

A unifying understanding of rise-fall-rise, topics and non-at-issue meaning

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Outline

1. Aims of this talk
2. Intonational Compliance Marking (Westera 2017)
3. Application to rise-fall-rise
4. Conclusion

1.1. The various uses of rise-fall-rise

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- ▶ to explain how it accounts for the above range of uses.

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 - ▶ e.g., Quality suspension implies *speaker bias* (Gunlogson, 2008);
- ▶ the essence of this proposal aligns with much previous work
(e.g., Pierrehumbert & Hirschberg 1990).

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From Gussenhoven 2004, simplified:

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(Gussenhoven 1983, 2002: delay conveys extra significance.)

2.3. Generalization to rising/falling accents

Generalizing Westera 2013 (following Hobbs 1990):

- ▶ like boundary tones ($H\%/L\%$), also trailing tones (L^*H , H^*L) convey (non-)compliance with the maxims.

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$$\text{Quantity}(\mathcal{Q}, p) = \forall q \left(\left(\begin{array}{l} \text{Quality}(q) \wedge \\ \text{Relation}(\mathcal{Q}, q) \end{array} \right) \rightarrow (p \subseteq q) \right)$$

$$\text{Manner}(p) = \Box(p \in \text{Intents}) \quad (\Box = \text{common knowledge})$$

$$\text{Maxims}(\mathcal{Q}) = \exists p \left(\begin{array}{l} \text{Quality}(p) \wedge \\ \text{Relation}(\mathcal{Q}, p) \wedge \\ \text{Quantity}(\mathcal{Q}, p) \wedge \\ \text{Manner}(p) \end{array} \right)$$

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- ▶ Q_0 and Q_i can be identical.

Outline

1. Aims of this talk
2. Intonational Compliance Marking (Westera 2017)
3. Application to rise-fall-rise
4. Conclusion

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- ▶ in the absence of a precise, general theory of QUDs...
- ▶ ...RFR is best regarded as a *new empirical window* on QUDs.
- ▶ The ICM theory generates many predictions even without a precise understanding of the QUDs.

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Prediction 2: in utterances that end with L%, prefinal RFR marks material that conveys a secondary intent (non-at-issue meaning).

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Prediction 3:

Pre-final RFR can mark the *topic* of the utterance.

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Indeed (Wagner 2012; Meyer, Fedorenko & Gibson 2011):

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a. B: No! Mary, insulted John.

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- (15) A: Did John insult Mary?
a. B: No! Mary, insulted John.
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But the contributions are metalinguistic

(and the shift in main QUD this imposes is annoying).

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Prediction 6: On utterances with a single explicated intent, RFR commits the speaker to the truth of that intent (Quality).

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Outline

1. Aims of this talk
2. Intonational Compliance Marking (Westera 2017)
3. Application to rise-fall-rise
4. Conclusion

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The ICM theory (Westera 2017):

- ▶ L%: $\Box \text{Maxims}(Q_0)$ (Q_0 is the main QUD)
- ▶ H%: $\neg\Box \text{Maxims}(Q_0)$
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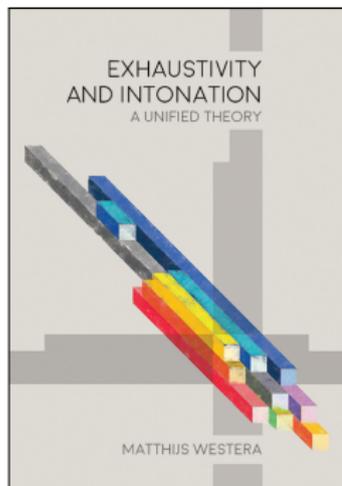
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References (1/2)

- ▶ Brazil, D.C. (1975). *Discourse intonation*. Discourse Analysis Monographs 1. University of Birmingham.
- ▶ Büring, D. (2003). On D-Trees, Beans and B-Accents.
- ▶ Constant, N. (2012). English Rise-Fall-Rise: a study in the Semantics and Pragmatics of Intonation. In: *Linguistics and Philosophy* 35(5), pp.407–442.
- ▶ Goodhue, D., L. Harrison, Y.T.C. Su & M. Wagner (2016). Toward a bestiary of English intonational tunes. *Proceedings of NELS* 46.
- ▶ Groenendijk, J. and F. Roelofsen (2009). Inquisitive Semantics and Pragmatics. Presented at the *Workshop on Language, Communication, and Rational Agency* at Stanford.
- ▶ Gunlogson, C. (2008). A question of commitment. In: *Belgian Journal of Linguistics* 22, pp.101–136.
- ▶ Gussenhoven, C. (1983). Focus, mode and the nucleus. In: *Journal of Linguistics* 19.02, pp.377–417.
- ▶ Gussenhoven, C. (2002). Intonation and interpretation: Phonetics and Phonology. In: *Proceedings of the First International Conference on Speech Prosody*, pp.47–57.
- ▶ Gussenhoven, C. (2004). *The Phonology of Tone and Intonation*. Cambridge University Press.
- ▶ Hara, Y. and R. van Rooij (2007). Contrastive topics revisited: A simpler set of topic-alternatives. Presented at NELS 38.
- ▶ Hobbs, J.R. (1990). The Pierrehumbert-Hirschberg Theory of Intonational Meaning Made Simple. In: *Intentions in Communication*. Bradford Books (MIT Press), pp. 313–324.
- ▶ Jackendoff, R. S. (1972). *Semantic interpretation in generative grammar*. Current Studies in Linguistics 2. MIT Press.
- ▶ Ladd, D.R. (1980). *The structure of intonational meaning: Evidence from English*. Indiana University Press.

References (2/2)

- ▶ Malamud, S.A. and T. Stephenson (2015). Three ways to avoid commitments: Declarative force modifiers in the conversational scoreboard. In: *Journal of Semantics* 32.2, pp.275–311.
- ▶ Meyer, M.-C., E. Fedorenko & E. Gibson (2011). Contrastive topic intonation: an empirical evaluation. Presented at *Experimental and Theoretical Advances in Prosody*.
- ▶ Pierrehumbert, J.B. and J. Hirschberg (1990). The meaning of intonational contours in the interpretation of discourse. In: *Intensions in communication*. Ed. by P.R. Cohen, J. Morgan, and M.E. Pollack, MIT Press, pp.271–311.
- ▶ Roberts, C. (1996). Information structure in discourse. In J. Yoon & A. Kathol (Eds.), *OSU working papers in linguistics* (Vol.49, pp.91–136).
- ▶ Steedman, M. (2014). The Surface Compositional Semantics of English Intonation. In: *Language* 90, pp.2–57.
- ▶ Tomioka, S. (2010). A scope theory of contrastive topics. In: *Iberia: An International Journal of Theoretical Linguistics* 2.1, pp.113–130.
- ▶ Wagner, M. (2012). Contrastive topics decomposed. In: *Semantics and Pragmatics* 5 (8), pp.1–54.
- ▶ Ward, G. and J. Hirschberg (1985). Implicating uncertainty: the pragmatics of fall-rise intonation. In: *Language* 61.4, pp.747–776.
- ▶ Ward, G. and J. Hirschberg (1986). Reconciling Uncertainty with Incredulity: A Unified Account of the L*+H L H% Intonational Contour. Presented at the Annual Meeting of the LSA.
- ▶ Westera, M. (2013). 'Attention, I'm violating a maxim!' A unifying account of the final rise. In *Proceedings of SemDial*.
- ▶ Westera, M. (2017). *Exhaustivity and intonation: a unified theory*. PhD dissertation, University of Amsterdam.