Semantic Theory
week 11 – Presuppositions (Part II)

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Recap: Intermediate Summary

- Presuppositions are triggered by a number of different words and linguistic constructions, including definite noun phrases.

- Presuppositions behave differently than assertions in semantics construction: They are typically projected unchanged, rather than used in functional application.

- Projected presuppositions can be filtered in the semantic composition process, and can be cancelled by contextual knowledge.

Recap: Presuppositions in DRT

Presupposition Projection as Anaphora Resolution
Rob van der Sandt (1992)

DRS construction proceeds in two steps:

I. The construction rules for definite noun phrases introduce α-DRSs. This yields a “proto-DRS.”

II. In a second step, the α-DRSs are resolved by means of binding and accommodation. This translates a proto-DRS into a standard DRS.

Recap: Syntax for proto-DRSs

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 αzK’, where z is a discourse referent and K’ is a proto-DRS.

A DRS is a proto-DRS $\langle U_K, C_K, A_K \rangle$ such that $A_K = \varnothing$

Step 2: From proto-DRS to DRS

In order to arrive at a DRS (with a model-theoretic interpretation), all presuppositions from the proto-DRS must be resolved

- Binding: presupposed information is anaphorically bound to previously introduced information

- Accommodation: presupposed information is added to the appropriate context

Determining the correct resolution strategy is based on specific *preferences* and *constraints*

Back to: DRS 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 $K_1 \neq K$.

Resolution by binding

Let K, K', K_t be some DRSs such that K' ≤ K, K_t ≤ K and

- γ = α x K_s ∈ K', such that K_s is α-free
- y ∈ U_{Kt} is a DR that is accessible and suitable for γ

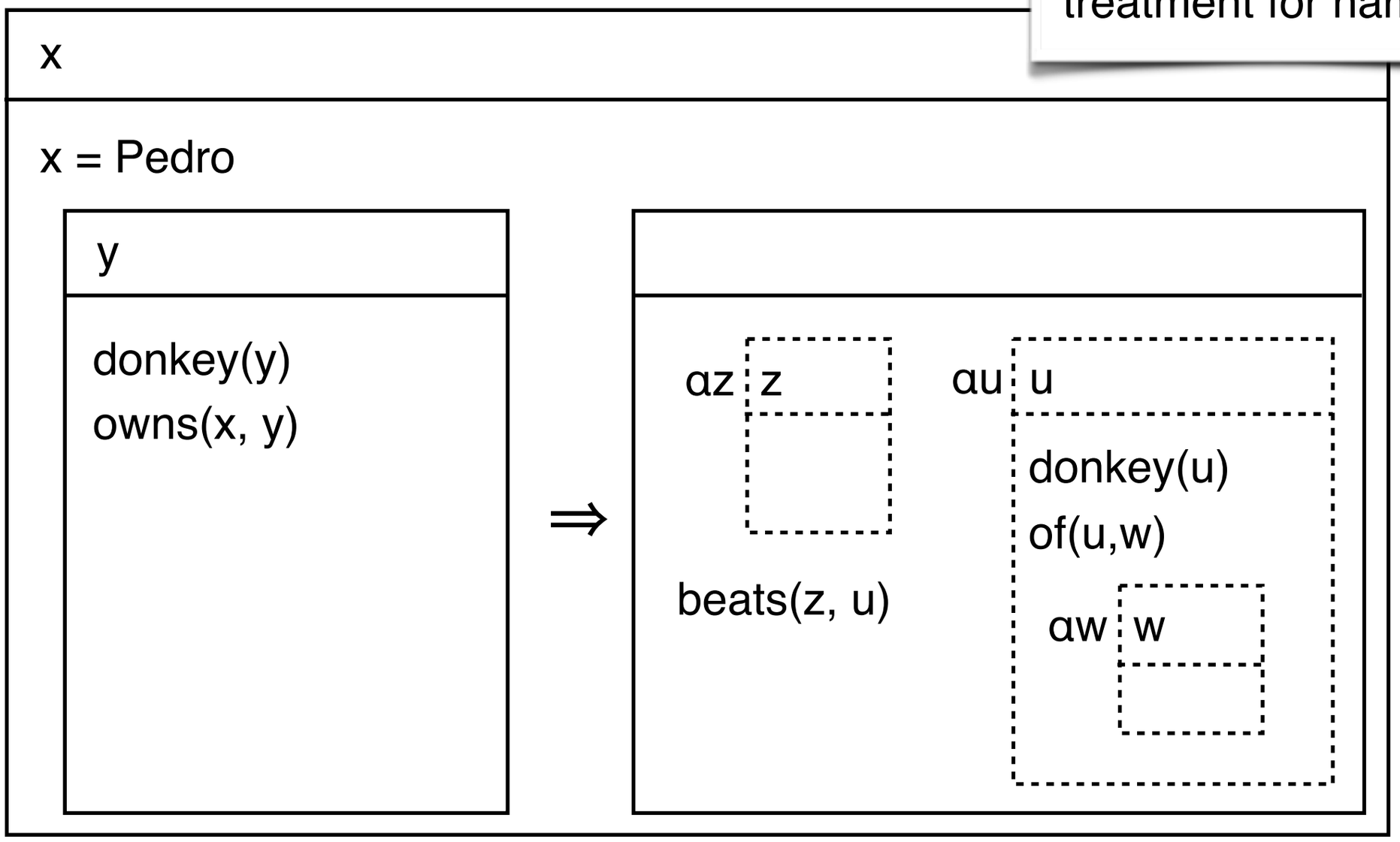
Binding: Remove γ from K' and extend K_t with U_{Ks}, C_{Ks}, and the condition x = y.

Note: Because K_s must be α-free, complex Alpha-DRSs are always resolved from the inside out.

Resolution by binding: example

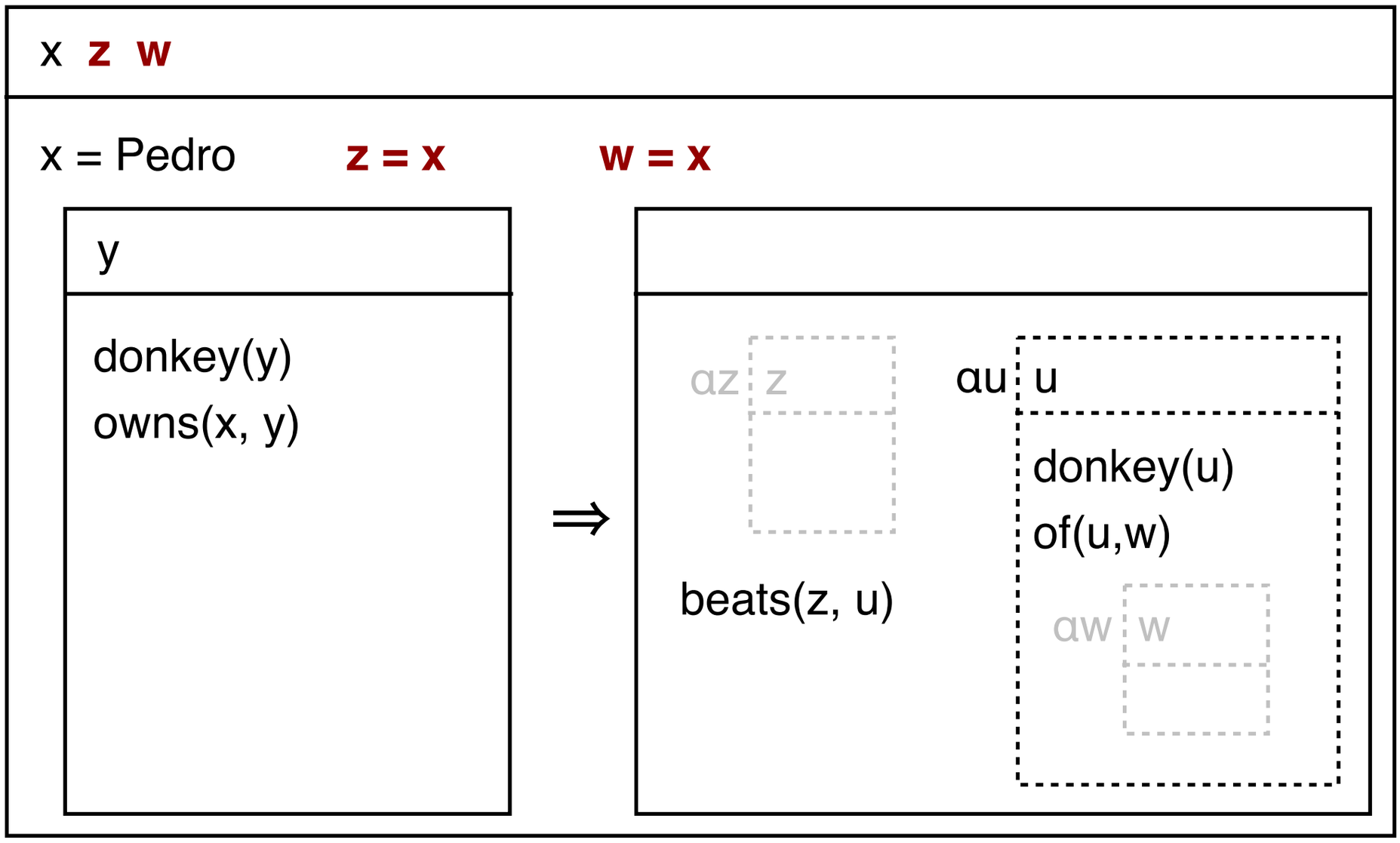
- *If Pedro owns a donkey, he beats his donkey.*

