

Intro to polar questions?

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Introduction and course overview

Who am I and who are you?

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- Day 1: basics, terminology, etc.
- Day 2: negation and bias
- Day 3: monopolar and bipolar
- Day 4: inquisitive semantics* (color perception?)
- Day 5: application and experiments

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- wh-questions? alternative questions?
- answers
- embedded questions

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- you are able to get through very tightly packed papers on questions (references)
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So, who are you? Briefly name, languages of interest, BA/MA/PhD/?

Types of questions

Krifka (2011); Groenendijk and Stokhof (2011); Dayal (2016); Roelofsen (2019); Dekker et al. (2016)

- (Matrix / Root) Questions are sentences that elicit a response from an addressee to gain information
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(1) a. What song is Masha listening to now? – ‘Huntrix–How it’s done’.

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 - c. Is Masha painting her nails or playing chess tonight? –
Nails / Chess / Both / Neither.

- (1a) *wh*-question / content question / constituent question
- (1b) *yes-no* question / polar question (PQ)
- (1c) disjunctive question / alternative question

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Terminology in the languages you speak?

More terminology

- Three components (Abeillé et al. 2012):

	Syntax: clause type	Semantics: denotation	Pragmatics: illocutionary force
<i>She paints her nails.</i>	declarative	proposition	assertion
<i>Does she paint her nails?</i>	interrogative	set of propositions	query

- interrogative sentence $\times$ question $\times$ interrogative act (Groenendijk and Stokhof 2011: 1059)
- question-form $\times$ question-content $\times$ questioning/answering speech acts (Partee 2009)

More terminology

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- interrogative sentence $\times$ question $\times$ interrogative act (Groenendijk and Stokhof 2011: 1059)
- question-form $\times$ question-content $\times$ questioning/answering speech acts (Partee 2009)
- since we're dealing with meaning, I primarily use *polar questions*
- the boundary between semantics and pragmatics is even thinner for questions
(Tabatowski 2022: 33, Dekker et al. 2016: 11)

A bit of syntax (just a little)

Chomsky (1957/2002)

- *Syntactic structures* (2nd edition; pp. 61–65) on transformations in English

- (2)
- a. Negation (T_{not}): $NP + Aux + VP \longrightarrow NP + Aux + n't + VP$
 - b. Question (T_Q): $NP + Aux + VP \longrightarrow Aux + NP + VP$

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 - b. Question (T_Q): $NP + Aux + VP \longrightarrow Aux + NP + VP$
- (3)
- a. Base: [The man] [has] [eaten an apple]
 - b. Negation (T_{not}): [The man] [has] [not] [eaten an apple]
 - c. Question (T_Q): [Has] [the man] [eaten an apple?]
- (I'm cherry picking and not telling the whole story, see *do-support* and others)
 - What if Chomsky hadn't started with English?

Polar interrogatives cross-linguistically

Dryer (2013), Hölzl (2025)

- Marking strategies for polar interrogatives in two different global samples

	Dryer (2013)	Hölzl (2016)
Question particle	585	28
Interrogative intonation only	173	8
Interrogative verb morphology	164	8
Mixture of particle and morphology	15	1
Interrogative word order	13	1
Absence of declarative morphemes	4	1
No interrogative-declarative distinction	1	1
Total	955	48

- Click me, I'm a [WALS Feature 116A: Polar Questions](#) link!

Polar interrogatives cross-linguistically

(4) *Finnish*

- a. Lähti-kö Mari?
left-kö.Q Mari
'Did Mari leave?'
- b. *Lähti Mari?
left Mari
(Int.) 'Did Mari leave?'
- c. Lähti-kö Mari vai Pekka?
left-kö.Q Mari or Pekka
'Did Mari leave or did Pekka
leave?'

- *-kO* is mandatory; w/o it is ill-formed
- also mandatory in alternative questions
- same applies to Turkish *-ml*, x2 in alternative

(Gonzalez 2023: 5)

Polar interrogatives cross-linguistically

(5) *Thai*

Nát cà sú๓ nǎŋ-sǔ๓ rǔ๓?

Nath will buy book OR.Q

‘Will Nath buy a book?’

