

# GLOBAL ILLUMINATION

## Weekly Activity 6

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### **Texture Mapping:-**

Texture Mapping is a technique of defining surface properties in such a way that they vary as a function of position on the surface normal. Usually textures are an image mapped to the surfaces of the object. In ray-tracing I believe these are the challenges we might face.

1. Ray tracing involves the interaction of light with the objects in the scene, each objects will have their properties and surface normal to calculate the light reflected or absorbed by it, when real world images are mapped unto such objects, in real world the light might act differently when different textures are involved but in our ray tracing even if we have different images mapped to a model the interaction of light along those textured surfaces will still remain the same no matter the textures.
2. Mapping a 2D image unto the scene requires the surface of the 3D object to be unwrapped unto a 2D plane and have the 2D image mapped onto it and then wrap it back into a 3D object this is simple when 3D objects are simple figures like sphere but as the objects get complicated we have precisely determine the exact mapping of the image on the object so as to textures don't look distorted or blurred. As mentioned in the paper even a planar surface will have a texture image distorted when subjected to linear transformation.
3. The type and the resolution of the image can also be the problem when mapping unto the surface, small resolution image will produce with textures which look blocky and pixelated and higher resolution image will look noisy and static.