

$$(g \circ \text{Tr}_{X,Z}^Z(f))(x') = \bigcup_{x \in g(x')} \text{Tr}_{X,Z}^Z(f)(x)$$

$$= \bigcup_{x \in g(x')} \left\{ y \in Y \mid \bigvee_{z \in Z} \langle y, z \rangle \in f(x, z) \right\}$$

$$= \left\{ y \in Y \mid \bigvee_{z \in Z} \langle y, z \rangle \in \bigcup_{x \in g(x')} f(x, z) \right\}.$$