Definition (Series composition). Let $\mathbf{f} : \mathbf{A} \nrightarrow \mathbf{B}$ and $\mathbf{g} : \mathbf{B} \nrightarrow \mathbf{C}$ be design problems. We define their *series composition* $(\mathbf{f} \fatsemi \mathbf{g}) : \mathbf{A} \nrightarrow \mathbf{C}$ as:

$$(\mathbf{f} \fatsemi \mathbf{g}) : \mathbf{A}^{\mathrm{op}} \times \mathbf{C} \to_{\mathbf{Pos}} \mathbf{Bool},$$
$$\langle a^*, c \rangle \mapsto \bigvee_{b \in \mathbf{B}} \mathbf{f}(a^*, b) \wedge \mathbf{g}(b^*, c).$$

@Gioele: below "b" is not macroed

Alternatively, rather than taking the "or" ($\bigvee$) over an element b, we can iterate over pairs b_1, b_2 such that $b_1 \preceq b_2$:

$$(\mathbf{f} \fatsemi \mathbf{g}) : \mathbf{A}^{\mathrm{op}} \times \mathbf{C} \to_{\mathbf{Pos}} \mathbf{Bool},$$
$$\langle a^*, c \rangle \mapsto \bigvee_{b_1 \preceq b_2, b_1, b_2 \in \mathbf{B}} \mathbf{f}(a^*, b_1) \wedge \mathbf{g}(b_2^*, c).$$