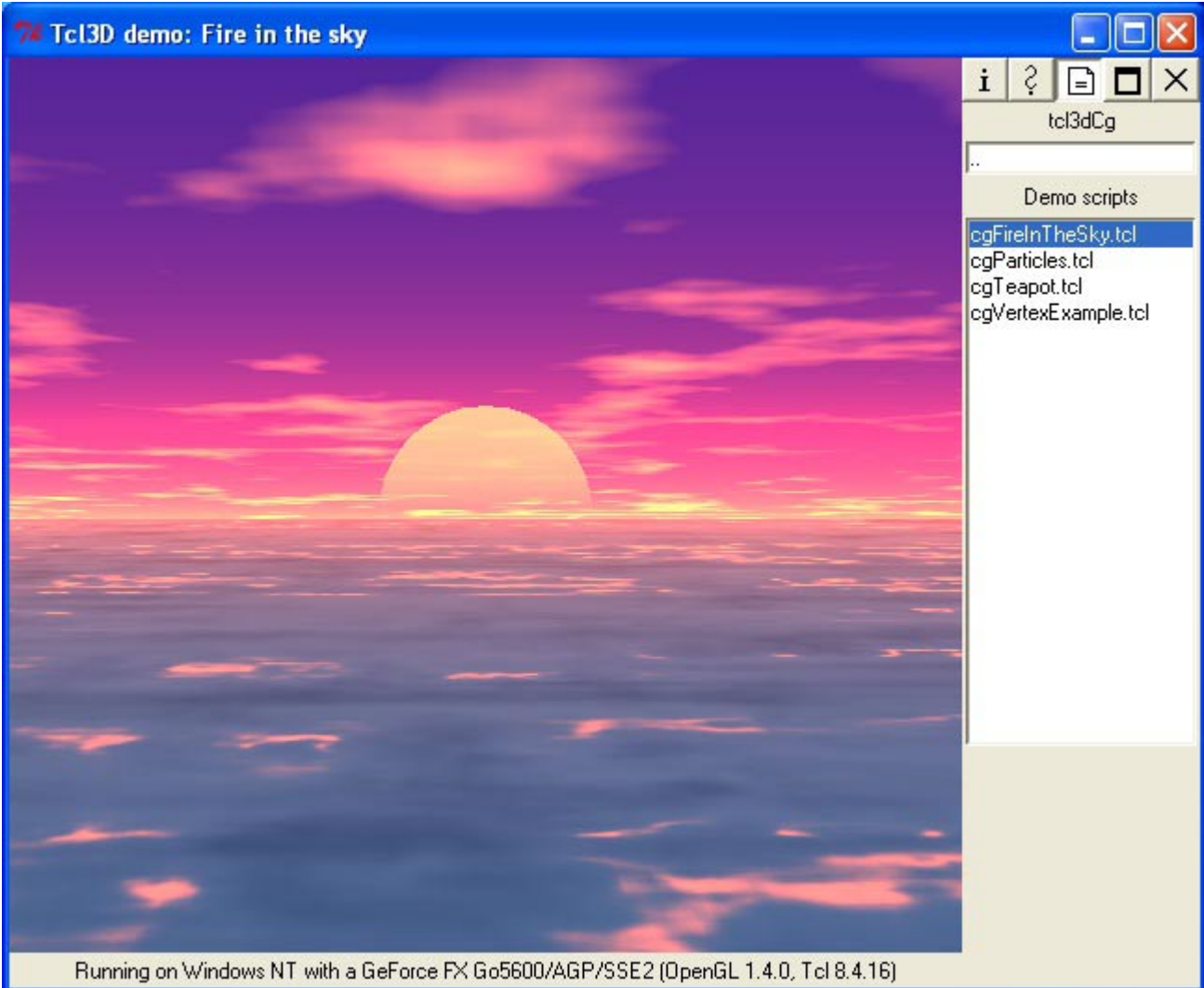
Document generated with Tcl 8.4.16 on 2008/12/28 01:35:38

Overview	
Category	Type
LibrarySpecificDemos	tcl3dCg
	tcl3dFTGL
	tcl3dGauges
	tcl3dOde
	tcl3dOgl
	tcl3dOglExt
	tcl3dSDL
	tcl3dTogl
Tcl3DSpecificDemos	None
TutorialsAndBooks	CodeSampler
	GameProgrammer
	NeHe
	RedBook

Category:	LibrarySpecificDemos
Root:	Contents
	Available types
	tcl3dCg
	tcl3dFTGL
	tcl3dGauges
	tcl3dOde
	tcl3dOgl
	tcl3dOglExt
	tcl3dSDL
	tcl3dTogl

Type:	tcl3dCg		
Category:	LibrarySpecificDemos		
Root:	Contents		
<p>This section contains Cg demo applications from several resources, that have been ported to Tcl3D. The examples cover vertex and fragment shader programming in Cg. Original sources from different sites. See the documentation for details.</p>			
Available demos			
			
cgFireInTheSky	cgParticles	cgTeapot	cgVertexExample

Demo:	cgFireInTheSky
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents



Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.16)

cgFireInTheSky.tcl

Original files from: <http://www.shadertech.com/shaders/FireInTheSky-src.zip>

Original files are Copyright (c) 2002 Jason Jerald

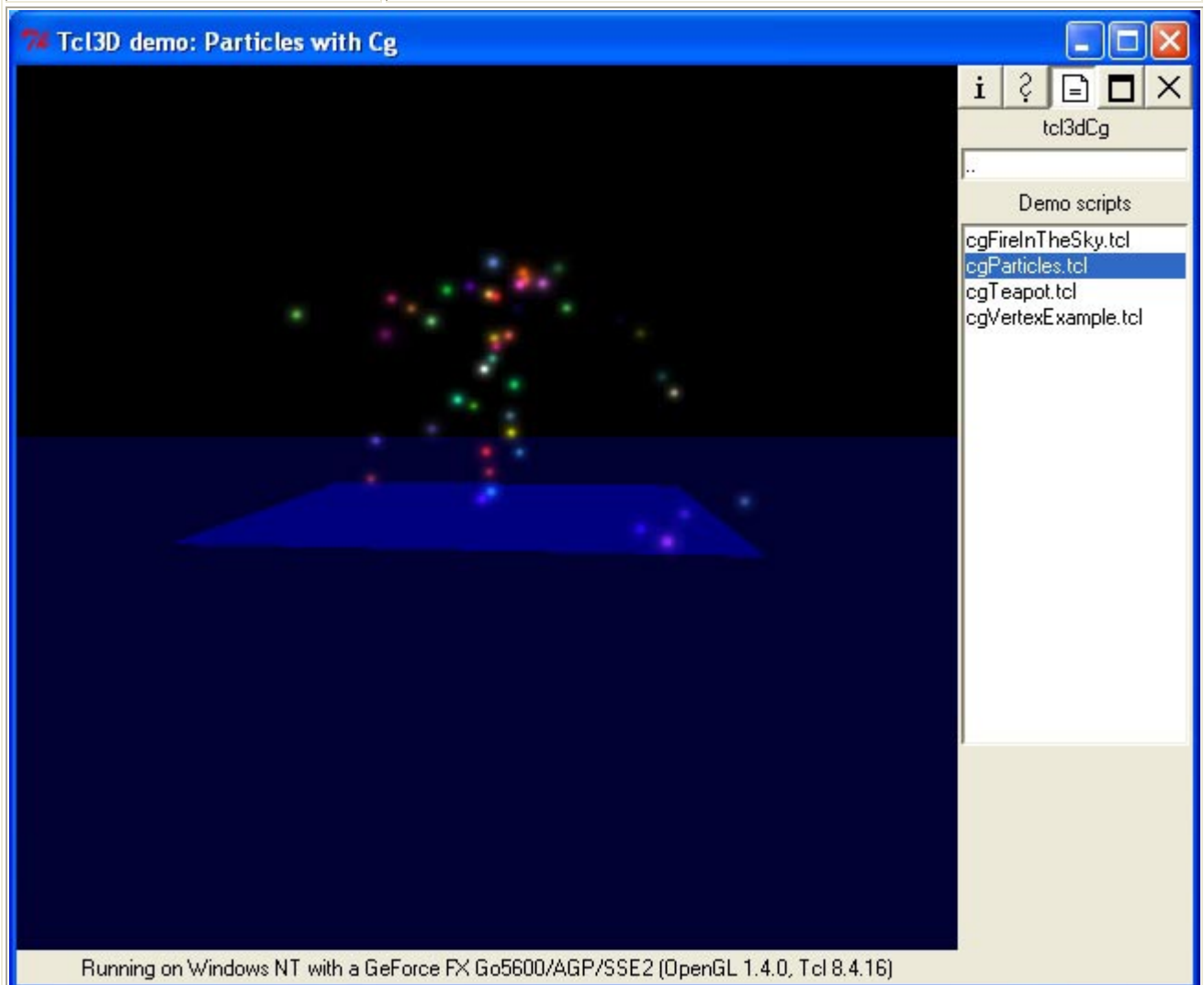
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Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.

Demo:	cgParticles
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents



cgParticles.tcl

Particle Effects using CG and OpenGL

Original files from: <http://www.shadertech.com/shaders/ParticleSystem-src.zip>

Original files are Copyright (c) 20002 Arkadiusz Waliszewski

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Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.

Demo:	cgTeapot
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents

Camera

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.16)

cgTeapot.tcl

Original files from: <http://developer.nvidia.com/Cg>
This is the example called interfaces_ogl as included in the Cg Toolkit.

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.


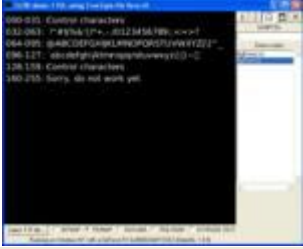
Demo:	cgVertexExample
Type:	tcl3dCg
Category:	LibrarySpecificDemos
Root:	Contents

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.16)

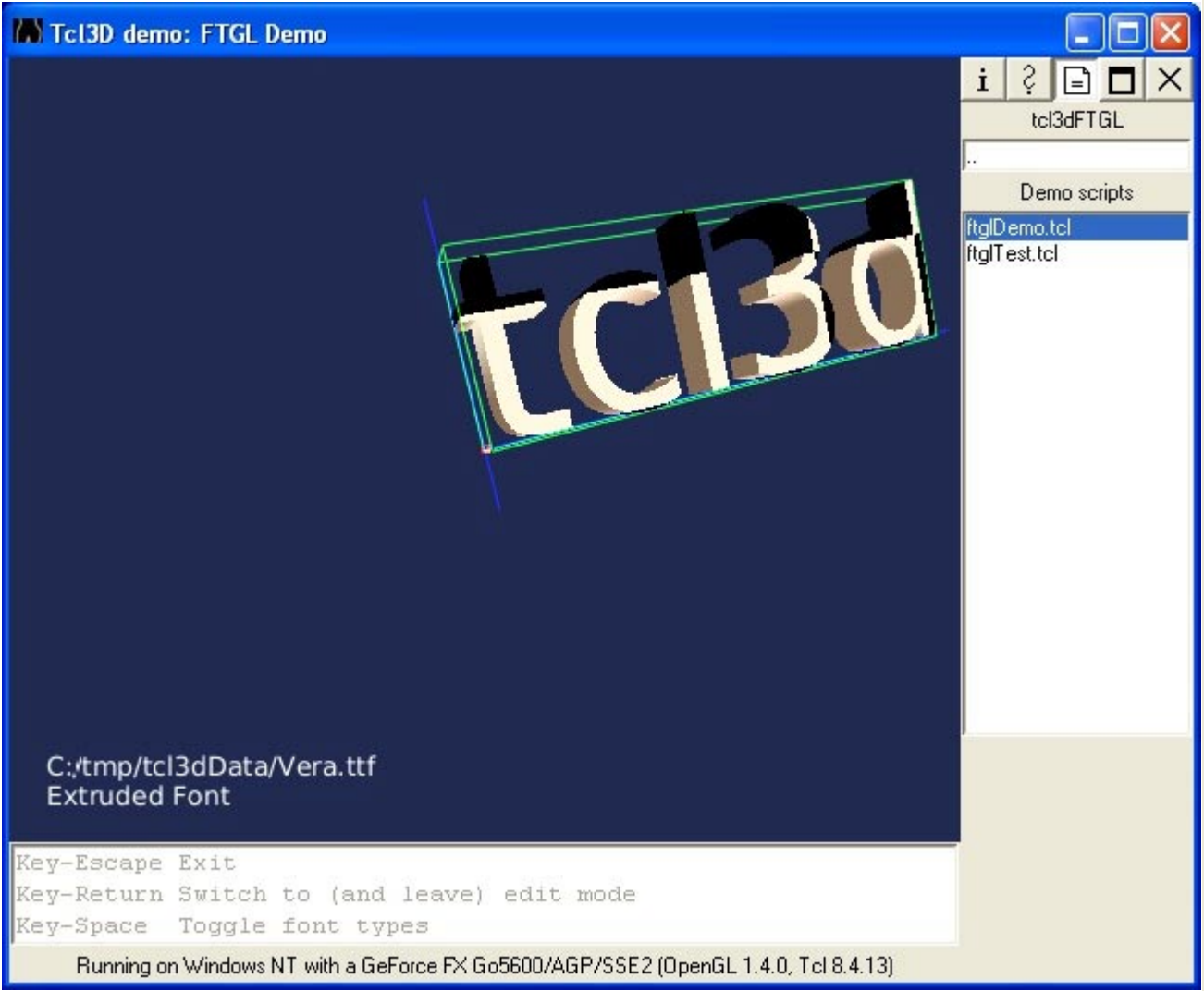
cgVertexExample.tcl

Original files from: <http://developer.nvidia.com/Cg>
This is the example called runtime_ogl as included in the Cg Toolkit.

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.

Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents
<p>This section contains FTGL demo applications written in Tcl3D. The examples cover the demo applications distributed with FTGL.</p>	
Available demos	
	
ftglDemo	ftglTest

Demo:	ftglDemo
Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents



ftglDemo.tcl

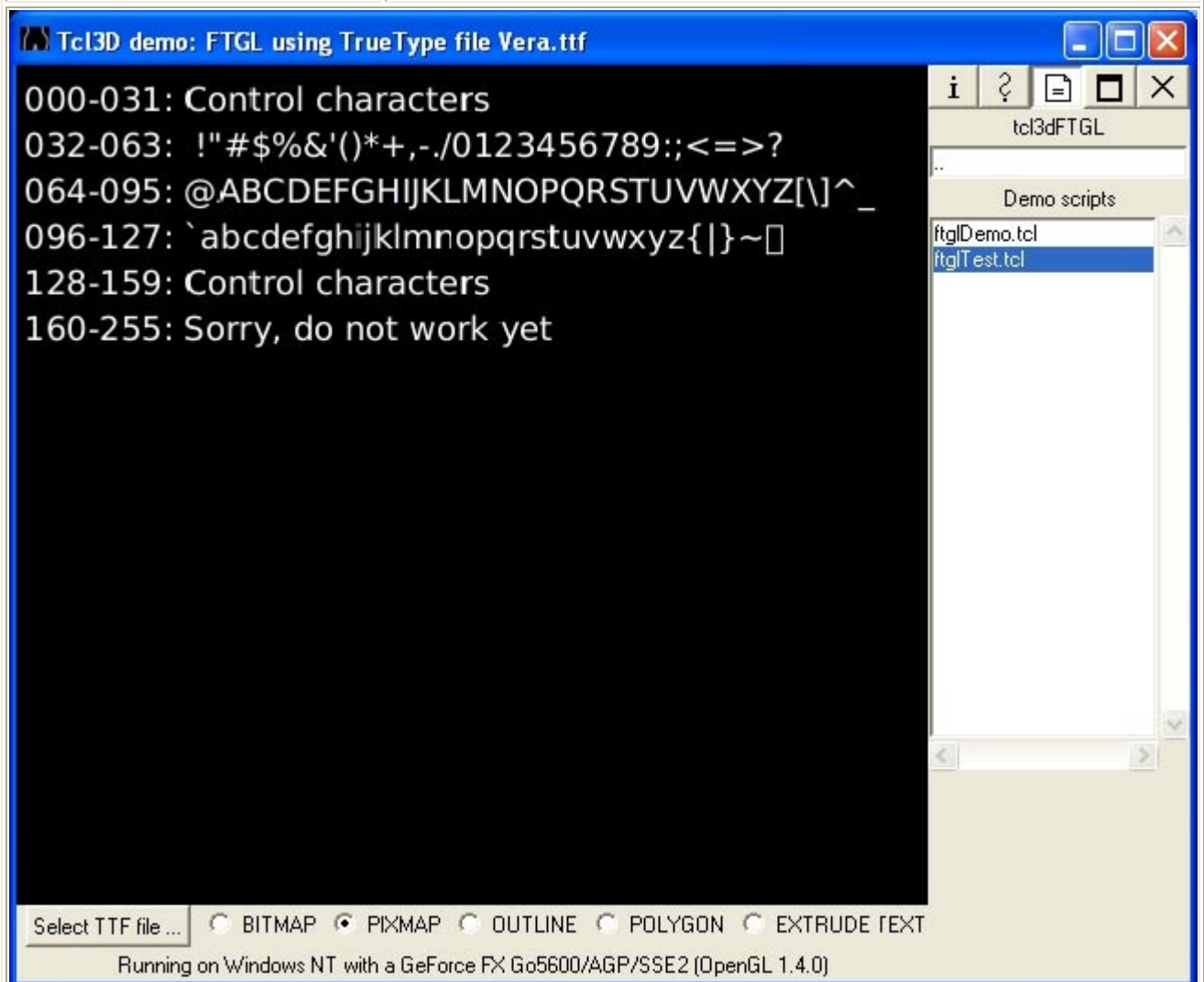
This demo demonstrates the different rendering styles available with FTGL.
 Press <n> to change the font rendering style.
 Press <enter> to enable edit mode.

Please contact me if you have any suggestions, feature requests, or problems.

Henry Maddocks
 henryj@paradise.net.nz
<http://homepages.paradise.net.nz/henryj/>

Modified for Tcl3D by Paul Obermeier 2006/01/18
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ftglTest
Type:	tcl3dFTGL
Category:	LibrarySpecificDemos
Root:	Contents





ftglTest.tcl

C++ source changed by mrn@paus.ch/ max rheiner
original source: henryj@paradise.net.nz

Modified for Tcl3D by Paul Obermeier 2006/01/18
See www.tcl3d.org for the Tcl3D extension.

A test program showing the 5 different font rendering types.

Type:	tcl3dGauges
Category:	LibrarySpecificDemos
Root:	Contents
<p>This section contains demo applications written with Tcl3D extensions packages. The examples cover the tcl3dGauges package, which was supplied by Victor G. Bonilla.</p>	
Available demos	
	
gaugedemo	gaugetest

Demo:	gaugedemo
Type:	tcl3dGauges
Category:	LibrarySpecificDemos
Root:	Contents



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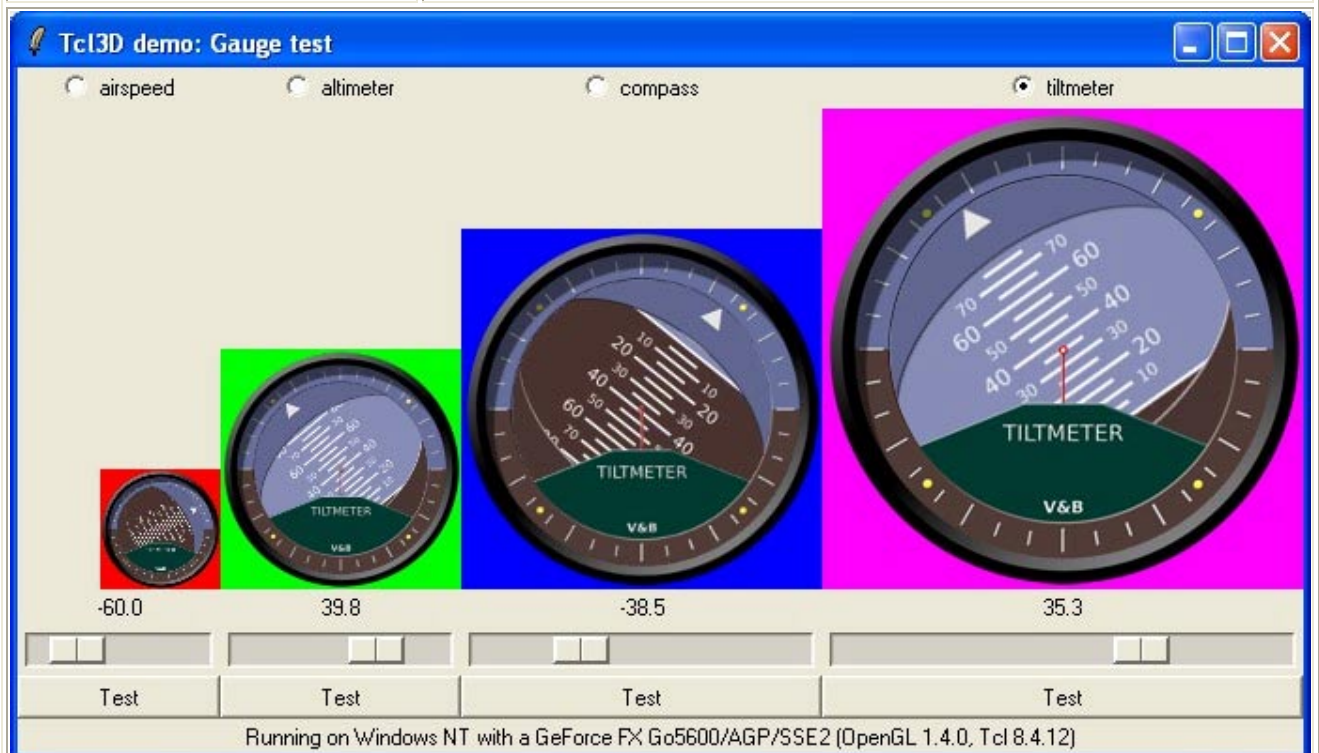
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Module: Tcl3D -> tcl3dGauges
 Filename: gaugedemo.tcl

Author: Paul Obermeier

Description: Demo program showing the use of the Tcl3D extension package gauge.

Demo:	gaugetest
Type:	tcl3dGauges
Category:	LibrarySpecificDemos
Root:	Contents



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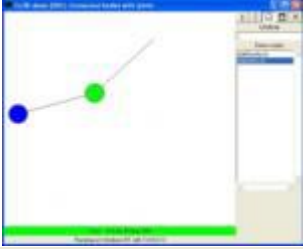
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Module: Tcl3D -> tcl3dGauges

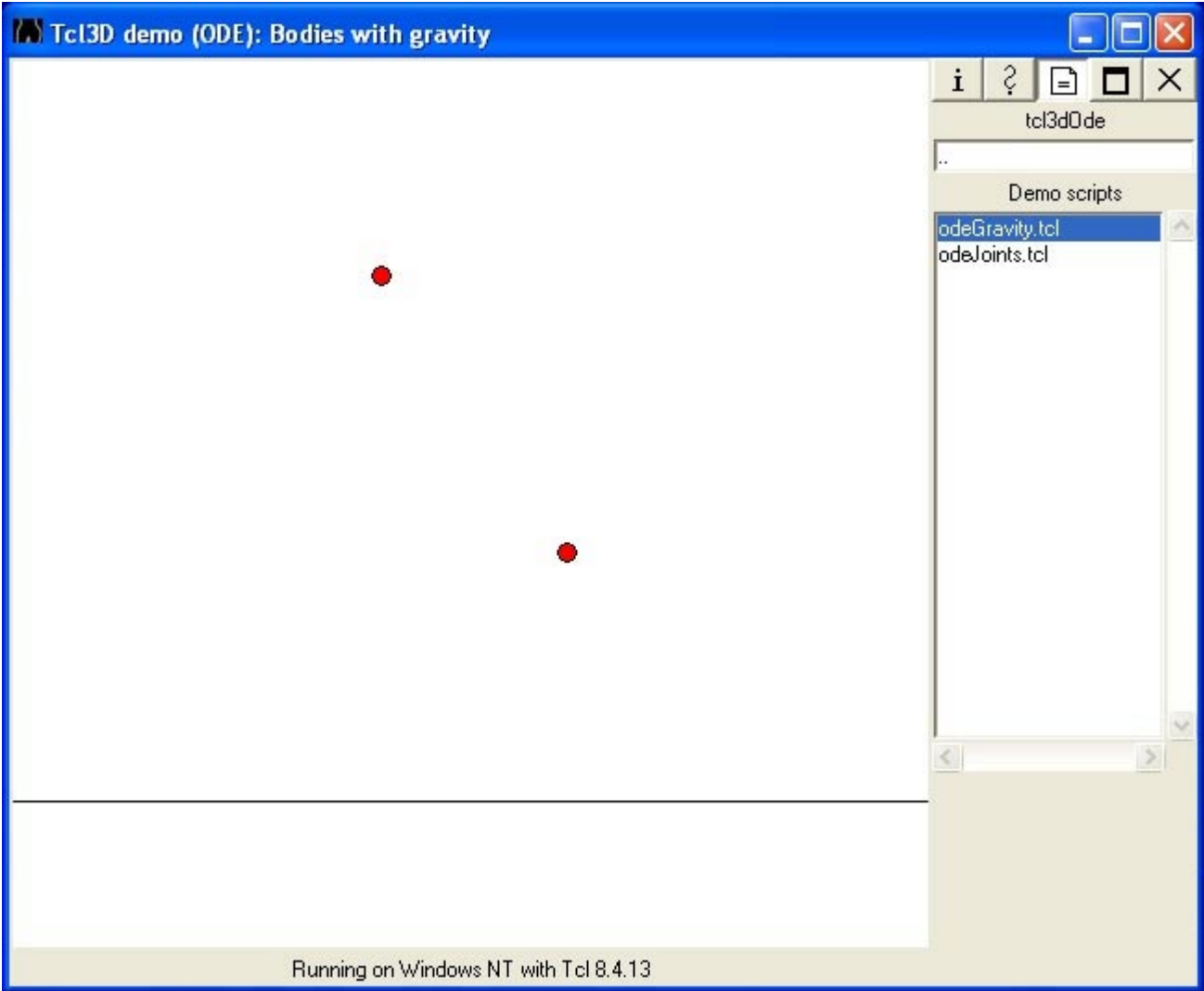
Filename: gaugetest.tcl

Author: Paul Obermeier

Description: Test program for the Tcl3D extension package gauge. The program allows to show the 4 gauges at different sizes.

Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents
This section contains ODE demo applications written in Tcl3D. The examples cover some demo applications distributed with PyOde.	
Available demos	
	
odeGravity	odeJoints

Demo:	odeGravity
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents



Running on Windows NT with Tcl 8.4.13

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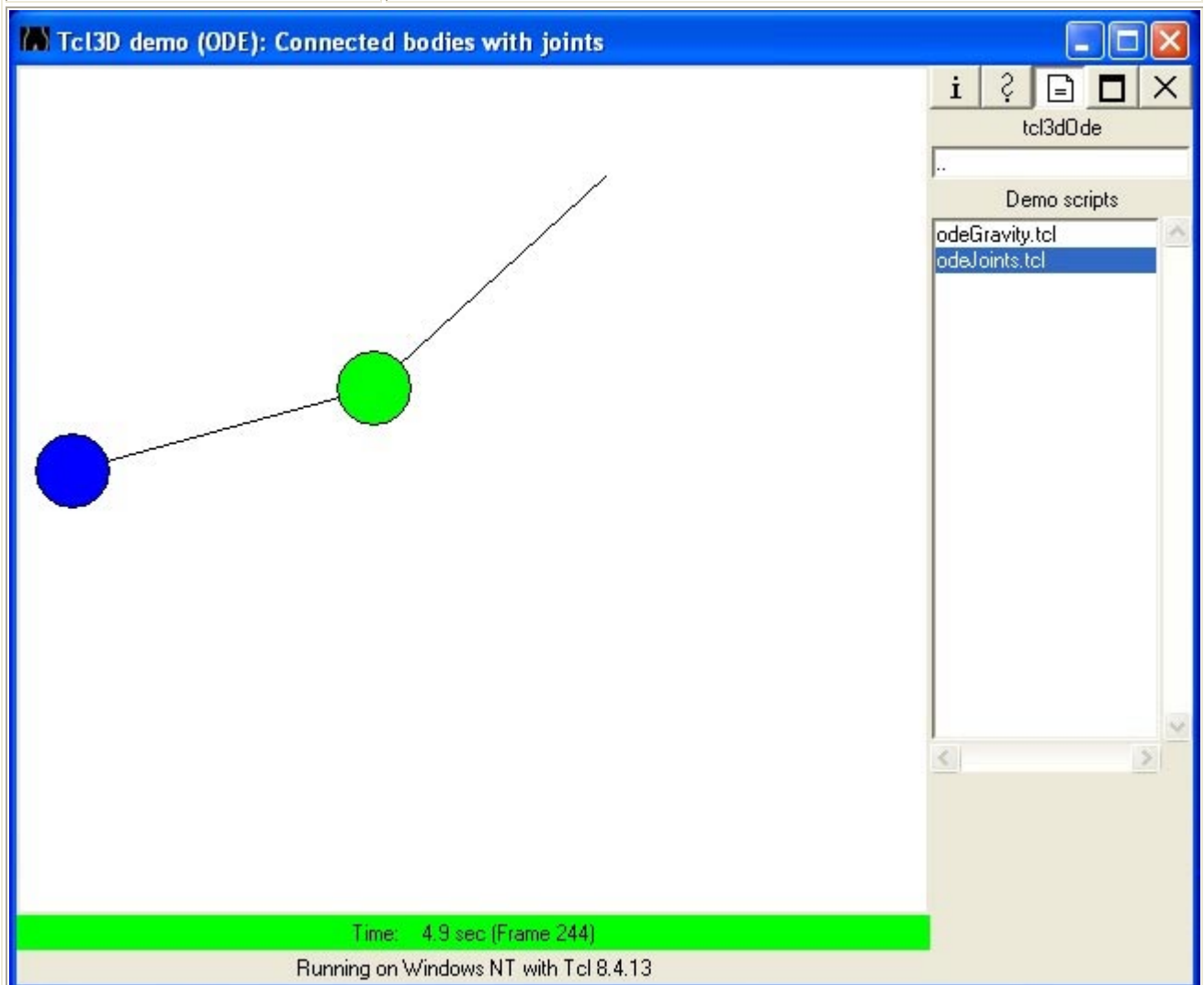
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Module: Tcl3D -> tcl3dOde
 Filename: odeGravity.tcl

Author: Paul Obermeier

Description: Tcl3D Ode example: Bodies influenced by gravity. Based on PyODE Tutorial 1 By Matthias Baas.

Demo:	odeJoints
Type:	tcl3dOde
Category:	LibrarySpecificDemos
Root:	Contents



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Module: Tcl3D -> tcl3dOde

Filename: odeJoints.tcl


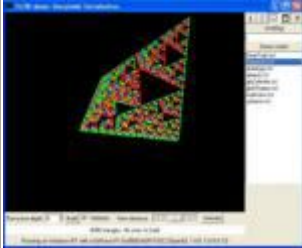




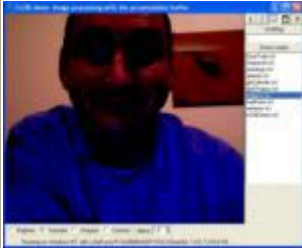
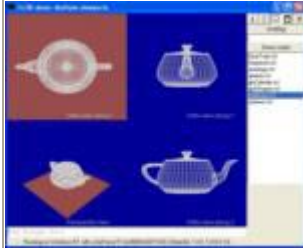
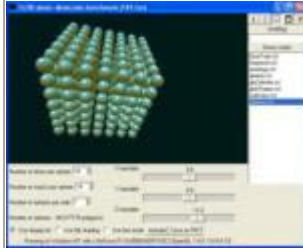

Author: Paul Obermeier

Description: Tcl3D Ode example: Connected bodies with joints
Based on PyODE Tutorial 2 By Matthias Baas.

Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

This section contains OpenGL demo applications from several resources, that have been ported to Tcl3D. They cover basic OpenGL programming. Original sources from different sites. See the documentation for details.

Available demos

				
GearTrain	Sierpinski	animlogo	atlantis	gluCylinder
				
glutShapes	imgproc	multiview	spheres	tcl3dC

Demo:	GearTrain
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

Key-Escape Exit
 B1-Motion Rotate
 B2-Motion Zoom

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

GearTrain.tcl

GearTrain Simulator * Version: 1.00

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 <skdutta@del3.vsnl.net.in>

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Tcl conversion Copyright Philip Quaipe August 2005.

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Slightly modified for Tcl3D presentation by Paul Obermeier 2006/08/02
See www.tcl3d.org for the Tcl3D extension.

Demo:	Sierpinski
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

Recursive depth Build Optimize View distance Animate

4096 triangles: 46 msec to build

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

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Module: Tcl3D -> tcl3dOgl

Filename: Sierpinski.tcl

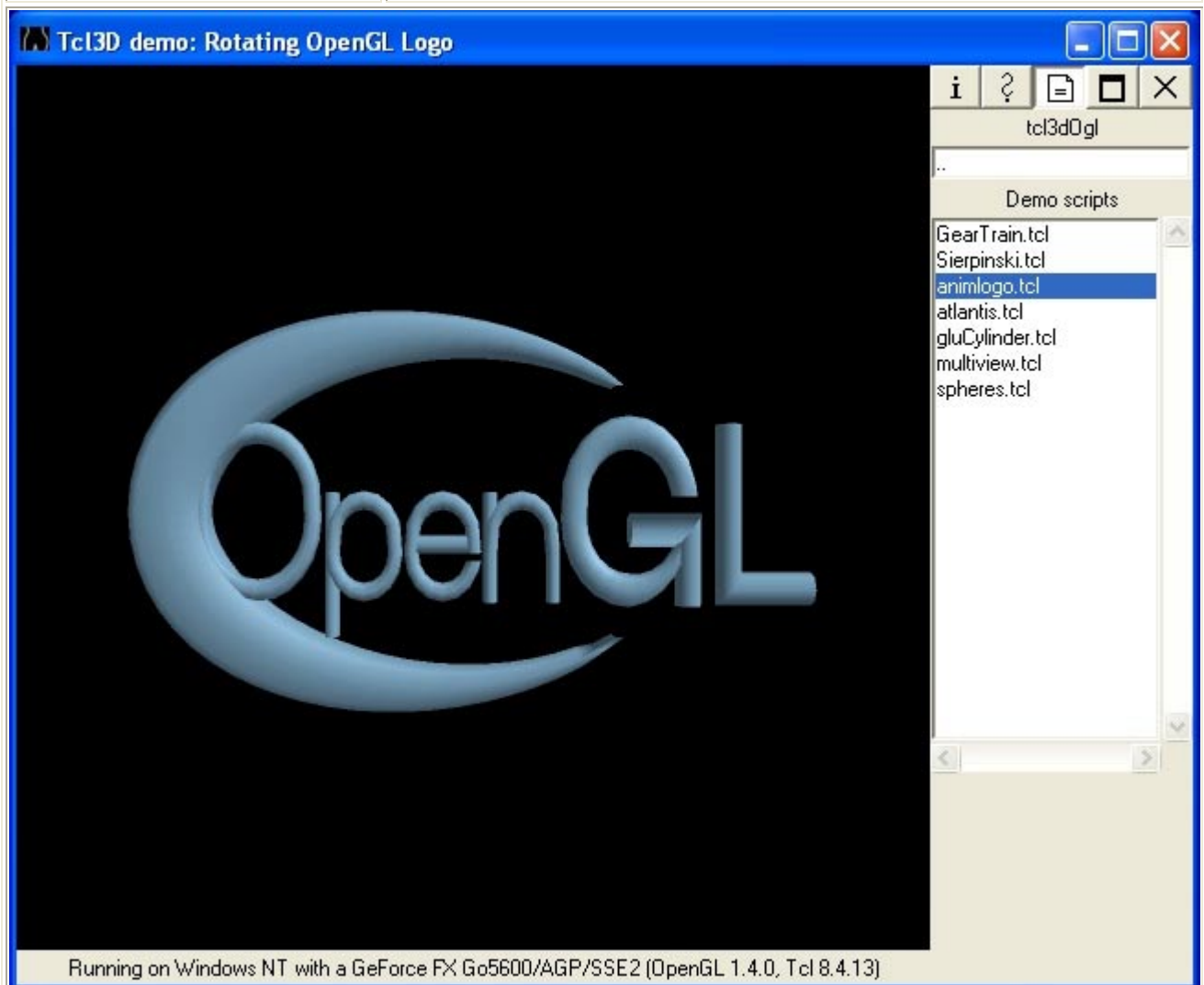
Author: Paul Obermeier

Description: Tcl3D demo displaying a 3D Sierpinski Tetrahedron.

Derived from a demo by Gerard Sookahet (tetra-3dc.tcl), which used the 3dcanvas package.
The original version is at: <http://wiki.tcl.tk/11832>.

Incorporates optimization functions by Philip Quaife.
See the Tcl'ers Wiki <http://wiki.tcl.tk/14820> for a description of his optimizations.

Demo:	animlogo
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents



animlogo.tcl

The animated OpenGL logo

This file is part of the openGL-logo demo.
(c) Henk Kok (kok@wins.uva.nl)

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Original sources available at:

http://www.opengl.org/resources/code/samples/glut_examples/demos/demos.html

Modified for Tcl3D by Paul Obermeier 2006/08/02
See www.tcl3d.org for the Tcl3D extension.

Demo:	atlantis
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: Atlantis". The main area displays a 3D scene with several fish swimming in a blue ocean. On the right side, there is a control panel with a list of demo scripts: GearTrain.tcl, Sierpinski.tcl, animlogo.tcl, atlantis.tcl (highlighted), gluCylinder, glutShapes, multiview.tcl, and spheres.tcl. A context menu is open over "atlantis.tcl" with options: Atlantis me, Start motion, Stop motion, and Quit program. At the bottom of the window, a keyboard control panel lists: Mouse-3 PopupMenu, Key-s Stop, Key-p Play, Key-Space Step, and Key-Escape Exit. Below the control panel, it says "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

atlantis.tcl

Copyright (c) Mark J. Kilgard, 1994. */

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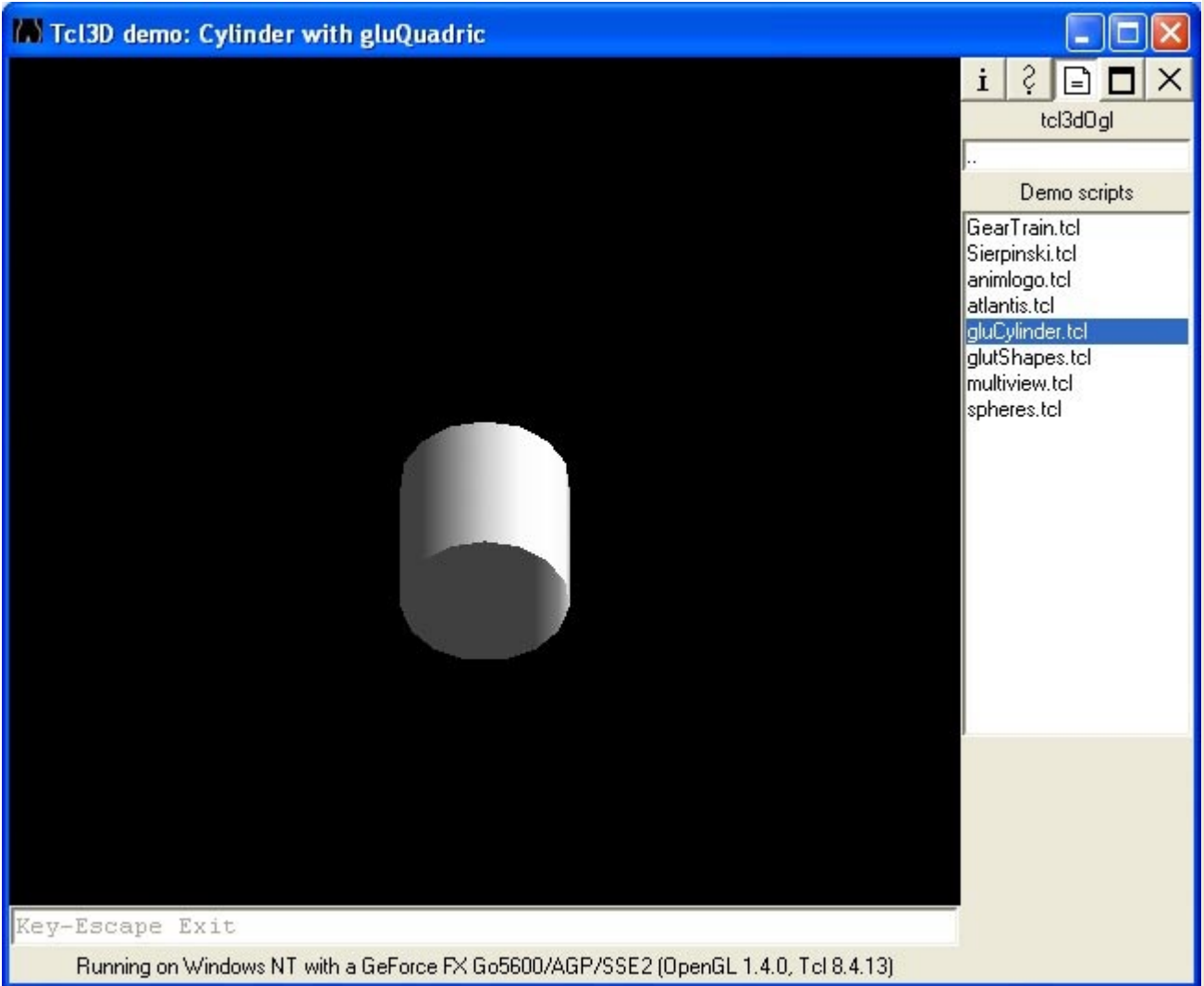
Original sources available at:

http://www.opengl.org/resources/code/samples/glut_examples/demos/demos.html

Modified for Tcl3D by Paul Obermeier 2005/08/14

See www.tcl3d.org for the Tcl3D extension.

Demo:	gluCylinder
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents



Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

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Module: Tcl3D -> tcl3dOgl
 Filename: gluCylinder.tcl

Author: Paul Obermeier

Description: Tcl3D demo showing the use of gluQuadric routines to draw a cylinder.

Demo:	glutShapes
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

Tcl3D demo: OpenGL GLUT shapes

Key-Escape Exit
 Key-r Reset rotation
 Key-Up|Down Decrease|Increase x rotation speed
 Key-Left|Right Decrease|Increase y rotation speed

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

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Module: Tcl3D -> tcl3dOgl
 Filename: glutShapes.tcl

Author: Paul Obermeier
 Date: 2006-12-01

Description: Tcl3D demo showing all supported GLUT shapes.

Demo:	imgproc
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

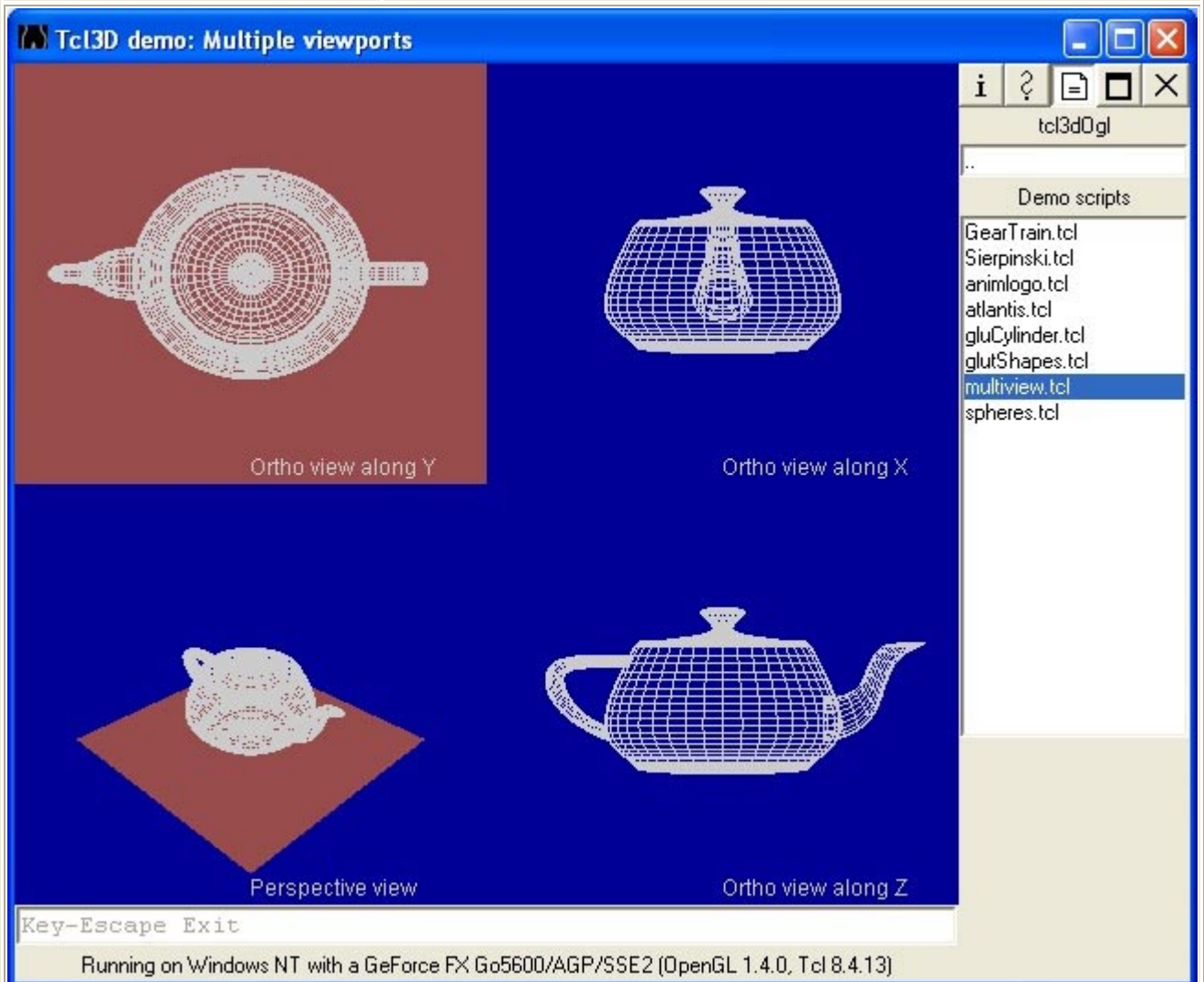
imgproc.c - by David Blythe, SGI

Examples of various image processing operations coded as OpenGL accumulation buffer operations. This allows extremely fast image processing on machines with hardware accumulation buffers (RealityEngine, InfiniteReality, VGX).

This demo is part of the advanced glut demos.
See http://www.opengl.org/resources/code/samples/glut_examples/advanced/advanced.html

Modified for Tcl3D by Paul Obermeier 2007/07/28
See www.tcl3d.org for the Tcl3D extension.

