Intro to polar questions?

Maria ‘Masha’ Onoeva
mariaonoeva.github.io

Charles University

HUMBOLDT-UNIVERSITÄT ZU BERLIN

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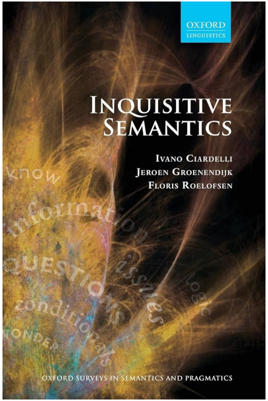
Day 1, Day 2, Day 3: recap

- doesn’t fit on one slide anymore
- can you recap it, please?
- Masha, can you please not recap it?
- can’t you recap it, please?
- can you recap it or not?

Sources



- Their web, books, courses, articles
- I'm not an expert, just curious!
- Quite enjoyable and clear
- Might seem overwhelming though

https://projects.illc.uva.nl/inquisitivesemantics/

Inquisitive semantics

Ciardelli et al. (2018); Ciardelli (2021); Ciardelli et al. (2013a); Roelofsen (2019); Groenendijk and Roelofsen (2009)

- 'In Inquisitive semantics, an utterance is intuitively seen as a proposal to update the already established information in one or more ways'
- it has given rise to a new enriched notion of sentence meaning

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Why is it an "enriched" notion of meaning?

- Something Old: keep classical truth conditions → Informative content (info(P) = $\bigcup P$)

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- Something New: add resolution conditions → Inquisitive issues ($\text{alt}(P) = \text{Max}_{\subseteq}(P)$)

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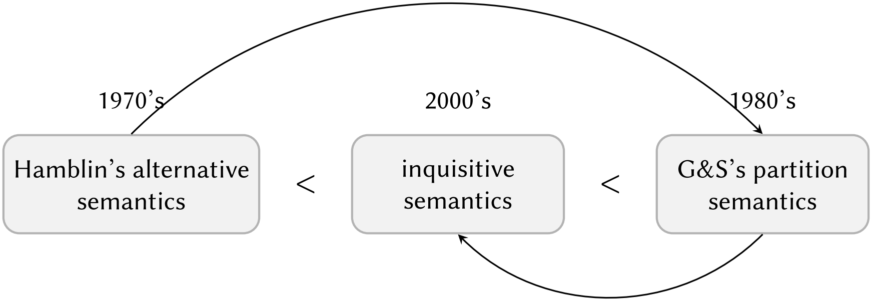
- Something New: add resolution conditions → Inquisitive issues ($\text{alt}(P) = \text{Max}_{\subseteq}(P)$)
- The Upgrade: Classical semantics only models information exchange; enriched semantics models information exchange AND issue-raising inside a single unified framework.

Proposition-Set Theories



Roelofsen (2019): Proposition-set theories, ordered chronologically and in terms of restrictiveness.

Reasons and consequences of enrichment

Ciardelli et al. (2018: 2-7)

- Reason 1: To represent the content of interrogative sentences, i.e., unified account for declaratives and interrogatives
- Reason 2: To model conversational contexts
- Reason 3: To model issue-directed propositional attitudes and capture the meaning of verbs that report such attitudes

Reasons and consequences of enrichment

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- Reason 2: To model conversational contexts
- Reason 3: To model issue-directed propositional attitudes and capture the meaning of verbs that report such attitudes

- Enrichment: A proposition is not a set of worlds ($p \subseteq W$) anymore, it is a downward-closed set of info states ($P \subseteq \mathscr{P}(W)$)
- Consequence: The basic unit of meaning shifts from truth conditions to resolution conditions (*'to understand a sentence is to know its resolution conditions'*)
  - Classical question: "Is this sentence true in world w?"
  - Inquisitive question: "Does info state s resolve this sentence?"

Vocab: from truth to resolution

Ciardelli et al. (2018), Ciardelli (2021)

Classical Semantics *(Truth-Conditional)*

- **World (w):** A complete possible state of affairs *($w \in W$)*
- **Truth ($w \models \phi$):** World w makes ϕ true *($w \in [\![\phi]\!]$)*
- **Proposition ($[\![\phi]\!]$):** Set of worlds where ϕ is true *(Truth conditions)*

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Inquisitive Semantics *(Support-Based)*

- **Info State (s):** Set of possible worlds ($s \subseteq W$) *(What do we know?)*
- **Support ($s \vDash \phi$):** State s settles / resolves ϕ *($s \in [\phi]$)*
- **Proposition ($[\phi]$):** Downward-closed set of supporting states *(Resolution conditions)*
- **Alternative ($\mathrm{alt}(\phi)$):** A maximal state in $[\phi]$ *(Maximal resolving state)*
- **Issue:** Request to reach an alternative in $\mathrm{alt}(\phi)$ *(Trivial if 1 alt; non-trivial if ≥ 2)*

