Definition (Companion and conjoint)
Let $\mathbf{P}$ and $\mathbf{Q}$ be posets, and suppose that $f : \mathbf{P} \to_{\mathbf{Pos}} \mathbf{Q}$ is a monotone map. We define its *companion* in $\mathbf{DP}$, denoted $\widehat{f} : \mathbf{P} \nrightarrow \mathbf{Q}$, and its *conjoint*, denoted $\check{f} : \mathbf{Q} \nrightarrow \mathbf{P}$ as

$$\widehat{f}(p^*, q) := f(p) \leq_{\mathbf{Q}} q \qquad \text{and} \qquad \check{f}(q^*, p) := q \leq_{\mathbf{P}} f(p).$$