NB: we here use the standard DRT treatment for names



Resolution by binding: example

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



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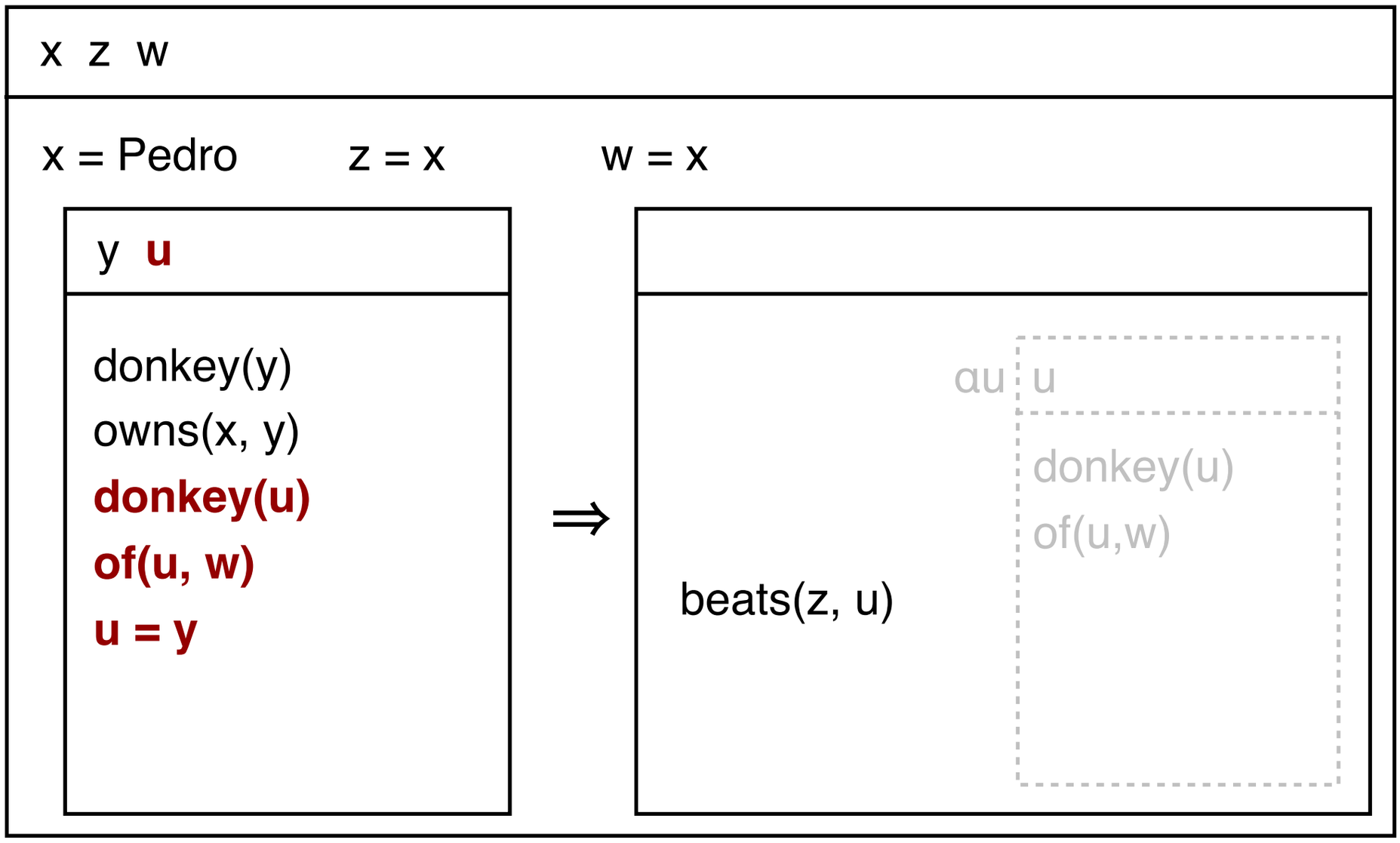

Resolution by binding: example

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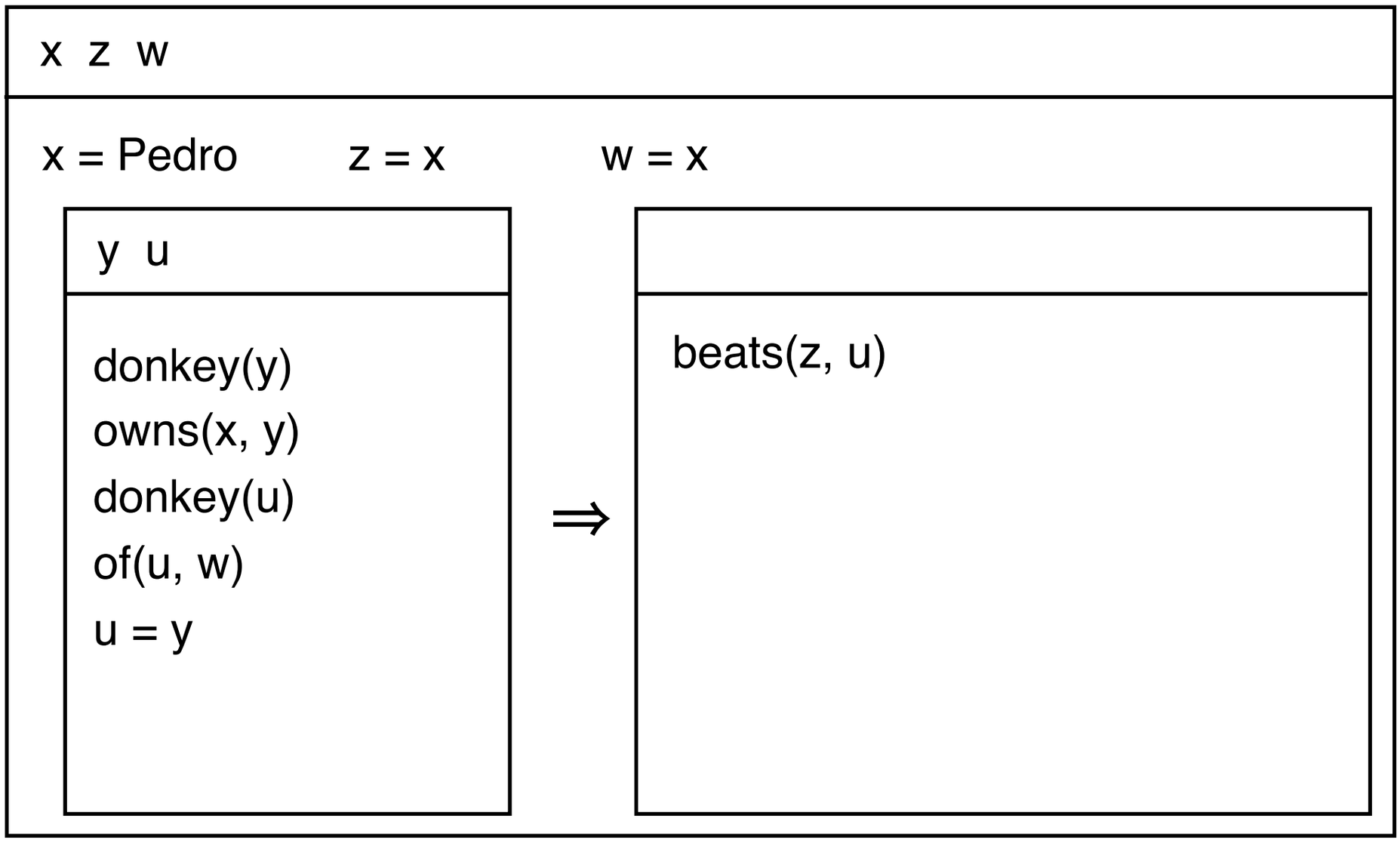


Resolution by accommodation

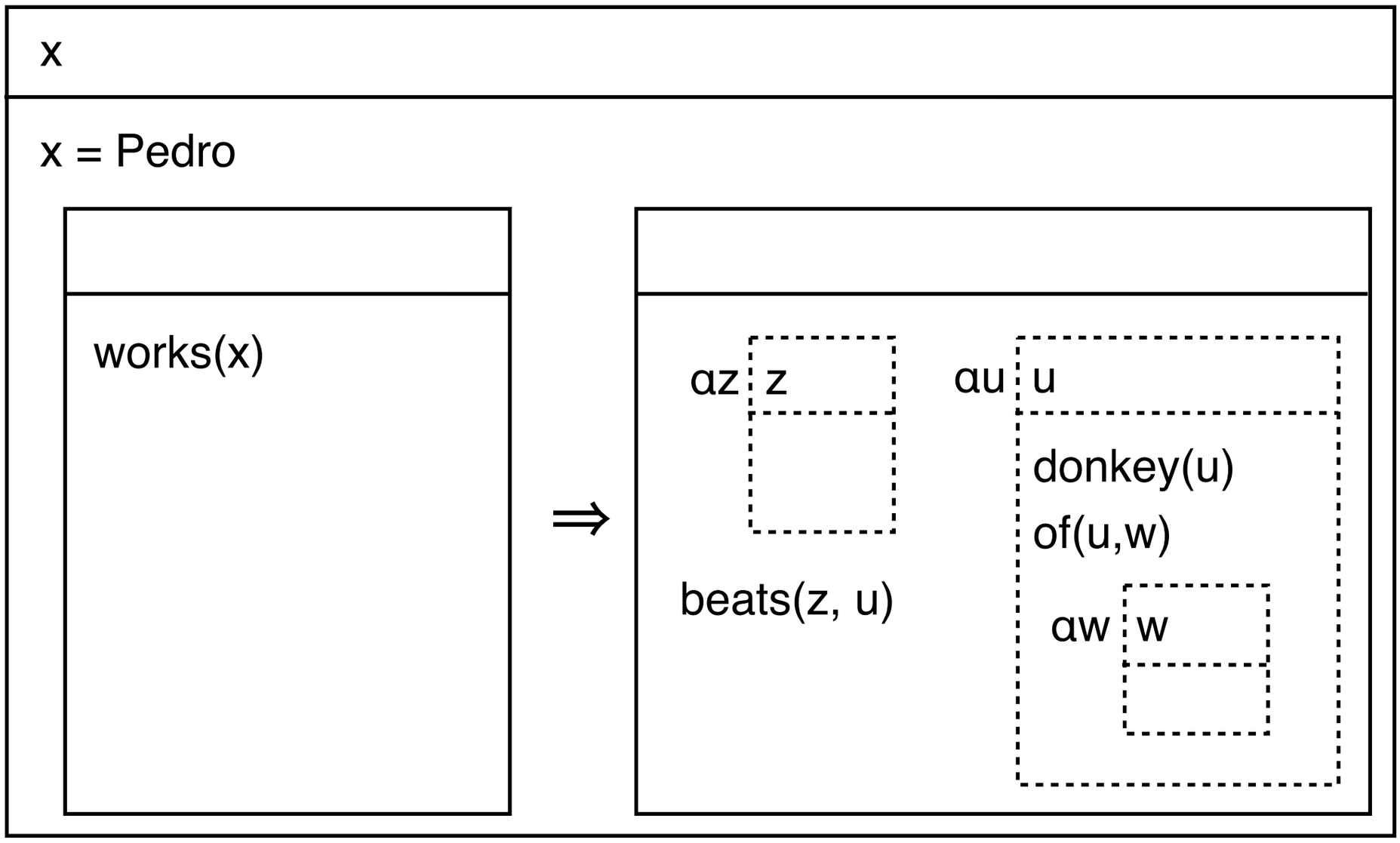
Let K, K’ be DRSs such that K’ ≤ K, K_t ≤ K and

- γ = α x K_s ∈ K’, such that 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_{Ks} and C_{Ks}.

