

$$f \otimes g : (\mathbf{A} \times \mathbf{C})^{\text{op}} \times (\mathbf{B} \times \mathbf{D}) \rightarrow_{\text{Pos}} \mathbf{Bool},$$

$$\langle \langle a, c \rangle^*, \langle b, d \rangle \rangle \mapsto f(a^*, b) \wedge g(c^*, d).$$