

$$\approx \sum_{\substack{w \in V \\ w \in q}} c(w, D) \log \left[(1-\lambda) \frac{c(w|q)}{|q|} + \lambda P(w|REF) \right]$$

$$- \sum_{\substack{w \in V \\ w \in q}} c(w, D) \log [\lambda P(w|REF)]$$

$$+ \sum_{w \in V} c(w, D) \log [\lambda P(w|REF)] - \sum_{w \in V} c(w, D) \log P(w|Q, R=0)$$

$$= \sum_{\substack{w \in V \\ w \in q}} c(w, D) \log \left[1 + \frac{\overbrace{(1-\lambda)c(w|q)}^{(A)}}{\underbrace{|q| \cdot \lambda P(w|REF)}_{(B)}} \right]$$

$$+ \sum_{w \in V} c(w, D) \log [\lambda P(w|REF)]$$

$$- \sum_{w \in V} c(w, D) \log P(w|Q, R=0)$$

Ⓐ captures TF, Ⓑ captures IDF,

Document length normalization not captured