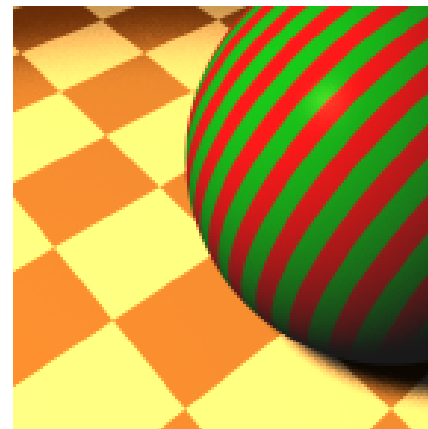
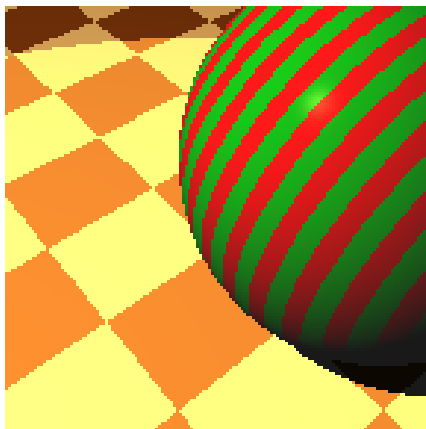
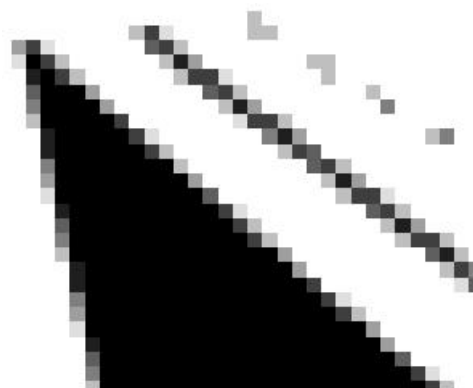
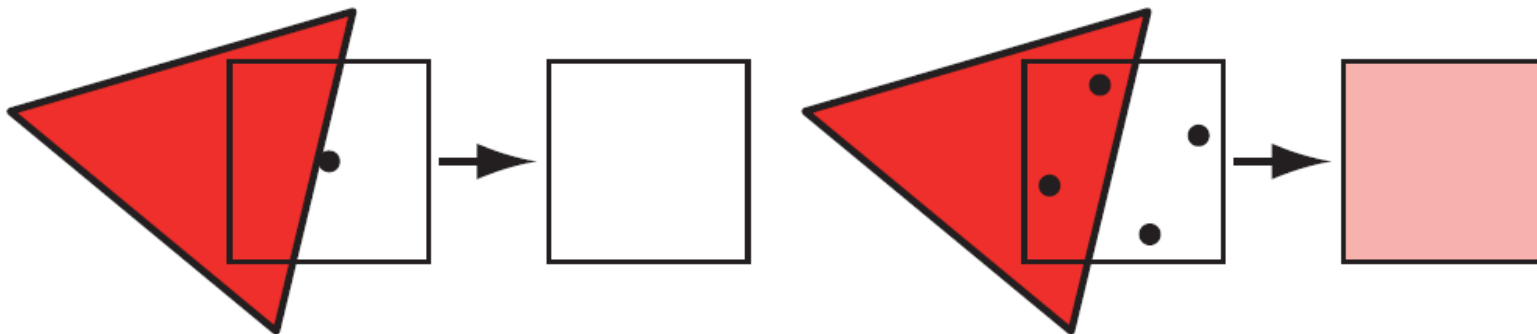


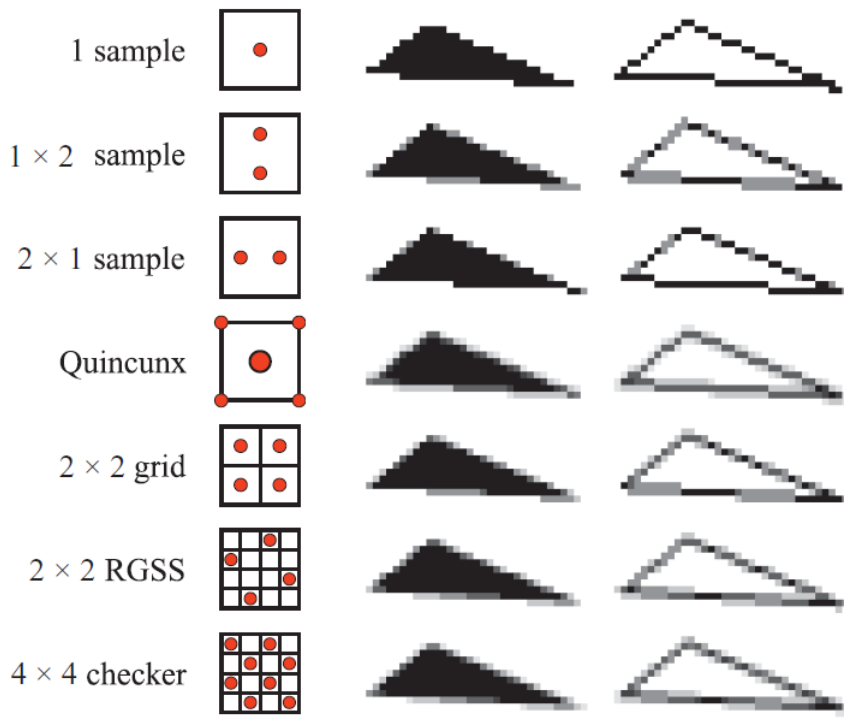
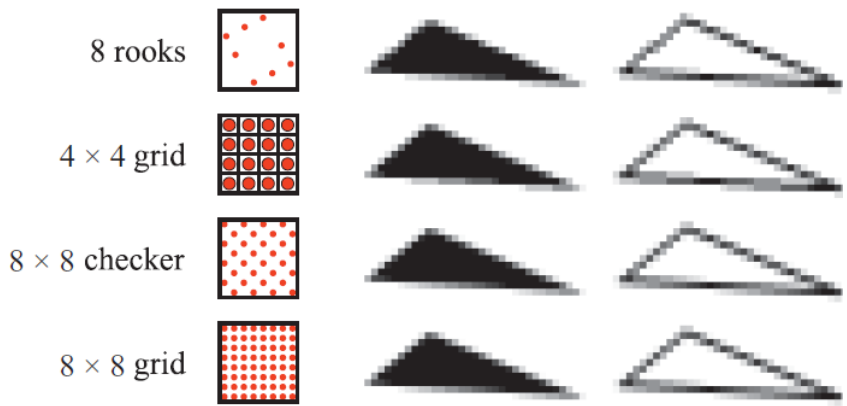
Трассировка лучей Сглаживание (anti-aliasing)

