

$$\text{Tr}_{\mathbf{A}, \mathbf{B}}^{\mathbf{C}}(\mathbf{f}) : \mathbf{A}^{\text{op}} \times \mathbf{B} \xrightarrow{\text{Pos}} \mathbf{Bool}$$

$$\langle a^*, b \rangle \mapsto \bigvee_{c \in \mathbf{C}} \mathbf{f}(\langle a, c \rangle^*, \langle b, c \rangle).$$