Exercise 15 for the mid-term

Solutions

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1. Entailment or Presupposition? Use the tests.

(1) a. Joan didn't begin doing his homwork.
    b. Joan had not been doing his homework before.

(2) a. It was his wallet that Bill lost.
    b. Bill lost something.

(3) a. I know that Sue and Fred went to the party.
    b. Sue went to the party.

Solutions

1.(1) (1a) both presupposes and entails (1b).

Contradictary test: # Joan didn't begin doing his homwork and he had been doing his homework before.

Negation test: Joa began doing his homwork.

(1b) still holds.

(2) (2a) both presupposes and entails (2b).

Contradictary test: # It was his wallet that Bill lost and he didn't lose anything.

Question test: - Was his wallet that Bill lost?

- No, it was his book that he lost.

(2b) still holds.

Solutions

(2) (3a) both presupposes and entails (3b).

Contradictary test: # I know that Sue and Fred went to the party and Sue didn't go to the party.

Negation test: I don't know that Sue and Fred went to the party

(3b) still holds.

Exercise 15 for the mid-term

2. Characteristic function and schönfinkelization

Assume D= {Mary, John, Jane}. The binary relation $R_{\text{pround of}}$ is defined as in (1).

(1) $R_{\text{pround of}} = \{<\text{Mary, John}>, <\text{Jane, Mary}>\}$

a. Write the characteristic function of $R_{\text{pround of.}}$

b. Which schönfinkelization of the characteristic function of

$R_{\text{pround of}}$ do we assume in English? Write the schönfinkelization out.

Solutions

(2) We assume right (to left) schönfinkelization in English.

$$R_{\text{pround of}} = \begin{bmatrix} \langle \text{Mary, John} \rangle \rightarrow 1 \\ \langle \text{Mary, Jane} \rangle \rightarrow 0 \\ \langle \text{Mary, Mary} \rangle \rightarrow 0 \\ \langle \text{John, Mary} \rangle \rightarrow 0 \\ \langle \text{John, Jane} \rangle \rightarrow 0 \\ \langle \text{John, John} \rangle \rightarrow 0 \\ \langle \text{Jane, John} \rangle \rightarrow 0 \\ \langle \text{Jane, Mary} \rangle \rightarrow 1 \\ \langle \text{Jane, Jane} \rangle \rightarrow 0 \end{bmatrix}$$

$$[[\text{pround of}]] = \begin{bmatrix} \text{Mary} \rightarrow \begin{bmatrix} \text{Mary} \rightarrow 0 \\ \text{John} \rightarrow 0 \\ \text{Jane} \rightarrow 1 \end{bmatrix} \\ \text{John} \rightarrow \begin{bmatrix} \text{Mary} \rightarrow 1 \\ \text{John} \rightarrow 0 \\ \text{Jane} \rightarrow 0 \end{bmatrix} \\ \text{Jane} \rightarrow \begin{bmatrix} \text{Mary} \rightarrow 0 \\ \text{John} \rightarrow 0 \\ \text{Jane} \rightarrow 0 \end{bmatrix} \end{bmatrix}$$