Pipeline: extracting Infos and Issues

Ciardelli et al. (2018), Ciardelli (2021)

Semantic content from a proposition $[\phi]$ follows a 3-step pipeline (my simplification):

Step 1: Start with the Raw Proposition ($[\phi]$)

- Collect all supporting information states ($[\phi] \subseteq \mathscr{P}(W)$)
- Contains all states that resolve ϕ

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Step 2: Extract Informative Content ($\text{info}([\phi])$)

- Formal: Take the union of all states: $\text{info}([\phi]) = \bigcup[\phi]$
- Criterion: ϕ is **informative** iff $\text{info}([\phi]) \neq W$ *(Eliminates worlds)*

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- Formal: Take the maximal states: $\text{alt}([\phi]) = \text{Max}_{\subseteq}([\phi])$
- Criterion: ϕ is **inquisitive** iff $|\text{alt}([\phi])| \geq 2$ *(Raises an issue)*

Assertions and Questions

- **Assertions** *Informative, non-inquisitive*
  - Intuition: Eliminates possibilities; does not raise an issue.
  - Formal: Exactly one alternative: $|\mathrm{alt}(\phi)| = 1 \iff \mathrm{info}(\phi) \in [\phi]$
  - Contingent assertion: $\mathrm{info}(\phi) \neq W$

Assertions and Questions

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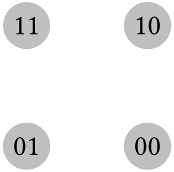
  - Formal: Exactly one alternative: $|\mathrm{alt}(\phi)| = 1 \iff \mathrm{info}(\phi) \in [\phi]$
  - Contingent assertion: $\mathrm{info}(\phi) \neq W$
- **Questions** (all of them) *Non-informative, inquisitive*
  - Intuition: Raises an issue; eliminates no possibilities.
  - Formal: Multiple alternatives ($|\mathrm{alt}(\phi)| \geq 2$) AND $\mathrm{info}(\phi) = W$

Examples, hurray!

Ciardelli et al. (2013a: 28)

(1) Imagine a context in which we are dealing with a two-digits code, where each digit can be either 1 or 0. Consider the following sentences in English (see the next frame).



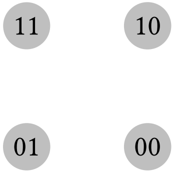
A two-digit code context, the logical space W

- the whole logical space (W) with 4 possible worlds
- only one is a true world

Examples, hurray!

Ciardelli et al. (2013a: 28)

(2)
- a. The code is 11.
- b. The second digit of the code is 1.
- c. If the first digit is 1, the second digit is also 1.
- d. Is the code 11?
- e. What is the first digit?
- f. What is the second digit?
- g. What is the code?

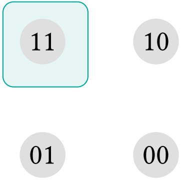


The logical space W

(2a) The code is 11.

- **Informative:** $\text{info}(P) \neq W$ (*eliminates worlds*)
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ (*raises an issue*)

- **Proposition** (P)**:** $\mathscr{P}(\{11\}) = \{\{11\}, \varnothing\}$
- **info**(P)**:** $\{11\} \neq W \rightarrow$ Rules out **10, 01, 00**
- **alt**(P)**:** $\{\{11\}\} \rightarrow$ **1** Alternative
- **Result:** Non-inquisitive, Informative (*Assertion*)



The logical space W

(2a) The second digit of the code is 1.

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- **Proposition (P):** $\mathscr{P}(\{11, 01\})$
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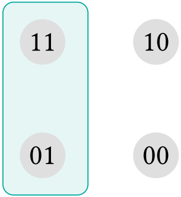

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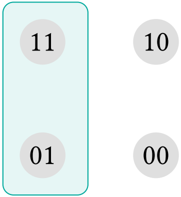


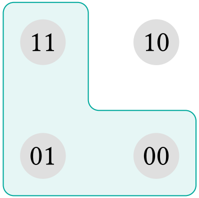
The logical space W

- Why one alternative?
  - An Alternative (Information State): An alternative is not a single world, it is a set of candidate worlds that the sentence permits as possibilities for w.

(2c) If the first digit is 1, the second digit is also 1.

