

3D Rendering in Windows®

*How to display three-dimensional objects
in Windows® with and without OpenGL®*

...just the color figures for those who got the B&W paperback...

by D. James Benton

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Foreword

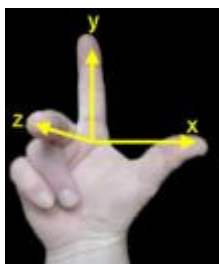
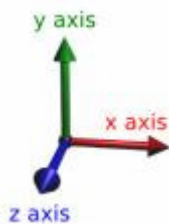
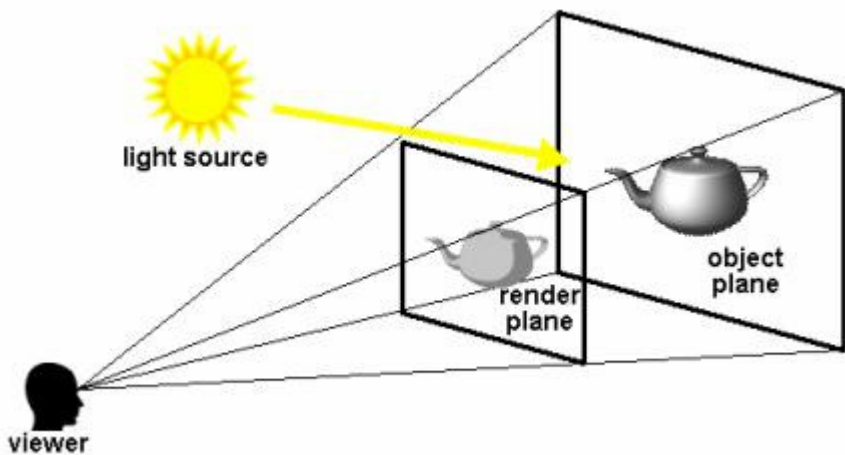
This is a how-to guide on rendering three-dimensional objects. The target operating system is Windows®, but these same principles and techniques could be used in other contexts. The primary implementation is based on OpenGL®, but alternate rendering systems are also presented.

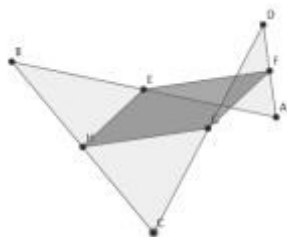
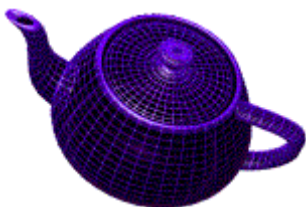
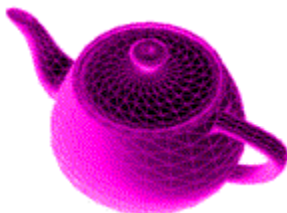
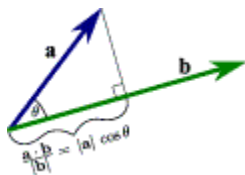
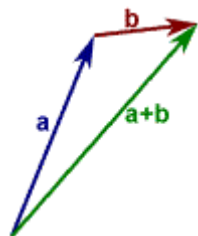
There are several obstacles for the developer to overcome in order to use OpenGL® on the Windows® operating system. The Microsoft® C compiler will no longer build the examples originally provided by Silicon Graphics® without modifications. I have fixed scores of them. They can be downloaded from my web site.

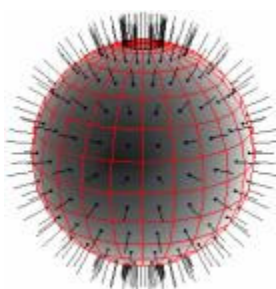
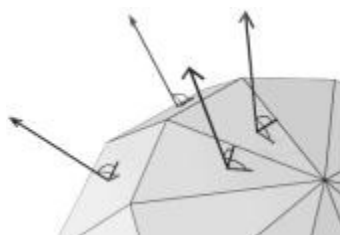
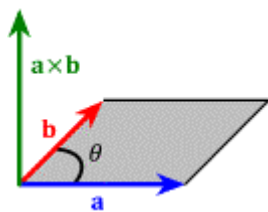
Microsoft® supported—even promoted—OpenGL® before their own system, DirectX®, provided 3D rendering. Microsoft® currently tolerates the existence of OpenGL®, much like they tolerate the existence of Apple® computers and Linux®. They do nothing to facilitate support and have made more than enough changes to their C compiler to frustrate all but the most persistent developers.

