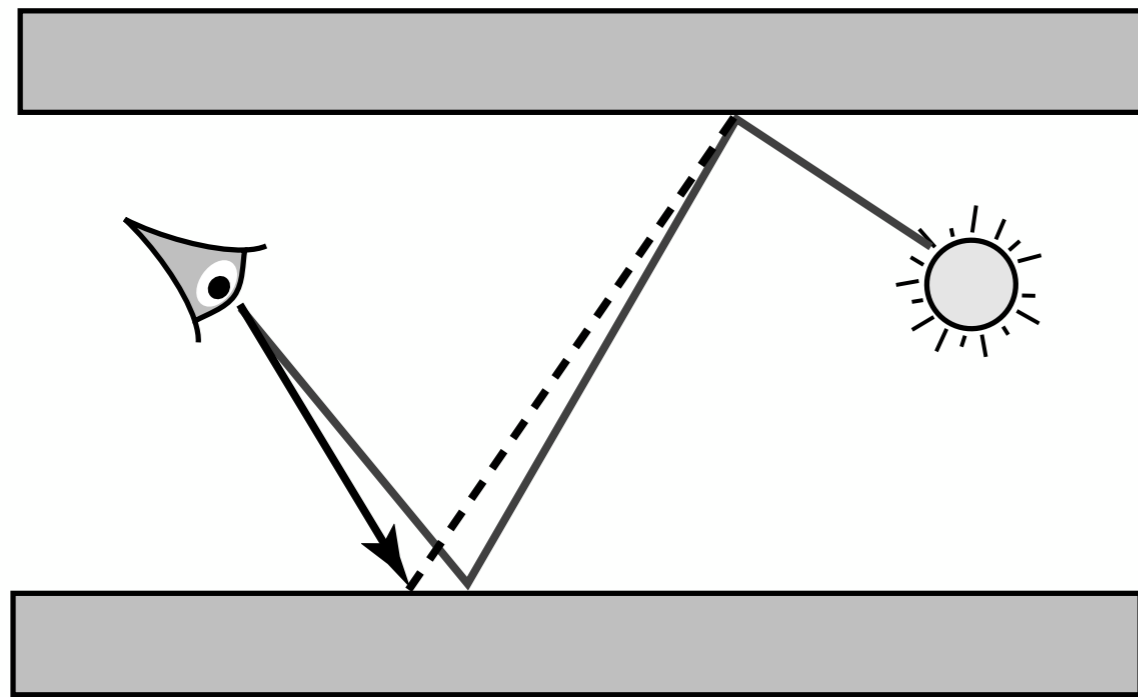
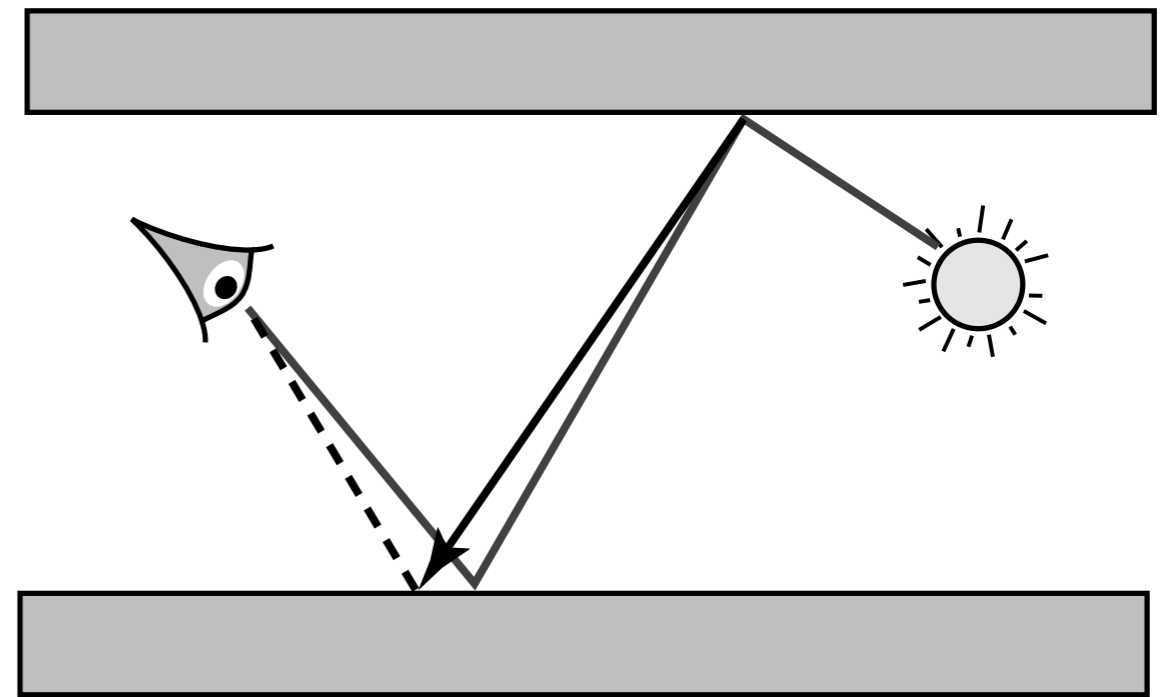


