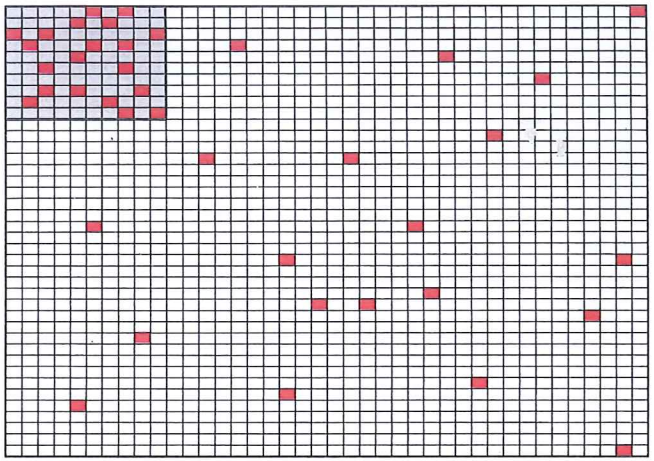
Some time after the initial stage, the energy is spread more uniformly over all the atoms as a result of their jostling each other. The small block still has a higher proportion of its atoms ON than the bigger block, and so it is still hotter. The temperature of System 1 is now 0.72 and that of System 2 is 0.23.



What is the final state of the universe? There is *no* final state for the careful observer, for the ON-ness jostles and migrates forever (there is no rule that brings it to an end). But there is an *apparent* final state for an observer who stands so far back that the behavior of the individual atoms cannot be discerned. There is a final state for the *thermodynamic observer*, not for the atomic individualist. This *apparent* end of change occurs when there is a *uniform distribution of ON-ness*, as in the figure below.

Later, the jostling of the atoms results in a uniform distribution of the energy. There will be small accumulations here and there (there are fluctuations*), but on average the proportion of atoms ON in the smaller block is equal to the proportion ON in the larger. The temperatures of the blocks are now the same, at 0.27, and they are at* thermal equilibrium.