'Negation and Interrogativity'

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Overview

1.   Preliminaries

1.1.   What this talk is about

(1) Socrates (does **not**) know(s) **that**/**if** Xanthippe loves him. (In fact she does(n't).)

(2) Socrates is (**not**) sure/convinced **that**/**if** Xanthippe loves him.

⇒ Embedded interrogatives are sensitive to negation and sometimes may even be licensed by negation.

1.2.   Questions vs. Interrogatives

Inquiry force is (…) not a necessary condition for a question, let alone an interrogative (Huddleston 1994: 414).

- Grm. modal particles show that *questions* may still be *questions*, even though they are not used to ask for information.

(3) Ob Du wohl gleich Deinen Mund hältst?   (?'ob-imperative'; Thurmair 2013: 646)

(4) a. Ist das etwa ein Fragesatz?   (→ doubt/challenge)

     b. Ob das denn alles Fragesätze sind?   (→ doubt/questioning)

- *Denotion* vs. *illocution*: 'denn' indicates the relevance of the update of the background for potential consequences as the speaker's attitude (Thurmair 1989; 2013; König 1995; Bayer 2012; Öhl 2017b)

(5) a. Haben Sie denn Fieber?   (relevance for diagnosis)

     b. Haben Sie denn überhaupt Fieber?   (distance to potential diagnosis)

- Embedded interrogatives do not denote questions, but they may refer to questions (cf. Bayer 2004: 66)

- *'denn'* emphasises **some quality of a true answer to a given question** – thus, it can be used in embedded interrogatives **if they refer to a question** (Öhl 2017b)

(6) a. Sokrates fragt Xanthippe, **ob** sie ihn **denn** liebt.

     b. Sokrates denkt darüber nach, **ob** Xanthippe ihn **denn** liebt.

     c. Sokrates hält Xanthippe vor, **ob** sie ihn **denn** liebt.

(7) a. Weißt Du, ob das denn stimmt?

  b. Ich weiß nicht, ob das (*denn) stimmt.

- 'denn' emphasises some quality of a true proposition **that is not yet determined**.

⇒ 'denn' cannot occur in complements of **veridical predicates** (i.e. predicates that license the inference that the embedded proposition is true *or* that the truth is known in the world of the matrix).

(8) Sokrates weiß (die Antwort auf die Frage), **ob** Xanthippe ihn (***denn**) liebt.

- 'denn' cannot occur whenever an embedded interrogative **does not refer to a question**.

(9) a. Sokrates weiß (nicht), **ob** Xanthippe ihn (#**denn**) liebt.

  b. Es hängt (nicht nur) von Xanthippe allein ab, **ob** sie Sokrates (#**denn**) liebt.

  c. Sokrates ist nicht davon überzeugt, **ob** Xanthippe ihn (#**denn**) liebt.

⇒ Whether an *ob*-clause is interpreted as referring to a question depends on the matrix clause.

2. What is an embedded interrogative and when does it occur?

! **Nuclear question:** if it is possible to attribute a specific function to complementisers like *ob* and *if*, how can it be characterised in order to allow for different referential options of these clauses?

2.1. Statistics

- Only very few German predicates exclusively embed interrogative clauses.[1]

(10) a. **ob- und *w*-Sätze (*fragen, umhören*, . . .): ~1% (!)**

  b. *dass*-, *w*- und *ob*- Sätze (*wissen, bedenken, nachdenken*, . . .): 36%

  c. dass- und w-Sätze (bedauern, sich freuen): 19%

  d. *dass*- und *ob*- Sätze (*zweifeln, garantieren*, . . .): <1%

  e. nur dass-Sätze (*beweisen, glauben, annehmen*, . . .): 43%

⇒ Most of the predicates embedding interrogatives also embed declarative clauses.

2.2. Classification of predicates

- Responsiveness?

  Normally, sentences containing embedded questions have meanings involving "the answer to the question". (Huddleston 1994: 415)

(11) *Responsive predicates*   (Spector/Egré 2015: 1734)

  (i) Syntactic property: they take both declarative and interrogative complements.

  (ii) Semantic property: they express a relation between the holder of an attitude and a *proposition* which is an answer to the embedded question.

(12) a. Sokrates weiß, dass Xanthippe ihn liebt.

  b. Sokrates weiß (die Antwort auf die Frage), **ob** Xanthippe ihn liebt.

