

What sentences do

Act 2: Declaratives, Interrogatives, and Contexts

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Discussion: What do sentences have in common?

Yesterday: a bunch of different kinds of **declaratives** and **interrogatives**

✚ (and imperatives, but that's hard for now)

As yet unmet goal: Find the kernel of commonality among speech acts associated with sentences of a particular type

Declarative and interrogative types (reminder)

A non-exhaustive list:

- (1)
 - a. **Assertion:** John ate the cake.
 - b. **Threat:** If you cross me, there'll be hell to pay.
 - c. **Promise:** I'll turn in the assignment no later than Monday.
 - d. **Indirect question:** I wonder what we're having for dinner.

- (2)
 - a. **Canonical Question:** Did John eat the cake?
 - b. **Rhetorical:** Is the Pope Catholic?
 - c. **Exam:** Is Bratislava the capital of Slovakia?
 - d. **Controversy:** Was 9/11 an inside job?

Can you come up with:

- ❖ A list of effects common to all declarative utterances?
- ❖ A list of effects common to all interrogative utterances?
- ❖ Kinds of odd declaratives/interrogatives (in any language) that we haven't discussed yet?

Think of: what the speaker is committed to, what they ask/assume of the addressee, aspects of the speaker's intention, etc.

Goals for today

First pass at modeling the basic effects of **declaratives and interrogatives**

- ❖ Start from the standard semantic view
- ❖ Plug this into a model of discourse
- ❖ Refine the standard view
- ❖ Tomorrow: putting teeth on the pragmatics

Semantics of declaratives and interrogatives

The standard view

Declarative sentences have **propositional** content

- ❖ Proposition: Thing which can be true or false, serve as objects of belief, etc.
- ❖ View of the last half century: proposition as **set of worlds**
- ❖ Content of *Frieda petted the platypus*: set of (all) worlds in which Frieda petted the platypus
 - ❖ (or characteristic function from worlds to truth values)

Interrogative sentences have **question** content

- ❖ Can't be said to be true or false
- ❖ Content of *Did Frieda pet the platypus?*: set of possible answers to the question $\{\text{PET}, \neg\text{PET}\}$ (= **set of sets** of worlds)
- ❖ Content of *What did Frieda pet?*: $\{ \text{F petted platypus A, F petted platypus B, ...} \}$

Digression: What is an answer?

Proposal by Hamblin (1958):

1. An answer is a statement (\approx proposition)
2. Possible answers to a question are an exhaustive set of mutually exclusive possibilities

Easy for polar (yes/no) questions: two possible answers, p and $\neg p$

Less easy for wh-questions:

- (3)
- a. Tourist, to stranger: Where can you get a coffee in Zagreb?
 - b. Author doing research for in-depth travel guide: Where can you get a coffee in Zagreb?

Focus on polar questions (for now).

Modeling contexts with the Table model

What belongs in a discourse context

What we need to capture:

- ✦ Who is participating in the discourse
- ✦ How the discourse context is updated when something is said
- ✦ General conversational goals (why?)

A start: Stalnakerian context

Components of a discourse context:

- ❖ **Common ground** cg : the set of propositions taken as true by participants in the conversation
- ❖ **Context set** $cs = \bigcap cg$: set of live possible worlds (compatible with every proposition in cs)
- ❖ Uttering a sentence expressing proposition p constitutes a **proposal** to add p to cg , and thereby shrink cs
- ❖ Need something else entirely for interrogatives

Overarching goal of a conversation: minimize the size of cs , i.e., exchange information not previously known to all participants

The Table model

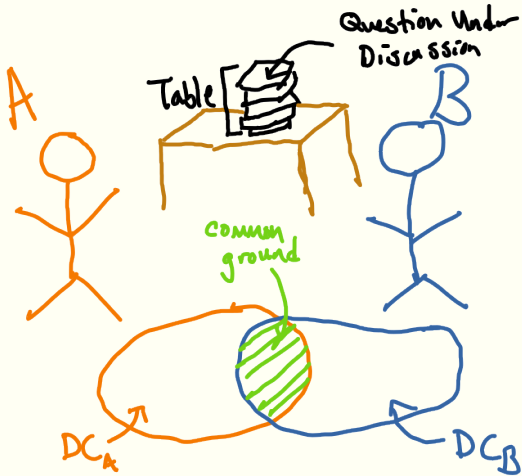
In this course we will adopt a version of the **Table model** (Farkas & Bruce 2010) which incorporates many Stalnakerian notions

