The basic dynamic effect of interrogative utterances

Sven Lauer and Cleo Condoravdi
Stanford University

13th Texas Linguistics Society Conference
University of Texas, Austin
June 23-24, 2012

Outline

The varied uses of interrogatives
Information questions

- Interrogatives can be used for many purposes:
- Informing, . . .

(1)   Is it raining?
   $\hookrightarrow$ Speaker wants to acquire information.

Initiating discussion

- ▶ Interrogatives can be used for many purposes:
- ▶ Informing, putting up for discussion...

(2) Who had opportunity to commit the crime? (Let's figure this out.)
     ↪ Speaker wants to initiate discussion to determine the correct answer.

(3) Where shall we go for dinner?
     ↪ Speaker wants to initiate discussion to *make one of the answers true*.

The varied uses of interrogatives

Exam questions

- ▶ Interrogatives can be used for many purposes:
- ▶ Informing, putting up for discussion, testing addressee's knowledge, . . .

(4)   What is the formula for sulphuric acid?

The varied uses of interrogatives
Rhetorical questions

- Interrogatives can be used for many purposes:
- Informing, putting up for discussion, testing addressee's knowledge, reminding addressee about a fact, ...

(5)   Who insisted that we see this movie?

(6)   Is the pope catholic?

(7)   Did John lift a finger to help?

The varied uses of interrogatives

Bringing up a possibility

- Interrogatives can be used for many purposes:
- Informing, putting up for discussion, testing addressee's knowledge, reminding addressee about a fact, bringing up a possibility, ...

(8)   [*A* is looking for his keys]
      B: Could they be in the car?

The varied uses of interrogatives

Combative questions

- ▶ Interrogatives can be used for many purposes:
- ▶ Informing, putting up for discussion, testing addressee's knowledge, reminding addressee about a fact, bringing up a possibility, prompting for a commitment, ...

(9)   Senator, should taxes be raised to reduce the deficit?

The varied uses of interrogatives
Socratic questions

- Interrogatives can be used for many purposes:
- Informing, putting up for discussion, testing addressee's knowledge, reminding addressee about a fact, bringing up a possibility, prompting for a commitment, teaching, . . .

(10)   And doesn't this line bisect each of these spaces?

[Plato, MENO]

The varied uses of interrogatives

- Interrogatives can be used for many purposes:
- Informing, putting up for discussion, testing addressee's knowledge, reminding addressee about a fact, bringing up a possibility, prompting for a commitment, teaching, . . .
- How do interrogatives do that?
- Do all these uses derive from a common dynamic effect?

Interrogatives and the QUD

- QUD-models have been applied to a variety of phenomena.
- So, easy: The utterance of an interrogative adds its denotation to the QUD-stack.
- But: The QUD-stack has a particular function.
- It represents the issues that the interlocutors are jointly trying to resolve.
- But that does not seem adequate for exam questions, bringing up possibilities, rhetorical questions, combative questions, . . .

Interogatives and the QUD (cont'd)

- Two possible strategies:
    1. Broaden the function assigned to the QUD stack.
    2. Assume that the addition to the QUD stack is not the basic function of interrogatives, but rather a secondary effect that may happen when the context is right, on the basis of a more basic effect.
- We follow the second strategy here.

Outline

Introduction: The varied uses of interrogatives

Theoretical background
    Denotation and context change effect
    Form-force mapping through extra-compositional conventions

Proposal: Interrogatives publicize preferences for
addressee-commitments

Deriving the uses of interrogatives

Outline

Introduction: The varied uses of interrogatives

Theoretical background
    Denotation and context change effect
    Form-force mapping through extra-compositional conventions

Proposal: Interrogatives publicize preferences for
addressee-commitments

Deriving the uses of interrogatives

Semantic objects and their use

- What a semantic object is *used to do* is a matter of (linguistic) convention.
- It is sometimes thought that the (compositionally-determined) denotation of a clause determines its context-change effect.
  - E.g. it is sometimes claimed that imperatives cannot denote propositions, because imperatives do not assert their contents.
  - cf. also Belnap (1990): The 'declarative fallacy'.
- But: a proposition is not particularly well-suited for making a claim / proposing an update of the common ground.
  - A proposition p is just as good for raising the question whether p, or to indicate that p is desirable, or . . .
- The use of a clause type / semantic object not follow from independent pragmatic principles.