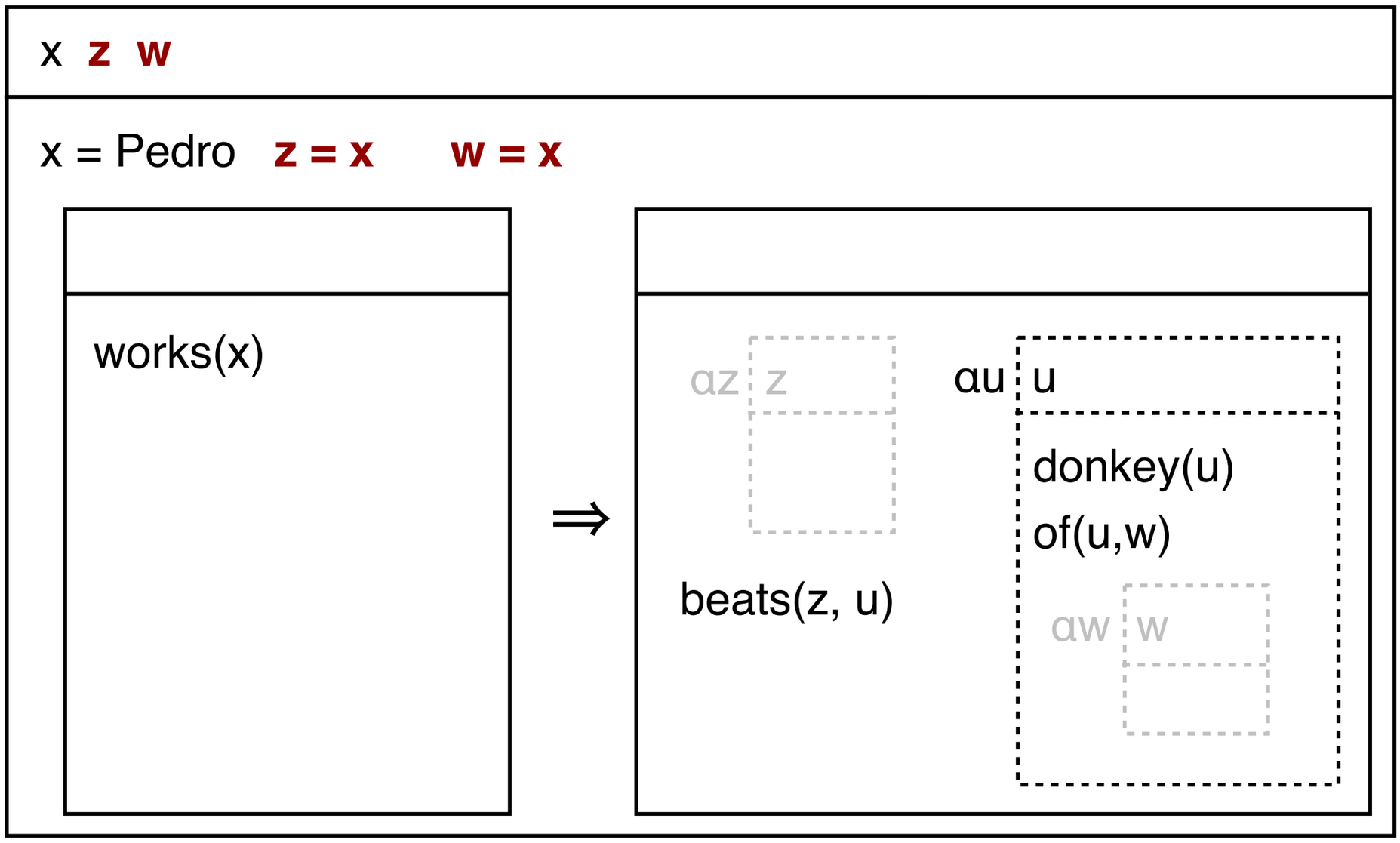
Resolution by accommodation: example

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



Resolution by accommodation: example

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



Resolution by accommodation: example

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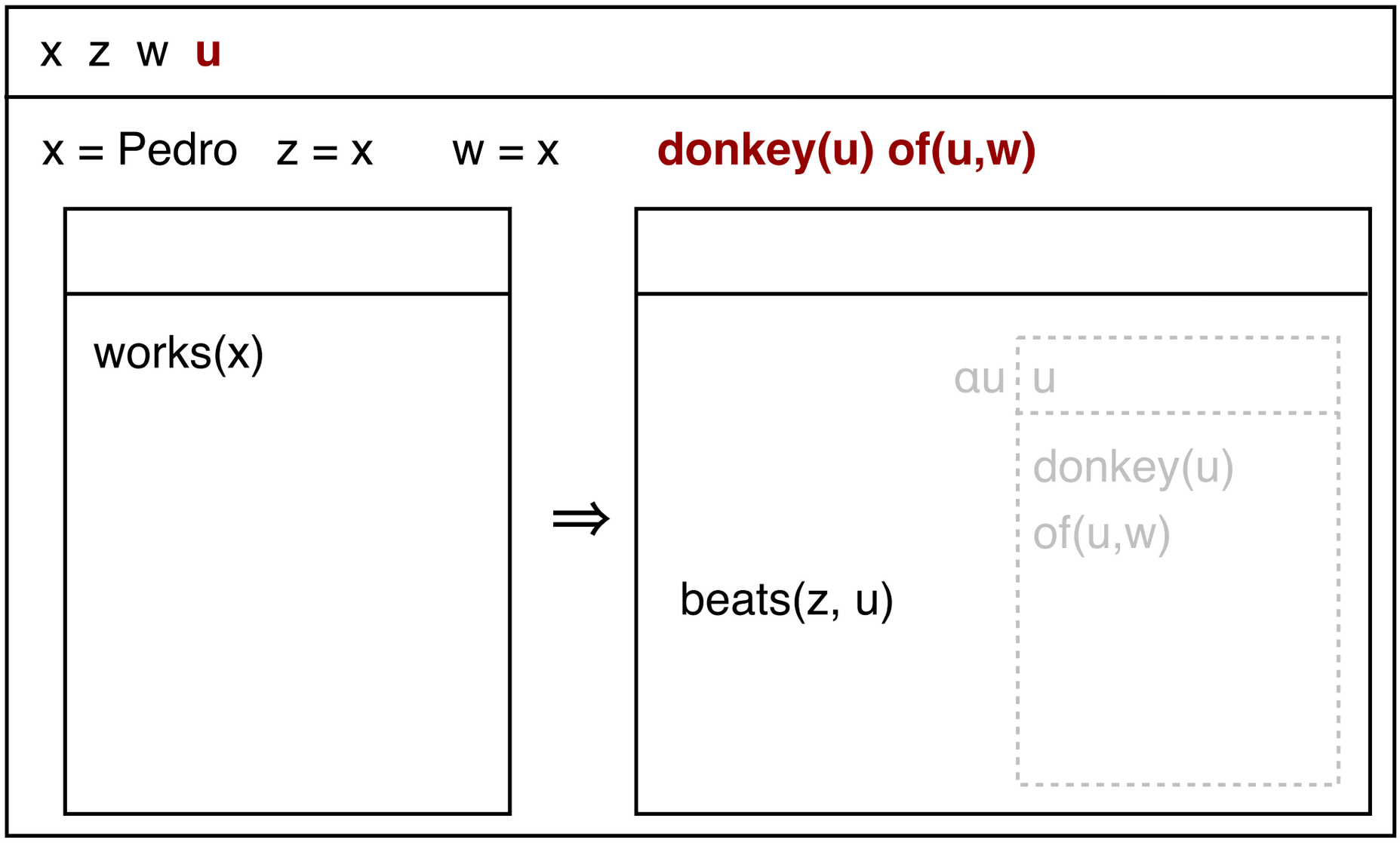


Preference principles for presupposition resolution

I. Binding is preferred over accommodation.

II. Binding works “upwards” along the accessibility relation: The “closest” possible antecedent is preferred.

III. Accommodation works “downwards” along the accessibility relation. It is preferred to accommodate into the highest possible DRS.

Constraints on projection

Free variable constraint:

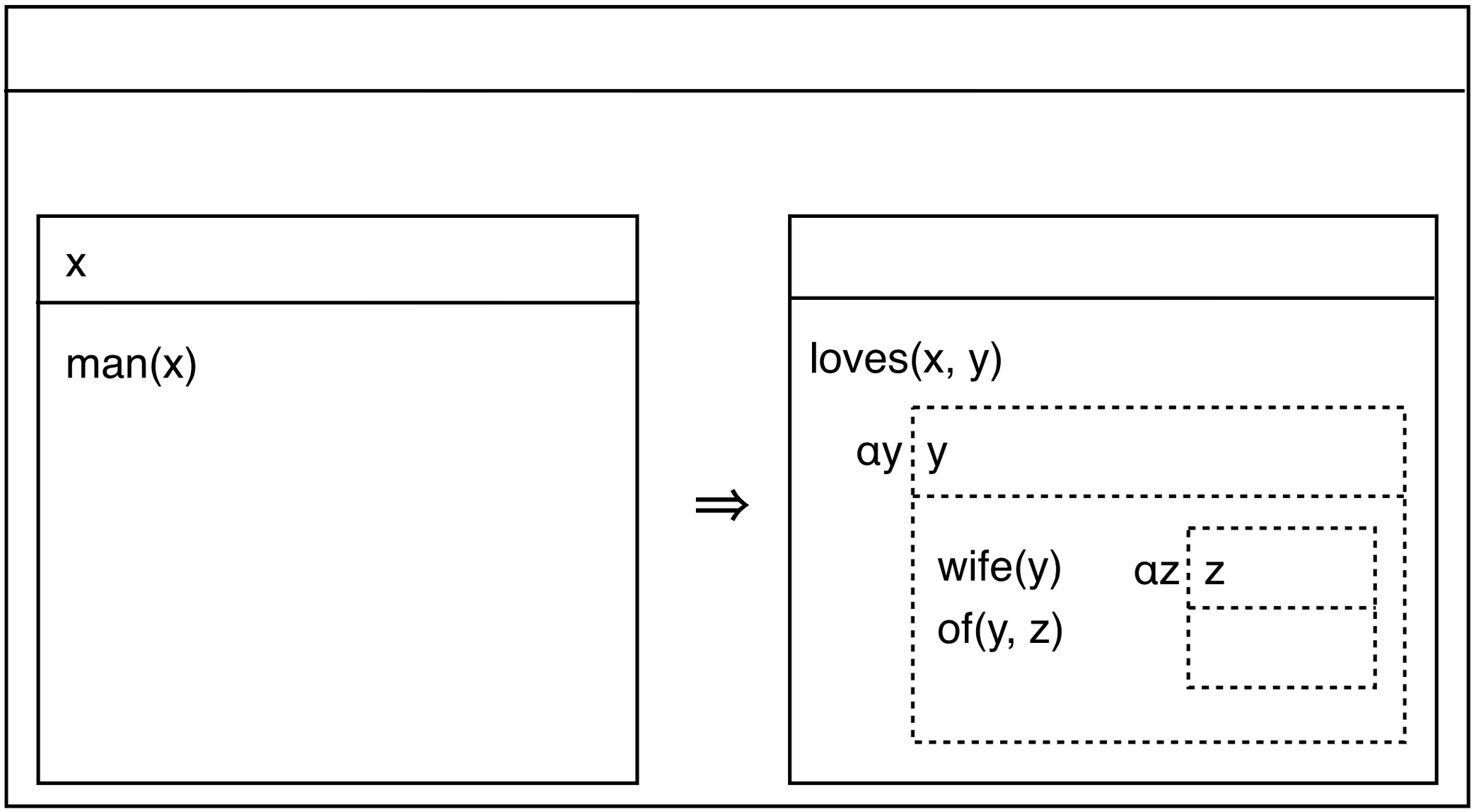
The resolved DRS may not contain any free discourse referents.

