

Semantic Theory

Lecture 13: Presuppositions in DRT

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Last Call

- Final exam: 2011-07-19
- Deadline for registration: **TODAY**

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Presuppositions (Recap)

- Presuppositions are requirements that the context must satisfy for the utterance to be interpretable.
- When a sentence carrying a presupposition is embedded in another sentence, the complete sentence often inherits the presupposition.
 - (1) *The mathematician who proved Goldbach's conjecture was a woman* » *Someone proved G's conjecture*
 - (2) *The mathematician who proved Goldbach's conjecture wasn't a woman* » *Someone proved G's conjecture*
 - (3) **Maybe** *the mathematician who proved Goldbach's conjecture wasn't a woman* » *Someone proved G's conjecture*

(Examples: Kai von Fintel)

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Presuppositions (Recap)

- Projected presuppositions can be filtered in certain contexts, or cancelled by contextual knowledge.
- **The projection problem** for presuppositions is the problem of predicting the presuppositions of complex sentences from the presuppositions of their parts.
 - (1) *The king has a son*
 - (2) *The king's son is bald*
 - (3) *If the king has a son, the king's son is bald*

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Presuppositions in DRT

- Rob van der Sandt's (1992) theory:
 - Presuppositions are anaphora with semantic content.
 - Presupposition filtering is modelled as anaphora binding within a local context (sub-DRS).
 - If a presupposition is not bound, it is accommodated (usually in the top-level DRS).

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Presupposition as Anaphora

- (1) *The chancellor decides*
 >> *There is a chancellor // (s)he decides*
- (2) *John regrets that Mary is married*
 >> *Mary is married // John regrets this*
- (3) *John stopped smoking*
 >> *John used to smoke // he has stopped doing that*
- (4) *It was Peter who ate the cake*
 >> *Somebody ate the cake // Peter did it*

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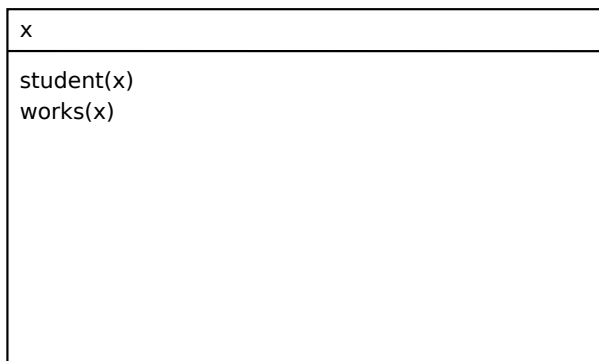
Van der Sandt: Basic Principles

- Introduce “ α -DRSs” as a new type of complex condition
- DRS construction proceeds in two steps:
 - Construction rules for definite noun phrases introduce α -DRSs. This yields a “proto-DRS.”
 - In a second step, the α -DRSs are resolved (translation of a proto-DRS into a standard DRS)
- Resolution: presuppositions can be either **bound** or **accommodated**