(Holmberg 2015: 43)

(6) *Polish*

Czy Agata ma kapibarę?

czy.Q Agata has capybara

‘Does Agata have a capybara?’

(Chirpanlieva 2025)

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‘Will Nath buy a book?’

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czy.Q Agata has capybara

‘Does Agata have a capybara?’

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(7) *Vietnamese*

Nam có đọc sách không?

Nam YES read book NO

‘Does Nam read books?’

(Trinh 2025: 403)

(8) *Mandarin*

nǐ xǐhuan-bu-xǐhuan yuyongxue?

you like-not-like pragmatics

‘Do you like pragmatics?’

(Ye 2021: 355)

Polar interrogatives cross-linguistically

- The situation is much more nuanced than one type per language
 - Click me, I'm a [WALS Feature 116A: Polar Questions](#) link again!

(9) *Hungarian*

- a. Esik az eső\/? [intonation]
falls the rain
'Is it raining?'
- b. Esik-e az eső\? [particle]
falls-E.Q the rain
'Is it raining?'

(Gyuris 2017: 3–4)

(10) *Russian*

- a. Dožd' idët_{L+H*}? [intonation]
rain goes
'Is it raining?'
- b. Idët li dožd'? [particle]
goes LI.Q rain
'Is it raining?'

(Onoeva and Staňková 2025: 430)

Polar interrogatives cross-linguistically: syntax

Partee (2009)

*“In the syntax of questions, [...], there are usually two key morphemes that are posited: **an abstract morpheme “Q”**, somewhere in the complementizer position, that marks something as a syntactic question-form possibly realized in some languages as a morpheme like Russian *li* or Chinese *ma*, and/or licensing interrogative word-order or intonation), and **a wh-morpheme** that forms wh-words like who, what, where, when, how, used in so-called WH-questions.”*

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Holmberg (2015)

- a question is syntactically an open proposition containing a free variable (x); for PQs, it is $[\pm\text{Pol}]$
- the structural goal of any answer is simply to assign a specific value to that variable
- “something somehow moves to the C-domain” – covertly or overtly

The end of the syntactic part!

Holmberg (2015)

Language	Syntactic Representation of Polarity Variable	Movement to C-Domain
English	Abstract [$\pm$ Pol] feature high in the IP-domain	Overt via Subject-Auxiliary (Pol-to-C) inversion
Finnish	Bound enclitic particle (- <i>ko</i> /- <i>kö</i>) marking question disjunction	Overt via pied-piping the highest verbal host to C
Mandarin	A-not-A: Interrogative functional head in IP domain	Covert (LF-movement); subject to island constraints
Thai	Coordinate structure of two opposing PolPs (negative elided)	Covert; clause-final particle acts as a scope marker

Truth-conditions (semantics, finally!)

Kroeger (2019: 35)

(11) *Masha is wearing neon-green nail polish.* – a declarative sentence

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- Syntax of (11): It has a subject (*Masha*), an auxiliary (*is*), a verb aspect form (*wearing*), and an adjective-noun phrase (*neon-green nail polish*).
 - *Nail polish green-neon Masha wearing is* – ungrammatical

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- Semantics of (11): the claim or thought being expressed – a proposition p
 - Russian: *У Маши на ногтях неоново-зеленый лак.*
 - Hungarian: *Masha neon-zöld körömlakkot visel.*

} the same proposition

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} the same proposition
- Pragmatics of (11): uttering it in the context

Truth-conditions

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- since you understand what this sentence means, in formal semantics, it indicates that you know the conditions under which it is true; hence, *truth-conditions*

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von Fintel and Heim (2011: 5)

(12) $\llbracket (11) \rrbracket^{g,w} = \text{TRUE}$ if and only Masha is wearing neon-green nail polish in the world w ;
otherwise FALSE

Questions and truth

(13) *Is Masha wearing neon-green nail polish?* – an interrogative sentence

Problem (Groenendijk and Stokhof 2011: 1062)

Can a question be true or false? Do declaratives and interrogatives just have different moods but share the same semantic content (a proposition or radical)?

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Problem (Groenendijk and Stokhof 2011: 1062)

Can a question be true or false? Do declaratives and interrogatives just have different moods but share the same semantic content (a proposition or radical)?