- **Informative:** $\text{info}(P) \neq W$ *(eliminates worlds)*
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ *(raises an issue)*

- **Proposition (P):** $\mathscr{P}(\{11, 01, 00\})$
- **info**(P): $\{11, 01, 00\} \neq W \to$ Rules out **10**
- **alt**(P): $\{\{11, 01, 00\}\} \to$ **1** Alternative
- **Result:** Non-inquisitive, Informative (*Assertion*)

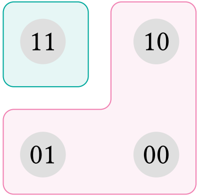


The logical space W

(2d) Is the code 11?

- **Informative:** $\text{info}(P) \neq W$ (*eliminates worlds*)
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ (*raises an issue*)

- **Proposition (P):** $\mathscr{P}(\{11\}) \cup \mathscr{P}(\{10, 01, 00\})$
- **info**(P): $\{11\} \cup \{10, 01, 00\} = W \rightarrow$ Rules out nothing
- **alt**(P): $\{\{11\}, \{10, 01, 00\}\} \rightarrow$ **2** Alternatives
- **Result:** Inquisitive, Non-informative (*Polar Question*)

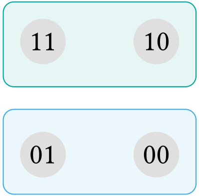


The logical space W

(2e) What is the first digit?

- **Informative:** $\text{info}(P) \neq W$ (*eliminates worlds*)
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ (*raises an issue*)

- **Proposition (P):** $\mathscr{P}(\{11, 10\}) \cup \mathscr{P}(\{01, 00\})$
- **info(P):** $\{11, 10\} \cup \{01, 00\} = W \rightarrow$ Rules out nothing
- **alt(P):** $\{\{11, 10\}, \{01, 00\}\} \rightarrow$ **2** Alternatives
- **Result:** Inquisitive, Non-informative

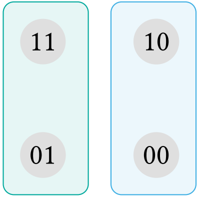


The logical space W

(2f) What is the second digit?

- **Informative:** $\text{info}(P) \neq W$ (*eliminates worlds*)
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ (*raises an issue*)

- **Proposition (P):** $\mathscr{P}(\{11, 01\}) \cup \mathscr{P}(\{10, 00\})$
- **info(P):** $\{11, 01\} \cup \{10, 00\} = W \to$ Rules out nothing
- **alt(P):** $\{\{11, 01\}, \{10, 00\}\} \to$ **2** Alternatives
- **Result:** Inquisitive, Non-informative

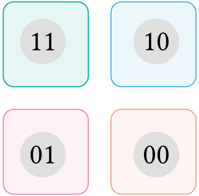


The logical space W

(2g) What is the code?

- **Informative:** $\text{info}(P) \neq W$ (*eliminates worlds*)
- **Inquisitive:** $|\text{alt}(P)| \geq 2 \iff \text{info}(P) \notin P$ (*raises an issue*)

- **Proposition (P):** $\bigcup_{w \in W} \mathscr{P}(\{w\})$
- **info**(P)**:** $\bigcup W = W \rightarrow$ Rules out nothing
- **alt**(P)**:** $\{\{11\}, \{10\}, \{01\}, \{00\}\} \rightarrow$ **4** Alternatives
- **Result:** Inquisitive, Non-informative



The logical space W

Our main questions are PQs

(3) a. The code is 11.
    b. Is the code 11?

(4) a. Isn't the code 11?
    b. Is the code not 11?

(5) The code is 11? [rising declarative]

Here we go again

AnderBois (2019)

(6) a. Did Amelia bring a Mexican dish? [positive PQ]
b. Did Amelia not bring a Mexican dish? [low-neg PQ]
c. Didn't Amelia bring a Mexican dish? [high-neg PQ]

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- Since double negation is vacuous ($\neg\neg p \equiv p$), classical Hamblin/Partition semantics predicts all three yield identical meanings
- but they are not, yada yada yada

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- but they are not, yada yada yada
- AnderBois's solution: two-tiered Inquisitive Semantics – Main vs. Projected issues

Properties of PQs in English

(7) Summary of properties:

(i) positive PQs: May convey weak positive speaker bias. ‘Default’ use with no bias conveyed also possible.

(ii) low-negation PQs: Always convey weak negative bias plus possibility of extended discussion

(iii) high-negation PQs: Always emphasize truth value of main issue, convey positive prior expectation/belief

- informative and inquisitive tiers are not enough
- two inquisitive tiers – *main* and *projected* issues

Two-Tiered Inquisitive Semantics

AnderBois (2019)

(8) $$\langle\langle \phi \rangle\rangle = \frac{\mathscr{M}}{\mathscr{D}} = \frac{\text{Main Issue}}{\text{Projected Issue}}$$

- **Main Issue ($\mathscr{M}$):** the QUD introduced into the discourse, the addressee is expected to resolve this
    - Uniform across positive PQ, low-neg PQs and high-neg PQs ($\mathscr{M} = \{p, \neg p\}$).