Demo:	multiview
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents



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Module: Tcl3D -> tcl3dOgl

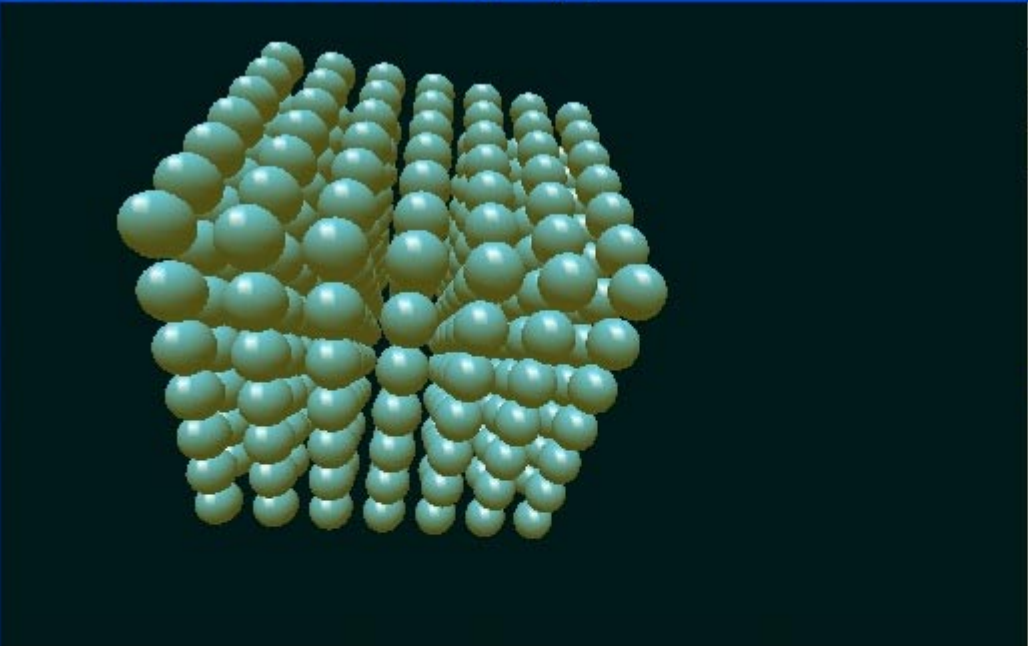
Filename: multiview.tcl

Author: Paul Obermeier

Description: Tcl3D demo showing the famous teapot in 4 different viewports on a single togl widget.

Demo:	spheres
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

Tcl3D demo: Molecules benchmark (182 fps)



Number of slices per sphere: X translate:

Number of stacks per sphere: Y translate:

Number of spheres per side: Z translate:

Number of spheres: 343 (77175 polygons)

Use display list Use flat shading Use line mode

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

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Module: Tcl3D -> tcl3dOgl
 Filename: spheres.tcl

Author: Paul Obermeier

Description: Tcl3D demo displaying spheres in various modes.

Demo:	tcl3dChaos
Type:	tcl3dOgl
Category:	LibrarySpecificDemos
Root:	Contents

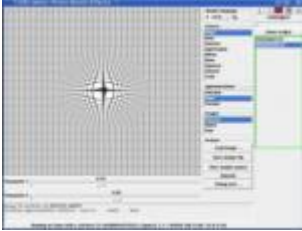
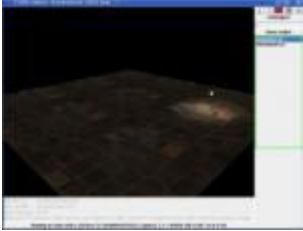
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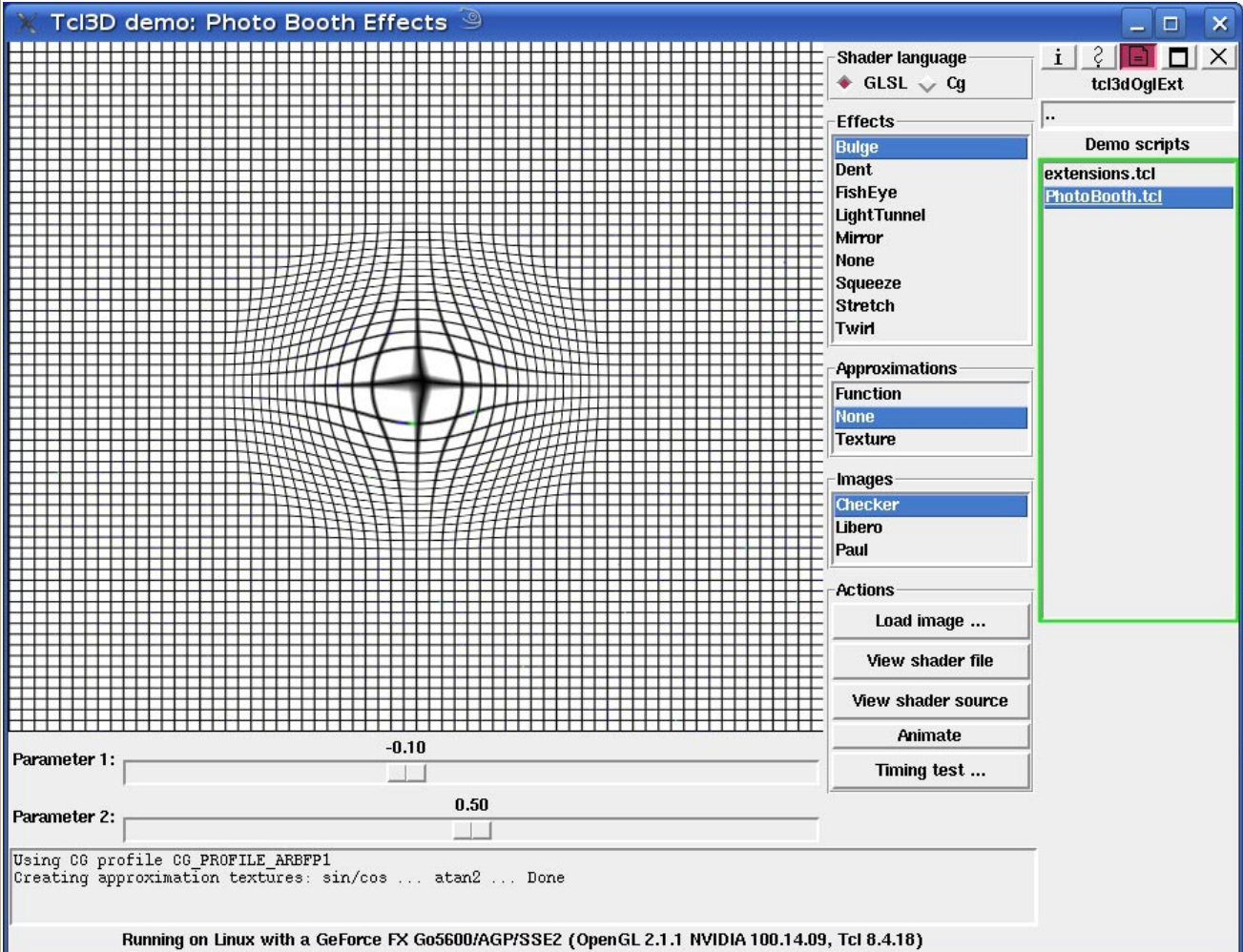
Module: Tcl3D -> tcl3dOgl
 Filename: tcl3dChaos.tcl

Author: Paul Obermeier

Description: Implementation of algorithm described on Wiki page "Simple Chaos Theory with Tcl" (<http://wiki.tcl.tk/11887>) using Tcl3D.
 Interesting values:
 2000 8 10 14 revert
 6300 3 3 3 revert

Type:	tcl3dOglExt
Category:	LibrarySpecificDemos
Root:	Contents
<p>This section contains OpenGL demo applications from several resources, that have been ported to Tcl3D. The examples cover OpenGL extension programming. Original sources from different sites. See the documentation for details.</p>	
Available demos	
	
PhotoBooth	extensions

Demo:	PhotoBooth
Type:	tcl3dOglExt
Category:	LibrarySpecificDemos
Root:	Contents



Parameter 1:

Parameter 2:

Using CG profile CG_PROFILE_ARBFP1
Creating approximation textures: sin/cos ... atan2 ... Done

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

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Modified for Tcl3D by Paul Obermeier 2007/04/14
See www.tcl3d.org for the Tcl3D extension.

The demo has been modified to allow up to 2 parameters to be changed interactively via a slider.

The parameter range of the two sliders can be provided as comment lines at the top of the shader source files.

Further enhancements include:

Loading of image files of any size via the "Load image" button. All image files with an extension of .jpg or .tga in the directory of the script are automatically

recognized and inserted into the "Images" labelframe.

Add your own shader without modifying the Tcl script by adding a new file with extension

.frag in the directory of the script.

A description of the effect shaders and the original sources are available at <http://dem.ocracy.org/libero/photobooth/>

Demo:	extensions
Type:	tcl3dOglExt
Category:	LibrarySpecificDemos
Root:	Contents

Mouse-L StartAnimation
 Mouse-MR StopAnimation
 Key-Escape Exit
 ARB_multitexture EXT_point_parameters ARB_texture_compression EXT_texture_edge_clamp
 Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

extensions.tcl

Program to demonstrate the use of extensions.

Extensions used:

```

  GL_ARB_multitexture
  GL_EXT_point_parameters
  GL_ARB_texture_compression
  GL_EXT_texture_edge_clamp

```

Original C++ code by Dave Astle 2/1/2002



Original files

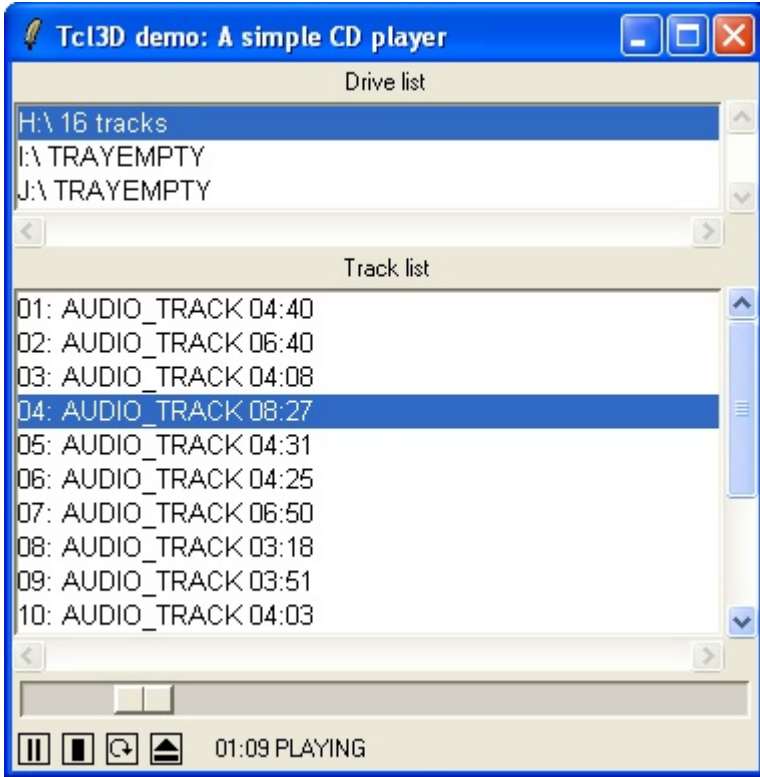
from:

<http://www.gamedev.net/reference/programming/features/oglext/demo.zip>

Modified for Tcl3D by Paul Obermeier 2005/09/05

See www.tcl3d.org for the Tcl3D extension.

Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents
<p>This section contains SDL demo applications written in Tcl3D. The examples cover joystick and CD programming with the help of the SDL library.</p>	
Available demos	
	
cdplayer	joysticktest

Demo:	cdplayer
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents
	
Copyright:	2006-2008 Paul Obermeier (obermeier@tcl3d.org) See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.
Module:	Tcl3D -> tcl3dSDL
Filename:	cdplayer.tcl
Author:	Paul Obermeier
Description:	Tcl script implementing a simple CD player to test the CD related functions (SDL_CD*) of the Tcl3D SDL wrapping.

Demo:	joysticktest
Type:	tcl3dSDL
Category:	LibrarySpecificDemos
Root:	Contents

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Module: Tcl3D -> tcl3dSDL
 Filename: joysticktest.tcl

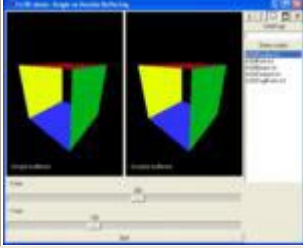

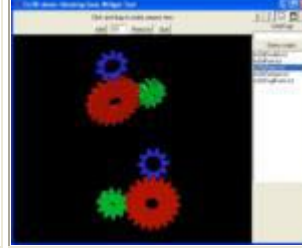


Author: Paul Obermeier

Description: Tcl script to test the joystick related functions of the Tcl3D SDL wrapping.

Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents

The following demos from the Togl distribution have been ported to Tcl3D.
 Original sources available at: <http://sourceforge.net/projects/togl/>

Available demos

				
tcl3dDouble	tcl3dFont	tcl3dGears	tcl3dTexture	tcl3dTo

Demo:	tcl3dDouble
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents

tcl3dDouble.tcl

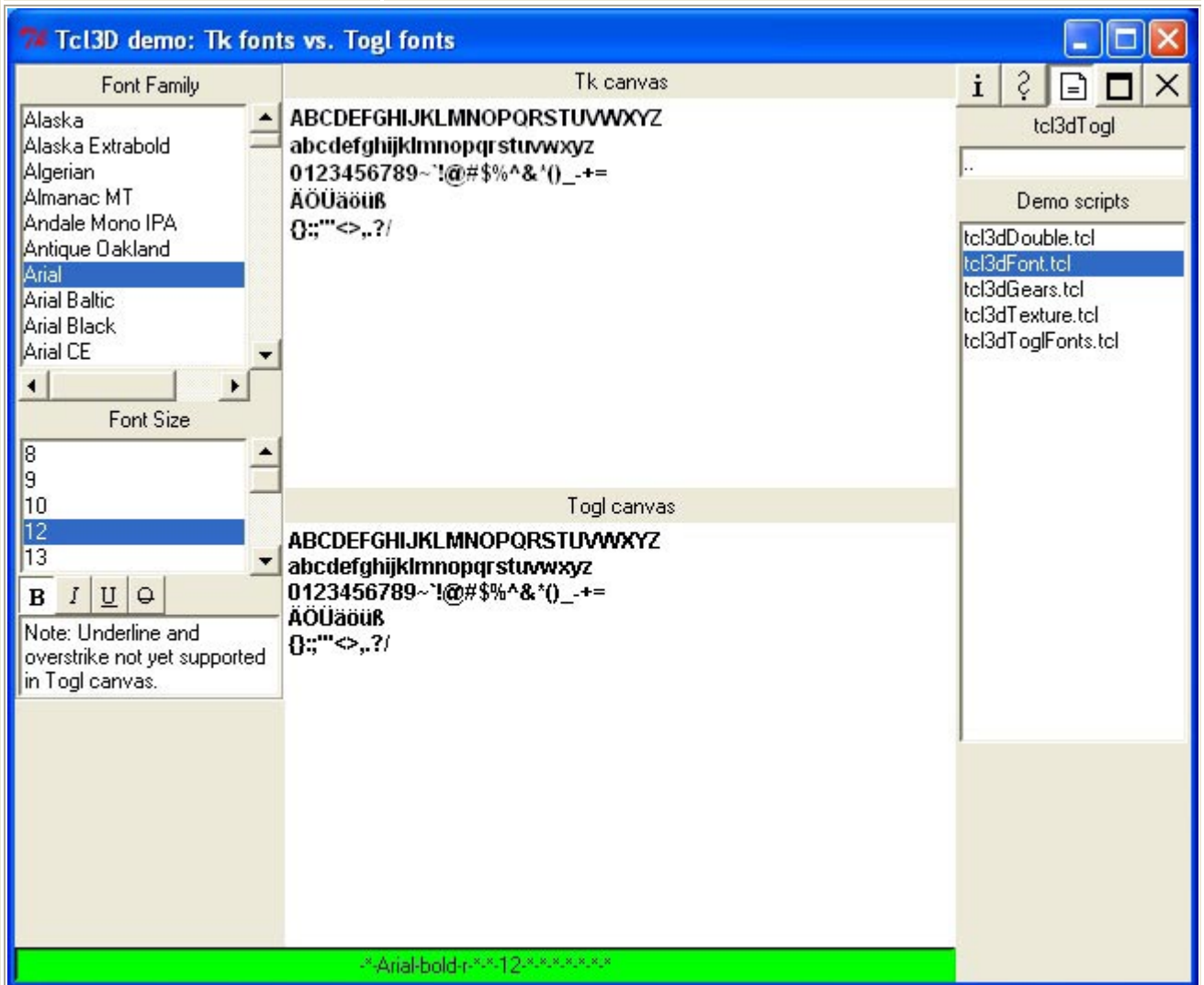
A Tcl3D widget demo with two windows, one single buffered and the other double buffered.

This is a version of the original Togl double demo written entirely in Tcl with the help of the Tcl3D package.

Copyright (C) 1996 Brian Paul and Ben Bederson (Original C/Tcl version)
 Copyright (C) 2005 Paul Obermeier (Tcl3D version)
 See the LICENSE file for copyright details.

Original sources available at: <http://sourceforge.net/projects/togl/>

Demo:	tcl3dFont
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents



Copyright: 2005-2008 Paul Obermeier (obermeier@tcl3d.org)

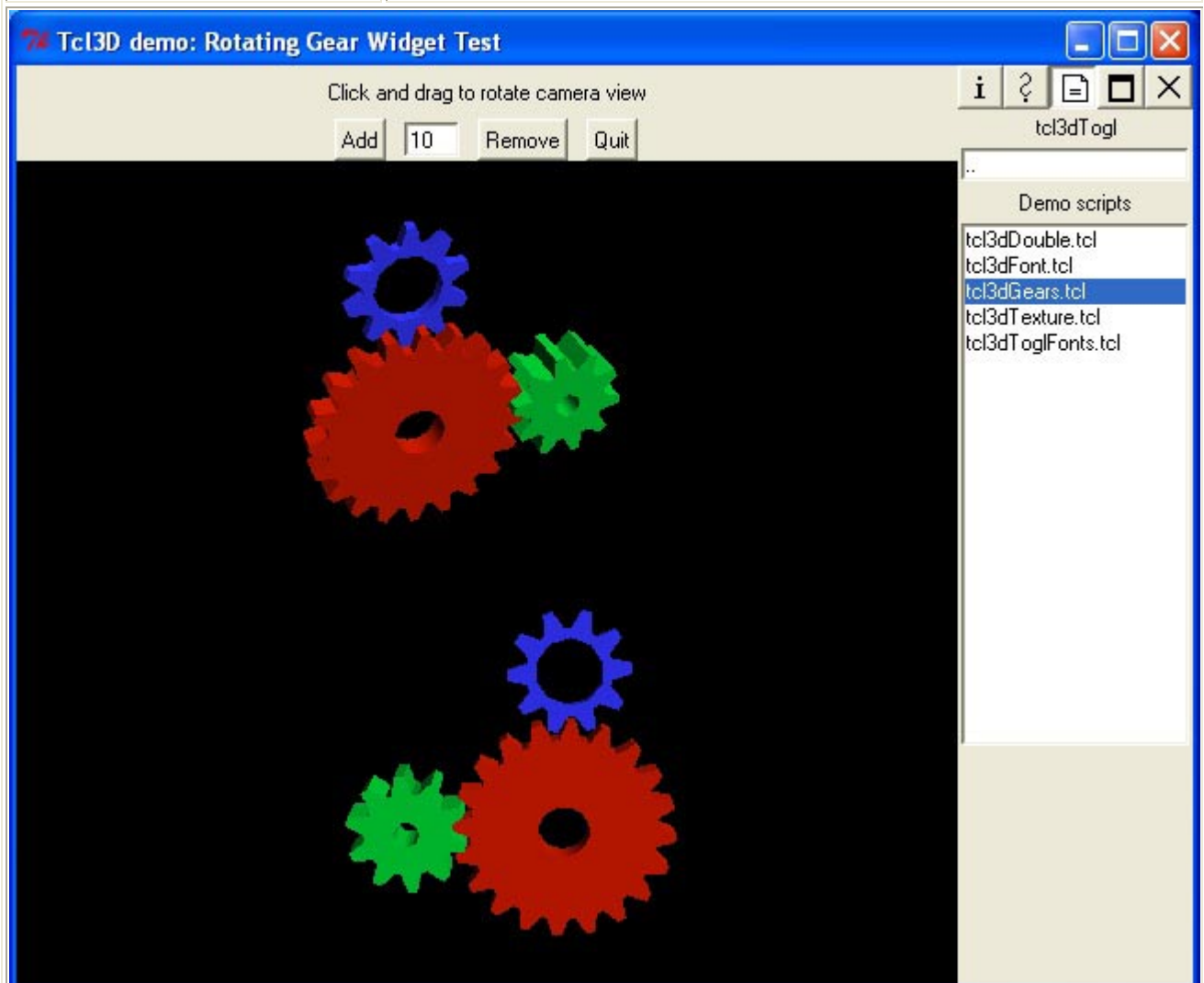
See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.

Module: Tcl3D -> tcl3dTogl
 Filename: tcl3dFont.tcl

Author: Paul Obermeier

Description: Tcl script to select a font. The font is displayed in a Tk widget as well as in an OpenGL window. The font name in XLFD notation is shown in a text widget for copy/paste. This demo shows the usage of the "loadbitmapfont" command built into the Togl widget. Note: The Tk font might look nicer, because font antialiasing is enabled. On Windows this can be toggled in the display property window (Appearance->Effects).

Demo:	tcl3dGears
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents



```
tcl3dGears.tcl
```

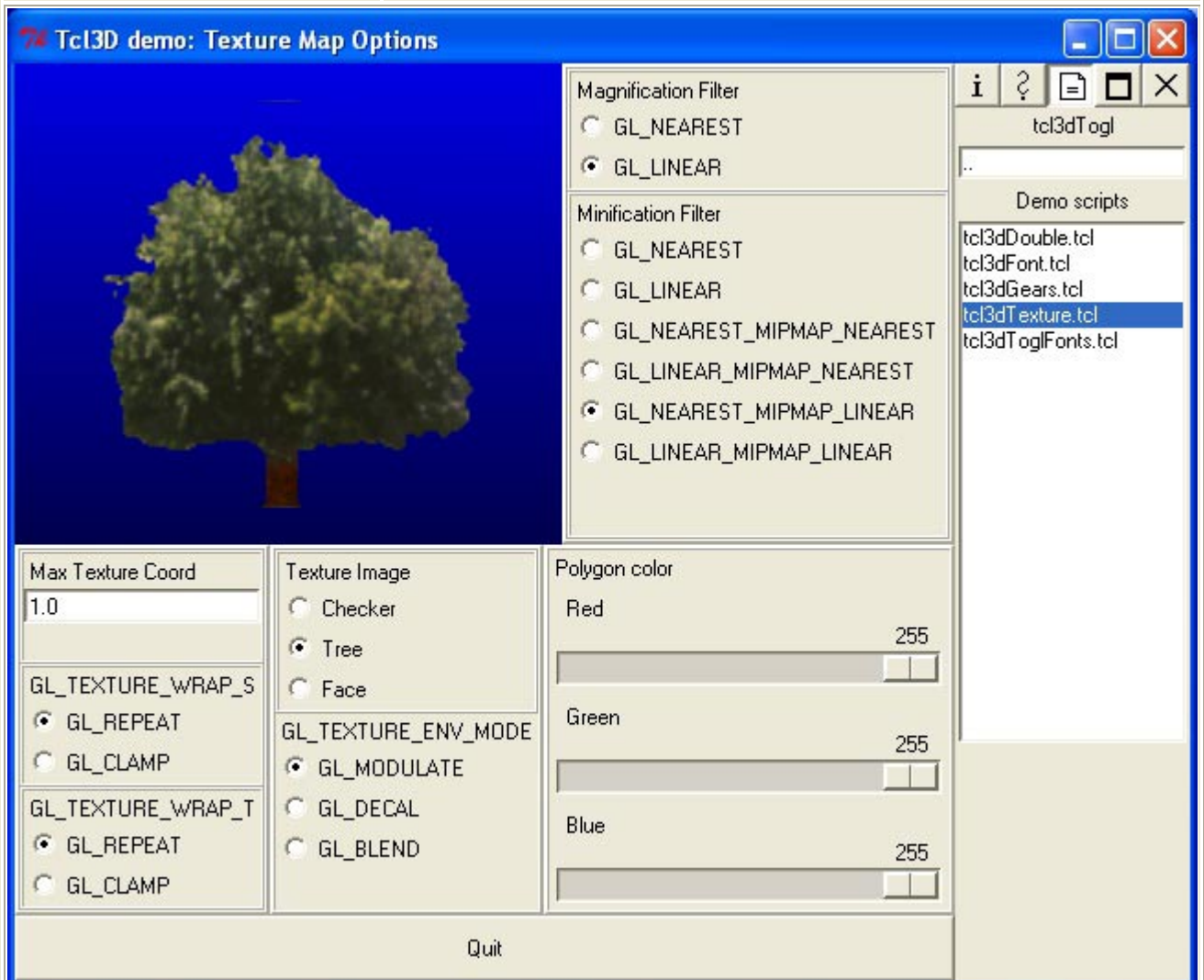
```
Test Togl using GL Gears Demo
```

```
This is a version of the original Togl gears demo written entirely in Tcl  
with the help of the Tcl3D package.
```

```
Copyright (C) 1997 Philip Quaipe (Original C/Tcl version)  
Copyright (C) 2005 Paul Obermeier (Tcl3D version)  
See the LICENSE file for copyright details.
```

```
Original sources available at: http://sourceforge.net/projects/togl/
```

Demo:	tcl3dTexture
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents



```
tcl3dTexture.tcl
```

```
Togl texture map demo
```

This is a version of the original Togl texture demo written entirely in Tcl with the help of the Tcl3D package.

Copyright (C) 1996 Brian Paul and Ben Bederson (Original C/Tcl version)

Copyright (C) 2005 Paul Obermeier (Tcl3D version)

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Original sources available at: <http://sourceforge.net/projects/togl/>

Demo:	tcl3dTogIFonts
Type:	tcl3dTogl
Category:	LibrarySpecificDemos
Root:	Contents

```

loadbitmapfont
loadbitmapfont -family courier
loadbitmapfont -family times
loadbitmapfont -family fixed -size 12 -weight medium -slant regular
loadbitmapfont -family fixed -size 12 -weight bold -slant italic
loadbitmapfont -slant xyz
loadbitmapfont -weight xyz
loadbitmapfont -size 20
loadbitmapfont -size 20 -weight bold
loadbitmapfont -size 20 -slant italic
loadbitmapfont -*-courier-bold-r-**-10-***-***-***-***
loadbitmapfont -family 8x13
loadbitmapfont 8x13
loadbitmapfont -family a-b
loadbitmapfont a-b
loadbitmapfont -family
loadbitmapfont -family -weight -slant (Could not allocate font "-weight")
loadbitmapfont -unknownoption (Could not allocate font "-unknownoption")
Key-Escape Exit
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.16)

```

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Module: Tcl3D -> tcl3dTogl

Filename: tcl3dTogIFonts.tcl


Author: Paul Obermeier

Description: Program demonstrating and testing the different possibilities of specifying a bitmap font for the Togl widget.

Category:	Tcl3DSpecificDemos
Root:	Contents
Available types	

Demo:	bytearray
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

Tcl3D demo: Creating textures from byte arrays (Test 5)



Key-1: Gradient with tcl3dVector (slow)
 Key-2: Gradient with tcl3dVectorFromByteArray (fast)
 Key-3: Gradient with tcl3dVectorFromByteArray (faster)
 Key-4: Gradient with tcl3dVectorFromByteArray (fastest)
 Key-5: Color gradient with tcl3dVectorFromByteArray
 Key-6: Gradient readback with tcl3dVectorToByteArray
 Key-Escape: Exit

27502 microseconds per iteration

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

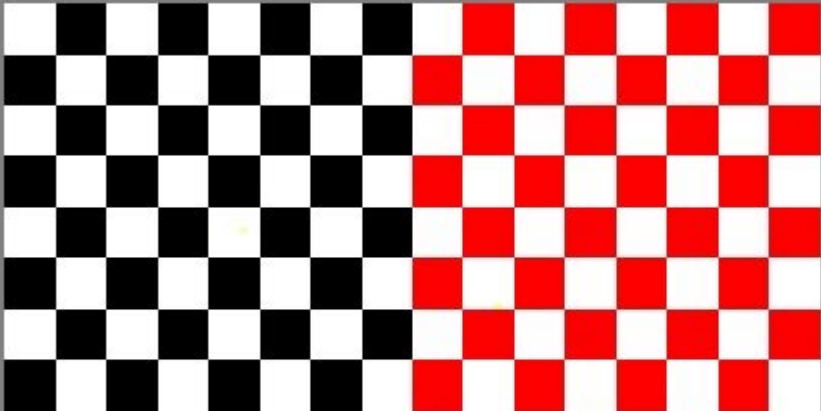
bytearray.tcl

Tcl3D demo showing the use of the tcl3dByteArray2Vector function, introduced in Version 0.3.
 The program texture maps an image generated with Tcl onto a quad.

Author: Paul Obermeier
 Date: 2006-02-01

Demo:	checkerBoard
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

Tcl3D demo: Texture generation comparison



Key-Escape Exit
 Black checker: 243764 microseconds per iteration
 Red checker: 825 microseconds per iteration

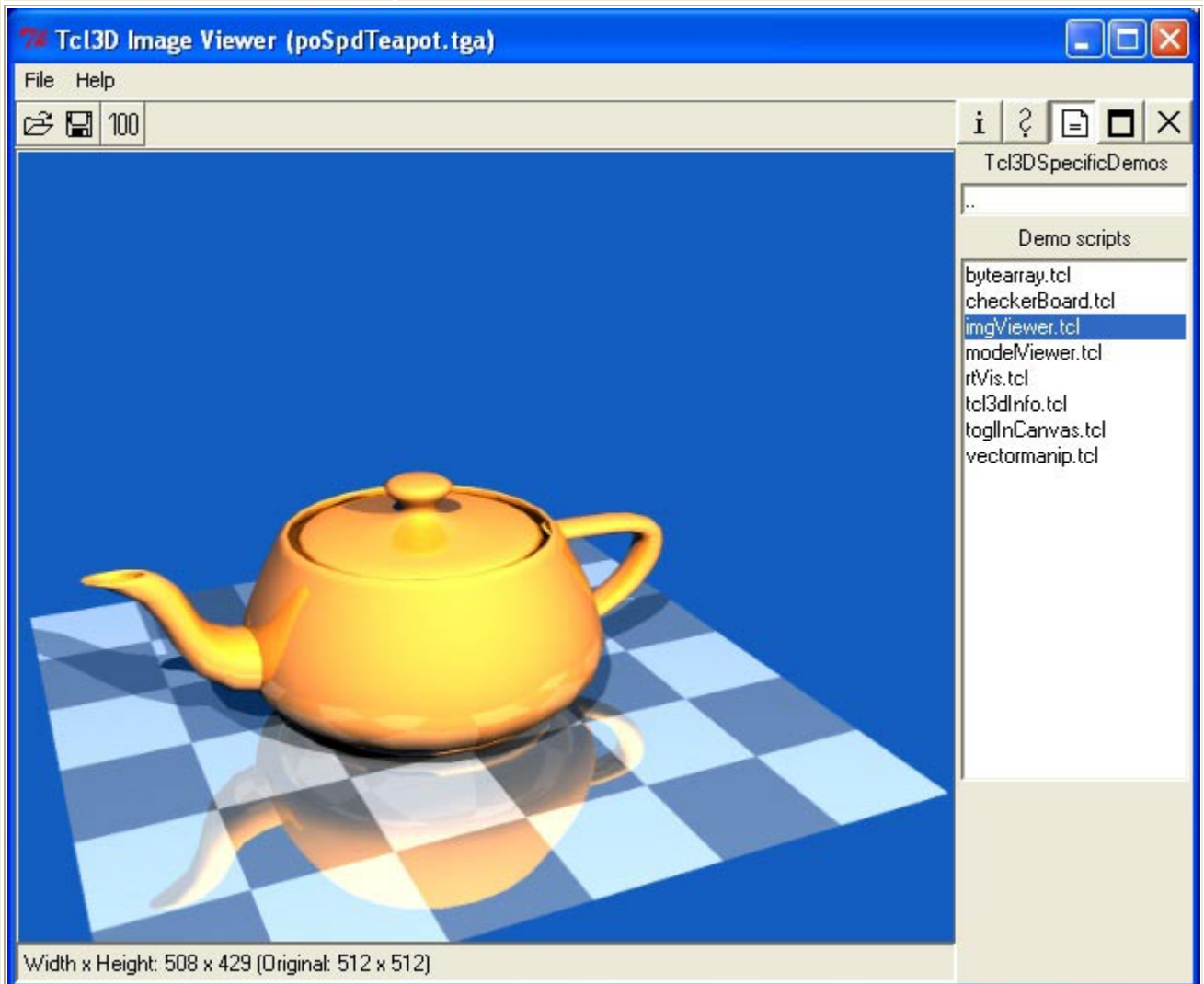
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

checkerBoard.tcl

This program creates a checkerboard image in two ways.
 The first texture is created with an algorithm, as used in some of the RedBook examples (ex. checker.tcl). This algorithm has been converted 1:1 from C to Tcl. Very slow.
 The second image is created using the Img extension, which is essentially faster.

Author: Paul Obermeier
 Date: 2006-09-22

Demo:	imgViewer
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents



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Module: Tcl3D
 Filename: imgViewer.tcl

Author: Paul Obermeier

Description: Tcl program to display images and stretch them in realtime with the use of OpenGL textures. The images can be read from files in all formats supported by the Img extension. The stretched image may also be written out to an image file.

Demo:	modelViewer
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

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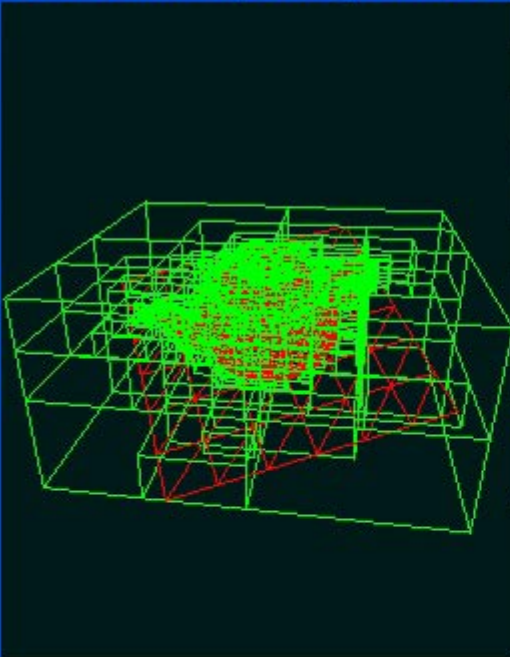
Module: Tcl3D
 Filename: modelViewer.tcl

Author: Paul Obermeier

Description: Tcl program to display 3D model files in all formats supported by the Tcl3D extension.

Demo:	rtVis
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

Tcl3D demo: Ray-Tracing visualization



CoR: Origin CoR: Geometry Load script ... i ? [] [X]

Show rays Tcl3DSpecificDemos

Primary Reflected Shadow

Show geometry

Static Dynamic Lines

Show lightsources

Lines

Show acc. structures


Lines

Octree
 BVH
 KD-Tree

Levels:

1 2 3 4 5
 6 7 8 9 10
 11 12 13 14 15

Output messages


 KD-Tree tree level 17 has 1194 cells
 KD-Tree tree level 18 has 1328 cells
 KD-Tree tree level 19 has 1421 cells
 KD-Tree tree level 20 has 1525 cells
 KD-Tree tree level 21 has 1657 cells
 KD-Tree tree level 22 has 1670 cells
 KD-Tree tree level 23 has 1672 cells
 KD-Tree tree level 24 has 1579 cells
 KD-Tree tree total number of cells: 15984

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.16)

Copyright: 2008 Paul Obermeier (obermeier@tcl3d.org)

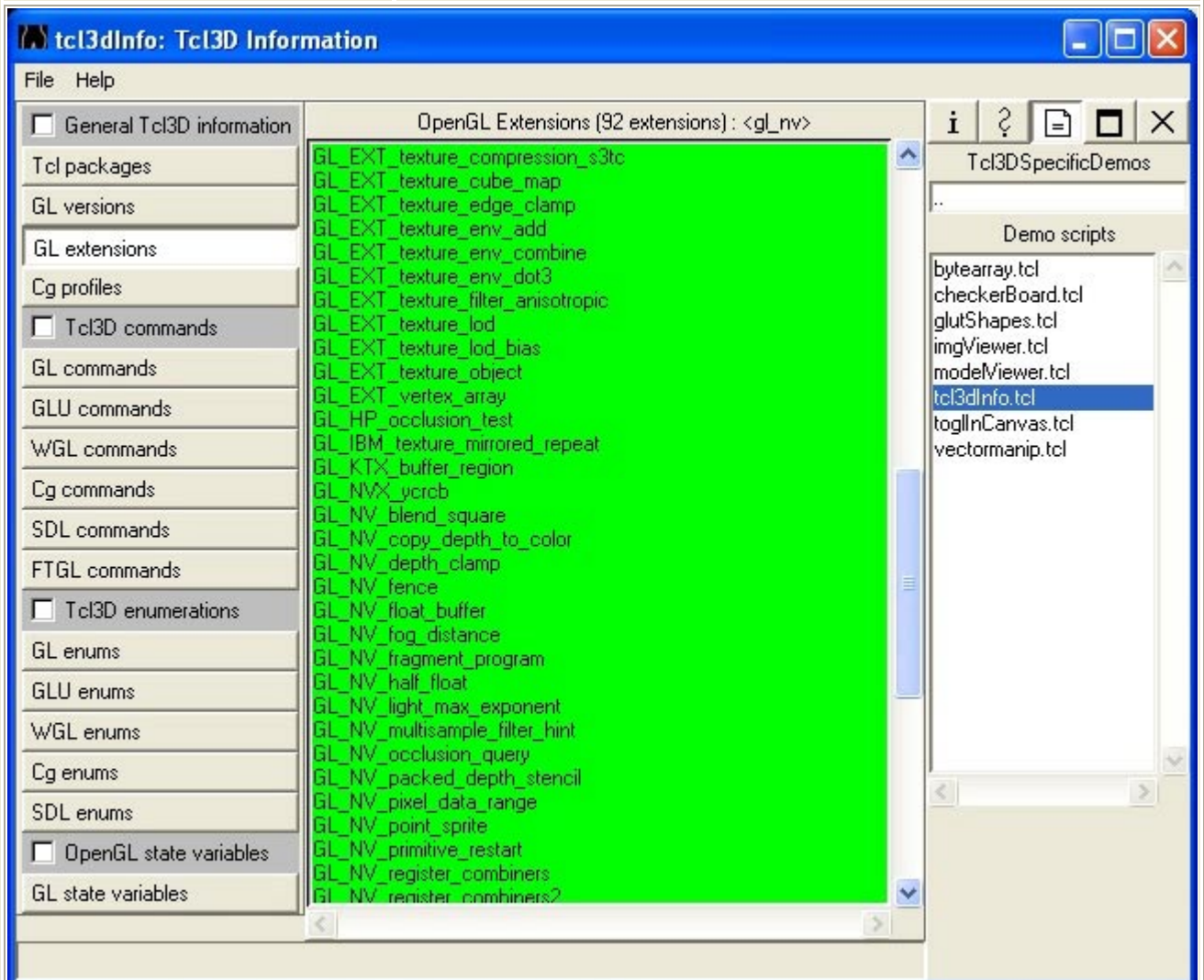
See the file "Tcl3D_License.txt" for information on usage and redistribution of this file, and for a DISCLAIMER OF ALL WARRANTIES.

Module: Tcl3DSpecificDemos
 Filename: rtVis.tcl

Author: Paul Obermeier

Description: Ray Tracing visualization program.
 The comments of the rtvis* procedures explain how to use the ray-tracing visualization commands.

Demo:	tcl3dInfo
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents



Copyright: 2005-2008 Paul Obermeier (obermeier@tcl3d.org)

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Module: Tcl3D
 Filename: tcl3dInfo.tcl

Author: Paul Obermeier

Description: Tcl script to display OpenGL related information. When called without arguments, a window is opened with buttons to display OpenGL information for the following categories:

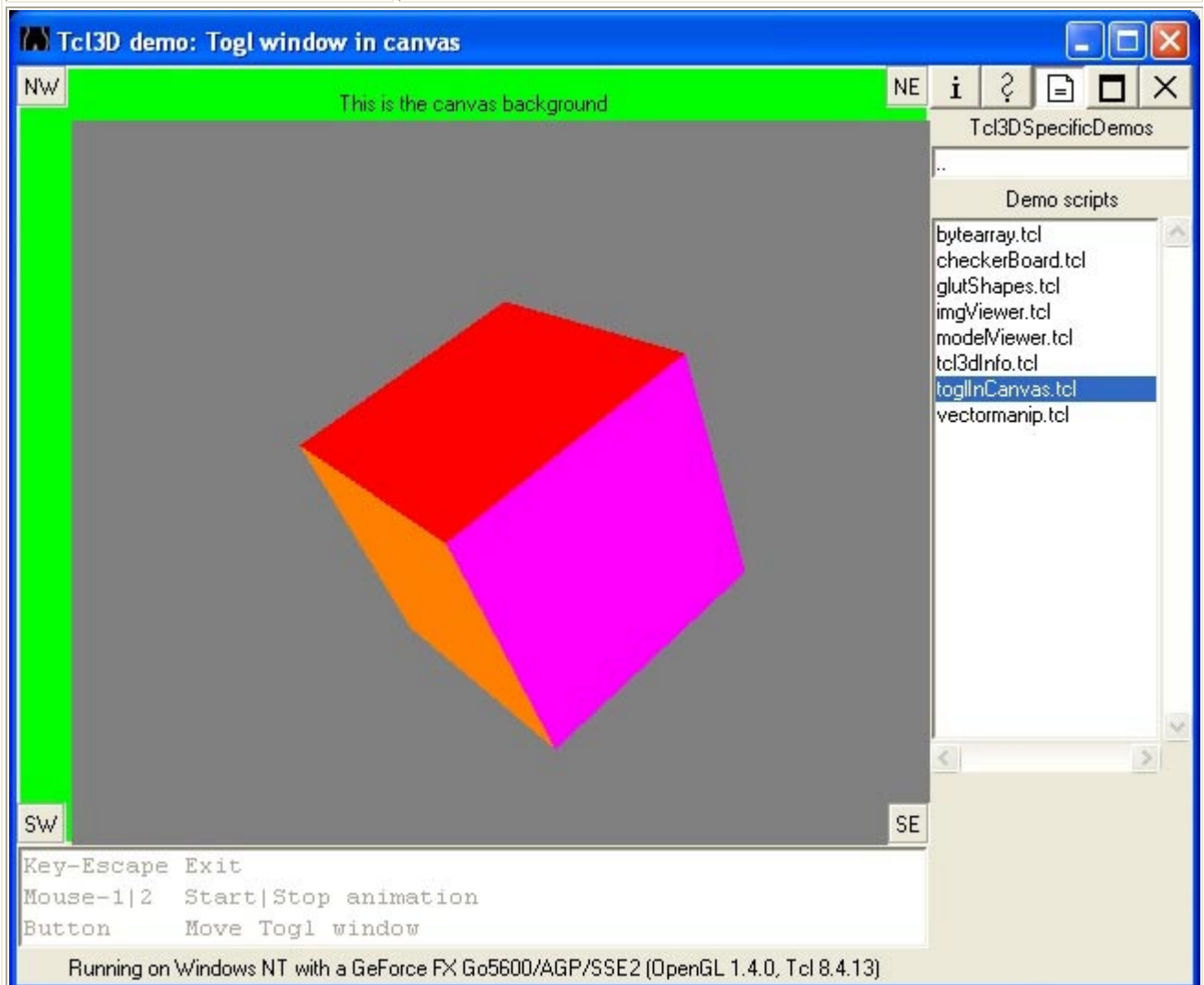
- General information (-info)
- Available OpenGL commands in Tcl (-cmd)
- Available OpenGL enumerations in Tcl (-enum)
- Current values of OpenGL state variables (-state)

The information texts can also be printed to stdout without opening a GUI, if calling this Tcl script

with any of the above listed command line options.
To display all four categories, the option "-all"
can be used.

Note: To retrieve all necessary information, an OpenGL
context has to be established. So the batch mode
needs a DISPLAY, too.

Demo:	toglInCanvas
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents



`toglInCanvas.tcl`

Tcl3D demo using a Togl window and some button widgets inserted into a canvas.

Author: Paul Obermeier

Date: 2006-12-08

Demo:	vectormanip
Type:	
Category:	Tcl3DSpecificDemos
Root:	Contents

Tcl3D demo: Manipulating image vectors (Test 5)

```

Key-1:      Copy:  Dest (bw)      = Src (bw)
Key-2:      Copy:  Dest (r,g,b)   = Src (r,g,b)
Key-3:      Manip: Dest (bw)      = -1 * Src (bw)  + 255
Key-4:      Manip: Dest (r,g,b)   = -1 * Src (r,g,b) + 255
Key-5:      Swap  : Dest (r,g,b)   = Src (g,r,b)
Key-Escape: Exit

```

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

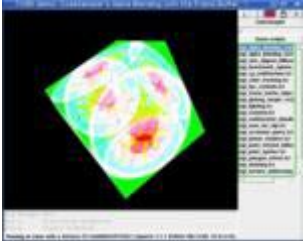
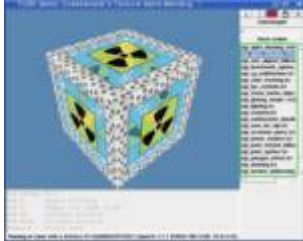


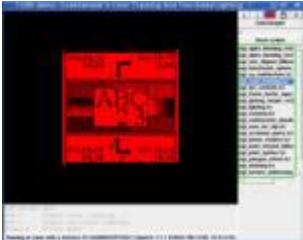
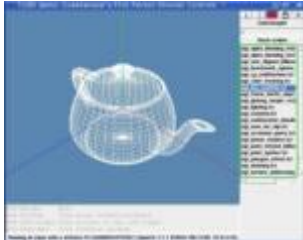
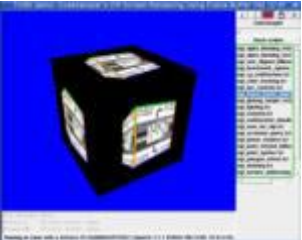



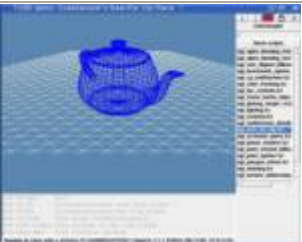
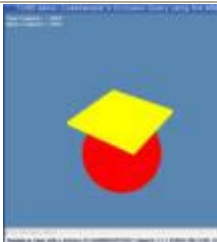
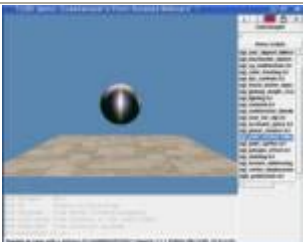
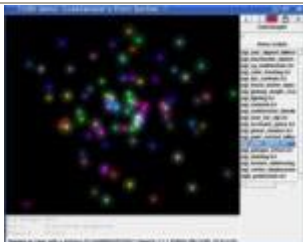

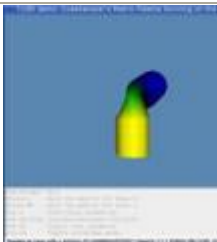

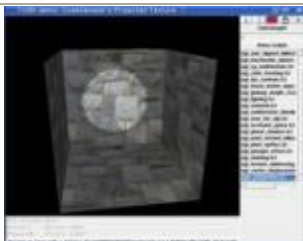
vectormanip.tcl

Tcl3D demo showing the use of the Vector manipulation functions, introduced in Version 0.3.2.