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Example: Binding

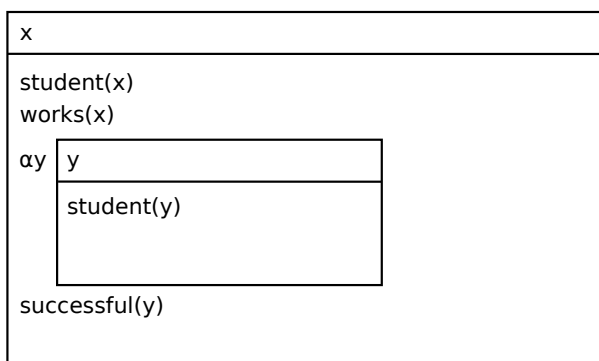
- *A student works.*



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Example: Binding

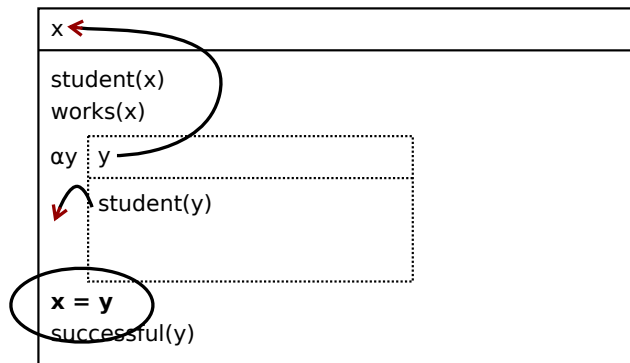
- *A student works. The student is successful.*



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Example: Binding

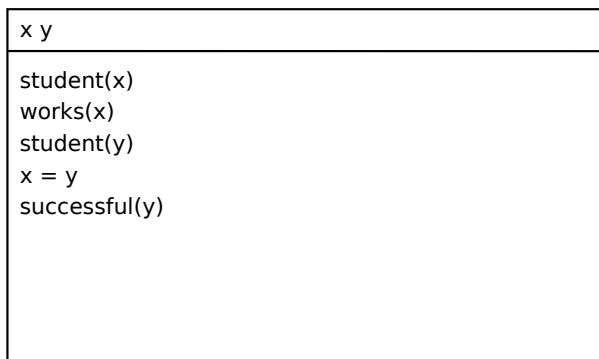
- A student works. The student is successful.



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Example: Binding

- A student works. The student is successful.



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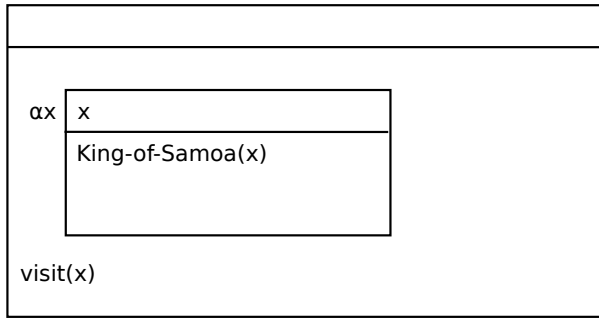
Accommodation

- Expressions that trigger presuppositions can often be used even if the context does not satisfy the presupposition.
 - (1) *The king of Buganda is 43*
 - (2) *The movie I saw yesterday was really interesting*
 - (3) *We regret that we have no free rooms available*
- The missing information is silently added to the context ("accommodated") as we interpret the sentence

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Accommodation

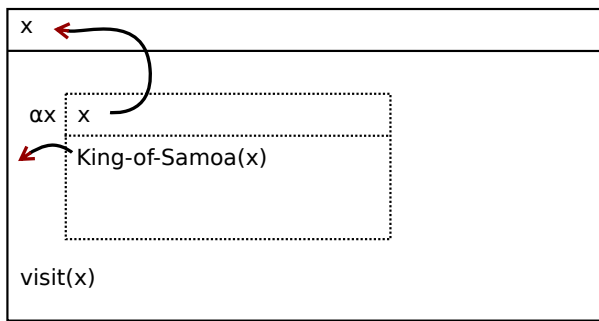
- *The King of Samoa is visiting.*



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Accommodation

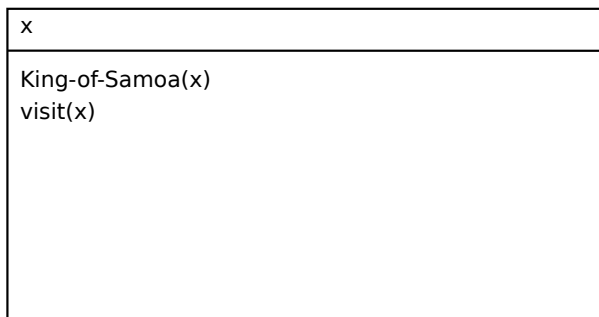
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Accommodation

- *The King of Samoa is visiting.*



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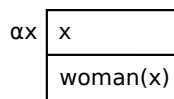
DRS-Construction

- A **(proto-) DRS** is a triple $\langle U_k, C_k, A_k \rangle$ such that
 - U_k is a set of discourse referents
 - C_k is a set of (atomic or complex) conditions
 - A_k is a set of “anaphoric” (α -) DRSs of the form $\alpha z K'$, where z is a discourse referent and K' is a proto-DRS.