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  - Uniform across positive PQ, low-neg PQs and high-neg PQs ($\mathscr{M} = \{p, \neg p\}$).
- **Projected Issue ($\mathscr{D}$):** a set of alternatives made salient as potential / safe future QUDs

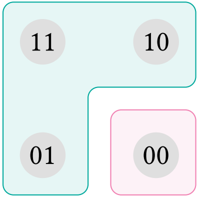
A bit more on the issues

- the primary yes/no issue = **main issue**
  - “The main issue presents an issue whose resolution the speaker expects/requests if possible (i.e. introduces a Question Under Discussion (QUD)).”
- beyond biases: secondary issues = **projected issues**
  - “The projected issue makes salient a potential QUD, but produces no obligation for the addressee to respond.”
  - “Pragmatic reasoning still plays a role, of course, since hearers reason about why a cooperative speaker would find a given projected issue to be useful in the immediate future of the discourse.”
- “uniform pragmatic roles to both main and projected issues main issues must be addressed by cooperative interlocutors when possible, projected issues merely can be”

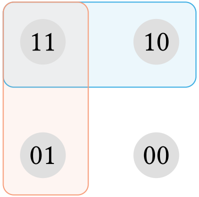
Positive PQ

(9) Did Amelia bring a Mexican dish?

- **Main Issue ($\mathscr{M}$):** brought dish vs. brought neither
- **Projected Issue ($\mathscr{D}$):** sub-alternatives – Tacos or Tamales
- **Pragmatic Effect:** Directs discourse to sub-cases of the positive answer → conveys positive bias



Main Issue ($\mathscr{M}$)

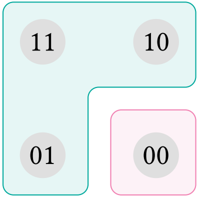


Projected Issue ($\mathscr{D}$)

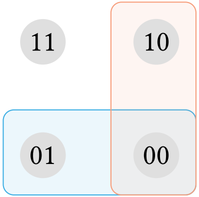
Low-negation PQ

(10) Did Amelia not bring a Mexican dish?

- **Main Issue ($\mathscr{M}$):** brought dish vs. brought neither
- **Projected Issue ($\mathscr{D}$):** individually negated alternatives – Not tacos / Not tamales
- **Pragmatic Effect:** Projected alts are super-alternatives of {00}



Main Issue ($\mathscr{M}$)

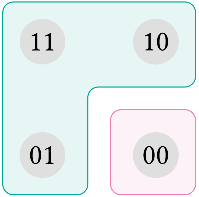


Projected Issue ($\mathscr{D}$)

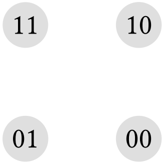
High-negation PQ

(11) Didn't Amelia bring a Mexican dish?

- **Main Issue ($\mathscr{M}$):** brought dish vs. brought neither
- **Projected Issue ($\mathscr{D}$):** Nothing – $\varnothing$
- **Deriving VERUM:** Single-step high negation wipes out sub-alternatives
- By eliminating $\mathscr{D}$, high-neg PQs force total conversational focus strictly onto the truth value of $\mathscr{M}$



Main Issue ($\mathscr{M}$)



Projected Issue ($\mathscr{D} = \varnothing$)

VERUM FOCUS

- VERUM FOCUS (Gutzmann et al. 2020): focuses the **truth value** of a proposition

(12) A: I cannot imagine that Peter kicked the dog.
B: Peter **DID** kick the dog.

More for questions

(13) The code is 11?

- Kiss (2024) and Farkas and Roelofsen (2017) – declarative questions, aka rising declaratives in English

More for questions

(13) The code is 11?

- Kiss (2024) and Farkas and Roelofsen (2017) – declarative questions, aka rising declaratives in English

Or not?

(14) a. Is John going to the party?
b. Is John going to the party or not?

Ciardelli et al. (2013b)

> *In terms of inquisitive content, (1)/(14a) and (2)/(14b) are equivalent. Both are used to raise the issue whether John is going to the party or not, and both are resolved if and only if one of the two options is established. This is suitably captured both in InqB and in InqD. It has been noted that in English questions like (2)/(14b) usually carry a sense of urgency that is not necessarily conveyed by standard polar questions like (1)/(14a) (Bolinger 1978; Biezma 2009). In order to capture this fine-grained difference, it would be necessary to further refine the basic inquisitive semantic machinery of InqB and InqD.*

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References III

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