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[1] ZAS-database with 1750 clause embedding predicates – last evaluation September 2016; thanks to Kerstin Schwabe (cf. Schwabe 2016 a+b).

- Schwabe/Fittler (2014 a+b); Schwabe (2016b): typology of question embedding predicates. Predicates may be classified according to question-answer-schemes that can be further distinguished in epistemic and deontic predications (Schwabe 2016b: 9ff.); a further parameter is ± interaction. Examples::

(13) a. Er wollte auch (nicht) sagen, ob darunter auch der soeben wiedergewählte FIFA-Präsident Sepp Blatter sei. (Schwabe 2016: 13; *+AA-Prädikat*:Antwortakt; epistemisch, interaktional)

    b. (Er) taxiert Weine danach, ob er am Morgen darauf einen leichten oder schweren Kopf hat. (ibd. 24; *RsA-Prädikat*: 'research activity', epistemisch, nicht-interaktional)

    c. Er mag es selbst verantworten, ob er sich zum Richter über Leben und Tod aufschwingt. (ibd. 20; *–AA-Prädikat*: kein Antwortakt; deontisch, interaktional)

- I would like to interpret this typology in a way that deontic predicates optionally selecting *if*-clauses are defined as a separate class. This is because they are not about a true answer but about the truth conditions themselves (cf. Öhl 2017a; *forthcoming*). Even though paraphrasing by "answer to the question if" makes sense, it is not what the sentence denotes.

(14) a. **That**/ (#the answer to the question) **if** I find Linguistics exciting is my decision.

    b. The library has determined **that**/ (#the answer to the question) **if**/whether books can be returned on Sundays.

- *if*-clauses may correspond to sets of answers but do not necessarily denote sets of answers

(15) a. determine

    b. = restrict a set of worlds by defining the truth conditions

    c. ≠ select the true answer(s)

⇒ Reference to questions or to sets of answers are just options of interpreting the logical properties of complementisers like *if* and *ob*.

⇒ *if*-clauses are chosen whenever there is a choice of *alternative epistemic worlds*.

2.3. Interrogative clauses as syntactic objects

(16) a. i = <w,t>

    b. a = <w^a,t^a> (actual index; evaluation index of the truth value)

(17) a. that zero is a prime number

    b. p(i) = λi.prime-number'(i,zero')

    c. [[zero is prime number]]^a = {0,1}

- Interrogative semantics (cf. Lohnstein 2013: 72-75; Krifka 2011: 1761ff.; Groenendijk & Stokhof 1984: 48ff; 83ff.; 102ff.; 153ff.; 215):

(18) a. Is zero a prime number?

    b. λiλa[prime-number'(i,zero') = prime-number'(a,zero')]

⇒ The meaning of the sentence consists in the set of indices *i* where the truth of zero being a prime number corresponds to the truth of zero being a prime number at any actual index *a*.

⇒ *Intensional reading* (sets of sets; complementary sets ±p(i) for any *a*), which would also be valid for worlds where zero is a prime number.

- **NB:** The worlds in question are epistemic worlds, not alethic ones; wheras in alethic modality, the definition of prime numbers yields an absolute truth by means of the accessibility relation between possible worlds, epistemic worlds may diverge. Otherwise, asking this question wouldn't make sense or would even be impossible.

- Such an "index dependent proposition" is mapped to a syntactic object that can be embedded.

(19) a. Homer wonders if zero is a prime number.

   b. wonder'(Homer', $\lambda i\lambda a$[prime-number'(i,zero') = prime-number'(a,zero')])   (intensional)

- In certain epistemical contexts, embedded *wh*-clauses are *extensionalised*.

(20) a. Homer knows if zero is a prime number.

   b. know'(λi[prime-number'(i,x) = prime-number'(a,x)])   (extensional)

⇒ The meaning of the embedded clause consists in the set of indices *i* where the truth of x being a prime number corresponds to the truth of x being a prime number at the actual index *a*.

⇒ The actual index is fixed.

2.4.   Questions
- When are extensional *if*-clauses excluded?
- Can external effects on the choice of an *if*-clause be uniformly modeled?
- What determines the choice, at last?

3.   Proposal

3.1.   Operations blocking extensionalisation

- If predicates are underspecified whether to embed an *if*-clause or a *that*-clause, the grammatical, the logical or even the pragmatic context may decide about the choice of an *if*-clause.

