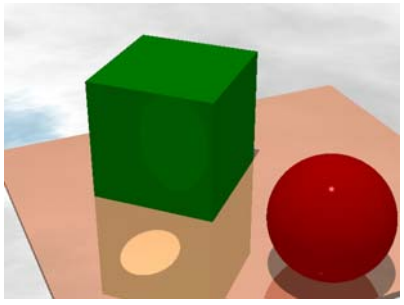
Photons

Global Illumination

- Radiosity
- Photon mapping
  - Caustics

What's surprising here?



Photons

- Global settings
- Specify light's contribution (from)
- Specify interaction with media (to)

Global Settings

```
global_settings
   { photons
       { count 20000 media 100
       }
   }
```

Shooting photons from object

```
light_source
{ MyLight
   photons
     { refraction on
       reflection on
   }
}
```

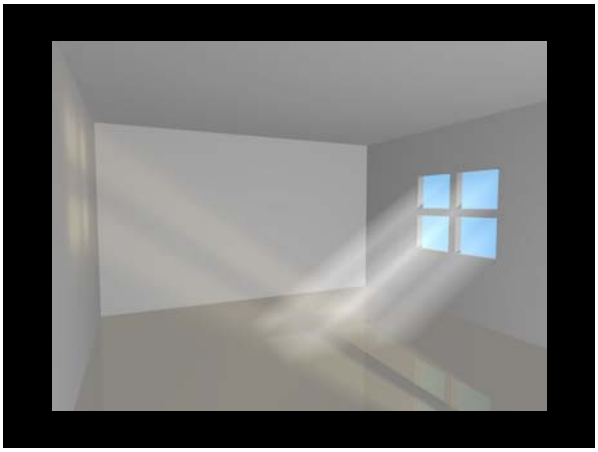
Shooting photons at object

```
Object {
   MyObject
   photons {
      [target [<spacing_multiplier>]]
      [refraction on|off]
      [reflection on|off]
      [collect on|off]
      [pass_through]
   }
```

```
global_settings
{ assumed_gamma 1
  photons
  { count 20000
    media 100
  }
}
```

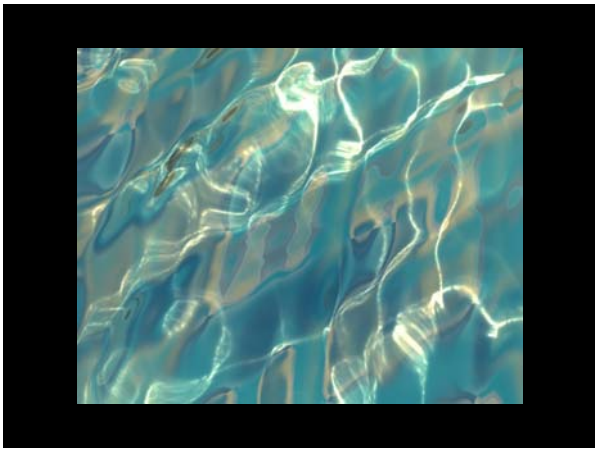
```
light_source { <10,100,150>, 1
               photons {
                 reflection on
                 refraction on
               }
             }

light_source { <14, -5, 2>, 0.5
               media_interaction off
               photons { reflection off }
             }
```

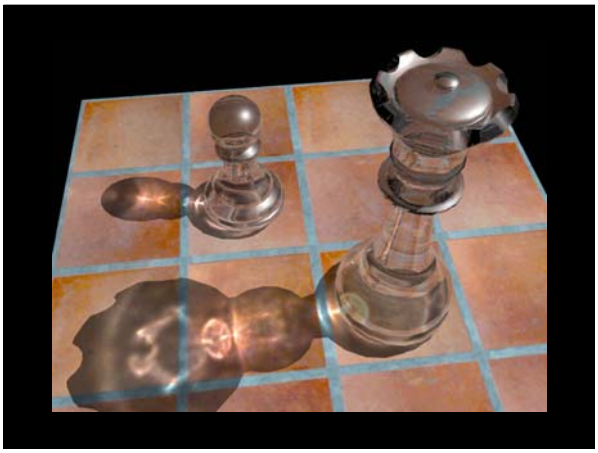
```
// Scattering media box:
box
  { <-5, -6.5, -10.5>, <3, 6.5, 10.25>
    pigment { rgbt 1 } hollow
    photons {pass_through}
    interior {
       media
        { scattering { 1, 0.07 extinction 0.01 }
          samples 30,100
        }
    }
   }
```



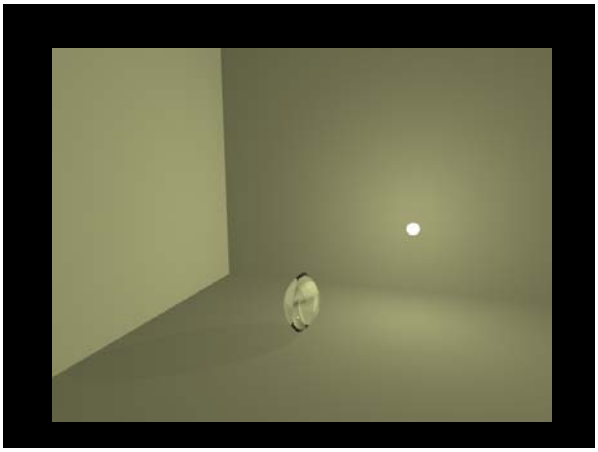
Cool Photons, pt2

- Caustics





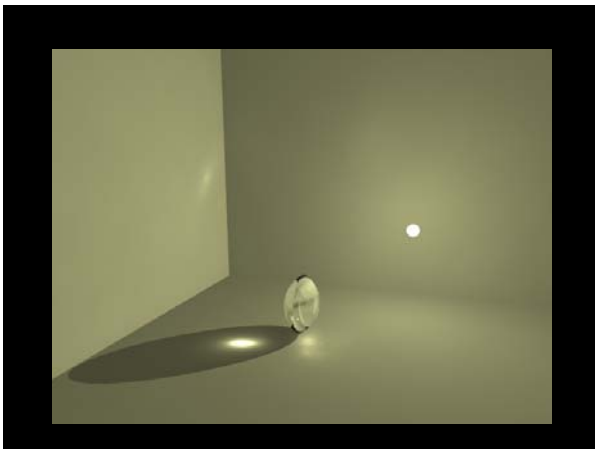
```
#declare lens = object
                {   intersection
                       { sphere {<-.5, 0, 0>, 1}
                         sphere {< .5, 0, 0>, 1}
                       }
                }


 object { lens
  pigment {color rgbt <1,1,1,.95>}
  finish {ambient 0 diffuse 0 reflection .3 }
  interior {ior 1.5}
  translate <0,2,0>
 }
```



What was missing?

```
global_settings {
  photons {
    count 20000
    autostop 0
    jitter .4
    max_trace_level 20
  }
}

light_source {
 …
  photons {refraction on
           reflection on
          }
}
```

```
object { lens
 pigment {color rgbt <1,1,1,.95>}
 finish {ambient 0 diffuse 0 reflection .3 }
 interior {ior 1.5}
 photons{
     target
     reflection on
     refraction on
  }
 translate <0,2,0>
}
```



```
object { myPrism
 pigment {color rgbt <1,1,1,.95>}
 finish {ambient 0 diffuse 0 reflection .3 }
 interior {ior 1.5
           dispersion 1.5
           dispersion_samples 40
          }
  photons{
     target
     reflection on
     refraction on
     collect off
  }

 translate <0,2,0>
}
```