Consistency and informativity constraints:

The resolved DRS must be consistent and informative

Free variable constraint: example

- *Every man loves his wife.*



Free variable constraint: example

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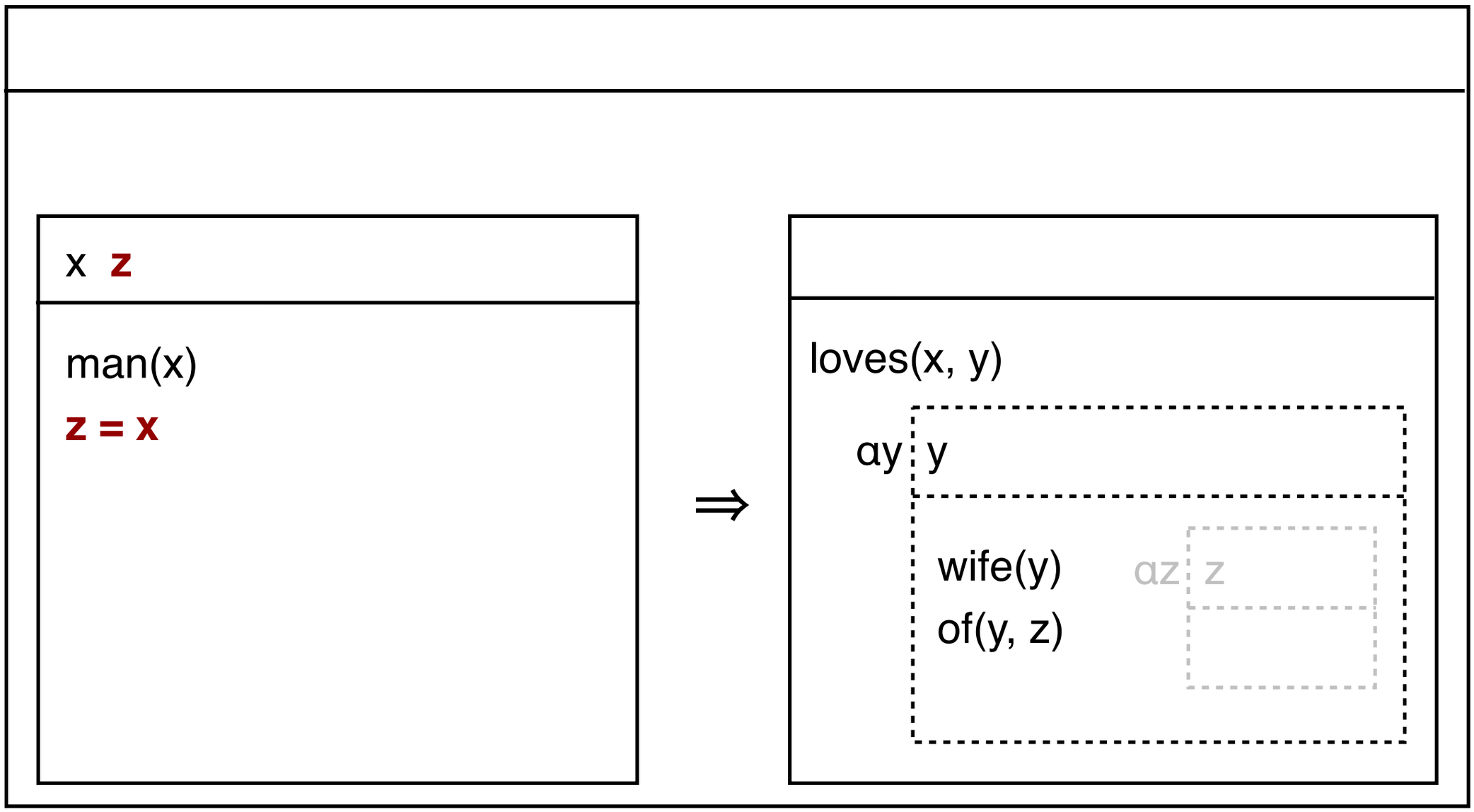

Free variable constraint: example

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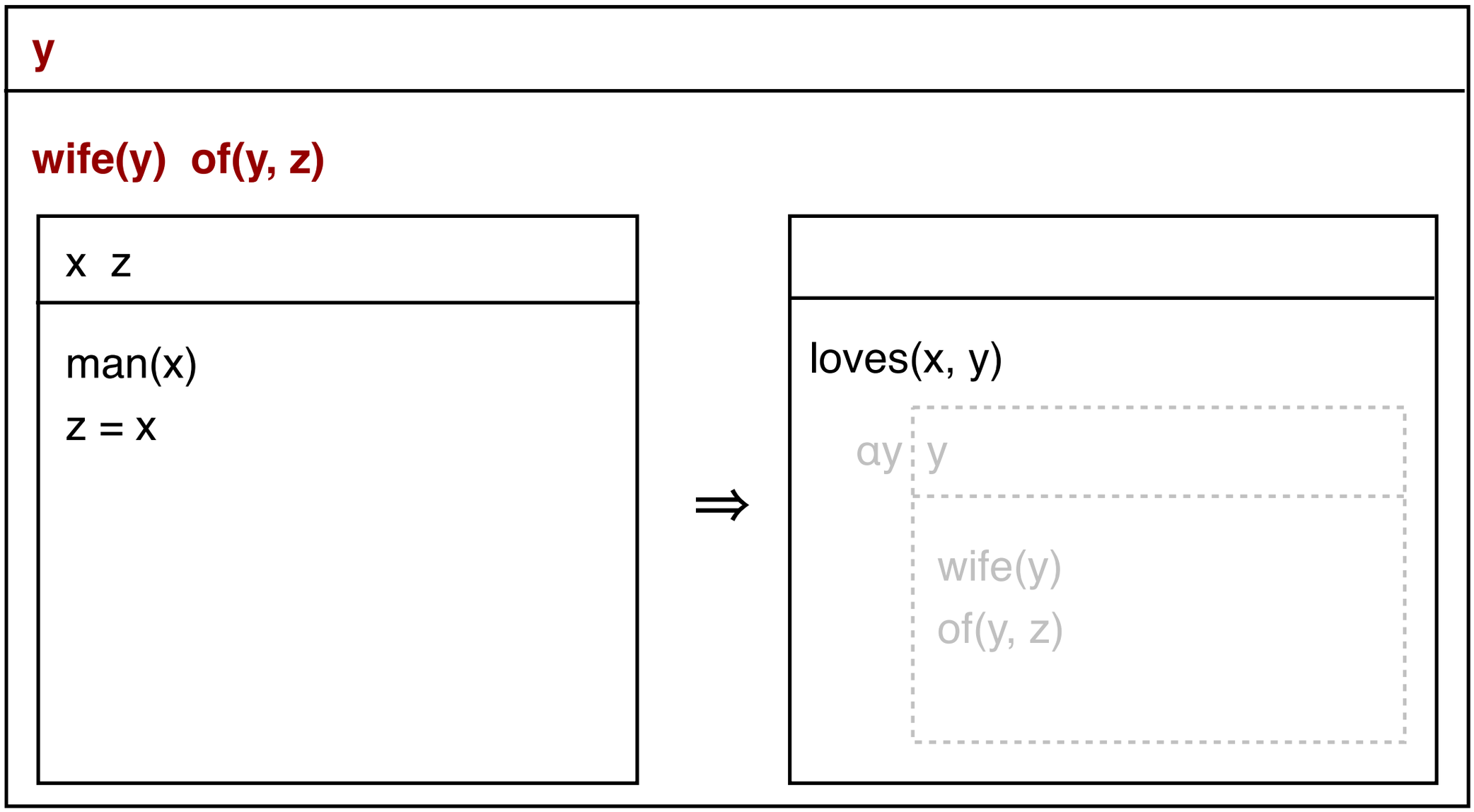

