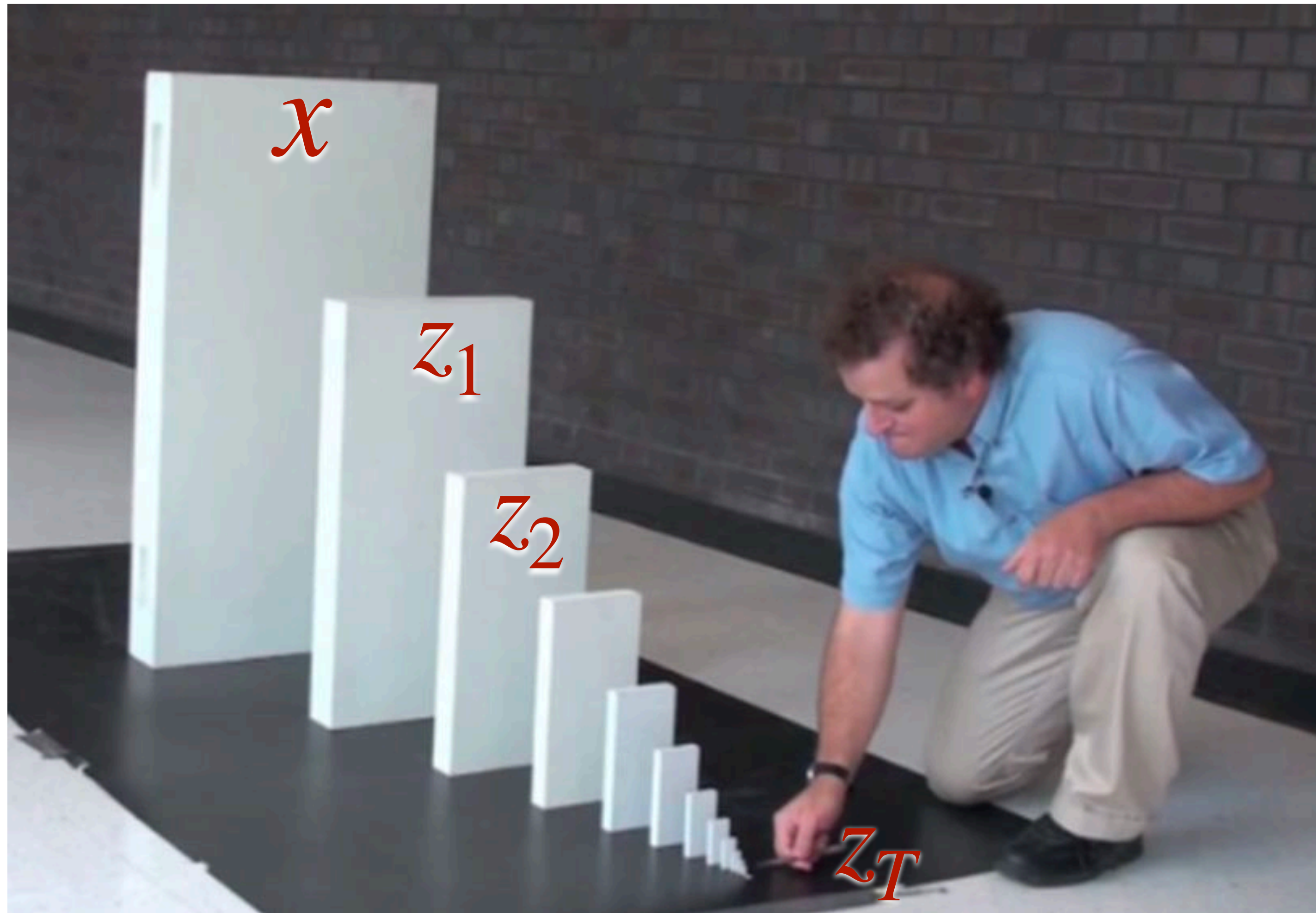# Towards diffusion: hierarchical VAEs

Towards diffusion: (Markovian) hierarchical VAEs

Reverse process $\quad p\left(x, z_1, z_2, \cdots, z_T\right) = p\left(z_T\right) p\left(z_{T-1} \mid z_T\right) \cdots p\left(z_1 \mid z_2\right) p\left(x \mid z_1\right)$

Forward process $\quad q\left(x, z_1, z_2, \cdots, z_T\right) = q(x)\, q\left(z_1 \mid x\right)\, q\left(z_2 \mid z_1\right) \cdots q\left(z_T \mid z_{T-1}\right)$