$$P_N(\tau_j \to \tau_i) \propto \sum_{d \in D_k} \underbrace{\frac{P_N(d_l \mid \tau_j)}{\prod_{\langle s_l, m\rangle \in d_l} \sum_{s_t} P_N(s_t|s_l)\, P(m|s_t,\tau)}}_{} \underbrace{F(\tau_i \mid d)}_{\propto P(\tau_i|d)^\gamma}$$

$$P(\tau \mid d) \propto \underbrace{P(\tau)}_{\text{prior}} \underbrace{P(d \mid \tau)}_{\prod_{\langle s,m\rangle \in d} P(m|s,\tau)}$$

$$F(\tau \mid d) \propto P(\tau \mid d)^l, \quad l \geq 1$$

$$P(\tau_j \to \tau_i) \propto \sum_{d \in D_k} P(d \mid \tau_j) F(\tau_i \mid d)\,.$$

$$P_N(s_a \mid s_l) \propto P(s_a)\, P_N(s_l \mid s_a)$$

$$P_N(s_t \mid s_l) = \sum_{s_a} P(s_a \mid s_l) P_N(s_t \mid s_a)$$

$$P_N(d_l \mid \tau) = \prod_{\langle s_l, m\rangle \in d_l} \sum_{s_t} P_N(s_t \mid s_l)\, P(m \mid s_t, \tau)\,.$$

$$P_N(\tau_j \to \tau_i) \propto \sum_{d \in D_k} P_N(d_l \mid \tau_j) F(\tau_i \mid d)\,.$$