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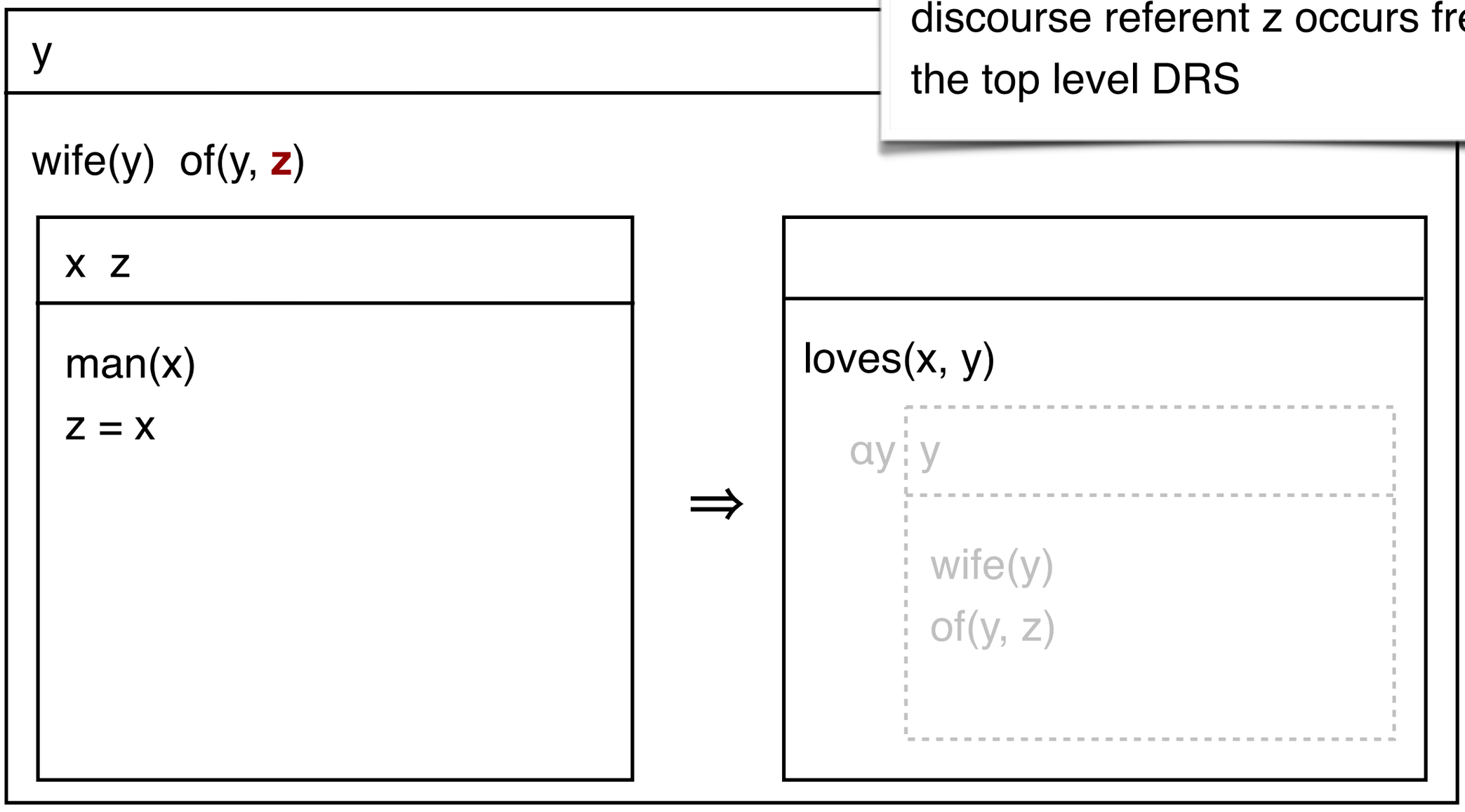
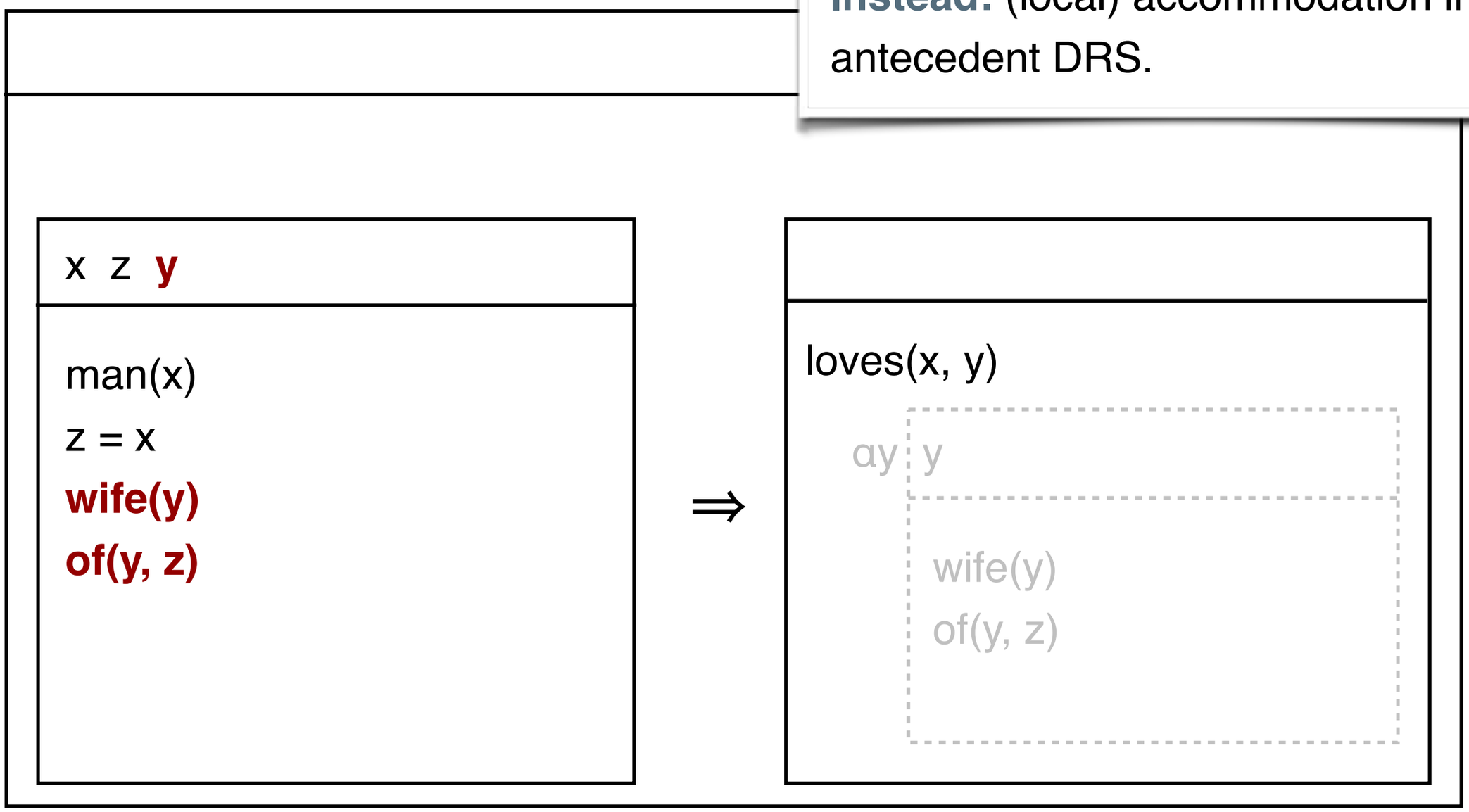


Inadmissible resolution:
discourse referent z occurs free in the top level DRS

Free variable constraint: example

- *Every man loves his wife.*

Instead: (local) accommodation in the antecedent DRS.



Consistency and informativity constraints

- Consistency: The resolved DRS must be *satisfiable* (taking background knowledge into account).

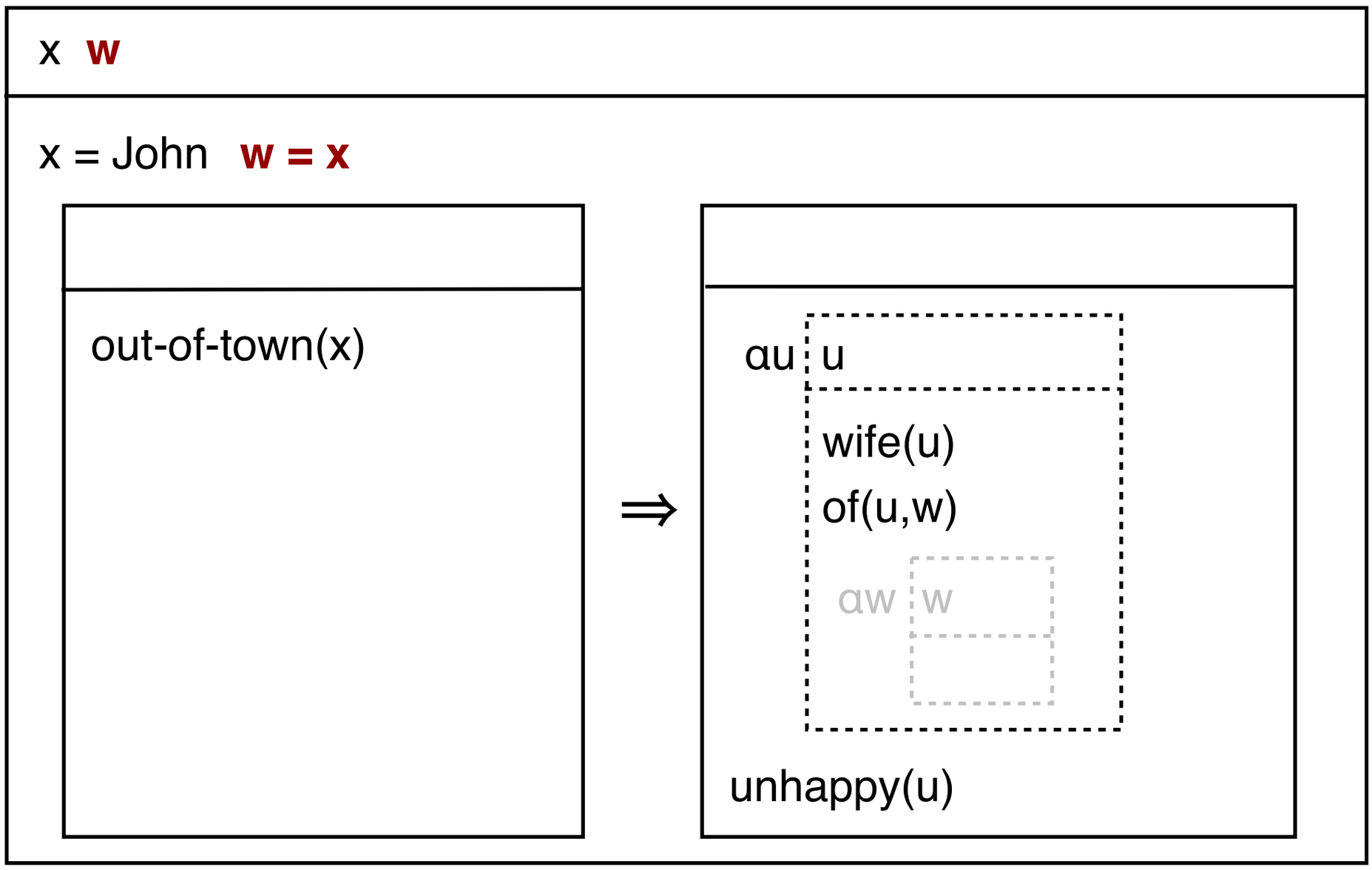
- Informativity: The resolved DRS may not be entailed by our *background knowledge*.

- Local consistency: No sub-DRS must be inconsistent with any superordinate DRS.

- Local informativity: No sub-DRS must be entailed by any superordinate DRS.