MCMC light transport methods

CS6630 lecture



Lens perturbation



Caustic perturbation

Figure 11.4: The lens edge can be perturbed by regenerating it from either side: we call these *lens perturbations* and *caustic perturbations*.

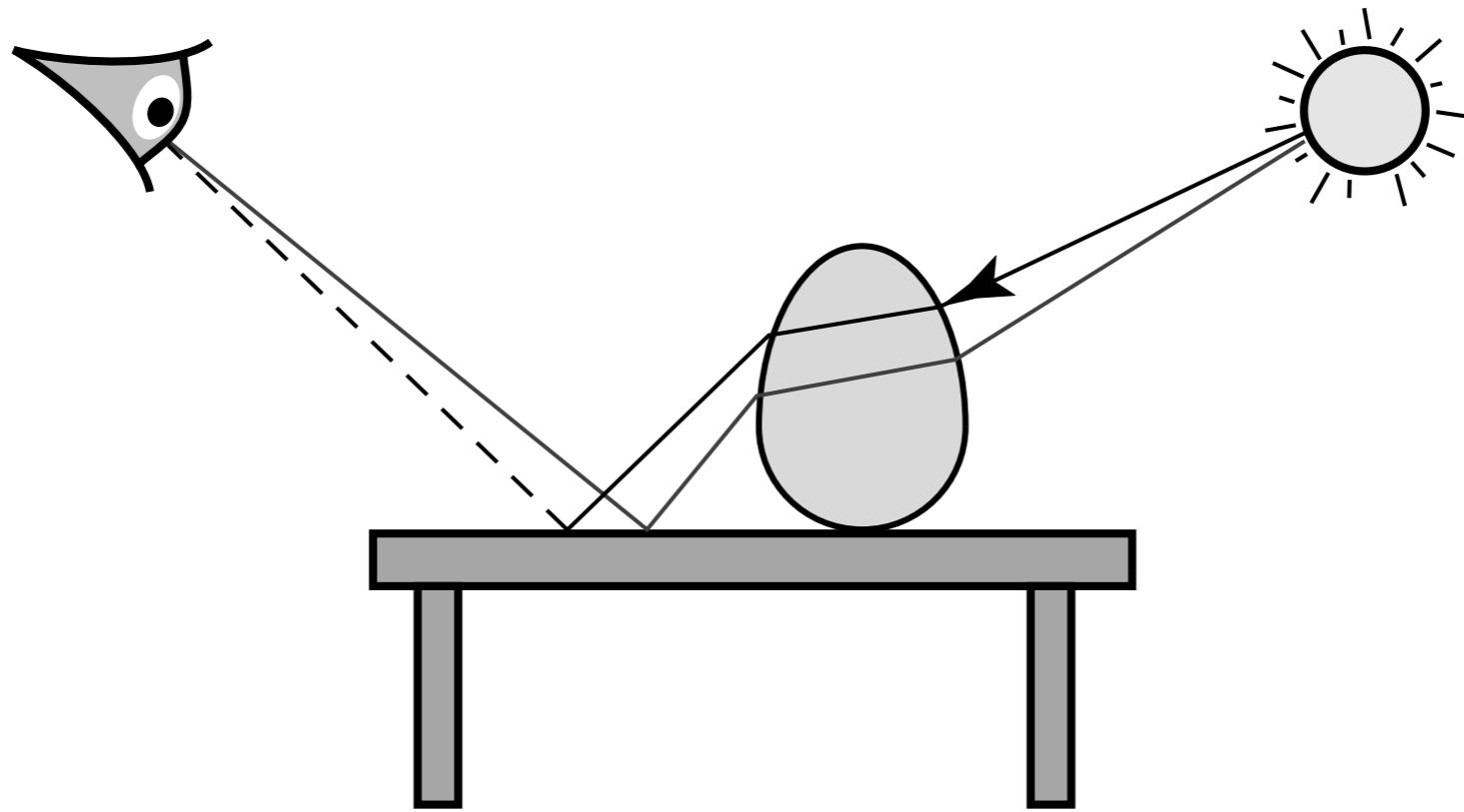


Figure 11.5: A caustic perturbation. A new path is generated by perturbing the direction of the ray from the light source by a small amount, and then tracing the perturbed ray through the same sequence of specular reflections and refractions as the original path.

