Lexical analyses

↓: Hintikka (1969), Forbes (2003), Zimmermann (2004a) ↑: Montague (1969), Zimmermann (1993)

criterion ↓ / type →	*Q*uantifier: $\boldsymbol{seek}'(x_e,\mathcal{Q}_{(et)t}) \equiv \ldots$	*P*roperty: $\boldsymbol{seek}'(x_e,P_{et}) \equiv \ldots$
*H*intikka	$\lambda p_{st}\,\Box\,[\,{}^{\vee}p \to (\mathcal{Q}y)\,\mathbf{F}(x,y)\,]\,(\mathbf{T}(x))$	$\lambda p_{st}\,\Box\,[\,{}^{\vee}p \to (\exists y)\,[P(y) \wedge \mathbf{F}(x,y)]\,]\,(\mathbf{T}(x))$
*S*uccess	$\lambda p_{st}\,\Box\,[(\mathcal{Q}y)\,\mathbf{F}(x,y) \to {}^{\vee}p]\,(\mathbf{T}(x))$	$\lambda p_{st}\,\Box\,[(\exists y)\,[P(y) \wedge \mathbf{F}(x,y) \to {}^{\vee}p]]\,(\mathbf{T}(x))$
*M*atch	$\lambda p_{st}\,\Box\,[\,{}^{\vee}p \leftrightarrow (\mathcal{Q}y)\,\mathbf{F}(x,y)\,]\,(\mathbf{T}(x))$	$\lambda p_{st}\,\Box\,[\,{}^{\vee}p \leftrightarrow (\exists y)\,[P(y) \wedge \mathbf{F}(x,y)]\,]\,(\mathbf{T}(x))$
*F*uzzy	$\lambda p_{st}\,\Box\,[{}^{\vee}p \to (\mathcal{Q}y)\,F_{\mathcal{Q}}(x,y)]\,(T_{\mathcal{Q}}(x))$	$\lambda p_{st}\,\Box\,[{}^{\vee}p \to (\exists y)\,[P(y) \wedge T_{\mathcal{Q}}(x,y)]]\,(T_{\mathcal{Q}}(x))$
whatever	*your favourite analysis goes here*	*… or here*

Problems with …

… Monotonicity — Zimmermann (2004a)

Günther is looking for a book on Italian cooking. — ↑ monotonicity inference
∴ ***Günther is looking for a book.*** — to be explained

Günther is looking for a book on Italian cooking. — ↓ monotonicity inference
∴ ***Günther is looking for a book.*** — to be avoided

Günther is looking for a book on Italian cooking. — Monotonicity Problem
Eric is looking for something.
∴ ***Günther is looking for something Eric is looking for.*** — to be avoided (or explained away)

$(\exists\mathcal{Q}_{(et)t})\;[\boldsymbol{seek}'(\mathbf{e},\mathcal{Q}) \wedge \boldsymbol{seek}'(\mathbf{g},\mathcal{Q})]$ — opaque objects as quantifiers

$(\exists P_{et})\;[\boldsymbol{seek}'(\mathbf{e},P) \wedge \boldsymbol{seek}'(\mathbf{g},P)]$ — … or properties

… Specificity — Carlson (1977)

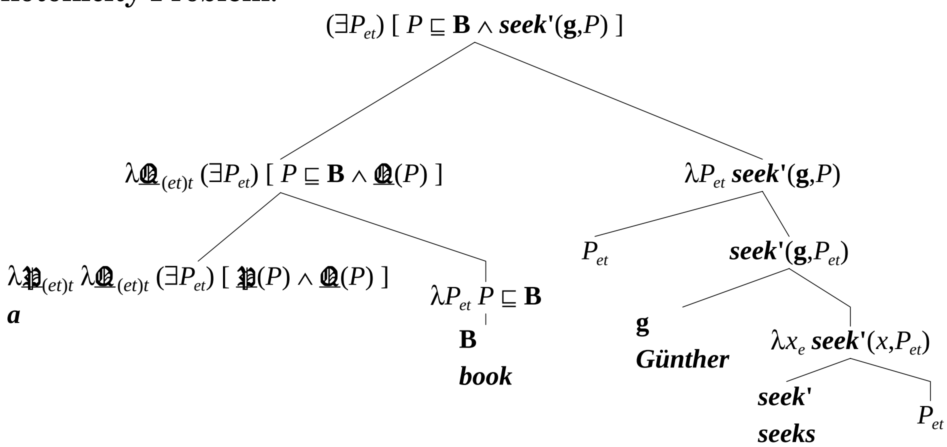
Günther is looking for a book on Italian cooking. — specific /unspecific
Günther is looking for books on Italian cooking. — ~~specific~~/unspecific