The creators of OpenGL®, Silicon Graphics, Inc., filed for bankruptcy in 2009. There is no longer an official OpenGL® SDK, but there is an extensive and fiercely loyal user and support community, so that OpenGL® will persist for a long time to come. The video graphics hardware developers are heavily invested in the survival of OpenGL®, as Microsoft® controls DirectX®.

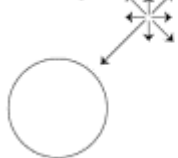
*All of the examples contained in this book,
(as well as a lot of free programs) are available at...*



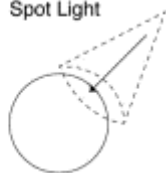




Point Light



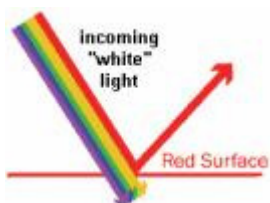
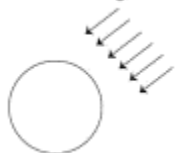
Spot Light



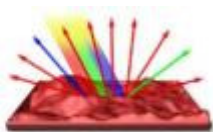
Ambient Light



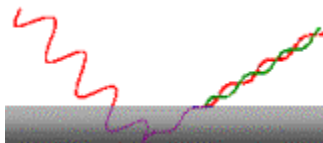
Directional Light

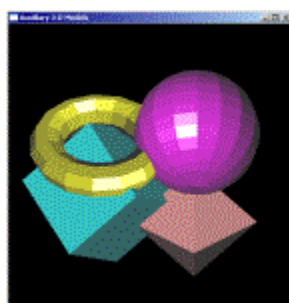
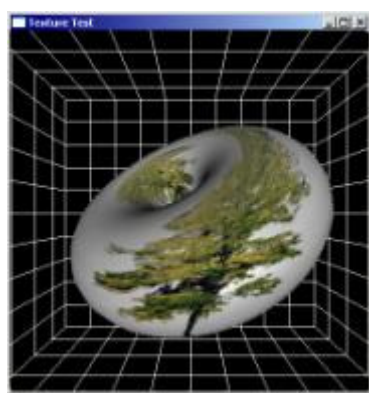
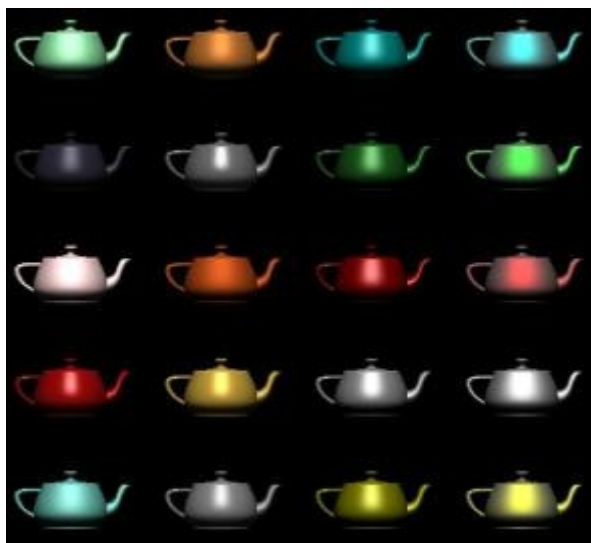