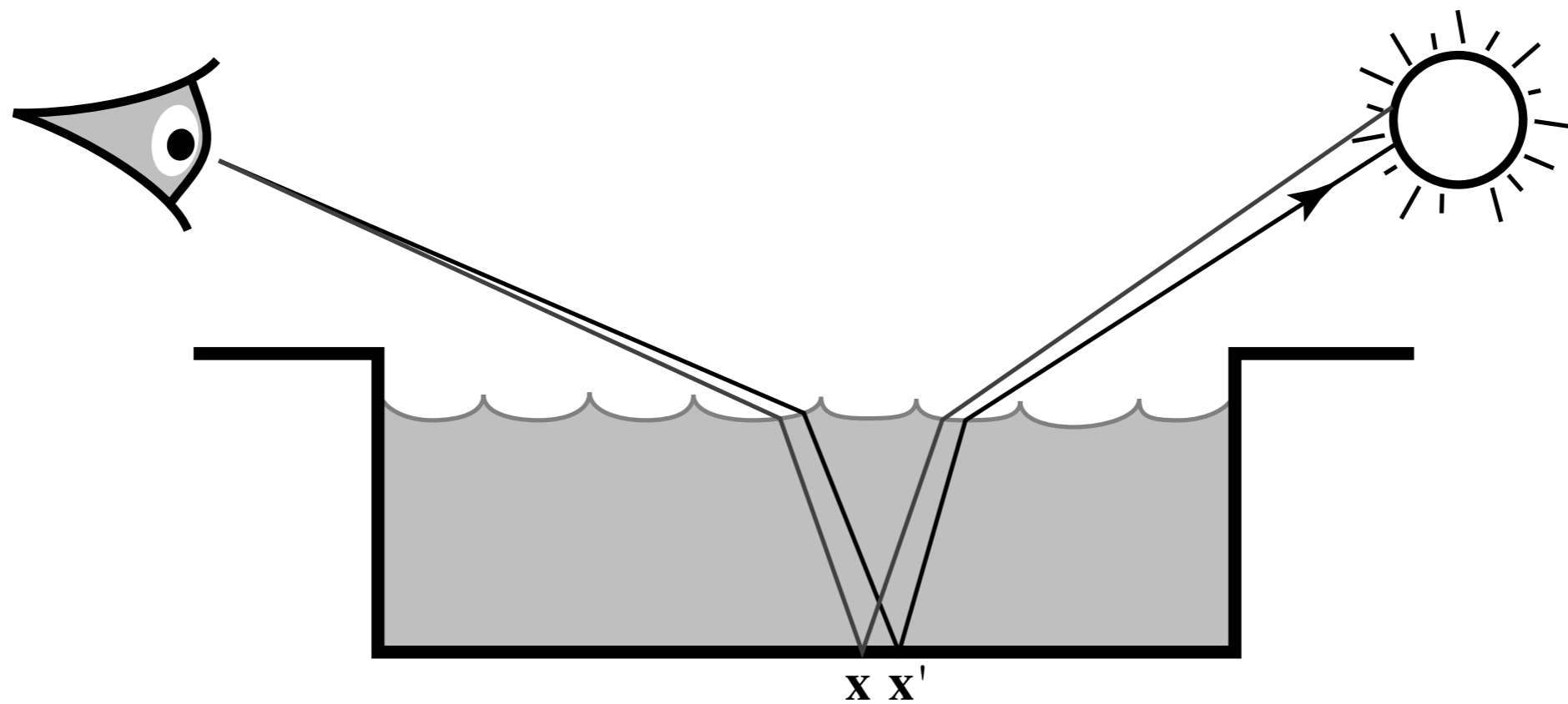