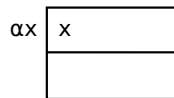
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Definite Noun Phrases

- The DRS construction rules for all definite noun phrases introduce α -DRSs:
- **Definite descriptions** (“the woman”)



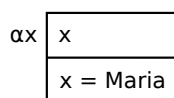
- **Pronouns** (“he”)



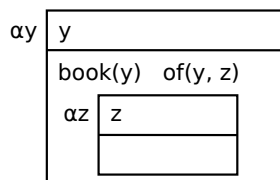
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Definite Noun Phrases

- The DRS construction rules for all definite noun phrases introduce α -DRSs:
- **Proper names** (“Maria”)



- **Possessives** (“his book”)



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Remark on Proper Names

- Proper names introduce α -DRS like other definite noun phrases.
- In the following examples, we assume (for simplicity) that proper names are treated as in standard DRS

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Subordination

- K_1 is an **immediate sub-DRS** of a DRS $K = \langle U_K, C_K, A_K \rangle$ iff
 - C_K contains a condition of the form $\neg K_1, K_1 \Rightarrow K_2, K_2 \Rightarrow K_1, K_1 \vee K_2, K_2 \vee K_1$
 - or $\alpha x K_1 \in A_K$
- K_1 is a **sub-DRS** of K (notation: $K_1 \leq K$) iff
 - $K_1 = K$ or
 - K_1 is an immediate sub-DRS of K or
 - there is a DRS K_2 such that $K_1 \leq K_2$ and K_2 is an immediate sub-DRS of K .
- K_1 is a **proper sub-DRS** of K iff $K_1 \leq K$ and $K_1 \neq K$.

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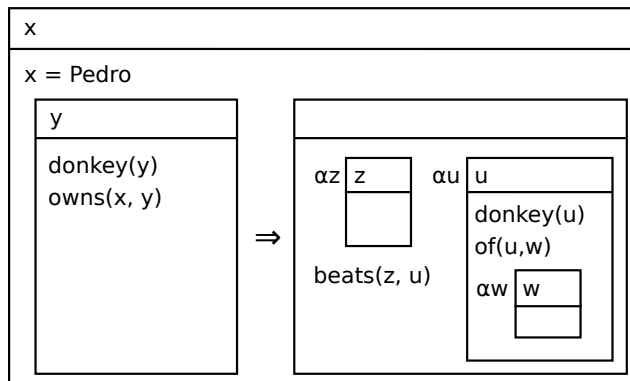
Resolution by Binding

- Let K, K', K_t be some DRSs such that $K' \leq K, K_t \leq K$ and
 - $\gamma = \alpha x K_s \in K', K_s$ is α -free
 - $y \in U_{K_t}$ is a DR that is accessible and suitable for γ
- **Binding:** Remove γ from K' and extend K_t with U_{K_s}, C_{K_s} , and the condition $x = y$.
- **Note:** Because K_s must be α -free, complex Alpha-DRSs are always resolved from the inside out.