- **What if yes?** Going back to Frege, the difference is purely pragmatic – just a change in mood/use. Let's reduce question content to standard propositions! – *Reductionist approaches*
- **What if no?** Interrogatives possess a distinct type of semantic content altogether (answerhood conditions instead of truth conditions) – *erotetic semantic approaches*

Yes, same semantically, different pragmatically (1/2)

Groenendijk and Stokhof (2011), Šimík (2011), Partee (2009)

- Performative embedding approach, e.g, by Lewis (1976)

(14) p = Masha is wearing neon-green nail polish

- [I-SAY](p) in other words, '*I say that p* ' is true iff I say that p
- [I-ASK](p) in other words, '*I ask whether p* ' is true iff I ask whether p

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The problems?

- everything is always true when you simply utter it
- circularity issue: just push the problem to the embedded part, but what about it?

Yes, same semantically, different pragmatically (2/2)

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- Imperative-epistemic embedding approach by Hintikka (1974)
- *Is Masha wearing neon-green nail polish?* paraphrased as (15)

(15) [Bring it about that [I know whether [Masha is wearing neon-green nail polish]]].
→ BRING-IT-ABOUT – imperative part; I-KNOW – epistemic part

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(16) BRING-IT-ABOUT that:

- a. If it is true → I-KNOW [*Masha is wearing it*]
- b. If it is false → I-KNOW [*Masha is not wearing it*]

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- inquirer ignorance: hardcoded into the sentence meaning
- circularity issue: relies on the embedded interrogative *whether*
- imperative issue: can imperatives actually be true or false?

What if no? – Answerhood conditions

Problem (Groenendijk and Stokhof 2011: 1062)

Can a question be true or false? Do declaratives and interrogatives just have different moods but share the same semantic content (a proposition or radical)?

Hamblin's Answer: No! They are semantically distinct objects (Hamblin 1973)

- **Core idea:** A question does not have truth conditions. It has answerhood conditions.
- Questions characterize the conditions under which they are answered.

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“Hamblin's picture” (Groenendijk and Stokhof 2011: 1079)

1. An answer to a question is a sentence, or statement.
2. The possible answers to a question form an exhaustive set of mutually exclusive possibilities.
3. To know the meaning of a question is to know what counts as an answer to that question.

Hamblin's possible answers

Hamblin (1973); Sudo (2023)

Semantic value of (17a) is the static **set of its possible answers**, or the set of propositions

(17) a. *Is Masha wearing neon-green nail polish?*

$$\llbracket ? \text{ Masha is wearing neon-green nail polish} \rrbracket_H^g = \left\{ \begin{array}{l} \lambda w_s. \text{Masha is wearing neon-green nail polish in } w, \\ \lambda w_s. \text{Masha is not wearing neon-green nail polish in } w \end{array} \right\}$$

- (18) a. $\llbracket ? \rrbracket_H^g = \{ \lambda w_s. \lambda p_{\langle s,t \rangle}. p(w) = 1, \lambda w_s. \lambda p_{\langle s,t \rangle}. p(w) = 0 \}$
b. $\{ p; \neg p \}$ for short

Karttunen's true answers

Karttunen (1977); Sudo (2023); Šimík (2011); Partee (2009)

- Semantic value: the smaller **set of a question's true answers**
- the question's denotation becomes world-dependent (dynamic) rather than static
- the difference between Hamblin's set and Karttunen's set is not that essential

(Groenendijk and Stokhof 2011: 1111, fn. 65)

$$(19) \quad \llbracket ? \text{ Masha is wearing neon-green nail polish} \rrbracket_K^g = \\ \lambda w_s. \lambda p_{\langle s, t \rangle}. \left[\begin{array}{l} p = \lambda w'_s. \text{Masha is wearing neon-green nail polish in } w' \vee \\ p = \lambda w'_s. \text{Masha is not wearing neon-green nail polish in } w' \end{array} \right]$$

$$(20) \quad \llbracket ?_{\mathbf{yn}} \rrbracket_K^g = \lambda w_s. \lambda p_{\langle s, t \rangle}. \lambda q_{\langle s, t \rangle}. p = q \text{ or } q = \lambda w'_s. p(w') = 0$$