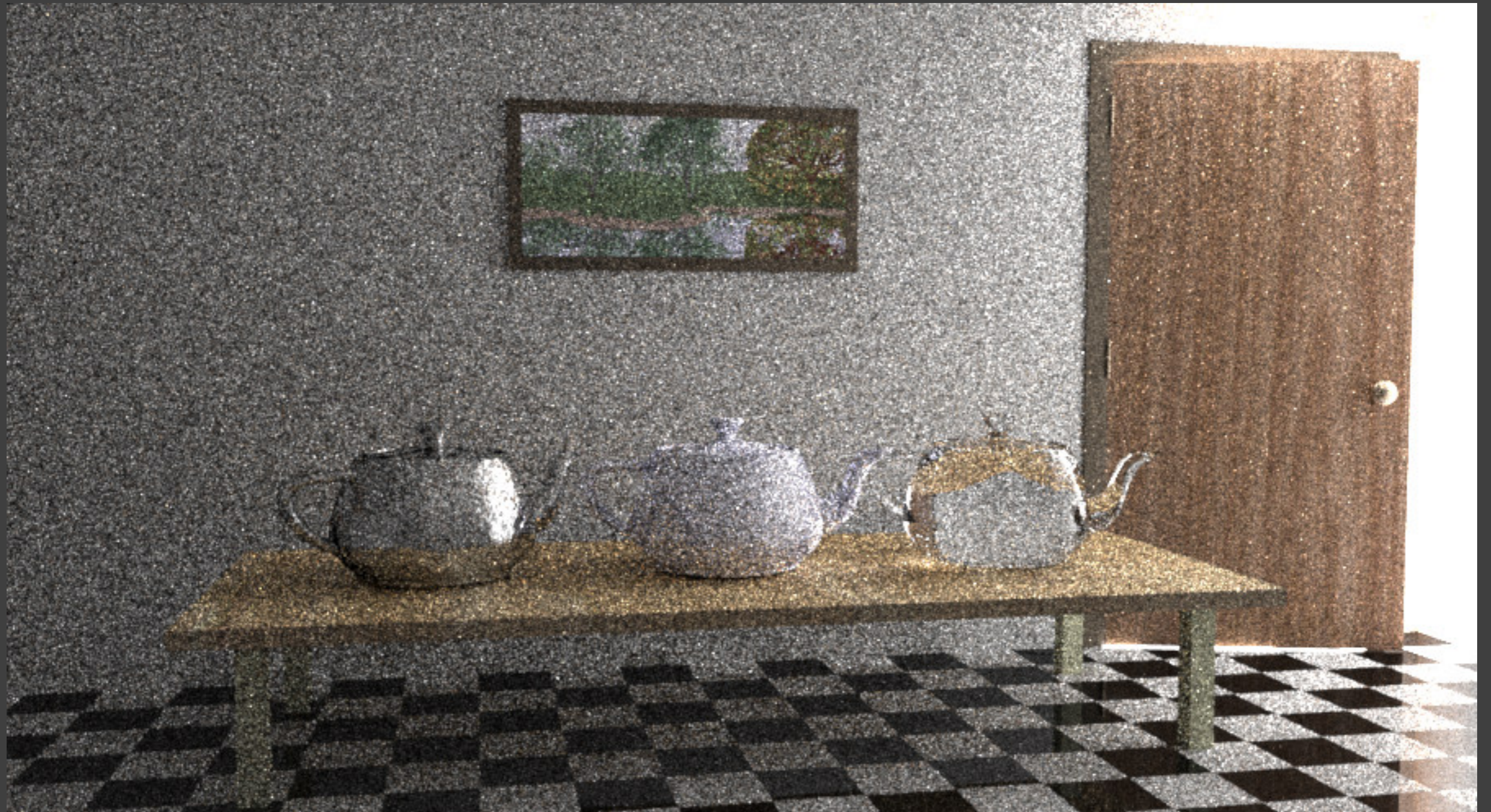