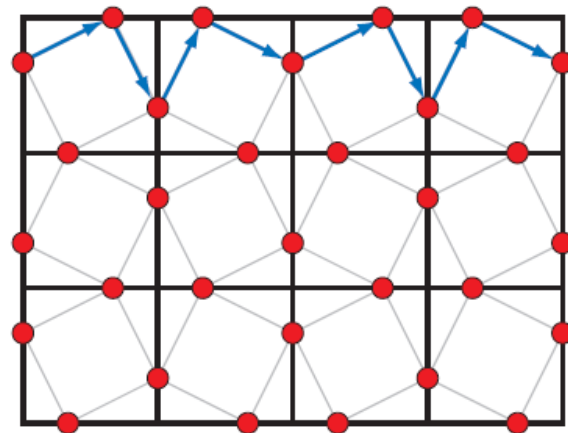
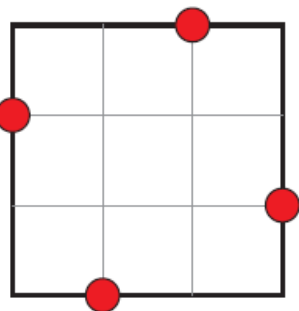
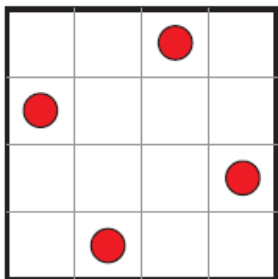
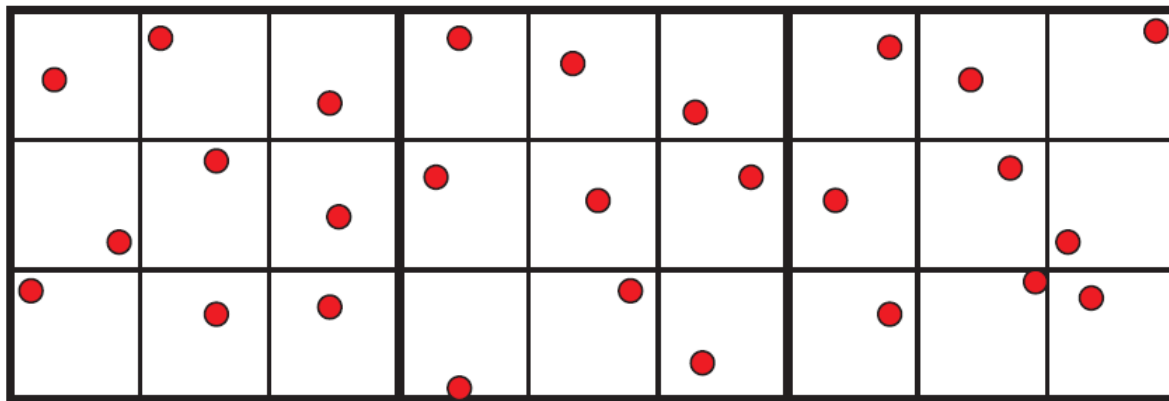
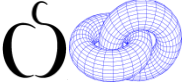
материалы занятий: <https://compsciclub.ru/courses/graphics2018/2018-autumn/classes/>
дублируются на сайте: <http://www.school30.spb.ru/cgsg/cgc2018/>

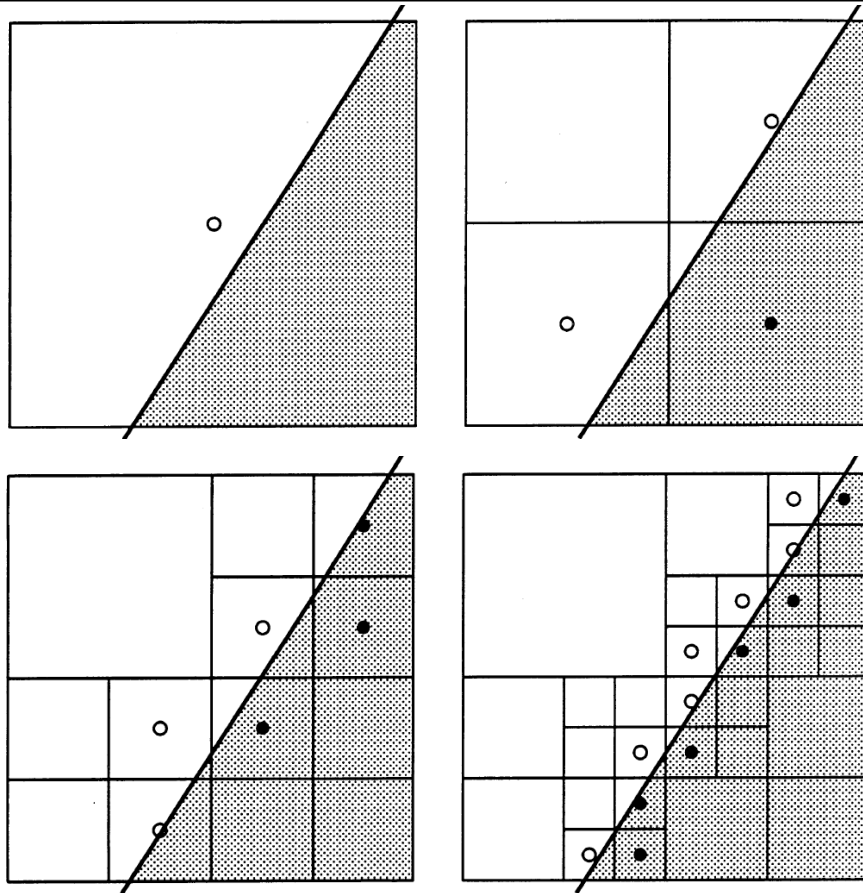
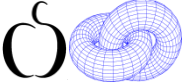


