Definition (Symmetry, asymmetry, and antisymmetry of endorelations)

An endorelation $R : \mathbf{A} \to \mathbf{A}$ is *symmetric* if

$$\frac{x \mathrel{R} y}{y \mathrel{R} x},$$

is *asymmetric* if

$$\frac{x \mathrel{R} y \quad y \mathrel{R} x}{\bot},$$

and is *antisymmetric* if

$$\frac{x \mathrel{R} y \quad y \mathrel{R} x}{x = y}.$$