

# Lower(SL(FA $_{\eta}$ )) ⊢ MMt

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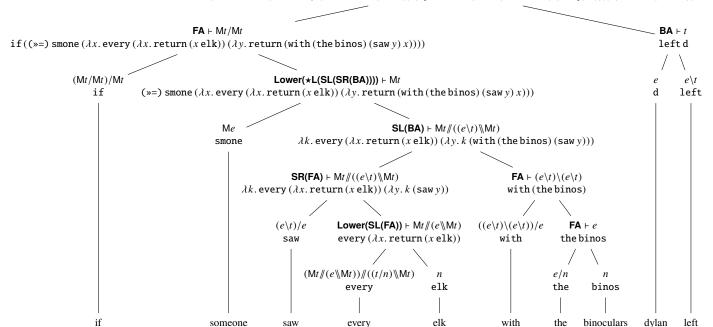
(»=) (every  $(\lambda x. \text{return}(x \text{ elk}))(\lambda y. \text{ (»=) smone}(\lambda x. \text{return}(\text{with}(\text{the binos})(\text{saw}y)x))))(\lambda y. \text{return}(\text{if}(\text{return}(x \text{ elk})))))$  $\star R(SR(FA_n)) \vdash MMt // ((Mt/Mt) \backslash MMt)$  $\lambda k$ . (>=) (every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (with (the binos) (saw y) x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/MtLower(SR( $\star$ L(SL(BA))))  $\vdash$  Mt if every  $(\lambda x. \text{ return } (x \text{ elk})) (\lambda y. ( ) = ) \text{ smone } (\lambda x. \text{ return } (\text{with } (\text{the binos}) (\text{saw } y) x)))$ Me  $SL(BA) \vdash Mt //((e \setminus t) \setminus Mt)$  $\lambda k$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . k (with (the binos) (saw y))) smone  $\mathsf{FA} \vdash (e \backslash t) \backslash (e \backslash t)$ **SR(FA)**  $\vdash$  M $t/\!\!/((e\backslash t)\backslash\!\!\backslash Mt)$ with (the binos)  $\lambda k. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. k (\text{saw } y))$  $FA \vdash e$  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathsf{M}t /\!\!/ (e \backslash\!\backslash \mathsf{M}t)$  $((e\backslash t)\backslash (e\backslash t))/e$ with the binos saw every  $(\lambda x. \text{ return } (x \text{ elk}))$ 

 $\textbf{FA}_{\eta} \vdash \mathsf{M}t \\ \texttt{if}((\texttt{``='}) \mathsf{smone}(\lambda x. \mathsf{return}(x \mathsf{elk})) (\lambda y. \mathsf{return}(\mathsf{with}(\mathsf{the}\,\mathsf{binos})(\mathsf{saw}\,y)\,x)))) (\mathsf{return}(\mathsf{left}\,\mathsf{d}))$ 

 $(Mt/(e \backslash Mt))/((t/n) \backslash Mt)$ 

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#### $Lower(SL(FA_{\eta})) \vdash Mt$ (»=) ((»=) smone ( $\lambda x$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . return (with (the binos) (saw y) x)))) ( $\lambda y$ . if (return y) $\star R(SR(FA_n)) \vdash Mt // ((Mt/Mt) \backslash Mt)$ $\lambda k$ . (>=) ((>=) smone ( $\lambda x$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . return (with (the binos) (saw y) x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/MtLower( $\star$ L(SL(SR(BA)))) $\vdash$ Mt if (»=) smone $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. \text{ return } (\text{with } (\text{the binos}) (\text{saw } y) x)))$ Me $SL(BA) \vdash Mt //((e \setminus t) \setminus Mt)$ $\lambda k$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . k (with (the binos) (saw y))) smone **SR(FA)** $\vdash$ Mt//( $(e \setminus t) \setminus Mt$ ) $\mathsf{FA} \vdash (e \backslash t) \backslash (e \backslash t)$ with (the binos) $\lambda k. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. k (\text{saw } y))$ $FA \vdash e$ $(e \backslash t)/e$ $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathsf{M}t /\!\!/ (e \backslash\!\backslash \mathsf{M}t)$ $((e \backslash t) \backslash (e \backslash t))/e$ with the binos saw every $(\lambda x. \text{ return } (x \text{ elk}))$ $(Mt/(e \backslash Mt))/((t/n) \backslash Mt)$ n e/nnelk the binos every if elk someone every with the binoculars dyl saw Lower(SL(FA $_{\eta}$ )) ⊢ MMt(»=) (() smone $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. \text{ return } (\text{with } (\text{the binos}) (\text{saw } y) x)))) (\lambda y. \text{ return } (\text{if } (\text{return } (x \text{ elk})))))$ $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_{\eta})) \vdash \mathsf{MM}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{MM}t)$ $\lambda k$ . (»=) ((»=) smone ( $\lambda x$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . return (with (the binos) (saw y) x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/MtLower( $\star$ L(SL(SR(BA)))) $\vdash$ Mt if (»=) smone $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. \text{ return } (\text{with } (\text{the binos}) (\text{saw } y) x)))$ Me $SL(BA) \vdash Mt //((e \setminus t) \setminus Mt)$ $\lambda k$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . k (with (the binos) (saw y))) smone $SR(FA) \vdash Mt / ((e \setminus t) \setminus Mt)$ **FA** $\vdash$ $(e \setminus t) \setminus (e \setminus t)$ with (the binos) $\lambda k$ . every $(\lambda x$ . return (x elk)) $(\lambda y$ . k (saw y)) $\textbf{Lower(SL(FA))} \vdash \mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)$ $((e \setminus t) \setminus (e \setminus t))/e$ $(e \backslash t)/e$ $FA \vdash e$ saw every $(\lambda x. \text{return}(x \text{ elk}))$ with the binos $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$ e/nn n every elk the binos