Groenendijk & Stokhof's partition of logical space

Groenendijk and Stokhof (1984); Šimík (2011)

- Semantic value: a **partition of the logical space** W into non-overlapping blocks
- Each cell represents a complete, exhaustive answer
- Under this view, a question is a grid that groups together worlds that share the exact same truths

(21) $\llbracket ? \text{ Masha is wearing neon-green nail polish} \rrbracket_{GS}^g =$

$\neg p$ (Masha is not wearing it)	p (Masha is wearing it)
---------------------------------------	------------------------------

Logical space W

Proposition set frameworks

Roelofsen (2019)

Denotation of PQs is a set of propositions, namely $\{ p; \neg p \}$

- Hamblin (1973) and Karttunen (1977): ALTERNATIVE SEMANTICS
- Groenendijk and Stokhof (1984): PARTITION SEMANTICS
- Ciardelli et al. (2018): INQUISITIVE SEMANTICS (more on Thursday)

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- frankly speaking, not that existing for PQs, the difference and predictions are more clear with constituent questions
- also the difference for embedded questions

A bit of constituent questions (very very informally)

- (22)
- a. *What song is Masha listening to now?*
 - b. Answerhood conditions would correspond to a playlist, i.e., a set of answers

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 - b. Answerhood conditions would correspond to a playlist, i.e., a set of answers
 - Hamblin says: the denotation is the whole playlist (the set of all possible proposition-answers)
 - Karttunen says: the denotation is the track currently playing (the set of true proposition-answers)
 - Groenendijk and Stokhof say: the denotation is the complete Now Playing screen (the exhaustive state of the player, partitioning the worlds)

Partition

- Partition of W based on Groenendijk and Stokhof (1984)
- $D_{\text{song}} = \{\text{Song A, Song B}\}$

Logical Space W

Cell 1 $\text{listen}(m) = \{\text{Song A}\}$ <i>(only Song A)</i>	Cell 2 $\text{listen}(m) = \{\text{Song B}\}$ <i>(only Song B)</i>
Cell 3 $\text{listen}(m) = \{\text{Song A, Song B}\}$ <i>(both A & B)</i>	Cell 4 $\text{listen}(m) = \emptyset$ <i>(No song)</i>

Back to polar questions: Uh-oh, a problem

Roelofsen (2019: 8)

Does anyone see a problem?

- | | | | |
|------|----|-------------------------------------|--------------------|
| (23) | a. | Is Judit Polgar a chess player? | [positive PQ] |
| | b. | Is Judit Polgar not a chess player? | [low-negation PQ] |
| | c. | Isn't Judit Polgar a chess player? | [high-negation PQ] |

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| c. | Isn't Judit Polgar a chess player? | [high-negation PQ] |

- Are the answerhood conditions the same?
- Proposition set frameworks predict that they have the same meaning – the possible / true answers – which is undesirable?

- (23)
- | | |
|----|--|
| a. | $= \{ p, \neg p \}$ |
| b. | $= \{ \neg p, \neg\neg p \} = \{ \neg p, p \} = \{ p, \neg p \}$ |
| c. | $= \{ \neg p, \neg\neg p \} = \{ \neg p, p \} = \{ p, \neg p \}$ |

Back to polar questions: Uh-oh, a problem

Roelofsen (2019: 8)

Does anyone see a problem?

- (23)
- | | | |
|----|-------------------------------------|--------------------|
| a. | Is Judit Polgar a chess player? | [positive PQ] |
| b. | Is Judit Polgar not a chess player? | [low-negation PQ] |
| c. | Isn't Judit Polgar a chess player? | [high-negation PQ] |

- Are the answerhood conditions the same?
- Proposition set frameworks predict that they have the same meaning – the possible / true answers – which is undesirable?

- (23)
- | | |
|----|--|
| a. | $= \{ p, \neg p \}$ |
| b. | $= \{ \neg p, \neg\neg p \} = \{ \neg p, p \} = \{ p, \neg p \}$ |
| c. | $= \{ \neg p, \neg\neg p \} = \{ \neg p, p \} = \{ p, \neg p \}$ |

How to get out of this?

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