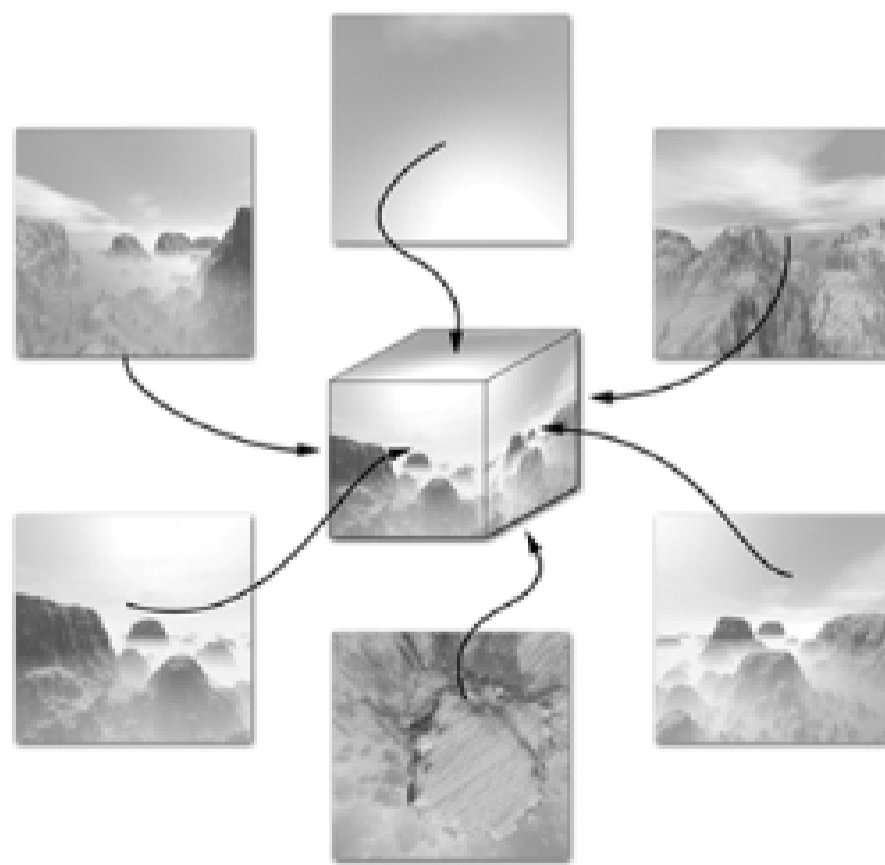
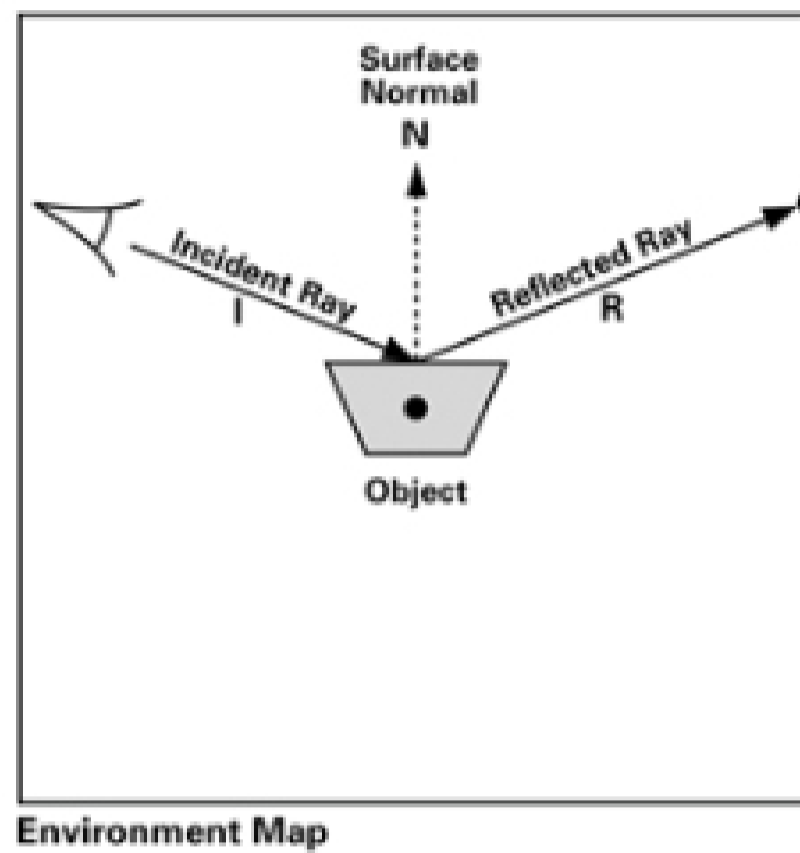