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Resolution by Binding

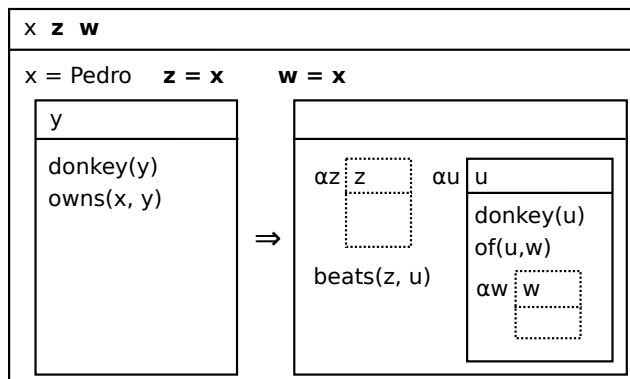
- *If Pedro owns a donkey, he beats his donkey.*



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Resolution by Binding

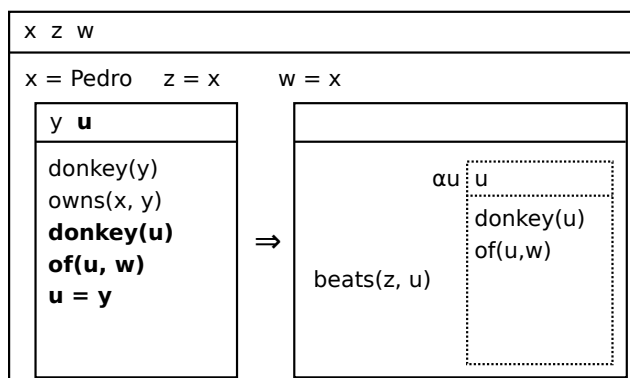
- *If Pedro owns a donkey, he beats his donkey.*



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Resolution by Binding

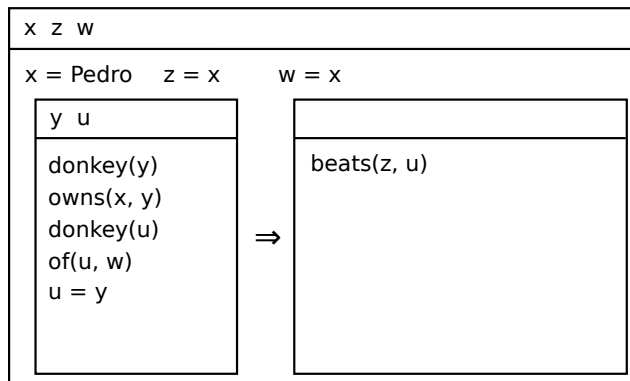
- *If Pedro owns a donkey, he beats his donkey.*



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Resolution by Binding

- *If Pedro owns a donkey, he beats his donkey.*



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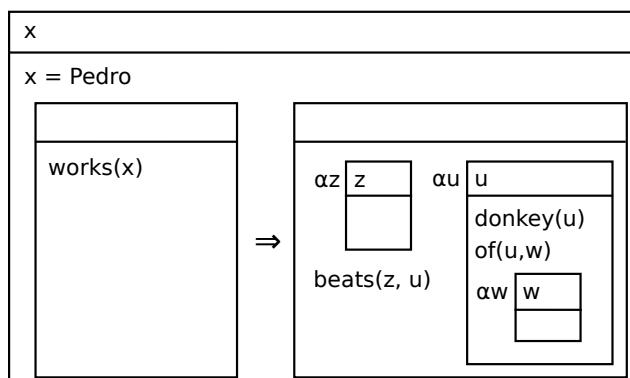
Resolution by Accommodation

- Let K, K' be DRSs such that $K' \leq K, K_t \leq K$ and
 - $\gamma = \alpha x K_s \in K', K_s$ is α -free
 - K_t a DRS that is accessible for γ .
- **Accommodation:** Remove γ from K' and extend K_t with U_{K_s} and C_{K_s} .