The program texture maps an image generated with Tcl (the source) onto the left quad. The source texture is manipulated with the vector functions according to the chosen method and mapped onto the right quad. See functions `execMethod?` below.

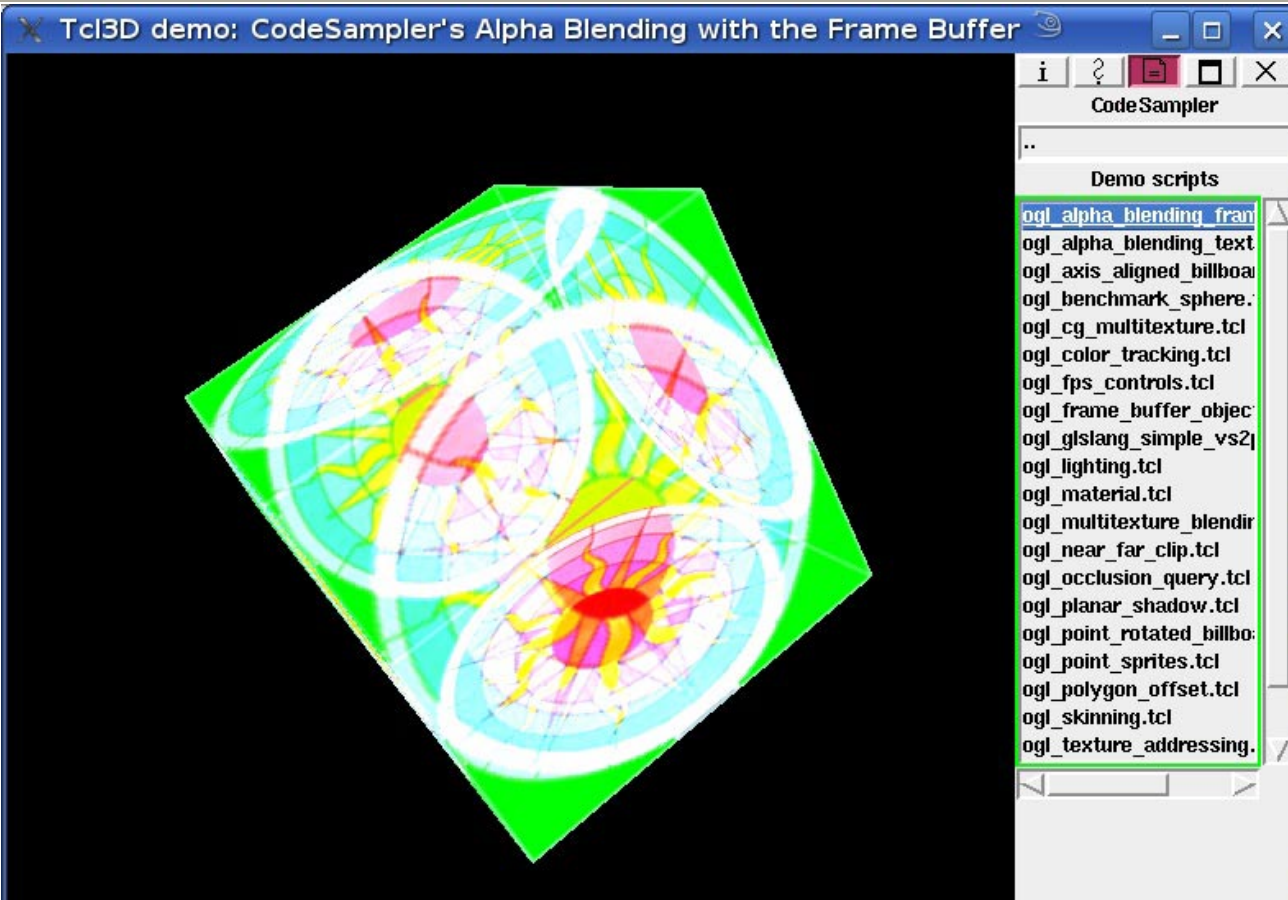
Author: Paul Obermeier
Date: 2006-08-15

Category:	TutorialsAndBooks
Root:	Contents
	Available types
	CodeSampler
	GameProgrammer
	NeHe
	RedBook

Type:	CodeSampler		
Category:	TutorialsAndBooks		
Root:	Contents		
<p>Several demo applications from Kevin Harris' page have been ported to Tcl3D. The examples cover Cg programming.</p> <p>Original sources available at: http://www.codesampler.com/oglsrc.htm</p>			
Available demos			
			
ogl alpha blending framebuffer	ogl alpha blending texture	ogl axis aligned billboard	ogl benchmark
			
ogl color tracking	ogl fps controls	ogl frame buffer object	ogl glslang simple
			
ogl material	ogl multitexture blending	ogl near far clip	ogl occlusion
			
ogl point rotated billboard	ogl point sprites	ogl polygon offset	ogl skinning
			
ogl vertex displacement	oglu projtexture		

Demo:	ogl_alpha_blending_framebuffer
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Alpha Blending with the Frame Buffer



Key-Escape Exit
 Key-s Start|Stop Animation
 Key-b Toggle blending

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_alpha_blending_framebuffer.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 03/25/05

Description: This sample demonstrates how to perform alpha-blending in the frame-buffer. The sample renders a textured cube which is alpha-blended into the frame-buffer in such a way as to create a translucent effect.

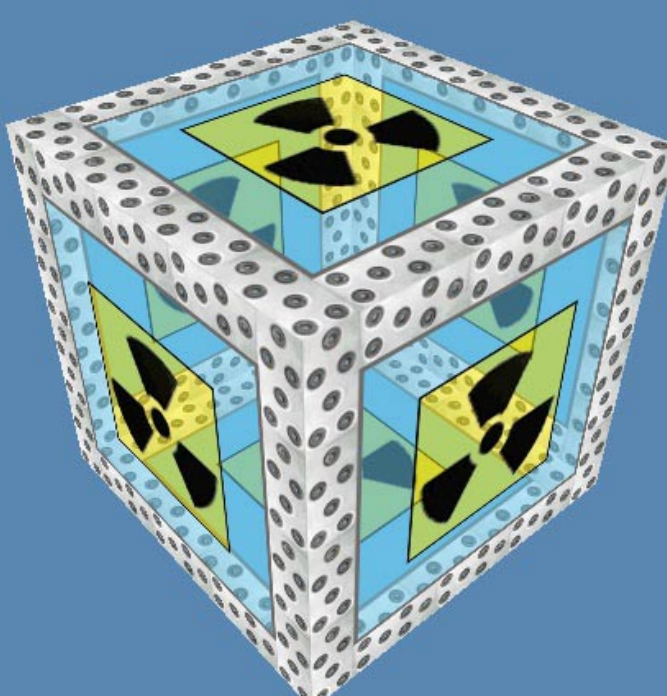
Control Keys: b - Toggle blending

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 4: Alpha Blending in the Frame buffer
http://www.codesampler.com/oglsrc/oglsrc_4.htm#ogl_alpha_blending_framebuffer

Modified for Tcl3D by Paul Obermeier 2008/05/01
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_alpha_blending_texture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Texture Alpha Blending



CodeSampler

..

Demo scripts

- ogl_alpha_blending_fran
- ogl_alpha_blending_text
- ogl_axis_aligned_billboa
- ogl_benchmark_sphere.
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec
- ogl_glslang_simple_vs2j
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl
- ogl_point_rotated_billbo
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing.

Key-Escape Exit
 Key-b Toggle blending
 Key-s Toggle cull mode trick
 Key-Up Increase distance
 Key-Down Decrease distance
 Mouse-L Rotate cube

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_alpha_blending_texture.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 03/25/05
 Description: This sample demonstrates how to perform alpha blending using the alpha channel of a standard .tga texture. For proper alpha blending, the sample uses a cull-mode sorting trick to ensure the sides of the textured cube get rendered in back-to-front order.

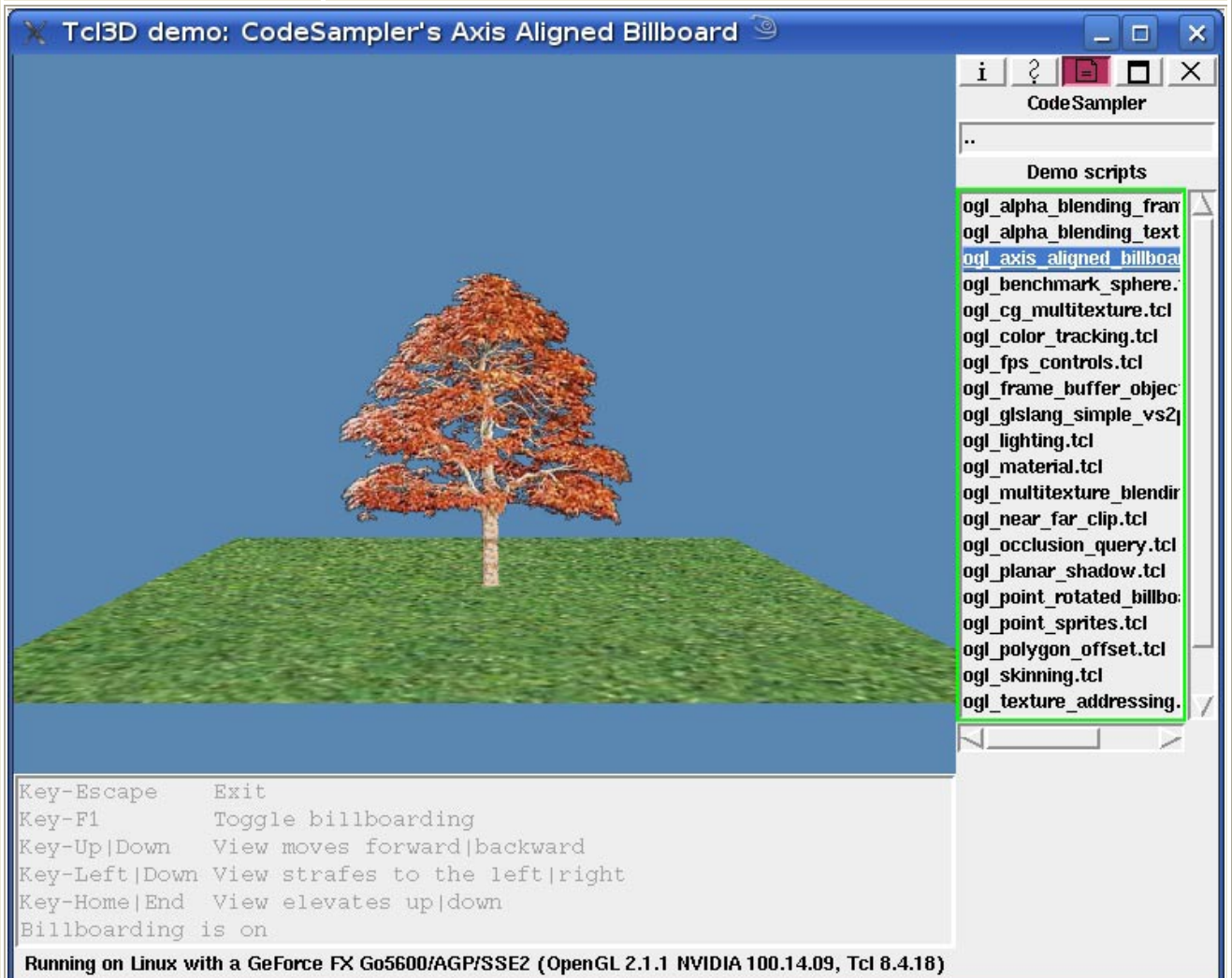
Control Keys: b - Toggle blending
 s - Toggle usage of cull-mode sorting trick
 Up Arrow - Move the test cube closer
 Down Arrow - Move the test cube away

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 3: Alpha Texture Blending
http://www.codesampler.com/oglsrc/oglsrc_3.htm#ogl_alpha_blending_texture

Modified for Tcl3D by Paul Obermeier 2008/05/01

See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_axis_aligned_billboard
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



The screenshot shows a window titled "Tcl3D demo: CodeSampler's Axis Aligned Billboard". The main area displays a 3D scene with a tree on a green hill against a blue sky. A control panel at the bottom left lists keyboard shortcuts and the status "Billboarding is on". A right-hand sidebar shows a list of demo scripts, with "ogl_axis_aligned_billboard" highlighted.

Key-Escape Exit
Key-F1 Toggle billboarding
Key-Up|Down View moves forward|backward
Key-Left|Down View strafes to the left|right
Key-Home|End View elevates up|down
Billboarding is on

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Demo scripts:

- ogl_alpha_blending_fran
- ogl_alpha_blending_text
- ogl_axis_aligned_billboard**
- ogl_benchmark_sphere.
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec
- ogl_glslang_simple_vs2
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl
- ogl_point_rotated_billbo
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing.

Name: `ogl_axis_aligned_billboard.cpp`
Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 02/01/05
Description: An example of axis aligned billboarding.

Control Keys: F1 - Toggle billboarding
 Up - View moves forward
 Down - View moves backward
 Left - View strafes left
 Right - View strafes Right
 Left Mouse - Perform looking
 Mouse - Look about the scene

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 8: Axis-Aligned Billboards

Modified for Tcl3D by Paul Obermeier 2007/03/10
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_benchmark_sphere
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1|F2 Decrease|Increase sphere precision.
 Key-F3 Use Immediate mode calling C.
 Key-F8 Use Immediate mode calling Tcl.
 Key-F4 Use a Display List.
 Key-F5 Use a Vertex Array.
 Key-F6 Start benchmark.
 Key-s Stop running benchmark.
 Key-F7 Toggle wireframe mode.

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

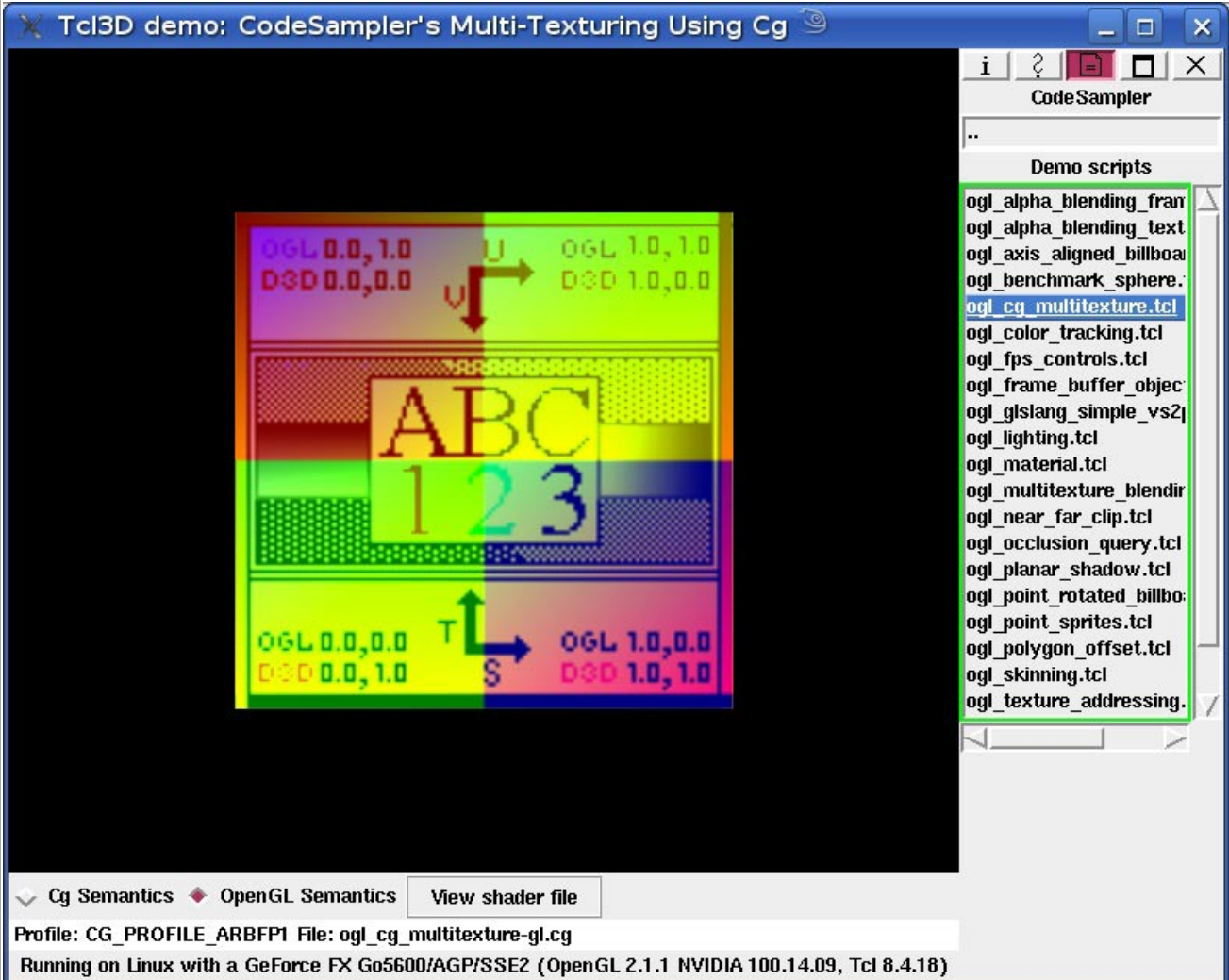
 Name: `ogl_benchmark_sphere.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/21/05
 Description: Renders a textured sphere using either Immediate Mode calls, Immediate Mode calls cached in a Display List, or as a collection of geometric data stored in an interleaved fashion within a Vertex Array.

Control Keys: Left Mouse Button - Spin the view.
 F1 - Decrease sphere precision.
 F2 - Increase sphere precision.
 F3 - Use Immediate mode
 F4 - Use a Display List
 F5 - Use a Vertex Array
 F6 - Perform Benchmarking
 F7 - Toggle wire-frame mode.

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 9: Benchmarking Test App

Modified for Tcl3D by Paul Obermeier 2005/11/07
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_cg_multitexture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



Name: `ogl_cg_multitexture.cpp`
 Author: Kevin Harris
 Last Modified: 04/26/05
 Description: This sample demonstrates how to blend two textures together with Cg using either OpenGL's native multi-texture support (using semantics) or by using Cg's special texture functions: `cgGLSetTextureParameter`, `cgGLEnableTextureParameter`, and `cgGLDisableTextureParameter`.

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 10: Multi-Texturing with Cg

Modified for Tcl3D by Paul Obermeier 2007/05/22
 See www.tcl3d.org for the Tcl3D extension.

The original demo has been extended with a little GUI to allow switching between the two call semantics at runtime.
 To visualize, that a different shader program is active, the OpenGL semantics shader adds only half of the checker image color.

Demo:	ogl_color_tracking
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-c Toggle color tracking
 Key-l Toggle two sided lighting
 Mouse-L Rotate quad

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_color_tracking.cpp`

Author: Kevin Harris (kevin@codesampler.com)

Last Modified: 04/28/05

Description: This sample demonstrates color-tracking and two-sided lighting in OpenGL.

Color tracking allows us to substitute the color of our vertices for one or more of the material colors used by OpenGL's lighting equation. This feature is typically not used much anymore as since modelers today use textures to color their geometry - not vertex colors. Of course, this technique is alive and kicking in a billion lines of legacy code so it's good to understand this technique just in case you run across it.

Two-sided lighting basically means that we want OpenGL to light both sides of our geometry instead of just the front faces. Again, this feature is typically not used much anymore since it's very inefficient to light both sides of every triangle but there are some cases where this is helpful to know.

Control Keys: c - Toggle between a material color or color tracking the
 vertices
 l - Toggle two-sided lighting

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 5: Color Tracking and Two-Sided lighting
http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_color_tracking

Modified for Tcl3D by Paul Obermeier 2008/05/01
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_fps_controls
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-Up|Down View moves forward|backward
 Key-Left|Right View strafes to the left|right
 Key-Home|End View elevates up|down

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_fps_controls.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
 Description: This sample demonstrates how to collect user input and build a custom view matrix for First Person Shooter style controls.

Control Keys: Up - View moves forward
 Down - View moves backward
 Left - View strafes left
 Right - View strafes Right
 Left Mouse - Perform looking
 Mouse - Look about the scene
 Home - View moves up
 End - View moves down

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: First Person Shooter Controls

Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_frame_buffer_object
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Off-Screen Rendering Using Frame Buffer Obj

Key-Escape Exit
 Mouse-L Rotate outer cube
 Mouse-MR Rotate inner cube

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

 Name: `ogl_frame_buffer_object.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 07/06/05

Description: This sample demonstrates how to create dynamic textures through off-screen rendering. The off-screen rendering step is accomplished using a frame-buffer and render-buffer object, which is created using OpenGL's `EXT_framebuffer_object` extension.

As a demonstration, a spinning textured cube is rendered to a frame-buffer object, which is in turn, used to create a dynamic texture. The dynamic texture is then used to texture a second spinning cube, which will be rendered to the application's window.

Control Keys: Left Mouse Button - Spin the large, black cube.
 Right Mouse Button - Spin the textured cube being rendered into the p-buffer.

Note: The EXT_framebuffer_object extension is an excellent replacement for the WGL_ARB_pbuffer and WGL_ARB_render_texture combo which is normally used to create dynamic textures. An example of this older technique can be found here:

http://www.codesampler.com/oglsrc/oglsrc_7.htm#ogl_offscreen_rendering

Original C++ code by Kevin Harris (kevin@codesampler.com)

See www.codesampler.com for the original files

OpenGL samples page 14: Off-screen Rendering Using Frame-Buffer Objects

Modified for Tcl3D by Paul Obermeier 2007/02/25

See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_glslang_simple_vs2ps
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
Key-F1 Toggle shaders

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_glslang_simple_vs2ps.cpp`

Author: Kevin Harris (kevin@codesampler.com)

Last Modified: 04/21/05

Description: This sample demonstrates how to write vertex and fragment shaders using OpenGL's new high-level shading language GLSLang.

Control Keys: F1 - Toggle usage of vertex and fragment shaders.

Note: The fragment shader has been changed slightly from what the fixed-function pipeline does by default so you can see a noticeable change when toggling the shaders on and off. Instead of modulating the vertex color with the texture's texel, the fragment shader adds the two together, which causes the fragment shader to produce a brighter, washed-out image. This modification can be switched back in the fragment shader file.

Original C++ code by Kevin Harris (kevin@codesampler.com)

See www.codesampler.com for the original files

OpenGL samples page 10: Simple Vertex & Fragment Shader (GLSLang)

Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_lighting
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-s Start|Stop Animation
 Key-d Change to directional light
 Key-o Change to spot light
 Key-p Change to point light
 Key-w Toggle wireframe mode

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

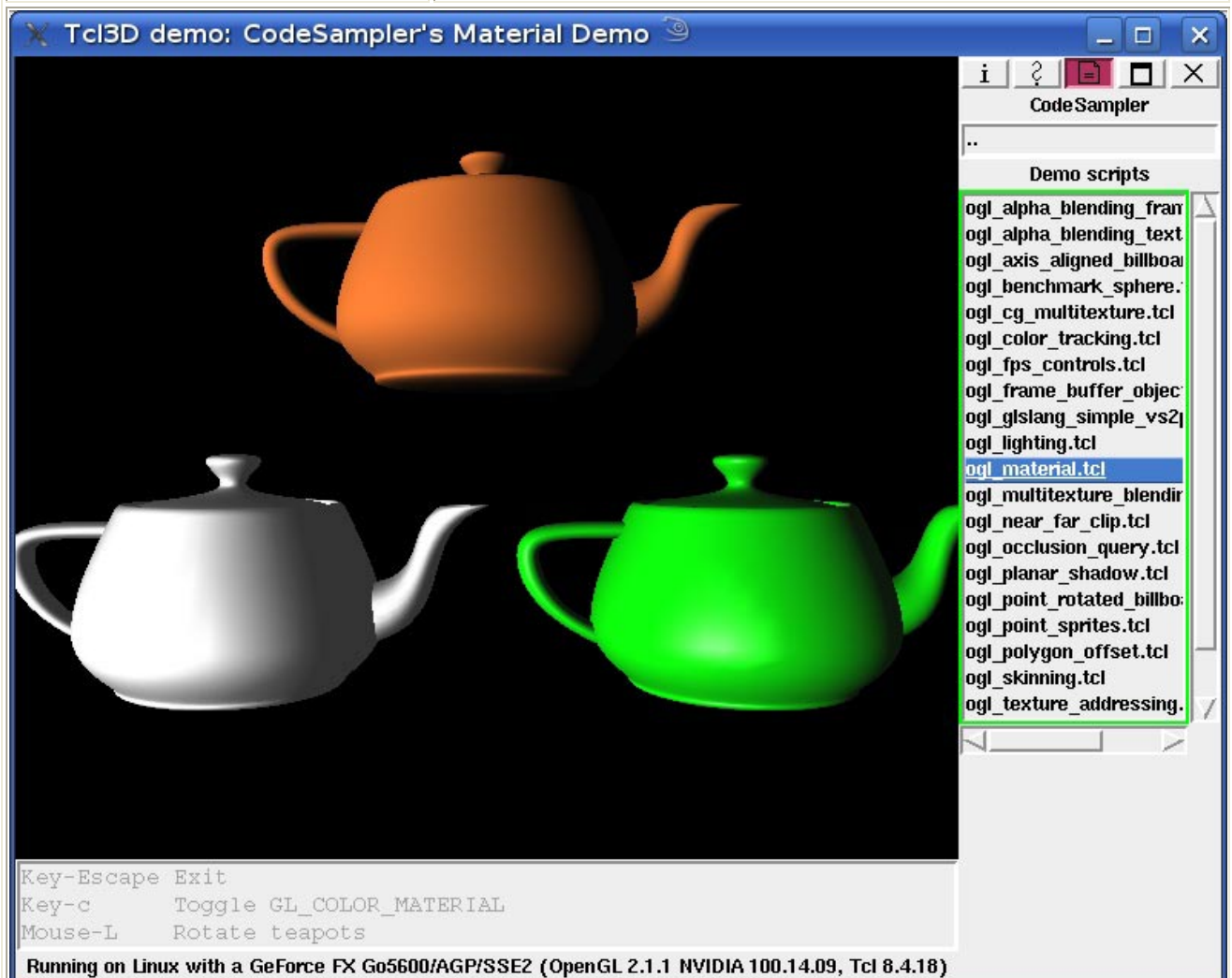
Name: `ogl_lighting.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
 Description: This sample demonstrates the three basic types of lights that are available in OpenGL: directional, spot, and point.

Control Keys: l - Changes the light's type
 w - Toggles wire frame mode

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: Lighting
http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_lighting

Modified for Tcl3D by Paul Obermeier 2008/05/01
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_material
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit
 Key-c Toggle GL_COLOR_MATERIAL
 Mouse-L Rotate teapots

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_material.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/28/05
 Description: This sample demonstrates how to use materials with lighting to produce different surface effects.

Control Keys: Left Mouse Button - Spin the view


Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 5: Materials
http://www.codesampler.com/oglsrc/oglsrc_5.htm#ogl_material

Modified for Tcl3D by Paul Obermeier 2008/04/28
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_multitexture_blending
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Multi-Texture Blending

Contribution of each texture for blending:
 Contribution of Tex 0 = 0.540
 Contribution of Tex 1 = 0.130 (Inferred by the values of Tex 0 & Tex 2)
 Contribution of Tex 2 = 0.330



RGB values passed for interpolation of texture stage 1
 Red = 0.806
 Green = 0.806
 Blue = 0.806
 ALPHA value passed for interpolation of texture stage 2
 Alpha = 0.670

Key-Escape Exit
 Key-F1|F2 Increment|Decrement contribution of texture 0
 Key-F3|F4 Increment|Decrement contribution of texture 2
 Key-F5 Toggle wireframe mode
 Key-Up|Down Decrease|Increase distance

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_multitexture_blending.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/08/05
 Description: This sample demonstrates how to use the OpenGL extensions `GL_ARB_multitexture` and `GL_ARB_texture_env_combine` in conjunction with specially encoded vertex colors to blend three textures together.

This technique is very popular in terrain rendering engines which use it to blend dramatically different textures such as rock and grass together with out creating a noticeable edge. For example, with three textures consisting of stone, grass, and sand you can render a mountain that blends in patches of grass and sand at its base.

Of course, while this technique remains popular as a fall-back for older hardware, shaders make this task a lot easier and are quickly becoming the preferred method for terrain texture blending.

The technique basically consists of the following steps:

Step 1: Take the desired contribution of the three textures and encode them into the vertex's color such that the RGB portion of the color controls the interpolation between texture stages 0 and 1, and the color's ALPHA controls the interpolation between texture stages 1 and 2.

Step 2: Use `GL_ARB_multitexture` to apply three textures simultaneously to our geometry.

Step 3: Set the first texture on texture stage 0.

Step 4: During texture stage 1, use `GL_INTERPOLATE_ARB` to linearly interpolate between the output of stage 0 and the texture of stage 1 with `GL_SRC_COLOR` (i.e. the RGB part of the color).

Step 4: During texture stage 2, use `GL_INTERPOLATE_ARB` to linearly interpolate between the output of stage 1 and the texture of stage 2 with `GL_SRC_ALPHA` (i.e. the ALPHA part of the color).

Control Keys: F1 - Increase contribution of texture 0
F2 - Decrease contribution of texture 0
F3 - Increase contribution of texture 2
F4 - Decrease contribution of texture 2
F5 - Toggle wire-frame mode.
Up - View moves forward
Down - View moves backward

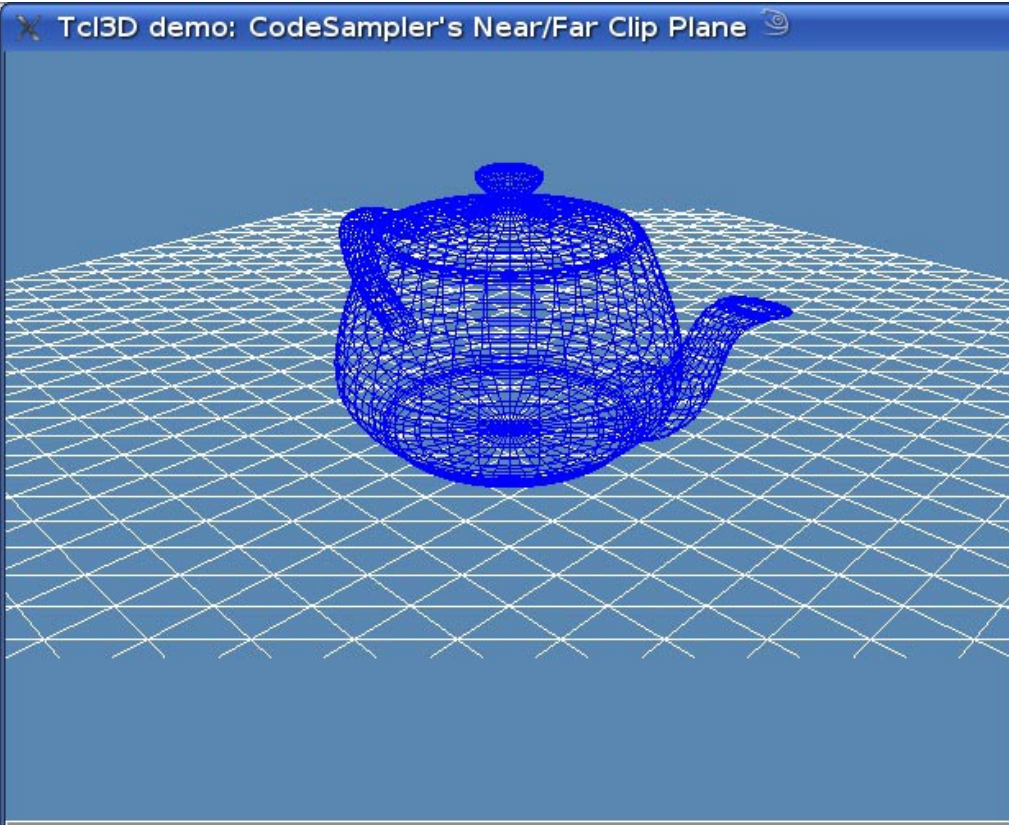
Note: I tried to create an intuitive way to set the contribution of each texture at run-time using the function keys, but this system is still a little confusing since I only allow the contribution of texture 0 and texture 2 to be adjusted. This is due to the fact that the equation for encoding the blending info into the vertex color simply infers the contribution value of texture 1 based on the values for textures 0 and 2. Therefore, the contribution value of texture 1 must be indirectly set by adjusting the contributions of textures 0 and 2.

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 4: Multi-Texture Blending

Modified for Tcl3D by Paul Obermeier 2007/03/10
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_near_far_clip
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Near/Far Clip Plane



Code Sampler

Demo scripts

- ogl_alpha_blending_fran
- ogl_alpha_blending_text
- ogl_axis_aligned_billboa
- ogl_benchmark_sphere.
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec
- ogl_glslang_simple_vs2)
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl**
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl
- ogl_point_rotated_billbo
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing.

Key-Escape Exit
Key-F1|F2 Increase|Decrease near clip plane
Key-F3|F4 Increase|Decrease far clip plane
Key-Up|Down View moves forward|backward
Key-Left|Right View strafes to the left|right
Key-Home|End View elevates up|down

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_near_far_clip.cpp`
Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 02/01/05
Description: This sample demonstrates how adjustments to OpenGL's near and far clip planes effect the view.

Control Keys:

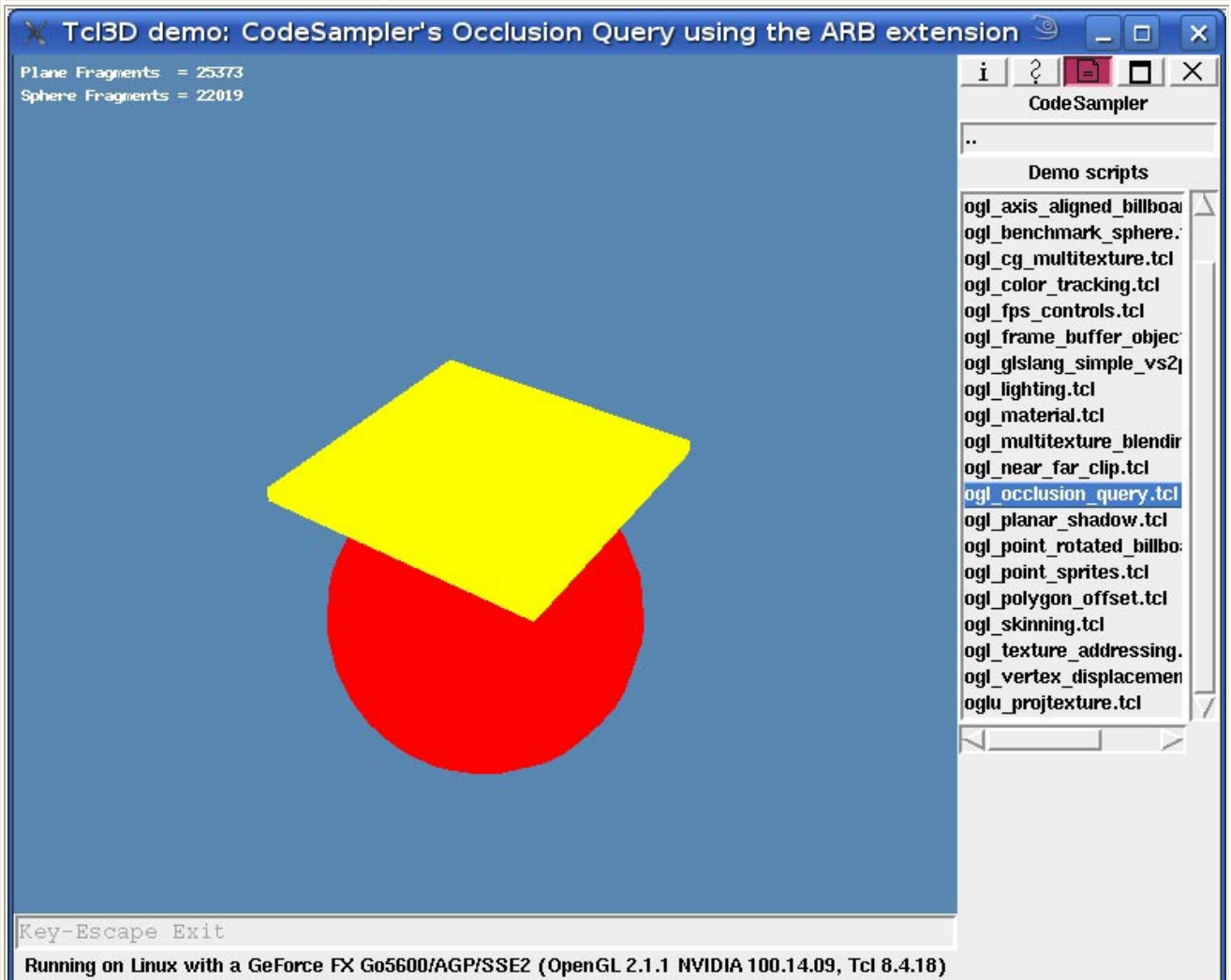
Up	- View moves forward
Down	- View moves backward
Left	- View strafes left
Right	- View strafes Right
Left Mouse	- Perform looking
Mouse	- Look about the scene
F1	- Increase near clip value
F2	- Decrease near clip value
F3	- Increase far clip value
F4	- Decrease far clip value

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files

OpenGL samples page 2: Near/Far Clipping Plane

Modified for Tcl3D by Paul Obermeier 2007/03/10
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_occlusion_query
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



Name: `ogl_occlusion_query_arb.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
 Description: This sample demonstrates how to use OpenGL's new extension,
`ARB_occlusion_query` and `NV_occlusion_query`.

Control Keys: Left Mouse Button - Spin the view

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 7: Occlusion Query

Modified for Tcl3D by Paul Obermeier 2007/03/10
 See www.tcl3d.org for the Tcl3D extension.


This sample integrates `ARB_occlusion_query` and `NV_occlusion_query` code into one file.

If called with no command line arguments, it uses the `ARB_occlusion_query` extension.

Use "nv" as parameter to use the `NV_occlusion_query` extension.

Demo:	ogl_planar_shadow
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Planar Shadows



Code Sampler

Demo scripts

- ogl_axis_aligned_billboa
- ogl_benchmark_sphere.
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec
- ogl_glslang_simple_vs2
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl**
- ogl_point_rotated_billbo
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing.
- ogl_vertex_displacemen
- oglu_projtexture.tcl

Key-Escape Exit
Key-Up|Down Move light up|down
Key-Left|Right Move light left|right
Key-s Toggle stencil usage
Mouse-L Spin the view
Mouse-MR Spin the teapot
Stencil is ON

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_planar_shadow.cpp`
Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 02/01/05
Description: This sample demonstrates how to create planar shadows under OpenGL.

Planar shadows are created by building a special projection matrix which flattens an object's geometry into a plane when rendered.

If the plane, which the geometry is flattened into, matches up with another planar surface like a floor or a wall, the flattened geometry can be made to resemble a shadow on that surface.

Control Keys: Up - Light moves up
Down - Light moves down
Left - Light moves left
Right - Light moves right

Left Mouse Button - Spin the view

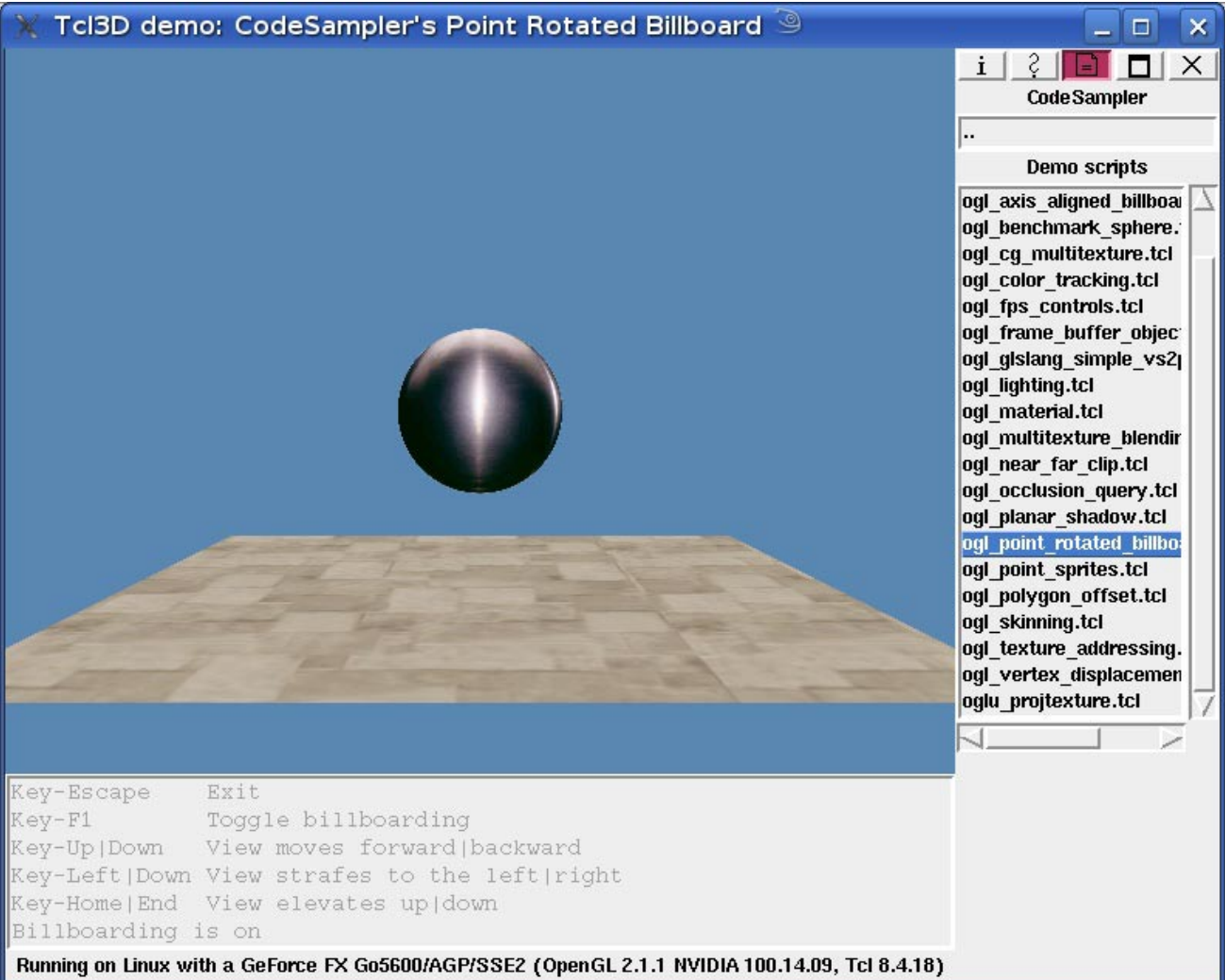
Right Mouse Button - Spin the teapot

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 7: Planar Shadows
http://www.codesampler.com/oglsrc/oglsrc_7.htm#ogl_planar_shadow

Modified for Tcl3D by Paul Obermeier 2008/05/02
See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_point_rotated_billboard
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Point Rotated Billboard



Key-Escape Exit
 Key-F1 Toggle billboard
 Key-Up|Down View moves forward|backward
 Key-Left|Down View strafes to the left|right
 Key-Home|End View elevates up|down
 Billboarding is on

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

 Name: ogl_point_rotated_billboard.cpp
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
 Description: An example of point rotated billboarding.

Control Keys: F1 - Toggle billboarding
 Up - View moves forward
 Down - View moves backward
 Left - View strafes left
 Right - View strafes Right
 Left Mouse - Perform looking
 Mouse - Look about the scene

 Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 8: Point-Rotated Billboards

Modified for Tcl3D by Paul Obermeier 2007/03/10
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_point_sprites
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-s Start|Stop Animation
 Mouse-L Rotate

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: `ogl_point_sprites.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 02/01/05
 Description: This sample demonstrates how to create point sprites using OpenGL's new `GL_ARB_point_sprite` extension, which can be used to create point-rotated billboards on the GPU.

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 6: Point Sprites

Modified for Tcl3D by Paul Obermeier 2005/11/08
 See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_polygon_offset
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Name: `ogl_polygon_offset.cpp`

Author: Kevin Harris (kevin@codesampler.com)

Last Modified: 02/01/05

Description: This sample demonstrates how to eliminate z-fighting when rendering polygons directly on top of other polygons.

Control Keys: Left Mouse Button - Spin the view
 F1 - Increase Offset Factor
 F2 - Decrease Offset Factor
 F3 - Increase Offset Unit
 F4 - Decrease Offset Unit

Original C++ code by Kevin Harris (kevin@codesampler.com)

See www.codesampler.com for the original files

OpenGL samples page 5: Polygon Offset

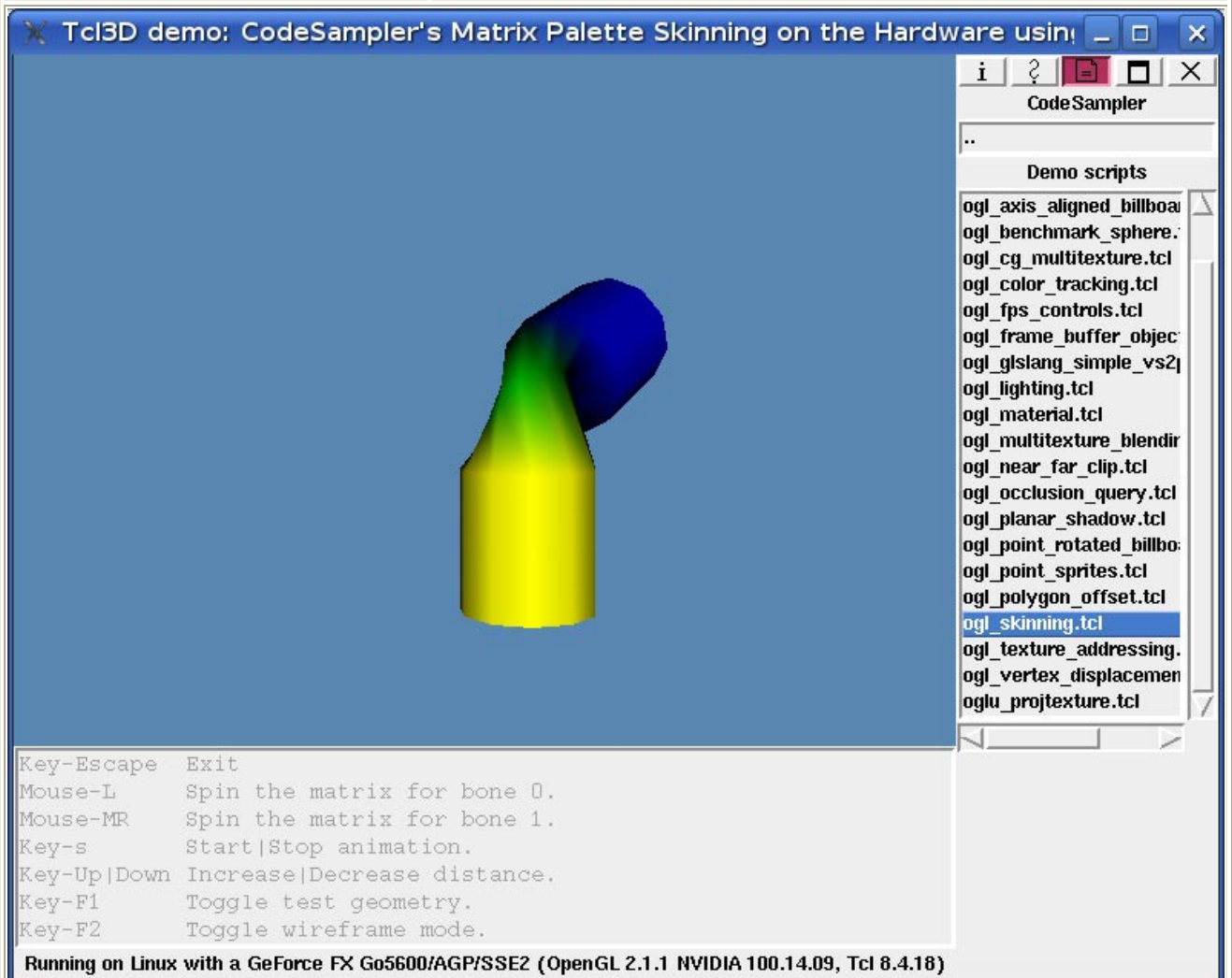
Modified for Tcl3D by Paul Obermeier 2007/03/05

See www.tcl3d.org for the Tcl3D extension.

