its trace in is defined as a morphism $\operatorname{Tr}_{X,Y}^Z(f): X \to Y$, given by

Definition (Trace in $\mathbf{Pos}_{\mathcal{H}}$). Given a morphism $f: X \otimes Z \to Y \otimes Z$ in $\mathbf{Pos}_{\mathcal{H}}$,

 $x \mapsto \{y \in Y \mid \bigvee \langle y, z \rangle \in f^*(x, z)\}.$

 $\operatorname{Tr}_{X,Y}^{Z}(f)^{\star}:X\to\mathcal{U}Y$