

For an anchor word (row) in the co-occurrence matrix

$$Q_{s_k,j} = \sum_{k'} p(z_1 = k' | w_1 = s_k) p(w_2 = j | z_1 = k')$$

= 1 because of the anchor word property

$$= p(w_2 = j | z_1 = k) = C_{i,k}$$

For any other row

$$\bar{Q}_{i,j} = \sum_k p(z_1 = k | w_1 = i) p(w_2 = j | z_1 = k)$$

But this is clearly a convex combination of anchor words

$$\bar{Q}_{i,j} = \sum_k C_{i,k} \bar{Q}_{s,k}$$