See <http://www.opengl.org/sdk/docs/man/xhtml/glPolygonOffset.xml>

for the `glPolygonOffset` command.

Demo:	ogl_skinning
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit
 Mouse-L Spin the matrix for bone 0.
 Mouse-MR Spin the matrix for bone 1.
 Key-s Start|Stop animation.
 Key-Up|Down Increase|Decrease distance.
 Key-F1 Toggle test geometry.
 Key-F2 Toggle wireframe mode.

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

 Name: `ogl_cg_skinning.cpp` `ogl_glslang_skinning.cpp`
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/28/05
 Description: This sample demonstrates how to skin a mesh on the hardware using a Cg or GLSL shader. To keep things simple, the skeletal system used in this sample is very simple and only consists of two bones or bone matrices.

Special thanks go out to Cyril Zeller, and Matthias Wloka of nVIDIA for their help in straightening out a few oddities that my sample was suffering from. In short, Cg works fine and I'm occasionally a big dummy! ;)

Control Keys: Left Mouse Button - Spin the matrix for bone0.
 Right Mouse Button - Spin the matrix for bone1.

F1 - Toggle test geometry between a cylinder and a simple grouping of 3 quads.
 F2 - Toggle wire-frame mode

Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 11: Matrix Palette Skinning on the Hardware

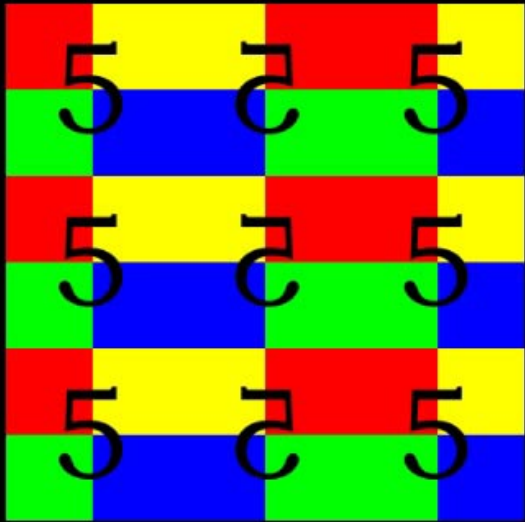
Modified for Tcl3D by Paul Obermeier 2005/11/05
See www.tcl3d.org for the Tcl3D extension.

This sample integrates Cg and GLSL code into one file.
If called with no command line arguments, it uses the Cg shader.
Use "glsl" as parameter to use the GLSL shader.

Demo:	ogl_texture_addressing
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Texture Addressing

```
GL_TEXTURE_WRAP_S = GL_MIRRORED_REPEAT_ARB
GL_TEXTURE_WRAP_T = GL_REPEAT
```



Key-Escape Exit
Key-F1 Next S texture addressing method
Key-F2 Next T texture addressing method

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Code Sampler

Demo scripts

- ogl_axis_aligned_billbo...
- ogl_benchmark_sphere.
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec...
- ogl_glslang_simple_vs2j
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl
- ogl_point_rotated_billbo...
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing**
- ogl_vertex_displacemen
- oglu_projtexture.tcl

```
-----
Name: ogl_texture_addressing.cpp
Author: Kevin Harris (kevin@codesampler.com)
Last Modified: 02/01/05
Description: This sample demonstrates the two methods of texture
addressing that are available under OpenGL:

GL_REPEAT
GL_CLAMP
GL_MIRRORED_REPEAT_ARB ( GL_ARB_texture_mirrored_repeat )
GL_CLAMP_TO_BORDER_ARB ( GL_ARB_texture_border_clamp )
GL_CLAMP_TO_EDGE      ( GL_SGIS_texture_edge_clamp )

Control Keys: F1 - Changes addressing method for the S coordinates
               F2 - Changes addressing method for the T coordinates
-----
```

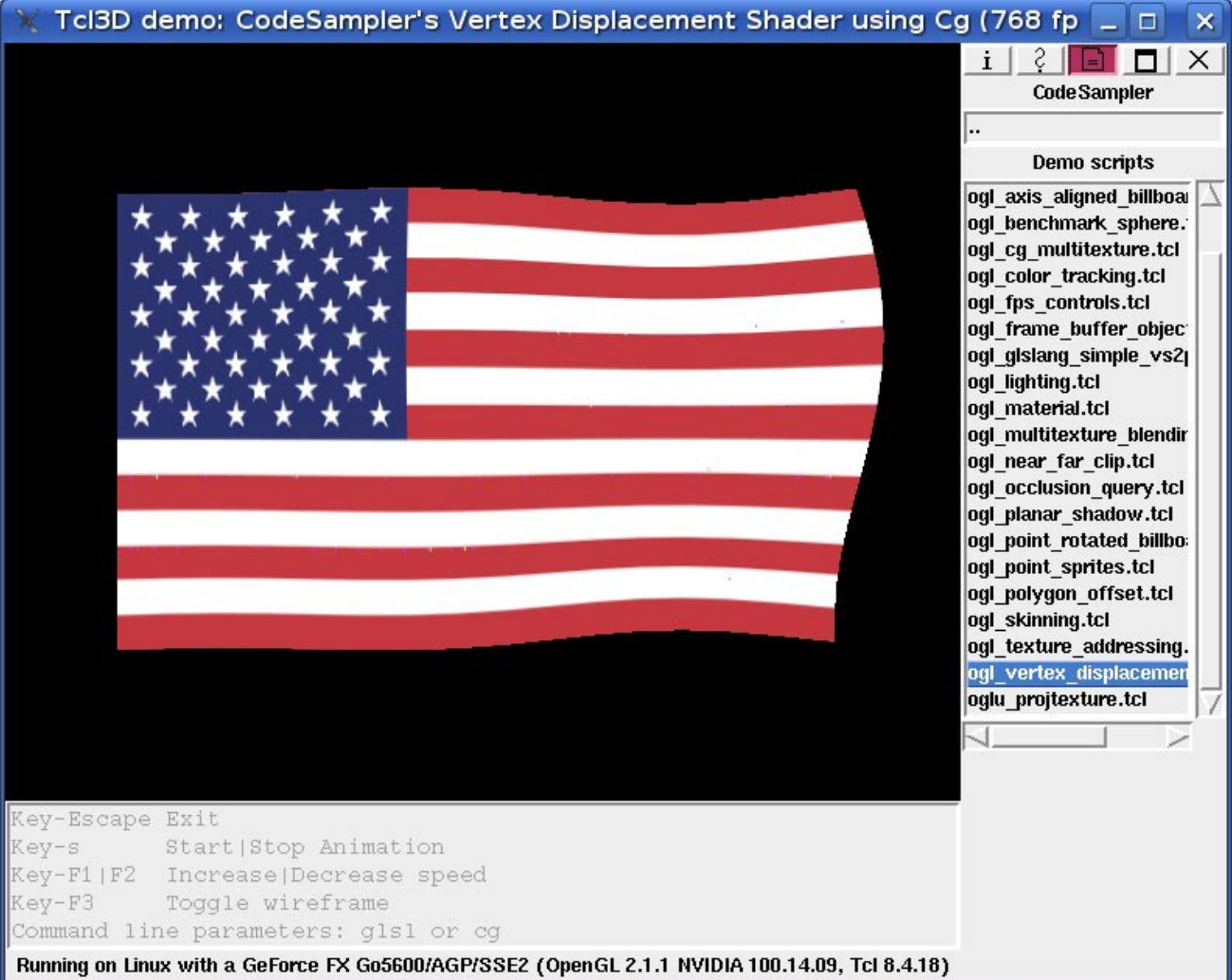
```
Original C++ code by Kevin Harris (kevin@codesampler.com)
See www.codesampler.com for the original files
OpenGL samples page 3: Texture Addressing
```

```
Modified for Tcl3D by Paul Obermeier 2007/03/06
```

See www.tcl3d.org for the Tcl3D extension.

Demo:	ogl_vertex_displacement
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Vertex Displacement Shader using Cg (768 fp)



CodeSampler

Demo scripts

- ogl_axis_aligned_billboad
- ogl_benchmark_sphere
- ogl_cg_multitexture.tcl
- ogl_color_tracking.tcl
- ogl_fps_controls.tcl
- ogl_frame_buffer_objec
- ogl_glslang_simple_vs2
- ogl_lighting.tcl
- ogl_material.tcl
- ogl_multitexture_blendir
- ogl_near_far_clip.tcl
- ogl_occlusion_query.tcl
- ogl_planar_shadow.tcl
- ogl_point_rotated_billbo
- ogl_point_sprites.tcl
- ogl_polygon_offset.tcl
- ogl_skinning.tcl
- ogl_texture_addressing
- ogl_vertex_displacement**
- oglu_projtexture.tcl

Key-Escape Exit
 Key-s Start|Stop Animation
 Key-F1|F2 Increase|Decrease speed
 Key-F3 Toggle wireframe
 Command line parameters: glsl or cg

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

Name: ogl_cg_vertex_displacement.cpp
 ogl_glslang_vertex_displacement.cpp
 Author: Kevin Harris (kevin@codesampler.com)
 Last Modified: 04/21/05
 Description: This sample demonstrates how to perform mesh deformation or vertex displacement with OpenGL using a Cg or GLSL shader.

Control Keys: F1 - Increase flag motion
 F2 - Decrease flag motion
 F3 - Toggle wire-frame mode

Original C++ code by Kevin Harris (kevin@codesampler.com)
 See www.codesampler.com for the original files
 OpenGL samples page 11: Vertex Displacement or Mesh Deformation Shader

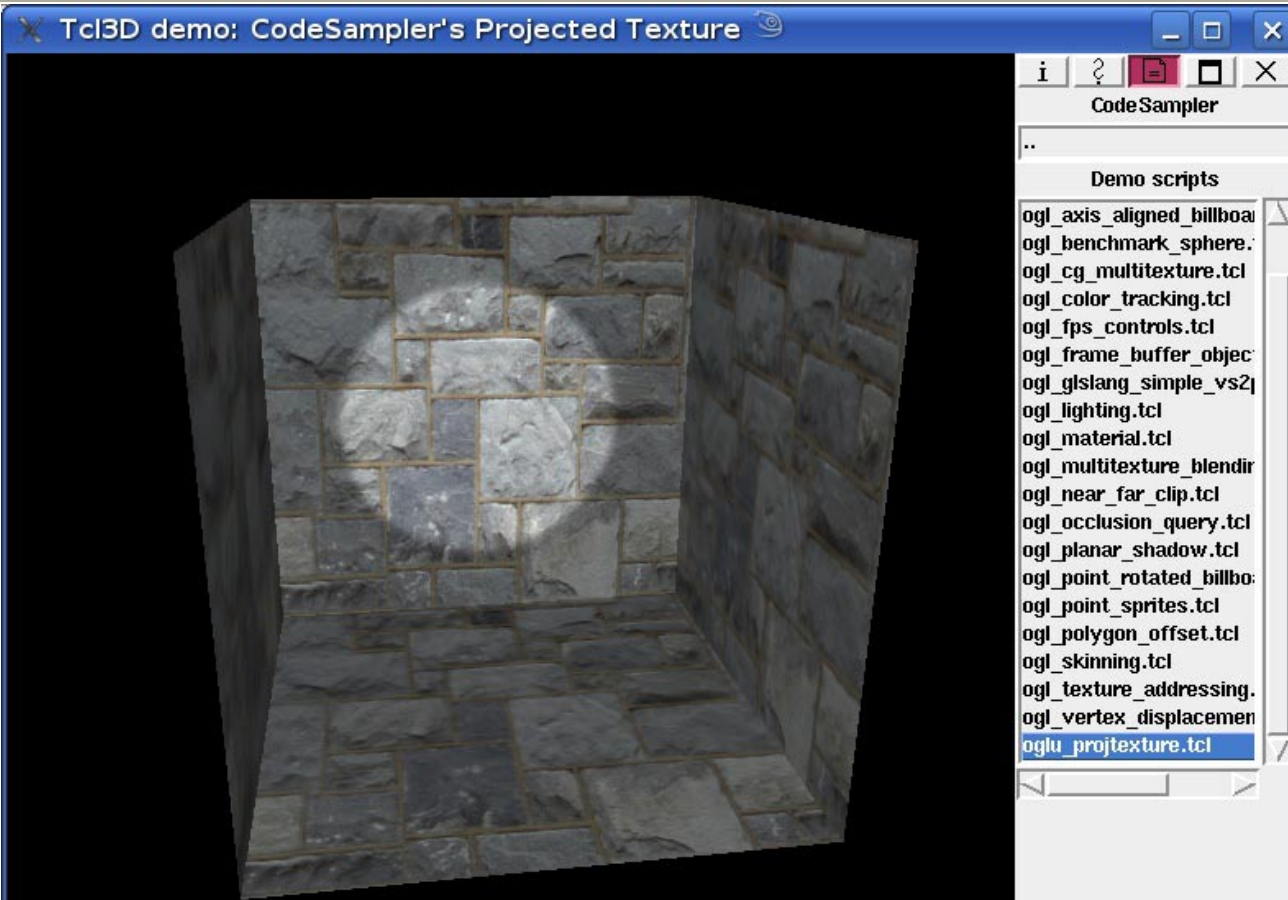
Modified for Tcl3D by Paul Obermeier 2005/11/05
 See www.tcl3d.org for the Tcl3D extension.

This sample integrates the Cg and GLSL code into one file.
 If called with no command line arguments, it uses the Cg shader.

Use "glsl" as parameter to use the GLSL shader.

Demo:	oglu_projtexture
Type:	CodeSampler
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: CodeSampler's Projected Texture



Key-Escape Exit
 Mouse-L Rotate cube
 Mouse-MR Rotate light

Running on Linux with a GeForce FX Go5600/AGP/SSE2 (OpenGL 2.1.1 NVIDIA 100.14.09, Tcl 8.4.18)

This program demonstrates how one would go about doing a projected texture. The sample here shows how a projected texture technique can be used to produce a light map.

The point is that even though you have very few vertices available for the fixed function

pipeline lighting solution, you can achieve nice per pixel lighting even though the surface

has only a handful of vertices.

This sample draws a cube, only allowing the inside being visible via culling front facing polys,

and then projects the light map texture on the second texture stage all through the fixed

function pipeline.



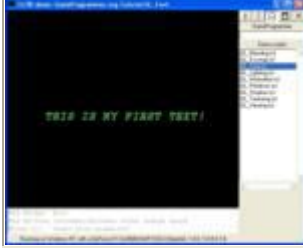
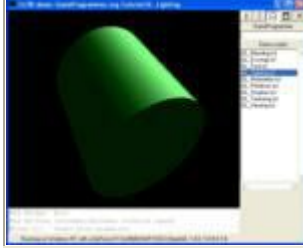

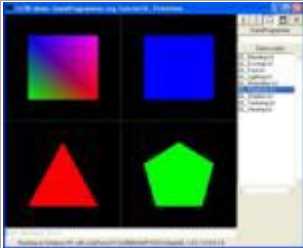

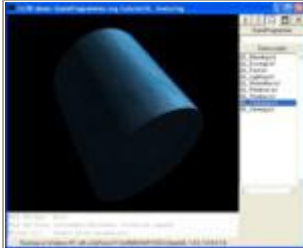
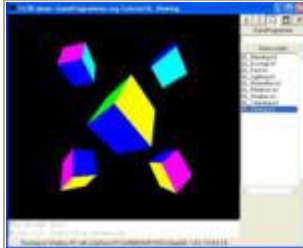
The left mouse button will move the cube around and the right mouse button will move the

projected # light map around.

Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents

Several demo applications from Vahid Kazemi's page have been ported to Tcl3D.
 Original sources available at: <http://www.GameProgrammer.org>

Available demos

				
GL Blending	GL Envmap	GL Font	GL Lighting	GL Mo
				
GL Primitives	GL Shadow	GL Texturing	GL Viewing	

Demo:	GL_Blending
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

GL_Blending.tcl

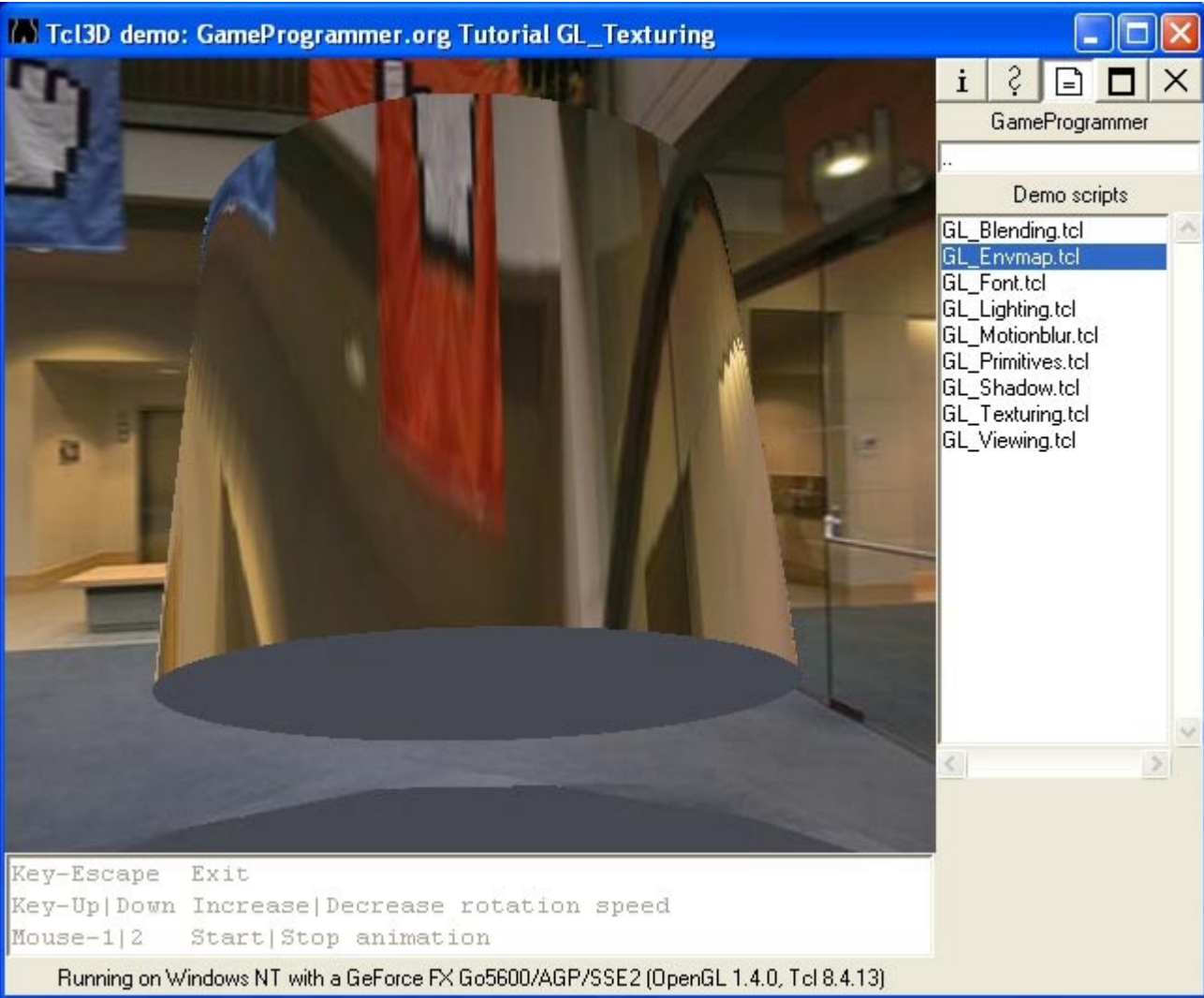
Tutorial from www.GameProgrammer.org
Blending demo

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Envmap
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: GameProgrammer.org Tutorial GL_Texturing



Key-Escape Exit
 Key-Up|Down Increase|Decrease rotation speed
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

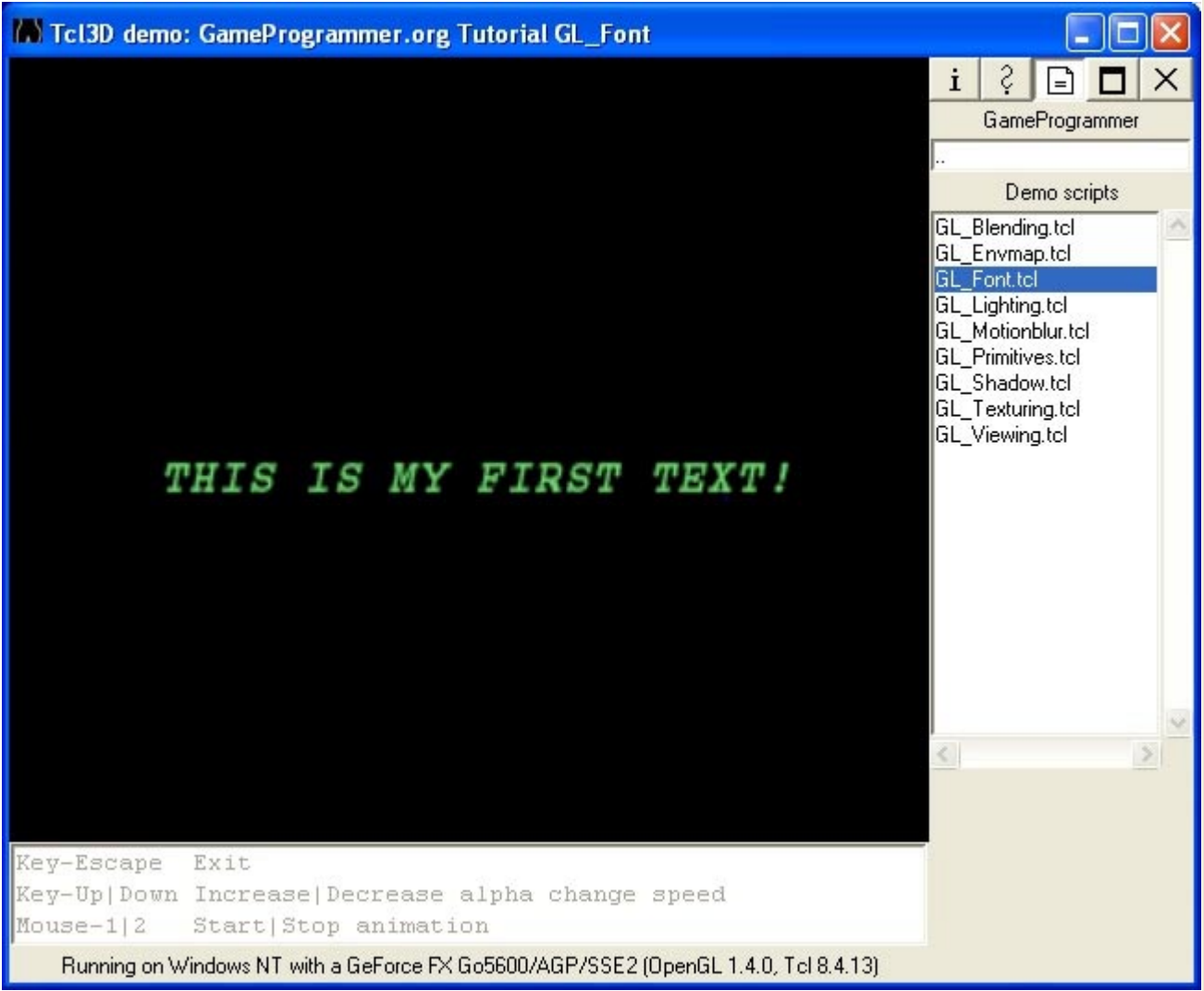
GL_Texturing.tcl

Tutorial from www.GameProgrammer.org
 Using Textures

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
 See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Font
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



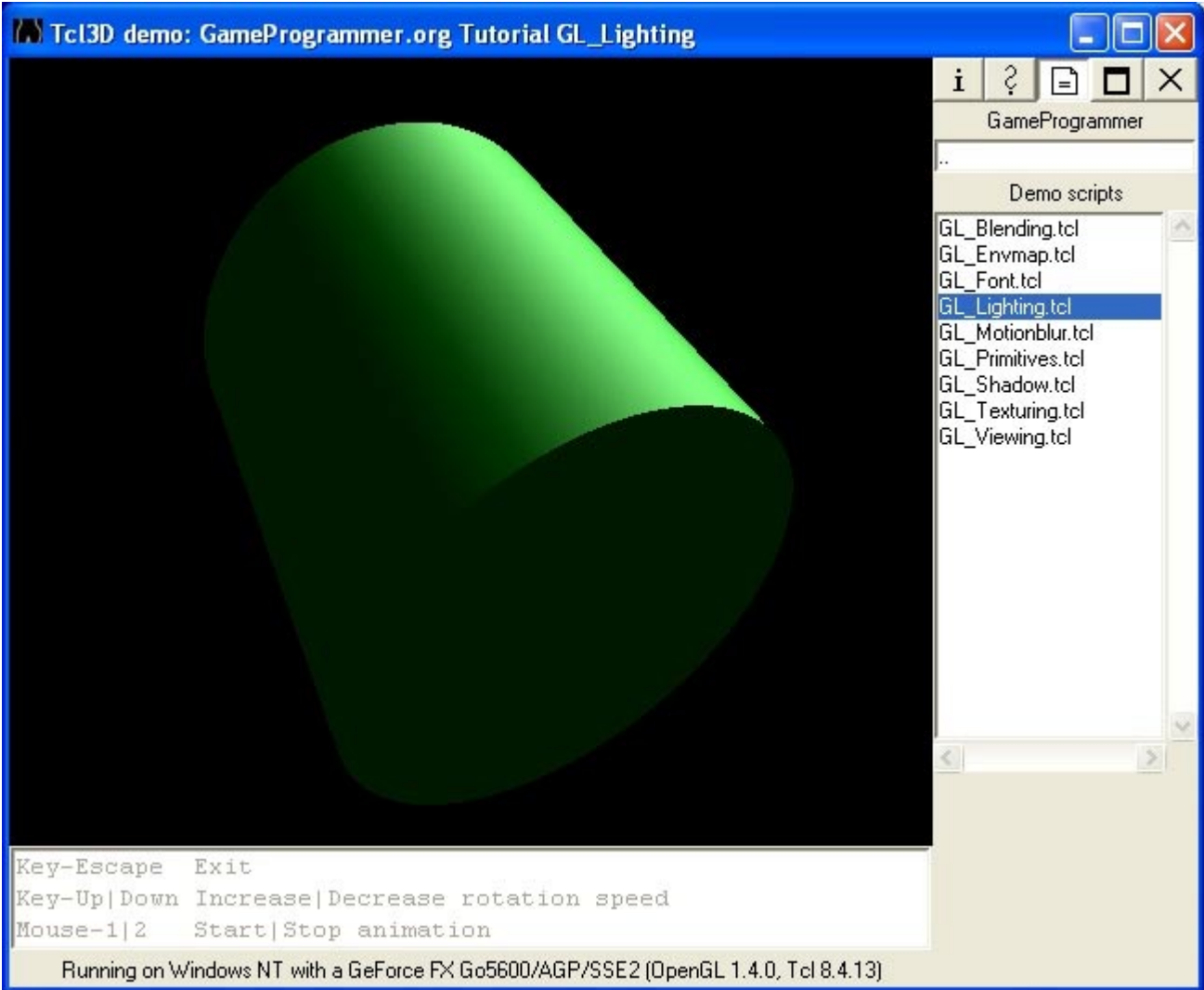
GL_Font.tcl

Tutorial from www.GameProgrammer.org
 Bitmap fonts

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/15
 See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Lighting
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit
Key-Up|Down Increase|Decrease rotation speed
Mouse-1|2 Start|Stop animation
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

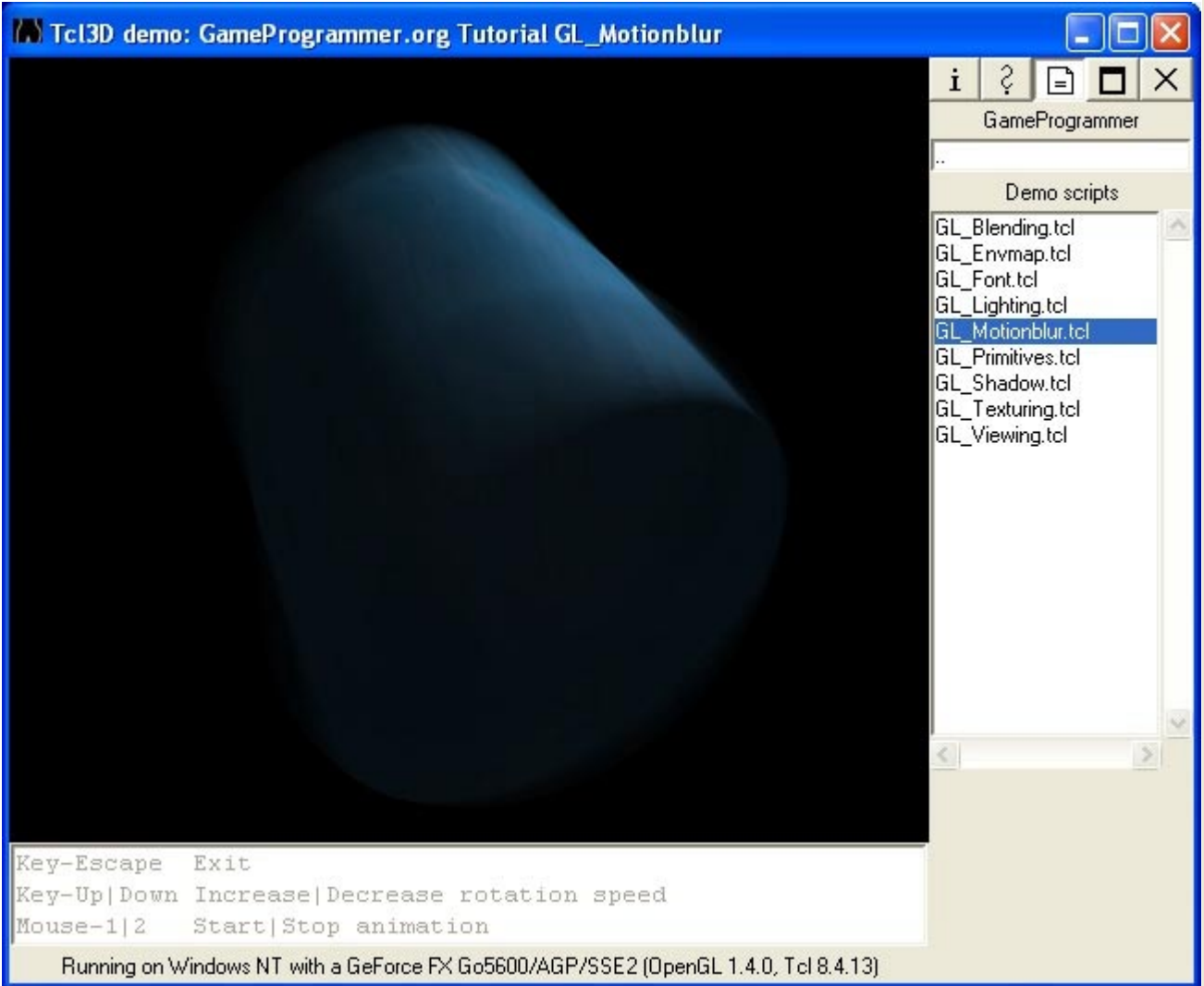
GL_Lighting.tcl

Tutorial from www.GameProgrammer.org
Turn the lights on!

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Motionblur
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



The screenshot shows a window titled "Tcl3D demo: GameProgrammer.org Tutorial GL_Motionblur". The main area displays a 3D scene with a blue, motion-blurred sphere. On the right, a file list titled "Demo scripts" includes:

- GL_Blending.tcl
- GL_Envmap.tcl
- GL_Font.tcl
- GL_Lighting.tcl
- GL_Motionblur.tcl**
- GL_Primitives.tcl
- GL_Shadow.tcl
- GL_Texturing.tcl
- GL_Viewing.tcl

At the bottom of the window, a control panel shows:

```

Key-Escape  Exit
Key-Up|Down Increase|Decrease rotation speed
Mouse-1|2   Start|Stop animation

```

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

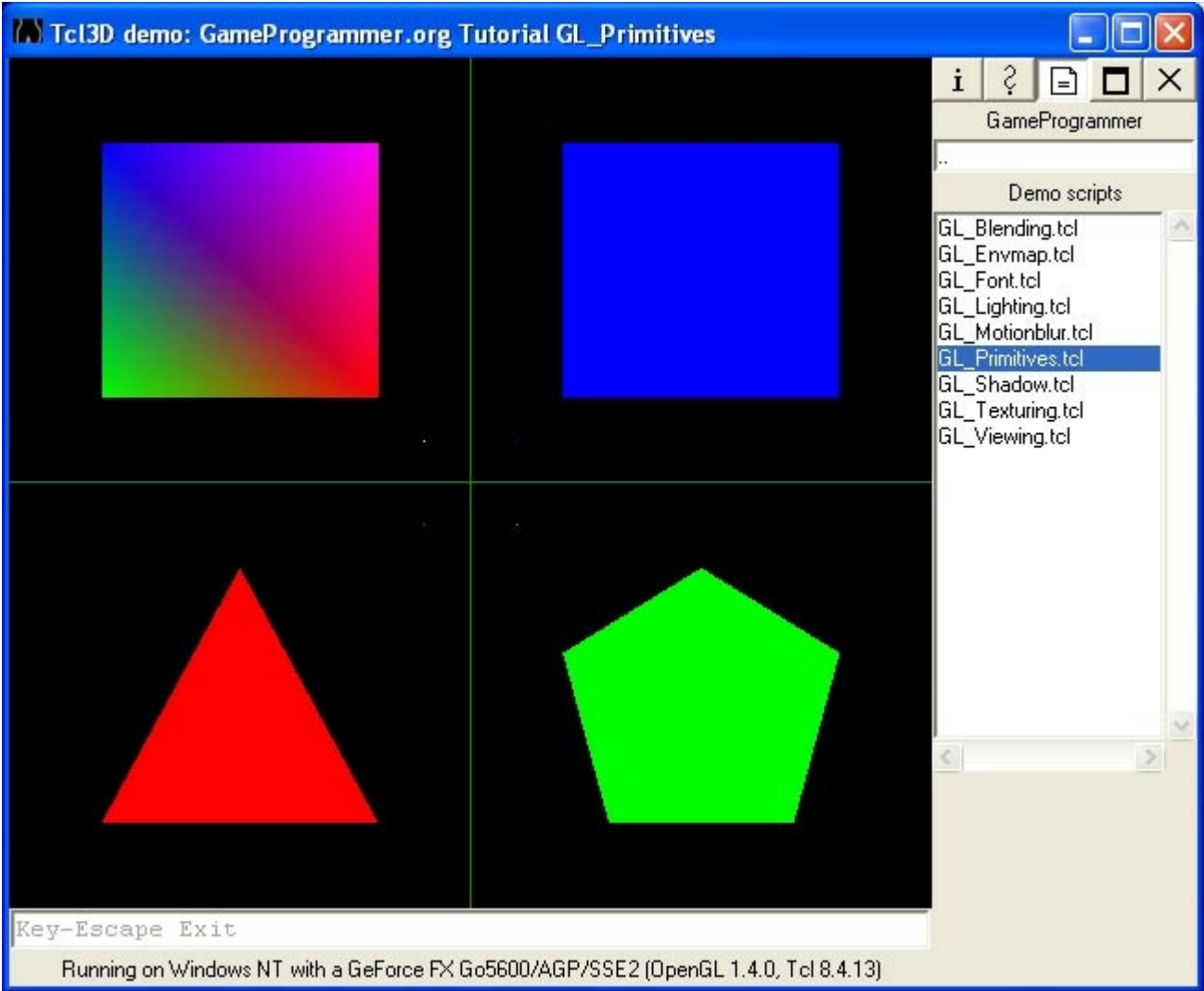
GL_Motionblur.tcl

Tutorial from www.GameProgrammer.org
Using Textures

Original code Copyright 2006 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/14
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Primitives
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



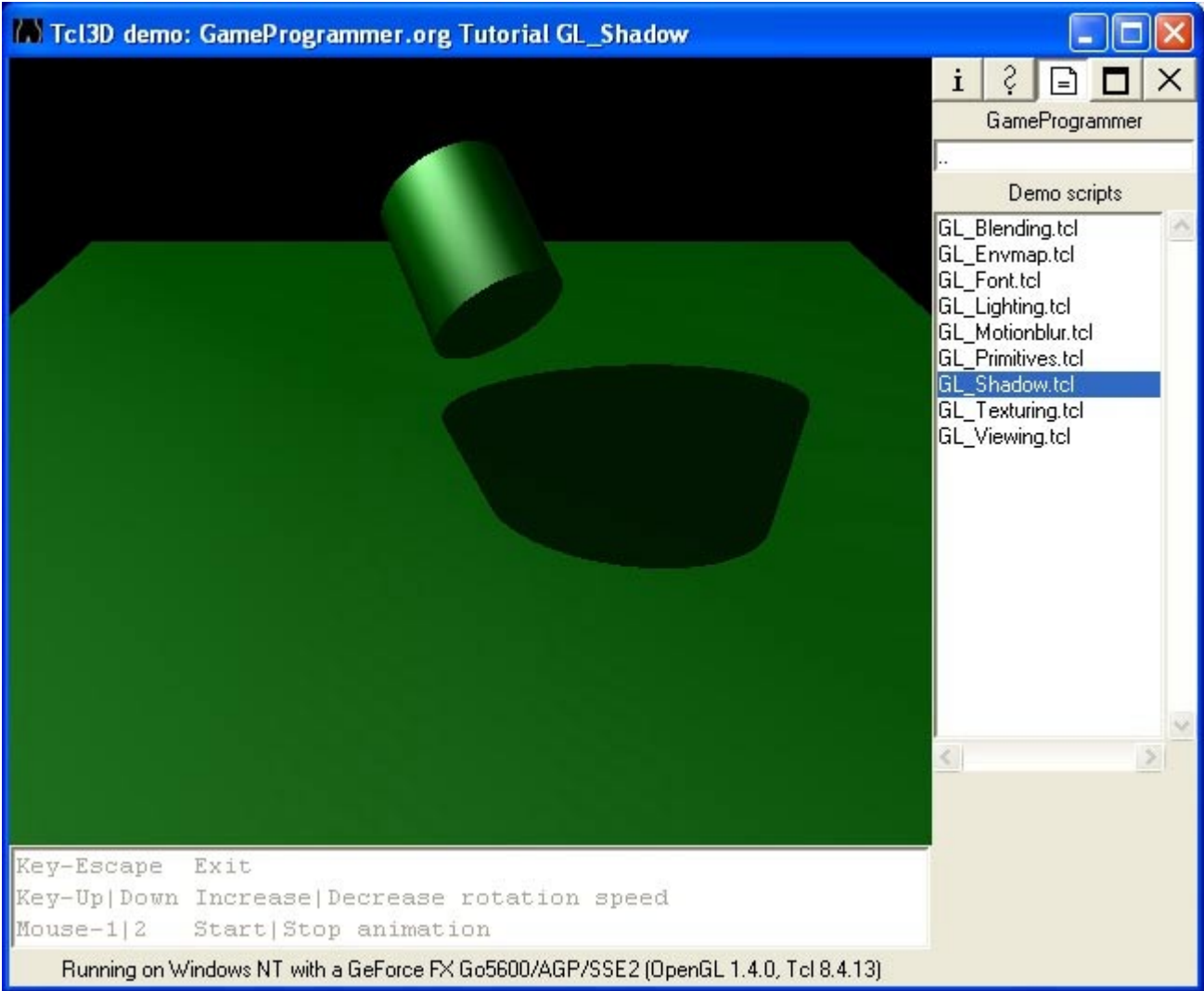
GL_Primitives.tcl

Tutorial from www.GameProgrammer.org
OpenGL Primitives.

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Shadow
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit
Key-Up|Down Increase|Decrease rotation speed
Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

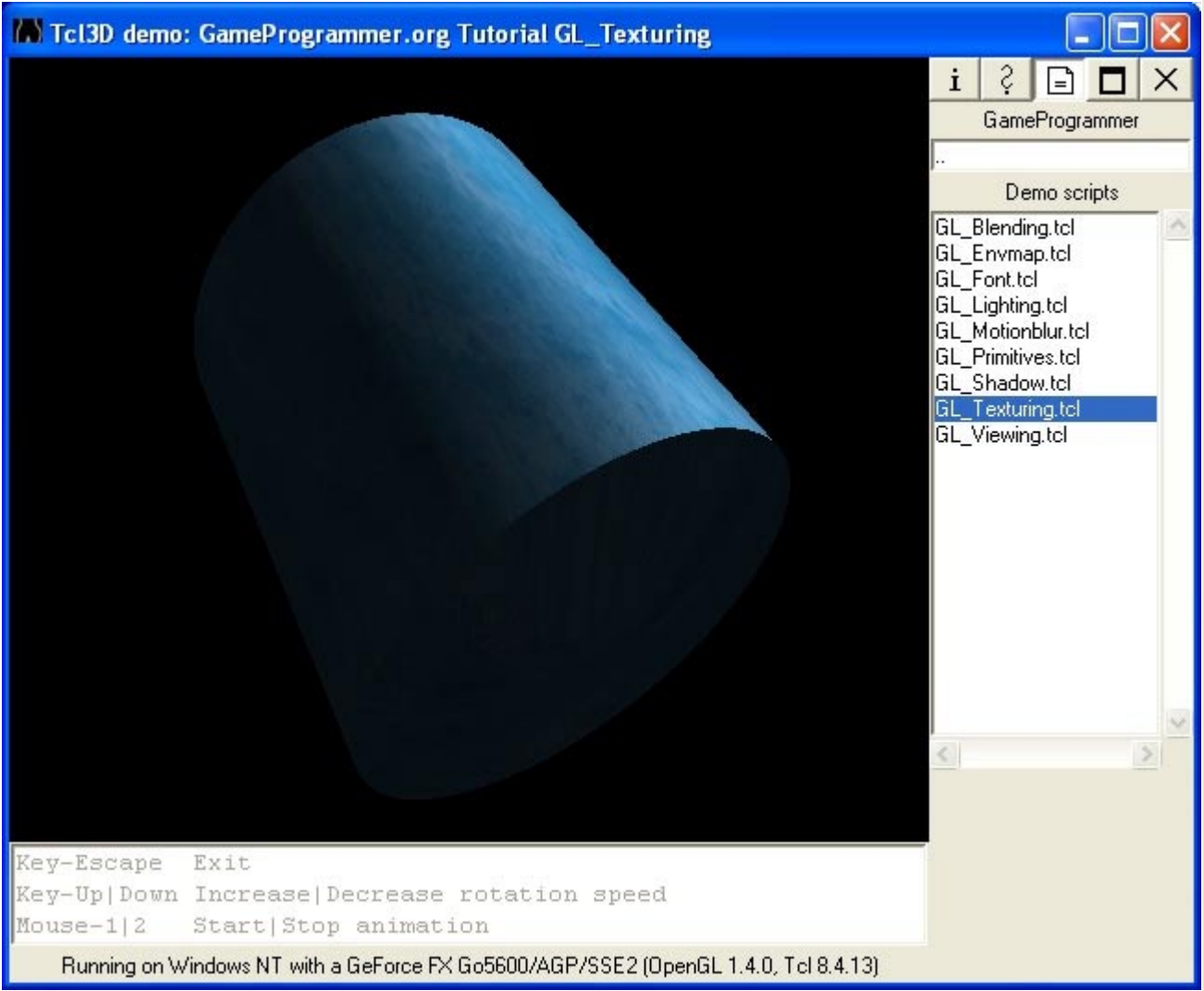
GL_Shadow.tcl

Tutorial from www.GameProgrammer.org
Stencil shadows.

Original code Copyright 2005 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/10
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Texturing
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



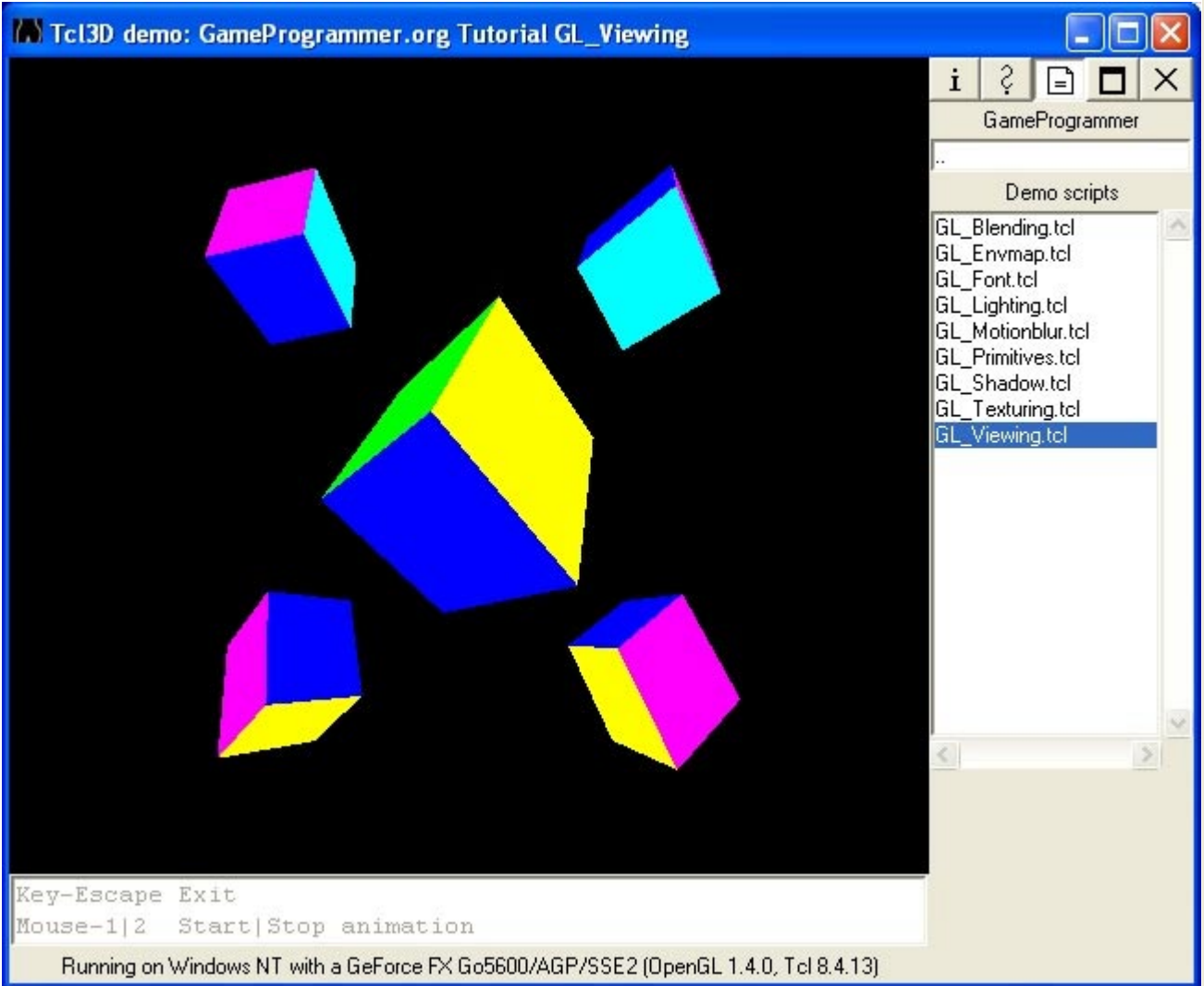
GL_Texturing.tcl

Tutorial from www.GameProgrammer.org
Using Textures

Original code Copyright 2004 by Vahid Kazemi

Modified for Tcl3D by Paul Obermeier 2006/09/12
See www.tcl3d.org for the Tcl3D extension.

