Analogie *StatMech* $\longleftrightarrow$ *Machine/Statistical Learning*

- set of samples $Y^n = \{X_i, i = 1, ... N\}$ drawn iid from pdf X where $X(x)$ is unknown

- posterior X given Y : $P_{X|Y}(x, y) = \frac{P_{Y|X}(x,y)P_X(x)}{P_Y(y)}$

- rewrite $P_{X|Y}(x, y) = \frac{exp^{log(P_{Y|X}(x,y)P_X(x))}}{P_Y(y)}$

- interpret $P_Y(y)$ as partion fucntion Z

- $H = -log(P_{Y|X}(x, y)P_X(x))$