

How is contraction not possible here?

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1. Another kind of *how*-question. Typically, *how*-questions are assumed to query manner or instrument (1a)-(1b). However, English *how*-questions can also have a very different, largely unnoticed interpretation: they can be used (rhetorically) to express extreme surprise that the proposition under *how* holds at all (1c). I will refer to these ‘propositional’ *how*-questions as *PHQs*, and to the more familiar manner and instrument *how*-questions collectively as *MHQs*.

- (1) How did John fix that chair?
- a. Very slowly and carefully. (manner, MHQ)
 - b. With a hammer. (instrument, MHQ)
 - c. I know! I didn’t think he could fix anything! (propositional, PHQ)

While many *how*-questions, like (1), are ambiguous between MHQ and PHQ readings, MHQs and PHQs are distinguished by at least three properties. First, PHQs can be used with all kinds of stative predicates, while MHQs cannot – presumably because manner/instrument modifiers are incompatible with states (Smith 1991:ch3, Katz 2000). For example, while *fall asleep* in (2) denotes a change of state, *be asleep* in (3) denotes a simple state (reinforced by the adverb *still* (Katz 2000)). Correspondingly, the MHQ reading is available in (2) but not in (3). More examples of unambiguous PHQs with statives are given in (4).

- (2) How did Sarah fall asleep?
- a. By counting backwards slowly. (MHQ)
 - b. I know; she was so wired at bedtime! (PHQ)
- (3) How is Sarah still asleep?
- a. #By keeping her blinds closed. (MHQ)
 - b. I know; it’s been ten hours now! (PHQ)
- (4) a. How is Chili’s still open? (It’s 2:00a.m.!)
b. How do you hate this song? (It’s got such great lyrics!)
c. How has it already snowed six times? (It’s only October!)

Second, PHQs are fully compatible with sentential negation, showing none of the weak-island effects induced by negation in MHQs (Abrusán 2008, Ross 1984, Kuno & Takami 1997, etc.):

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

Oddly, however, while PHQs freely allow negation, they resist Neg-contraction to *n’t*:

- (6) 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 at all this winter?

Some speakers that I have consulted reject sentences like (6) outright; others find them marginally acceptable. All have agreed, however, that there is a clear contrast in acceptability between the *how*-questions in (6) and the *why*-questions in (7), where Neg-contraction is fine:

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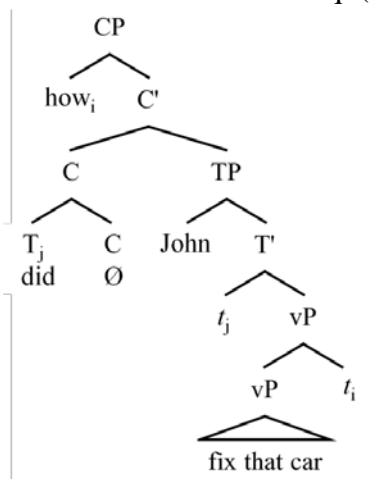
- (7) a. Why isn't Chili's open yet?
 b. Why don't you love this song?
 c. Why hasn't it snowed at all this winter?

The contrast between (5) and (6) (and between (6) and (7)) presents an interesting puzzle: Given that there is no problem with negation *per se* in PHQs, why should it matter if Neg is reduced to *n't* or spelled out as *not*? I offer the following explanation:¹

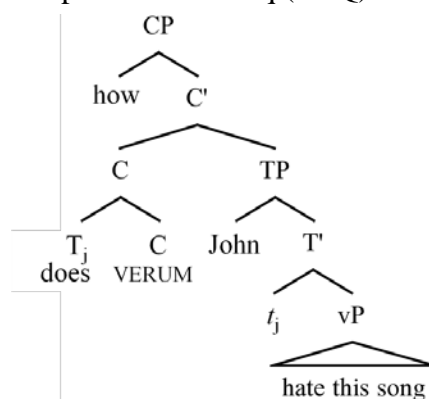
- (8) PROPOSAL: The problem arises when Neg raises to C. Raising allows Neg to undesirably scope over a VERUM operator in C that is responsible for the PHQ's unique semantics.

