## **Definition** (Trace in **Pos**<sub>9/</sub>) Given a morphism $f: X \times Z \to Y \times Z$ in **Pos**<sub>9/2</sub>, its trace in is defined as a

morphism  $\operatorname{Tr}_{X,Y}^{\mathbb{Z}}(f): X \to Y$ , given by

$$\operatorname{Tr}_{YXY}^{Z}(f)^{\star} \cdot X \to 9/Y$$

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

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