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Resolution by Accommodation

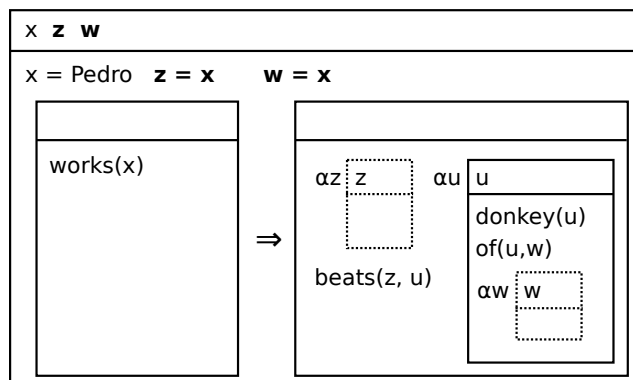
- *If Pedro works, he beats his donkey.*



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Resolution by Accommodation

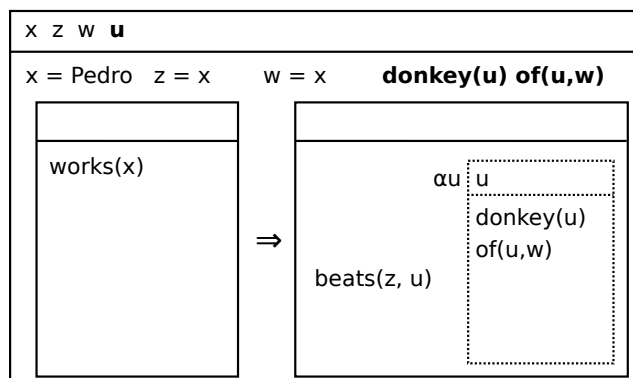
- *If Pedro works, he beats his donkey.*



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Resolution by Accommodation

- *If Pedro works, he beats his donkey.*



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Preference Principles

- Binding is preferred over accommodation.
- Binding works “upwards” along the accessibility relation: The “closest” possible antecedent is preferred.
- Accommodation works “downwards” along the accessibility relation. It is preferred to accommodate into the highest possible DRS.

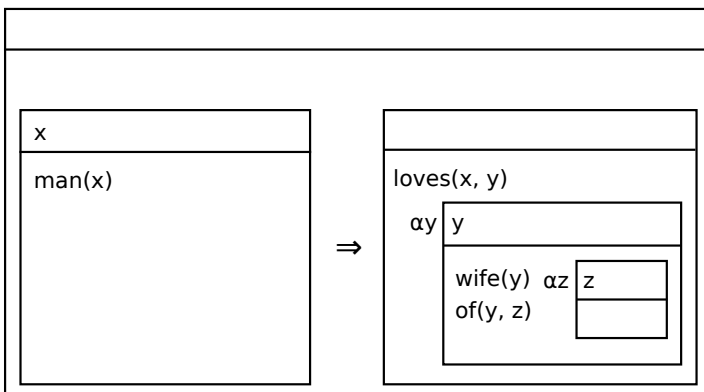
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Constraints on Projection

- Free variable constraint:**
 The resolved DRS may not contain any free discourse referents.
- Consistency and informativity constraints:**
 The resolved DRS must be consistent and informative

