

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.
 - 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)

2

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

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).

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

5

4

Van der Sandt: Basic Principles

- Introduce "α-DRSs" as a new type of complex condition
- DRS construction proceeds in two steps:
 - The 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

Exa	mple: Binding	
 A 	student works.	
	x	
	student(x) works(x)	
		7

Example: Binding

A student works. The student is successful.

х	
stu wor	dent(x) /ks(x)
αу	У
	student(y)
suc	cessful(y)

Example: Binding

A student works. The student is successful.

x	
student(x) works(x)	
αу у	
student(y)	
$\mathbf{x} = \mathbf{v}$	
successful(y)	

9

Example: Binding

A student works. The student is successful.

x y student(x) works(x) student(y) x = y successful(y)

10

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

11

Accommodation

The King of Samoa is visiting.



<section-header><section-header><section-header><section-header><section-header><text><image><page-footer>

<section-header><section-header><section-header><text><text>

DRS-Construction

- A (proto-) DRS is a triple (U_K, C_K, A_K) 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.

Definite Noun Phrases

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

αx	х
	woman(x)

Pronouns ("he")



16



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

Subordination

- K₁ is an immediate sub-DRS of a DRS K=(U_K, C_K, A_K) iff
 - C_K contains a condition of the form $\neg K_1$, $K_1 \Rightarrow K_2$, $K_2 \Rightarrow K_1$, $K_1 \nu K_2$, $K_2 \nu K_1$
 - or $\alpha x K_1 \in A_K$
- K_1 is a **sub-DRS** of K (notation: $K_1 \le K$) iff
 - K₁ = K or
 - K₁ is an immediate sub-DRS of K or
 - there is a DRS K₂ such that K₁ ≤ K₂ and K₂ is an immediate sub-DRS of K.
- K_1 is a **proper sub-DRS** of K iff $K_1 \leq K$ and $K_1 \neq K$.

19

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
 - $y \in U_{Kt}$ 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.

20

Resolution by Binding

If Pedro owns a donkey, he beats his donkey.



Resolution by Binding

If Pedro owns a donkey, he beats his donkey.



Resolution by Binding

If Pedro owns a donkey, he beats his donkey.



Resolution by Binding

If Pedro owns a donkey, he beats his donkey.



Resolution by Accommodation

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

25

Resolution by Accommodation

If Pedro works, he beats his donkey.



Resolution by Accommodation

If Pedro works, he beats his donkey.



Resolution by Accommodation

If Pedro works, he beats his donkey.



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.

29

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







Every man loves his wife.

у					
wife(y) of(y, z)					
x z					
man(x)		loves(x, y)			
z = x		αγ γ			
	⇒	wife(y)			
		of(y, z)			





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.

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

37

(Local) Informativity

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



(Local) Informativity

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



(Local) Informativity

If John is married, his wife is unhappy.



(Local) Informativity If John is married, his wife is unhappy. x w $x = John \quad w = x$ u married(x)αuu wife(u) wife(u) of(u, w) of(u,w) ⇒ Admissible: Accommodation within the antecendent-DRS \Rightarrow the resolved DRS does not unhappy(u) entail that John has a wife. 41

Literature

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