The hard action axiom for the tree-level MGA

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8:32 AM

$$\lambda /\!/ hta^{xu} = \lambda /\!/\!/ \left(u \mapsto e^{ad\lambda_x}(\bar u)\right) /\!/ \bar u \to u$$

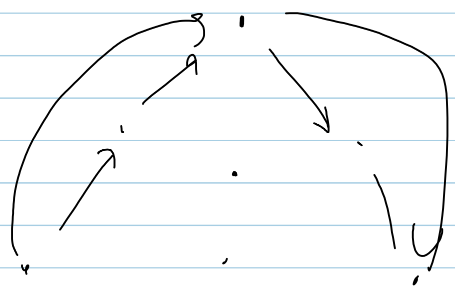
$$hta^{xu} /\!/ hta^{yu} /\!/ hm^{xy}_z \overset{?}{=} hm^{xy}_z /\!/ hta^{zu}$$

$$\lambda /\!/ hta^{xu} /\!/ hta^{yu} /\!/ hm^{xy}_z$$

$$\tilde\lambda_y /\!/ u \mapsto e^{ad\lambda_x}(\bar u)$$

$$= \lambda /\!/\!/ u \mapsto e^{ad\lambda_x}(\bar u) /\!/\!/\!/ \bar u \mapsto e^{ad\tilde\lambda_y}(\bar{\bar u}) /\!/ \bar{\bar u} \to u /\!/ hm^{xy}_z$$

$$= \lambda \;\ldots\ldots\; ?$$



$$\begin{tikzcd}
\overset{\lambda_1\ \lambda_2}{FL(u)} \arrow[r, "CC_u^{\lambda_1}"] \arrow[d] & \overset{\lambda_1'\ \lambda_2'}{FL(\bar u)} \arrow[r, "CC_{\bar u}^{\lambda_2'}"] \arrow[dl] \arrow[d] & \overset{\lambda_1''\ \lambda_2''}{FL(\bar{\bar u})} \arrow[dl] \\
FL(u,\bar u)/u = e^{ad\lambda_1}\bar u \arrow[d] & FL(\bar u,\bar{\bar u})/\bar u = e^{ad\lambda_2'}\bar{\bar u} \arrow[dl] & \\
FL(u,\bar u,\bar{\bar u})/u = e^{ad\lambda_1}\bar u,\ \bar u = e^{ad\lambda_2}\bar{\bar u} = e^{ad\lambda_2'}\bar{\bar u} & &
\end{tikzcd}$$

$$u = e^{ad\, bch(\lambda_1\lambda_2)}\bar{\bar u}$$

The wheel-level property:

$$J_u(\mathrm{bch}(\lambda_1,\lambda_2)) = J_u(\lambda_1) /\!/ CC_u^{\lambda_2 /\!/ CC_u^{\lambda_1}} + J_u(\lambda_2 /\!/ CC_u^{\lambda_1})$$

In the A-T language: $j : TAut_n \longrightarrow tr_n$ with

$$j(gh) = j(g) + g\, j(h)$$

$$\frac{1}{1-(a+b)} = \frac{1}{1-a-b} = \frac{1/1-a}{1-\frac{b}{1-a}} = \frac{1}{1-a} \cdot \frac{1}{1-\frac{b}{1-a}}$$