

A MODAL ANALYSIS OF PROPOSITIONAL ‘HOW’

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Goals and main claims

- Distinguish propositional *how* (Jaworski 2009, Sæbø 2016, Pak 2017, Jarvis 2022) from manner/method *how*.
- Characterize the structural contexts in which it occurs and the shape of answers it invites.
- Propositional *how* is the *wh* counterpart of *in view of* phrases (Kratzer 1981), and therefore its semantics is inherently modal.
- More precisely, it asks how the conversational background for a modal must be elaborated in order to render its prejacent true.

Propositional ‘how’ versus manner ‘how’

Clausal embedding *How is it the case that...* unambiguously yields the propositional reading:

- (1) How did Howard come to the party?
 a. The other thing he had got cancelled. (propositional answer)
 b. He took the bus. (manner answer)
- (2) How is it the case that Howard came to the party?
 a. The other thing he had got cancelled. (propositional answer)
 b. #He took the bus. (manner answer)

Negative islands Negation also unambiguously yields the propositional reading (in general):

- (3) How did Howard *not* come to the party?
 a. He had another thing he had to go to. (propositional answer)
 b. {#By train/#On foot.} (manner answer)

Manner *how* is interpreted in an event-modifying position below negation from which it can’t extract (Szabolcsi & Zwarts 1993; cf. Bross 2020). Propositional *how* is higher.

Statives Stative predicates generally resist manner modifiers (Katz 2003, Ernst 2016), so *how* gets propositional readings with them (Pak 2017):

- (4) a. How are you cold right now? (propositional; #manner)
 b. How is this art? (propositional; #manner)

Modals Certain modals receive MODAL CONCORD readings (Geurts & Huitink 2006, Anand & Brasoveanu 2010) in which their contribution depends on an earlier modal (e.g. *He couldn’t possibly levitate*). Under weak modals, propositional but not manner *how* supports concord-like readings:

- (5) a. How {can/could} you be tired? (propositional; emphatic)
 b. How {can/could} I open the door? (manner; non-emphatic)

Under strong modals, propositional *how* is often blocked, while manner *how* behaves normally:

- (6) How {#should/#must/#may} Howard come to the party?

Propositional ‘how’ versus ‘why’

Propositional *how* is distinguished from *why* in that it includes a note of incredulity or skepticism and it doesn’t presuppose its prejacent.

- (7) *On discovering that a product isn’t made of wood as advertised:*
 $\left\{ \begin{array}{l} \text{How} \\ \text{??Why} \end{array} \right\}$ is this wood?
- (8) *On hearing someone described implausibly as tall:*
 $\left\{ \begin{array}{l} \text{How} \\ \text{??Why} \end{array} \right\}$ is Howard tall?

Why questions also lack the modal effects shown in the previous section.

Analysis: extending conversational backgrounds

Two uses, two backgrounds Propositional *how* can achieve (at least) two distinguishable pragmatic effects:

- (9) How is Floyd tall?!
- a. RELUCTANT ACCEPTANCE:
 ... His parents are so short! (questions circumstances)
- b. INDIGNANT REJECTION:
 ... He’s 5’6"! That’s not tall! (questions belief)

Each of these effects, we conjecture, arises from a different Kratzerian conversational background—epistemic vs circumstantial—and our principal examples can be paraphrased in these terms:

- (10) How is this wood? (epistemic)
 ‘What set of beliefs is compatible with this being wood?’
- (11) How did Floyd not come to the party? (circumstantial)
 ‘What set of circumstances is compatible with Floyd not having come to the party?’

In view of what? These can also be roughly paraphrased with *in view of* phrases: *in view of what circumstances did Floyd not come?* This is revealing because *in view of* phrases are classically assumed to reflect conversational backgrounds—and propositional *how* therefore emerges as their *wh* counterpart.

A modal analysis Our proposal, then, is that propositional *how* asks for elaborations of the conversational background, and that to achieve this it provides its own modal force:

- (12) $\llbracket \text{how}_{\text{PROP}} p \rrbracket = \text{‘What could we supplement the current conversational background with to make the prejacent } p \text{ true?’}$
- (13) $\llbracket \text{how}_{\text{PROP}} \rrbracket^f = \lambda p_{(s,t)} \lambda w . \{q_{(s,t)} \mid \exists w' \in \text{Best}_w(f(w') \cup \{q\})[p(w')]\}$

...where *f* is the conversational background. We sidestep here the modal base/ordering source distinction.

Illustration and consequences

Illustrating the analysis This means propositional *how* questions denote an alternative set of potential additional assumptions needed to make the prejacent true:

- (14) $\llbracket \text{how}_{\text{PROP}} \text{ did Howard not come to the party?} \rrbracket^f = \lambda w . \{q_{(s,t)} \mid \exists w' \in \text{Best}_w(f(w') \cup \{q\})[\text{come-to-party}_{w'}(\text{Howard})]\}$

Asks what additional assumptions about the circumstances need to be added to have Howard not come to the party:

- (15) $\left\{ \begin{array}{l} \text{that Howard was sick,} \\ \text{that he wasn’t feeling social,} \\ \text{that he forgot about it, ...} \end{array} \right\}$ (circumstantial)

The *wood* case is similar, except that it asks about wood-related additional beliefs that could be assumed:

- (16) $\llbracket \text{how}_{\text{PROP}} \text{ is this wood?} \rrbracket^f = \{q_{(s,t)} \mid \exists w' \in \text{Best}_w(f(w') \cup \{q\})[\text{wood}_{w'}(\text{this})]\}$
- (17) $\left\{ \begin{array}{l} \text{that sometimes plastic looks like wood,} \\ \text{that natural plastic is technically a wood product,} \\ \text{that some small parts of it are wood, ...} \end{array} \right\}$ (epistemic)

Explaining islands As propositional *how* applies to a proposition rather than a property of events, it can occur above negation and thereby escape islands.

Explaining clausal embedding Propositional *how* but not manner *how* is possible with *how is it the case that...?* because it, unlike manner *how*, combines with a proposition.

Modal concord Assuming that propositional *how* is itself a possibility modal explains why it seems to participate in modal concord with other possibility modals and resists necessity modals.

The bigger picture

- We proposed an analysis of propositional *how* that treats it as a possibility modal that asks for potential elaborations of the conversational background.
- If some modifiers affect conversational backgrounds, it’s *expected* that they’d have *wh* counterparts—like propositional *how*—that question them.

References

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