

Bundled meanings: 'Extremely' in hw-clauses

Elena Castroviejo and Laia Mayol

J.W. Goethe Universität-Frankfurt & University of Pennsylvania

Journées Sémantique et Modélisation

Université Paris Diderot

April 9, 2009



Our project

- Study the **interactions** of asserted, conventionally and conversationally implicated **meanings** in embedded *hw*-clauses.
- Explore the possibility that the contribution of **CI items** is responsible for the **exclamative** flavor of *hw*-clauses embedded in non-exclamative predicates (??).

Hw-clauses

Example

- (1) a. Peter knows how (extremely) fast the TGV can travel.
b. Mary wonders how (#extremely) intelligent her new students can be.

Claims

- 'Extremely' has the properties of **expressive** items and is semantically composed at the CI TIER.
- The meaning conveyed by the speaker at the CI TIER complies with conversational **maxims**.
- The literal and non-literal meaning at one dimension cannot be **contradicted** at another dimension.

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Outline

1. Data
2. Background
3. Our approach
4. Further predictions
5. Conclusions

Data

Factive verbs embed *hw*-clauses containing ‘extremely’, even when the subject is negated.

Example

- (2)
- a. I know how **extremely** tall Bill is.
 - b. Mary knows how **extremely** tall Bill is.
 - c. Mary doesn't know how **extremely** tall Bill is.

Data

Some **non-factive verbs**, such as 'agree', can also embed *hw*-clauses containing 'extremely'.

Example

(3) John and Mary agree on how **extremely** tall Bill is.

Data

Factive verbs with negated **1st-person** subjects and some non-factive predicates cannot embed *hw*-clauses that include 'extremely'.

Example

- (4)
- a. I don't know how (**#extremely**) tall Bill is.
 - b. Mary wonders/asks how (**#extremely**) tall Bill is.

Factivity: ?)

- 'Extremely' can occur in exclamatives but not in interrogatives, because the former indicate extreme degree.
- Exclamatives have the same denotation as interrogatives, but they have a different sentential force, because they include a factive morpheme (FAC).

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Factivity: ?)

Insight: factivity cannot be negated.

Example

(5) I don't know how (**#extremely**) tall Bill is.

Factivity: ?)

- **Loose ends:** 'ask' and 'wonder' are analyzed as **antifactive**, but they can embed factive clauses.

Example

- (6) a. I wonder/ask how (**#extremely**) tall Bill is.
b. I wonder why Bill came to the party.

- **Loose ends:** Nothing is said about the compositional semantics of 'extremely' with the rest of the *wh*-clause.

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Levels of meaning

- ?): 'Extremely' in *hw*-clauses behaves like a **non-restrictive** modifier. It is semantically composed at the CI TIER and has the properties of an **expressive** item (???)
- ?): 'Extremely' in *hw*-clauses behaves as an **apposition**. It is **presupposed** that this apposition is the **true instantiation** of the *wh*-variable.
- 'Extremely' can only occur in *hw*-clauses when there is speaker **knowledgeability**.

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Levels of meaning

Insight: by virtue of being a CI, 'extremely' involves speaker knowdgeability, which makes (7) a contradiction between levels of meaning.

Example

(7) # I don't know how **extremely** tall Bill is.

Levels of meaning

Loose ends: there is no contradiction when 'ask' and 'wonder' are in the 3rd person.

Example

(8) Mary wonders/asks how (#**extremely**) tall Bill is.

'Extremely' as a CI-item

'Extremely' *in this particular configuration* is a **non-restrictive modifier**.

Example

- (9) Mary knows how extremely tall Bill is.
- a. #Mary knows to what degree Bill is
[extremely tall]. **RESTRICTIVE MODIFICATION**
- b. Mary knows to what degree Bill is [tall] & I believe Bill is
extremely tall. **NON-RESTRICTIVE MODIFICATION**

'Extremely' as a CI-item

'Extremely' is an **emotive** adverb: the speaker is emotional about the degree to which x is ADJ.

- (10) Mary knows how extremely/surprisingly/#relatively/#fairly tall Bill is.

'Extremely' as a CI-item

Semantic composition

- (11) a. AT-ISSUE TIER: ($\text{how}_{\langle\langle ed \rangle, \langle et \rangle\rangle}(\text{tall}_{\langle ed \rangle})$)(b_e): t^a
(?)
b. CI TIER: ($\text{extremely}_{\langle\langle ed \rangle, \langle et \rangle\rangle}(\text{tall}_{\langle ed \rangle})$)(b_e): t^c
- (12) EXPRESSIVE CONTENT: the speaker is emotional about p ,
and $p = b$ is tall to degree d .

(Non-)literal meaning at the CI tier

At the CI TIER:

- Literal meaning of the CI is the speaker's side comment:
 $(\text{extremely}_{\langle\langle ed \rangle, \langle et \rangle\rangle})(\text{ADJ}_{\langle ed \rangle})(x_e)$
- Expressive content: the speaker is emotional about p , and $p = x$ is ADJ to degree d .
- Conversational implicature: the speaker knows p , and $p = x$ is ADJ to degree d .