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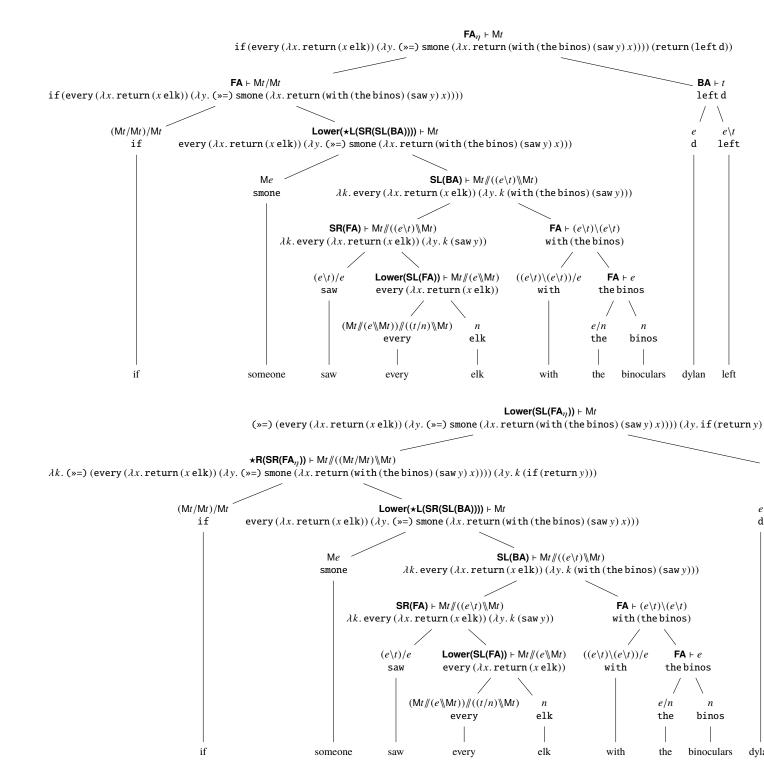
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#### Lower(SL(FA $_{\eta}$ )) $\vdash$ MMt

(»=) (every  $(\lambda x. \text{ return}(x \text{ elk}))(\lambda y. \text{ (»=) smone}(\lambda x. \text{ return}(\text{with}(\text{the binos})(\text{saw}y)x))))(\lambda y. \text{ return}(\text{if}(\text{return}y)))$  $\star R(SR(FA_n)) \vdash MMt // ((Mt/Mt) \backslash MMt)$  $\lambda k$ . (>=) (every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (with (the binos) (saw y) x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/MtLower( $\star$ L(SR(SL(BA))))  $\vdash$  Mt if every  $(\lambda x. \text{ return } (x \text{ elk})) (\lambda y. ( ) = ) \text{ smone } (\lambda x. \text{ return } (\text{with } (\text{the binos}) (\text{saw } y) x)))$ Me  $SL(BA) \vdash Mt //((e \setminus t) \setminus Mt)$  $\lambda k$ . every ( $\lambda x$ . return (x elk)) ( $\lambda y$ . k (with (the binos) (saw y))) smone **SR(FA)**  $\vdash$  Mt//( $(e \setminus t) \setminus Mt$ ) **FA**  $\vdash$   $(e \setminus t) \setminus (e \setminus t)$ with (the binos)  $\lambda k. \text{ every } (\lambda x. \text{ return } (x \text{ elk})) (\lambda y. k (\text{saw } y))$  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathsf{M}t /\!\!/ (e \backslash\!\backslash \mathsf{M}t)$  $((e \backslash t) \backslash (e \backslash t))/e$ **FA** ⊢ *e* with the binos saw every  $(\lambda x. \text{ return } (x \text{ elk}))$ (Mt/(e Mt))/((t/n)Mt)n e/nn