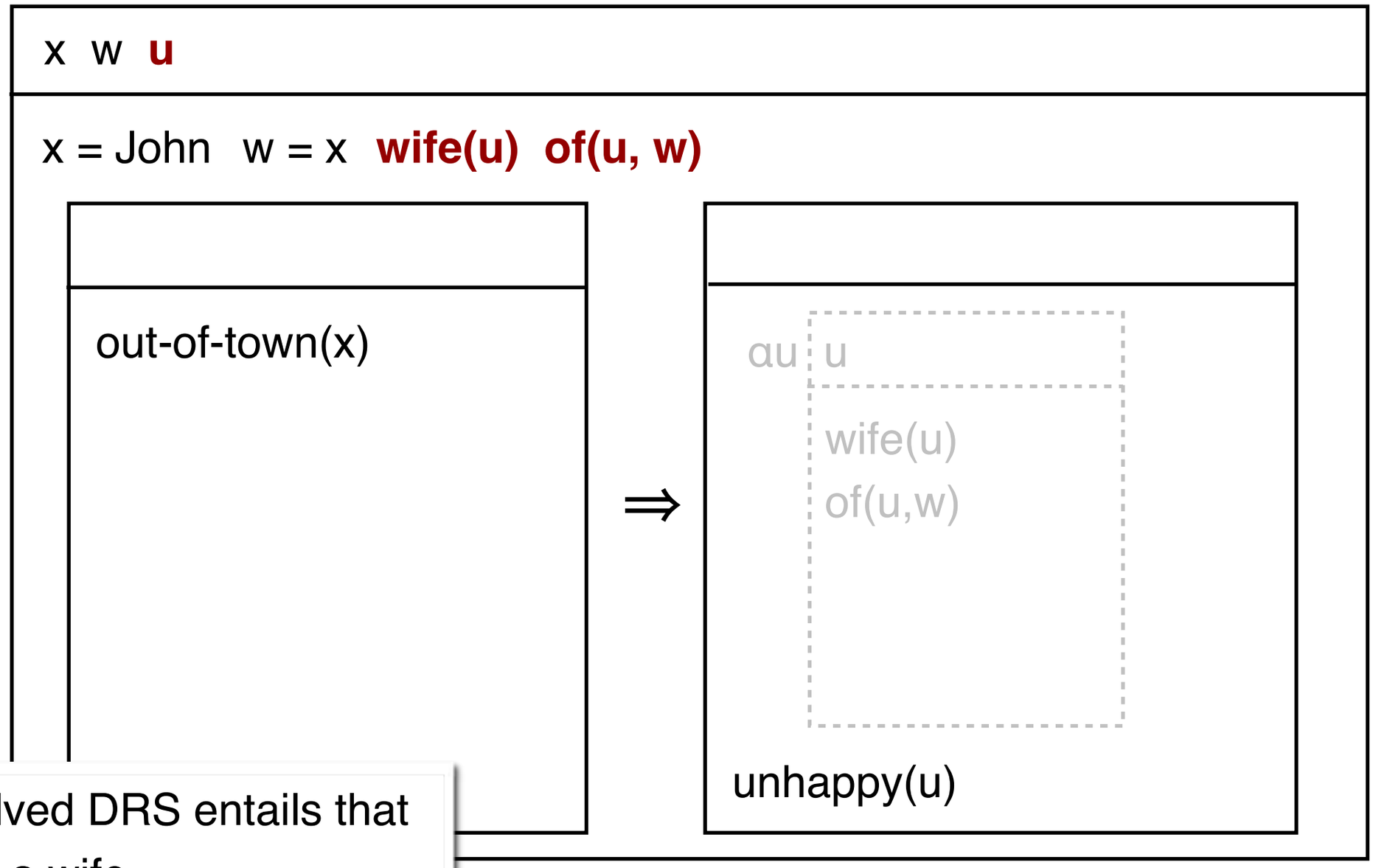
(Local) Informativity: example

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



(Local) Informativity: example

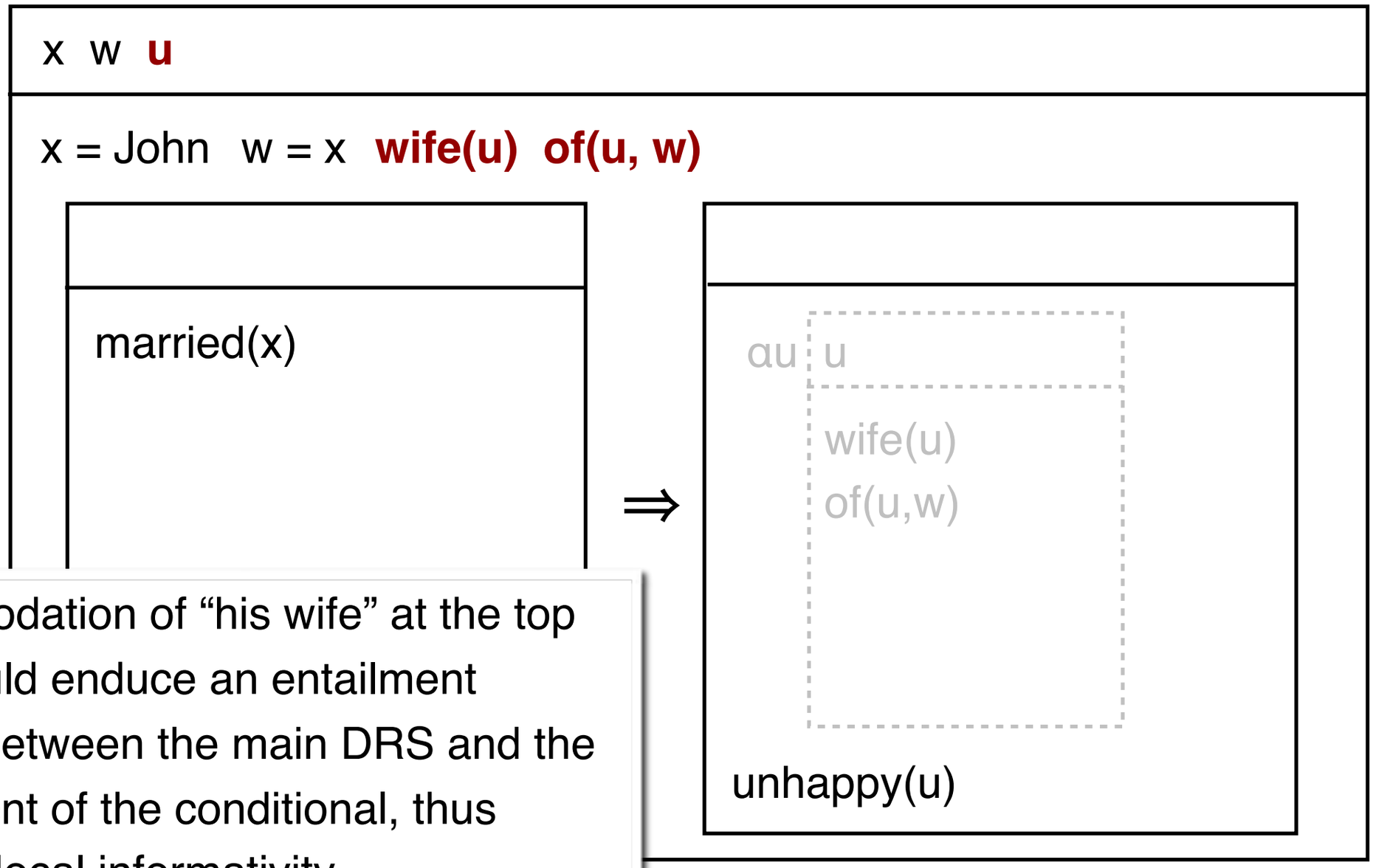
- *If John is out of town, his wife is unhappy.* » John is married



The resolved DRS entails that John has a wife.

(Local) Informativity: example

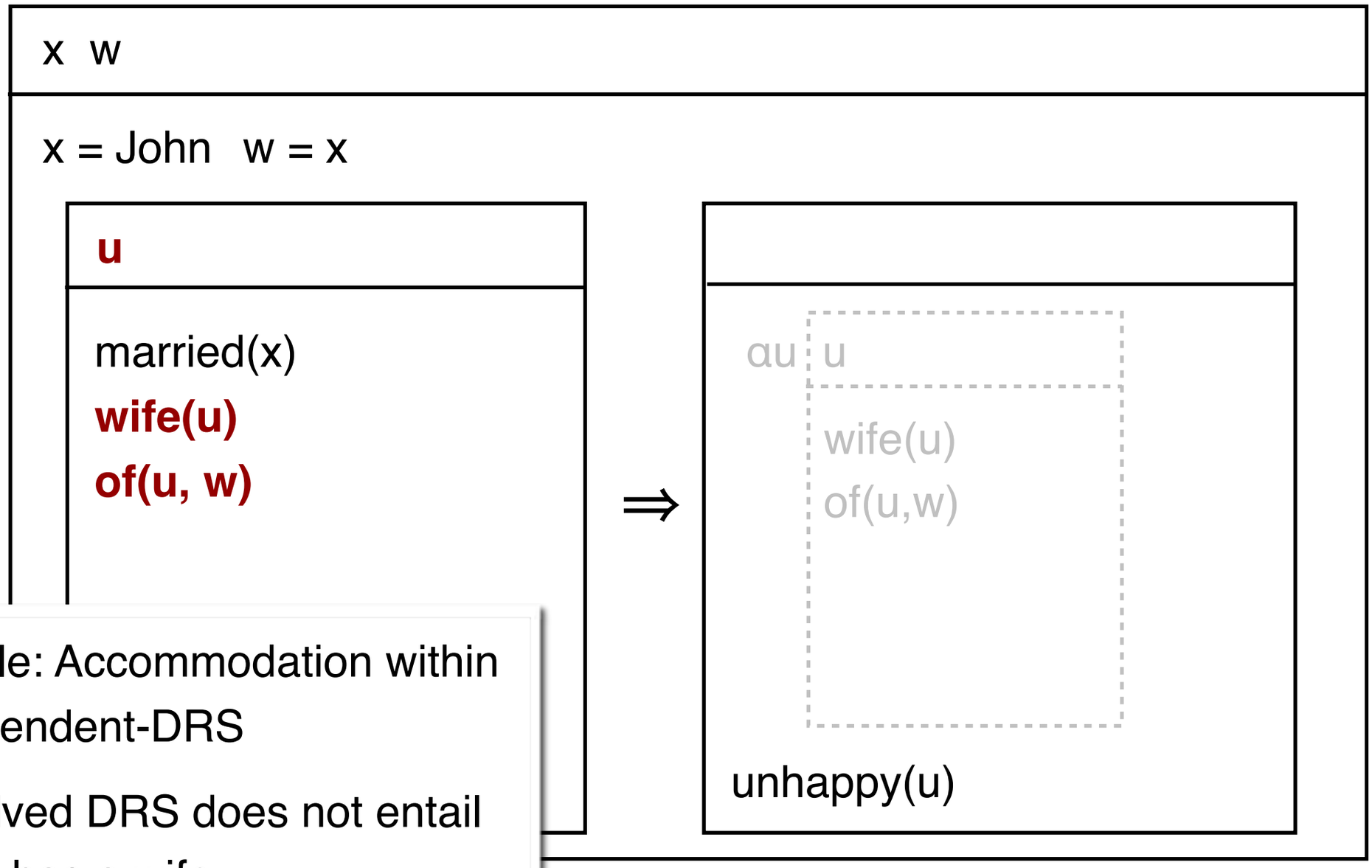
- *If John is married, his wife is unhappy.* ⇏ John is married



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

(Local) Informativity: example

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



Admissible: Accommodation within the antecendent-DRS

The resolved DRS does not entail that John has a wife.

Evaluation of the DRT analysis of presuppositions

Pros:

- Empirically sound representations
- Unified treatment of presuppositions and anaphora
- Structural explanation of filtering/cancellation principles

Cons:

- Two-stage resolution procedure for presuppositions not compositional
- Once resolved, presuppositions have lost their ‘presuppositionhood’
- Does not explain projection behaviour of other phenomena: for instance, conventional implicatures

Conventional Implicatures

- *Noam Chomsky, a famous linguist, attended the conference.*

Assertion: Noam Chomsky attended the conference

Conventional implicature: Noam Chomsky is a famous linguist

part of the conventional meaning of words/constructions (as opposed to usage)

not part of the truth-conditions of the sentence as a whole

Grice 1975; Potts 2003, 2005

Examples of conventional implicatures

(1) Ames, the former spy, is now behind bars.	appositive
(2) Ames, who stole from the FBI, is now behind bars.	non-restrictive relative clause
(3) Ames was, as the press reported, a successful spy.	as-clause
(4) Fortunately, Beck survived the descent.	parenthetical
(5) Frankly (speaking), Ed fled.	utterance modifier
(6) I hate your damn dog!	expressive adverb
(7) That bastard Conner got promoted.	epithet
(8) Yamadasensei -ga o -warai-ni nat-ta. Yamada teacher - nom hon - laugh - dat be - perf 'Professor Yamada laughed.' honorific	honorific

Potts 2003, 2005

Properties of conventional implicatures

Conventional implicatures are…

- *non-cancellable:* they cannot be directly denied
- *not at-issue:* CIs are not part of the regular asserted content
- *scopeless:* CIs project, and are not sensitive to 'presupposition plugs' (such as propositional attitude verbs)
- *speaker-oriented:* the speaker of a sentence containing a CI-trigger is committed to the CI content

Potts 2003, 2005

Conventional implicatures versus presuppositions

"Presuppositions are a special case of conventional implicatures, namely, those which, for pragmatic reasons, are presumed to be true already."

Karttunen & Peters (1979)

"Conventional implicatures are distinguished from presuppositions in that they introduce new information, motivating a *multi-dimensional* approach to meaning."

Potts (2005)

"Presuppositions and conventional implicatures belong to the larger class of not at-issue content."