Semantic objects and their use (cont'd)

- ▶ Some semantic objects are quite versatile.
- ▶ E.g. inquisitive semantics (IS): Declaratives and interrogatives get the same type of denotation.
- ▶ And it is possible to specify a uniform use for those, e.g.: Uttering a sentence that denotes an IS-proposition acts as a proposal to add one of the IS-possibilities contained in it to the common ground (Farkas and Roelofsen 2012).
- ▶ But: This use still needs to be *specified*, it is a matter of linguistic convention, above and beyond compositionally-determined denotation and general-purpose pragmatic reasoning.

Clause types: Form + Use

- A *clause type* is a pairing of a (formally-individuated) expression type and its conventional use (Sadock and Zwicky 1985).
- The old 'propositional radical + mood' view can be seen as a simple(-minded) implementation of clause-typing.

Stenius (1967, p. 254)

- *(11)   You live here now.*

- *(12)   Live here now!*

- *(13)   Do you live here now?*

These three sentences have something in common, which [...] I call the sentence radical; what is different in each of them I call the modal element.

Sentence = Sentence Radical + Mood

" The sentence radical signifies the descriptive content of the sentence, the modal element signifies its mood. [Assume the addressee is John, then we can represent these sentences as]

(14)   It is the case that John lives here now.

(15)   Let it be the case that John lives here now!

(16)   Is it the case that John lives here now?

In this notation, the sentence-radical can be said to be the that-clause, whereas the modal element is what stands in front of the that clause."

"When stating that somebody speaks the truth one does not mean that he is producing a true sentence-radical for one does not say that somebody is speaking the truth if he presents a true sentence-radical in the imperative or interrogative mood, or as a that-clause without specied mood, or, as part of, say, an implication which as a whole is expressed in the indicative mood. The expression speaking the truth thus refers to the modal concept of truth, and means that one is following the rule for the indicative correctly." (Stenius 1967, 268)

Stenius (1967): Moods as rules for language game moves

- Stenius' rules:
  - Produce a sentence in the indicative mood only if its sentence radical is true.
  - React to a sentence in the imperative mood by making the sentence radical true.
  - Answer a question by 'yes' or 'no', according as its sentence-radical is true or false.

- The rule for the indicative mood is essentially a *normative precondition* for its use (by the speaker): one must produce a sentence in the indicative mood only if its sentence radical is true.

- The rules for the interrogative and imperative mood specify a *normative effect*, of its use, a requirement that is imposed on the addressee: The rule dictates the way the addressee is to act in response.

Bierwisch (1980): Moods as indicators of basic cognitive attitudes

- Utterances have a *content* and are associated with a *cognitive attitude to this content*.
- "cognitive attitudes are pre-reflexive ways of appreciating actual or possible states of affairs (p. 20)"
- Moods as conventional indicators of cognitive attitudes
  - D: the utterer takes it that . . . (declaratives)
  - I: the utterer intends that . . . (imperatives)
  - Q: the utterer intends to know . . . (interrogatives)
- Relating meaning to force:
  By making an utterance *mu* with the utterance meaning *m*, the speaker wants the audience to recognize that he has the respective attitude towards *m*
- *Nota bene*: *m* does not need to be propositional!

Clause types again

- A *clause type* is a pairing of a (formally-individuated) expression type and its conventional use (Sadock and Zwicky 1985).
- What are 'conventional uses'?
    - Stenius (1): Normative preconditions for the utterance of a clause of this type.
    - Stenius (2): Normative consequences of the utterance of a clause of this type.
    - Bierwisch: Basic cognitive attitudes 'expressed' by a sentence of this type.
- Here:
    - Conventional uses of clause types are uniformly specified in terms of *normative consequences*.
    - These consequences consist in the *commitments* the speaker undertakes with his utterance (cf. von Savigny (1988))
    - These commitments are about *cognitive attitudes* of the speaker.