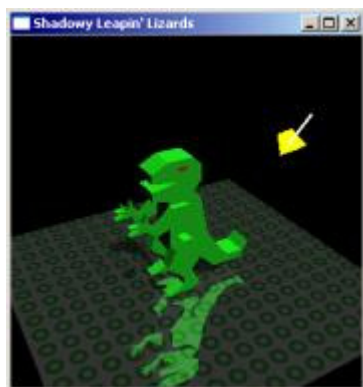
Specular Reflection

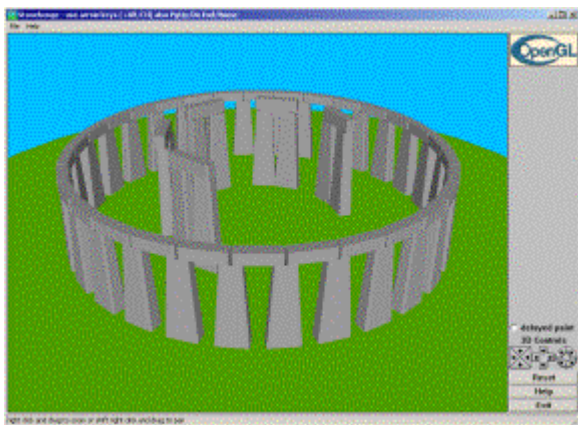
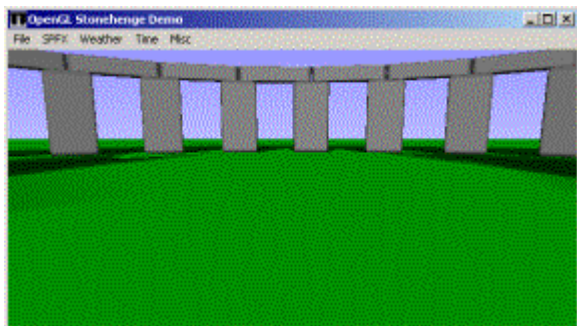
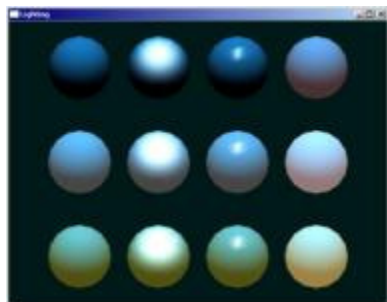


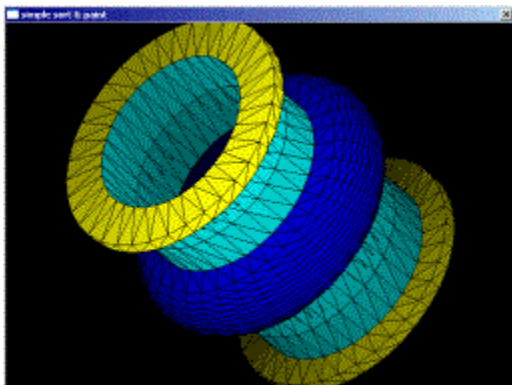
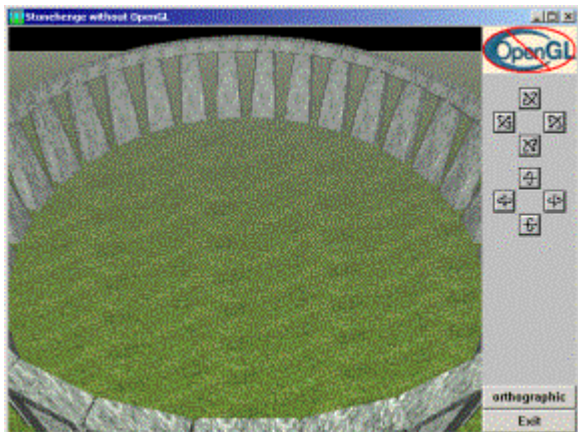
Diffuse Reflection

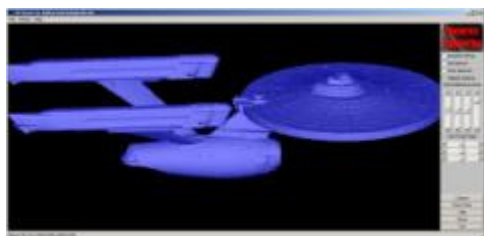
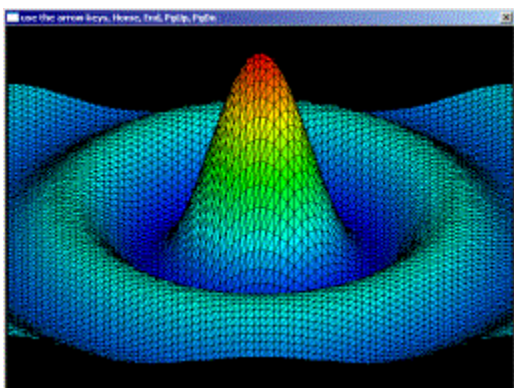
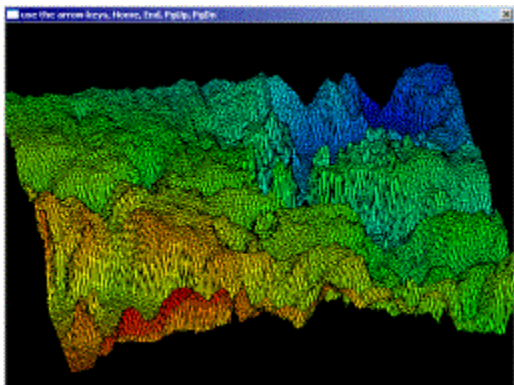