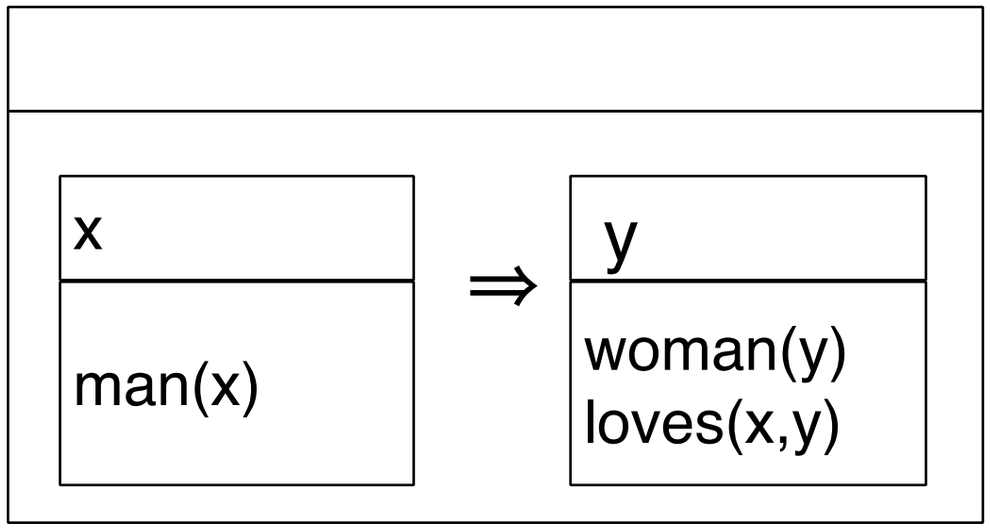
Simons et al. (2010)

Q: How to provide a unified formal treatment of projection?

Projective DRT

PDRT is an extension of DRT with an explicit representation of information status; projection variables (*pointers* and *labels*) indicate the *interpretation site* of all referents and conditions

Every man loves a woman.



Projective DRT

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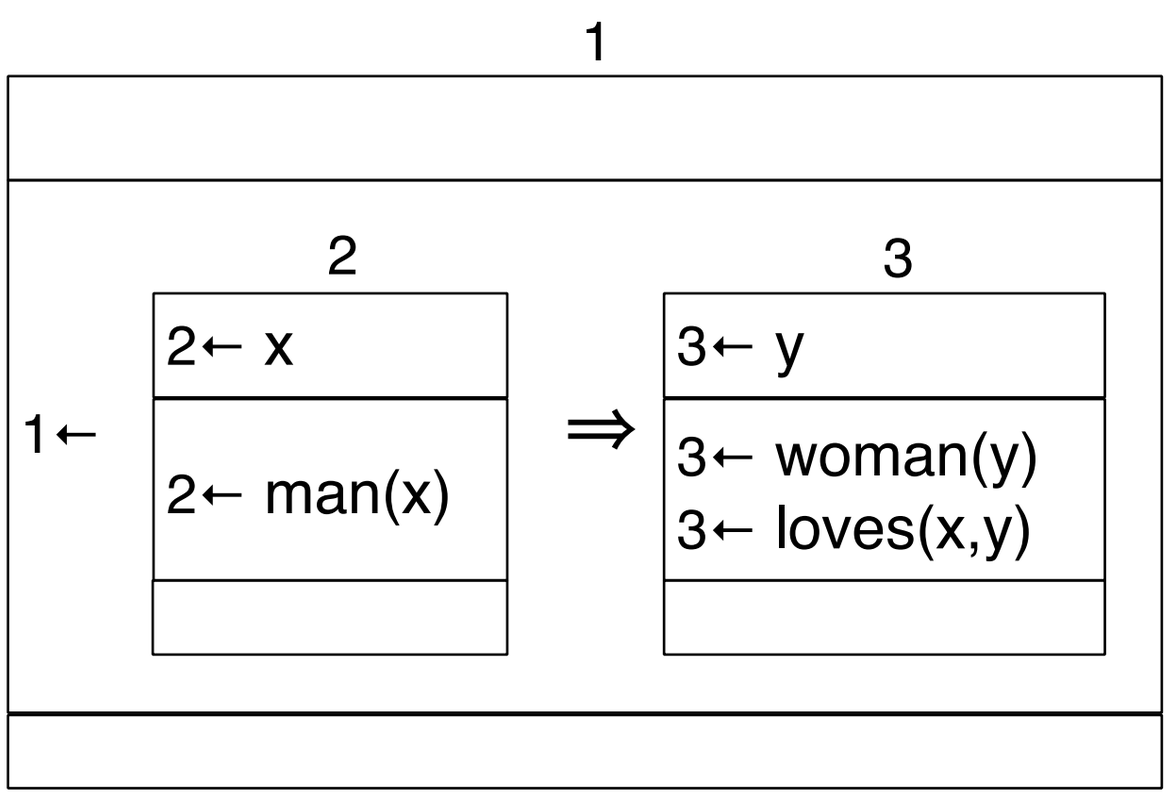
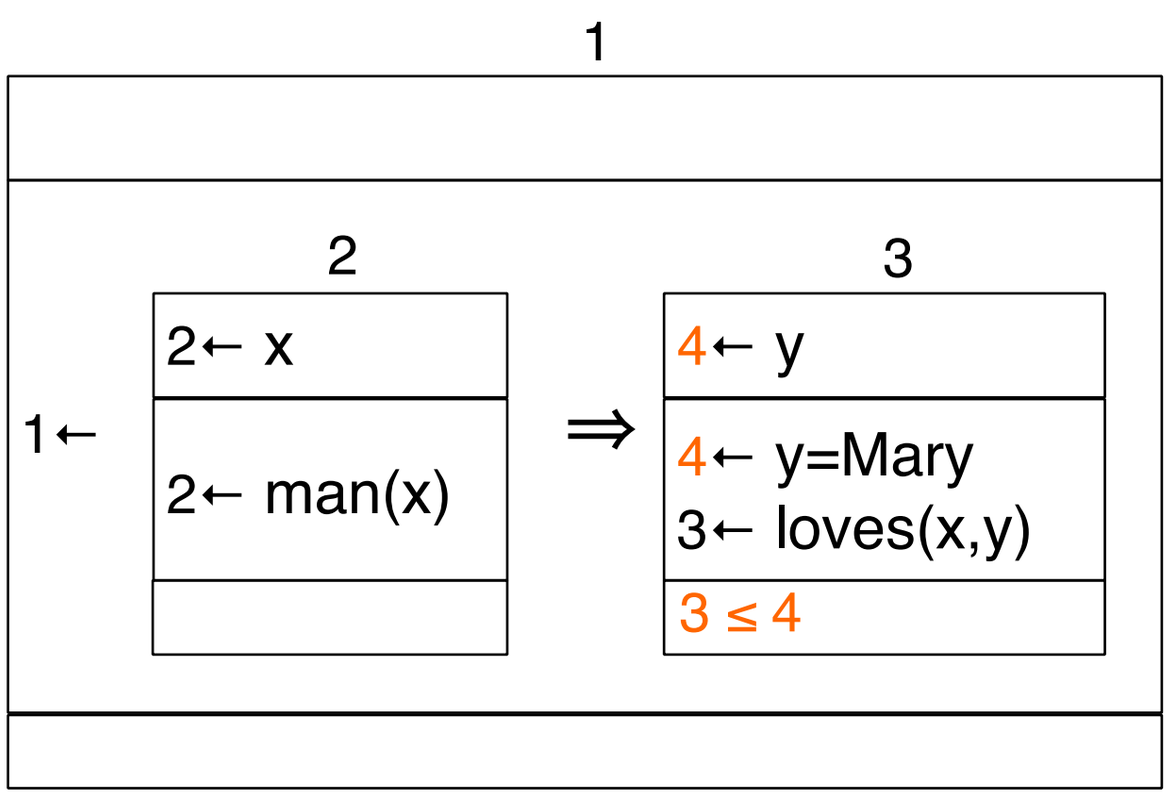


Presuppositions in DRT

PDRT is an extension of DRT with an explicit representation of information status; projection variables (*pointers* and *labels*) indicate the *interpretation site* of all referents and conditions

Every man loves Mary.

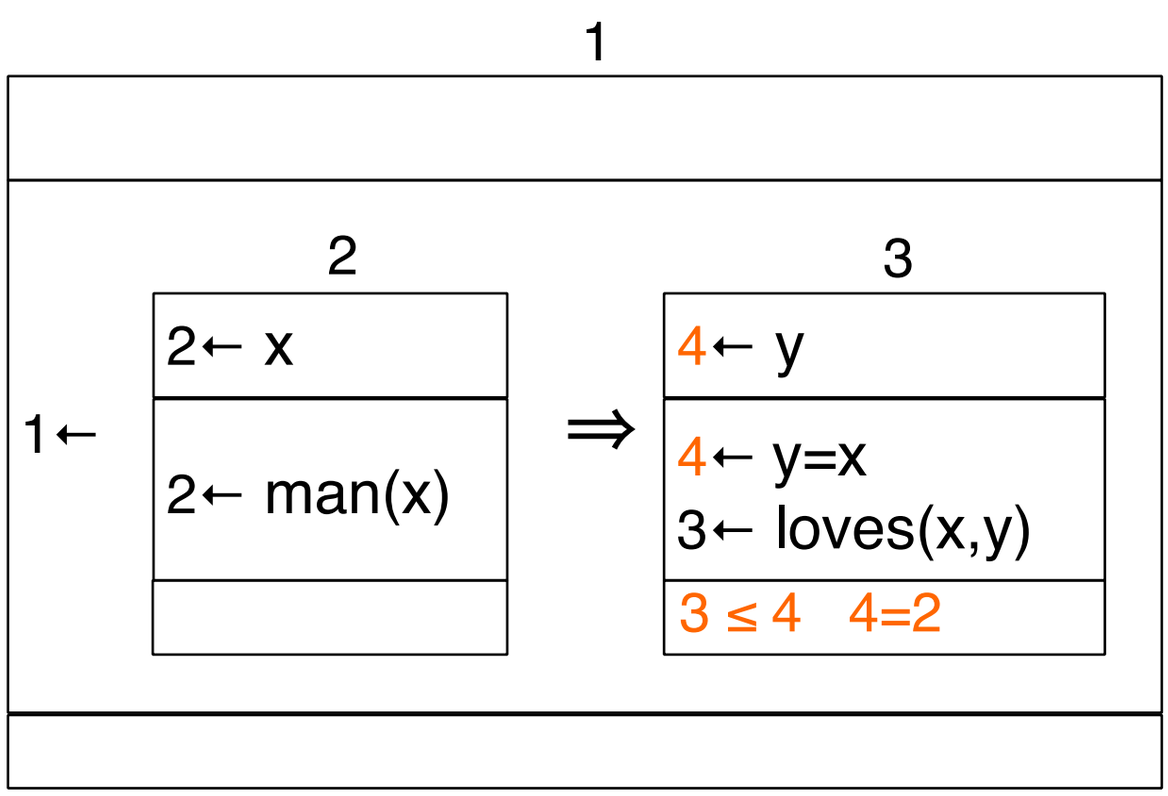


The projection site of unresolved presuppositions is *underspecified*

Anaphora in PDRT

Anaphoric expressions bind their pointer *and* referent to (the context of) their antecedent.

