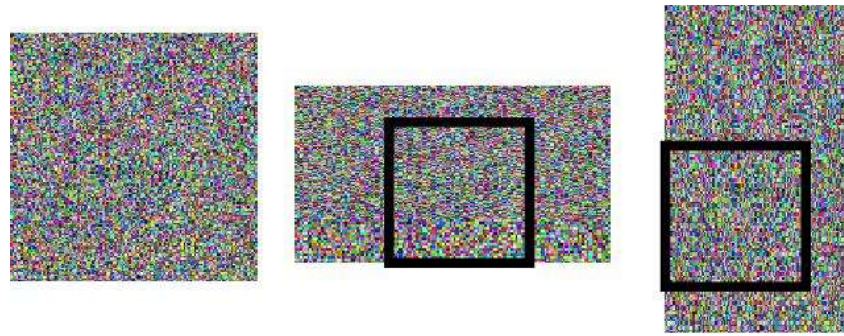


Random Number Generation



Probabilistic cellular automata need random numbers to achieve the desired behaviour. However, a GPU neither provides functions for this purpose directly nor has a global register which could be used to implement a simple pseudo-random number generator. On the other hand, generating random numbers with the CPU would hurt the performance.

The solution used here generates a random texture with very high resolution only once. For each iteration, this texture is mapped onto the cells using a random geometry transformation. The utilized point-sampling leads to aliasing which is useful in this case. Thereby, the independence of random values in neighboring cells is maximized.