

Propositional *how* questions and negation

Another kind of *how*-question

Typically, *how*-questions query manner, means or instrument. But some English *how*-questions have a very different interpretation – they express extreme surprise that the proposition under *how* holds at all.

- 1) a. How is Sarah still asleep?
- b. How do you hate this song?
- c. How has it already snowed six times?
- d. How is John still working on that paper?

Manner/instrument <i>how</i> -question (MHQ)	Propositional <i>how</i> -question (PHQ)
How did he fix the car?	How did he fix the car?
A1: Very carefully. A2: With a hammer.	A: I know! I didn't think he could fix anything!

PHQ *how* freely combines with statives and other predicates that are incompatible with manner/instrument modifiers (Smith 1991, Katz 2000).

- 2) a. How did Sarah fall asleep? (✓PHQ, ✓MHQ)
 - b. How is Sarah still asleep? (✓PHQ, *MHQ)
- cf. Sarah { ✓fell / *is } asleep by counting sheep.

PHQs are fully compatible with negation, unlike MHQs, which are subjected to weak-island effects (Abrusán 2008, Kuno/Takami 1997, Ross 1984, etc.).

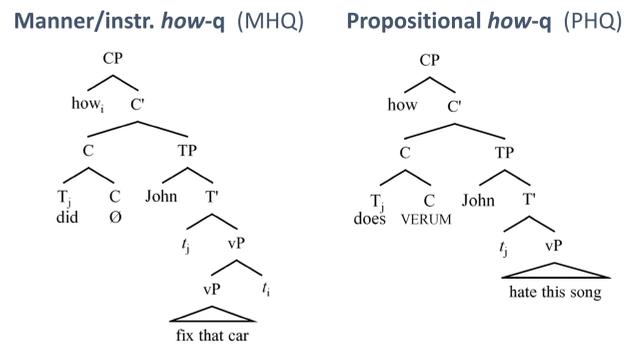
- 3) How did John not fix that car?
 - a. # With a hammer. / # Very carefully. (MHQ)
 - b. I know! It looked like such a simple job! (PHQ)

But PHQs resist Neg-contraction to *n't*, showing a clear contrast with *why*-questions, where Neg-contraction is fine.

- 4) a. How { is Chili's not / ?*isn't Chili's } open yet?
 - b. How { do you not / ?*don't you } love this song?
 - c. How { has it not / ?*hasn't it } snowed yet?
 - d. How { is John not / ?*isn't John } working on that paper anymore?
- 4') a. Why isn't Chili's open yet?
 - b. Why don't you love this song?
 - c. Why hasn't it snowed yet?
 - d. Why isn't John working on that paper anymore?

PROPOSAL: PHQs, unlike MHQs, have...

- *how* initially merged in Spec,CP
- a covert VERUM operator in C



What does a PHQ mean?

A PHQ 'how *p*?' is used when *S* previously believed that *p* was unlikely or impossible, and now must acknowledge the truth of *p*.

PHQs have the same force as **how-possibly questions** (Dray 1957, Jaworski 2009): they request some information that might relieve a cognitive tension between *p* and what *S* already knows.

- 6) *How-possibly* questions (Dray 1957, Jaworski 2009)
 - a. How did he possibly catch a fly ball 20 feet off the ground?
 - b. How did you manage to notice her in all the commotion?

Correspondingly, 'informative' responses to PHQs can always be interpreted as an attempt to update S's background beliefs in order to make *p* more compatible with them:

- 7) A: How is Chili's not open yet?
 B: Well, I've noticed that a lot of restaurants are opening later...

 A: How has it already snowed six times?
 B: Actually, snowfalls in October used to be really common.

What distinguishes the PHQs in (1) from other *how-possibly* questions is the absence of overt modal or change-of-state expressions (*possibly, can/could, manage to, etc.*).

Suppose VERUM is responsible for the PHQ's how-possibly semantics.