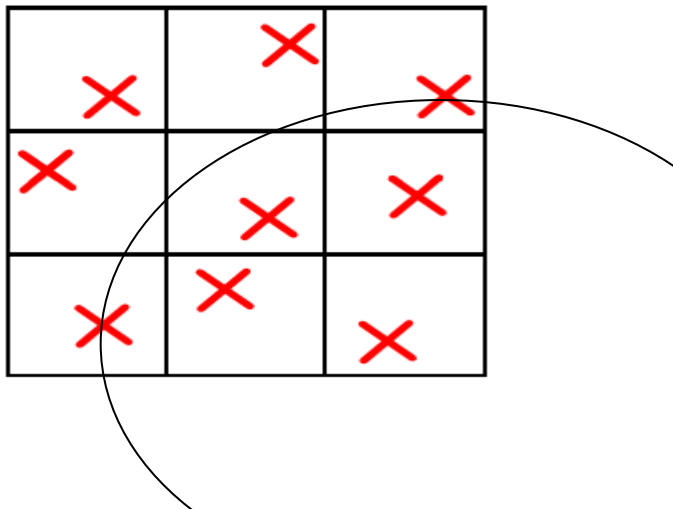


$$\mathbf{p}(x, y) = \sum_{i=1}^n w_i \mathbf{c}(i, x, y)$$





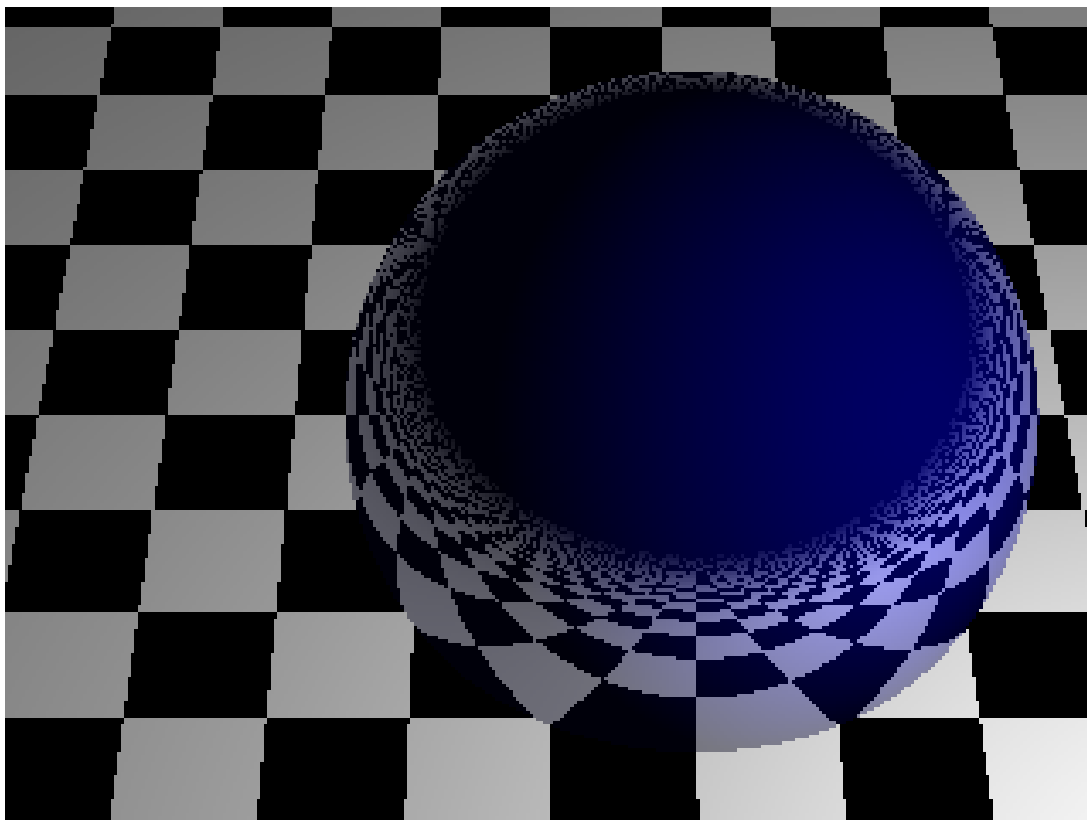
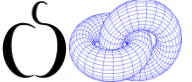