! NB: If the predication is modified by an operator like NEG, the extensionalisation of the embedded proposition is blocked.

(21) a. It isn't clear if zero is a prime number.

   b. ⟦¬clear'($\lambda i\lambda a$[prime-number'(i,zero) = prime-number'(a,zero)])⟧ = 1

   c. "It is true that it isn't clear if zero is a prime number."

⇒ *if* is grammatically licensed

! NB: the choice of *if* vs. *that* seems to correlate with the scope of the negative operation.

(22) a. It isn't certain that zero is a prime number.

   b. ⟦ certain '[prime-number'(a,zero)] ⟧ = 0   (sentence negation)

   c. "It is not true that it is certain that zero is a prime number."

- Narrow scope of NEG in German prefers *ob*, wide scope yields markedness of *ob* as compared to *that*.

(23) es ist [unsicher **ob**/??dass das stimmt]   [ᵥ᾿ un-V [CP ob . . .]]

(24) a. Es ist [schon seit JEher] nicht sicher, **ob**/?dass das stimmt.

   b. Es ist nicht [schon seit JEher] sicher, **dass**/#ob das stimmt.

- complex *Vorfeld*: preference of *ob*

(25) a. Unklar ist, **ob**/??dass das stimmt.

   b. Nicht klar ist, **ob**/??dass das stimmt.

   c. Klar ist NICHT, **dass**/??ob das stimmt.

⇒ Evidence for immediate composition of NEG+PRED ("coherent negation"; Öhl 2007: 420ff.)?

- sentence negation vs. predicate modification in English:

(26) a. He did not tell **that** he would come.   → It is not true that he

   b. ⟦ told(he,[come(he)] ⟧ = 0   told that he would come.

(27) a. He did not tell **if** he would come.   → It is true that he did not tell (i.e. he concealed)

   b. ⟦ ¬told(he,[come(he)∨¬come(he)] ⟧ = 1   whether he was planning to come or not.

⇒ The option of immediate composition of NEG and specific predicates can be taken as universal. *Coherent negation* just means that this kind of composition is overt.

⇒ The accessibility of the complementary set of alternative worlds as in (18) is decisive for the *if*-clause to be licensed. The relevant operations are operations *on the predicate*.

- More evidence: scope of modals

(28) a. [$_{VP}$ sicher sein, **dass/#ob** das stimmt] soll es angeblich bereits   (wide scope; epistemic)

   b. [$_{CP}$ **#dass/ob** das stimmt] hat erstmal sicher sein sollen   (narrow scope; deontic)

- other modifiers (cf. Adger/Quer 2001: 110; 112; Öhl 2007: 417)

(29) a. Time will make clear **if** zero is a prime number.   (FUT)

   b. I wished I could make clear **if** zero is a prime number.   (IRR)

   c. He seems to have made clear **if** zero is a prime number.   (POT)

   d. He must make clear **if** zero is a prime number.   (DEON)

   e. . . .

3.2.   (Subjective) veridicality

? *Veridical* predicates scope over *propositions* that are presupposed as true *or* as truth-accessible for the subject of the matrix.

(30) a. Homer knows that/if zero is (not) a prime number.

   b. Homer does not know if zero is not a prime number.

⇒ Predicate negation blocks the presupposition.

Def.: *veridicality* = property of *utterances* or *perceptions* to be assumed as true or real (abstracted from Borchert 2006, Encyclopedia of Philosophy 7: 188; 193)

- Montague's (1969) concept of veridicality (Giannakidou 2013: 119):

(31) a. ⟦ I see a unicorn⟧ = 1

   b. ⇒ There are unicorns.

   c. → *see*' is a veridical predicate.

(32) **Def.** *objective veridicality*: A function F is veridical if Fp entails p.   (Giannakidou 2013: 119)

   (…) a subjective version of (non)veridicality is necessary, one that allows veridicality to depend on what epistemic agents know or believe to be true.   (ibd.).

(33) *Epistemic model of an individual i*   (Giannakidou 1998: 45)

   An epistemic model M(i) ∈ M is a set of worlds associated with an individual i representing worlds compatible with what i believes or knows.