A basic context is a quadruple $\langle A, T, DC, cg \rangle$, where

- ✦ A is the set of discourse participants (usually $n = 2$)
- ✦ T is the Table, a stack of issues to be resolved in the current context (uppermost element: *Question Under Discussion*)
 - ✦ Issue = set of propositions
 - ✦ Resolution = adding some member of the issue to the cg
- ✦ DC is a set of sets of of propositional discourse commitments DC_x for each person x in the conversation
- ✦ cg is a Stalnakerian common ground, the set of propositions all participants are committed to ($= \bigcap DC$)

Typical goal of a discourse: **resolve** the issue on top of the Table

The Table: depicted



Derived notions

From this, we can also derive two more pragmatically useful notions:

- ✦ The **context set** $cs = \bigcap cg$, the set of all worlds compatible with the common ground
 - ✦ Same as Stalnaker, mostly useful shorthand to make the notation simpler
- ✦ The **projected set** ps , the set of common grounds compatible with one element of the top of the Table
 - ✦ Intuition: a menu of possible futures of the common ground given that we resolve the QUD

Advantages of the Table model

Sample context c_0 at the beginning of a conversation:

DC_A	Table	DC_B

$$cg_0$$
$$ps = \{\}$$

Allows for tracking of individual commitments as well as conversation-level goals

Structure of discourse is guided by resolving a certain issue, like in Stalnakerian/QUD-based settings

Idea that speaker is making 'proposals' represented by the projected set

Discourse effects of declarative utterances

Uttering a declarative sentence p is assumed to have the following discourse effects (modified from Farkas & Roelofsen 2017):

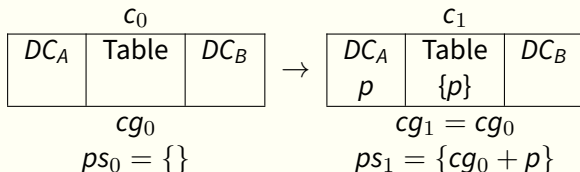
- ✦ Add the (singleton) issue containing only p to the Table
- ✦ Add $cg + p$ to the projected set

Modeled formally as an utterance function UTT_{dec} , where k is the type of a context:

$$(4) \quad \text{UTT}_{dec} = \lambda p_{st}. \lambda c_k. \left[\begin{array}{lcl} T & = & T_c + \{p\} \\ ps & = & \{CG + p\} \\ c' & = & c \text{ in all other respects} \end{array} \right]^{c'}$$

Declaratives: example

(5) **Aloysius**, to **Beatrix**: *He ate the cake* ($=p$).

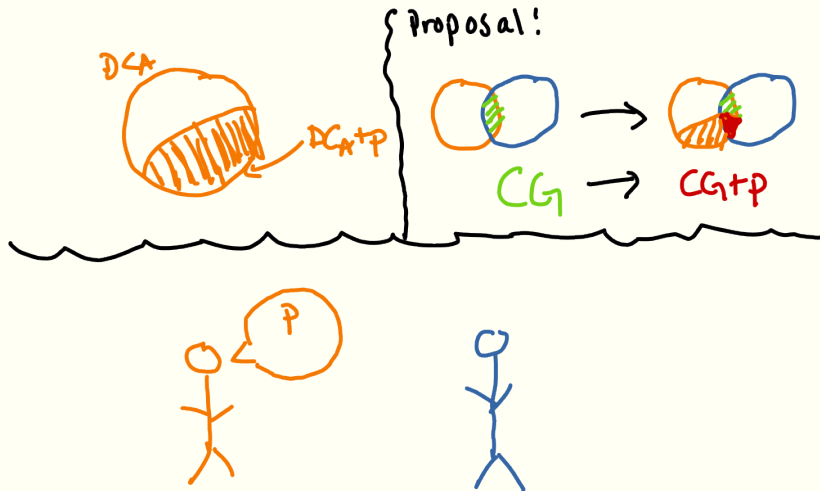


In virtue of uttering p , A:

- ✦ Commits himself to the truth of p
- ✦ Indicates that adding p to the cg is the only viable path forward
 - \Rightarrow Intuition that uttering a declarative is informative: Ad is cornered into accepting it

Does this capture our intuitions about the common core of declarative meaning?

