

LING 364: Introduction to Formal Semantics

Lecture 14
February 28th

Administrivia

- Reminders
 - **Homework 3**
 - due Thursday
 - *hope you all have attempted it*
 - email (midnight deadline)
 - **Thursday's Class**
 - Computer Lab classroom confirmed
 - 3:30pm – 4:45pm
 - *come prepared with non-working Homework 3 grammars etc. so I can help you*

Today's Class

- Back to theory today...
- [**A course objective:** *to work on theory and practice with formal theories in parallel.*]

Last Time

- Last time... actually two lectures ago...
- Chapter 4: Modifiers
- **Adjectives**
 - **Intersective model (see also Homework 3)**
 - *view predicates as representing sets*
 - (1) Ossie is a bird $\text{ossie} \in \{\text{..set of all birds..}\}$
 - (2) Ossie is tall $\text{ossie} \in \{\text{..set of all tall things..}\}$
 - (3) Ossie is a tall bird
 - $\text{ossie} \in \{\text{..set of all birds..}\} \cap \{\text{..set of all tall things..}\}$

set
membership

set
intersection

Last Time

- **Adjectives**

- **Problems with the intersective model**

- *not every adjective falls neatly into this framework*
 - $\text{Ossie} \in \{\text{..set of all birds..}\} \cap \{\text{..set of all tall things..}\}$
 - “tall bird” perhaps more precisely means “tall for a bird”
 - **Ossie is a bird & Ossie is taller_than bird average**

 - cf. Ossie is a **dead** bird
 - $\text{Ossie} \in \{\text{..set of all birds..}\} \cap \{\text{..set of all dead things..}\}$

 - cf. **former** teacher
 - does “former” have an intersective interpretation?

Chapter 4: Modifiers

- **4.4 Adverbs**

- **traditionally**

- adjectives modify nouns
 - adverbs modify verbs

- **example:**

- (6) Shelby barked loudly **adverbial modification**
 - `event(e,barking), agent(e,shelby), loud(e).`
 - (6') Shelby is loud **adjectival modification**
 - `loud(shelby).`
 - *is there an “event” here?*

Chapter 4: Modifiers

- **4.4 Adverbs**

- further modification (e.g. time and place)

- **examples:**

- (7) *Yesterday*, Shelby barked *in the backyard*

- `event(e,barking), agent(e,shelby),
place(e,backyard), time(e,yesterday).`

- (7') *Yesterday*, Shelby barked *loudly in the backyard*

- `event(e,barking), agent(e,shelby), loud(e),
place(e,backyard), time(e,yesterday).`

Chapter 4: Modifiers

- **4.4 Adverbs**

- **example:** (*subject oriented*)

- (8a) John **intentionally** met Mary
 - `event(e,meeting), participant(e,john), participant(e,mary), intentional(e).`
 - more correctly?
 - `event(e,meeting), participant(e,john), participant(e,mary), intended/caused(e,john).`

Chapter 4: Modifiers

- **4.4 Adverbs**

- **example:** (*object oriented*)

- (8b) John chopped the onion **finely**

- `event(e, chopping), agent(e, john), patient(e, onion), fine(e).`

- **resultative interpretation**

- `event(e, chopping), agent(e, john), patient(e, onion), transformed(e, onion, pieces), fine(pieces).`

Chapter 4: Modifiers

- **Another example** (*not in handout*):
 - John hammered the nail
 - John hammered the nail nude
 - John hammered the nail flat

how would you express the conjunction of these two statements?

- ?John hammered the nail flat nude
- *John hammered the nail nude flat

Chapter 4: Modifiers

- **Another example** (*not in handout*):
 - John hammered the nail
 - `event(e,hammering), agent(e,john), patient(e,nail).`
 - John hammered the nail nude
 - `event(e,hammering), agent(e,john), patient(e,nail), nude(john).`
 - (*what's does this fail to capture?*)
 - John hammered the nail flat
 - `event(e,hammering), agent(e,john), patient(e,nail), result(e,flat(nail)).` (*informally*)

Chapter 4: Modifiers

- **Another example** (*not in handout*):
 - John hammered the nail flat nude
 - `event(e,hammering), agent(e,john),
patient(e,nail), result(e,flat(nail)),
nude(e,john).`

Chapter 4: Modifiers

- **4.4 Adverbs**

- **example:** (*speaker oriented*)

- (8c) Surprisingly, John cried
 - `event(e, crying), agent(e, john), surprising(e, speaker).`

Chapter 4: Modifiers

- **4.4.2 Adverbs without events**

- *view them as properties of individuals*

- **earlier example:**

- (6) Shelby barked loudly

- **Phrase**

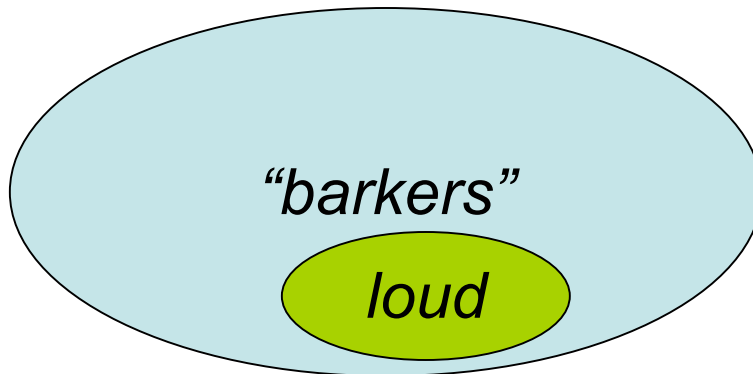
- bark

- bark loudly

- **Set-theoretic view**

- {..individuals who bark..}

- **subset** of {..individuals who bark..}



implementation idea:

loudly could be a function that maps a property onto another property

Chapter 4: Modifiers

- **4.4.2 Adverbs without events**

- *view them as relation mappers*

- **earlier example:**

- (8b) John chopped the onions finely

- **Phrase**

- **Relational view**

- chop

- chop(X, Y) .

- finely

- takes a relation, picks out its 2nd argument,
adds result: (2nd argument) is in fine pieces

-

-

- chop(X, Y) .

-

- ➡

-

- chop(X, Y), become(Y, fine_pieces) .

Chapter 4: Modifiers

- **4.4.2 Adverbs without events**

- *view them as proposition mappers*

- **earlier example:**

- (8) Surprisingly, John cried

- **Phrase** **Propositional view**

- cry `cry(X).`

- John cried `cried(john).`

- surprisingly takes a proposition, produces a complex proposition,
adding a statement about the truth of the proposition

- `cried(john).`

- ➡

- `cried(john), surprising(cried(john), speaker).`