… Number — Zimmermann (2004b)

Günther is looking for a book on Italian cooking. — 1's enough
Günther is looking for books on Italian cooking. — 1's not enough – or is it?

Solution to …

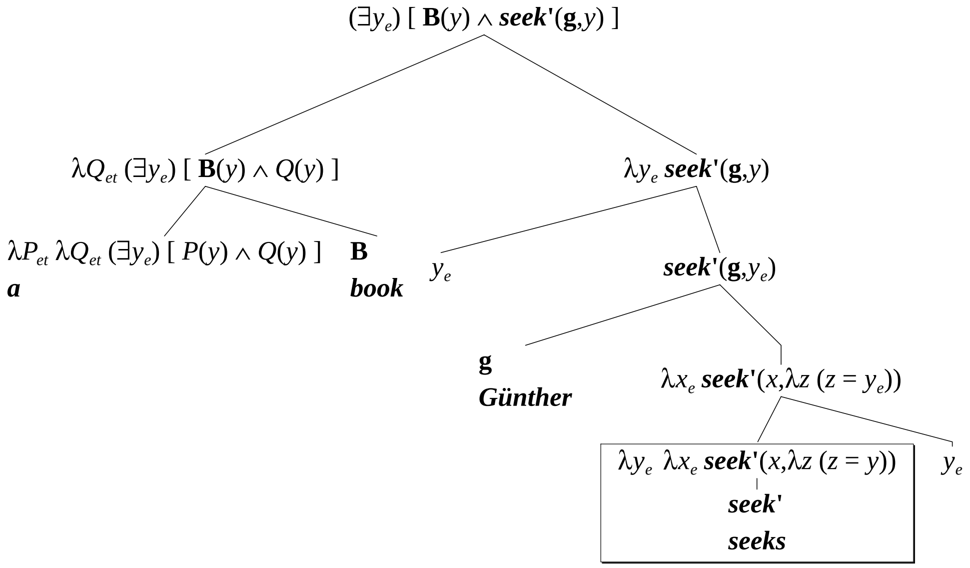
… Monotonicity Problem:

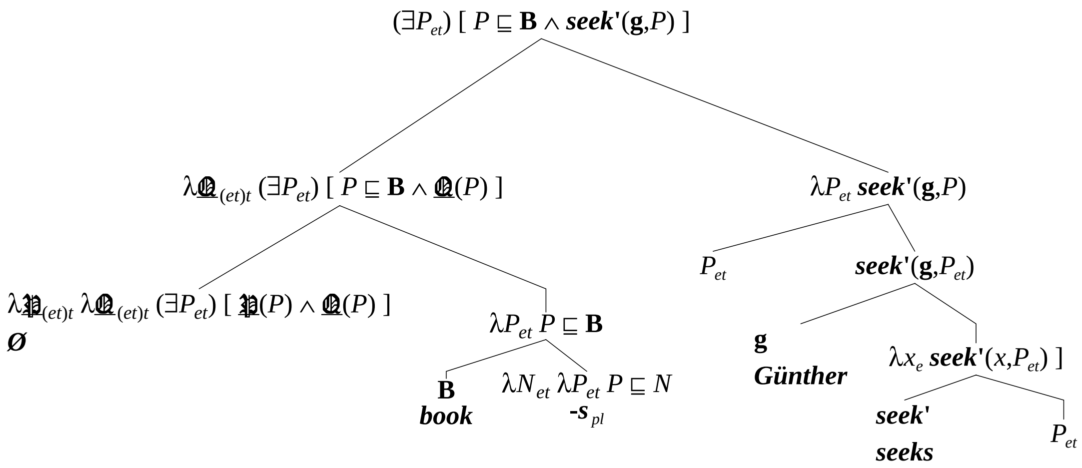


(+ lexical analysis *MP*)