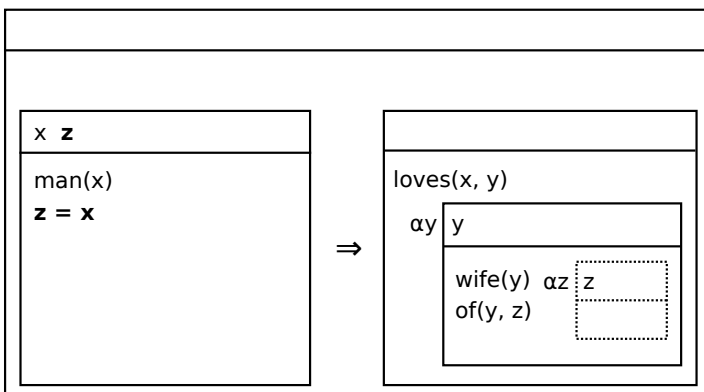
Free Variable Constraint

- Every man loves his wife.*



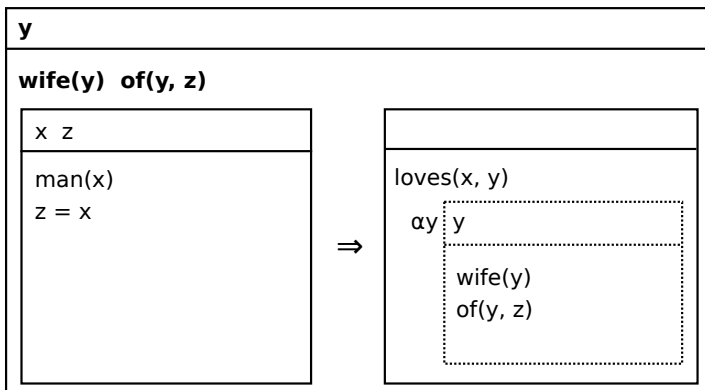
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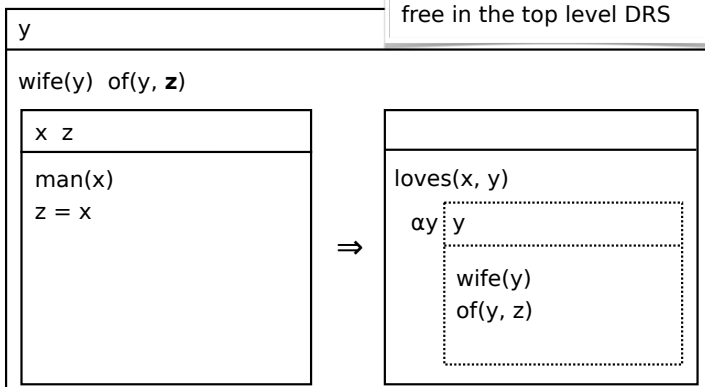


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Free Variable Constraint

- Every man loves his wife.

Inadmissible resolution:
discourse referent z occurs free in the top level DRS

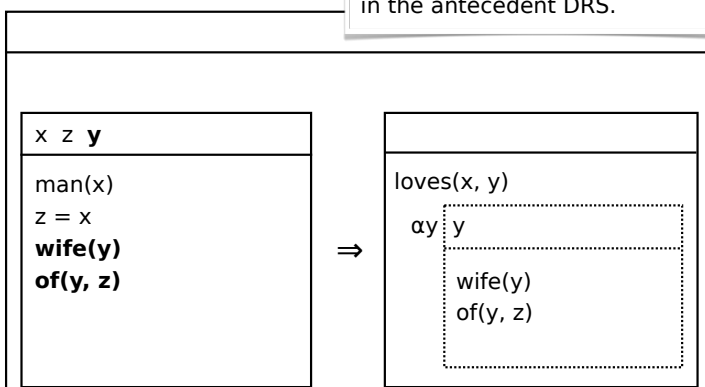


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Free Variable Constraint

- Every man loves his wife.

Instead: (local) accommodation in the antecedent DRS.



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Further Constraints

- The resolved DRS must be consistent and informative.
- **Consistency:** The resolved DRS must be satisfiable (taking background knowledge into account).
- **Informativity:** The resolved DRS may not be entailed by our background knowledge.
- **Local consistency:** No sub-DRS must be inconsistent with any superordinate DRS.
- **Local informativity:** No sub-DRS must be entailed by any superordinate DRS.

