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?

<table>
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<tr>
<th>Manner/instrument (MHQ)</th>
<th>Propositional <em>how</em>-question (PHQ)</th>
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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.

2. a. How did Sarah fall asleep?  
   b. How is Sarah still asleep?  
   cf. Sarah (fell *is not*) asleep by counting sheep.

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

3. a. How did John not fix that car?  
   b. It With a hammer. / # Very carefully.  
   b. I know! I didn’t think he could fix anything!

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* open yet?  
   b. How do you not *not* love this song?  
   c. How has it not *not* snowed yet?  
   d. How is John not *not* working on that paper anymore?

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

5. a. How is Sarah still asleep?  
   b. How is Sarah still asleep?  
   cf. Sarah (fell *is not*) asleep by counting sheep.

6. 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...

As 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)

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     • \([\text{[VERUM]}]=\alpha p\). 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* yields such a PHQ, it associates with the conversational move denoted by VERUM (adding *p* to CG).

   \(\text{how} > \text{VERUM} > p = \text{‘by what means/instrument should we for-sure add } p \text{ to CG’}\)

   (‘Give me some *q* I can use to help add (this unlikely) *p* to CG.’)

PROPOSAL: PHQs, unlike MHQs, have...

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

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Negative PHQ

8) **Negative why-question** (see ex. 4')

\[ \text{[why] How is Sarah still asleep? (PHQ)} \]

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

9) **Negative yes/no-question** (Romero/Han 2004)

\[ \text{[yes/no] How do you not love this song? (PHQ)} \]

- Steps 1-2 proceed as in (8).
- Negative *yes-no* question has VERUM in C
- Neg incorporation into C allows \(\text{VERUM} > p\):
  - ‘It’s not 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.’
  - \(\text{VERUM} > p\) creates bias (speaker already believes you love this song)

10) **Negative PHQ** (see ex. 4)

\[ \text{[why] How is Sarah not still asleep? (PHQ)} \]

- Unlike in (9), \(\text{VERUM} > p\) is not intended:
  - \(\text{VERUM} > p\) is not added to CG
  - ‘John loves this song’
  - ‘by what means should we for-sure add *p* to CG?’
  - *‘by what means is it not for sure that we should add *p* to CG?’*
  - To avoid \(\text{VERUM} > p\), 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**

\[ \text{[why] How is Sarah not still asleep? (PHQ)} \]

- Notice that \(\text{VERUM} > p\) is not added to CG
- Step 1: Neg raises to T and stops there.
- Step 2: Neg is spelled out as *n’t* if it is a sub-word.
- It’s Neg-to-C raising that causes problems in (4), not contraction per se.

12) Negative MHQ  (see ex. 3a)

\[ \text{[why] How is Sarah not still asleep? (PHQ)} \]

- 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 (Broch 1989), **Neg-contraction is fine**, as expected (no VERUM here!)

\[ \text{A:} \text{How did John fix that car?} \]
\[ \text{B:} \text{He used so many different tools, you’d be better off asking: How didn’t he fix it?} \]