☞ $P \sqsubseteq N \equiv \Box\,(\forall y)\,[P(y) \to N(y)]$

… Specificity Problem:





… Number Problem:

$$\boldsymbol{a}^{+\prime} = \lambda\mathfrak{P}_{(et)t}\,\lambda\mathfrak{Q}_{(et)t}\,(\exists P_{et})\,[\,\Sigma(P) \wedge \mathfrak{Q}(P) \wedge \mathfrak{Q}(P)\,]$$

$$\boldsymbol{Ø}_{pl}' = \lambda\mathfrak{P}_{(et)t}\,\lambda\mathfrak{Q}_{(et)t}\,(\exists P_{et})\,[\,\Pi(P) \wedge \mathfrak{Q}(P) \wedge \mathfrak{Q}(P)\,]$$

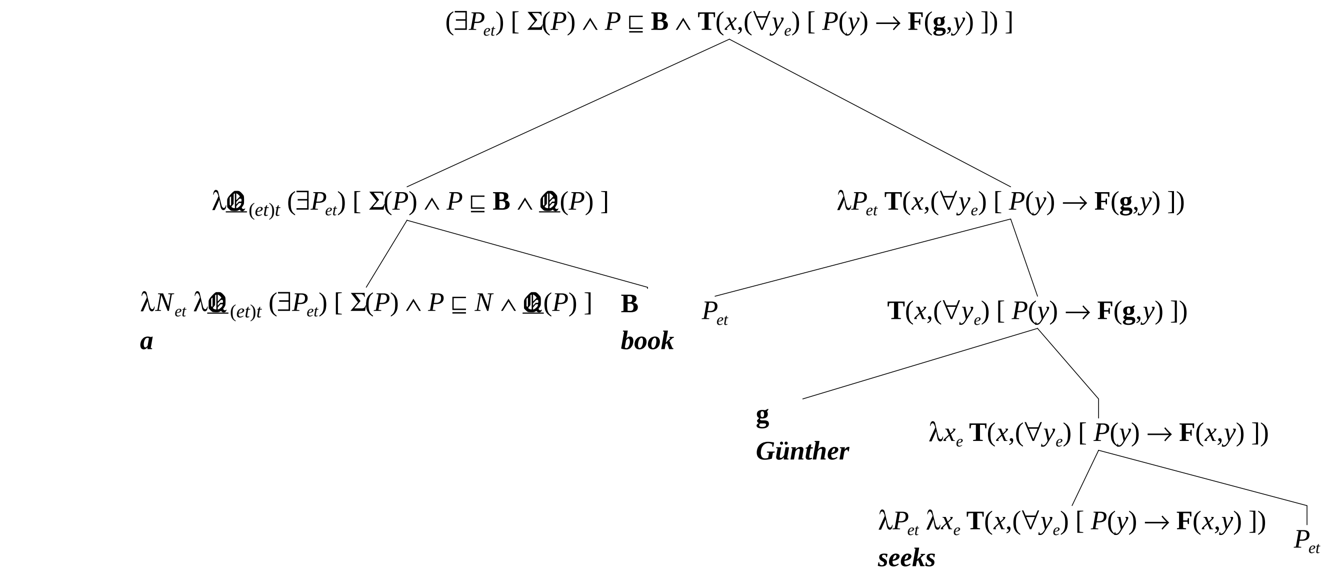
$$\boldsymbol{seek}' = \lambda P_{et}\,\lambda x_e\,\lambda p_{st}\,\Box\,[\,{}^{\vee}p \leftrightarrow (\forall y_e)\,[P(y) \rightarrow \mathbf{F}(x,y)]\,]\,(\mathbf{T}(x))$$

[≡ $\lambda P_{et}\,\lambda x_e\,\mathbf{T}(x,(\forall y_e)\,[\,P(y) \rightarrow \mathbf{F}(x,y)\,])$ more orthodox reformulation]

$$\boldsymbol{find}' = \mathbf{F}$$

☞ $\Sigma(P) \equiv \Box\,(\exists y)\,(\forall z)\,[\,P(z) \leftrightarrow z = y\,]$