Saying p : depicted



Discourse effects of interrogative utterances

Uttering an interrogative sentence q is assumed to have the following discourse effects:

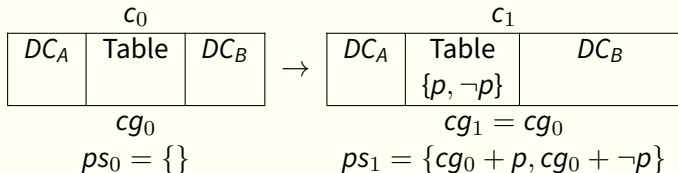
- ✦ Add q to the Table
- ✦ For every $p \in q$, add $cg + p$ to the projected set

Modeled formally as an utterance function UTT_{int} :

$$(6) \quad \text{UTT}_{int} = \lambda q_{\langle st, t \rangle} . \lambda c_k . \left[\begin{array}{lcl} T & = & T_c + q \\ ps & = & \{CG + p \mid p \in q\} \\ c' & = & c \text{ in all other respects} \end{array} \right]^{c'}$$

Interrogatives: example

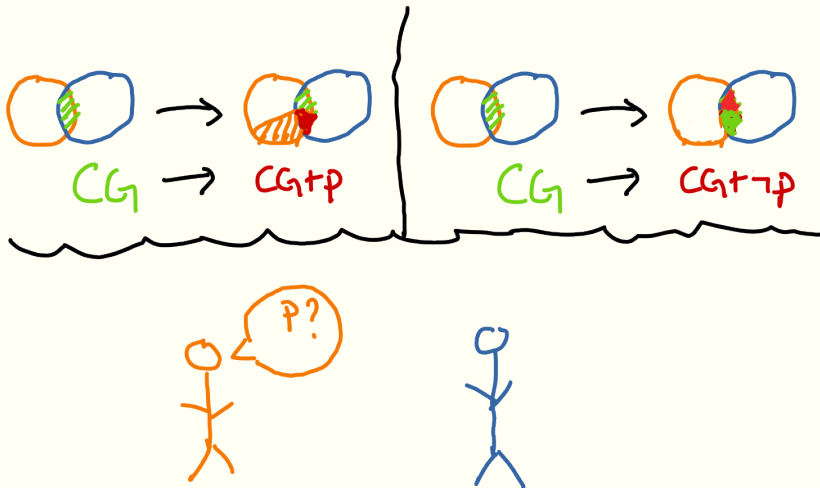
(7) **Ariadne**, to **Balthasar**: *Did he eat the cake?* ($=p?$).



In virtue of uttering $p?$, A:

- ✦ Makes no discourse commitments
- ✦ Provides two options for conversational futures: one where p is true, and one where $\neg p$ is true
 - \Rightarrow Intuition that uttering an interrogative is inquisitive: B given multiple options for how to proceed
 - ✦ \Rightarrow If B objects (*No he didn't!*), there is something wrong with the conversation, such as mistaken assumptions on A's part

Saying $p?$: depicted



Beyond the canonical cases

We have an emergent theory. Does it help us understand non-canonical cases?

- ✦ *What is the capital of Croatia?* from someone who is sincerely asking vs. a teacher quizzing a student
- ✦ *Is the Pope Catholic?* from someone (misguided) who is sincerely asking vs. a rhetorical question

Unifying declaratives and interrogatives

Issues for the standard view

The difference in discourse effects between declaratives and interrogatives so far is stipulative:

- ❖ Declarative utterances make commitment, interrogatives don't
- ❖ Interrogatives add their content to the Table, declaratives add **the set containing** their content to the table

Does this raise any other problems?

Another view?

Having a typewise contrast between declaratives and interrogatives good for handling their differences, but less their similarities

Some predicates can combine with both:

(8) Gustav knows/said/is happy that/whether it is raining.

Response particles like *yes/no* occur in responses to both:

- (9) a. A: Did you eat all the charcuterie?
B: Yes, I did./No, I didn't.
- b. A: You ate all the charcuterie.
Yes, I did. No, I didn't.

A way forward

Idea: What if we treat declarative and interrogative denotations as the same type of formal object? (Hamblin 1973)

- ✦ Denotation of declarative p : $\{p\}$
- ✦ Denotation of polar interrogative $p?$: $\{p, \neg p\}$

Small change, but immediate benefits for our theory:

- ✦ Decl/Int utterances both just put their content on the Table
- ✦ Different impositions on the addressee follow from differences in singleton vs. non-singleton content (in a way to be spelled out)
- ✦ **But:** what is the cost?

Tomorrow: Making our hidden pragmatic assumptions explicit!

References

- Farkas, Donka & Kim Bruce. 2010. On reacting to assertions and polar questions. *Journal of Semantics* 27(1). 81–118. doi:10.1093/jos/ffp010.
- Farkas, Donka & Floris Roelofsen. 2017. Division of Labor in the Interpretation of Declaratives and Interrogatives. *Journal of Semantics* 34(2). 237–289. doi:10.1093/jos/ffw012.
- Hamblin, Charles L. 1973. Questions in Montague English. *Foundations of Language* 10(1). 41–53.