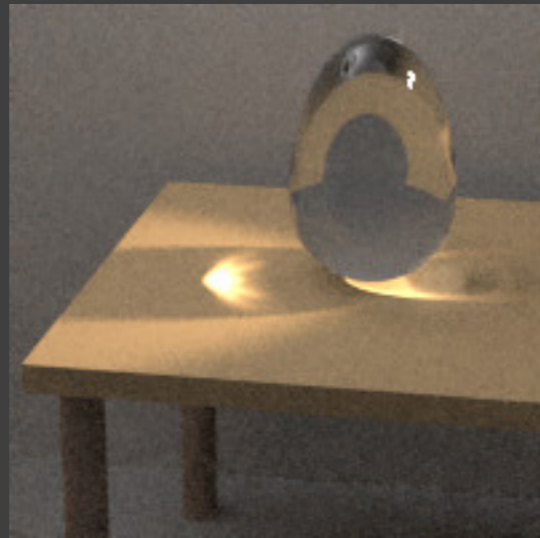
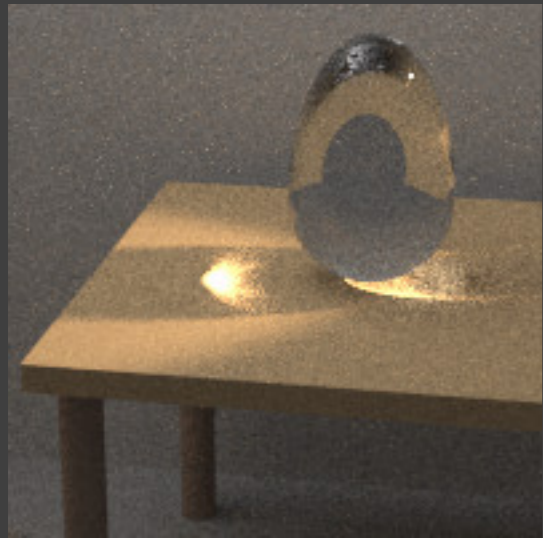
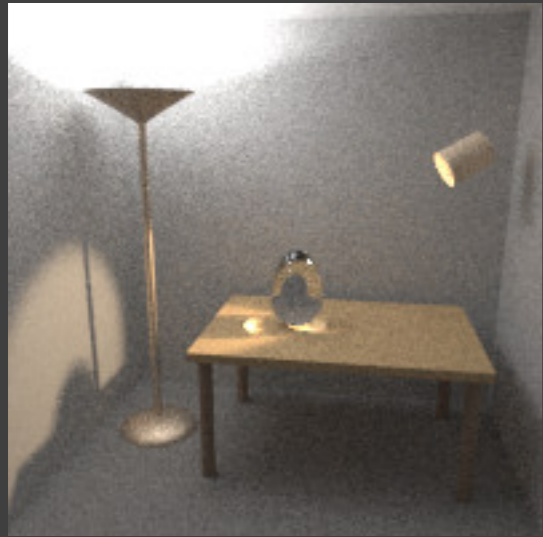
Figure 11.6: Using a two-chain perturbation to sample caustics in a pool of water. First, the lens edge is perturbed to generate a point x' on the pool bottom. Then, the direction from original point x toward the light source is perturbed, and a ray is cast from x' in this direction.



