IP-final rises in French dialogues: corpus study

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Summary

- Popular view: rises can turn utterances into questions
- True, rises often associate with questions but there are rises without questions and questions without rises, so. . .
- What is the meaning of final rises in French?
- No large corpus study showing the function of rises in free conversation speech has been done for French.

  Joint project, October 2004 – October 2005, Université Paul Sabatier, Toulouse

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Overview

1. **Intonation**
   - Transcription: INTSINT
   - Identifying boundaries of Intonational Phrases

2. Dialogue Structure
   - Annotation of Dialogue Acts
   - Annotation of Dialogue Structure
   - Discourse Higher-level Structure

3. Results

4. Going Further

Overview

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Transcription: INTSINT
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Defining rises - some questions

- what intonation description?
  - **phonetic** unsuitable for free speech b/c of large speaker variation, confuses linguistically relevant w/ irrelevant information
  - **phonological** involves subjective choices, costly (time + several trained annotators should be used), well-tested standards (such as MAE-ToBI for AmE) are lacking
  - other methodological issues with instrumental analysis (pitch tracking errors, perception vs. acoustic realization)

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INTSINT

- **INternational Transcription System for INTonation**, developed in Aix-en-Provence

  - uses the **MOMEL** (Modélisation de MELodie) algorithm to calculate the macro-prosodic component of f0
  - labels target points on the MOMEL-stylized curve which are assumed to carry linguistic information:
    - absolute prosodic events: **T** - top, **M** - mid, **B** - bottom
    - relative prosodic events: **H** - higher, **S** - same, **L** - lower, **U** - upstep, **D** - down
  - requires some preprocessing of the speech segments (esp. initial pauses problematic), can be run as a PRAAT script (very handy), result has to be manually checked
  - we considered only labels aligned with right IP boundaries
  - we took as rises: T, H, U

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IP boundaries

- **previous work:** IPs in French *optionally* associated with certain tonal and rhythmical events (pitch resetting, pauses, drop in amplitude, final syllable lengthening, a.o.); association with information structure boundaries

- **our criteria** (for purposes of annotation)
  1. **Always:** every completed turn boundary is an IP boundary.
  2. **Optionally:** Criteria above.

- 3 annotators, agreement 'good' (κ=.718)

- semi-automatic option explored, based on automatic pause recognition + manual assignment of IP boundary to all speaker switch points: gets 65% and 75% of the manually assigned IP boundaries

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Annotation of Dialogue Acts
Annotation of Dialogue Structure
Discourse Higher-level Structure

Dialogue Acts

- we took an existing taxonomy for French route descriptions

- problematic case: polar questions
  [Working def.] utterance that is *turn-final*, followed by a
  reply from the addressee that contextually entails *yes/no/I
  don't know*, if of declarative form, can be in context
  felicitously turned into an *est-ce que* interrogative

  (1)   (I_{103})   est-ce que tu as tu as le profond étang
          (K_{104})   oui, sur la gauche
          (I_{105})   oui, tout à gauche
          (I_{106})   **et tu as la grande plaine**
          (K_{107})   non IP DA

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Annotation Schema

- Existing scheme: Edinburgh MAPTASK (Carletta, Isard, Kowtko and others)
  - Problems: merge form-function
  - *e.g: clarify, explain, instruct and query-yn, reply-wh*
- We wanted to separate form and function
- 2 tags:
  - Form: assertive, interrogative, imperative, (need a NSU?)
  - Function: landmark management (landmark introduction, description), instructions (with/without references to landmarks), acknowledgment...
  - *e.g assertive+prescription without landmark, interrogative+landmark description, assertive+acknowledgment...*
- Annotation made separately + post-hoc discussion (pilot-study)

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Dialogue Structure Annotation

