Intro

General types ☺

Illustrative language

Not a fan of how they handle polymorphic functions tbh

$\Lambda t.\ \lambda x \in t.\ x$ has type $\Delta t.\ t \to t$

Notational Preliminaries

$[f|x|x']$ denotes $\lambda y \in S.$ if $y = x$ then x' else $f(y)$

$f \in S \Rightarrow S'$ $x \in S$ $x' \in S'$ $S \Rightarrow S' \equiv S'^{S}$

Syntax $\prod_{x \in S} F(x)$ all functions f whose domain is S and $\forall x \in S, f(x) \in F(x)$

$W_1|^{W_2}_{t}$ replace all t in W_1 with W_2

RQW $Q(x)$ induces type W

~~I~~ don't understand (2a)

Not sure I fully understand RQW

Semantics

$B \in W \Rightarrow D^{T} \Rightarrow D$;;; type to (type to domain) to domain

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$M_{QW} \in R_{QW} \Rightarrow \prod_{\overline{D} \in \overline{\mathbb{D}}} (Env_Q(\overline{D}) \to B[W](\overline{D}))$

$Env_Q(\overline{D}) = \prod_{X \in V} B[\theta(X)](\overline{D})$

Representations

$rep(D, D') = \{ \langle \phi, \psi \rangle \mid \phi \in D \to D',\ \psi \in D' \to D,\ \psi \circ \phi \sqsupseteq I_D,\ \phi \cdot \psi \sqsubseteq I_{D'} \}$

$\rho = \langle \phi, \psi \rangle \in rep(D, D')$

x represents x' according to ρ iff

$x \sqsubseteq \psi(x')$ or equiv... $\phi(x) \sqsubseteq x'$

Representation Thm

Sure...

Full semantics

Category  or what did we get ourselves into

⋮

Syntactic Manipulations

Boo created Ackermann's function