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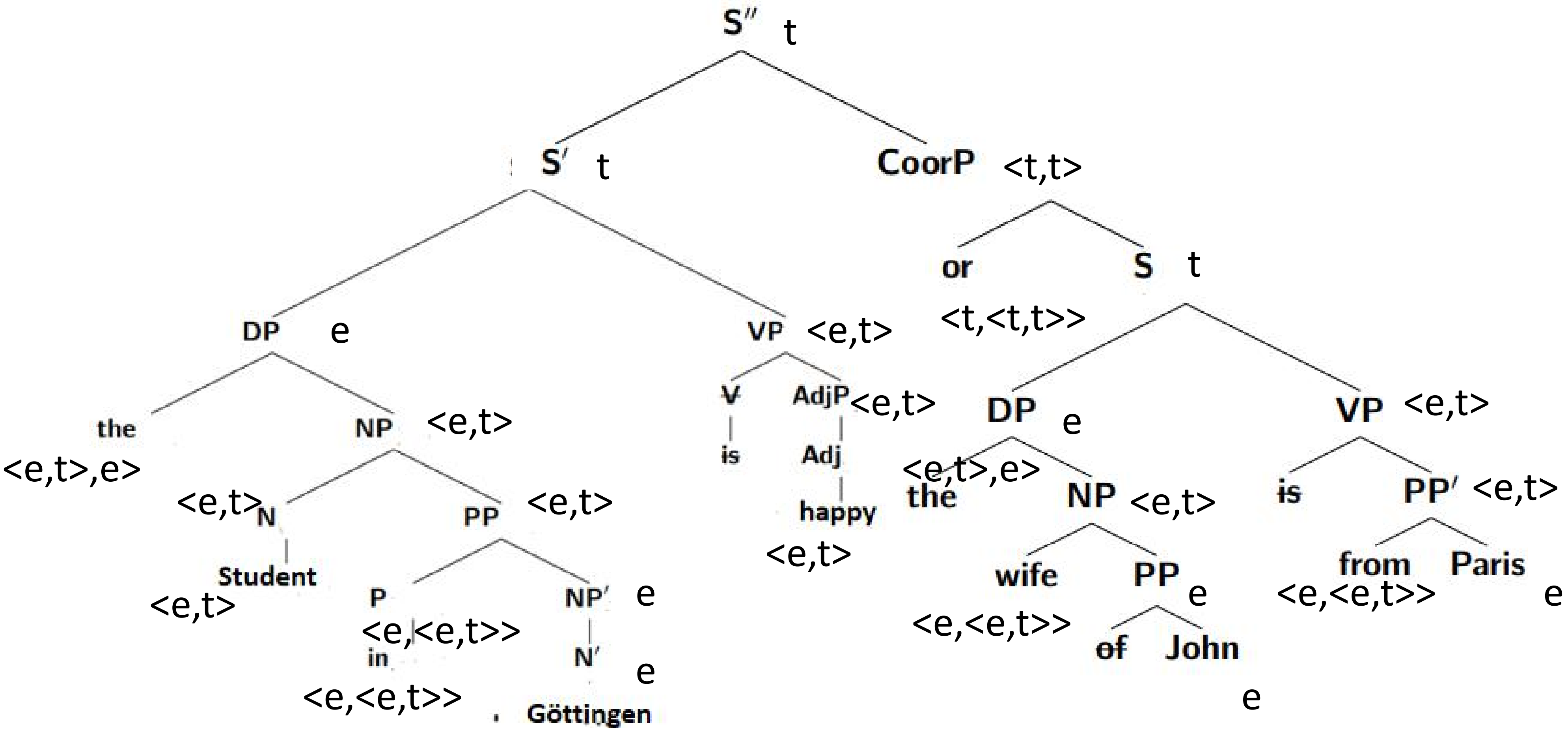
3. For sentences (1) and (2):

   a. first annotate the tree with denotation types

   b. Compute the truth-conditions (and definedness conditions if necessary)

Solutions

(1) The student in Göttingen is happy or the dog of John is from Paris.



Solution: Exercise 14b

We already computed the truth conditions for [[S']], see details in the slides of week 5, **Exercise 14b.**

[[S'']]= [[CoorP]] ([[S']]) (FA)

= [[or]]([[S]])([[S']]) (FA)

= [λ p $\in$ Dt. [λq $\in$ Dt . there is an r $\in$ {p,q} such that r = 1]]([[S]])([[S']]) (TN)

= 1 iff there is an r $\in$ {[[S]],[[S']]} such that r = 1

[[S']] = [[VP]]([[DP]]) (FA)

= [λx $\in$ D_e . x is happy] (ιx [x is a student in Göttingen]

defined only if $\exists$!x [x is a student in Göttingen] ([[VP]], [[DP]])

=1 iif ιx [x is a student in Göttingen] is happy

defined only if $\exists$!x [x is a student in Göttingen]

[[PP]] = [[John]] = John (NN, TN)

[[wife]] = λx $\in$ De . [λy : y $\in$ De and y is female . y is a wife of x] (TN)

[[NP]] = [[wife]]([[PP]]) (FA)

= [λx ∈ De . [λy : y ∈ De and y is female . y is a wife of x]](John) ([[PP]], [[wife]])

= [λy : y ∈ De and y is female . y is a wife of John]

[[the]] = λf : f ∈ Dhe,ti and ∃ !x[f (x) = 1]. ιx[f (x) = 1] (TN)

[[DP]] = [[the]]([[NP]]) (FA)

= [λf : f ∈ Dhe,ti and ∃ !x[f (x) = 1]. ιx[f (x) = 1]]([λy : y ∈ De and y is female . y is a wife of John])

(FA)

= ιx[[λy : y ∈ De and y is female . y is a wife of John](x) = 1]

only defined if ∃ !x[[λy : y ∈ De and y is female . y is a wife of John](x) = 1]

= ιx[x is a wife of John]

only defined if ∃ !x[x is a wife of John] and ιx[x is a wife of John] is female

[[Paris]] = Paris (TN)

[[from]] = λx ∈ De . [λy ∈ De . y is from x] (TN)

[[VP]] = [[PP]] (NN)

= [[from]]([[Paris]]) (FA)

= [λx ∈ De . [λy ∈ De . y is from x]](Paris) ([[from]], [[Paris]])

= [λy ∈ De . y is from Paris]

[[S]] = [[VP]]([[DP]]) (FA)

= [λy ∈ De . y is from Paris] ([[DP]]) ([[VP]])