2. Analysis. Compare the two structures in (9). In the MHQ in (9)a, *how* is merged as a low vP adjunct (Katz 2000; Thomason & Stalnaker 1973) and moves to Spec,CP. In the PHQ in (9)b, on the other hand, *how* is initially merged in Spec,CP – i.e., PHQ-*how* takes scope over the *entire* proposition that follows, with no missing arguments or other gaps. Correspondingly, PHQs are immune to negative-island effects (5), which (by hypothesis) arise only when Neg c-commands a *wh*-trace (Ross 1984, Kuno & Takami 1997). Similarly, PHQs (unlike MHQs) do not allow family-of-questions readings (10), which (by hypothesis) arise when a universal quantifier c-commands a *wh*-trace (May 1985).

- (9) a. Manner/instrument *how*-q (MHQ)



- b. Propositional *how*-q (PHQ)



- (10) a. Q: How_i did everyone [_{vP} get to sleep ~~how_i~~]? (MHQ)
 A: John counted sheep, Mary listened to soft music, Sam drank warm milk...
 b. Q: How is [_{TP} everyone still asleep]? (PHQ)
 A: I know! I thought at least one person would still be awake.

A second difference between the two structures in (9) is that the PHQ has a covert semantic operator, VERUM, in C. Recall that, in addition to acknowledging the truth of the proposition under *how*, a PHQ also expresses *extreme surprise* at the truth of the proposition under *how*. A PHQ is arguably an attempt to resolve an internal epistemic conflict (cf. Romero & Han 2004): the speaker previously believed that *p* was nearly impossible, and now must recognize the

¹ There is another type of *how*-question, distinct from both PHQs and MHQs, which I have provisionally coined the 'metalinguistic *how*-q': e.g. *How is John a good husband?* (= 'How can you say that John is a good husband?'). These questions are interpreted as challenges to another speaker's use of a word/phrase (here, *a good husband*); crucially, unlike PHQs they do not presuppose the proposition under *how*. I leave their analysis for future work.

certainty of p . The implicit question is ‘What caused such an unlikely reversal?’ – a question with an existentialist flavor that usually ends up being interpreted rhetorically.

I propose that the PHQ’s interpretation comes about via the combination of how_p (propositional *how*) in Spec,CP and a covert VERUM operator in C.

(11) $[[how_p]]^2 = \lambda r. \text{What is the } q \text{ such that CAUSE}(q,r)?$ (Tsai 2008)

(12) $[[VERUM]] = \lambda p. \text{It is for-sure that } p \text{ should be added to CG}$ (Romero & Han 2004)

VERUM, according to Romero & Han 2004, is a conversational epistemic operator that asserts the speaker’s certainty that a proposition should be added to the Common Ground (CG) (similar to *really* in *Sarah really is still asleep*). Suppose that the purpose of VERUM in the PHQ is to rule out the possibility that there is some mistake about the truth of p . This could be the source of the ‘extreme surprise’ interpretation of a PHQ: The addition of VERUM to p yields an implicature that p is particularly unlikely or hard to believe (otherwise VERUM would be unnecessary information, per Grice’s (1975) Quantity-2 maxim).

(13) $[[how_p \text{ VERUM } p]] = \text{‘What is the } q \text{ such that } q \text{ caused it to be for-sure that } p \text{ should be added to CG?’}$

Now let’s return to the question raised in §1: Why is Neg-contraction dispreferred in negative PHQs but fine in negative *why*-questions?

(14) a. ?* How doesn’t John love this song?

b. *cf.* Why doesn’t John love this song?

