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