

$$EU(O) = \sum_{\bar{C} \in \bar{\mathcal{C}}} \sum_{\bar{O} \in \bar{\mathcal{O}} | \bar{C}} \Pr(\bar{C}) \cdot \Pr(\text{selected} = \bar{O} | \bar{\mathcal{O}})^{P\{R\}, P\{\}} \cdot \Pr(\text{selected} = O | \bar{O}, \phi)^{R\{\}} \cdot U(O)$$