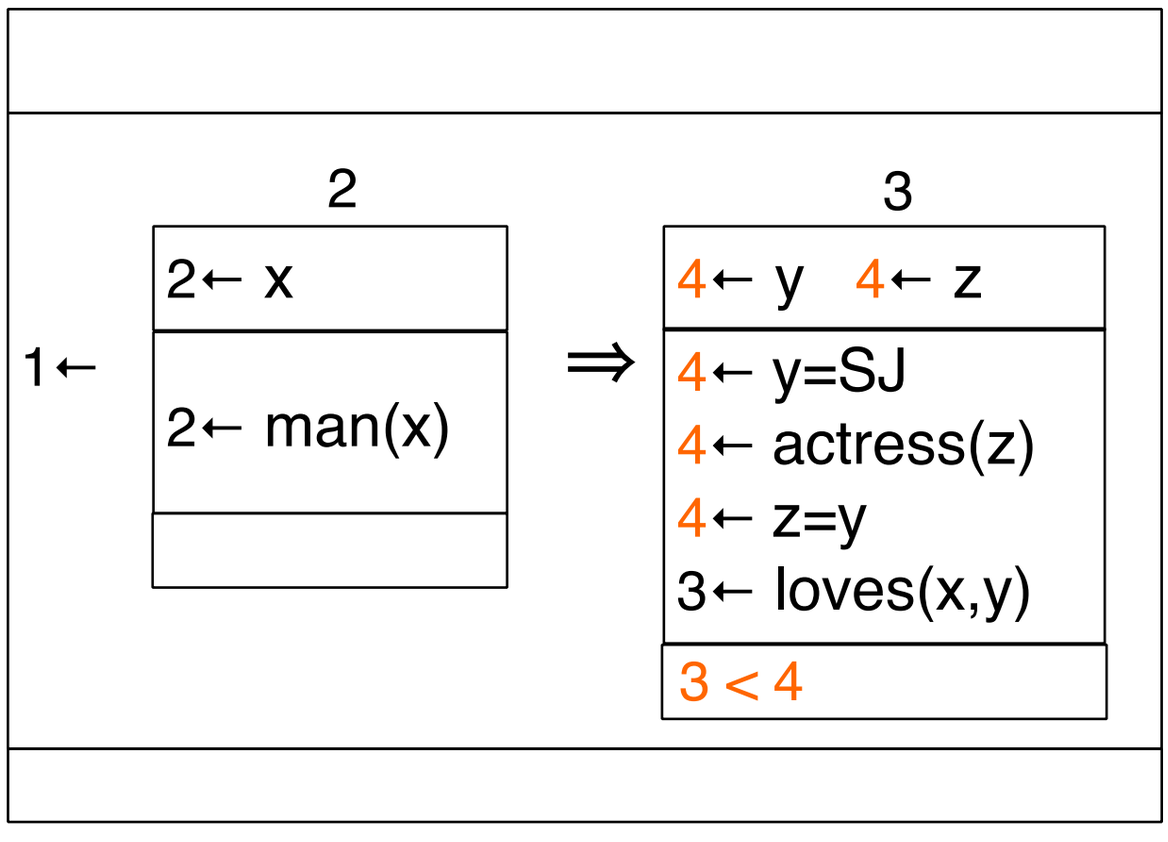
Every man loves himself.



Conventional implicatures in PDRT

Conventional implicatures are represented as “piggybacking on their projecting anchor”.

Every man loves Scarlett Johansson, (who is) an actress.

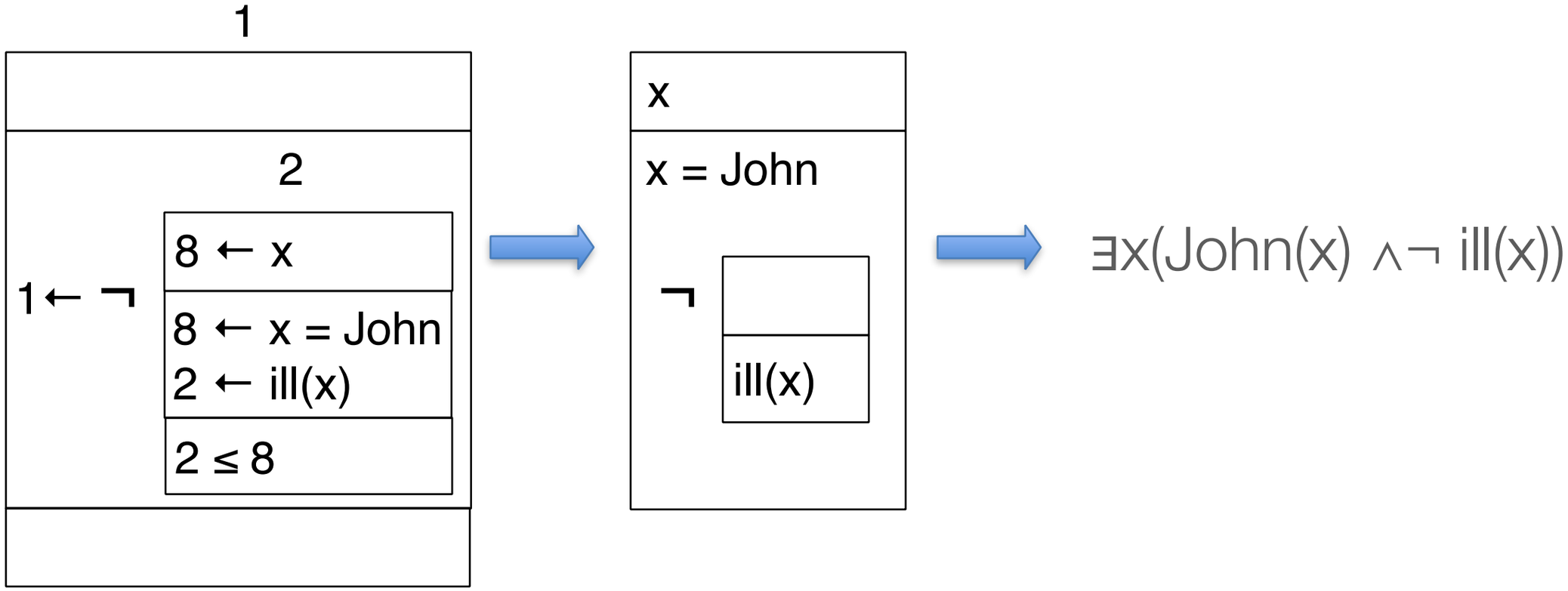


PDRT versus DRT

PDRSs contain the same information as DRSs and more!

This means that we can translate PDRSs into DRSs (and FOL)

It's not the case that John is ill.



Summary PDRT

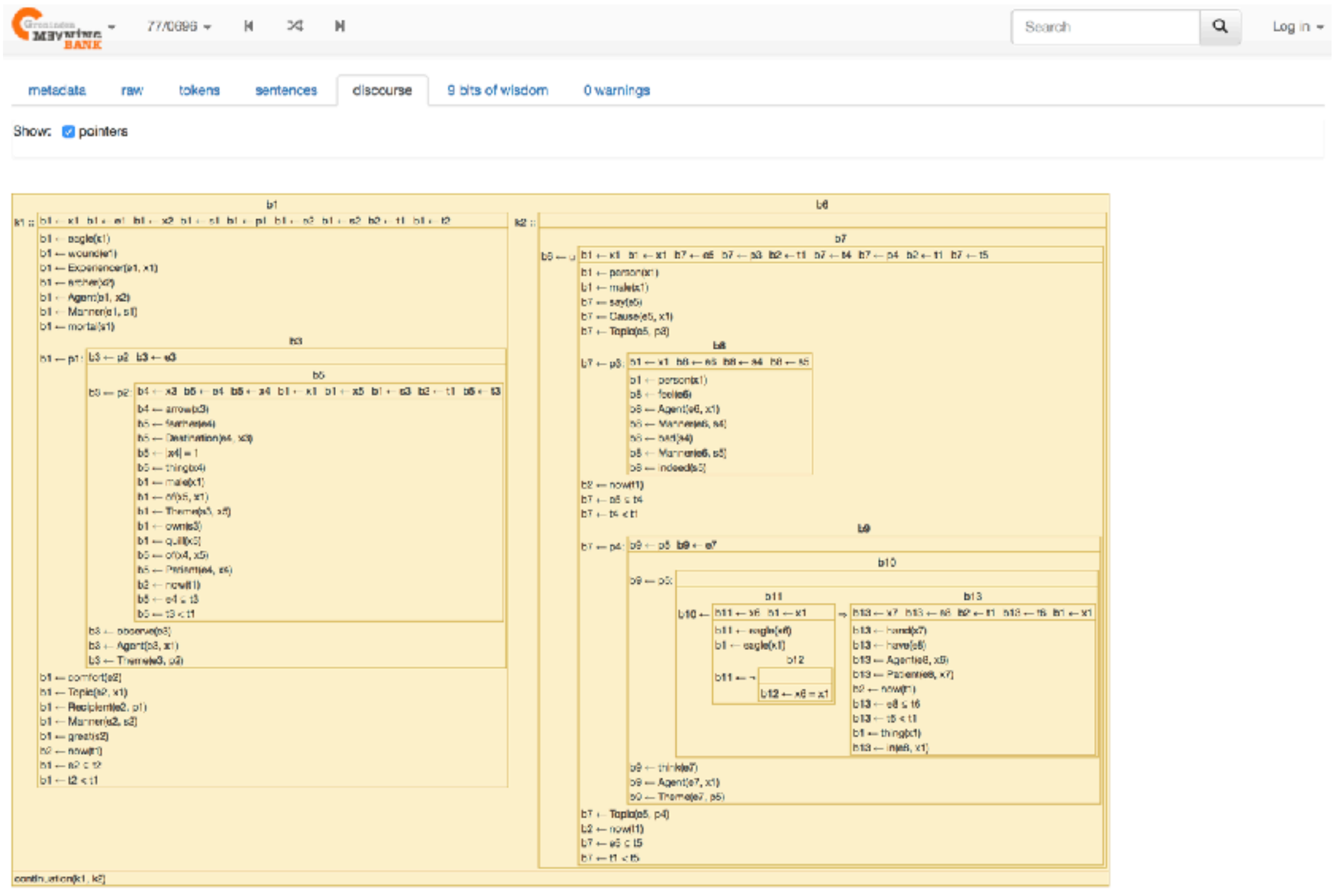
- Unified treatment of different types of projection phenomena (presuppositions, anaphora, and conventional implicatures)

- PDRT provides rich representational structures that extend all formal properties of DRT in terms of the accessibility constraints and model-theoretic interpretation

- Projection becomes part of semantic construction; no need for a two-stage resolution procedure

→ Ideal for computational applications!

The Groningen Meaning Bank



Literature

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

- Noortje Venhuizen (2015). Projection in Discourse: A data-driven formal semantic analysis. *University of Groningen*.

- Link: http://gmb.let.rug.nl