

**Lemma.** For any  $\mathbf{P}, \mathbf{Q} \in \text{Ob}_{\mathbf{DP}}$ , the design problem  $\text{br}_{\mathbf{P}, \mathbf{Q}} : \mathbf{P} \times \mathbf{Q} \rightarrow \mathbf{Q} \times \mathbf{P}$  given by

$$\text{br}_{\mathbf{P}, \mathbf{Q}}(\langle p_1, q_1 \rangle^*, \langle q_2, p_2 \rangle) := (p_1 \leq_{\mathbf{P}} p_2) \wedge (q_1 \leq_{\mathbf{Q}} q_2)$$

constitutes the braiding operation for a symmetric monoidal structure on  $\langle \mathbf{DP}, \otimes, \{\bullet\} \rangle$ . In other words,  $\langle \mathbf{DP}, \otimes, \{\bullet\}, \text{br} \rangle$  is a symmetric monoidal category.