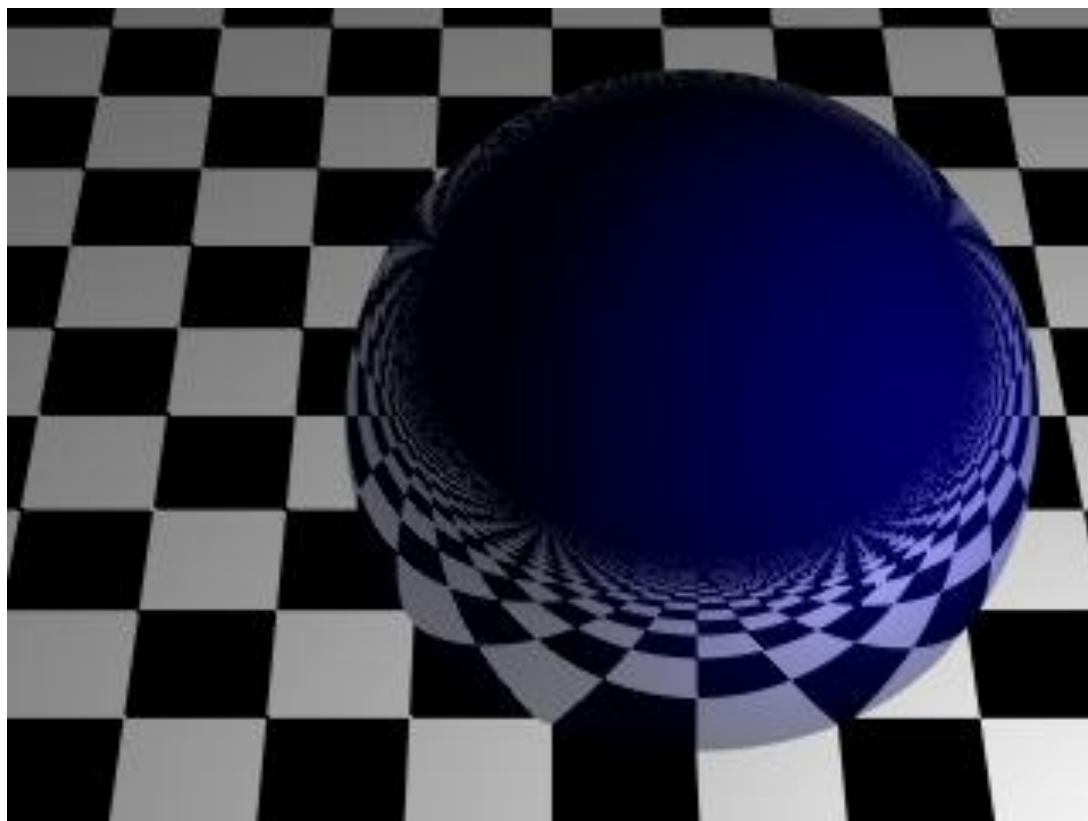


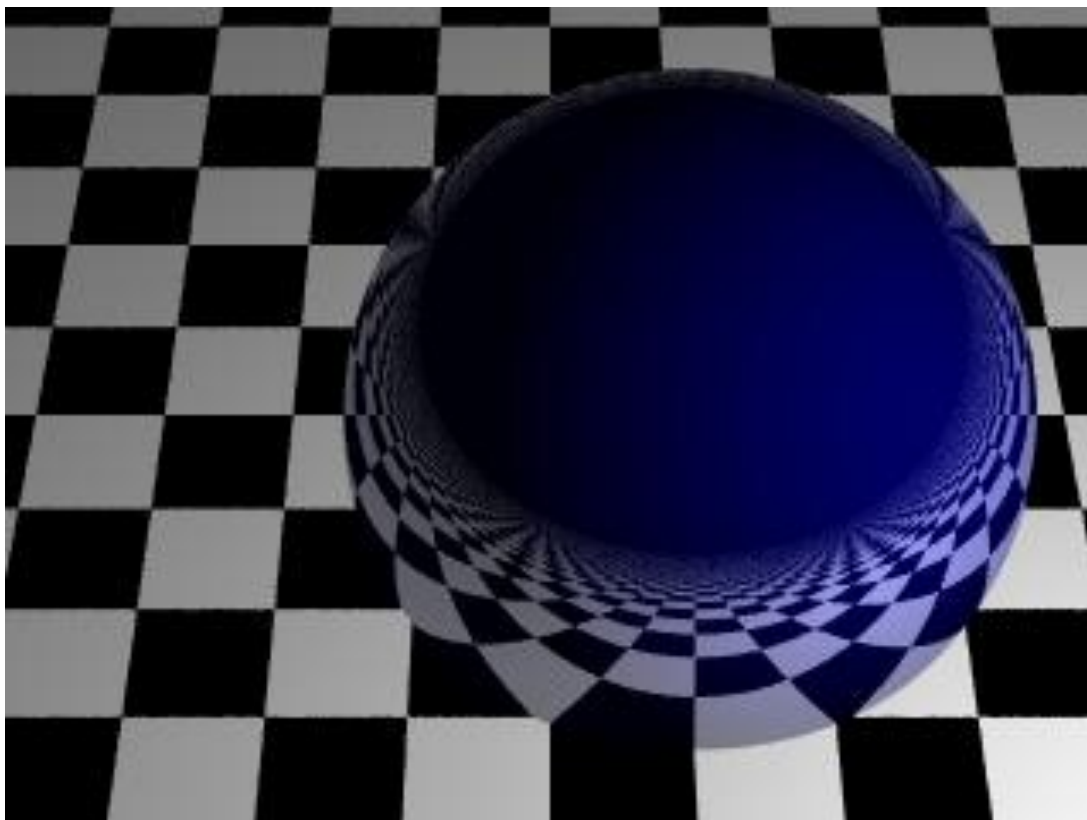
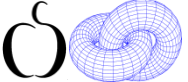
$$\sigma^2 = \frac{1}{n-1} \cdot \sum_{i=1}^n (C_i - \bar{C})^2 = \frac{n}{n-1} \cdot \left(\frac{1}{n} \sum_{i=1}^n C_i^2 - \left(\frac{1}{n} \sum_{i=1}^n C_i \right)^2 \right)$$