bidirectional path tracing

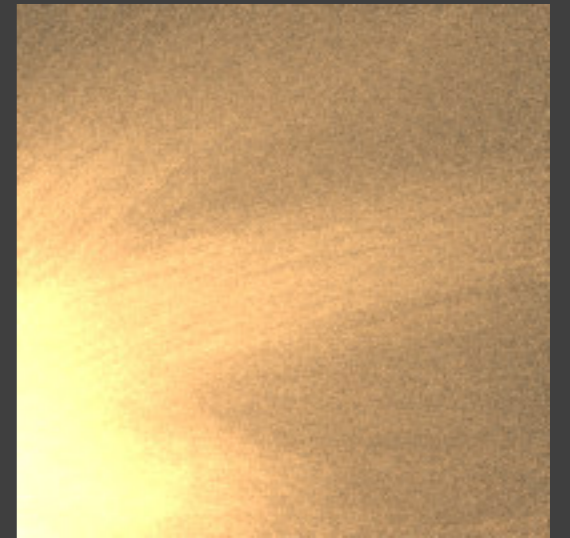
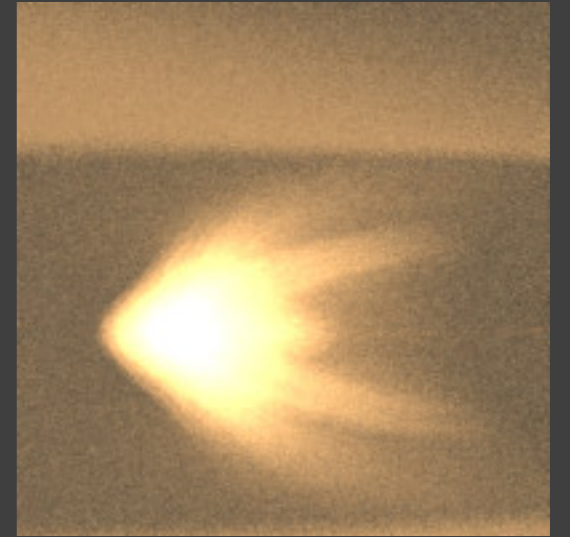
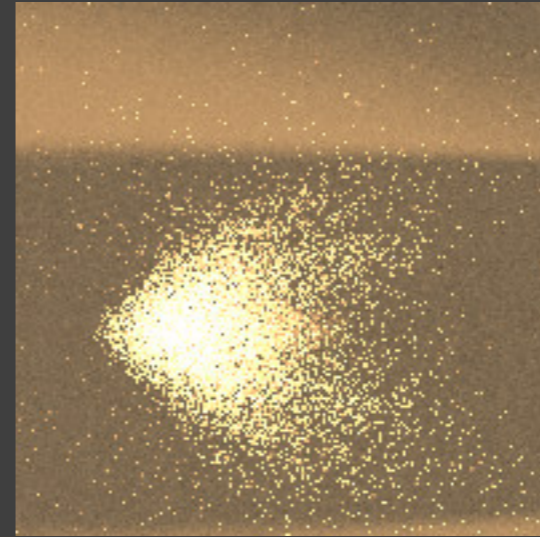