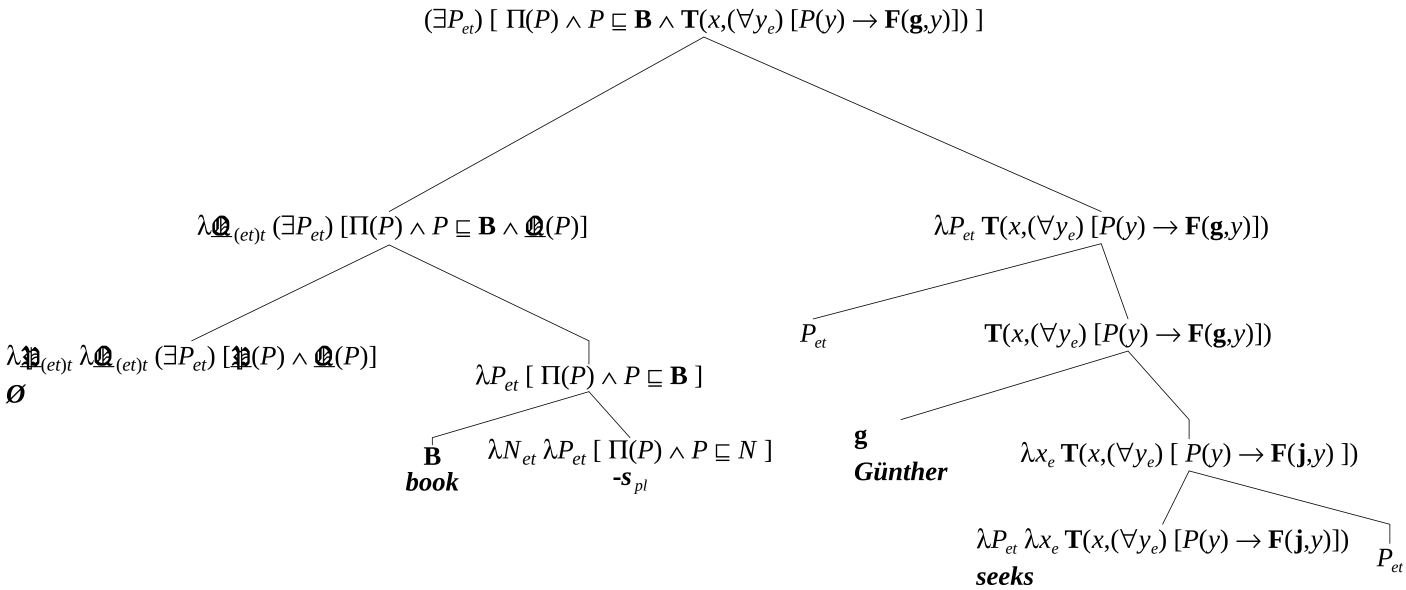
☞ $\Pi(P) \equiv \Box\,(\forall y)\,[\,P(z) \rightarrow (\exists z)\,[\,Q(z) \wedge z \neq y\,]]$



$$(\exists P_{et})\ [\ \underline{\Sigma(P)} \wedge P \sqsubseteq \mathbf{B} \wedge \mathbf{T}(x,(\forall y_e)\ [\ P(y) \rightarrow \mathbf{F}(\mathbf{j},y)\ ])]$$