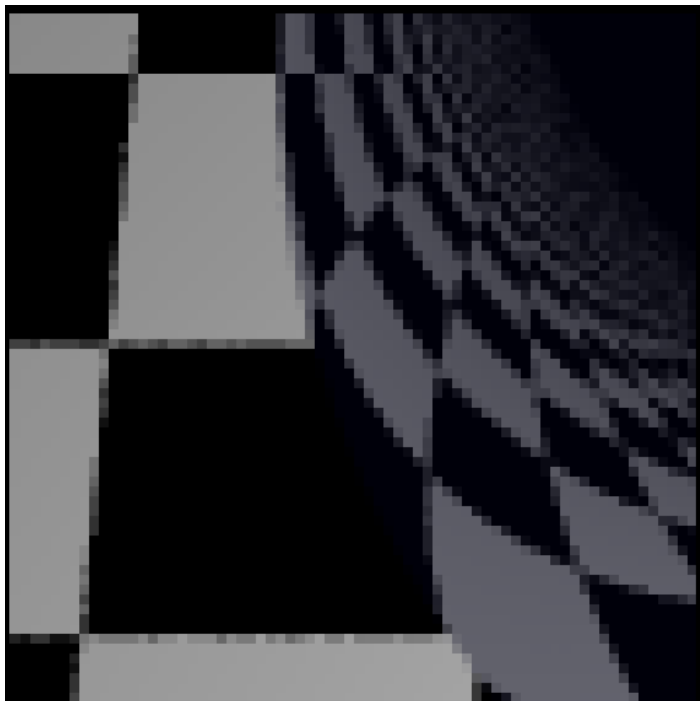
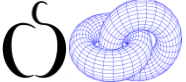
2	6	8
7	0	3
4	1	5

6	10	2	13
3	14	12	8
15	0	7	11
5	9	4	1

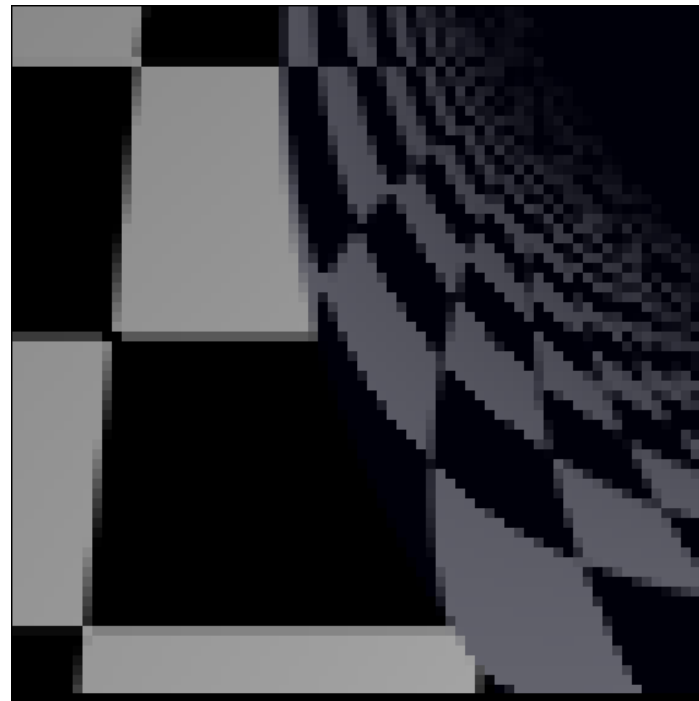




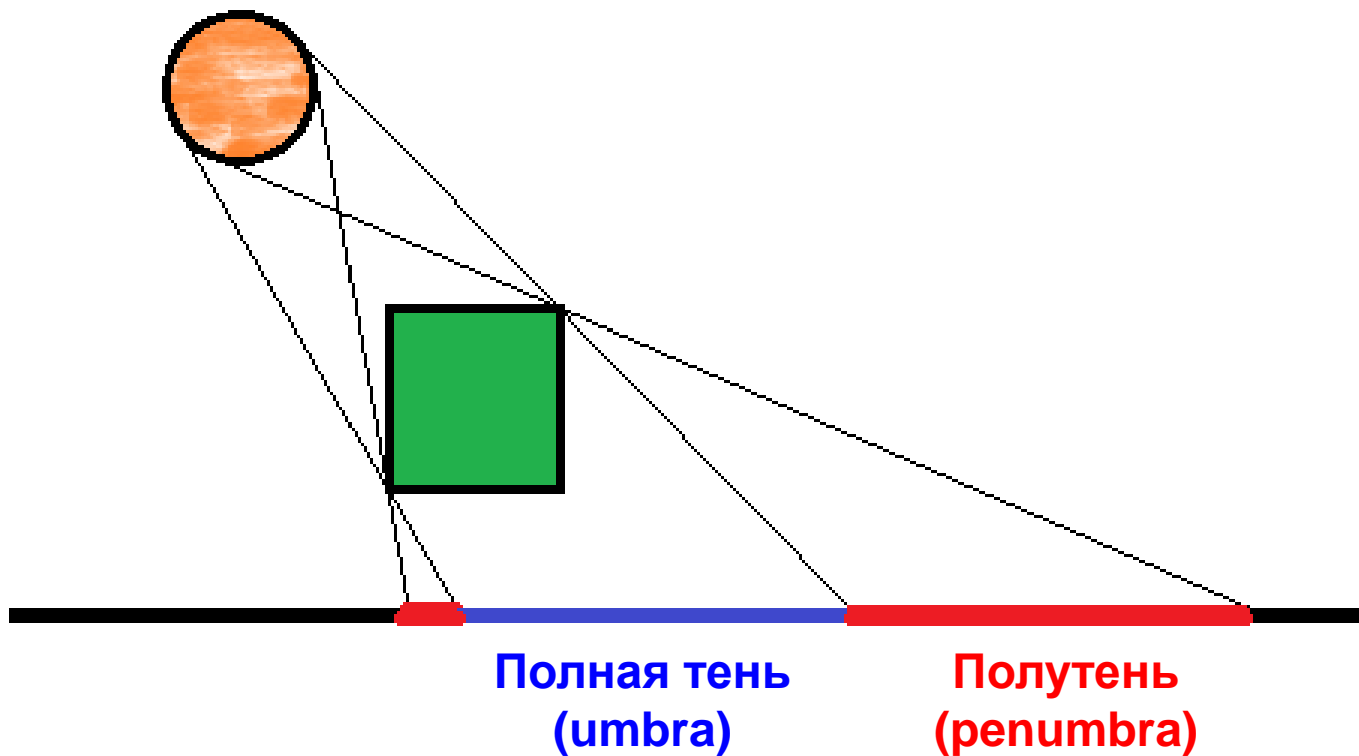
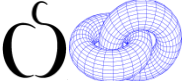


