Inference at $*$
of proof for Lemma squash_thru_equiv_rel:

$\vdash \forall T$:Type, E:($T \rightarrow T \rightarrow \mathbb{P}$). ($\downarrow$EquivRel($T$;$x$,$y$.$E$($x$,$y$))) $\Rightarrow$ EquivRel(T;x,y.$\downarrow E$(x,y))
by InteriorProof ((((RepUnfolds "equiv_rel refl sym trans" 0)
CollapseTHEN (
GenUnivCD))·)
CollapseTHENA ((Auto_aux (first_nat 1:n) ((first_nat
1:n),(first_nat 3:n)) (first_tok :t) inil_term)))·

1:

1. T : Type
2. E : $T \rightarrow T \rightarrow \mathbb{P}$
3. $\downarrow((\forall a{:}T.\ E(a,a))$
   $\&\ (\forall a,\ b{:}T.\ E(a,b) \Rightarrow E(b,a))$
   $\&\ (\forall a,\ b,\ c{:}T.\ E(a,b) \Rightarrow E(b,c) \Rightarrow E(a,c)))$
4. a : T

$\vdash \downarrow E(a,a)$

2:

1. T : Type
2. E : $T \rightarrow T \rightarrow \mathbb{P}$
3. $\downarrow((\forall a{:}T.\ E(a,a))$
   $\&\ (\forall a,\ b{:}T.\ E(a,b) \Rightarrow E(b,a))$
   $\&\ (\forall a,\ b,\ c{:}T.\ E(a,b) \Rightarrow E(b,c) \Rightarrow E(a,c)))$
4. a : T
5. b : T
6. $\downarrow E(a,b)$

$\vdash \downarrow E(b,a)$

3:

1. T : Type
2. E : $T \rightarrow T \rightarrow \mathbb{P}$
3. $\downarrow((\forall a{:}T.\ E(a,a))$
   $\&\ (\forall a,\ b{:}T.\ E(a,b) \Rightarrow E(b,a))$
   $\&\ (\forall a,\ b,\ c{:}T.\ E(a,b) \Rightarrow E(b,c) \Rightarrow E(a,c)))$
4. a : T
5. b : T
6. c : T
7. $\downarrow E(a,b)$
8. $\downarrow E(b,c)$

$\vdash \downarrow E(a,c)$

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http://www.nuprl.org/FDLcontent/p0_942988_/p121_81083_{squash_thru_equiv_rel}.html