Demo:	GL_Viewing
Type:	GameProgrammer
Category:	TutorialsAndBooks
Root:	Contents



The screenshot shows a window titled "Tcl3D demo: GameProgrammer.org Tutorial GL_Viewing". The main area displays a 3D scene with several cubes of different colors (magenta, cyan, yellow, blue, green) on a black background. A control panel on the right lists demo scripts, with "GL_Viewing.tcl" selected. A status bar at the bottom of the window contains the text: "Key-Escape Exit", "Mouse-1|2 Start|Stop animation", and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

GL_Viewing.tcl

Tutorial from www.GameProgrammer.org
Viewing and Transformations.

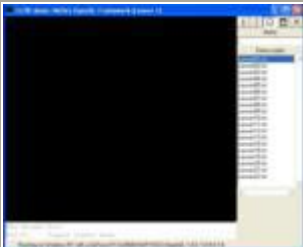
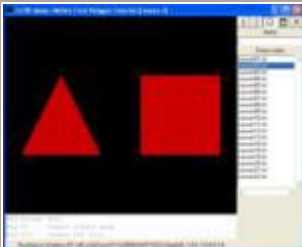
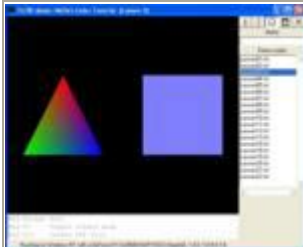
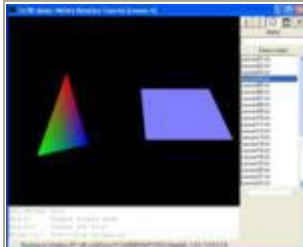

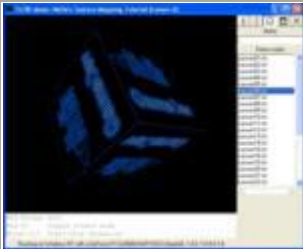
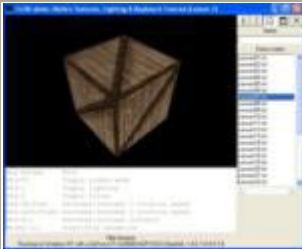
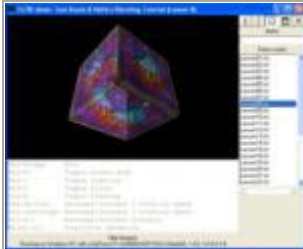
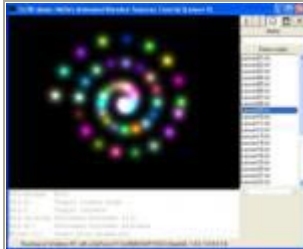

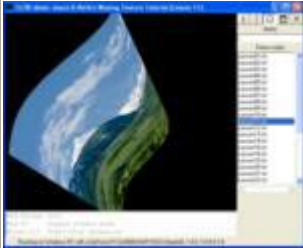
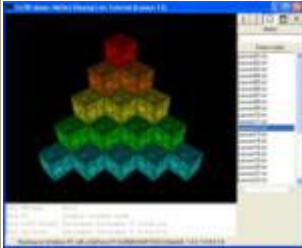
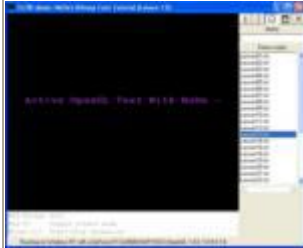


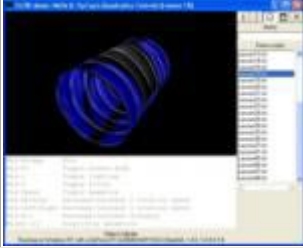
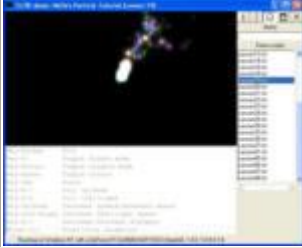
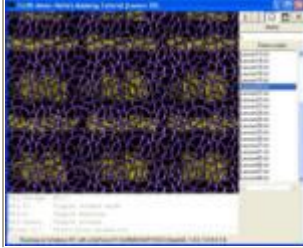



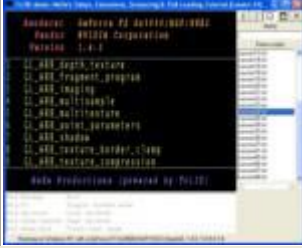
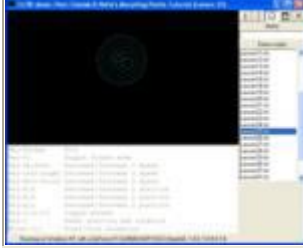
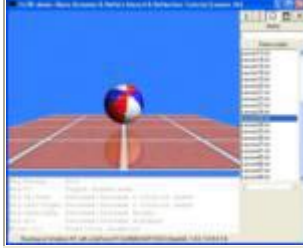

Original code Copyright 2004 by Vahid Kazemi

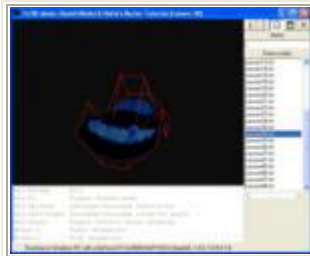
Modified for Tcl3D by Paul Obermeier 2006/09/11
See www.tcl3d.org for the Tcl3D extension.

Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

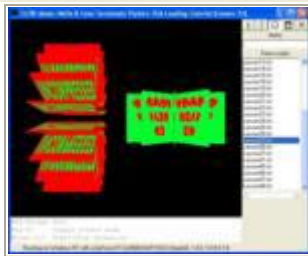
Some of the NeHe OpenGL tutorials have been ported to run with Tcl3D. Currently 34 out of 48 lessons are available. Original sources available at: <http://nehe.gamedev.net/>

Available demos

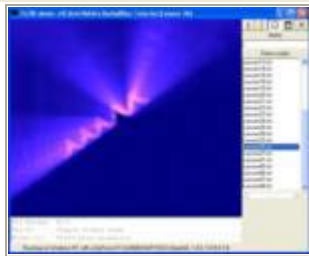
				
Lesson01	Lesson02	Lesson03	Lesson04	Lesson05
				
Lesson06	Lesson07	Lesson08	Lesson09	Lesson10
				
Lesson11	Lesson12	Lesson13	Lesson14	Lesson15
				
Lesson18	Lesson19	Lesson20	Lesson21	Lesson22
				
Lesson23	Lesson24	Lesson25	Lesson26	Lesson27



[Lesson28](#)



[Lesson33](#)



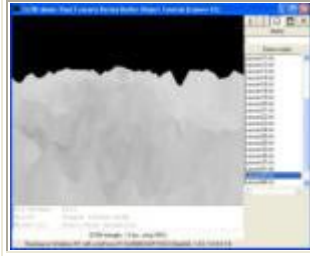
[Lesson36](#)



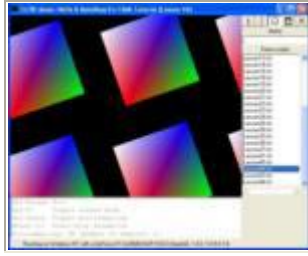
[Lesson37](#)



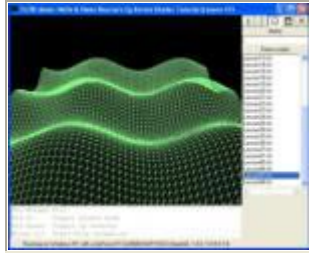
[Less](#)



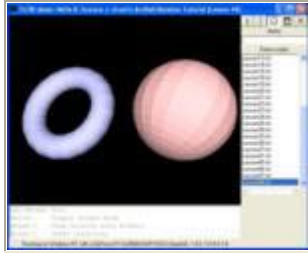
[Lesson45](#)



[Lesson46](#)

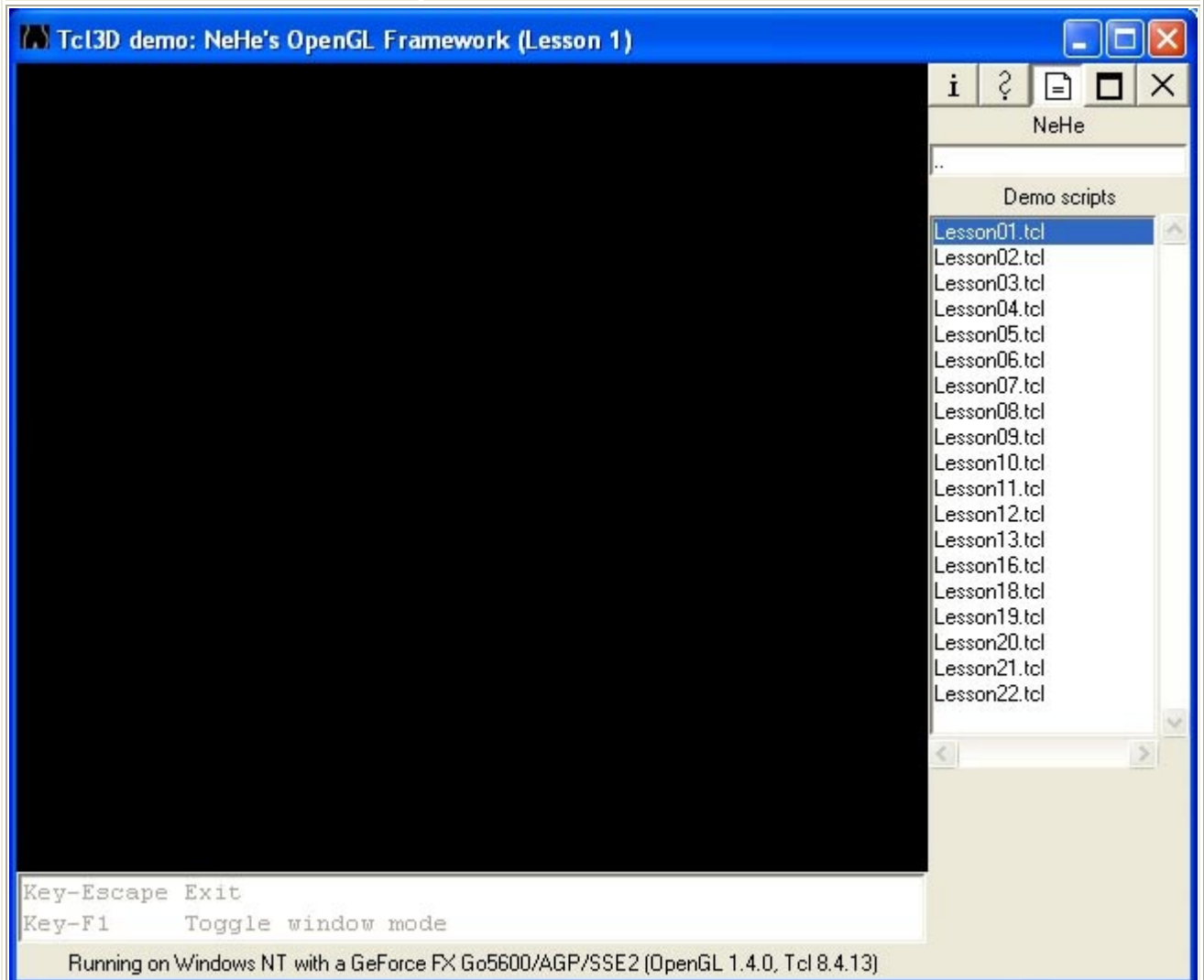


[Lesson47](#)



[Lesson48](#)

Demo:	Lesson01
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



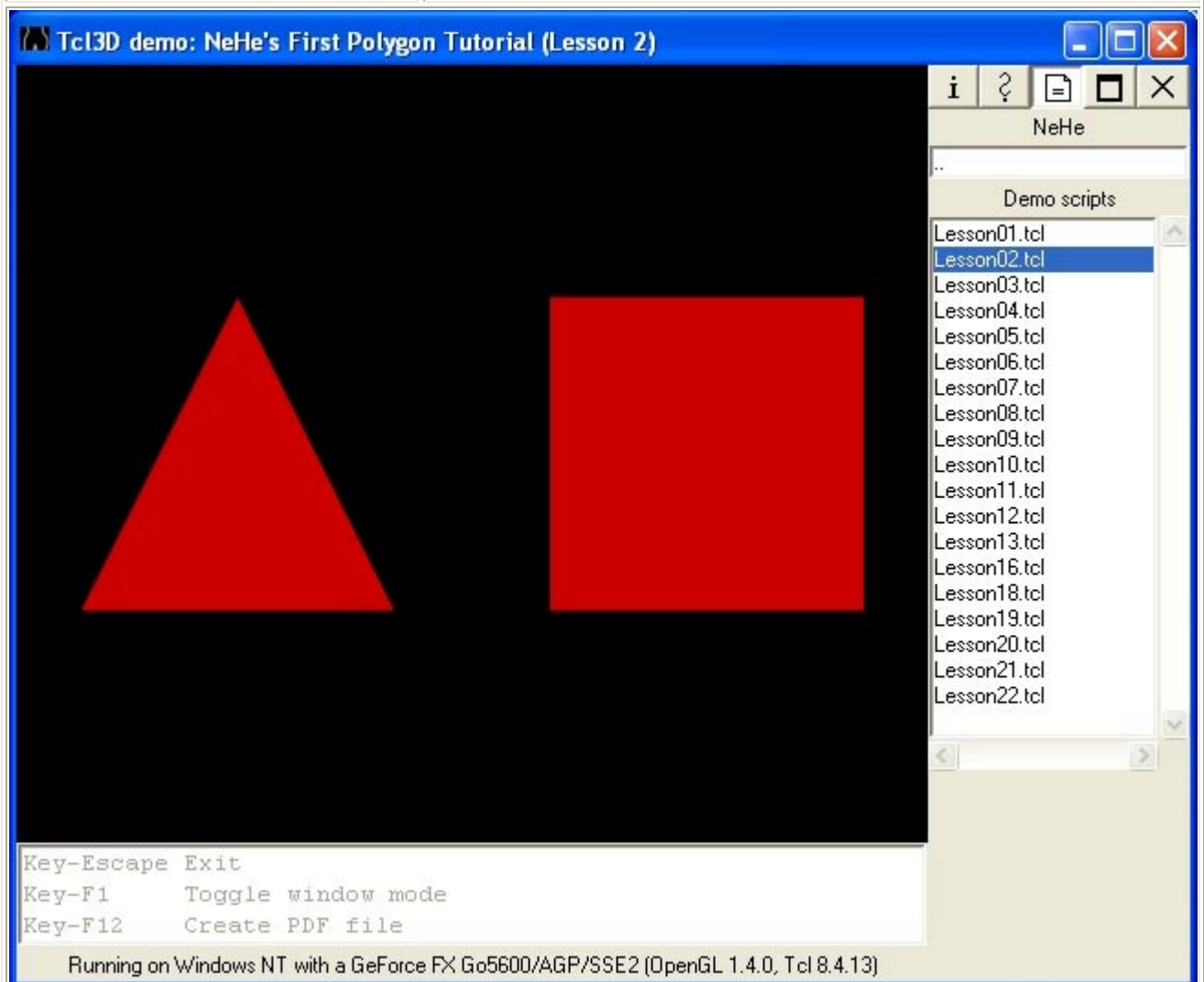
Lesson01.tcl

NeHe's OpenGL Framework

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson02
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



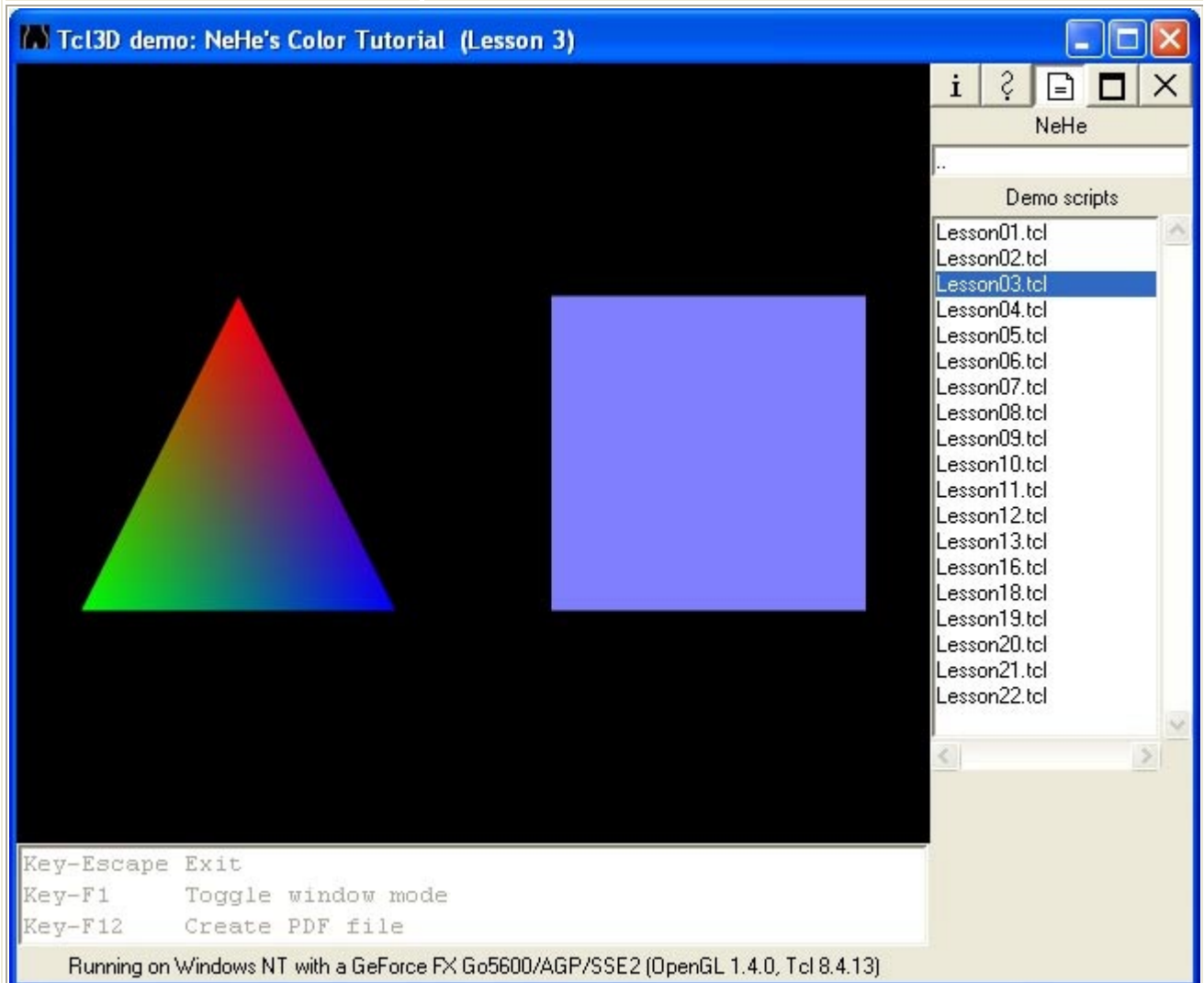
Lesson02.tcl

NeHe's First Polygon Tutorial

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 And Optimizing This Code, Making It More Flexible!
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 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson03
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



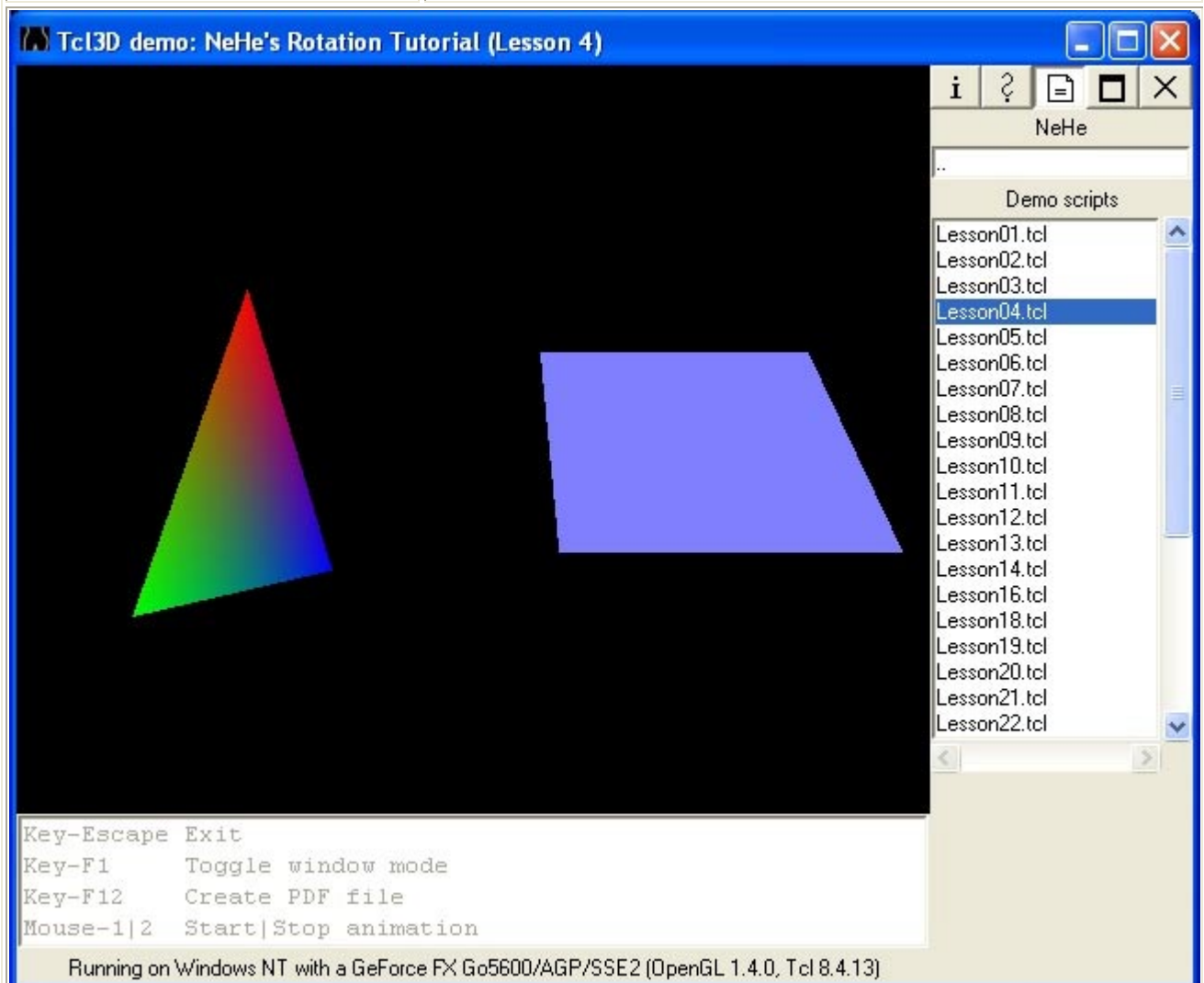
Lesson03.tcl

NeHe's Color Tutorial

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 And Optimizing This Code, Making It More Flexible!
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Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson04
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



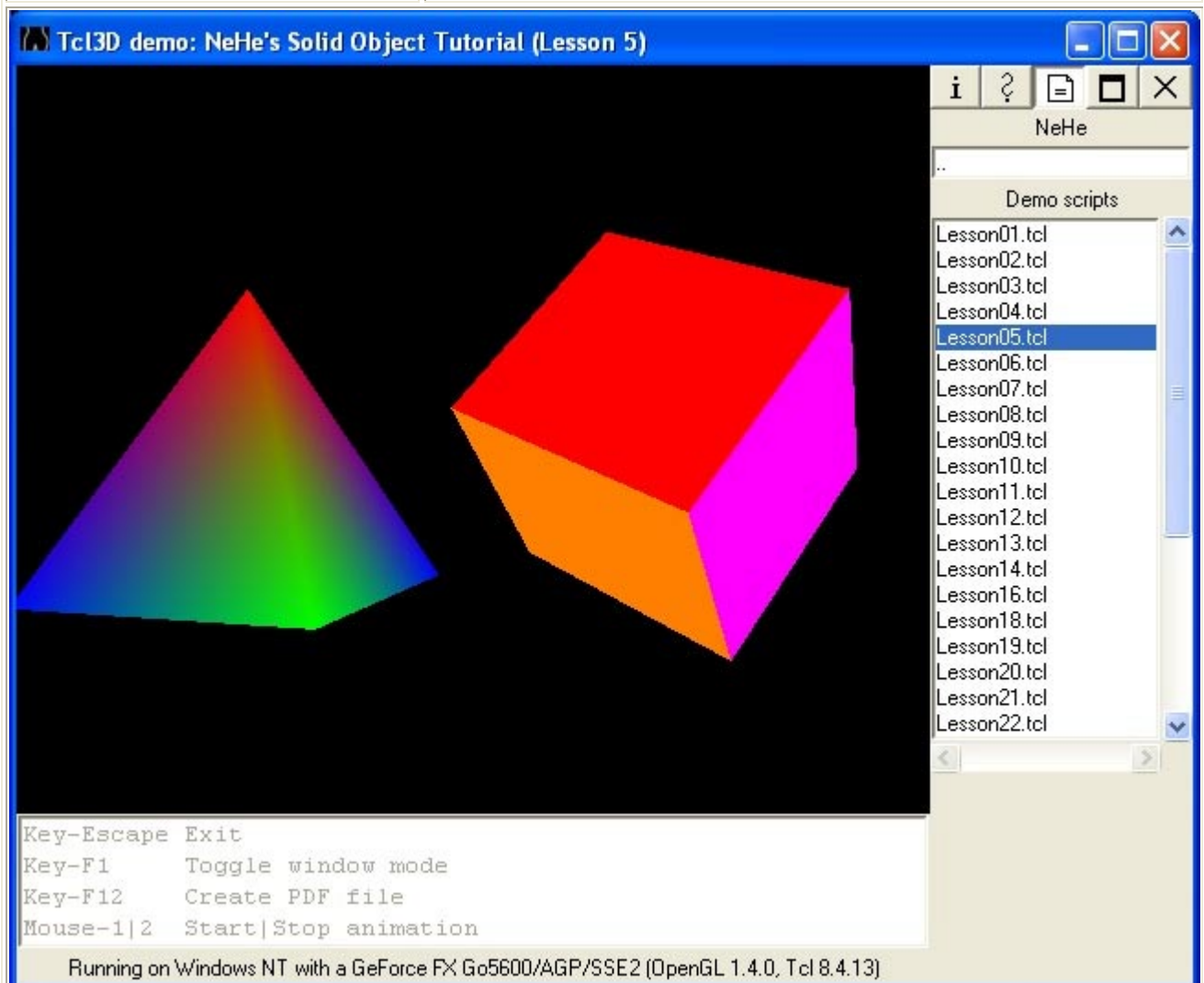
Lesson04.tcl

NeHe's Rotation Tutorial

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
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Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson05
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson05.tcl

NeHe's Solid Object Tutorial

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
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Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson06
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson06.tcl

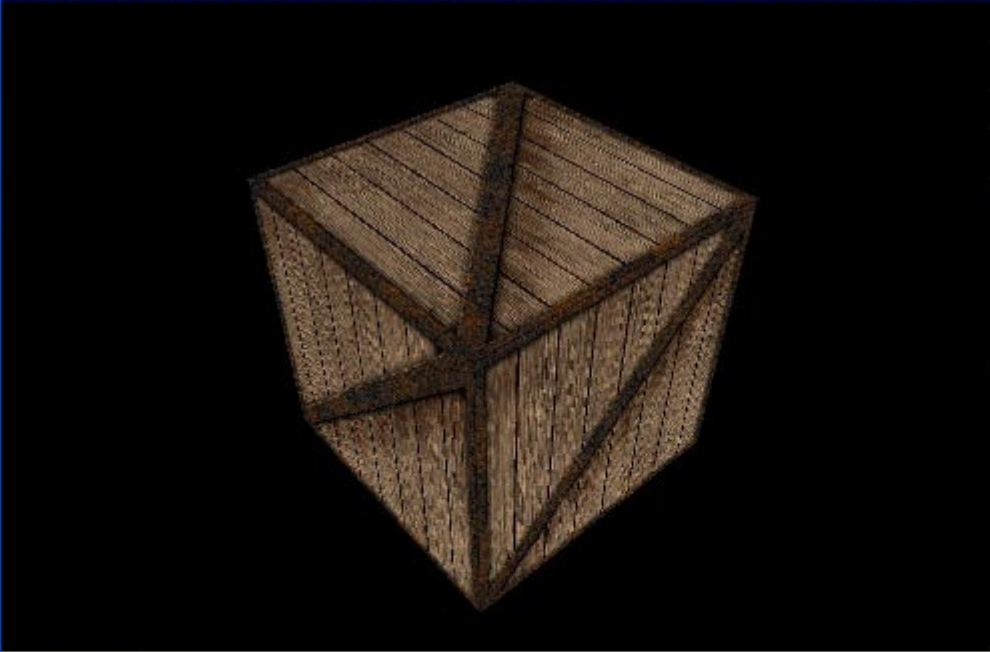
NeHe's Texture Mapping Tutorial

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson07
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: NeHe's Textures, Lighting & Keyboard Tutorial (Lesson 7)



NeHe

Demo scripts

- Lesson01.tcl
- Lesson02.tcl
- Lesson03.tcl
- Lesson04.tcl
- Lesson05.tcl
- Lesson06.tcl
- Lesson07.tcl
- Lesson08.tcl
- Lesson09.tcl
- Lesson10.tcl
- Lesson11.tcl
- Lesson12.tcl
- Lesson13.tcl
- Lesson14.tcl
- Lesson16.tcl
- Lesson18.tcl
- Lesson19.tcl
- Lesson20.tcl
- Lesson21.tcl
- Lesson22.tcl

Key-Escape	Exit
Key-F1	Toggle window mode
Key-l	Toggle lighting
Key-f	Toggle filter
Key-Up Down	Decrease Increase x rotation speed
Key-Left Right	Decrease Increase y rotation speed
Key-d i	Decrease Increase distance
Mouse-1 2	Start Stop animation

Filter Nearest

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson07.tcl

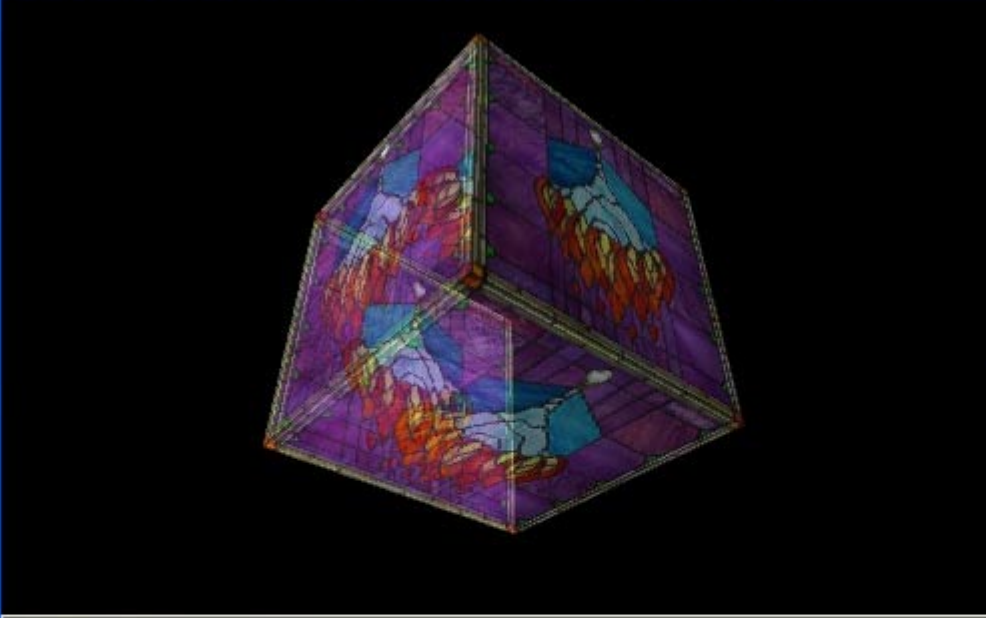
NeHe's Textures, Lighting & Keyboard Tutorial

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson08
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: Tom Stanis & NeHe's Blending Tutorial (Lesson 8)



NeHe

Demo scripts

- Lesson01.tcl
- Lesson02.tcl
- Lesson03.tcl
- Lesson04.tcl
- Lesson05.tcl
- Lesson06.tcl
- Lesson07.tcl
- Lesson08.tcl
- Lesson09.tcl
- Lesson10.tcl
- Lesson11.tcl
- Lesson12.tcl
- Lesson13.tcl
- Lesson14.tcl
- Lesson16.tcl
- Lesson18.tcl
- Lesson19.tcl
- Lesson20.tcl
- Lesson21.tcl
- Lesson22.tcl

Key-Escape	Exit
Key-F1	Toggle window mode
Key-l	Toggle lighting
Key-f	Toggle filter
Key-b	Toggle blending
Key-Up Down	Decrease Increase x rotation speed
Key-Left Right	Decrease Increase y rotation speed
Key-d i	Decrease Increase distance
Mouse-1 2	Start Stop animation

Filter Nearest

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson08.tcl

Tom Stanis & NeHe's Blending Tutorial

This Code Was Created By Tom Stanis / Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson09
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: NeHe's Animated Blended Textures Tutorial (Lesson 9)

NeHe

Demo scripts

- Lesson01.tcl
- Lesson02.tcl
- Lesson03.tcl
- Lesson04.tcl
- Lesson05.tcl
- Lesson06.tcl
- Lesson07.tcl
- Lesson08.tcl
- Lesson09.tcl**
- Lesson10.tcl
- Lesson11.tcl
- Lesson12.tcl
- Lesson13.tcl
- Lesson14.tcl
- Lesson16.tcl
- Lesson18.tcl
- Lesson19.tcl
- Lesson20.tcl
- Lesson21.tcl
- Lesson22.tcl

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-t Toggle twinkle
 Key-Up|Down Decrease|Increase tilt
 Key-d|i Decrease|Increase distance
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson09.tcl

NeHe's Animated Blended Textures Tutorial

This Code Was Created By Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson10
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-b Toggle blending
 Key-f Toggle filter
 Key-Up|Down Move forth|back
 Key-Left|Right Look left|right
 Key-PgUp|PgDn Look up|down

Filter MipMapped
 Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

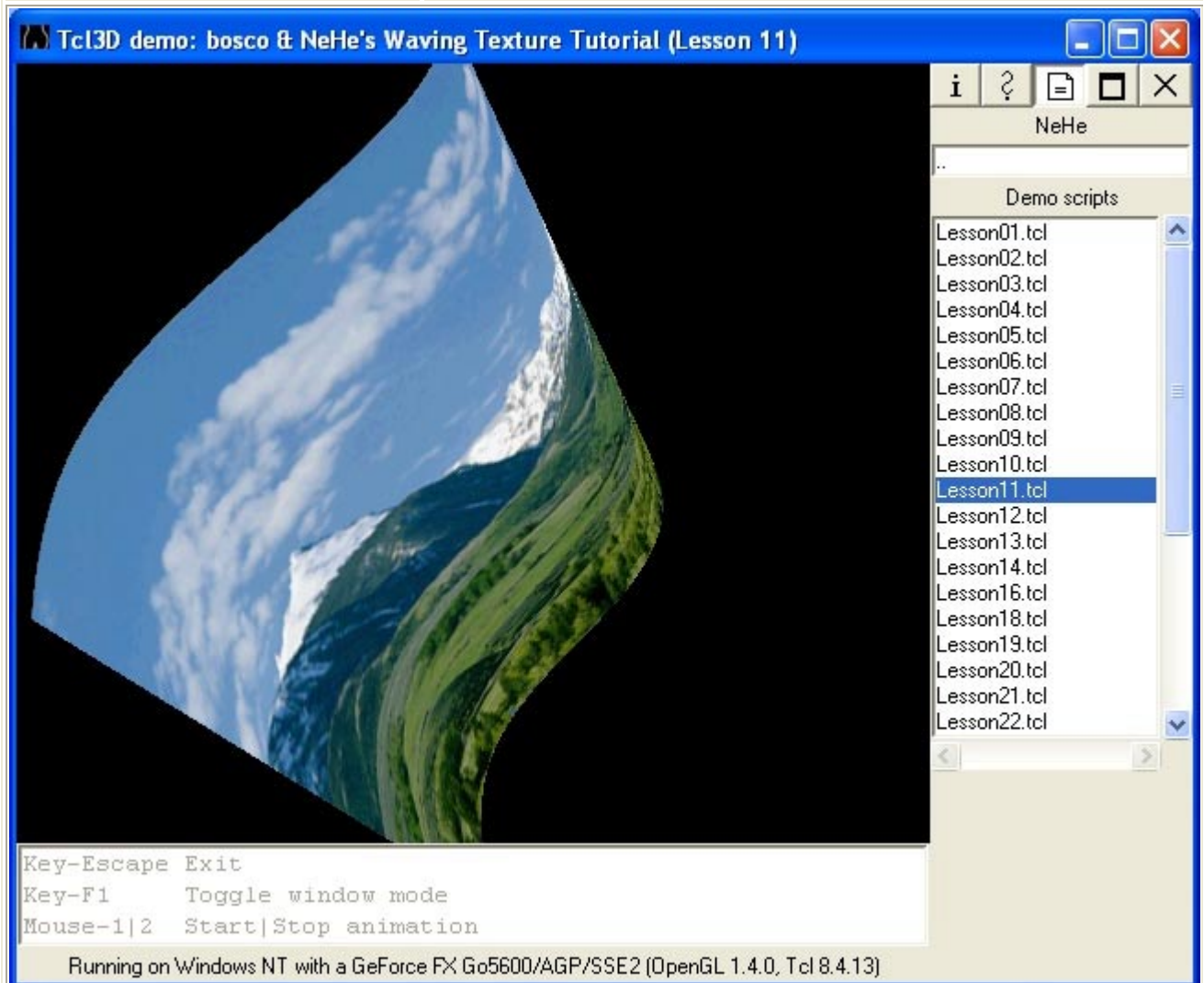
Lesson10.tcl

Lionel Brits & NeHe's 3D World Tutorial

This Code Was Created By Lionel Brits & Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson11
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson11.tcl

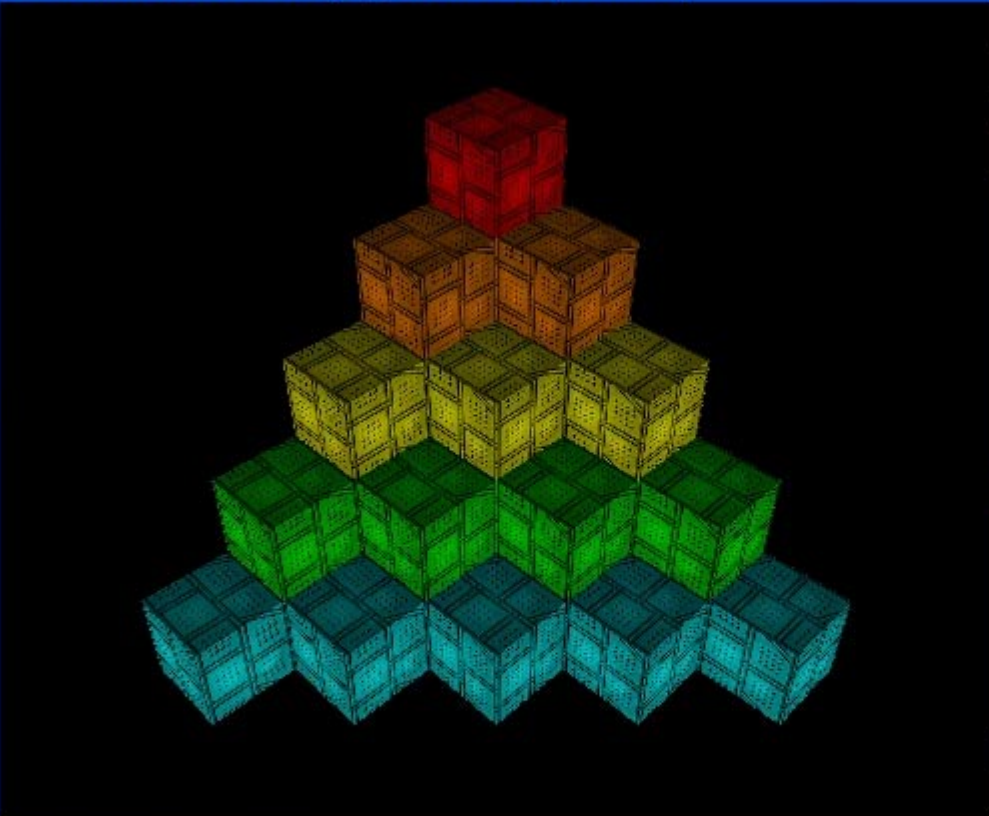
bosco & NeHe's Waving Texture Tutorial

This Code Was Created By bosco / Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson12
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: NeHe's Display List Tutorial (Lesson 12)



Key-Escape Exit
Key-F1 Toggle window mode
Key-Left|Right Decrease|Increase X rotation
Key-Up|Down Decrease|Increase Y rotation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

NeHe

Demo scripts

- Lesson01.tcl
- Lesson02.tcl
- Lesson03.tcl
- Lesson04.tcl
- Lesson05.tcl
- Lesson06.tcl
- Lesson07.tcl
- Lesson08.tcl
- Lesson09.tcl
- Lesson10.tcl
- Lesson11.tcl
- Lesson12.tcl
- Lesson13.tcl
- Lesson14.tcl
- Lesson16.tcl
- Lesson18.tcl
- Lesson19.tcl
- Lesson20.tcl
- Lesson21.tcl
- Lesson22.tcl

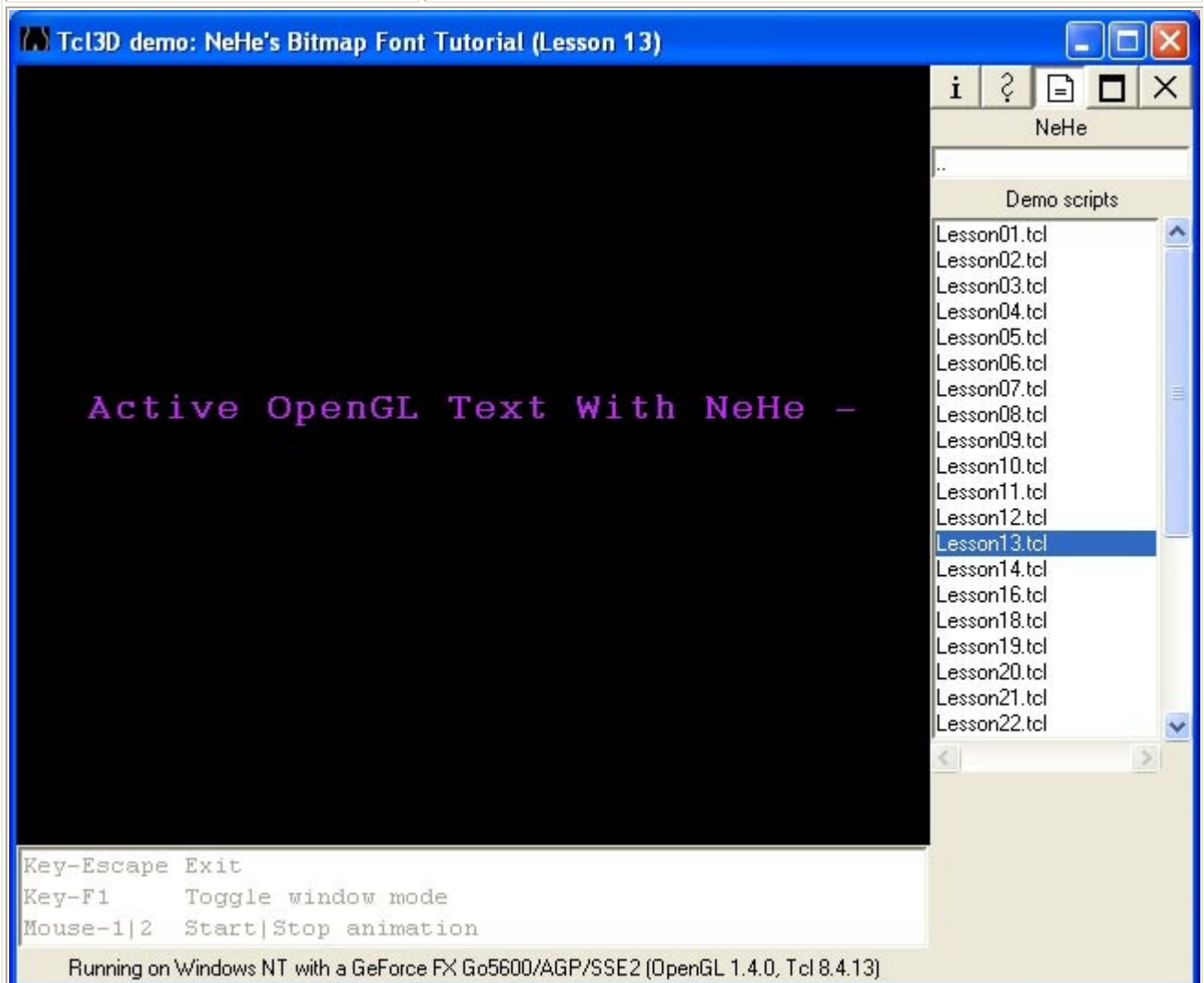
Lesson12.tcl

NeHe's Display List Tutorial

This Code Was Created By Jeff Molofee 2000
A HUGE Thanks To Fredric Echols For Cleaning Up
And Optimizing This Code, Making It More Flexible!
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson13
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson13.tcl

NeHe's Bitmap Font Tutorial

This Code Was Created By Jeff Molofee 2000
 Modified by Shawn T. to handle (%3.2f, num) parameters.
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing The Base Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson14
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson14.tcl

NeHe's Outline Font Tutorial

This Code Was Created By Jeff Molofee 2000
 Modified by Shawn T. to handle (%3.2f, num) parameters.
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing The Base Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/26
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson16
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: Chris Aliotta & NeHe's Fog Tutorial (Lesson 16)". The main area displays a 3D wireframe cube with a fog effect. Below the cube is a control panel with the following keybindings:

Key-Escape	Exit
Key-F1	Toggle window mode
Key-l	Toggle lighting
Key-f	Toggle texture filter
Key-g	Toggle fog filter
Key-Up Down	Decrease Increase x rotation speed
Key-Left Right	Decrease Increase y rotation speed
Key-d i	Decrease Increase distance
Mouse-1 2	Start Stop animation