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 $\textbf{FA}_{\eta} \vdash \textbf{M}t \\ \text{if (every } (\lambda x. \, \text{return} \, (x \, (\text{with (the binos) elk)})) \, (\lambda y. \, (\text{w=) smone} \, (\lambda x. \, \text{return} \, (\text{saw} \, y \, x)))) \, (\text{return} \, (\text{left d})) \\ }$ 

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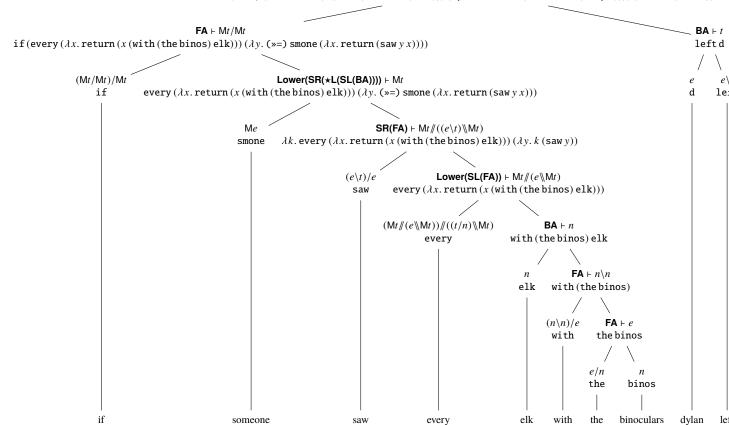
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# $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA}_{\eta})) \vdash \mathsf{M}t$

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(»=) (every  $(\lambda x. \text{ return}(x \text{ (with (the binos) elk))})(\lambda y. \text{ (»=) smone } (\lambda x. \text{ return (saw } y. x))))(\lambda y. \text{ if (return (saw } y. x))))$  $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_{\eta})) \vdash \mathsf{M}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{M}t)$  $\lambda k$ . (>=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/Mt $\mathbf{Lower}(\mathbf{SR}(\star\mathbf{L}(\mathbf{SL}(\mathbf{BA})))) \vdash \mathbf{M}t$ if  $\texttt{every}\left(\lambda x.\,\texttt{return}\left(x\,(\texttt{with}\,(\texttt{the}\,\texttt{binos})\,\texttt{elk})\right)\right)(\lambda y.\,(\texttt{``='})\,\texttt{smone}\,(\lambda x.\,\texttt{return}\,(\texttt{saw}\,y\,x)))$ **SR(FA)**  $\vdash$  Mt//((e\t)\\Mt) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y. k \text{ (saw } y))$ smone  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathbf{M}t /\!\!/ (e \backslash\!\!\backslash \mathbf{M}t)$ every  $(\lambda x. \text{return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$  $BA \vdash n$ every with (the binos) elk **FA**  $\vdash$   $n \setminus n$ with (the binos) $(n \backslash n)/e$  $FA \vdash e$ 

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 $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA}_{\eta})) \vdash \mathsf{MM}t$ (»=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (»=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . return (if (re  $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_\eta)) \vdash \mathsf{MM}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{MM}t)$  $\lambda k$ . (>=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/Mt $\mathbf{Lower}(\mathbf{SR}(\star\mathbf{L}(\mathbf{SL}(\mathbf{BA})))) \vdash \mathbf{M}t$ if  $\texttt{every}\left(\lambda x.\,\texttt{return}\left(x\,(\texttt{with}\,(\texttt{the}\,\texttt{binos})\,\texttt{elk})\right)\right)(\lambda y.\,(\texttt{``='})\,\texttt{smone}\,(\lambda x.\,\texttt{return}\,(\texttt{saw}\,y\,x)))$ **SR(FA)**  $\vdash$  Mt//((e\t)\\Mt) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y. k \text{ (saw } y))$ smone  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathbf{M}t /\!\!/ (e \backslash\!\!\backslash \mathbf{M}t)$ every  $(\lambda x. \text{return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$  $BA \vdash n$ every with (the binos) elk **FA**  $\vdash$   $n \setminus n$ n with (the binos) $(n \backslash n)/e$  $FA \vdash e$ with the binos the binos