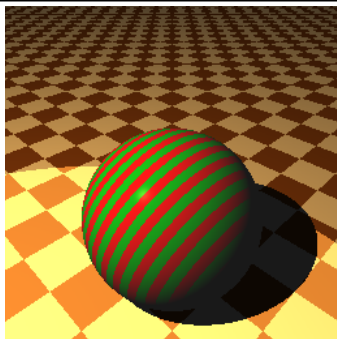
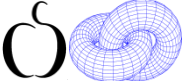


Jitter

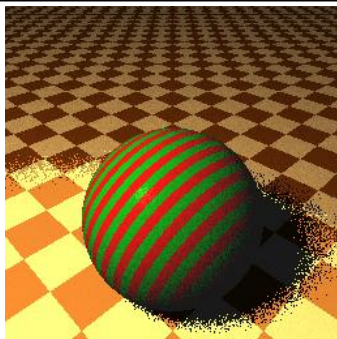


Supersampling

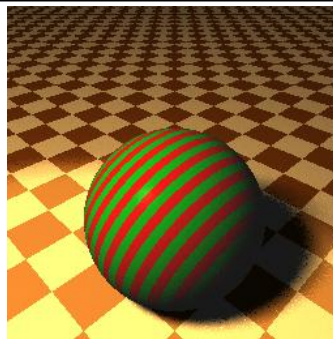




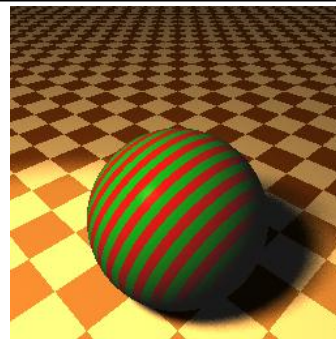
Точечный источник



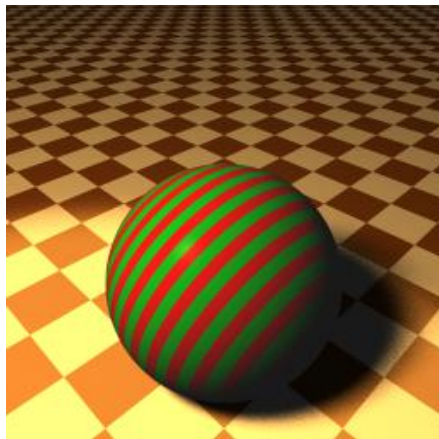
Без jittering



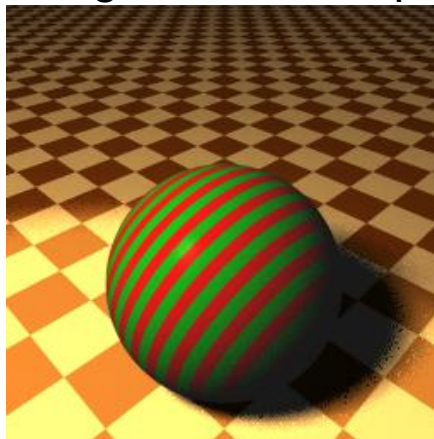
Sampling 3x3



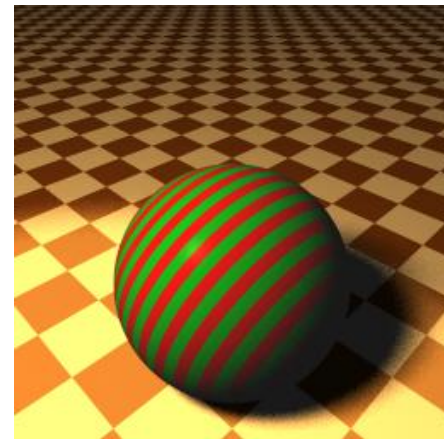
Sampling 5x5



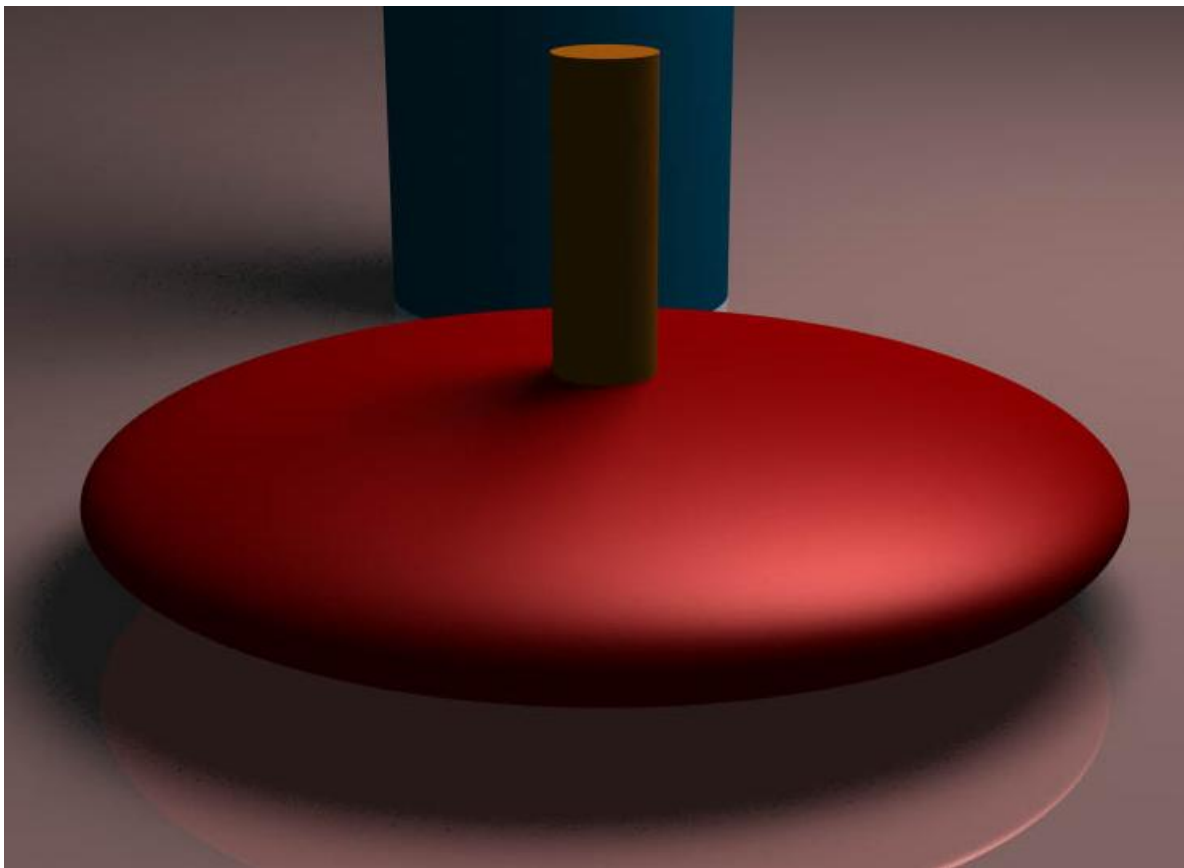
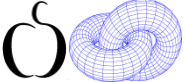
Jittering 15x15