At the bottom of the control panel, it says "Fog GL_EXP2" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

On the right side of the window, there is a file browser titled "NeHe" showing a list of "Demo scripts":

- Lesson01.tcl
- Lesson02.tcl
- Lesson03.tcl
- Lesson04.tcl
- Lesson05.tcl
- Lesson06.tcl
- Lesson07.tcl
- Lesson08.tcl
- Lesson09.tcl
- Lesson10.tcl
- Lesson11.tcl
- Lesson12.tcl
- Lesson13.tcl
- Lesson14.tcl
- Lesson16.tcl**
- Lesson18.tcl
- Lesson19.tcl
- Lesson20.tcl
- Lesson21.tcl
- Lesson22.tcl

Lesson16.tcl

Chris Aliotta & NeHe's Fog Tutorial

This Code Was Created By Christopher Aliotta & Jeff Molofee 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson18
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape	Exit
Key-F1	Toggle window mode
Key-l	Toggle lighting
Key-f	Toggle filter
Key-Space	Toggle quadratics
Key-Up Down	Decrease Increase x rotation speed
Key-Left Right	Decrease Increase y rotation speed
Key-d i	Decrease Increase distance
Mouse-1 2	Start Stop animation

Object Cylinder
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson18.tcl

NeHe & TipTup's Quadratics Tutorial

This Code Was Created By Jeff Molofee and GB Schmick 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing This Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit Our Sites At www.tiptup.com and nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/01/25
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson19
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-Return Toggle rainbow mode
 Key-space Toggle colors
 Key-Tab Burst
 Key-8|2 Pull up|down
 Key-6|4 Pull left|right
 Key-Up|Down Increase upward|downward speed
 Key-Left|Right Increase left|right speed
 Key-d|i Decrease|Increase distance
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson19.tcl

NeHe's Particle Tutorial

This Code Was Created By Jeff Molofee 2000
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson20
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Lesson20.tcl

NeHe's Masking Tutorial

This Code Was Created By Jeff Molofee 2000
 And Modified By Giuseppe D'Agata (waveform@tiscalinet.it)
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson21
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson21.tcl

NeHe's Line Tutorial

This Code Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/03/14
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson22
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
Key-F1 Toggle window mode
Key-e Toggle emboss
Key-m Toggle multitexturing
Key-b Toggle bump maps
Key-f Toggle filter
Key-Up|Down Decrease|Increase x rotation speed
Key-Left|Right Decrease|Increase y rotation speed
Key-d|i Decrease|Increase distance
Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson22.tcl

NeHe's GL_ARB_multitexture & Bump Mapping Tutorial

This Code Was Created by Jens Schneider (WizardSoft) 2000
Lesson22 to the series of OpenGL tutorials by NeHe-Production

This Code is loosely based upon Lesson06 by Jeff Molofee.
contact me at: schneide@pool.informatik.rwth-aachen.de

Basecode Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson23
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-l Toggle lighting
 Key-f Toggle filter
 Key-space Toggle object
 Key-r Reset rotation
 Key-Up|Down Decrease|Increase x rotation speed
 Key-Left|Right Decrease|Increase y rotation speed
 Key-d|i Decrease|Increase distance
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson23.tcl

NeHe & TipTup's Environment Mapping Tutorial

This Code Was Created By Jeff Molofee and GB Schmick 2000
 A HUGE Thanks To Fredric Echols For Cleaning Up
 And Optimizing The Base Code, Making It More Flexible!
 If You've Found This Code Useful, Please Let Me Know.
 Visit Our Sites At www.tiptup.com and nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/27
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson24
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Renderer *GeForce FX Go5600/AGP/SSE2*
Vendor *NVIDIA Corporation*
Version *1.4.0*

```

1  GL_ARB_depth_texture
2  GL_ARB_fragment_program
3  GL_ARB_imaging
4  GL_ARB_multisample
5  GL_ARB_multitexture
6  GL_ARB_point_parameters
7  GL_ARB_shadow
8  GL_ARB_texture_border_clamp
9  GL_ARB_texture_compression

```

NeHe Productions (powered by Tcl3D)

Key-Escape Exit
Key-F1 Toggle window mode
Key-Up|Down Line up|down
Key-PgUp|PgDown Page up|down
Key-Home|End First|last page

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

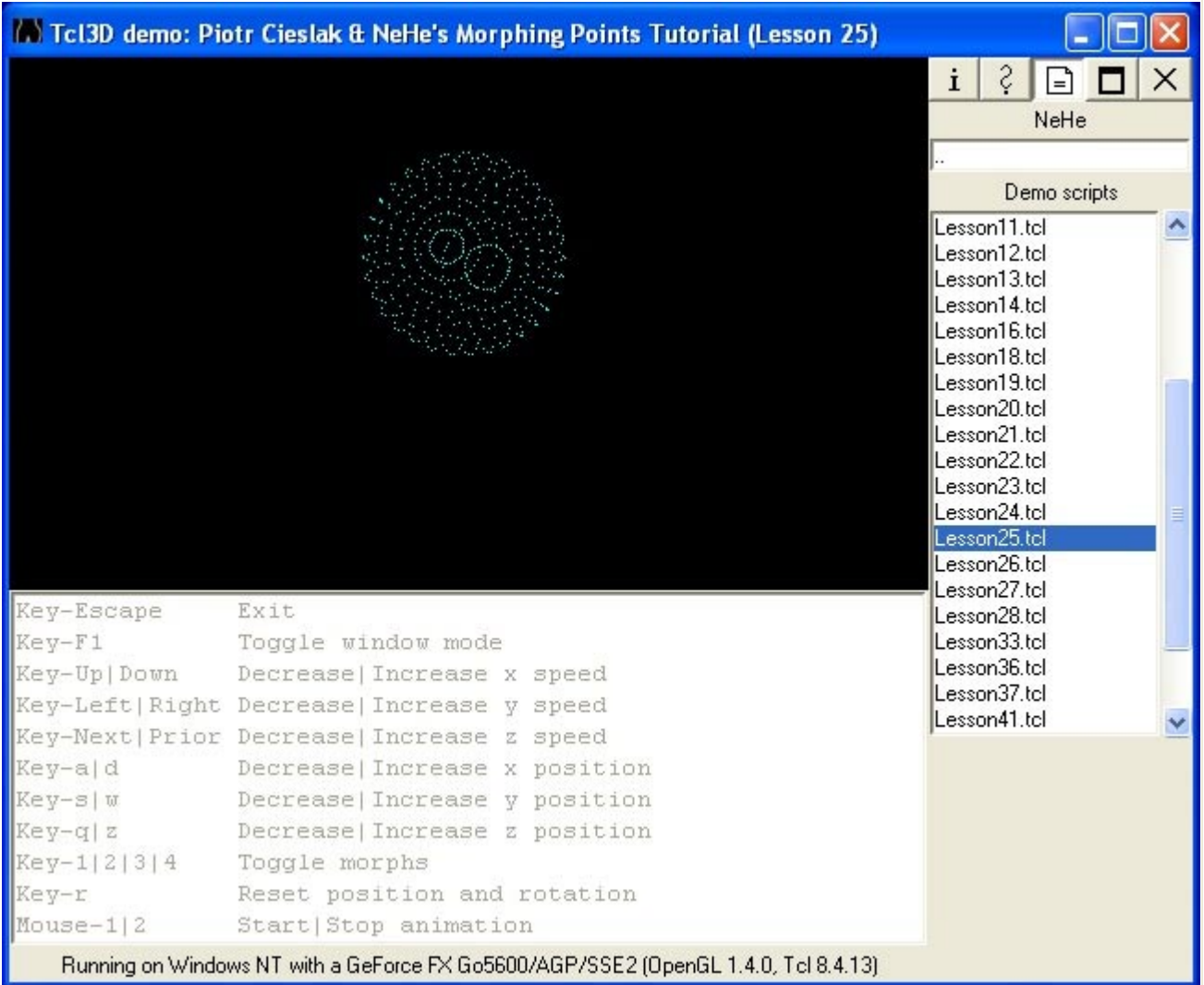
Lesson24.tcl

NeHe's Token, Extensions, Scissoring & TGA Loading Tutorial

This Code Was Created By Jeff Molofee 2000
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/25
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson25
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson25.tcl

Piotr Cieslak & NeHe's Morphing Points Tutorial

This Code Was Created By Pet & Commented/Cleaned Up By Jeff Molofee
 If You've Found This Code Useful, Please Let Me Know.
 Visit NeHe Productions At <http://nehe.gamedev.net>

Modified for Tcl3D by Paul Obermeier 2007/03/03
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson26
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-Up|Down Decrease|Increase x rotation speed
 Key-Left|Right Decrease|Increase y rotation speed
 Key-PgDn|PgUp Decrease|Increase height
 Key-d|i Decrease|Increase distance
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson26.tcl

Banu Octavian & NeHe's Stencil & Reflection Tutorial

This code has been created by Banu Octavian aka Choko - 20 may 2000 and uses NeHe tutorials as a starting point (window initialization, texture loading, GL initialization and code for keypresses) - very good tutorials, Jeff. If anyone is interested about the presented algorithm please e-mail me at boct@romwest.ro

Code Commenting And Clean Up By Jeff Molofee (NeHe)
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson27
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
Key-F1 Toggle window mode
Key-Up|Down Decrease|Increase x speed
Key-Left|Right Decrease|Increase y speed
Key-j|l Move light left|right
Key-k|i Move light bottom|up
Key-u|o Move light far|near
Key-4|6 Move cross left|right
Key-5|8 Move cross bottom|up
Key-7|9 Move cross far|near
Key-a|d Move sphere left|right
Key-s|w Move sphere bottom|up
Key-q|e Move sphere far|near
Key-r Reset position and rotation
Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson27.tcl

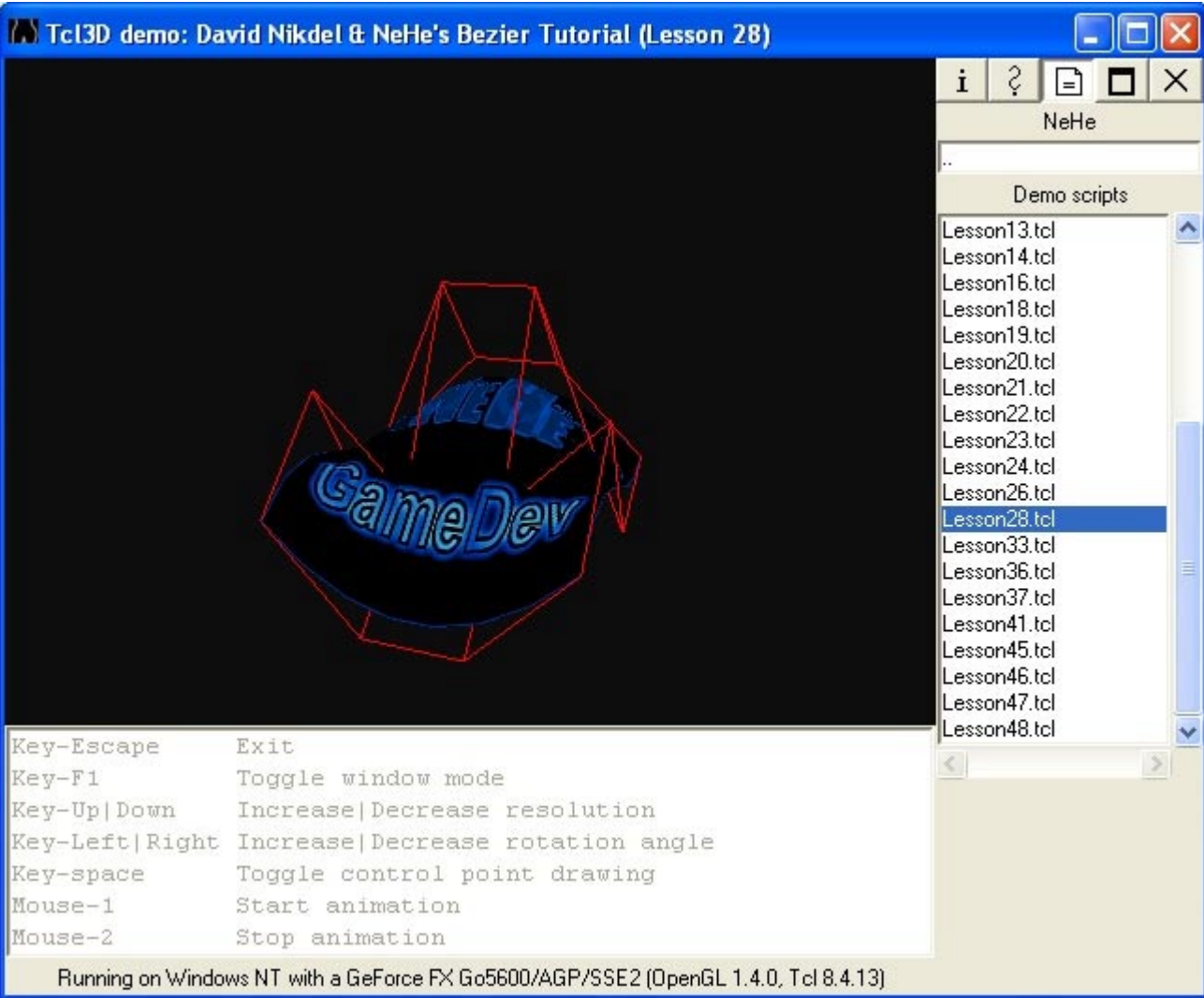
"Banu Octavian & NeHe's Shadow Casting Tutorial"

This code has been created by Banu Octavian aka Choko - 20 may 2000 and uses NeHe tutorials as a starting point (window initialization, texture loading, GL initialization and code for keypresses) - very good tutorials, Jeff. If anyone is interested about the presented algorithm please e-mail me at boct@romwest.ro
Attention!!! This code is not for beginners.

Modified for Tcl3D by Paul Obermeier 2007/02/27
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson28
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: David Nikdel & NeHe's Bezier Tutorial (Lesson 28)



Key-Escape Exit
Key-F1 Toggle window mode
Key-Up|Down Increase|Decrease resolution
Key-Left|Right Increase|Decrease rotation angle
Key-space Toggle control point drawing
Mouse-1 Start animation
Mouse-2 Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson28.tcl

David Nikdel & NeHe's Bezier Tutorial

This Code Was Published By Jeff Molofee 2000
Code Was Created By David Nikdel For NeHe Productions
If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/29
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson33
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Mouse-1|2 Start|Stop animation

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson33.tcl

NeHe & Evan 'terminate' Piphos TGA Loading Tutorial

Loading Uncompressed and Compressed .TGA Files with the Img extension.

This Code Was Created By Evan Piphos
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/16
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson36
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Lesson36.tcl

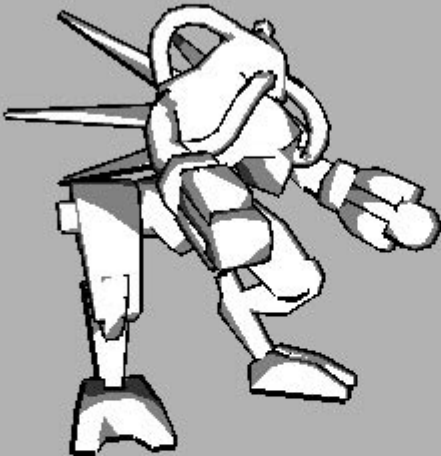
Dario Corno's Radial Blur & Rendering To A Texture Tutorial

If You've Found This Code Useful, Please Let Me Know.
Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/23
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson37
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: Sami Hamlaoui's Cel-Shading Tutorial (Lesson 37)



Key-Escape Exit
 Key-F1 Toggle window mode
 Key-o Toggle optimized vs. simple version
 Key-1 Toggle outline draw
 Key-2 Toggle outline smooth
 Key-Up|Down Increase|Decrease outline width
 Mouse-1|2 Start|Stop animation

Draw: 0 msec Outline: 0 msec

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson37.tcl

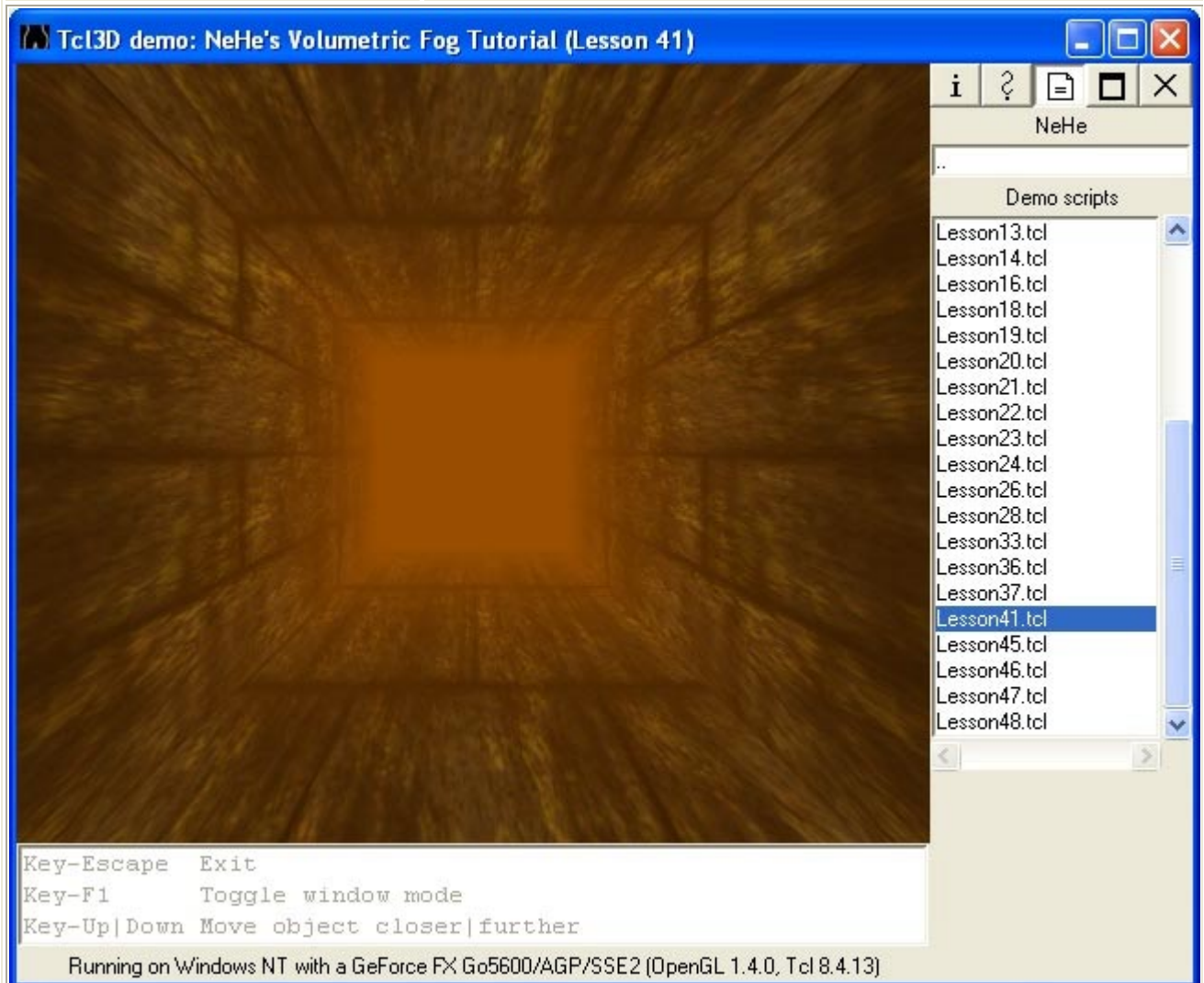
Sami Hamlaoui's Cel-Shading Code

Note: The original article for this code can be found at:
<http://www.gamedev.net/reference/programming/features/celshading>

If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/22
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson41
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



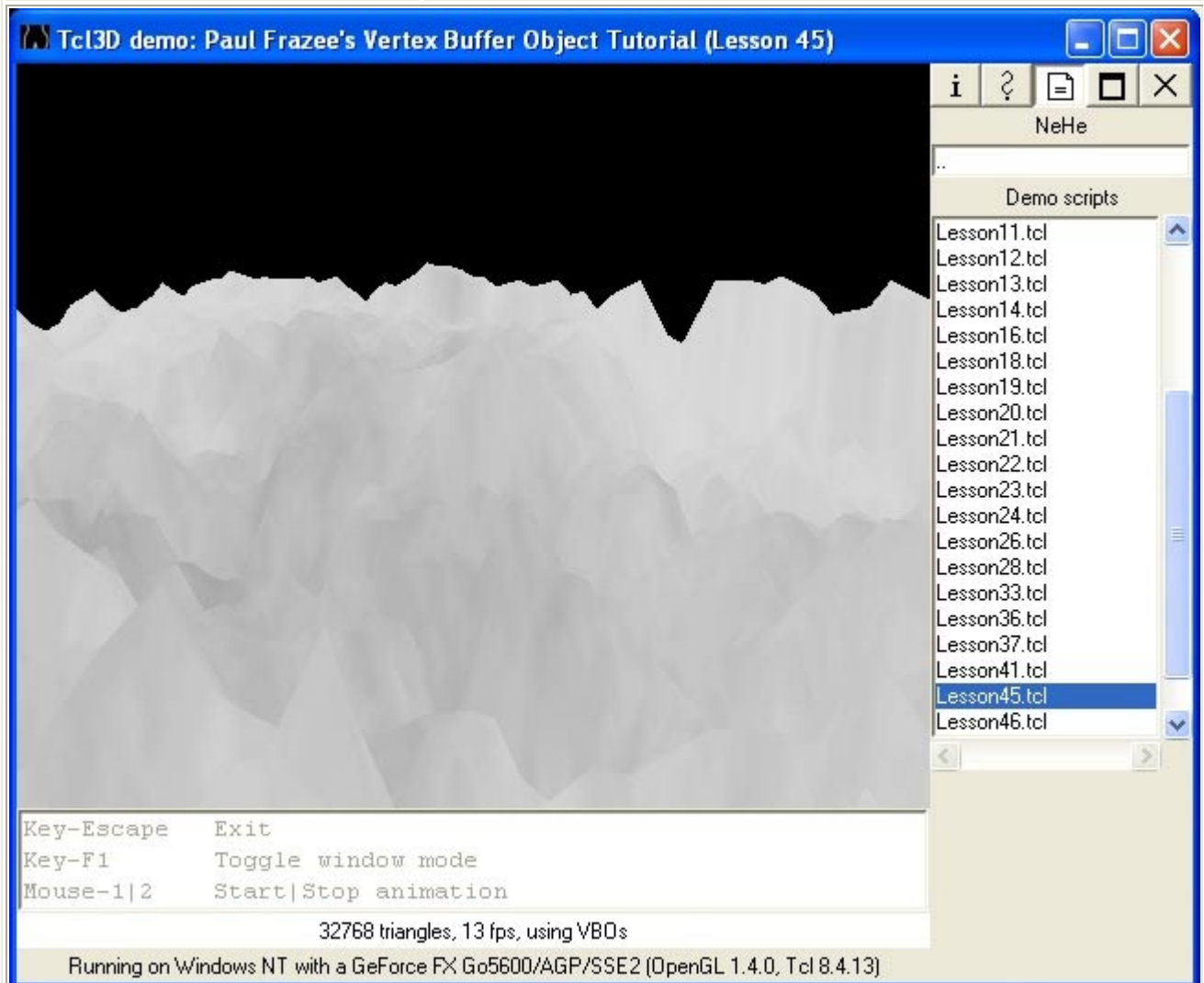
Lesson41.tcl

NeHe's Volumetric Fog Tutorial

This Code Was Created By Jeff Molofee 2003
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/27
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson45
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson45.tcl

Paul Frazee's Vertex Buffer Object Tutorial

Code Commenting And Clean Up By Jeff Molofee (NeHe)
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/17
 See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson46
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit
 Key-F1 Toggle window mode
 Key-Space Toggle multisampling
 Mouse-1|2 Start|Stop animation
 Multisampling: ON (Number of samples: 2)

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

Lesson46.tcl

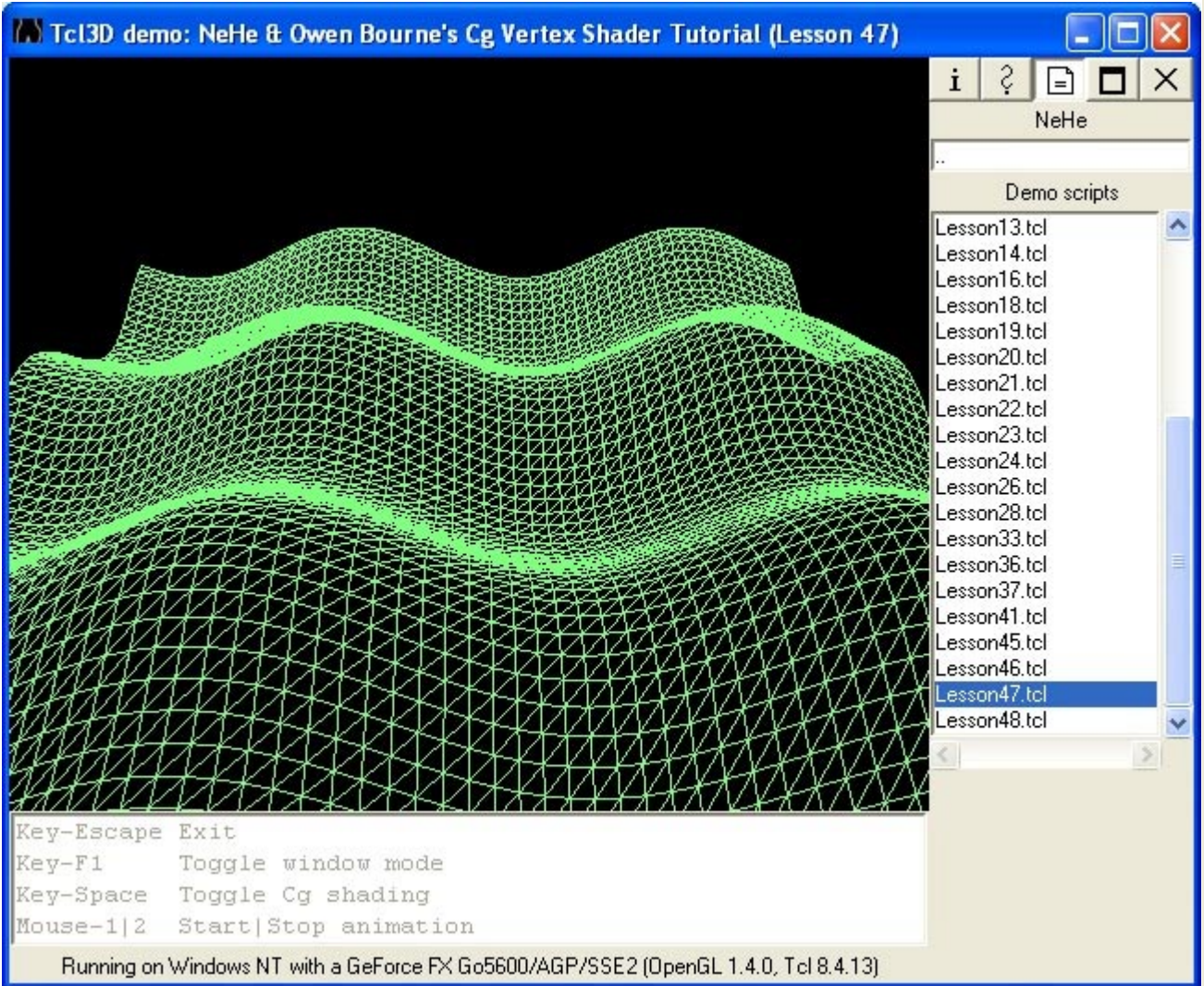
NeHe & MainRoach's FSAA Tutorial

This Code Was Created By Jeff Molofee 2001
 and Colt McAnlis (MainRoach).
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/13
 See www.tcl3d.org for the Tcl3D extension.

This demo uses the multisampling options built into tcl3dTogl starting from version 0.3.2.
 Another way to set the number of samples is via the driver specific GUI under Windows, or by setting the environment variable `__GL_FSAA_MODE` under Linux.

Demo:	Lesson47
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents



Lesson47.tcl

NeHe & Owen Bourne's Cg Vertex Shader Tutorial

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Modified for Tcl3D by Paul Obermeier 2006/09/05
See www.tcl3d.org for the Tcl3D extension.

Demo:	Lesson48
Type:	NeHe
Category:	TutorialsAndBooks
Root:	Contents

Lesson48.tcl

NeHe & Terence J. Grant's ArcBall Rotation Tutorial

Authors Name: Terence J. Grant

NeHe Productions 1997-2004
 If You've Found This Code Useful, Please Let Me Know.
 Visit My Site At nehe.gamedev.net

Modified for Tcl3D by Paul Obermeier 2006/08/31
 See www.tcl3d.org for the Tcl3D extension.

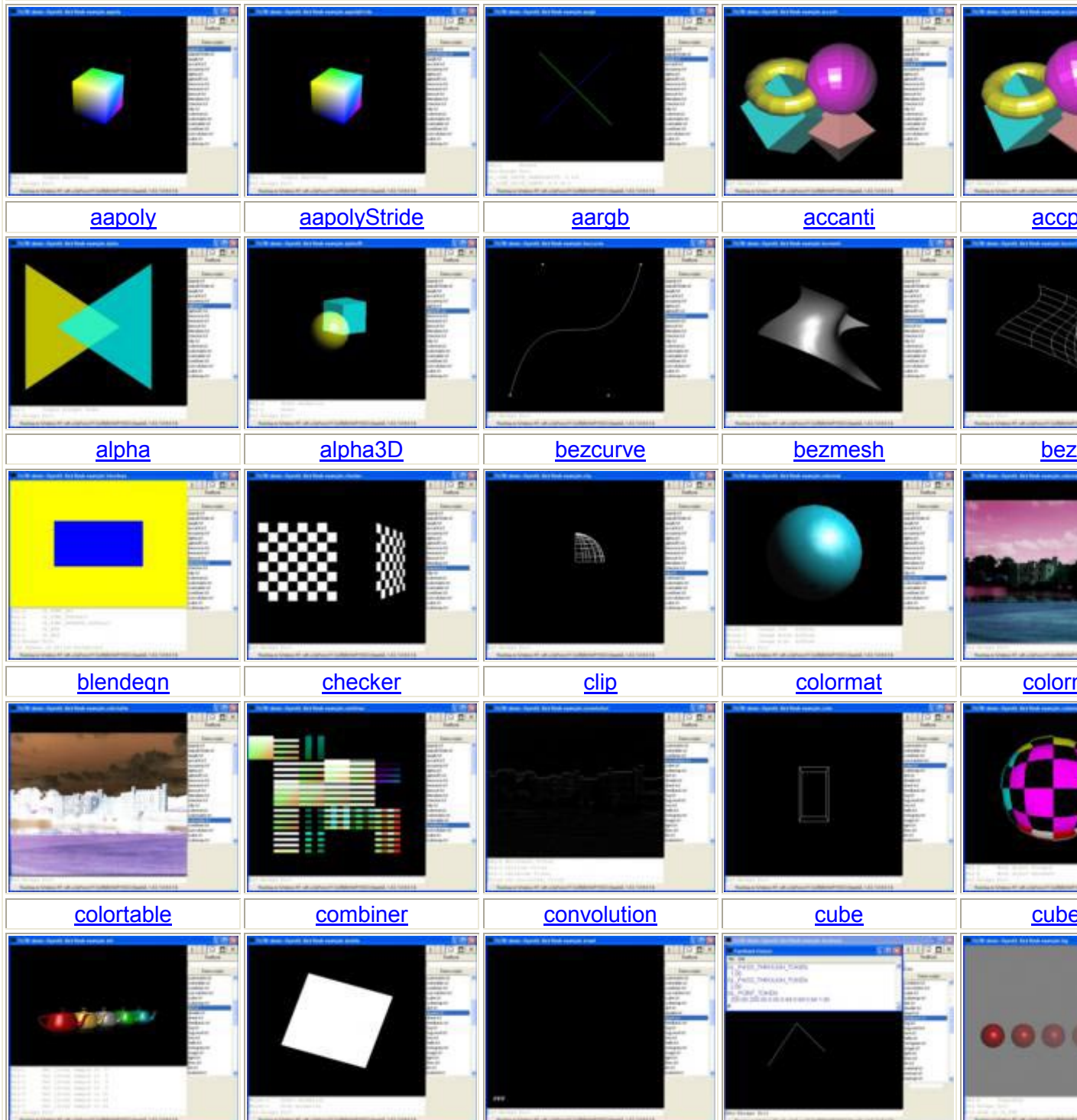
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

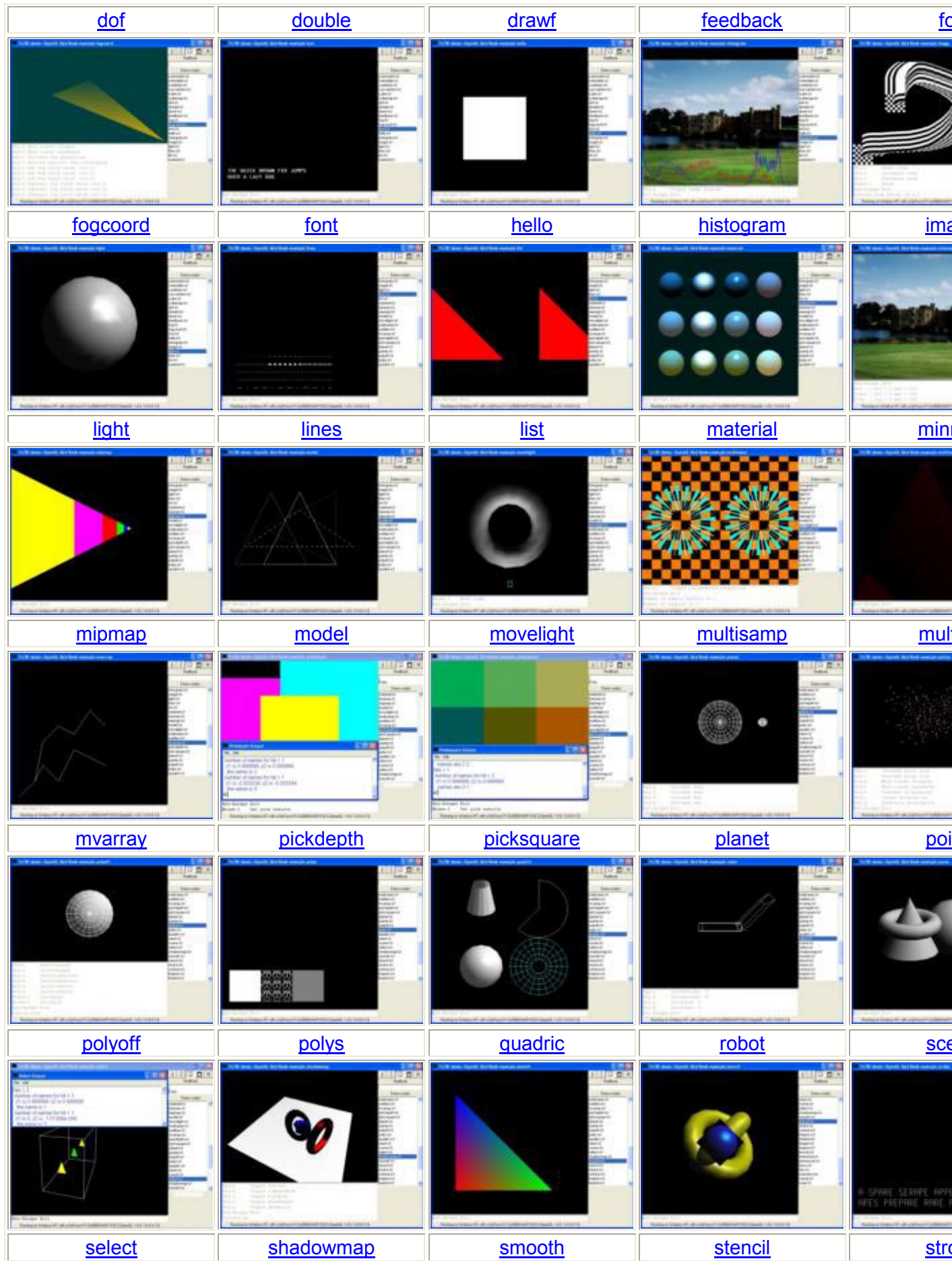
The Redbook describing OpenGL Version 1.4 contains 72 examples written in C. 67 of them have been converted into equivalent Tcl3D scripts and the results compared on several operating systems and computers to the C version.

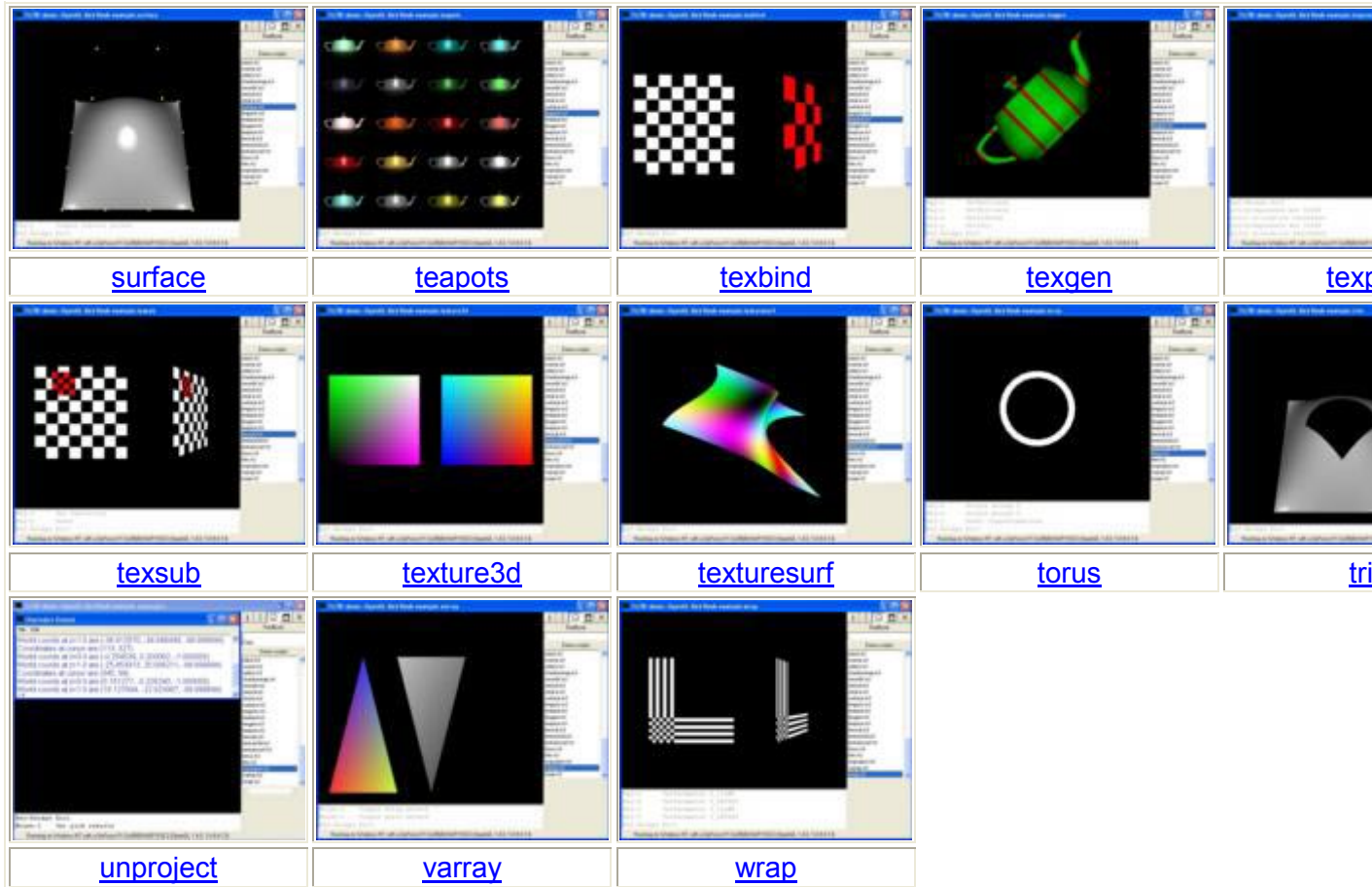
Three of the missing five examples (surfpoints, tess, tesswin) deal with tessellation, which is currently not implemented in the tcl3dTogl widget. The other two test programs (aaindex, fogindex) not yet ported deal with color index mode, which is not implemented in the tcl3dTogl widget.

Original sources available at: <http://www.opengl-redbook.com/source/>

Available demos

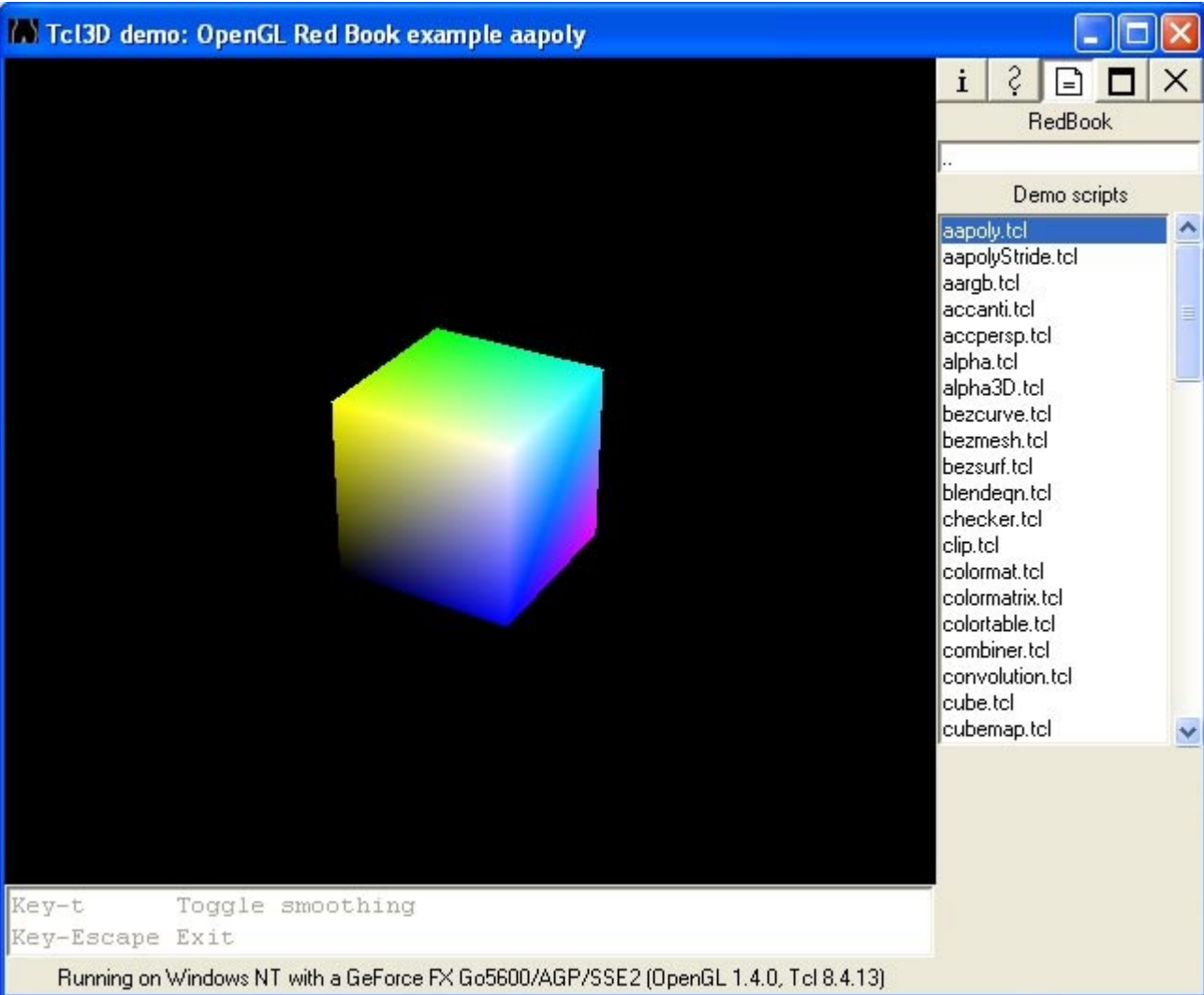






Demo:	aapoly
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example aapoly



Key-t Toggle smoothing
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

aapoly.tcl

An example of the OpenGL red book modified to work with Tcl3D.
The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc.
The Tcl3D sources are Copyright (c) 2005, Paul Obermeier.
See file LICENSE for complete license information.

This program draws filled polygons with antialiased edges. The special GL_SRC_ALPHA_SATURATE blending function is used.
Pressing the 't' key turns the antialiasing on and off.

Demo:	aapolyStride
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-t Toggle smoothing
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

aapoly.tcl

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This program draws filled polygons with antialiased edges. The special GL_SRC_ALPHA_SATURATE blending function is used.
Pressing the 't' key turns the antialiasing on and off.

Demo:	aargb
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

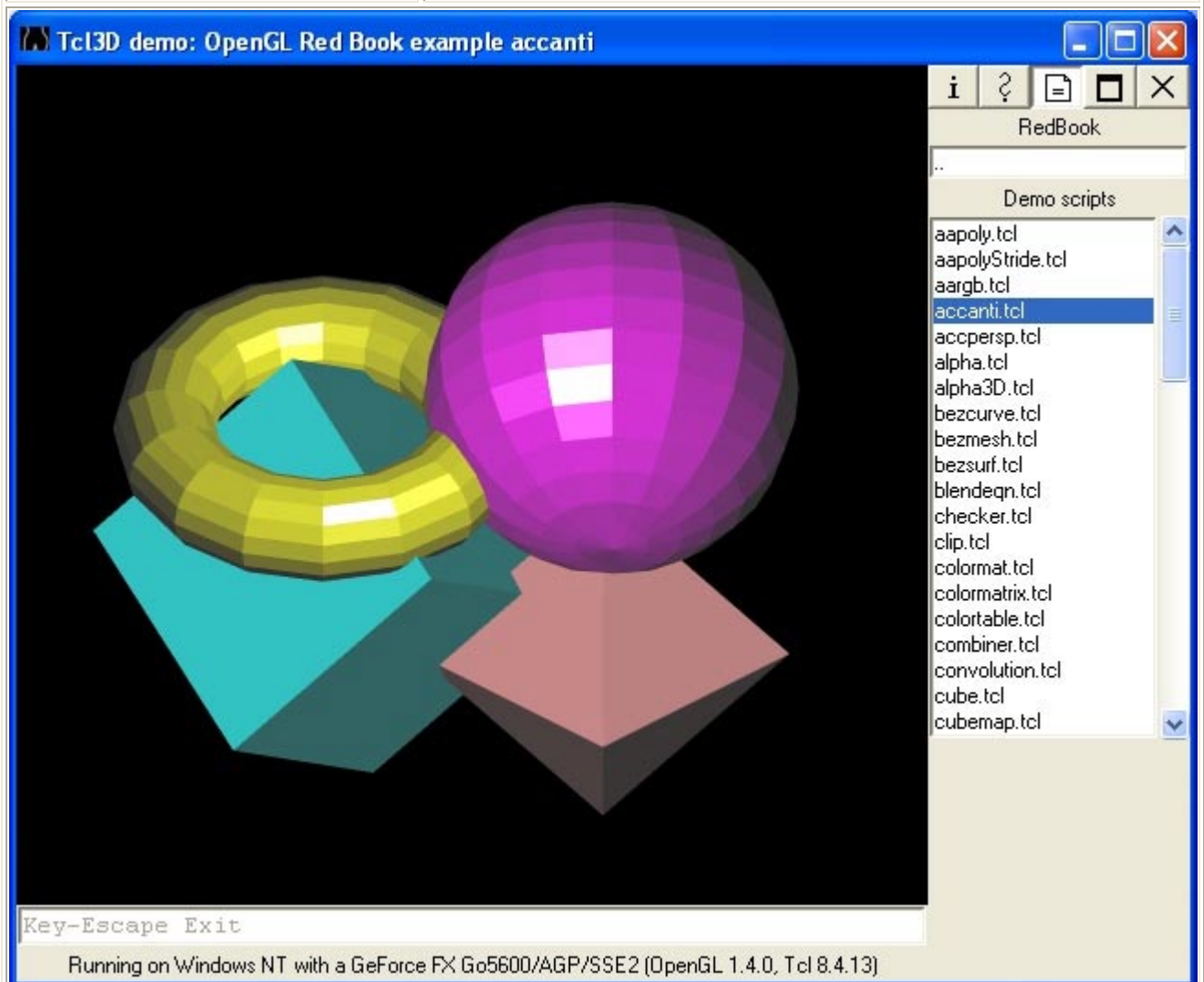
Key-r Rotate
 Key-Escape Exit
 GL_LINE_WIDTH_GRANULARITY: 0.125
 GL_LINE_WIDTH_RANGE: 0.5 10.0
 Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

aargb.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program draws shows how to draw anti-aliased lines. It draws two diagonal lines to form an X; when 'r' is typed in the window, the lines are rotated in opposite directions.