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 $\mathbf{FA}_{\eta} \vdash \mathsf{M}t$  $if(( = ) smone( \lambda x. every( \lambda x. return(x (with(the binos) elk)))( \lambda y. return(sawyx))))(return(left d))$  $FA \vdash Mt/Mt$  $BA \vdash t$  $if(( =) smone(\lambda x. every(\lambda x. return(x(with(the binos)elk)))(\lambda y. return(sawyx))))$  ${\tt left}\, {\tt d}$ (Mt/Mt)/Mt $Lower(\star L(SL(SR(BA)))) \vdash Mt$ if (»=) smone  $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ (with (the binos) elk))}) (\lambda y. \text{ return } (\text{saw } y. x)))$ le: d **SR(FA)**  $\vdash$  Mt//( $(e \setminus t) \setminus Mt$ ) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y$ . k (saw y))smone  $(e \backslash t)/e$ **Lower(SL(FA))**  $\vdash Mt /\!\!/ (e \backslash\!\!\backslash Mt)$ every  $(\lambda x. \text{ return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M} t /\!\!/ (e \backslash\!\!\backslash \mathsf{M} t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M} t)$  $BA \vdash n$ every with (the binos) elk  $FA \vdash n \backslash n$  $\verb|with|(\verb|the| binos|)$  $(n \backslash n)/e$  $FA \vdash e$ with the binos the binos

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## $\textbf{Lower}(\textbf{SL}(\textbf{FA}_{\eta})) \vdash \textbf{M}t$

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(»=) ((»=) smone  $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ (with (the binos) elk))}))(\lambda y. \text{ return } (\text{saw } y. x))))(\lambda y. \text{ if (return (x (with (the binos) elk)))}))$  $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_{\eta})) \vdash \mathsf{M}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{M}t)$  $\lambda k$ . (>=) ((>=) smone ( $\lambda x$ . every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . return (saw y x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/Mt $Lower(\star L(SL(SR(BA)))) \vdash Mt$ if (»=) smone  $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ (with (the binos) elk))}) (\lambda y. \text{ return } (\text{saw } y. x)))$ **SR(FA)**  $\vdash$  Mt//((e\t)\\Mt) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y. k \text{ (saw } y))$ smone  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathbf{M}t /\!\!/ (e \backslash\!\!\backslash \mathbf{M}t)$ every  $(\lambda x. \text{return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$  $BA \vdash n$ every with (the binos) elk **FA**  $\vdash$   $n \setminus n$ with (the binos) $(n \backslash n)/e$  $FA \vdash e$ with the binos

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## $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA}_{\eta})) \vdash \mathsf{MM}t$

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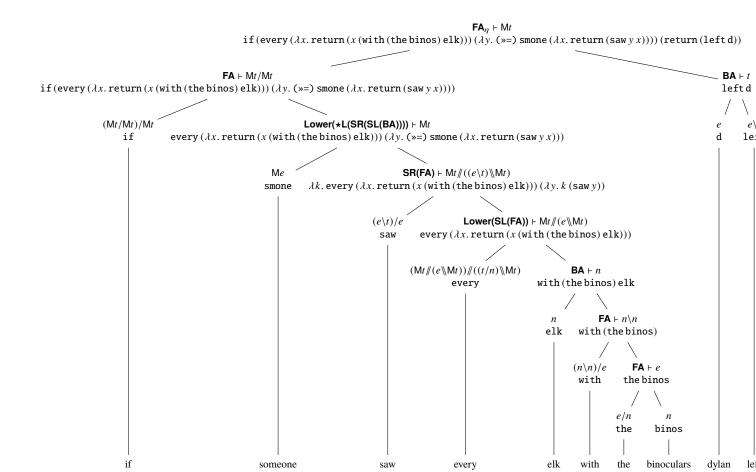
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(»=) ((»=) smone  $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ (with (the binos) elk))}) (\lambda y. \text{ return (saw } y. x)))) (\lambda y. \text{ return (if (return (saw y. x)))}))$  $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_\eta)) \vdash \mathsf{MM}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{MM}t)$  $\lambda k$ . (>=) ((>=) smone ( $\lambda x$ . every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . return (saw y x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/Mt $\mathbf{Lower(\star L(SL(SR(BA))))} \vdash \mathsf{M}t$ if (»=) smone  $(\lambda x. \text{ every } (\lambda x. \text{ return } (x \text{ (with (the binos) elk))}) (\lambda y. \text{ return } (\text{saw } y. x)))$ **SR(FA)**  $\vdash$  Mt//((e\t)\\Mt) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y$ . k (saw y))smone  $(e \backslash t)/e$ **Lower(SL(FA))**  $\vdash Mt/\!\!/(e \backslash Mt)$ every  $(\lambda x. \text{return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$  $BA \vdash n$ every with (the binos) elk **FA**  $\vdash$   $n \setminus n$ with (the binos) $(n \backslash n)/e$  $FA \vdash e$ with the binos the binos