I assume that questions with Neg-contraction are derived in two steps:

(15) a. STEP 1 (*Syntax*): Neg raises to T and then to C by syntactic head-movement:

$[_{CP} \text{ why } [_{C} [_{T} \text{ does Neg}_i]_i] [_{TP} \text{ John } [_{T} \text{ does Neg}_i]_i] [_{NegP} \text{ Neg}_i] [_{VP} \text{ love this song }]]]]$

b. STEP 2 (*PF*): Neg is spelled out as *n’t* by a Vocabulary Insertion (allomorphy) rule:

$[+NEG] \leftrightarrow n't / X+ _ _$ (within the same M-word (Embick 2010))

$\leftrightarrow not / \text{elsewhere}$

Since PHQs have VERUM in C, a problem arises at Step 1 of this derivation: The raising and incorporation of Neg into C enables Neg to take scope over VERUM. The resulting complex head is ambiguous between the intended reading (15)a (‘How is it for-sure that John does *not* love this song?’) and the unintended (15)b (*‘How is it *not* for-sure that John loves this song?’).

(16) a. *Intended*: $how_p > VERUM > NEG > p$

‘What is the q such that q causes it to be for-sure that $\sim p$ should be added to CG?’

b. *Unintended*: $* how_p > NEG > VERUM > p$

‘What is the q such that q causes it not to be for-sure that p should be added to CG?’

If Neg is left *in situ* below $C_{[VERUM]}$, this ambiguity is avoided. Neg is then spelled out as *not* by the allomorphy rule in (15)b.

(17) $[_{CP} \text{ how } [_{C} [_{T} \text{ does}_i]] \text{ VERUM}] [_{TP} \text{ John } t_i] [_{NegP} \text{ not } [_{VP} \text{ love this song }]]]] \quad \text{VERUM} > \text{NEG}$

3. Predictions and implications. If my analysis is on the right track, then we should expect Neg-contraction to be fine in a PHQ as long as Neg stays below C. We can test this prediction by

² I distinguish how_p (PHQ *how*) from how_M (MHQ *how*), which combines with predicates rather than propositions.

embedding a PHQ under a predicate like *wonder* or *want to know*, since T does not raise to C in indirect questions in standard English. As predicted, spellout as *n't* is fully grammatical:

(18) I want to know [_{CP} how [_C VERUM] [_{TP} John [_T does [_{NegP} *n't*]_i] [_{vP} love this song]]]]

A second prediction made by this account is that Neg-to-C raising, and subsequent spellout as *n't*, should be fine in any *wh*-question without VERUM (or any other semantic operator) in C. We can test this prediction by revisiting manner *how*-questions (MHQs), which do not have VERUM in C (9). Recall that negative MHQs are subjected to weak-island effects (19). But as noted by Kroch 1989, these weak-island effects can be removed by contextual conditions (20):

(19) A. How did John not fix that chair? B. # With a hammer.

(20) John tried everything! The real question is: how *didn't* he fix the chair?

Notice that Neg-contraction is grammatical in (20). This is just what we expect under the current analysis, since there is no VERUM to inhibit Neg-to-C raising in MHQs.

The idea that Neg-to-C raising can result in scopal interactions with VERUM is central to Romero & Han's (2004) account of English negative *yes/no* questions. According to Romero & Han, *Isn't there a vegetarian restaurant around here?* can be used either in a context where the speaker is biased towards believing that there *is* a vegetarian restaurant nearby (Q > NEG > VERUM > *p*), or in a context where the speaker is biased towards believing that there is *not* a vegetarian restaurant nearby (Q > VERUM > NEG > *p*) (see Ladd 1981). I am proposing that the PHQ is another context where VERUM and Neg potentially interact – but in the PHQ, VERUM has an inhibitory effect on Neg-to-C raising because the resulting ambiguity is undesirable.

The current analysis is also very much in line with previous observations that *n't* is fundamentally different from 'other clitics' like *'ll* and *'ve*; for example, *n't* cannot attach outside *'ll* or *'ve* (**we'ven't*), arbitrarily fails to attach to certain hosts (**amn't*), and triggers unpredictable phonological effects (/du/+*n't* → /dɒnt/) (Zwicky & Pullum 1983). Crucially, I have argued that *n't* attaches to its host by syntactic head-movement (Step 1 from (15)) rather than by local rebracketing in PF (like *'ll* and *'ve* (Embick & Noyer 2001, Mackenzie 2012)). Given that *n't* is syntactically derived, its semantic effects seen here are unsurprising.

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