Demo:	accanti
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

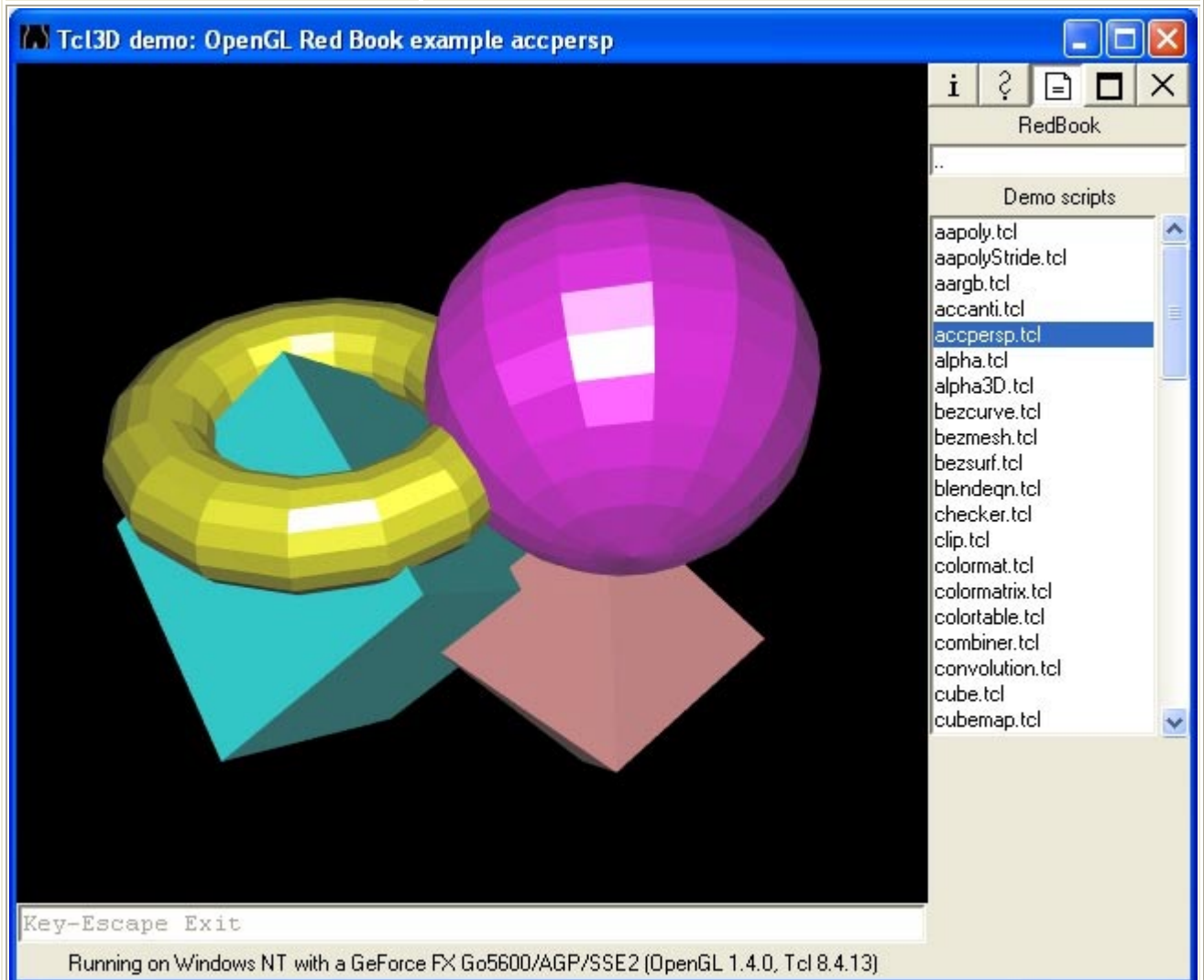


accanti.tcl

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Use the accumulation buffer to do full-scene antialiasing
 on a scene with orthographic parallel projection.

Demo:	accpersp
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



accpersp.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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Use the accumulation buffer to do full-scene antialiasing
 on a scene with perspective projection, using the special
 routines `accFrustum()` and `accPerspective()`.

Demo:	alpha
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-t Toggle polygon order
Key-Escape Exit
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

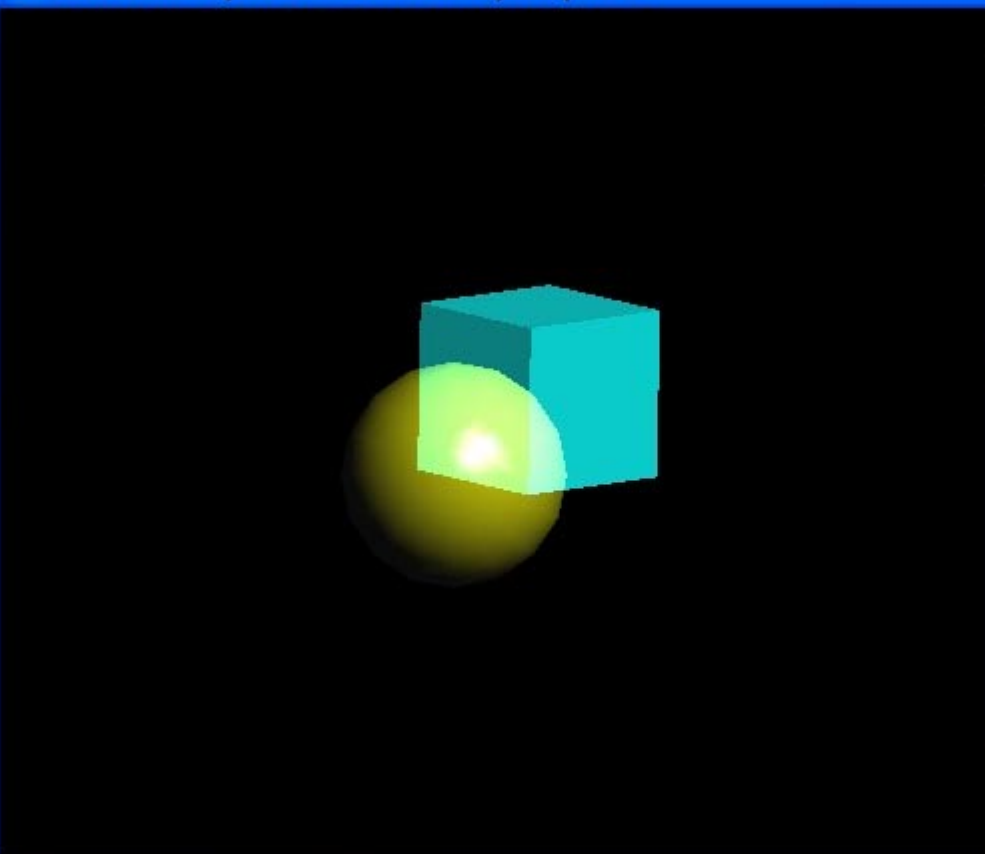
alpha.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program draws several overlapping filled polygons
to demonstrate the effect order has on alpha blending results.
Use the 't' key to toggle the order of drawing polygons.

Demo:	alpha3D
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example alpha3D



Key-a Start animation
Key-r Reset
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

RedBook

Demo scripts

- aapoly.tcl
- aapolyStride.tcl
- aargb.tcl
- accanti.tcl
- accpersp.tcl
- alpha.tcl
- alpha3D.tcl**
- bezcurve.tcl
- bezmesh.tcl
- bezsurf.tcl
- blendeqn.tcl
- checker.tcl
- clip.tcl
- colormat.tcl
- colormatrix.tcl
- colortable.tcl
- combiner.tcl
- convolution.tcl
- cube.tcl
- cubemap.tcl

alpha3D.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates how to intermix opaque and alpha blended polygons in the same scene, by using `glDepthMask`. Press the 'a' key to animate moving the transparent object through the opaque object. Press the 'r' key to reset the scene.

Demo:	bezcurve
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example bezcurve". The main display area is black, showing a white Bezier curve with four yellow control points. To the right of the main area is a file list titled "RedBook" and "Demo scripts". The file "bezcurve.tcl" is selected in the list. At the bottom of the window, there is a status bar that reads "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

bezcurve.tcl

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This program uses evaluators to draw a Bezier curve.

Demo:	bezmesh
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

bezmesh.tcl

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This program renders a lighted, filled Bezier surface,
 using two-dimensional evaluators.

Demo:	bezsurf
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

bezsurf.tcl

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This program renders a wireframe Bezier surface,
 using two-dimensional evaluators.

Demo:	blendeqn
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example blendeqn

```

Key-a      GL_FUNC_ADD
Key-s      GL_FUNC_SUBTRACT
Key-r      GL_FUNC_REVERSE_SUBTRACT
Key-m      GL_MIN
Key-x      GL_MAX
Key-Escape Exit
blue square on yellow background

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

blendeqn.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005-2008, Paul Obermeier. See file LICENSE for complete license information.

Demonstrate the different blending functions available with the OpenGL imaging subset. This program demonstrates use of the `glBlendEquation` call.

The following keys change the selected blend equation function:

```

'a'  -> GL_FUNC_ADD
's'  -> GL_FUNC_SUBTRACT
'r'  -> GL_FUNC_REVERSE_SUBTRACT
'm'  -> GL_MIN
'x'  -> GL_MAX

```

Extension function: `glBlendEquation` OpenGL 1.2

Demo:	checker
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example checker". The main display area shows a black background with two white checkerboard patterns. The pattern on the left is a flat 4x4 grid. The pattern on the right is a 4x4 grid that appears to be on a curved surface, with the squares becoming smaller and more distorted as they recede. To the right of the main display is a file list titled "RedBook" with a sub-section "Demo scripts". The list includes files like "aapoly.tcl", "aapolyStride.tcl", "aargb.tcl", "accanti.tcl", "accpersp.tcl", "alpha.tcl", "alpha3D.tcl", "bezcurve.tcl", "bezmesh.tcl", "bezsurf.tcl", "blendeqn.tcl", "checker.tcl" (which is highlighted in blue), "clip.tcl", "colormat.tcl", "colormatrix.tcl", "colortable.tcl", "combiner.tcl", "convolution.tcl", "cube.tcl", and "cubemap.tcl". At the bottom of the window, there is a status bar that reads "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

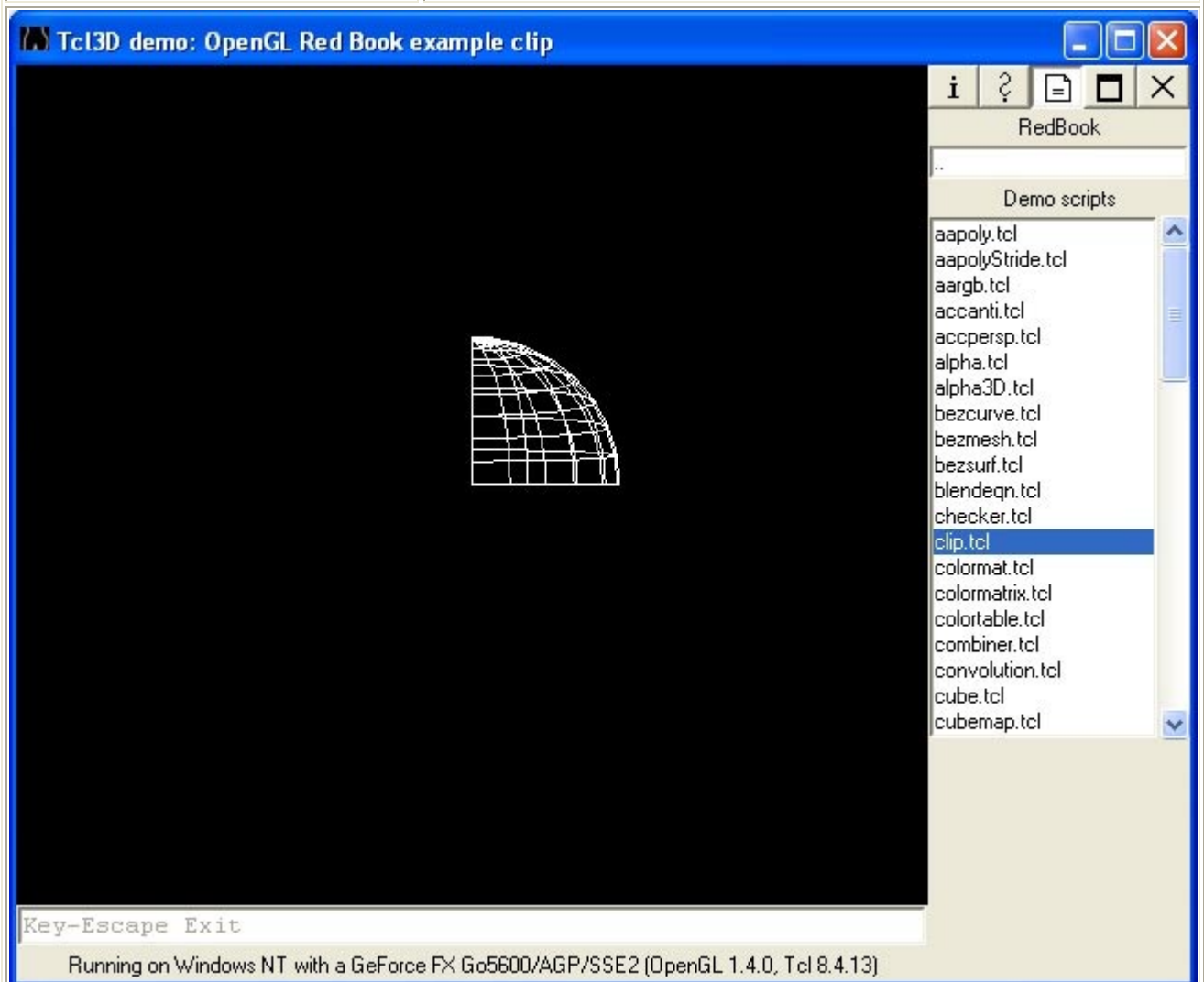
checker.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program texture maps a checkerboard image onto two rectangles.

If running this program on OpenGL 1.0, texture objects are not used.

Demo:	clip
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

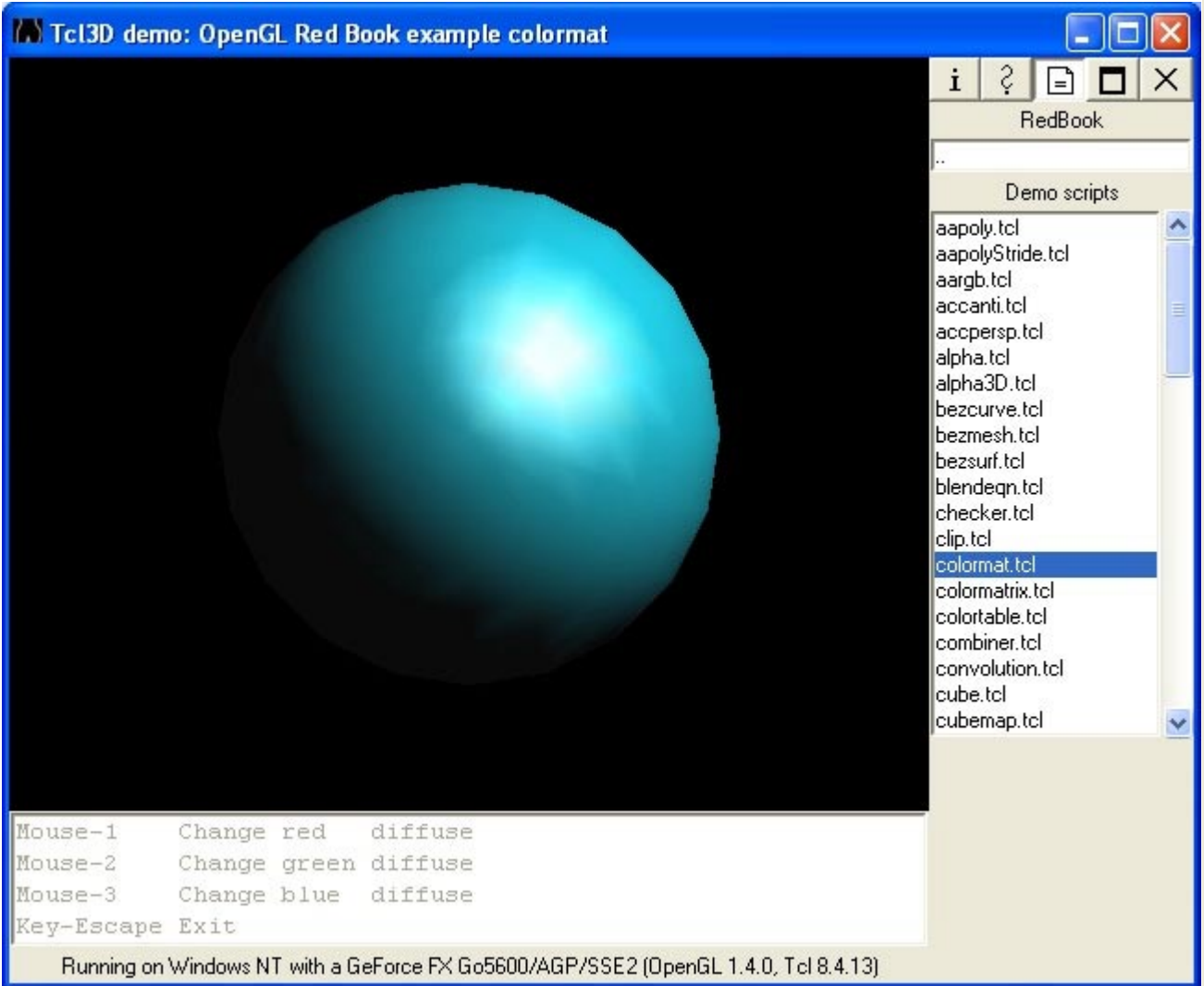


clip.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates arbitrary clipping planes.

Demo:	colormat
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example colormat". The main area displays a 3D sphere with a cyan-to-blue gradient. To the right is a file browser showing a list of "Demo scripts" including `aapoly.tcl`, `aapolyStride.tcl`, `aargb.tcl`, `accanti.tcl`, `accpersp.tcl`, `alpha.tcl`, `alpha3D.tcl`, `bezcurve.tcl`, `bezmesh.tcl`, `bezsurf.tcl`, `blendeqn.tcl`, `checker.tcl`, `clip.tcl`, `colormat.tcl` (highlighted), `colormatrix.tcl`, `colortable.tcl`, `combiner.tcl`, `convolution.tcl`, `cube.tcl`, and `cubemap.tcl`. A control panel at the bottom left lists:

- Mouse-1 Change red diffuse
- Mouse-2 Change green diffuse
- Mouse-3 Change blue diffuse
- Key-Escape Exit

 The status bar at the bottom indicates: "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

```
colormat.tcl
```

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After initialization, the program will be in
 ColorMaterial mode. Interaction: pressing the
 mouse buttons will change the diffuse reflection values.

Demo:	colormatrix
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example colormatrix". The main area displays a 3D rendered scene of a castle with a color matrix effect applied, resulting in a magenta/pink sky and a blueish ground. To the right is a file explorer showing a directory named "RedBook" containing a subdirectory "Demo scripts". The file "colormatrix.tcl" is selected in the list. Below the main window, a status bar reads "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

colormatrix.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program uses the color matrix to exchange the color channels of an image.

```
Red   -> Green
Green -> Blue
Blue  -> Red
```

Demo:	colortable
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

colortable.tcl

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Invert a passed block of pixels. This program illustrates the use of the `glColorTable()` function.

Demo:	combiner
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

combiner.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program renders a variety of quads showing different effects of texture combiner functions.

The first row renders an untextured polygon (so you can compare the fragment colors) and then the 2 textures. The second row shows several different combiner functions on a single texture: replace, modulate, add, add-signed, and subtract.

The third row shows the interpolate combiner function on a single texture with a constant color/alpha value, varying the amount of interpolation.

The fourth row uses multitexturing with two textures and different combiner functions.

The fifth row are some combiner experiments: using the scaling factor and reversing the order of subtraction

for a combination function.

Demo:	convolution
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

convolution.tcl

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Use various 2D convolutions filters to find edges in an image.

Demo:	cube
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

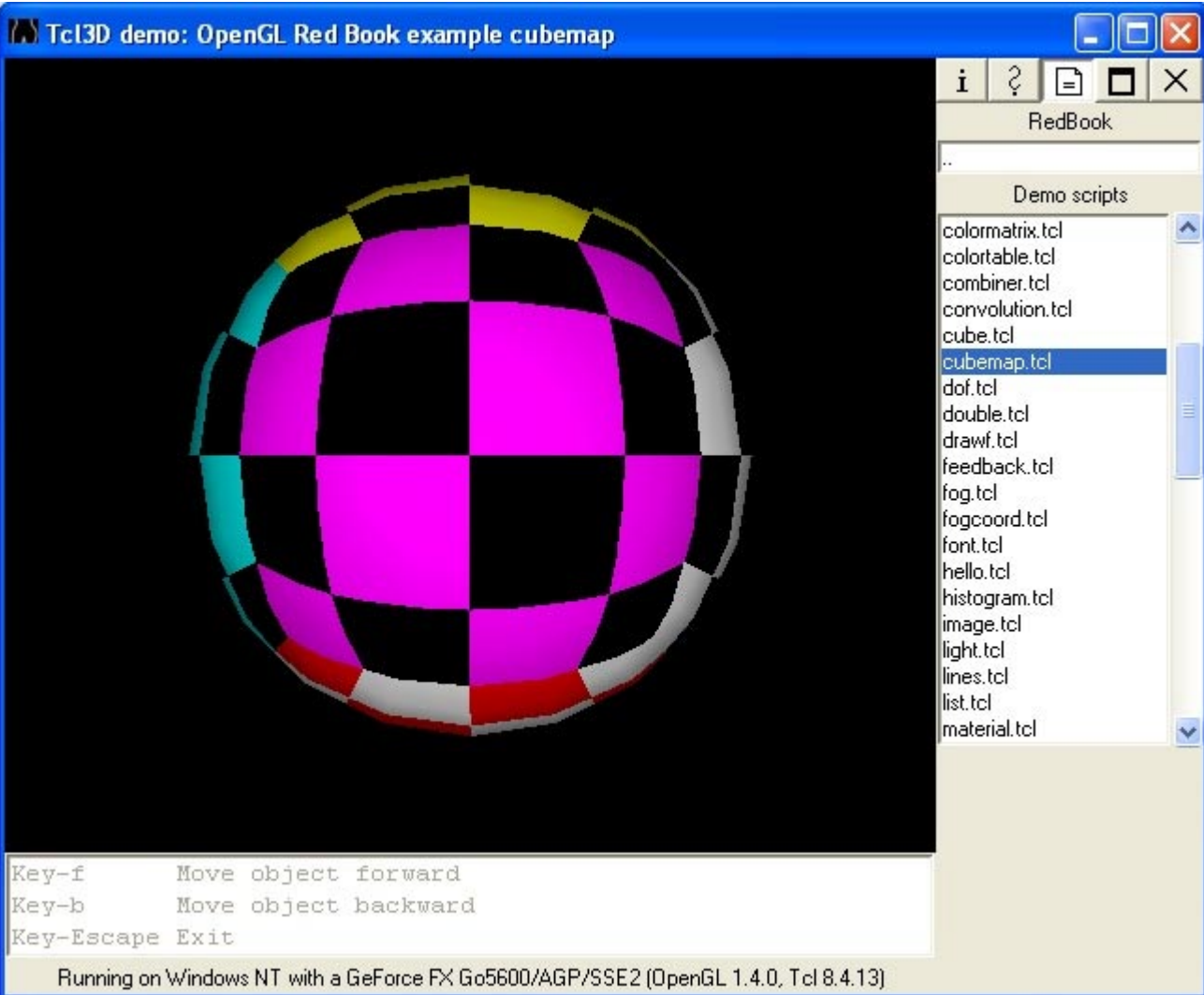
cube.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates a single modeling transformation, `glScalef()` and a single viewing transformation, `gluLookAt()`.
 A wireframe cube is rendered.

Demo:	cubemap
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example cubemap



Key-f Move object forward
Key-b Move object backward
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

cubemap.tcl

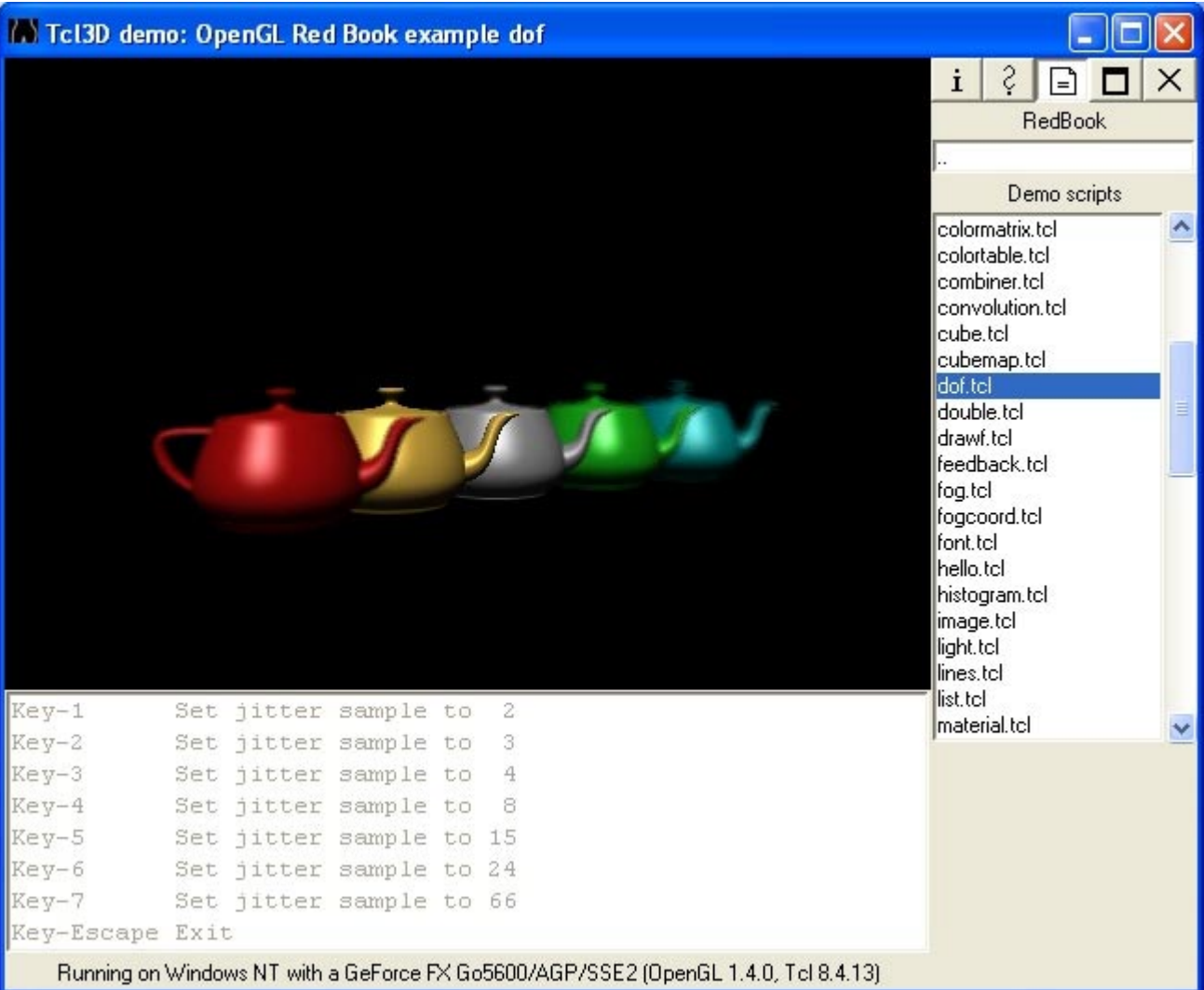
An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates cube map textures.
Six different colored checker board textures are
created and applied to a lit sphere.

Pressing the 'f' and 'b' keys translate the object
forward and backward.

Demo:	dof
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example dof



```

Key-1   Set jitter sample to 2
Key-2   Set jitter sample to 3
Key-3   Set jitter sample to 4
Key-4   Set jitter sample to 8
Key-5   Set jitter sample to 15
Key-6   Set jitter sample to 24
Key-7   Set jitter sample to 66
Key-Escape Exit
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

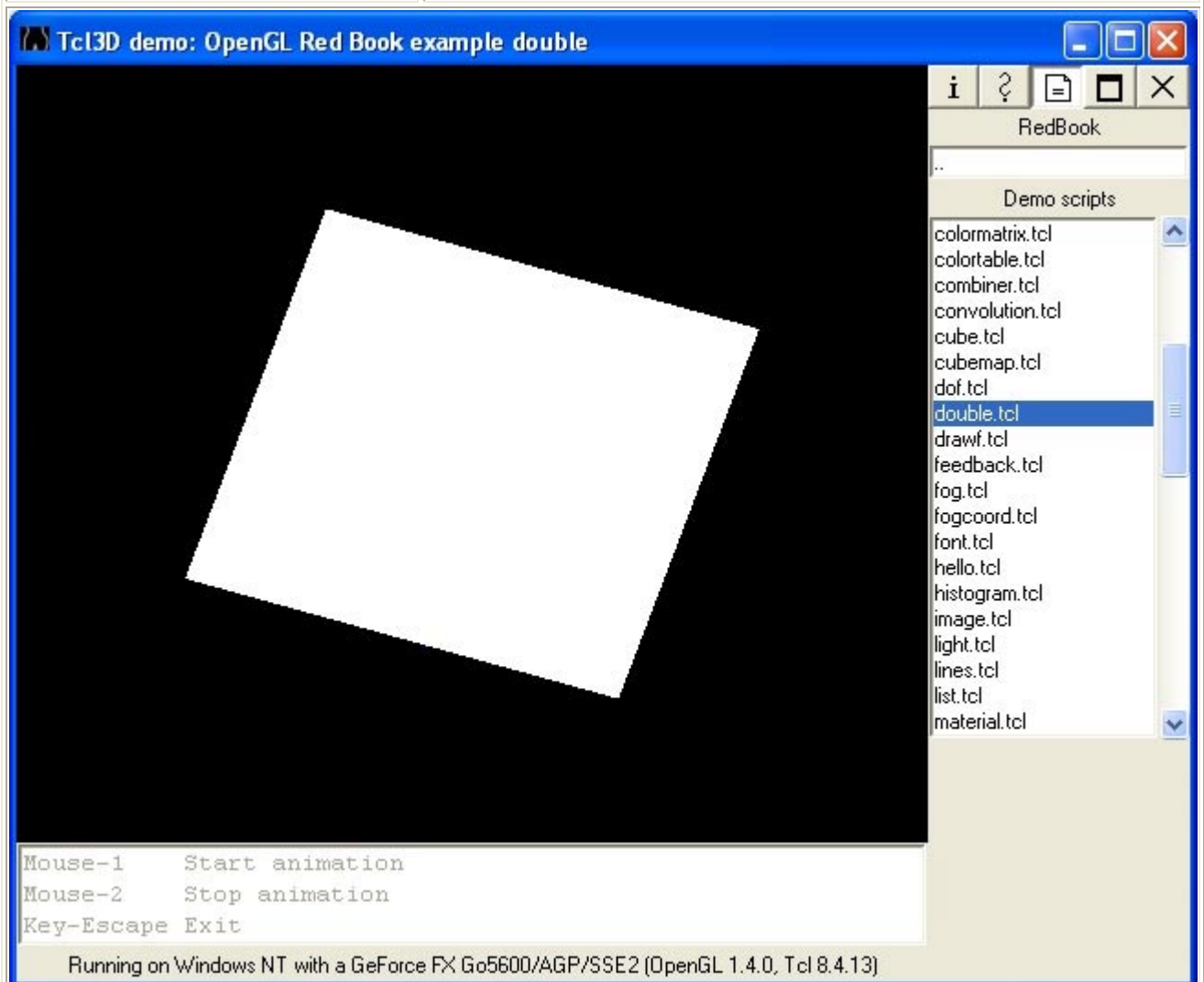
```

dof.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates use of the accumulation buffer to create an out-of-focus depth-of-field effect. The teapots are drawn several times into the accumulation buffer. The viewing volume is jittered, except at the focal point, where the viewing volume is at the same position, each time. In this case, the gold teapot remains in focus.

Demo:	double
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



double.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This is a simple double buffered program.
Pressing the left mouse button rotates the rectangle.
Pressing the middle mouse button stops the rotation.

Demo:	drawf
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example drawf". The main area is black with the text "FFF" in white. Below this is a console area with the text "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)". On the right side, there is a file browser showing a list of demo scripts, with "drawf.tcl" selected.

drawf.tcl

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Draws the bitmapped letter F on the screen (several times).
 This demonstrates use of the glBitmap() call.

Demo:	feedback
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

feedback.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates use of OpenGL feedback. First, a lighting environment is set up and a few lines are drawn. Then feedback mode is entered, and the same lines are drawn. The results in the feedback buffer are printed.

Demo:	fog
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-f ToggleFog
Key-Escape Exit
Fog mode is GL_EXP

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

fog.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program draws 5 red spheres, each at a different z distance from the eye, in different types of fog. Pressing the f key chooses between 3 types of fog: exponential, exponential squared, and linear. In this program, there is a fixed density value, as well as fixed start and end values for the linear fog.

Demo:	fogcoord
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example fogcoord

```

Key-f Move viewer forward
Key-b Move viewer backwards
Key-c Initiate fog generation
Key-C Restore explicit fog coordinates
Key-1 Add fog coord value (vtx 1)
Key-2 Add fog coord value (vtx 2)
Key-3 Add fog coord value (vtx 3)
Key-8 Subtract fog coord value (vtx 1)
Key-9 Subtract fog coord value (vtx 2)
Key-0 Subtract fog coord value (vtx 3)

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

fogcoord.tcl

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This program demonstrates the use of explicit fog coordinates. You can press the keyboard and change the fog coordinate value at any vertex. You can also switch between using explicit fog coordinates and the default fog generation mode.

Pressing the 'f' and 'b' keys move the viewer forward and backwards.

Pressing 'c' initiates the default fog generation. Pressing capital 'C' restores explicit fog coordinates. Pressing '1', '2', '3', '8', '9', and '0' add or subtract from the fog coordinate values at one of the three vertices of the triangle.

Extension function: glFogCoordfEXT

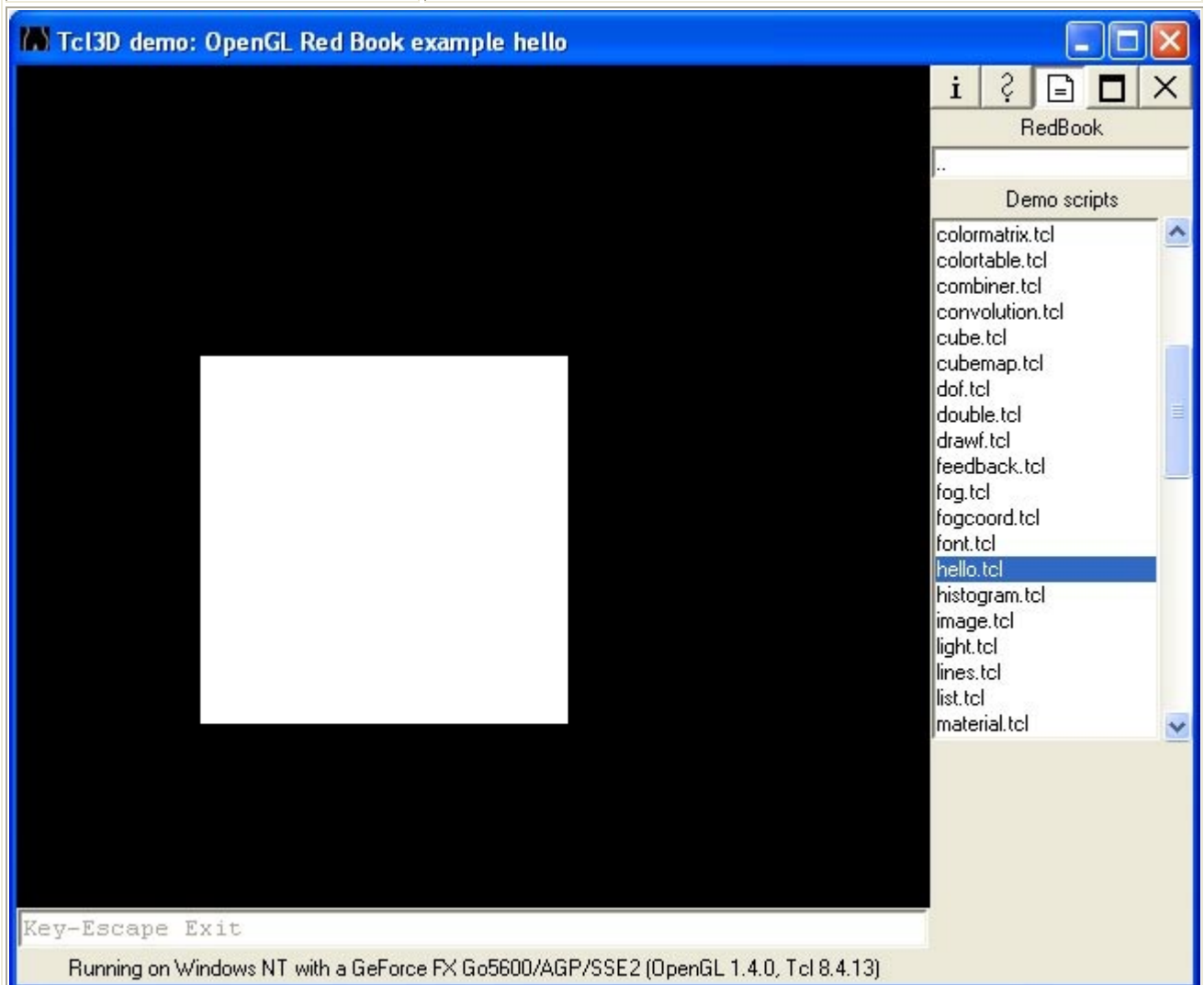
Demo:	font
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

font.tcl

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Draws some text in a bitmapped font. Uses `glBitmap()` and other pixel routines. Also demonstrates use of display lists.

Demo:	hello
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



hello.tcl

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This is a simple, introductory OpenGL program.

Demo:	histogram
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-s Toggle image display
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

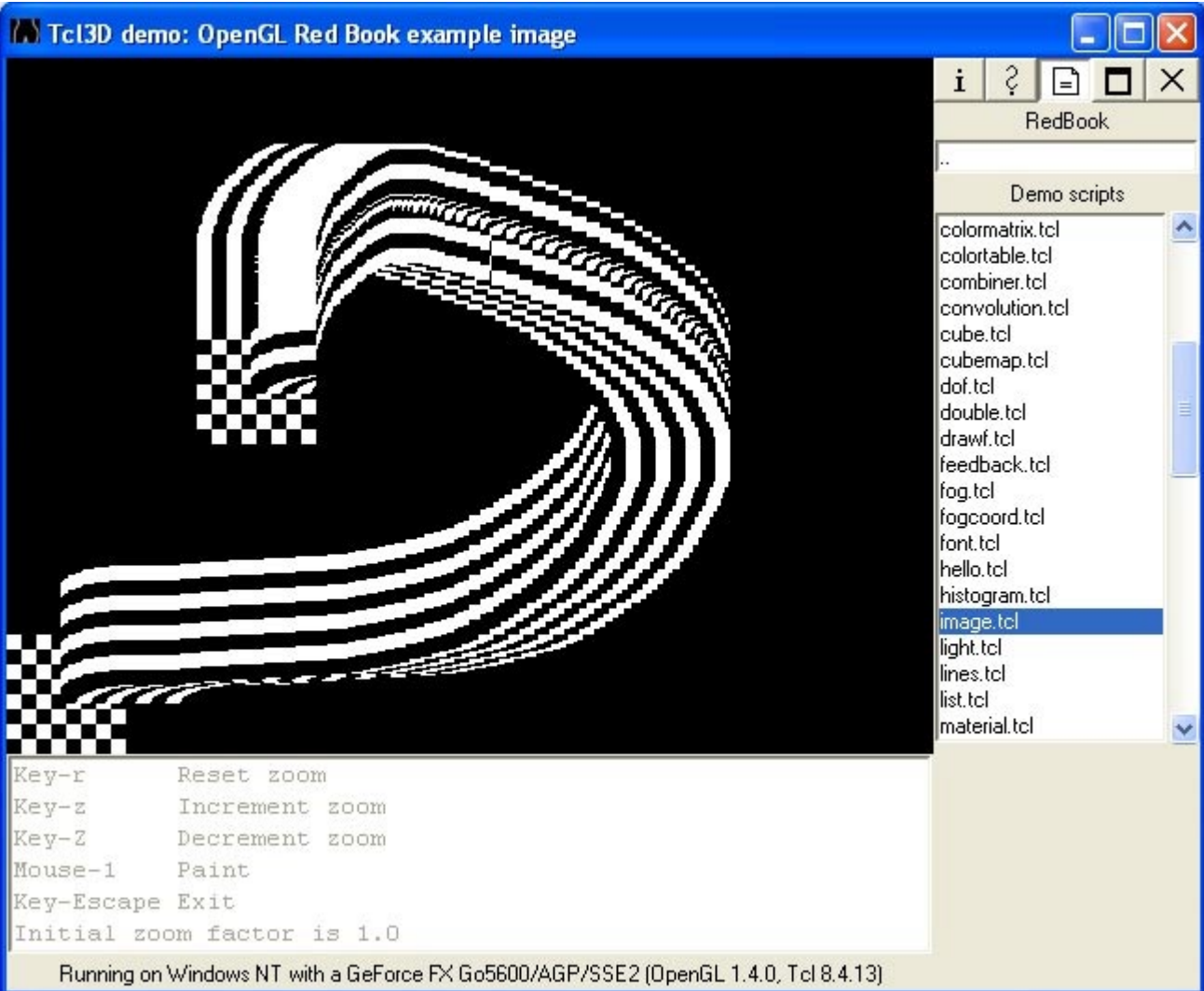
histogram.tcl

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Compute the histogram of the image. This program illustrates the use of the `glHistogram()` function.