Outline

Introduction: The varied uses of interrogatives

Theoretical background
    Denotation and context change effect
    Form-force mapping through extra-compositional conventions

Proposal: Interrogatives publicize preferences for
addressee-commitments

Deriving the uses of interrogatives

Mediating the form-function mapping

- ▸ How are conventional uses/consequences specified?
  - ▸ In the denotational semantics of the clause itself (dynamic semantics).
  - ▸ In the semantics of an abstract 'illocutionary operator' at the matrix level (e.g. recently Krifka (2001))
  - ▸ By means of an extra-compositional *convention of use* (this talk, von Savigny (1988)).

Extra-compositional conventions of use

- *Basic picture:*
    - The system of semantic composition recursively determines a certain semantic object for a clause, its denotation.
    - A separate convention determines how this object is used.
- NB: This is quite compatible with the assumption that the basic denotatum in itself is dynamic. For simplicity, we will talk as if it is static, though.

Examples: Declaratives and imperatives

(17) DECLARATIVE CONVENTION
When a speaker utters a declarative ϕ with denotation $[\![\phi]\!]^c$ in a context c, he thereby commits himself to act as though he believes that $[\![\phi]\!]^c$ is true.

(18) IMPERATIVE CONVENTION
When a speaker utters an imperative ϕ in a context c, he thereby commits himself to act as though he effectively prefers $[\![\phi]\!]^c$.

Commitments to beliefs and preference

- Commitments are always *commitments to act* in a certain way.
- Action choices are determined by the agents *beliefs* and *preferences*.
  ↪ Beliefs and preferences are the things an agent can be committed to.
- a is committed to the belief that p = a is committed to make his action choices as if he believes p.
- We write $PB(a, p)$ for 'a is committed to the belief that p'.

Commitments to effective preferences

- In general, an agent has a variety of preferential attitudes and pressures that influence his behavior.
  - desires
  - inclinations
  - personal moral codes
  - legal obligations
  - …
- If an agent is to *act*, he has to integrate all these preferences with each other, resolving any conflicts.
- These integrated preferences we call the agent's *effective preferences*.
- Since commitments are always about action, commitments to preferences are commitments to *effective preferences*.
- We write $PEP(a, p)$ for 'a is committed to (act as though) he effectively prefers p.'

Declaratives and interrogatives again

(19) DECLARATIVE CONVENTION
When a speaker utters a declarative ϕ with denotation in a context c, he thereby incurs the following commitment:
$PB(S, \llbracket \phi \rrbracket^c)$

(20) IMPERATIVE CONVENTION
When a speaker utters an imperative ϕ in a context c, he thereby incurs the following commitment:
$PEP(S, \llbracket \phi \rrbracket^c)$

Declaratives and interrogatives again

(21) DECLARATIVE CONVENTION
When a speaker utters a declarative ϕ with denotation in a context c, he thereby incurs the following commitment:
$PB(S, [\![\phi]\!]^c)$

The (proposal to) update the common ground comes about as an indirect effect in suitable contexts (Gunlogson 2003, Lauer in prep.).

Declaratives and interrogatives again

(22) IMPERATIVE CONVENTION
When a speaker utters an imperative ϕ in a context c, he thereby incurs the following commitment:
$PEP(S, [\![\phi]\!]^c)$

Similarly, the 'enticement to action' arises as an indirect effect where appropriate (Condoravdi and Lauer forthcoming)

Declaratives and interrogatives again

(23) DECLARATIVE CONVENTION
When a speaker utters a declarative ϕ with denotation in a context c, he thereby incurs the following commitment:
$PB(S, [\![\phi]\!]^c)$

(24) IMPERATIVE CONVENTION
When a speaker utters an imperative ϕ in a context c, he thereby incurs the following commitment:
$PEP(S, [\![\phi]\!]^c)$

Outline

Introduction: The varied uses of interrogatives

Theoretical background
    Denotation and context change effect
    Form-force mapping through extra-compositional conventions

Proposal: Interrogatives publicize preferences for addressee-commitments

Deriving the uses of interrogatives

Proposal: Preliminaries

- ▸ We remain neutral with respect to the question what the exact denotation of interrogatives should be.
- ▸ All we require is that the denotation determines a set of *congruent answers* $A_c(i)$ for any interrogative i.
  - ▸ One option is that this set simply *is* the denotation of the question (Hamblin 1958, Groenendijk and Stokhof 1984, etc.)
  - ▸ Other options are available: E.g. if **wh**-questions denote properties of individuals, then $A_c(i)$ can be derived by applying this property to the individuals in the domain.