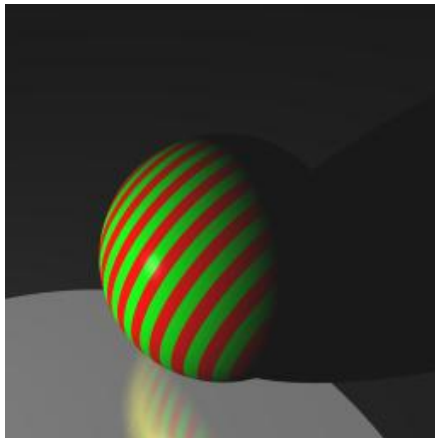
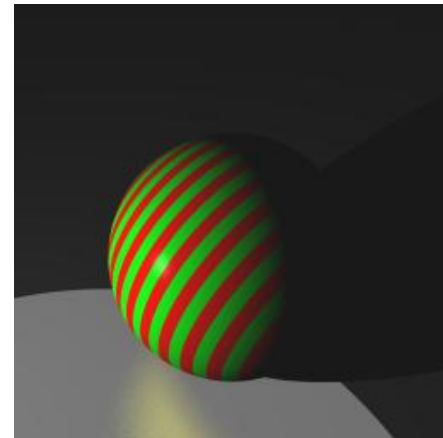
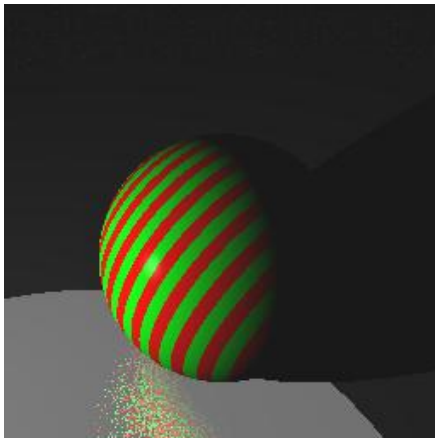
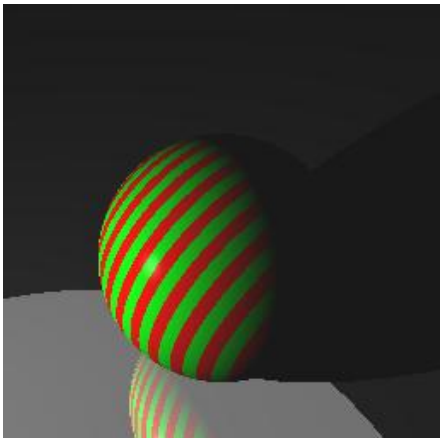
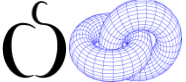


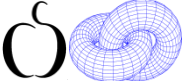
Jittering 3x3

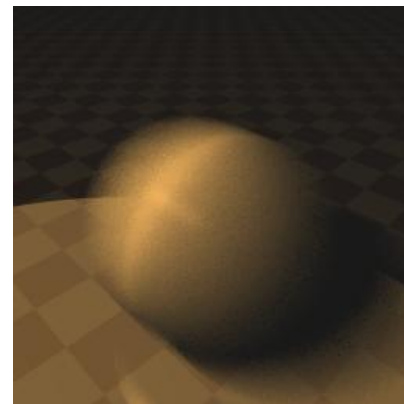
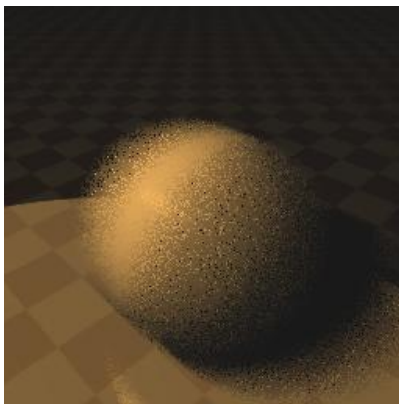
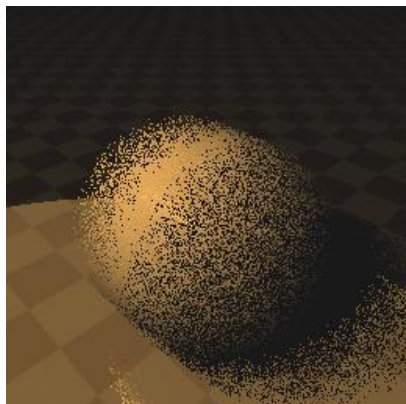
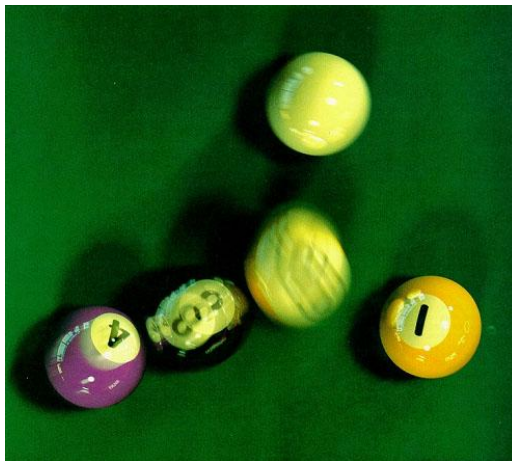
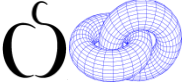


