Fig. S1. Example responses of single V1 neurons to visual stimulation. Plot of the average evoked response of a neuron recorded in a naive animal (dotted green) and the after training responses of neurons trained with short (red) and long (blue) reward times. In the naive animal, neurons respond briefly during the period of stimulation (green bar). During training, left eye and right eye stimulations are paired with rewards delivered after a short (ST) or long (LT) delay period, respectively (dashed vertical lines). After training, neuronal responses evoked by a given stimulus can persist until the reward time paired with that stimulus. The plots show the difference between the dominant and non-dominant eye responses per neuron smoothed with a Gaussian kernel (SD 50 ms); for detailed methods and plots of average population responses, see Shuler MG, Bear MF [(2006) Reward timing in the primary visual cortex. Science 311:1606–1609].
Fig. S2. Training in the rate based model. This plot shows the response of the neurons responsive to left (blue lines) or right eye (red lines) stimulation during each epoch of a training session. The stimulus is active during the period indicated by the green patch and cyan lines show reward times. The response of the naïve network, indicated by thick black line, decays quickly back to zero following stimulation. As training progresses, the responses to both inputs increase until the appropriate activity level is reached at the time of reward at which learning stops.