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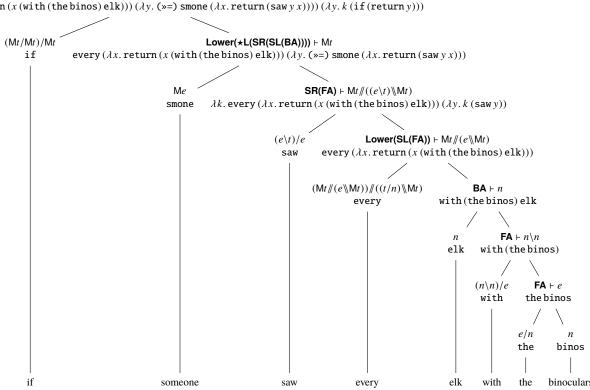


## $\textbf{Lower(SL(FA}_{\eta}\textbf{))} \vdash \mathsf{M}t$

(»=) (every  $(\lambda x. \text{ return}(x \text{ (with (the binos) elk))})(\lambda y. \text{ (»=) smone } (\lambda x. \text{ return (saw } y. x))))(\lambda y. \text{ if (return (saw } y. x))))$ 

## $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_{\eta})) \vdash \mathsf{M}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{M}t)$

 $\lambda k$ . (>=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . k (if (return y)))



## $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA}_{\eta})) \vdash \mathsf{MM}t$

(»=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (»=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . return (if (re  $\star \mathsf{R}(\mathsf{SR}(\mathsf{FA}_\eta)) \vdash \mathsf{MM}t /\!\!/ ((\mathsf{M}t/\mathsf{M}t) \backslash\!\!\backslash \mathsf{MM}t)$  $\lambda k$ . (>=) (every ( $\lambda x$ . return (x (with (the binos) elk))) ( $\lambda y$ . (>=) smone ( $\lambda x$ . return (saw y x)))) ( $\lambda y$ . k (if (return y))) (Mt/Mt)/Mt $\mathbf{Lower(\star L(SR(SL(BA))))} \vdash \mathsf{M}t$ if  $\texttt{every}\left(\lambda x.\,\texttt{return}\left(x\,(\texttt{with}\,(\texttt{the}\,\texttt{binos})\,\texttt{elk})\right)\right)(\lambda y.\,(\texttt{``='})\,\texttt{smone}\,(\lambda x.\,\texttt{return}\,(\texttt{saw}\,y\,x)))$ **SR(FA)**  $\vdash$  Mt//((e\t)\\Mt) Me $\lambda k$ . every  $(\lambda x$ . return  $(x \text{ (with (the binos) elk))}) (\lambda y. k \text{ (saw } y))$ smone  $(e \backslash t)/e$  $\mathbf{Lower}(\mathbf{SL}(\mathbf{FA})) \vdash \mathbf{M}t /\!\!/ (e \backslash\!\!\backslash \mathbf{M}t)$ every  $(\lambda x. \text{return}(x (\text{with}(\text{the binos}) \text{elk})))$ saw  $(\mathsf{M}t /\!\!/ (e \backslash\!\!\backslash \mathsf{M}t)) /\!\!/ ((t/n) \backslash\!\!\backslash \mathsf{M}t)$  $BA \vdash n$ every with (the binos) elk **FA**  $\vdash$   $n \setminus n$ n with (the binos) $(n \backslash n)/e$  $FA \vdash e$ with the binos the binos

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