Some Extensional Term Models For Combinatory Logics and λ- Calculus - Henk Barendregt

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1 Errata(*Corrections are in Red*)

- p.4, 1.1.4.I :

$$1. xM = y[x/y]M \qquad \text{If } y \notin FV(M) \cup BV(M)$$
$$2. (xM)N = [x/N]M \qquad \text{If } BV(M) \cap FV(N) = \phi$$

- p.17, line 5,
  not have the original theorem as a corollary.

- p.27,
  line 3:
  to concepts ~~like~~ such as equality, quantification, etcetera.
  line 21:
  terms of the λ-calculus are then called λ terms.

- p.29, line 13:
  In order to obtain a reverse interpretation, we first need a

- p.55, line 21:
  of the M_i and then (**) would also hold.

- p.62, line 8 of subcase 1.2 :

  Hence since $CL_{\omega'} \vdash M \approx_\alpha N$, $\alpha \neq 0$ and M_2 is closed,it follows from 2.2.8.2) and 2.2.6 that

- p.64, line 19:
  We give here a modification of our original construction, due to Scott.

- p.68, line 5:

  we again make use of the underlining technique.

- p.71, 2.5.10, Lemma:

  1. $\underline{\lambda} \vdash L \simeq \underline{M} \Leftrightarrow$ ~~$[L \equiv M$ or $L \equiv \underline{M}]$~~ $L \simeq M$
  2 .$\underline{\lambda} \vdash L \simeq \lambda x M \Leftrightarrow [\exists M'\ L \equiv \lambda x M'$ and $\underline{\lambda} \vdash M \simeq M']$ or $L \equiv \underline{\lambda x M}$
  3. $\underline{\lambda} \vdash L \simeq MN \equiv [\exists M'N'\ L \equiv M'N'$ and $\underline{\lambda} \vdash M \simeq M', \underline{\lambda} \vdash N \simeq N']$ or $L \equiv \underline{MN}$
  4. $\underline{\lambda} \vdash M \simeq M'$ and $\underline{\lambda} \vdash N \simeq N' \Rightarrow \underline{\lambda} \vdash [x\backslash N]M \simeq [x\backslash N']M'$

  Use $\underline{\lambda} \vdash M \simeq M' \equiv |M| \equiv |M'|$ like in A_{11}

- p.74, line 11:
  If $\underline{\lambda} +$ ext $\vdash M \geq N$ and if x is a variable not occurring in

- p.79, 2.5.26, Lemma, 3) :

  If Z is a subterm occurrence of L such that ~~there is no~~ the corresponding subterm occurrence Z' of L' is not simple then Z has some line in L'.

- p.129, Definition 2, I, 1. :

  $$1.\frac{M \geq_1 M'}{(\lambda x M) \geq_1 \lambda y[x\backslash y]M'} \qquad \text{If } y \notin FV(M') \cup BV(M')$$

- p.130 Lemma 5: If $\lambda' \vdash M \geq_1 M'$ and $\lambda' \vdash N \geq_1 N'$, then $\lambda' \vdash [x/N]M \geq_1 [x/N']M'$. Given that $BV(N') \cap FV(N') = \phi$, $BV(MM') \cap FV(N') = \phi$ and $x \notin BV(M')$

  Proof:
  Induction on the length of proof of $M \geq_1 M'$ using the sublemma:
  If $x \neq y$, $y \notin FV(N_1)$, $x \notin BV(M)$, then $[x/N_1]([y/N_2]M) \equiv [y/[x/N_1]N_2]([x/N_1]M)$.
  The proof of the sublemma proceeds by induction on the structure of M.

- p.131 case 2. line 4

  $M_3 \equiv \lambda y'[x/y']M"$ where $\lambda \vdash M \geq_1 M"$ and $y' \notin FV(M") \cup BV(M")$