Metropolis light transport



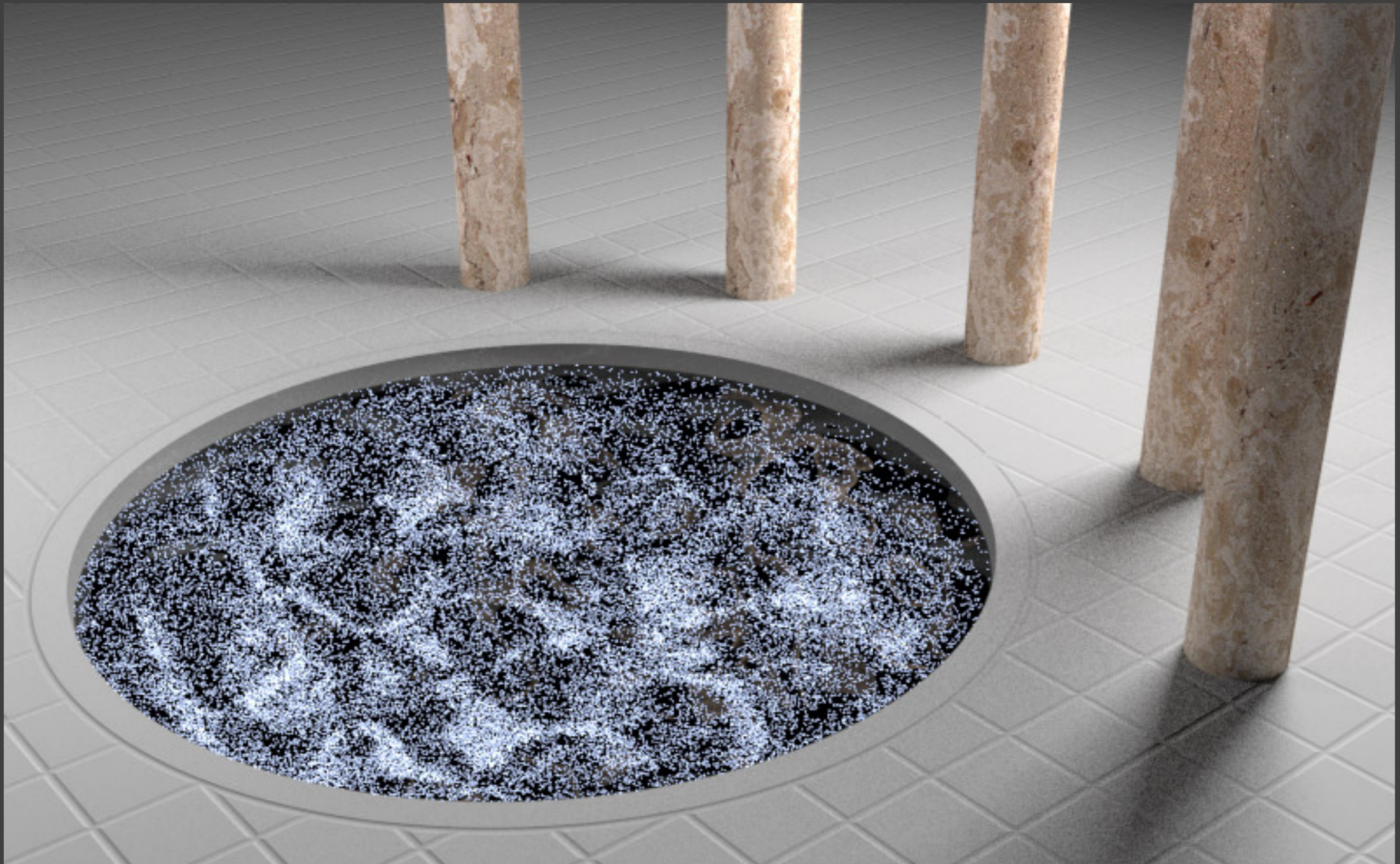
BDPT

MLT

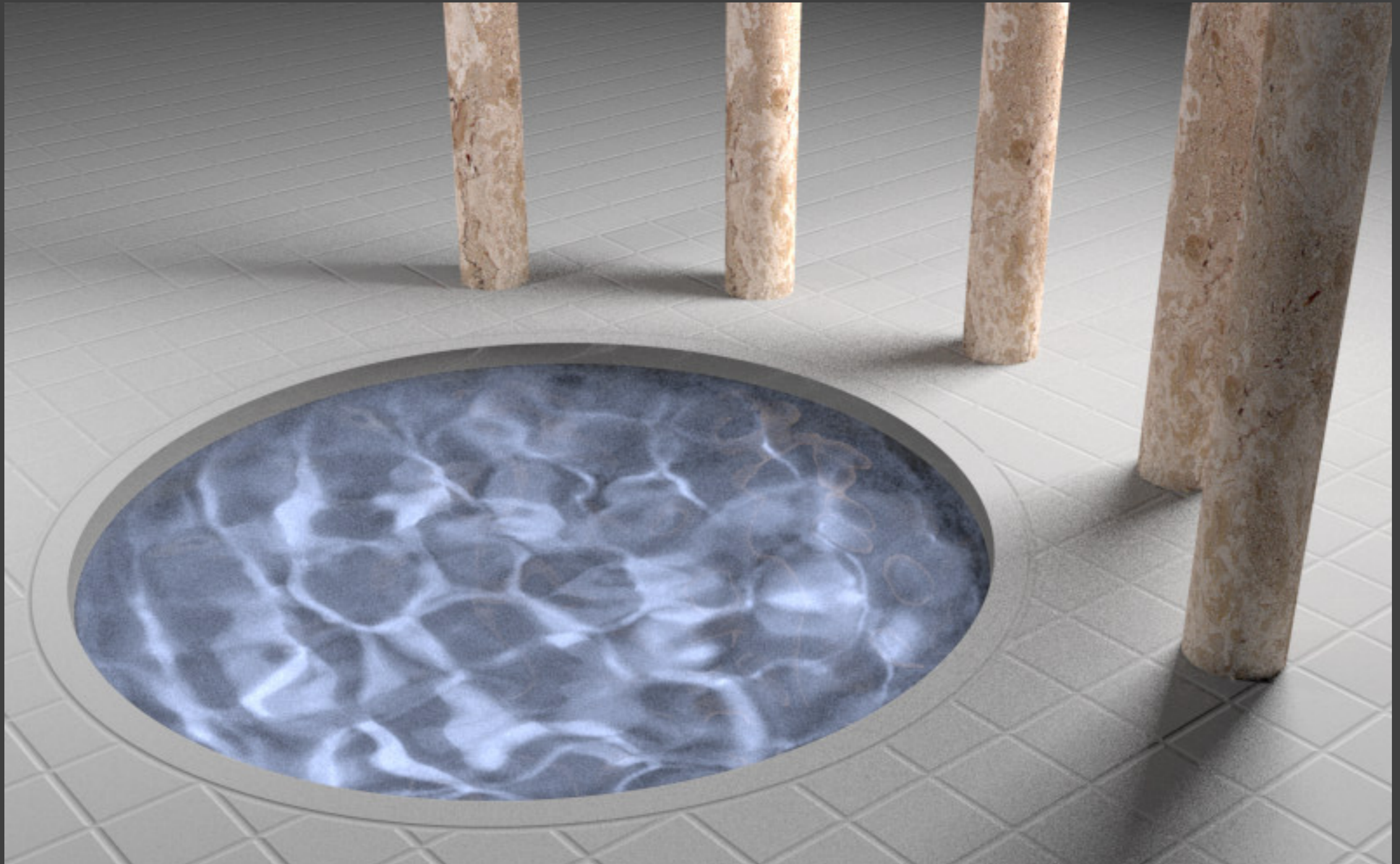


BDPT

MLT



bidirectional path tracing



Metropolis light transport



BDPT



Kelemen MLT



reference