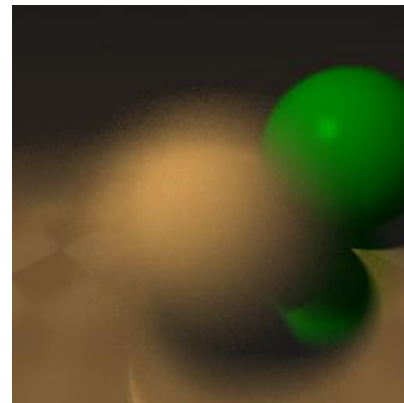
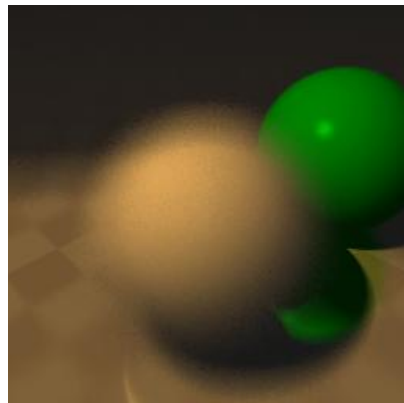
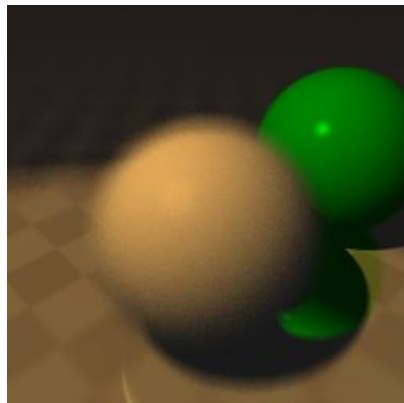
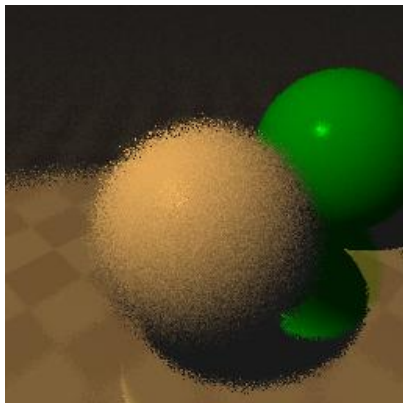
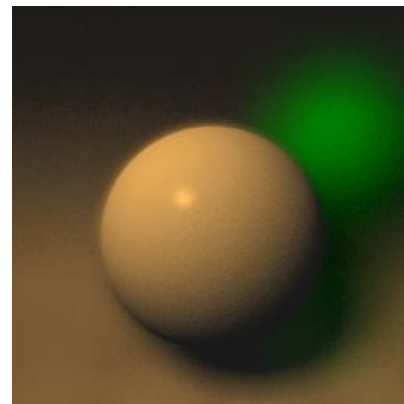
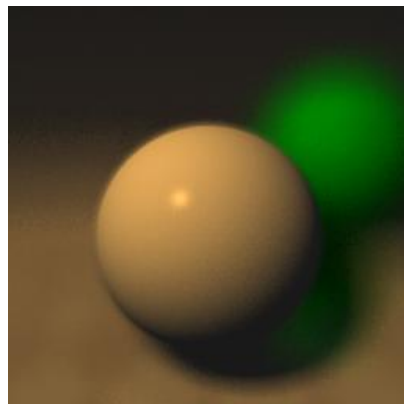
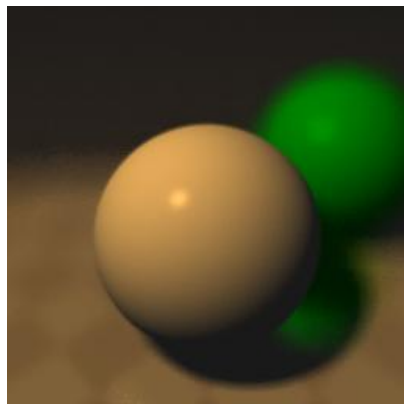
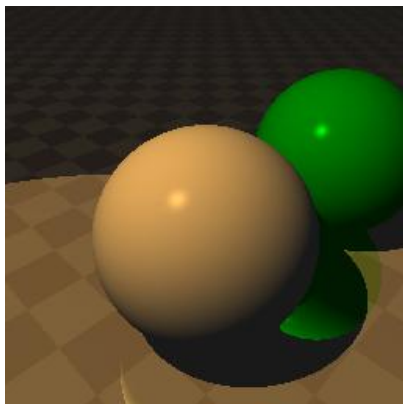
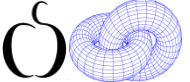
Jittering 5x5

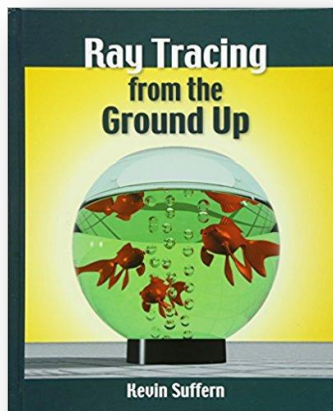












Kevin Suffern, «*Ray Tracing from the Ground Up*»,
A K Peters/CRC Press, 2007