Interrogatives: Proposal

- Basic intuition: With an interrogative, a speaker requests that the addressee be(come) doxastically committed to one of the possible answers to the interrogative.

- Requesting amounts to committing oneself to an effective preference.

- So, with the utterance of an interrogative, the speaker commits himself to a preference for there being $p \in A_c(i)$ such that $PB(Addr, p)$.

Declaratives and imperatives and interrogatives

(25) DECLARATIVE CONVENTION
When a speaker S utters a declarative ϕ with denotation in a context c, he thereby incurs the following commitment:

$$PB(S, [\![\phi]\!]^c)$$

(26) IMPERATIVE CONVENTION
When a speaker S utters an imperative ϕ in a context c, he thereby incurs the following commitment:

$$PEP(S, [\![\phi]\!]^c)$$

(27) INTERROGATIVE CONVENTION
If a speaker S utters an interrogative sentence i in context c towards $Addr$, he incurs the following commitment:

$$PEP(S, \exists p \in A_c(i) : PB(Addr, p))$$

Other clause types

- Together, the three conventions constitute a theory of the 'major' clause types.
- But there are others. Appropriate conventions need to be determined for those on a case-by-case basis.
- Do all clauses give rise to commitments?
- Not necessarily: e.g. in Chernilosvkaya, Condoravdi and Lauer (ms), we argue that *exclamatives* (and perhaps more generally, expressives) do *not* give rise to a commitment, but rather simply express an attitude.

The interrogative convention and the 'imperative-assertoric' analysis

(28)   INTERROGATIVE CONVENTION
         If a speaker Sp utters an interrogative sentence i in context c
         towards $Addr$, he incurs the following commitment:

$$PEP(Sp, \exists p \in A_c(i) : PB(Addr, p))$$

- Given the conventions for declaratives and imperatives, we can describe the effect of interrogatives as the speaker *requesting that the addressee commit himself to an answer* to the interrogative.

- In this description, our account is quite similar to the one proposed by Lewis and Lewis (1975):

(29) $[\![i?]\!] = [\![\text{Tell me truly whether } i!]\!]$

Lewis and Lewis (1975)

Lewis and Lewis (1975):

(30) $[\![i?]\!] = [\![\text{Tell me truly whether } i!]\!]$

Lewis and Lewis proposed this as a revision of Aqvist's 'imperative-epistemic' analysis:

(31) $[\![i?]\!] = [\![\text{Make it the case that I know whether } i!]\!]$

This revision was made to accommodate a wider range of uses of interrogatives, and it is the one with the broadest coverage of uses in the tradition of 'imperative paraphrase' theories that we know of.

Outline

Introduction: The varied uses of interrogatives

Theoretical background
    Denotation and context change effect
    Form-force mapping through extra-compositional conventions

Proposal: Interrogatives publicize preferences for
addressee-commitments

Deriving the uses of interrogatives

Deriving the uses of interrogatives

- The commitment specified by he INTERROGATIVE CONVENTION is universally present when an interrogative is uttered.

- This commitment interacts with contextual conditions which may or may not hold of the context in which the interrogative is uttered.

- Together, these contextual conditions and the conventionally-determined commitment give rise to the various functions interrogatives can fulfill.
  - cf. Condoravdi and Lauer (2009) for performative uses of desiderative assertions, Condoravdi and Lauer (2011) for explicit performatives, Condoravdi and Lauer (forthcoming) for imperatives.

Combative questions, interrogation questions

(32) Senator, should taxes be raised to balance the budget?

(33) [Police officer to suspect]
Did you kill the victim?