(34) *Veridicality and Nonveridciality*   (Giannakidou 2013: 121)

    i.   A propositional operator *F* is veridical iff *Fp* entails or presupposes that *p* is true **in some individual's model** M(x); p is true in M(x), if M(x) $\subset$ p, i.e. if all worlds in M(x) are p-worlds.

    ii. If (i) is not the case*, F* is nonveridical.

    iii. *F* is *anti*veridical iff *Fp* entails *not p* **in some individual's model**: iff M(x) $\cap$ p = $\varnothing$

(35) *Subjective veridicality and agent commitment*   (ibd.)

    i.   Truth assessment is relativized to epistemic agents.

    ii. In unembedded sentences the epistemic agent is the speaker.

    iii. In embedded sentences, possible epistemic agents are the speaker and the embedding clause subject. In embedded sentences generally the number of epistemic agents is +1 from the base case.

    iv. In texts, an additional epistemic agent is the hearer/reader.

? Lahiri (2002: 287): predicates like *certain, sure, convinced, agree on, conjecture* should be classified as nonveridical because they do not give access to an objective evaluation of the truth value of the embedded proposition.

! Whenever an *if*-clause is licensed by a nonveridical operation, it is acceptable.

(36) a. (Not) being sure **that/(*)if** zero was a prime number, Homer failed the exam.

    b. It is not yet clear **if** zero is not a prime number/ **what** the prime numbers are.   ($\rightarrow$ narrow scope of *NEG*)

? If these predicates were nonveridical, why should an additional nonveridical operation yield the option of embedding an *if*-clause?

$\Rightarrow$ Öhl (2017: 385ff.; forthcoming): among the *epistemic* predicates, *subjectively veridical predicates* (Öhl 2007, 412: factive epistemical predicates) constitute a proper subclass by denoting the interpretation of the truth value relatively to the *model* of the subject of the matrix clause. This makes them accessible to nonveridical operations.

- *subjective* vs. *objective* veridicality

(37) a. Homer is convinced that/*if 39.719 is a prime number.

    b. Homer is sure that/*if 39.719 is a prime number.

$\Rightarrow$ The the matrix subject as an epistemic agent has *committed* him/herself to the truth of p(a)*;* an *if*-clause is a. paradoxal, since the commitment is marked by *that*
         b. therefore also uninformative, since there isn't reported anything

(38) a. He has found out if 39.719 is a prime number.

    b. He has told me if 39.719 is a prime number.

$\Rightarrow$ The truth of p(a) is known to the matrix subject, it may be known to the speaker, but it is not reported to the hearer.

- scope/ informativity

(39) a. [[39.718 is a prime number]] = 0

    b. $\not\Rightarrow$ [[he is sure/convinced that 39.718 is a prime number]] = 0

    c. $\Rightarrow$ [[he has found out that 39.718 is a prime number]] = 0

$\Rightarrow$ The truth of [[he has found out if 39.719 is a prime number]] depends on the truth of [[39.719 is a prime number]]; the *if*-clause is informative (cf. Eckardt 2007: 462).

- negation

(40) a. He has not found out if 39.719 is a prime number.

    b. He is not sure if 39.719 is a prime number.

⇒ The matrix subject as an epistemic agent has neither access nor committed him/herself to the truth of p(a); the embedded proposition is intensionalised (s. above 3.1) .

- *tell*

(41) a. He told me that he was a Trekki.   (tell is ambiguous: ±ver)

    b. He told me that he was a Trekki but he wasn't.   (-ver)

    c. He told me if he was a Trekki (*but he wasn't)

(42) He did not tell me if he was a Trekki.

⇒ The speaker as an epistemic agent does not have access to the truth of p(a).

- da capo

(1) Socrates (does **not**) know(s) **that**/**if** Xanthippe loves him. (In fact she does(n't).)

(2) Socrates is (**not**) sure/convinced **that**/**if** Xanthippe loves him.

4.   Prosit

- Complementisers like *that* and *if* (resp. Gm. *dass/ob*) express a relation between the indices of the matrix and the connected clause. *if* yields propositional disjunction by relating complementary sets of possible indices to possible evaluation indices *a* (→ sets of complementary sets; intensional).

- Veridical predications may fix the evaluation index *a*, which means extensionalisation (→ complementary sets). An *if*-clause is licensed if neither of the sets is logically excluded.

- Nonveridical operations on the predication, like NEG, block the extensionalisation. *if*-clauses are grammatically licensed.

- Subjectively veridical predications denote commitment of the matrix subject to the truth of the embedded proposition. *if*-clauses must be grammatically licensed.

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