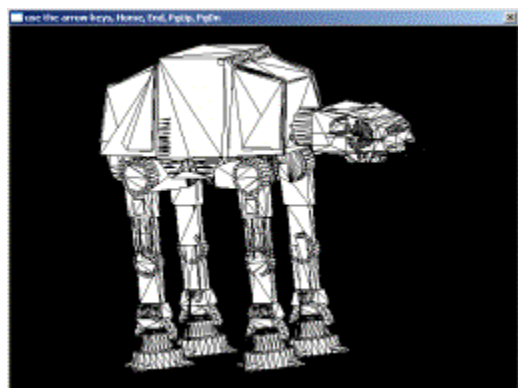
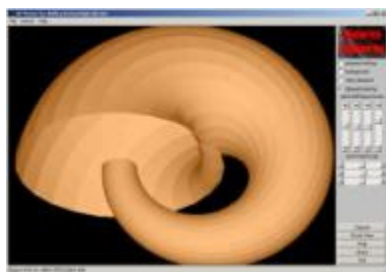


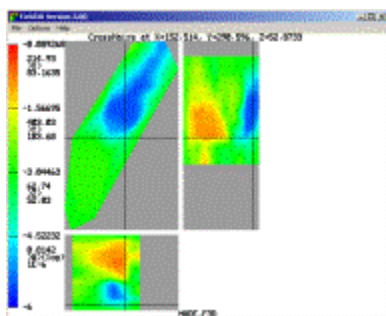


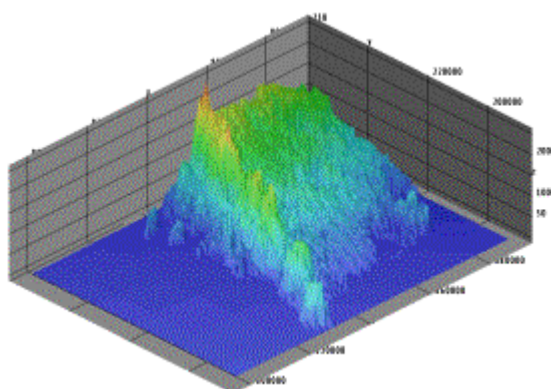
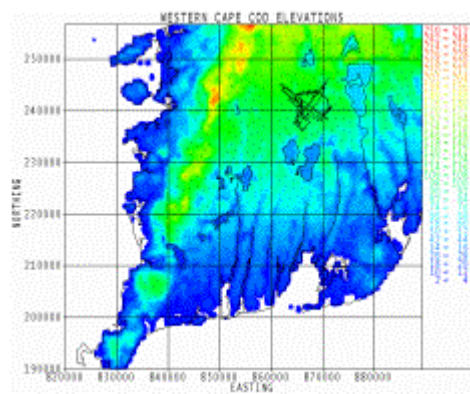
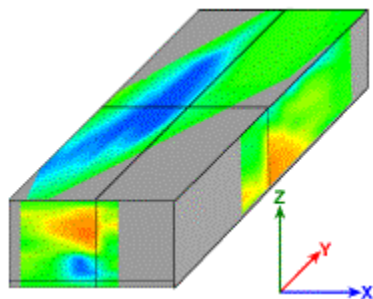












*Find the path to glory,
Or not—*

*If a parcel of evil we hold,
Gambler, taking from a Million,
Lost, how can this lost victory
Against the evil Rebels' Empire...*

*Along the battle, what path purport
To steal secret plans to the Empire's
Ultimate weapon, the Death Star, an
Armored space station with enough
power to destroy an entire planet.*

*Pursued by the Empire's sinister agents,
Princess Leia races home aboard her
starship, custodian of the stolen plans
that can save her people and restore
freedom to the galaxy....*