- VERUM: a **conversational epistemic operator** in C (Romero/Han 2004)
 [[VERUM]] = λ*p*. It is for-sure that *p* should be added to CG.
- VERUM yields an implicature that *p* is unlikely or hard to believe.
- Because *how* merges so high in a PHQ, it associates with the conversational move denoted by VERUM (adding *p* to CG).
how > VERUM > p = 'By what means/instrument should we for-sure add *p* to CG?'
(‘Give me some *q* I can use to help add (this unlikely) *p* to CG.’)

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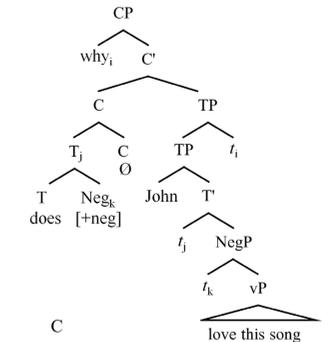


WCCFL 34 2016

Negation, contraction and VERUM

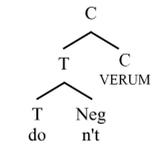
- 8) **Negative why-question** (see ex. 4')
[_{CP} **Why**_i [_C [_T **does**_j [_{Neg} **n't**_k]]] **John** *t*_j *t*_k **love this song** *t*_i]

- Step 1: Neg raises to T and then to C.
- Step 2: Neg is spelled out as *n't* iff it is a sub-word.
- No VERUM in C, so everything is fine.



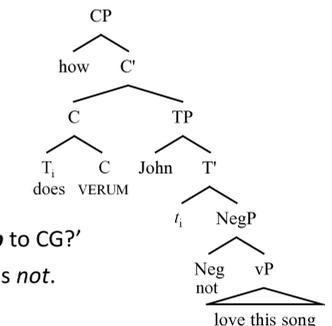
- 9) **Negative yes/no-question** (Romero/Han 2004)
[_{CP} [_C [_T **Do**_j [_{Neg} **n't**_k]]] VERUM] **you** *t*_j *t*_k **love this song**]

- Steps 1-2 proceed as in (8).
- Negative *yn*-question has VERUM in C
- Neg incorporation into C allows NEG > VERUM:
‘It is for-sure that we should add to CG that *you love this song*;
it's not for-sure that we should add to CG that *you love this song*.’
- Q > NEG > VERUM creates **bias** (speaker already believes *you love this song*)



- 10) **Negative PHQ** (see ex. 4)
[_{CP} **How** [_C [_T **does**_j] VERUM] **John** *t*_j **not love this song**]

- Unlike in (9), NEG > VERUM is not intended:
= how > VERUM > NEG > *p*: *John loves this song*
‘By what means should we for-sure add *~p* to CG?’
≠ how > NEG > VERUM > *p*: *John loves this song*
‘By what means is it **not** for-sure that we should add *p* to CG?’
- To avoid NEG > VERUM, Neg is left *in situ* and spelled out as *not*.



As expected, Neg-contraction is fine in a PHQ, as long as Neg doesn't raise to C.

- 11) **Embedded negative PHQ**

I want to know [_{CP} **how** [_C VERUM] **John** [_T **does** [_{Neg} **n't**]]] *t*_k **love this song**]

- Notice that *n't* is fine here – because no Neg to C, so no danger of NEG > VERUM.
- Step 1: Neg raises to T and stops there.
- Step 2: Neg is spelled out as *n't* (as in (8)).
- It's Neg-to-C raising that causes problems in (4), not contraction *per se*.

- 12) **Negative MHQ** (see ex. 3a)

[_{CP} **How**_i [_C [_T **did**_j [_{Neg} **n't**_k]]] **John** *t*_j *t*_k **fix that car** *t*_i]

- Trace of *how* under Neg correlates with weak-island effects:
‘What's a manner/instrument that John *didn't* use to fix the chair?’
- When island effects are removed by context (Kroch 1989), **Neg-contraction is fine**, as expected (no VERUM here!)
A: How did John fix that car?
B: He used so many different tools, you'd be better off asking: **How *didn't* he fix it?**