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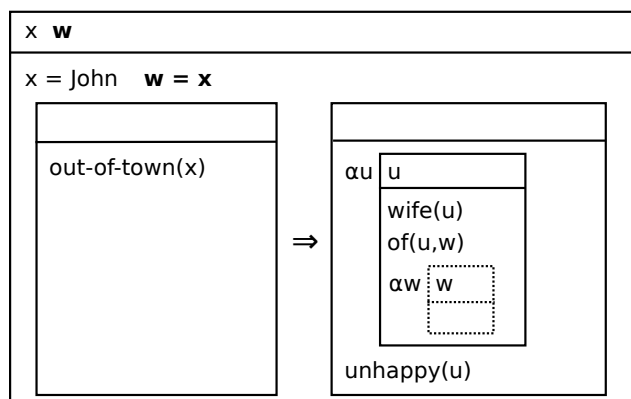
Presupposition Filtering

- *If John is out of town, his wife is unhappy*
 >> John is married
- *If John is married, his wife is unhappy*
 NOT >> John is married

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(Local) Informativity

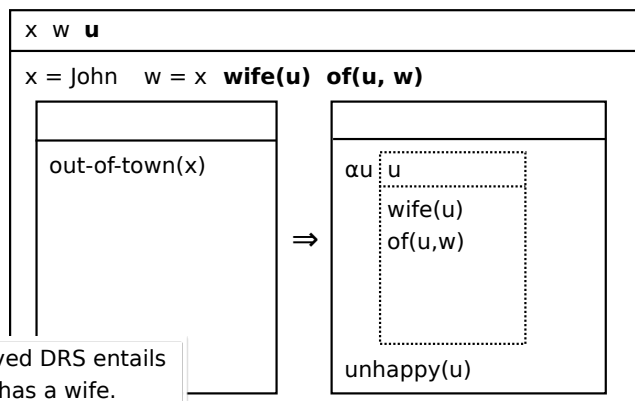
- *If John is out of town, his wife is unhappy.*



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(Local) Informativity

- *If John is out of town, his wife is unhappy.*

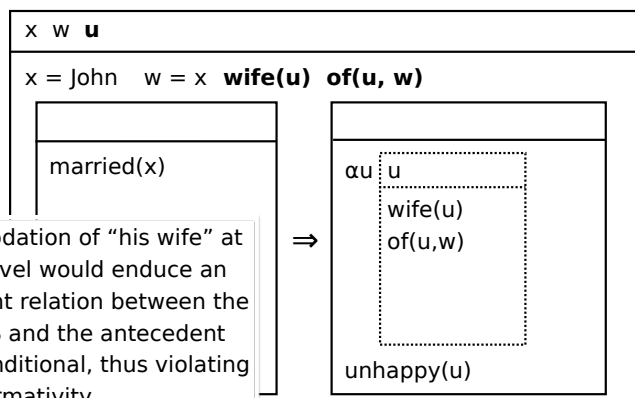


The resolved DRS entails that John has a wife.

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(Local) Informativity

- *If John is married, his wife is unhappy.*

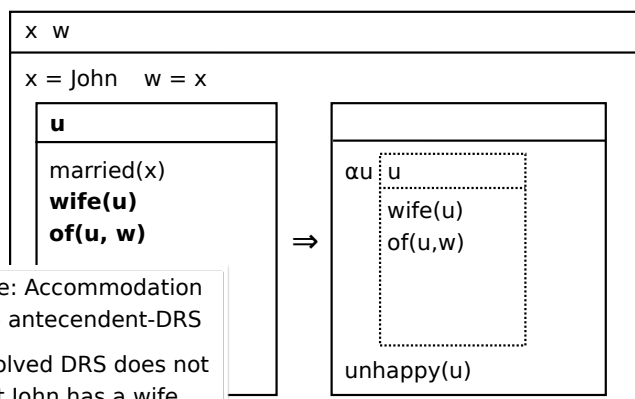


Accommodation of "his wife" at the top level would induce an entailment relation between the main DRS and the antecedent of the conditional, thus violating local informativity.

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(Local) Informativity

- *If John is married, his wife is unhappy.*



Admissible: Accommodation within the antecedent-DRS ⇒ the resolved DRS does not entail that John has a wife.

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Literature

- Rob van der Sandt (1992). Presupposition Projection as Anaphora Resolution, *Journal of Semantics* 9: 333-377