

A Linear Reconstruction of Brunch*

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To model the brunch menu, we turn it into a linear logic proposition that describes the transaction it allows.

$\text{menu} = \$20 \multimap \text{entree} \otimes \text{side} \otimes \text{beverage}$

$\text{entree} = (\text{eggs} \otimes \text{hash} \otimes \text{cranberries}) \& (\text{crepes} \otimes \text{mascarpone} \otimes \text{pears})$

$\text{side} = \text{clementines} \oplus \text{apples}$

$\text{beverage} = (!\text{juice} \& !\text{tea} \& !\text{coffee}) \otimes ((\$5 \multimap \text{cocktail}) \& \mathbf{1})$

$\text{cocktail} = \text{mimosa} \& \text{bellini}$

Notes:

- The menu offers you a prix fixe meal for \$20, including an entrée, a side, and a beverage; since all parts are included, we use simultaneous conjunction \otimes .
- The entrée is your choice, so we use alternative conjunction $\&$.
- The side dish is their choice, so we use disjunction \oplus .
- The beverage option offers one of juice, tea, or coffee, your choice, but unlimited in quantity, modelled using the exponential $!$.
- Finally, the optional extra-cost cocktail is modelled as your choice of nothing at all, $\mathbf{1}$, or the obligation to pay \$5 for a cocktail.

Original menu follows.

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Linear Cafe
prix fixe brunch menu,
december 1, 2009

\$20 includes:

Choice of entrée:

Poached eggs with turkey hash and cranberry sauce

Pumpkin mascarpone-filled crepes topped with caramelized pears

Side Dish:

Seasonal fresh fruit (either clementine wedges or apple slices)

Choice of beverage:

Juice, tea, or coffee -- all bottomless

(optionally, \$5 extra) Mimosa or Bellini