

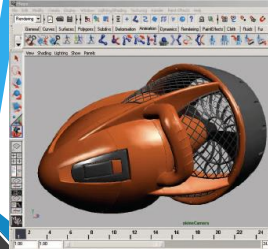
Uses of Digital Graphics

- Creative Expression
- Presenting Information
- Communicating Ideas
- Exploring New Ideas
 - **Scientific visualization** uses computer graphics to provide visual representations that improve our understanding of some phenomenon.



Uses of Digital Graphics

- Entertainment
- Documenting Life
- Designing Real-World Objects
 - **Computer-assisted design (CAD) software** assists designers, engineers, and architects in designing three-dimensional objects.



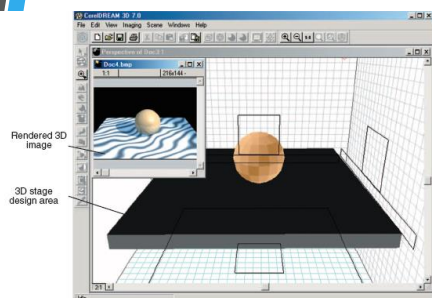
Vector Graphics Software

- Vector Graphics Software, or drawing software, provides tools to create, arrange, and layer graphical objects on the screen to create pictures.



3D Modeling Software

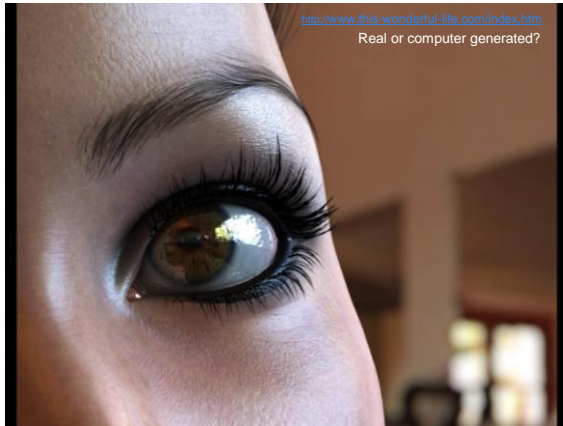
- 3D Modeling Software provides graphics tools that allow artists to create pictures of realistic 3D models.
 - Objects are created using a wire framework.
 - Surface textures are applied to the objects.
 - Light source is defined.
 - The scene is rendered – lighting, shapes, and surfaces are calculated to create a 3D appearance on a 2D display.



3D Modeling is sometimes referred to as **Ray Tracing**. <http://www.itrc.org/>



Real or computer generated?
<http://www.strata.com/showcase.asp>

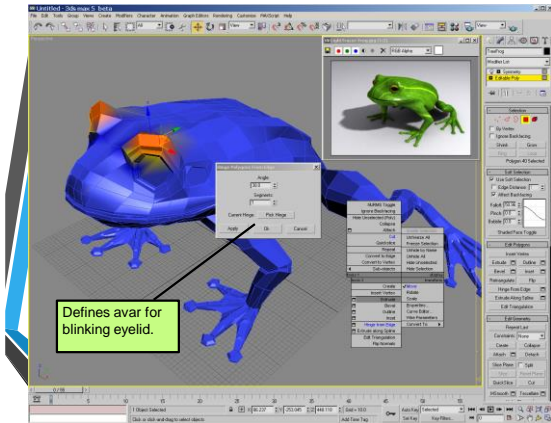


Computer Animation

- 2D Animation
 - Animated GIFs
 - [Macromedia Flash](#)
- 3D Animation
 - Involves rendering 24 3D images per second.
 - Expensive Software
 - Avars are used to provide hinges for movements of characters.
 - <http://www.pixar.com/howwedoit/index.html>



*Another Example: Total Immersion
D-Fusion*



Digital Animation Software

- Softimage/XSI v3.0 \$13,000
http://www.softimage.com/products/face_robot/video_gallery
- 3ds + Reactor = \$1,795
<http://www4.discreet.com/showandtell/showandtell.php?id=465#>
- Lightwave 3D, \$1,595
<http://www.newtek.com/products/lightwave/lw-gallery/videos/index.html>
- Renderman \$ 5,500 <https://renderman.pixar.com/>