

## **cond\_rel\_equivalent**<sup>11,40</sup>

$\forall T:\text{Type}, R, Q:(T \rightarrow T \rightarrow \mathbb{P}), P:(T \rightarrow \mathbb{P}).$

$\text{Trans}(T;x,y.Q(x,y))$

$\Rightarrow (\forall x, y:T. (Q(x,y) \Rightarrow \neg(Q(y,x))))$

$\Rightarrow R \Rightarrow Q$

$\Rightarrow (\forall x, y:T. (P(x) \ \& \ P(y)) \Rightarrow (((R(x,y)) \vee (x = y)) \vee (R(y,x))))$

$\Rightarrow (\forall x, y:T. (P(x) \ \& \ P(y)) \Rightarrow ((R(x,y)) \iff (Q(x,y))))$