= 1 iff [[DP]] is from Paris

= 1 iff ιx[x is a wife of John] is from Paris

only defined if ∃ !x[x is a wife of John] and ιx[x is a wife of John] is female

[[S'']]= 1 iff there is an r ∈ {[[S]],[[S']]} such that r = 1 ([[S'']])

= 1 ιx[x is a wife of John] is from Paris or ιx [x is a student in Göttingen] is happy

only defined if ∃ !x[x is a wife of John] and ιx[x is a wife of John] is female, and ∃ !x [x is a student in Göttingen]

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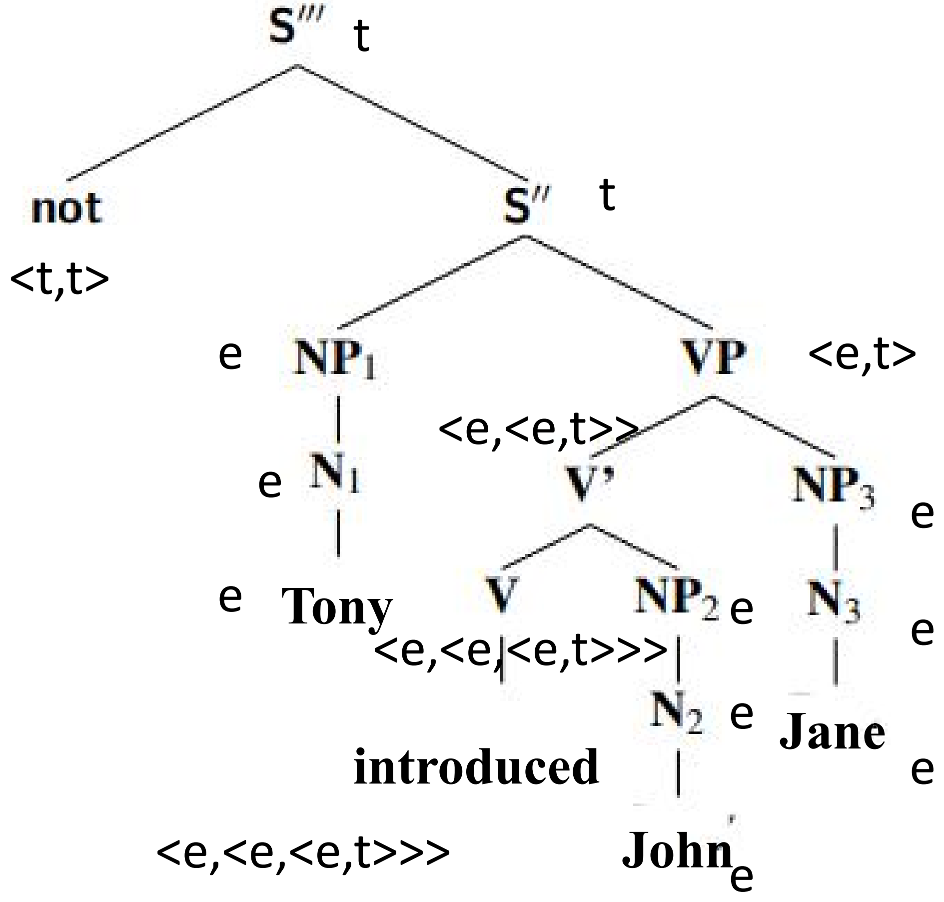
(2) It is not the case that Tony introduced John Jane.



Solutions

$[[not]] = \lambda p \in Dt.\ p = 0$ (TN)

$[[V]] = [[introduced]] = \lambda x \in D\ .\ [\lambda y \in D\ .\ [\lambda z \in D\ .\ z \text{ introduced } y \text{ to } x]]$ (NN, TN)

$[[NP1]] = [[N1]] = [[Tony]] = \text{Tony}$ (2xNN, TN)

$[[NP2]] = [[N2]] = [[John]] = \text{John}$ (2xNN, TN)

$[[NP3]] = [[N3]] = [[Jane]] = \text{Jane}$ (2xNN, TN)

$[[V']] = [[V]]([[NP2]])$ (FA)

$= [[introduced]]([[John]])$ ([[V]], [[NP2]])

$[[VP]] = [[V']]([[NP3]])$ (FA)

$= [[introduced]]([[John]])([[Jane]])$ ([[V']], [[NP3]])

$[[S'']] = [[VP]]([[NP1]])$ (FA)

$= [[introduced]]([[John]])([[Jane]])([[Tony]])$ $([[VP]], [[NP1])$

$= [\lambda x \in D . [\lambda y \in D . [\lambda z \in D . \text{z introduced y to x}]]] (John)(Jane)(Tony)$

$= 1$ iff Tony introduced Jane to John

$[[S''']]= [[not]] ([[S'']])$ (FA)

$= [\lambda p \in Dt. p = 0] ([[S'']])$ $([[not]], [[S'']])$

$= 1$ iff Tony didn't introduce Jane to John