Cg Hacking

Environment Mapping

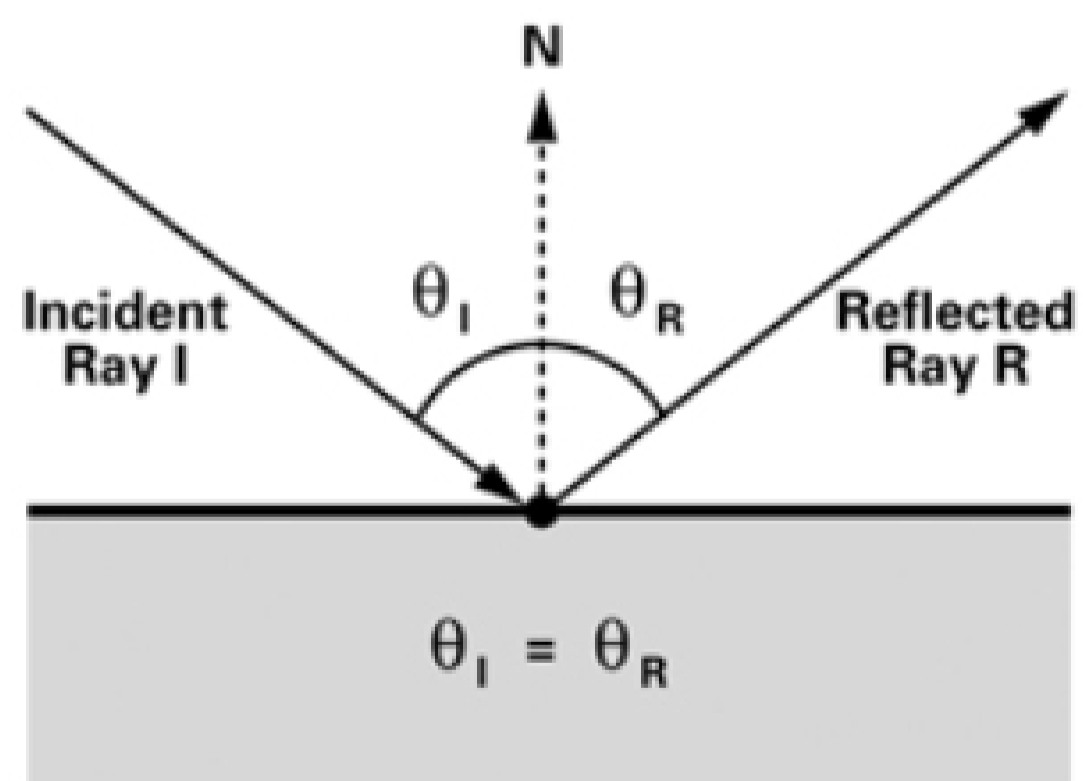


Computing Reflection Vectors



Assumptions?

Computing Reflection Vectors



Computing Reflection Vectors

$$R = I - 2N(N \cdot I)$$

- **reflect(I, N)**
 - Returns the reflected vector for the incident ray **I** and the surface normal **N**. The vector **N** should be normalized. The reflected vector's length is equal to the length of **I**. This function is valid only for three-component vectors.

Though you are better off using the Cg Standard Library routine because of its efficiency, the straightforward implementation of reflect is as follows:

```
float3 reflect (float3 I, float3 N)
{
    return I - 2.0 * N * dot(N, I);
}
```

Cg Environment Mapping

Vertex Program

- transforming the position into clip space
- passing through the texture coordinate set for the decal texture.
- computes the incident and reflected rays.

Fragment Program

- reflected ray looks up the environment map
- uses it to add a reflection to the fragment's final color.
- blend the reflection with a decal texture.
- A uniform parameter called reflectivity allows the application to control how reflective the material is.