(34) [Opposing counsel during cross-examination]
So, when did you leave your house in the morning of the 26th?

Combative questions, interrogation questions

- These uses, though perhaps not (stereo-)typical ones, are actually the most straightforward ones on our analysis.
- The questioner intends nothing more or less than to get the answerer to commit himself to the truth of one of the answers.
- The particular subtypes / labels we apply depend on certain contextual conditions to be in place.
  - E.g. a 'combative' question is an utterance of an interrogative in a context in which it is known that the interlocutors disagree on which of the elements of $A_c(i)$ are true.

Exam questions

(35) What is the formula for sulphuric acid? (exam question)

Contextual conditions:

(36) a. **Speaker assumption of sincerity**: The speaker believes that the addressee does not commit to believing in an element of $A_c(i)$ unless he actually believes it to be true.

b. **Speaker knowledge**: The speaker knows which of the elements of $A_c(i)$ are true.

c. **Speaker interest in addressee knowledge**: The speaker effectively prefers to know whether the addressee knows which of the elements of $A_c(i)$ are true.

Information questions

- An utterance of an interrogative is is an *information question* if its context satisfies the following conditions:

(37)   a.   **Speaker preference for sincerity**: The speaker effectively disprefers that the addressee commits to believing in an element of $A_c(i)$ unless he actually believes it to be true.

   b.   **Addressee preference for sincerity**: The addressee is effectively disprefers to commit to believing in an element of $A_c(i)$ unless he actually believes it to be true.

   c.   **Speaker ignorance**: The speaker does not know which elements of $A_c(i)$ are true.

   d.   **Addressee knowledge**: It is possible that the addressee knows which elements of $A_c(i)$ are true.

   e.   **Cooperative addressee**: The addressee does not effectively disprefer sharing his information about $A_c(i)$ with the speaker.

Putting an issue up for debate

- ▶ Case I: Jointly finding out the correct answer to a question.

(38) Who had opportunity to commit the crime? (Let's find out.)

(39) a. **Settledness**: It is (historically) settled which elements of $A_c(i)$ are true.
    b. **Speaker and addressee ignorance** Neither speaker nor addressee know which elements of $A_c(i)$ are true.
    c. **Feasability**: It is possible that the pooled knowledge of speaker and addressee entails which elements of $A_c(i)$ are true.
    d. **Addressee preference for sincerity**: s.a.
    e. **Speaker preference for sincerity**: s. a.

Putting an issue up for debate

- ▶ Case II: Determining the true answer to a question.

(40) Where will/shall we have dinner tonight?

(41) a. **Non-settledness**: It is not (historically) settled which elements of $A_c(i)$ are true.
    b. **Interlocutor control**: The interlocutors can determine which of the elements of $A_c(i)$ are true by agreeing upon them (=jointly committing to those elements).

Rhetorical questions
Case I: Existing commitment

- *Rhetorical questions* come in several varieties.
- What they have in common is that the speaker's preference for a commitment is or can be fulfilled without a speech act by the addressee.

Case I: Existing commitment

(42)   [*A* does not stop complaining who bad the movie was]
       B: Well, who insisted that we see it?

- Here, *A* is already committed to the true answer (i.e. that it was *A* who insisted seeing the movie).
- The interrogative answer serves to remind *A* of this commitment.

Rhetorical questions
Case II: Trivial commitment

- In other cases, the true answer is so obvious that any rational agent becomes committed to the true answer upon considering the question.
- A special case are definitional questions:

(43)   Is the pope catholic?

- In definitional questions, the addressee becomes committed once the question is asked, based on the conventional meaning (and/or shared world knowledge).

Rhetorical questions
Case II: Trivial commitment (cont'd)

- ▶ Most cases of 'bringing up a possibility' can be seen as falling into this category, as well.

(44)   [*A* is desperately looking for his keys.]
      B: Could they be in the car?

- ▶ In many contexts, it will be trivially true that it is an epistemic possibility that the keys are in the car (since *A* does not know where they are). As a result, *A* is automatically committed to believing in this possibility.

