24.910 Topics in Linguistic Theory: Propositional Attitudes
Spring 2009

SOLUTIONS: Assignment for Week 3 (Feb. 24)

❖ **[From Heim & Kratzer] Exercise 2 <u>parts e-h</u> (pp. 39-40)**

[Note: I've put some items in **bold** to bring attention to the parts of the expression that are relevant at each step. You don't have to do this.]

➢ **(e):**

[λ**f** . [λx . f(x) = 1 and x is gray]] (**[λy . y is a cat]**)

= [λx . **[λy . y is a cat] (x)** = 1 and x is gray]

= [λx . **x is a cat** and x is gray]

➢ **(f):**

[λ**f** . [λx . f(x)(Ann) = 1] **]** (**[λy . [λz . z saw y]]**)

= [λx . [λ**y** . [λz . z saw y]] **(x)**(Ann) = 1]

= [λx . [λ**z** . z saw x]**(Ann)** = 1]

= [λx . Ann saw x]

➢ **(g):**

[λx . [λ**y** . y>3 and y<7] **(x)**]

= [λx . x>3 and x<7]

➢ **(h):**

[λz . [λy . **[λx . x>3 and x<7] (y)**] (z)]

= [λz . **[λy . y>3 and y<7] (z)**]

= [λz . z>3 and z<7]

❖ **[From von Fintel & Heim] Exercise 1.2 (p. 10)**

[Also see the handout from 2/10/09, p. 4]

For the purposes of this solution, I'm going to skip the steps of putting together the parts of the sentential argument *a famous detective lives at 221B Baker St.* (let's call this S):

➢ Intension of S: [λw' . a famous detective lives at 221B Baker St. in w']

At this point in the reading we're working with the most simple lexical entry for *in the world of Sherlock Holmes*, where we've further stipulated that $\mathbf{w_9}$ is the world as presented in the Sherlock Holmes stories:

➢ $[\![\text{In the world of Sherlock Holmes}]\!]^w = [\lambda p_{<s,t>} . p(w_9)]$

Here's the computation (evaluating at w_7):

- ⟦In the world of Sherlock Holmes, a famous detective lives at 221B Baker St⟧^{w7}

  = ⟦in the world of Sherlock Holmes⟧^{w7} (intension of S)

  = ⟦in the world of Sherlock Holmes⟧^{w7} ([λw' . a famous detective lives at 221B Baker St. in w'])

  = [λ**p**$_{<s,t>}$. p(w_9)] (**[λw' . a famous detective lives at 221B Baker St. in w']**)

  = [λw' . a famous detective lives at 221B Baker St. in w'] (w_9)

  = (true iff) a famous detective lives at 221B Baker St. in w_9

❖ [From von Fintel & Heim] Exercise 1.3 (page 11)

Keep in mind that we're using the simple version of the intensional semantics, as above.

First, let's give the extension and intension of the two conjuncts:

- Extensions:

  ⟦Holmes is quick⟧^{w} = 1 iff Holmes is quick in w
  ⟦Watson is slow⟧^{w} = 1 iff Watson is slow in w

- Intensions:

  Intension of *Holmes is quick*: [λw' . ⟦Holmes is quick⟧$^{w'}$]
  = [λw' . Holmes is quick in w']

  Intension of *Watson is slow*: [λw' . ⟦Watson is slow⟧$^{w'}$]
  = [λw' . Watson is slow in w']

- Now let's go on to the computation. The first part is the same in both cases:

  ⟦In the world of Sherlock Holmes, Holmes is quick and Watson is slow⟧^{w}

  = **⟦in the world of Sherlock Holmes⟧^{w}** (λw' . ⟦Holmes is quick and Watson is slow⟧$^{w'}$)

  = [λp$_{<s,t>}$. p(w_9)] ([λw' . ⟦Holmes is quick and Watson is slow⟧$^{w'}$])

  = [λw' . ⟦Holmes is quick and Watson is slow⟧$^{w'}$] (w_9)

  = **⟦Holmes is quick and Watson is slow⟧^{w9}**

At this point, we have to do the two computations separately:

- With extensional *and*: **⟦and⟧^{w} = [λu_t . [λv_t . u = v = 1]]**

  ⟦Holmes is quick and Watson is slow⟧^{w9} = **⟦and⟧^{w9}** (⟦Watson is slow⟧^{w9}) (⟦Holmes is quick⟧^{w9})

  = **[λu_t . [λv_t . u = v = 1]]** (⟦Watson is slow⟧^{w9}) (⟦Holmes is quick⟧^{w9})

  = [λv_t . ⟦Watson is slow⟧^{w9} = v = 1] (⟦Holmes is quick⟧^{w9})

= (true iff) ⟦Watson is slow⟧^{w9} = ⟦Holmes is quick⟧^{w9} = 1]

= (true iff) Watson is slow in w_9 and Holmes is quick in w_9

- With intensional *and*: **⟦and⟧^{w} = [$\lambda p_{<s,t>}$. [$\lambda q_{<s,t>}$. p(w) = q(w) = 1]]**

  ⟦Holmes is quick and Watson is slow⟧^{w9} = **⟦and⟧^{w9}** ([λw' . ⟦Watson is slow⟧$^{w'}$]) ([λw' . ⟦Holmes is quick⟧$^{w'}$])

  = **[$\lambda p_{<s,t>}$. [$\lambda q_{<s,t>}$. p(w_9) = q(w_9) = 1]]** ([λw' . ⟦Watson is slow⟧$^{w'}$]) ([λw' . ⟦Holmes is quick⟧$^{w'}$])

  = [$\lambda q_{<s,t>}$. **[λw' . ⟦Watson is slow⟧$^{w'}$]**(w_9) = q(w_9) = 1] ([λw' . ⟦Holmes is quick⟧$^{w'}$])

  = [$\lambda q_{<s,t>}$. ⟦Watson is slow⟧^{w9} = q(w_9) = 1] ([λw' . ⟦Holmes is quick⟧$^{w'}$])

  = (true iff) ⟦Watson is slow⟧^{w9} = [λw' . ⟦Holmes is quick⟧$^{w'}$] (w_9) = 1]

  = (true iff) ⟦Watson is slow⟧^{w9} = ⟦Holmes is quick⟧^{w9} = 1

  = (true iff) Watson is slow in w_9 and Holmes is quick in w_9

- **[From von Fintel & Heim] Exercise 2.1 (page 19)**

  [Discussed in class – see handout from 2/24/09, pp. 3-4]