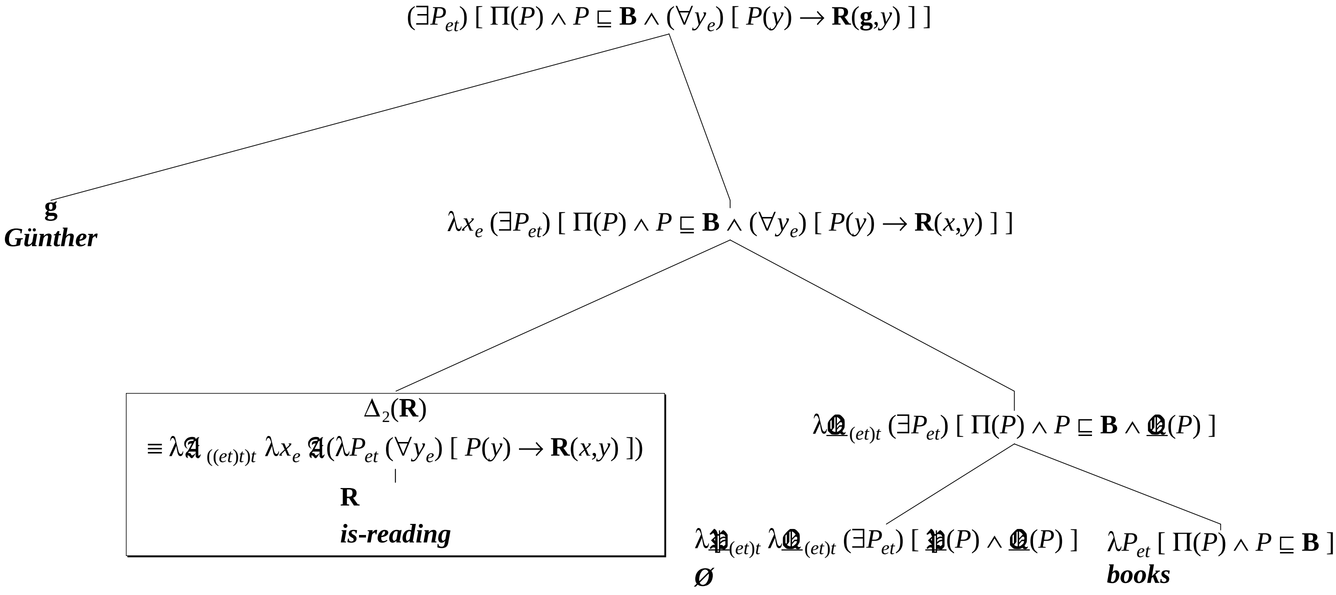
$$\equiv (\exists P_{et})\ [\ \underline{\Box\ (\exists y)\ (\forall z)\ [\ P(z) \leftrightarrow z = y\ ]} \wedge \underline{\underline{P \sqsubseteq \mathbf{B}}} \wedge \mathbf{T}(x,(\forall y_e)\ [\ P(y) \rightarrow \mathbf{F}(\mathbf{j},y)\ ])]$$

$$\equiv (\exists P_{et})\ [\ \Box\ (\exists y)\ (\forall z)\ [\ P(z) \leftrightarrow z = y\ ] \wedge \underline{\underline{\Box\ (\forall y)\ [P(y) \rightarrow \mathbf{B}(y)]}} \wedge \mathbf{T}(x,(\forall y_e)\ [\ P(y) \rightarrow \mathbf{F}(\mathbf{j},y)\ ])]$$



$$(\exists P_{et})\ [\ \underline{\Pi(P)} \wedge P \sqsubseteq \mathbf{B} \wedge \mathbf{T}(x,(\forall y_e)\ [P(y) \rightarrow \mathbf{F}(\mathbf{g},y)])\ ]$$

$$\equiv (\exists P_{et})\ [\ \underline{\Pi(P)} \equiv \underline{\Box\ (\forall y)\ [\ P(z) \rightarrow (\exists z)\ [\ Q(z) \wedge z \neq y\ ]]} \wedge \underline{\underline{P \sqsubseteq \mathbf{B}}} \wedge \mathbf{T}(x,(\forall y_e)\ [P(y) \rightarrow \mathbf{F}(\mathbf{g},y)])]$$



References

Carlson, G.(1977): 'A Unified Analysis of the English Bare Plural'. *Linguistics and Philosophy* **1**, 413–457.

Forbes, G. (2003): 'Meaning-Postulates, Inference, and the Relation/Notional Ambiguity.' *Facta Philosophica* **5**, 49–74.

Hintikka, J. (1969): 'Semantics for Propositional Attitudes'. In: J. W. Davis *et al.*(eds.), *Philosophical Logic*. Dordrecht. 21–45.

Montague, R. (1969): 'On the Nature of Certain Philosophical Entities'. *Monist* **53**, 159–195.

Zimmermann, T. E. (1993): 'On the Proper Treatment of Opacity in Certain Verbs'. *Natural Language Semantics* **1**, 149–179.

– (2004a): 'Monotonicity in Opaque Verbs'. Available at the Semanticsarchive.

– (2004b): 'Number and Opacity'. Guess wehere.