$$p_n^{\mathrm{BO}}(w_i|w_{i-n+1},...,w_{i-1})$$

$$= \begin{cases} d_n(w_{i-n+1},...,w_{i-1})\, p_n(w_i|w_{i-n+1},...,w_{i-1}) \\ \qquad\qquad \text{if } \mathrm{count}_n(w_{i-n+1},...,w_i) > 0 \\ \\ \alpha_n(w_{i-n+1},...,w_{i-1}))\, p_{n-1}^{\mathrm{BO}}(w_i|w_{i-n+2},...,w_{i-1}) \\ \qquad\qquad \text{else} \end{cases}$$