Demo:	image
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example image



```

Key-r      Reset zoom
Key-z      Increment zoom
Key-Z      Decrement zoom
Mouse-1    Paint
Key-Escape Exit
Initial zoom factor is 1.0

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

image.tcl

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This program demonstrates drawing pixels and shows the effect of `glDrawPixels()`, `glCopyPixels()`, and `glPixelZoom()`. Interaction: moving the mouse while pressing the mouse button will copy the image in the lower-left corner of the window to the mouse position, using the current pixel zoom factors. There is no attempt to prevent you from drawing over the original image. If you press the 'r' key, the original image and zoom factors are reset. If you press the 'z' or 'Z' keys, you change the zoom factors.

Demo:	light
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

light.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates the use of the OpenGL lighting model. A sphere is drawn using a grey material characteristic. A single light source illuminates the object.

Demo:	lines
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

lines.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates geometric primitives and their attributes.

Demo:	list
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example list". The main area displays a 3D scene with two red triangles on a black background. A file browser on the right shows a list of demo scripts, with "list.tcl" selected. The status bar at the bottom indicates "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

list.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates how to make and execute a display list. Note that attributes, such as current color and matrix, are changed.

Demo:	material
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example material". The main area contains a 3x4 grid of spheres. The top row shows spheres with different material properties (e.g., blue, white, red). The middle row shows spheres with different material properties (e.g., blue, white, red). The bottom row shows spheres with different material properties (e.g., blue, white, red). To the right of the main area is a file list titled "RedBook" and "Demo scripts". The file list includes: histogram.tcl, image.tcl, light.tcl, lines.tcl, list.tcl, material.tcl (selected), minmax.tcl, mipmap.tcl, model.tcl, movelight.tcl, multisamp.tcl, multitex.tcl, mvarray.tcl, pickdepth.tcl, picksquare.tcl, planet.tcl, pointp.tcl, polyoff.tcl, polys.tcl, quadric.tcl. At the bottom of the window, there is a status bar that says "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

material.tcl

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This program demonstrates the use of the GL lighting model.
 Several objects are drawn using different material characteristics.
 A single light source illuminates the objects.

Demo:	minmax
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

```

Red   : min = 0 max = 232
Green : min = 0 max = 244
Blue  : min = 0 max = 245

```

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

minmax.tcl

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Determine the minimum and maximum values of a group of pixels.
This demonstrates use of the glMinmax() call.

Demo:	mipmap
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

mipmap.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates using mipmaps for texture maps. To overtly show the effect of mipmaps, each mipmap reduction level has a solidly colored, contrasting texture image. Thus, the quadrilateral which is drawn is drawn with several different colors.

Demo:	model
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example model". The main area displays a 3D wireframe model of a pyramid. To the right is a file browser showing a list of "Demo scripts" including histogram.tcl, image.tcl, light.tcl, lines.tcl, list.tcl, material.tcl, minmax.tcl, mipmap.tcl, **model.tcl**, movelight.tcl, multisamp.tcl, multitex.tcl, mvarray.tcl, pickdepth.tcl, picksquare.tcl, planet.tcl, pointp.tcl, polyoff.tcl, polys.tcl, and quadric.tcl. At the bottom of the window, a status bar reads "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

model.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates modeling transformations

Demo:	movelight
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Mouse-1 Move light
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

movelight.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program demonstrates when to issue lighting and transformation commands to render a model with a light which is moved by a modeling transformation (rotate or translate). The light position is reset after the modeling transformation is called. The eye position does not change.

A sphere is drawn using a grey material characteristic. A single light source illuminates the object.

Interaction: pressing the left mouse button alters the modeling transformation (x rotation) by 30 degrees. The scene is then redrawn with the light in a new position.

Demo:	multisamp
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-b> Toggle checkerboard background
 Key-Escape Exit
 Number of sample buffers is 1
 Number of samples is 2

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

multisamp.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

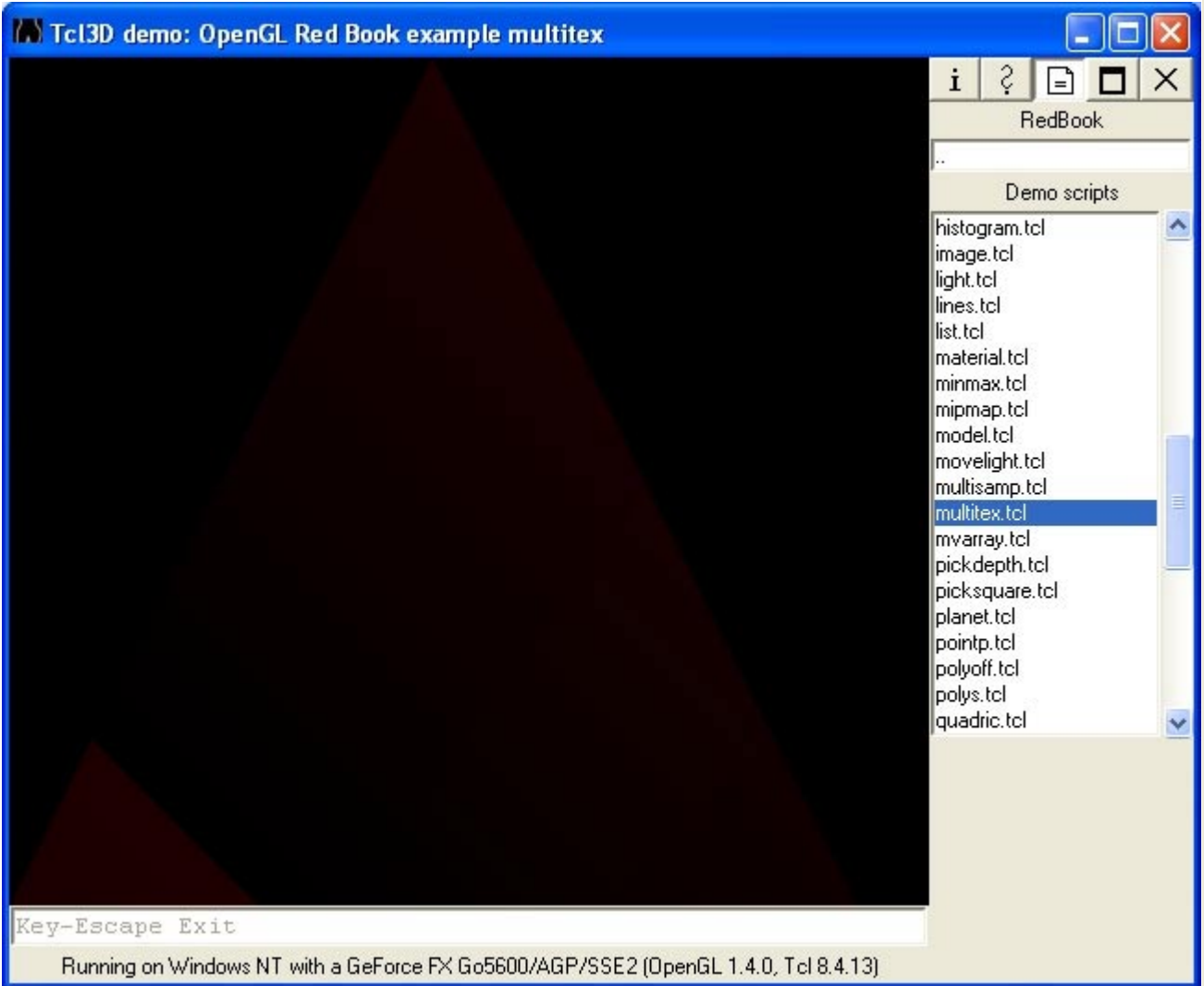
This program draws shows how to use multisampling to draw anti-aliased geometric primitives. The same display list, a pinwheel of triangles and lines of varying widths, is rendered twice. Multisampling is enabled when the left side is drawn. Multisampling is disabled when the right side is drawn.

Pressing the 'b' key toggles drawing of the checkerboard background. Antialiasing is sometimes easier to see when objects are rendered over a contrasting background.

This demo uses the multisampling options built into tcl3dTogl starting from version 0.3.2.

Another way to set the number of samples is via the driver specific GUI under Windows, or by setting the environment variable `__GL_FSAA_MODE` under Linux.

Demo:	multitex
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



multitex.tcl

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Demo:	mvarray
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

mvarray.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates multiple vertex arrays,
 specifically the OpenGL routine `glMultiDrawElements()`.

Demo:	pickdepth
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a Tcl3D demo window titled "Tcl3D demo: OpenGL Red Book example pickdepth". The main window displays a 3D scene with three overlapping rectangles: a black rectangle at the top left, a magenta rectangle on the left, and a yellow rectangle in the center. A console window titled "Pickdepth Output" is open in the foreground, showing the following text:

```

File Edit
number of names for hit = 1
z1 is 0.999999; z2 is 0.999999
the name is 2
number of names for hit = 1
z1 is -0.333334; z2 is -0.333334
the name is 3
#|
Key-Escape Exit
Mouse-1 Get pick results
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

On the right side of the demo window, there is a file browser showing a list of demo scripts, with "pickdepth.tcl" selected.

pickdepth.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

Picking is demonstrated in this program. In rendering mode, three overlapping rectangles are drawn. When the left mouse button is pressed, selection mode is entered with the picking matrix. Rectangles which are drawn under the cursor position are "picked." Pay special attention to the depth value range, which is returned.

Demo:	picksquare
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows the Tcl3D demo interface. The main window displays a 3x3 grid of colored squares. A terminal window titled "Picksquare Output" is open, showing the following text:

```

names are 2 2
hits = 1
number of names for hit = 2
z1 is 0.999999; z2 is 0.999999
names are 0 1
#|

```

Below the terminal window, the following text is displayed:

```

Key-Escape Exit
Mouse-1 Get pick results
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

picksquare.tcl

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Use of multiple names and picking are demonstrated.
A 3x3 grid of squares is drawn. When the left mouse
button is pressed, all squares under the cursor position
have their color changed.

Demo:	planet
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-y Increase year
 Key-Y Decrease year
 Key-d Increase day
 Key-D Decrease day
 Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

planet.tcl

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This program shows how to composite modeling transformations
 to draw translated and rotated models.
 Interaction: pressing the d and y keys (day and year)
 alters the rotation of the planet around the sun.

Demo:	pointp
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example pointp". The main area displays a 3D point cloud of approximately 250 points, colored in various colors (red, yellow, green, blue, purple) against a black background. The points are distributed in a roughly spherical shape. To the right of the main window is a file browser titled "RedBook" showing a list of "Demo scripts". The file "pointp.tcl" is selected and highlighted in blue. Below the main window, a list of keyboard shortcuts is displayed:

```

Key-+      Increase point size
Key--      Decrease point size
Key-f      Move viewer forwards
Key-b      Move viewer backwards
Key-c      Constant attenuation
Key-l      Linear attenuation
Key-q      Quadratic attenuation
Key-Escape Exit

```

At the bottom of the window, it says "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

pointp.tcl

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This program demonstrates point parameters and their effect on point primitives. 250 points are randomly generated within a 10 by 10 by 40 region, centered at the origin. In some modes (including the default), points that are closer to the viewer will appear larger.

Pressing the 'l', 'q', and 'c' keys switch the point parameters attenuation mode to linear, quadratic, or constant, respectively.

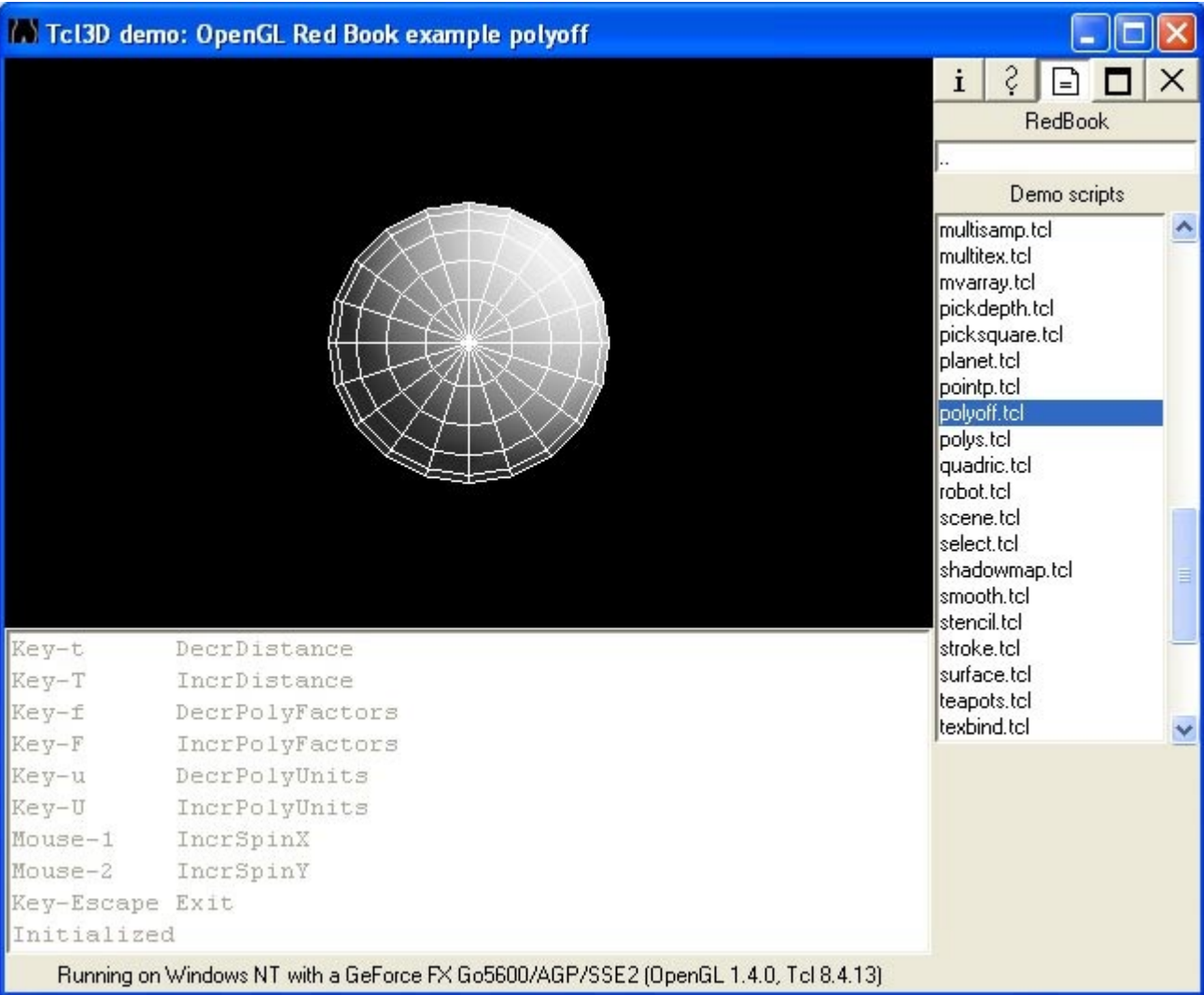
Pressing the 'f' and 'b' keys move the viewer forward and backwards. In either linear or quadratic attenuation mode, the distance from the viewer to the point will change the size of the point primitive.

Pressing the '+' and '-' keys will change the current point size. In this program, the point size is bounded, so it

will not get less than 2.0, nor greater than GL_POINT_SIZE_MAX.

Demo:	polyoff
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example polyoff



Key-t DecrDistance
 Key-T IncrDistance
 Key-f DecrPolyFactors
 Key-F IncrPolyFactors
 Key-u DecrPolyUnits
 Key-U IncrPolyUnits
 Mouse-1 IncrSpinX
 Mouse-2 IncrSpinY
 Key-Escape Exit
 Initialized

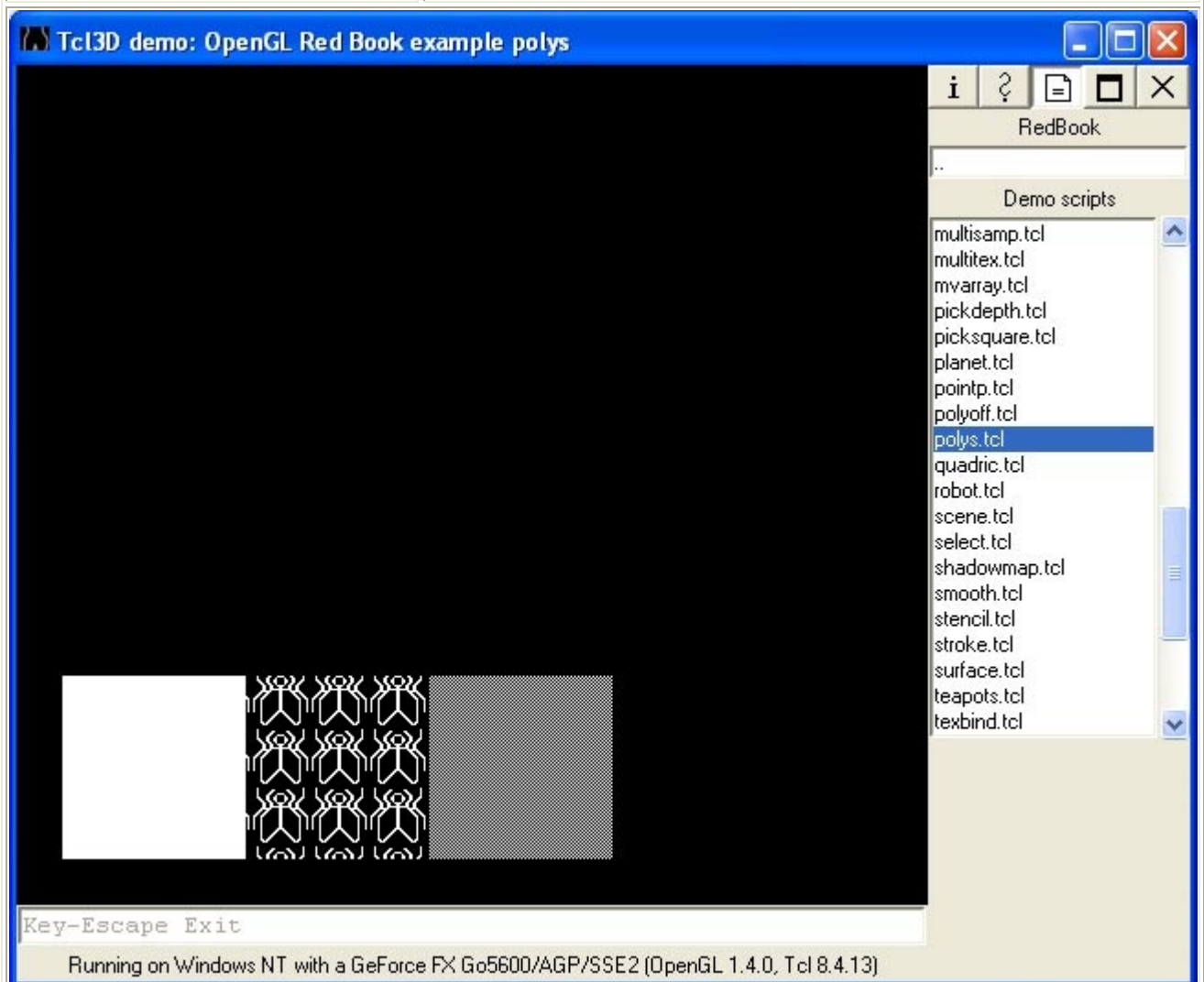
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

polyoff.tcl

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This program demonstrates polygon offset to draw a shaded polygon and its wireframe counterpart without ugly visual artifacts ("stitching").

Demo:	polys
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



polys.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates polygon stippling.

Demo:	quadric
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example quadric". The main area displays four 3D objects: a gray cone, a white sphere, a cyan wireframe sphere, and a cyan wireframe quarter-circle. To the right is a file list titled "RedBook" with "Demo scripts" listed below. "quadric.tcl" is highlighted in blue. The status bar at the bottom of the window contains the text "Key-Escape Exit" and "Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)".

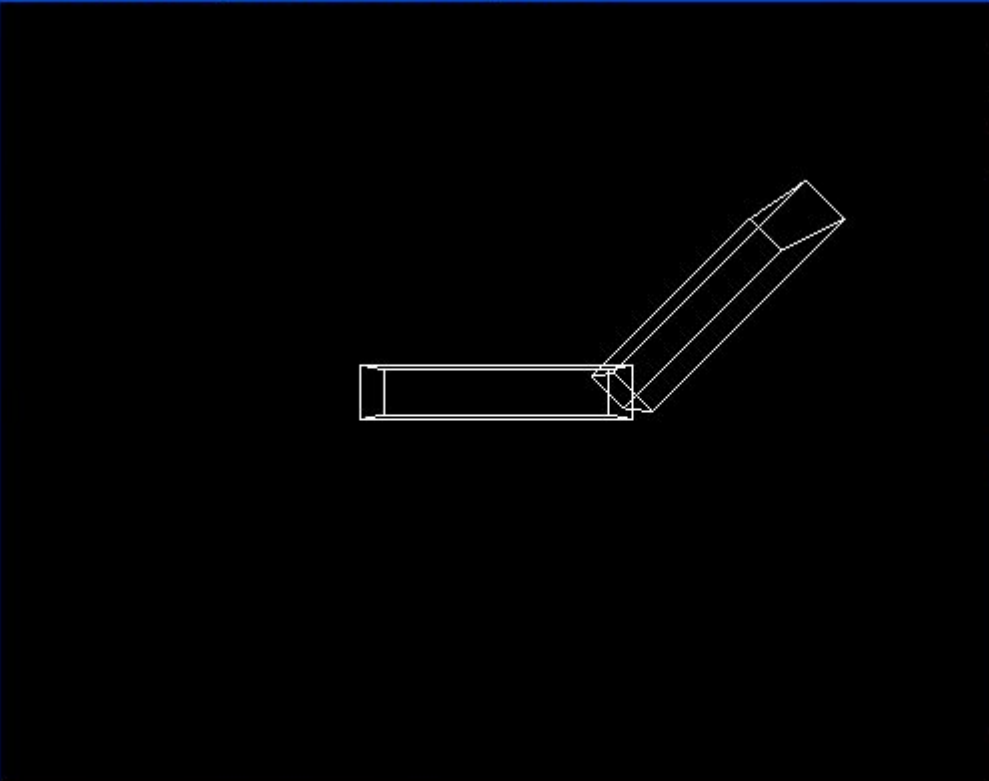
quadric.tcl

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This program demonstrates the use of some of the `gluQuadric*` routines. Quadric objects are created with some `quadric` properties and the callback routine to handle errors. Note that the cylinder has no top or bottom and the circle has a hole in it.

Demo:	robot
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example robot



Key-s IncrShoulder 5
 Key-S IncrShoulder -5
 Key-e IncrElbow 5
 Key-E IncrElbow -5
 Key-Escape Exit

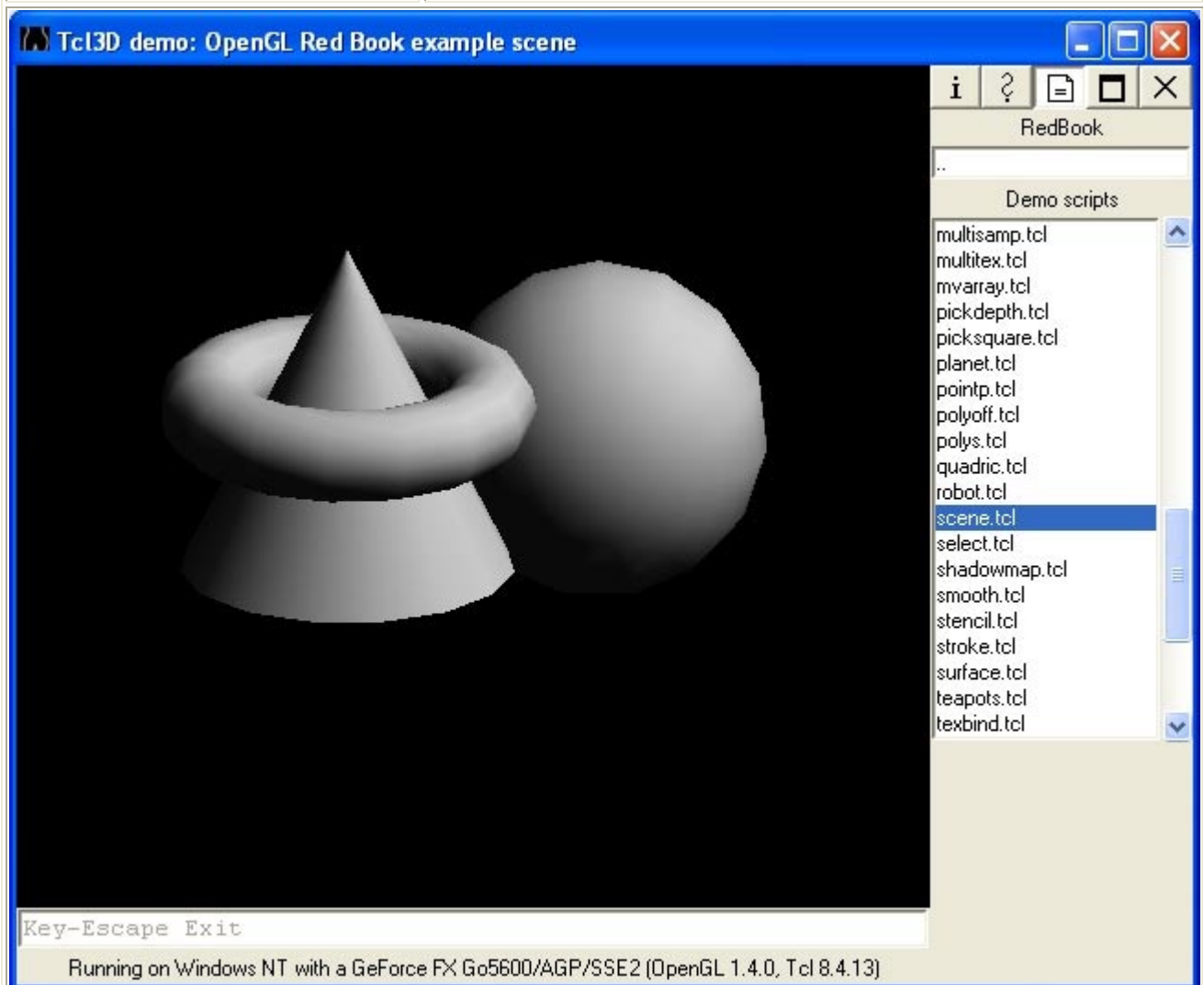
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

robot.tcl

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This program shows how to composite modeling transformations
 to draw translated and rotated hierarchical models.
 Interaction: pressing the s and e keys (shoulder and elbow)
 alters the rotation of the robot arm.

Demo:	scene
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

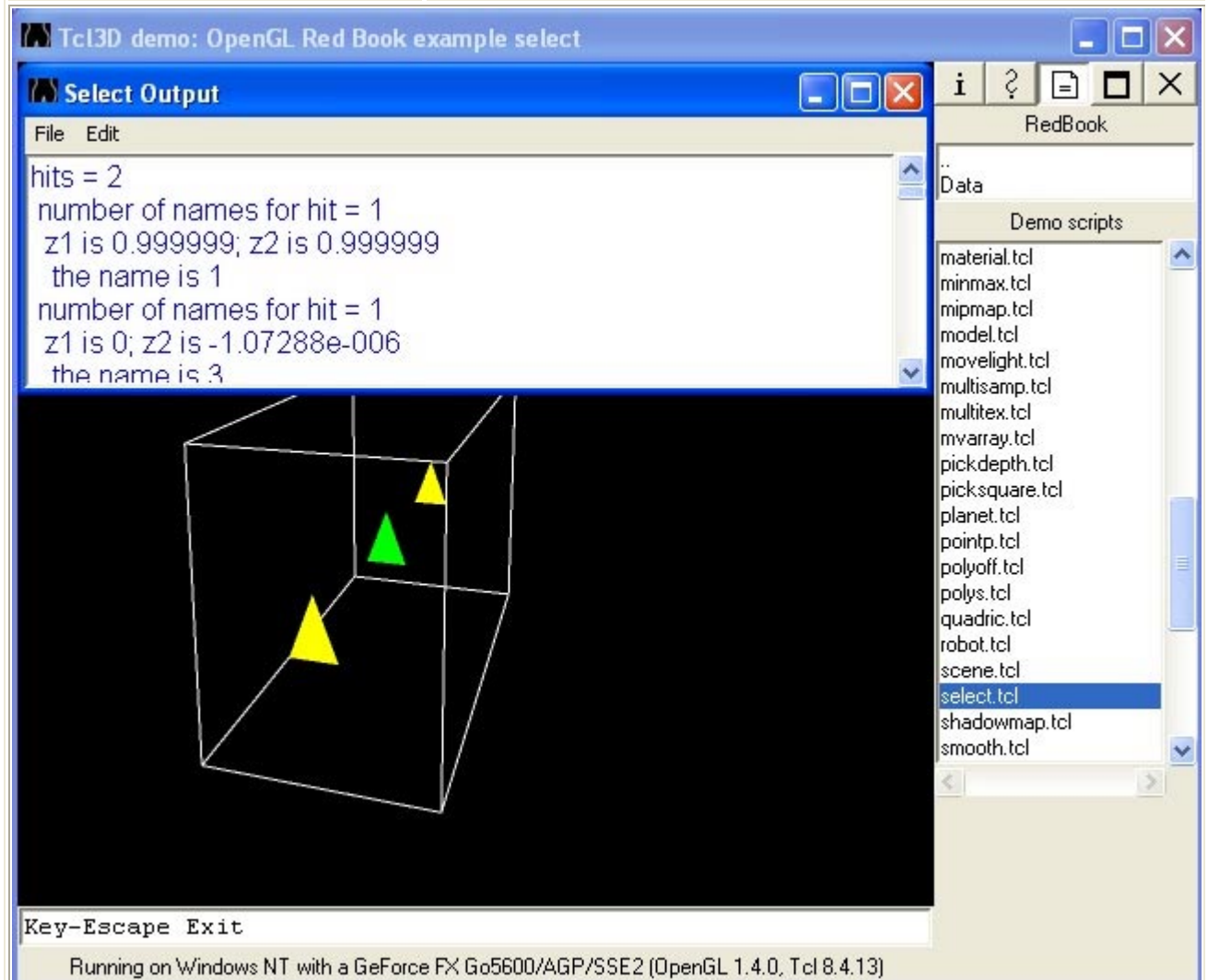


scene.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates the use of the GL lighting model.
 Objects are drawn using a grey material characteristic.
 A single light source illuminates the objects.

Demo:	select
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

select.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This is an illustration of the selection mode and name stack, which detects whether objects which collide with a viewing volume. First, four triangles and a rectangular box representing a viewing volume are drawn (drawScene routine). The green triangle and yellow triangles appear to lie within the viewing volume, but the red triangle appears to lie outside it. Then the selection mode is entered (selectObjects routine). Drawing to the screen ceases. To see if any collisions occur, the four triangles are called. In this example, the green triangle causes one hit with the name 1, and the yellow triangles cause one hit with the name 3.

Demo:	shadowmap
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example shadowmap

Key-t Toggle Texture
 Key-m Toggle CompareMode
 Key-f Toggle FuncMode
 Key-s Toggle ShowShadow
 Key-p Toggle Animation
 Key-Escape Exit
 Texture on

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

shadowmap.tcl

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Demo:	smooth
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

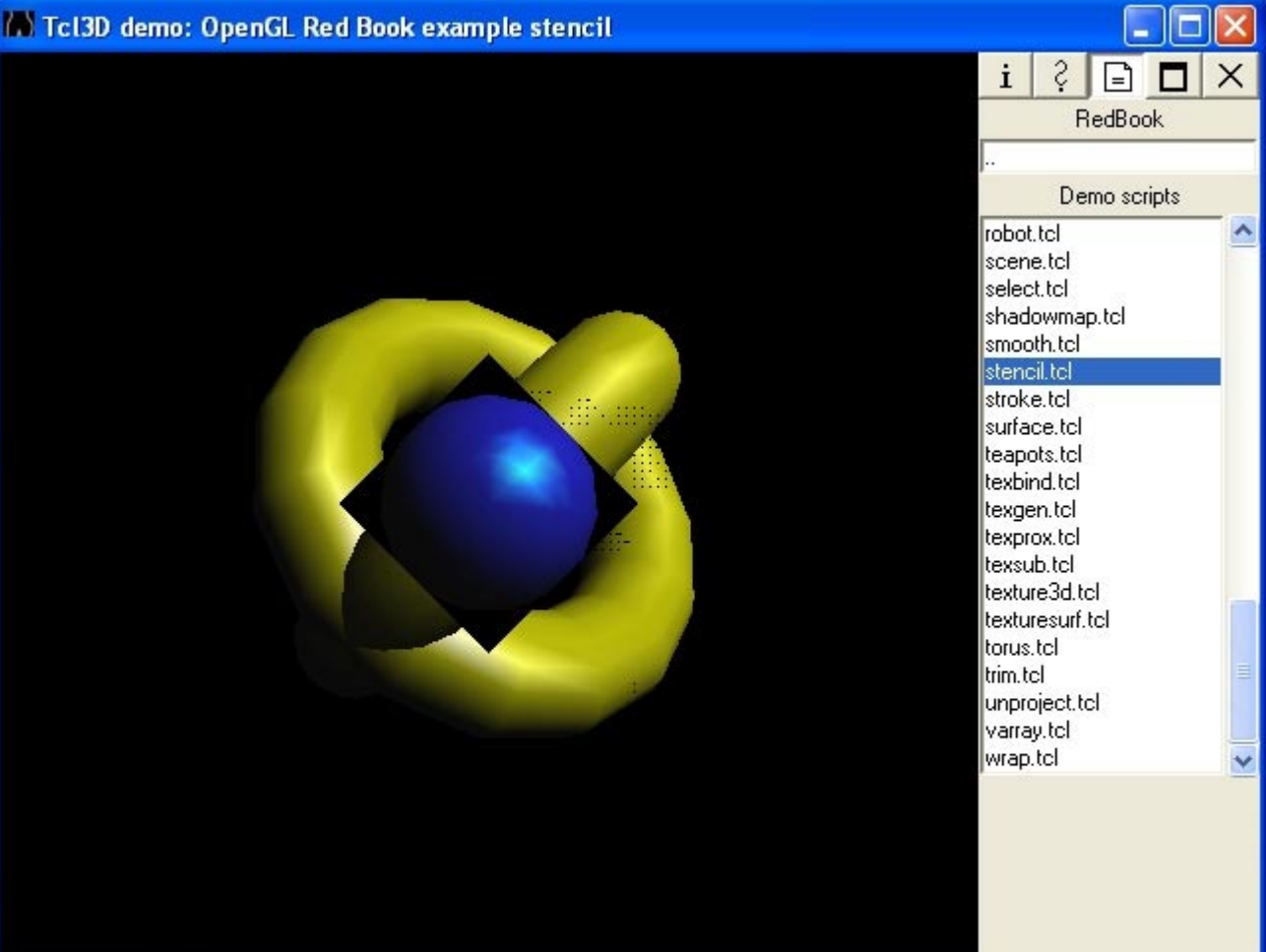
smooth.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates smooth shading.
 A smooth shaded polygon is drawn in a 2-D projection.

Demo:	stencil
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example stencil



Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

stencil.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates use of the stencil buffer for masking nonrectangular regions.
 Whenever the window is redrawn, a value of 1 is drawn into a diamond-shaped region in the stencil buffer.
 Elsewhere in the stencil buffer, the value is 0.
 Then a blue sphere is drawn where the stencil value is 1, and yellow torii are drawn where the stencil value is not 1.

Demo:	stroke
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

stroke.tcl

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This program demonstrates some characters of a stroke (vector) font. The characters are represented by display lists, which are given numbers which correspond to the ASCII values of the characters. Use of `glCallLists()` is demonstrated.

Demo:	surface
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-c Toggle control points
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

surface.tcl

An example of the OpenGL red book modified to work with Tcl3D. The original C sources are Copyright (c) 1993-2003, Silicon Graphics, Inc. The Tcl3D sources are Copyright (c) 2005, Paul Obermeier. See file LICENSE for complete license information.

This program draws a NURBS surface in the shape of a symmetrical hill. The 'c' keyboard key allows you to toggle the visibility of the control points themselves. Note that some of the control points are hidden by the surface itself.

Demo:	teapots
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

teapots.tcl

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This program demonstrates lots of material properties.
 A single light source illuminates the objects.

Demo:	texbind
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

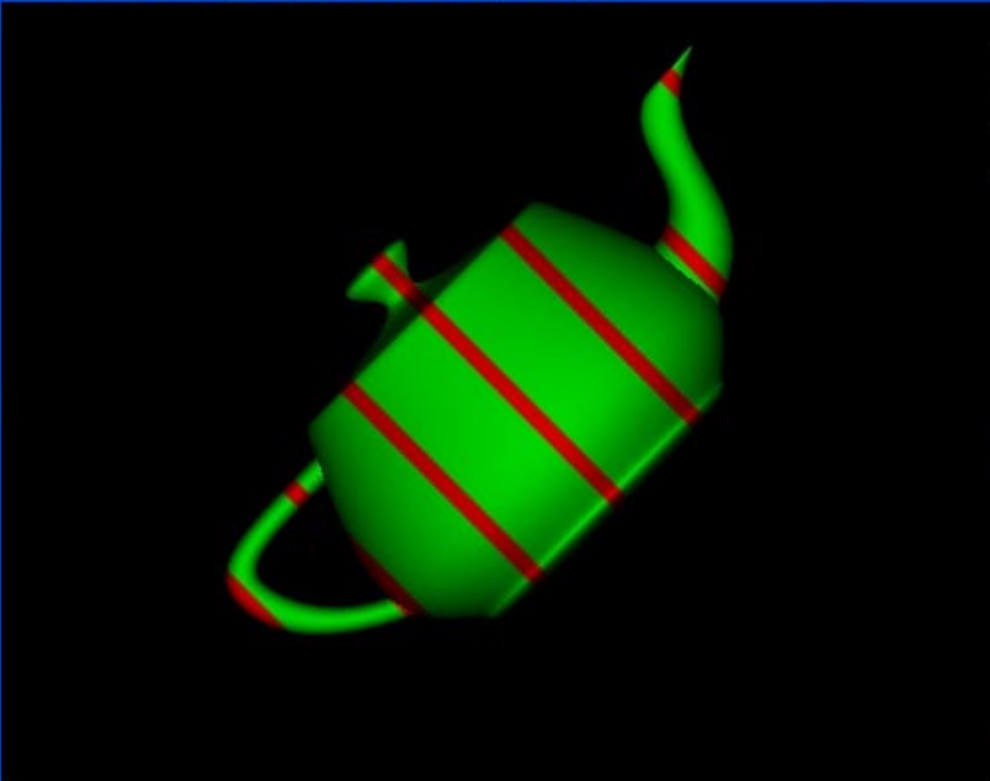
texbind.tcl

An example of the OpenGL red book modified to work with Tcl3D.
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This program demonstrates using `glBindTexture()` by creating and managing two textures.

Demo:	texgen
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example texgen



Key-e SetEyeLinear
 Key-o SetObjLinear
 Key-s SetSlanted
 Key-x SetZero
 Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

RedBook

Demo scripts

- robot.tcl
- scene.tcl
- select.tcl
- shadowmap.tcl
- smooth.tcl
- stencil.tcl
- stroke.tcl
- surface.tcl
- teapots.tcl
- texbind.tcl
- texgen.tcl**
- texprox.tcl
- texsub.tcl
- texture3d.tcl
- texturesurf.tcl
- torus.tcl
- trim.tcl
- unproject.tcl
- varray.tcl
- wrap.tcl

texgen.c

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This program draws a texture mapped teapot with automatically generated texture coordinates. The texture is rendered as stripes on the teapot. Initially, the object is drawn with texture coordinates based upon the object coordinates of the vertex and distance from the plane $x = 0$. Pressing the 'e' key changes the coordinate generation to eye coordinates of the vertex. Pressing the 'o' key switches it back to the object coordinates. Pressing the 's' key changes the plane to a slanted one ($x + y + z = 0$). Pressing the 'x' key switches it back to $x = 0$.

Demo:	texprox
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example texprox

RedBook

Demo scripts

- robot.tcl
- scene.tcl
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- stencil.tcl
- stroke.tcl
- surface.tcl
- teapots.tcl
- texbind.tcl
- texgen.tcl
- texprox.tcl**
- texsub.tcl
- texture3d.tcl
- texturesurf.tcl
- torus.tcl
- trim.tcl
- unproject.tcl
- varray.tcl
- wrap.tcl

```
Key-Escape Exit
proxyComponents are 32856
proxy allocation succeeded
proxyComponents are 32859
proxy allocation succeeded
```

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

texprox.tcl

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The brief program illustrates use of texture proxies.
 This program only prints out some messages about whether
 certain size textures are supported and then exits.

Demo:	texsub
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-s Set Subtexture
Key-r Reset
Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

texsub.tcl

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This program texture maps a checkerboard image onto two rectangles. This program clamps the texture, if the texture coordinates fall outside 0.0 and 1.0. If the s key is pressed, a texture subimage is used to alter the original texture. If the r key is pressed, the original texture is restored.

Demo:	texture3d
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

texture3d.tcl

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This program demonstrates using a three-dimensional texture.
 It creates a 3D texture and then renders two rectangles
 with different texture coordinates to obtain different
 "slices" of the 3D texture.

Demo:	texturesurf
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example texturesurf

Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

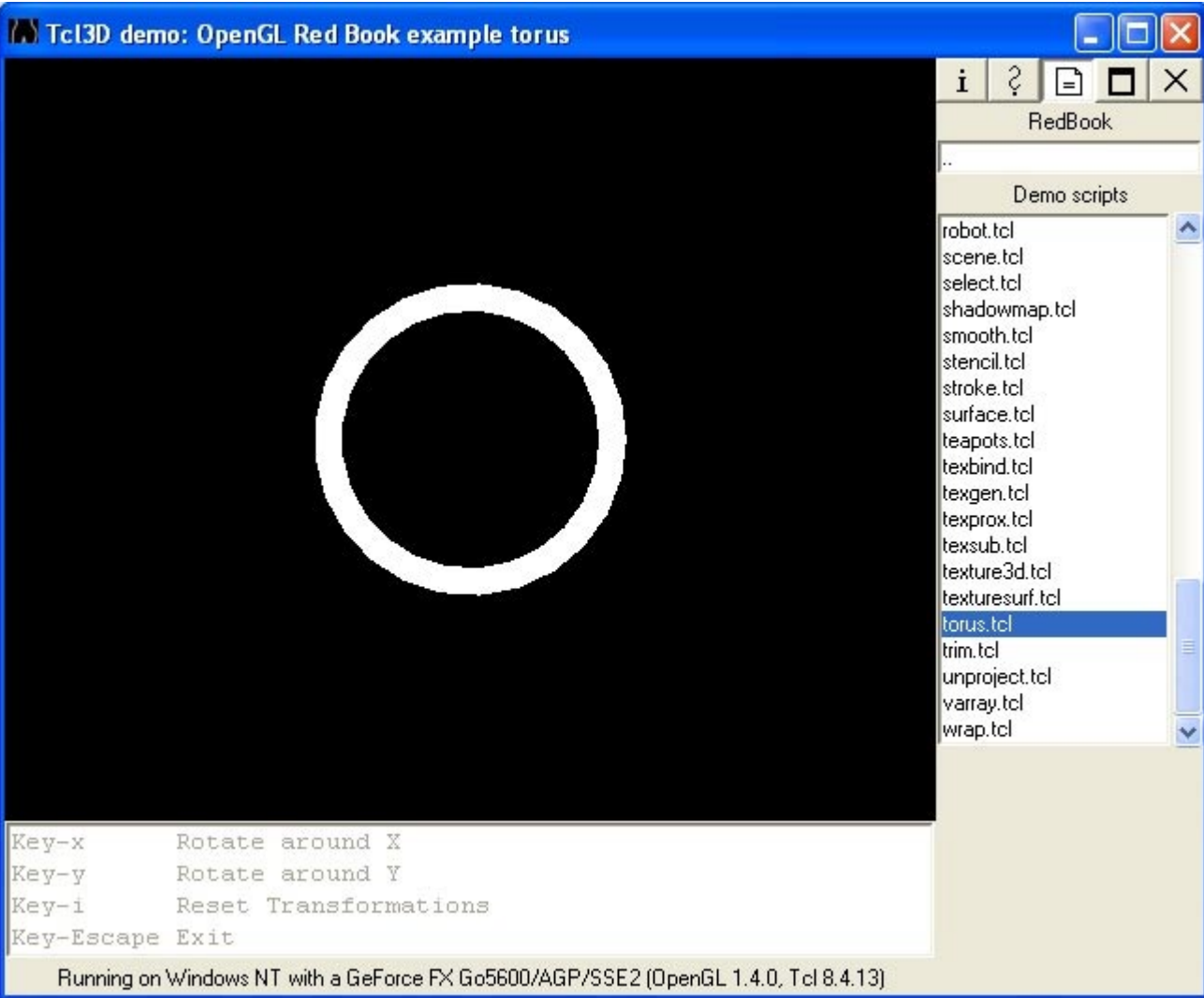
texturesurf.tcl

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This program uses evaluators to generate a curved surface and automatically generated texture coordinates.

Demo:	torus
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Tcl3D demo: OpenGL Red Book example torus



Key-x Rotate around X
 Key-y Rotate around Y
 Key-i Reset Transformations
 Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

torus.tcl

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This program demonstrates the creation of a display list.

Demo:	trim
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-Escape Exit

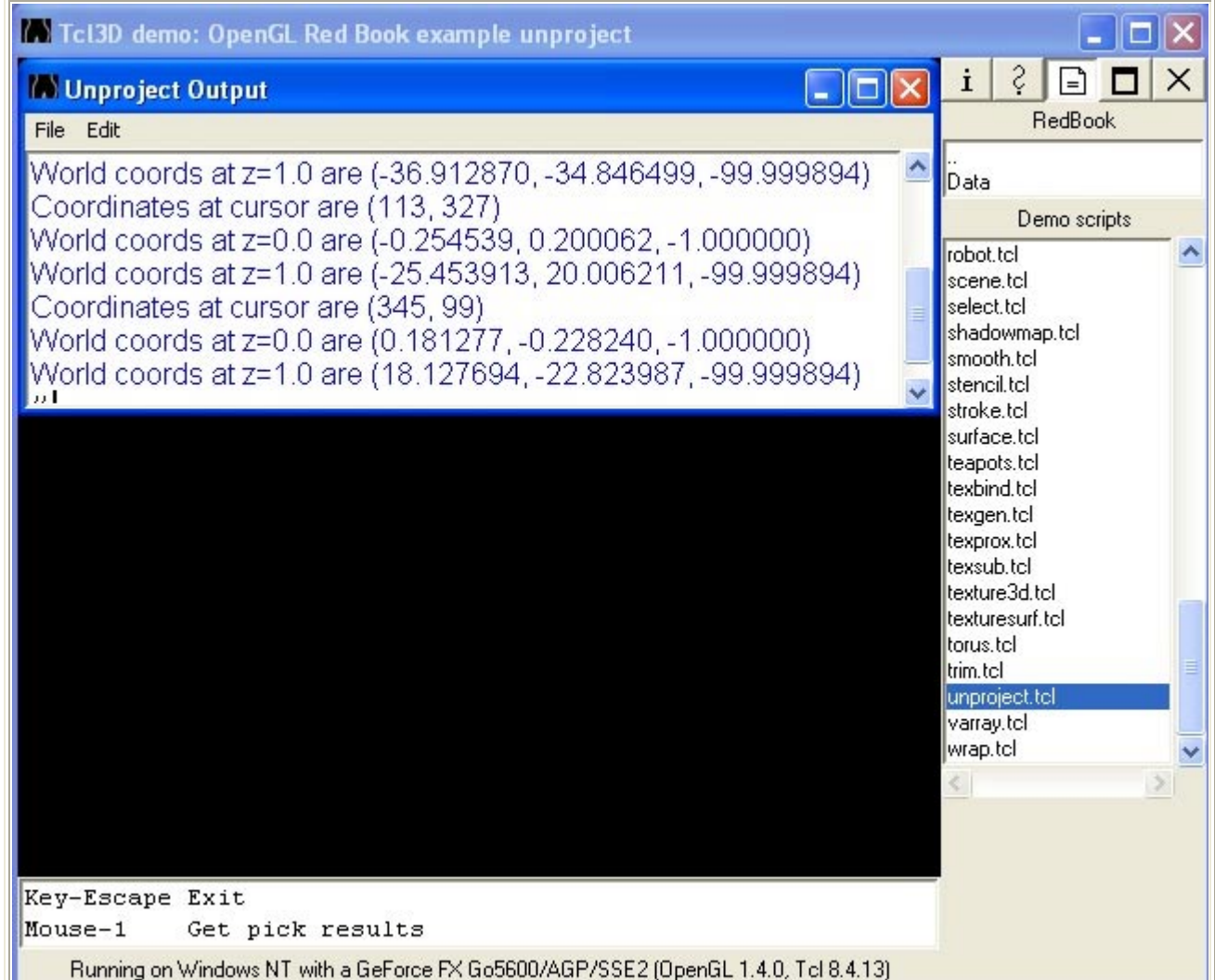
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

trim.tcl

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This program draws a NURBS surface in the shape of a symmetrical hill, using both a NURBS curve and pwl (piecewise linear) curve to trim part of the surface.

Demo:	unproject
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents



Key-Escape Exit
 Mouse-1 Get pick results
 Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

unproject.tcl

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When the left mouse button is pressed, this program reads the mouse position and determines two 3D points from which it was transformed. Very little is displayed.

Demo:	varray
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

The screenshot shows a window titled "Tcl3D demo: OpenGL Red Book example varray". The main display area shows two triangles on a black background. The left triangle is a rainbow gradient, and the right triangle is gray. To the right of the main display is a file browser window titled "RedBook" showing a list of "Demo scripts" including robot.tcl, scene.tcl, select.tcl, shadowmap.tcl, smooth.tcl, stencil.tcl, stroke.tcl, surface.tcl, teapots.tcl, texbind.tcl, texgen.tcl, texprox.tcl, texsub.tcl, texture3d.tcl, texturesurf.tcl, torus.tcl, trim.tcl, unproject.tcl, varray.tcl (highlighted), and wrap.tcl. Below the main display is a control panel with the following text:

```

Mouse-1   Toggle setup method
Mouse-2   Toggle deref method
Key-Escape Exit
Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

```

varray.tcl

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This program demonstrates vertex arrays.

Demo:	wrap
Type:	RedBook
Category:	TutorialsAndBooks
Root:	Contents

Key-s TexParameter S_CLAMP
 Key-S TexParameter S_REPEAT
 Key-t TexParameter T_CLAMP
 Key-T TexParameter T_REPEAT
 Key-Escape Exit

Running on Windows NT with a GeForce FX Go5600/AGP/SSE2 (OpenGL 1.4.0, Tcl 8.4.13)

wrap.tcl

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This program texture maps a checkerboard image onto two rectangles. This program demonstrates the wrapping modes, if the texture coordinates fall outside 0.0 and 1.0.
 Interaction: Pressing the 's' and 'S' keys switch the wrapping between clamping and repeating for the s parameter. The 't' and 'T' keys control the wrapping for the t parameter.

If running this program on OpenGL 1.0, texture objects are not used.