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Maxim of quality:

- Do not say what you believe to be false.
- Do not say that for which you lack **adequate evidence**.

“This type of implicature differs from those arising from other maxims, because it cannot be intelligently cancelled.”

(?, 46)

Example

- (13) #Pithium is radioactive, but that isn't true nor do I believe it, nor do I have evidence for claiming that it is.

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Interaction with at-issue meaning

Requirement across levels:

- At the AT-ISSUE TIER, an existential operator must introduce a **variable** over propositions p , which is compatible with the speaker's beliefs.
- **Resolutive** ('know', 'tell', 'agree') but not question-embedding ('ask', 'wonder') predicates fulfill this requirement.

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Interaction with at-issue meaning

'Know' vs. 'Wonder'

$$\begin{aligned} \llbracket \text{know} \rrbracket^w &= \lambda Q: \exists p \in Q(w) [p(w)] \ \& \ \forall q \in Q(w) [q(w) \rightarrow p \subseteq q]. \\ &[\lambda x. \forall w' \in \text{DOX}_w(x) \rightarrow [p(w')]] \end{aligned}$$

$$\llbracket \text{wonder} \rrbracket^w = \lambda Q \lambda x. [\forall w' \in \text{BOUL}_w(x) \rightarrow [\llbracket \text{know} \rrbracket^{w'}(Q)(x)]]$$

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Maxim of quality cannot be cancelled.

Example

- (14) a. I don't know how (#**extremely**) tall Bill is.
b. Mary doesn't know how **extremely** tall Bill is.

- (15) Contradiction in (14-a)
- a. CI TIER: It is implicated that the speaker knows *p*.
b. AT-ISSUE TIER: It is asserted that the speaker doesn't know *p*.

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Example

- (16)
- a. I don't know how (#**extremely**) tall Bill is.
 - b. Mary doesn't know how **extremely** tall Bill is.
-
- (17) No contradiction in (16-b)
- a. CI TIER: It is implicated that the speaker knows *p*.
 - b. AT-ISSUE TIER: It is asserted that Mary doesn't know *p*.

Interaction with at-issue meaning

'Wonder' introduces a set of possibly incompatible true propositions in the different bouletic alternatives, which may not correspond to the speaker's actual beliefs.

Example

(18) Mary wonders how (#extremely) tall Bill is.

(19) Contradiction in (18)

- a. AT-ISSUE TIER: For every bouletic alternative of Mary, there is a (possibly contradictory) p that solves $Q(w)$.
- b. CI TIER: The speaker cannot comment that Bill is extremely tall about every p .

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Interaction with at-issue meaning

Piled meanings are evaluated in the same context, whereas **concatenated** meanings are not.

Example

- (20) a. **CONCATENATED:** Bill is extremely tall, and Mary wonders how tall he is.
b. **PILED:** # Mary wonders how extremely tall Bill is.

In (20-a): context is updated clause by clause, and the new assertion is intersected with the previously updated context.

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- (21) a. **CONCATENATED**: Bill is extremely tall, and Mary wonders how tall he is.
b. **PILED**: # Mary wonders how extremely tall Bill is.

In (21-b): context is updated simultaneously for all levels of meaning, and reference to variables across levels may trigger the (unacceptable) update of contradictory contents.

Non-CI 'extremely'

Example

- (22) a. John told Mary how extremely tall Bill is, # but I don't think he's extremely tall.
- b. John told Mary how tall Bill is; specifically, he told her that Bill is extremely tall. However, I don't think he's extremely tall.

About (22-a)

CI 'extremely' conveys that the speaker believes that Bill is extremely tall.

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About (23-b)

Non-CI 'extremely' is not necessarily a speaker commitment \Rightarrow it can be denied without incurring a contradiction.

'Agree'

Example

(24) John and Mary agree on how extremely tall Bill is. # I think they are wrong about Bill's tallness, but I agree he's extremely tall.

'Agree' is a resolutive **but not factive** predicate \Rightarrow it can license CI 'extremely' as long as the proposition that the subjects agree on is compatible with the speaker's beliefs.

Benefits of our proposal

- We have argued that the contrasts discussed can be explained by appealing to the interaction of meanings at different levels.
- We have done so without needing FAC or two different clause types.
- We have elaborated on the differences between piled vs. concatenated meanings.

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Open issues

- How do variables at the CI TIER (here, p) get to be bound?
- What does it mean to know how tall/happy/stupid/short someone is?
- Why can only deadjectival adverbs modify the adjective in *hw*-clauses?

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Thank you!

Elena Castroviejo

J.W. Goethe Universität-Frankfurt

Castroviejo@em.uni-frankfurt.de

<http://user.uni-frankfurt.de/~castrovi/>

Laia Mayol

University of Pennsylvania

laia@ling.upenn.edu

<http://www.ling.upenn.edu/~laia/>

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