Rhetorical questions
Case III: Questions with minimizers

- ▶ In some cases, it is the form of the question itself that serves to induce the requisite commitment.
- ▶ One instance are questions with minimizers such as **lift a finger**.

(45)   Did John lift a finger to help?

- ▶ Such utterances conversationally implicate that the answer is negative (see van Rooy (2003), Rohde (2006) for attempts to cash out the implicature).
- ▶ In many contexts, this implicature can be taken to be so obvious that the addressee can be expected to draw it.
- ▶ In accepting the speaker's move, the addressee may then, quite indirectly, become committed to the negative answer.

Socratic questions

(46)   And doesn't this line bisect each of these spaces?

<div align="right">[Plato, MENO]</div>

- Socratic questions are in many ways like rhetorical ones.
- Except they generally require answers, to ensure the lead student follows along.
- But they are parallel in that their answers are either obvious or follow from something the student has committed to already.

Conclusion

- A uniform dynamic effect for interrogatives can be specified.
- The heterogeneous uses of interrogatives arise from the interplay of this uniform effect with varying contextual conditions.
- The effect proposed here fits neatly into an attractive, simple conception of the form-force mapping.
- Open questions: Is there a more general theory of clause types from which our conventions can be derived? Which clause types involve conventions and which don't? How can we tell in general?

Belnap, N.: 1990, Declaratives are not enough, *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* **59**(1), 1–30.

Chernilosvkaya, A., Condoravdi, C. and Lauer, S.: ms, The context change effect of exclamatives. Manuscript, Stanford and Utrecht University.

Condoravdi, C. and Lauer, S.: 2009, Performing a wish: Desiderative assertions and performativity. Talk presented at California Universities Semantics and Pragmatics (CUSP) 2, UC Santa Cruz, November 2009.

Condoravdi, C. and Lauer, S.: 2011, Performative verbs and performative acts, *in* I. Reich, E. Horch and D. Pauly (eds), *Proceedings of Sinn and Bedeutung (SuB) 15*, Universaar – Saarland Unversity Press, Saarbrücken, Germany, pp. 149–164.

Condoravdi, C. and Lauer, S.: forthcoming, Imperatives: Meaning and illocutionary force, *in* C. Piñón (ed.), *Empirical Issues in Syntax and Semantics 9, Papers from the Colloque de Syntaxe et Sémantique à Paris 2011*.

Farkas, D. F. and Roelofsen, F.: 2012, Polar initiatives and polarity particles in an inquisitive discourse model. Ms., University of California, Santa Cruz.

Groenendijk, J. and Stokhof, M.: 1984, *Studies on the Semantics of Questions and the Pragmatics of Answers*, PhD thesis, Universiteit van Amsterdam, Amsterdam, The Netherlands.

Gunlogson, C.: 2003, *True to Form: Rising and Falling Declaratives in English*, Routledge, New York.

Hamblin, C. L.: 1958, Questions, *Australasian Journal of Philosophy* **36**, 159–168.

Krifka, M.: 2001, Quantifying into question acts, *Natural Language Semantics* **9**(1), 1—40.

Lauer, S.: in prep., *Towards a dynamic pragmatics*, PhD thesis, Stanford University.

Lewis, D. and Lewis, S. R.: 1975, Review of Olson and Paul (1972) , *Theoria* **xli**(1), 39–60.

Olson, R. and Paul, A.: 1972, *Contemporary Philosophy in Scandinavia*, Johns Hopkins, Baltimore and London.

Rohde, H.: 2006, Rhetorical questions as redundant interrogatives, *San Diego Linguistics Papers* **2**.

Sadock, J. M. and Zwicky, A. M.: 1985, Speech act distinctions in syntax, *in* T. Shopen (ed.), *Language Typology and Syntactic Description*, Vol. I, Cambridge University Press, Cambridge, pp. 155–196.

Stenius, E.: 1967, Mood and language-game, *Synthese* **17**, 254–274.

van Rooy, R.: 2003, Negative polarity items in questions: Strength as relevance, *Journal of Semantics* **20**, 239—273.

von Savigny, E.: 1988, *The social foundations of meaning*, Springer.