REPRESENTING LIGHT IN THE DIGITAL REALM

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Scope

- To present you ways of representing light and lighting designs
- To understand the difference in conveying information to different audiences
- To aid you with the presentation of your lighting design scheme

Use of light and shadow to communicate 3d space



Use of light and shadow to communicate 3d space





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Post-war affluence



Representing lighting design

Lighting can be represented on a screen for conveying information on the:

quantitative characteristics of light
(intensity, energy, decay, multiple sources etc.)



Representing lighting design

Lighting can be represented on a screen for conveying information on the:

Qualitative characteristics of light (position of source, shadows, color, projection)



quantitative

Help us to define numerical values on the effects of light on surfaces

Usually used to determine if lighting is appropriate for certain tasks

Can lead to optimizations for energy use and glare control



qualitative

Help us to define the aesthetic qualities of a space

Accurate projection of shadows provides more contrast information

Depiction of material textures and translucency inform us on the absolute behaviour of light on surfaces



3d space

Cartesian coordinate system with three axes

The centre of the coordinate system is 0, 0, 0.

The position on each axis corresponds to 0

The position of any point is identified by three numbers (x, y, z) corresponding to the distance from each axis



topology

Main topological characteristic is the point

Two connected points create one line

Three or more connected points form a surface

Five or more surfaces form an object



creation

Extrusion of a surface













NURBS (Non Uniform Rational B-Spline)



Transformation



Transformation



Parametric transformation (bend)



Parametric transformation (twist)



Parametric transformation (compress)



camera





24mm, 35mm and 85mm

lens



cone of vision



hither



hither



cone of vision



depth of field

Far focus



Near focus



exposure

F STOP 2.8



F STOP 5.6



qualities of light



intensity



smoothness



colour



projection



projection



movement



shadow



defines spatial relationships



defines spatial relationships



defines characteristics of shape



defines same colour objects



defines same colour objects



blends in with darkness



key light

Defines the position of the main lighting source

The most bright light source

Defines the colour and contrast of the shadows



fill light

Controls the quality of the shadows

Usually placed 90 degrees from the key light

Many fill lights can be used



back light

Provides visual depth

Defines the shape of objects by projecting light from the back



3-point lighting



transparency and refraction



texture



color mapping







bump mapping

Texture map



Bump Map



bump mapping

Without bump map





specular mapping







mapping techniques



UV mapping

