

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 (D'Avis 2002, Abels 2005).

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.

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.

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.

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)
- I know how **extremely** tall Bill is.
 - Mary knows how **extremely** tall Bill is.
 - 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: Zanuttini and Portner (2003)

- '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).

Factivity: Zanuttini and Portner (2003)

- '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).

Factivity: Zanuttini and Portner (2003)

Insight: factivity cannot be negated.

Example

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

Factivity: Zanuttini and Portner (2003)

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

Example

- (6)
- I wonder/ask how (**#extremely**) tall Bill is.
 - 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.

Factivity: Zanuttini and Portner (2003)

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

Example

- (6)
- I wonder/ask how (**#extremely**) tall Bill is.
 - 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.

Levels of meaning

- Castroviejo (2008): ‘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 (Morzycki 2008, Potts 2005, 2007).
- D’Avis (2002): ‘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**.

Levels of meaning

- Castroviejo (2008): ‘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 (Morzycki 2008, Potts 2005, 2007).
- D’Avis (2002): ‘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**.

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: $(\text{how}_{\langle\langle ed \rangle, \langle et \rangle\rangle}(\text{tall}_{\langle ed \rangle}))(b_e): t^a$
(Kennedy and McNally 2005b)
- 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:
(extremely_{<<ed>, <et>>})(ADJ_{<ed>})(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 .

(Non-)literal meaning at the CI tier

At the CI TIER:

- Literal meaning of the CI is the speaker's side comment:
(extremely_{<<ed>>, <et>>})(ADJ_{<ed>})(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 .

(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 .

(Non-)literal meaning at the CI tier

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.”

(Gazdar 1979, 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.

(Non-)literal meaning at the CI tier

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.”

(Gazdar 1979, 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.

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.

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.

Interaction with at-issue meaning

'Know' vs. 'Wonder'

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

Interaction with at-issue meaning

'Know' vs. 'Wonder'

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

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

Interaction with at-issue meaning

'Know' vs. 'Wonder'

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

Interaction with at-issue meaning

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*.

Interaction with at-issue meaning

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*.

Interaction with at-issue meaning

Maxim of quality cannot be cancelled.

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 .

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 (\neq 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 .

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.

Interaction with at-issue meaning

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

Example

- (20)
- CONCATENATED: Bill is extremely tall, and Mary wonders how tall he is.
 - 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.

Interaction with at-issue meaning

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

Example

- (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)
- John told Mary how extremely tall Bill is, # but I don't think he's extremely tall.
 - 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.

Non-CI 'extremely'

Example

- (22)
- John told Mary how extremely tall Bill is, # but I don't think he's extremely tall.
 - 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.

Non-CI 'extremely'

Example

- (23)
- John told Mary how extremely tall Bill is, # but I don't think he's extremely tall.
 - 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 (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.

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.

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.

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?

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?

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?

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/>

References (1)

- Abels, K.: 2005, Remarks on Grimshaw's clausal typology, in E. Maier, C. Bary and J. Huitink (eds), *Proceedings of SuB9*.
- Castroviejo, E.: 2008, Adverbs in restricted configurations, in O. Bonami and P. C. Hofherr (eds), *Empirical Issues in Formal Syntax and Semantics 7*, pp. 53–76.
- D'Avis, F.: 2002, On the interpretation of *wh*-clauses in exclamative environments, *Theoretical Linguistics* **28**, 5–31.
- Gazdar, G.: 1979, *Pragmatics: Implicature, Presupposition, and Logical Form*, Academic Press, New York.

References (2)

- Kennedy, C. and McNally, L.: 2005b, The syntax and semantics of multiple degree modification in English, *Proceedings of HPSG-2005*.
- Morzycki, M.: 2008, Nonrestrictive modifiers in nonparenthetical positions, in L. McNally and C. Kennedy (eds), *Adverbs and Adjectives: Syntax, Semantics and Discourse*, Oxford University Press, pp. 101–122.
- Potts, C.: 2005, *The Logic of Conventional Implicatures*, Oxford Studies in Theoretical Linguistics, Oxford University Press, Oxford.
- Potts, C.: 2007, The expressive dimension, *Theoretical Linguistics* **33**(2), 165–197.

References (3)

Zanuttini, R. and Portner, P.: 2003, Exclamative clauses: at the syntax-semantics interface, *Language* **79**, 39–81.