



$$A_{n-1}^{(\ell)} \sim \text{Cat} \left(\hat{w}_{n-1}^{(1)}, \dots, \hat{w}_{n-1}^{(L)} \right), \ell = 1, \dots, L$$

$$\mathbf{x}_n^{(\ell)} \sim q \left(\cdot \mid \mathbf{x}_{n-1}^{A_{n-1}^{(\ell)}}, \mathbf{y}_n; \theta \right), \ell = 1, \dots, L$$

$$w_n^{(\ell)} \propto \cdot = p(y_n \mid \mathbf{x}_n^{(\ell)}), \ell = 1, \dots, L$$

$$\hat{w}_n^{(\ell)} = \frac{w_n^{(\ell)}}{\sum_{\ell'} w_n^{(\ell')}}, \ell = 1, \dots, L$$

