Definition (Uncertainty endofunctor)**.** The *uncertainty endofunctor* $\mathsf{Unc} : \mathbf{DP} \to \mathbf{DP}$ is defined as follows:

1. It maps an object $\mathbf{P}$ in **DP** (poset) to its poset of intervals $\mathrm{Int}(\mathbf{P})$.
2. It maps a morphism in **DP** $\mathbf{d} : \mathbf{F} \nrightarrow \mathbf{R}$ to $\mathsf{Unc}(\mathbf{d})$, where:

$$\mathsf{Unc}(\mathbf{d}) : \mathrm{Int}(\mathbf{F})^{\mathrm{op}} \times \mathrm{Int}(\mathbf{R}) \to_{\mathbf{Pos}} \mathbf{Bool}$$

$$\langle [f_{\mathsf{L}}, f_{\mathsf{U}}]^*, [r_{\mathsf{L}}, r_{\mathsf{U}}] \rangle \mapsto \mathbf{d}(f^*_{\mathsf{L}}, r_{\mathsf{L}}) \wedge \mathbf{d}(f^*_{\mathsf{U}}, r_{\mathsf{U}}).$$