- Classical approach: only "backward looking acts" are related to the dialogue context (Ack, Answer,...)
- Here: target systematically given
- Relate any speech act to the discourse context
- Closer to a relational account (SDRT, RST) than to the traditional dialogue acts structure
- Provide discourse "pop-ups": when a new constituent is not attached locally but higher in the structure
  - If last-utt = ack, we did not consider the new act as popping-up the discourse structure if its target was the target of the ack
- Problem: sometimes difficult to determine accurately a non-local attachment (solution: a special target)

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Discourse Higher-level Structure

- Several organizing principles are competing:
    1. Topic Structure (van Kuppevelt 95, Asher and Lascarides 2003)
    2. Game Structure (Powers 1974, Kowtko 1996, Maudet 2001)
    3. Grounding mechanisms can also interfere (Traum, 1994)
- Boundaries of 1,2,3 often (not always) coincide but are in the end difficult to differenciate systematically
- Solution for a preliminary study: Annotate "openings" and "closings" in general according to the following rules

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Rules for detecting "openings"

1. Discourse pop-ups
   - Based on attachment point in discourse structure
   - Non-local attachments
2. Activity changes (from landmark management to instruction, and the opposite)
3. New landmarks
4. Clarification requests
5. Discourse markers such as *"donc"* and *"alors"*

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Rules for detecting "closings"

1. Double acknowledgments
2. Acknowledgments following answers
3. Answers to feedback request (confirmation request)
4. Strong acceptances (heavy positive feedback turn)
5. Specific discourse markers such as *voilà* and *bon* (Muller and Prévot, 2003)

Results: Assertives

Function	RISE	¬ RISE
acknowledgment	57	58
answer to question	13	32
instruction using landmark	29	15
instruction without landmark	17	13
precision	9	13
landmark description	16	29
landmark introduction	7	5

Results: Polar Interrogatives

Function	RISE	¬ RISE
landmark introduction	13	5
acknowledgment request	6	2
precision	2	3
landmark description	4	3

Results: Rises and Dialogue Acts

- We used a χ^2 statistic for evaluating significance
- Rises: *landmark introduction* and *instruction using landmark* and less marked *acknowledgments, polar questions*
- Rise absences: *answers to questions*
- Observations:
  - the results differed between the 2 dialogues
  - Confirm the association of questions with rises
  - Acknowledgments exhibit variety, more fine grained account might help (position in the game) (Kowtko, 1996)
  - *landmark introduction* and *instruction using landmark* are typically utterances introducing new discourse referents

Open/close: pilot study results

	rises	**no rise**	**Total**
Open	62	23	85
Close	18	34	52
	Giver	**Follower**	**Total**
Open	51	34	85
Close	23	29	52
	Sp1	**Sp2**	**Total**
Open	48	37	85
Close	29	23	52

- Less "closings": our rules consider only explicit ones, many are implicit.
- Rises: openings
- "Rises" have a stronger association with "openings" than with questions

Other factors

- Speaker Roles (Giver/Follower, Expert)
- Local roles (Prévot, 2004)
- "A, B, A-B, O, D events" (Labov and Fanshel, 1977)
- Competence
- Position in a dialogue game (Kowtko, 1996)
- Expected revision (Marandin et. al 2004)
- Initiative
- Turn-taking (Ward and Tsukahara, 2000)

About these factors

- Speakers roles: default indication on who has initiative, who is competent
- Roles can be altered during the conversation ⤳ local roles
    - Problem: What drives local role changes
- Position in dialogue game and "local roles" provide similar information
    - The initiator of an explaining game is supposed competent for this game, as well as the responder of a confirming game
- Labov and Fanshel similar to "competence"
    - "If A makes a statement about B-event, then it is a request for confirmation"
- Attitude attribution of expected revision can fit with roles or competence proposals

Future work

Bigger corpus study (Bessac and Caelen, 1995) (Tourism Information Call Center), for

- Replicating our results about Dialogue Acts
- Refine the higher dialogue structure (Game versus Topic)
  - Need to refine the topic vs game annotation
- Test other hypotheses (Local Roles, Dialogue Game Position, Competence, Attitude attribution)