

Interaction and Communication

Area 4

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Plan of the session

- Overview of the work done
- Sample joint work:

Signed Languages, Verbal languages, Coverbal Gestures: Analysis and Representation

Carola Catenacci (ISTC-LOA) and Elena Pizzuto (ISTC-SLL), with the contribution of Patrice Dalle (IRIT-TIC) & Brigitte Garcia (UMR 7023, Université Paris 8 & CNRS)

- Discussion



The work covered

- Ontology of interaction and communication
 - Ingredients and their interplay
- Formal models of interaction and communication
 - Language-oriented: semantics and pragmatics
 - Agent-oriented: actions and mental attitudes
 - Social-oriented: conventions and commitments
 - ...mixed approaches



Interdisciplinarity

- Linguistics
- Philosophy (of language, ontology)
- Psycholinguistics
- Computational linguistics
- Knowledge representation
- Computational vision



Towards an ontology of interaction

- **MOSTRO report**
 - State of the art, comparison of approaches
 - Communicative acts
 - Intentional approaches
 - Social approaches
 - Semantico-pragmatic approaches
 - Distinction of communication and interaction
 - Communication without interaction (monologue)
 - Interaction without communication (purely physical)
 - Dialogue: communicative interaction, intended and cooperative.



Linguistic structure of communication

- Discourse theory and discourse semantics
 - Discourse structure, Segmented Discourse Representation Theory (IRIT-LILaC)
 - **Right-frontier and other global constraints** (IRIT-LILaC & ISTC-LOA)
 - **Discourse relations: Background** (IRIT-LILaC & ISTC-LOA)
 - Complex speech acts (biased questions), embedded speech acts (IRIT-LILaC)
 - Names as “pops” signals
 - Anaphora resolution (IRIT-LILaC; UNITN-DIT&CIMEC)
 - Semantics of modals and counterfactuals (IRIT-LILaC)
 - Presupposition in indexicals (IRIT-LILaC)



Linguistic structure of communication

- Dialogue theories: two main accounts, both based on DRT, segmented into basic units, incremental processing
 - SDRT, Focus on dialogue structure: dialogue acts seen as discourse relations (IRIT-LILaC)
 - Cues for identification of dialogue relations: lexicon, syntax & semantics
 - Grounding: analysis of acknowledgement
 - PTT, Focus on dialogue management (UNITN-DIT&CIMEC)
 - Negotiation for the common ground & grounding
 - Multiple levels of dialogue acts
 - “micro-conversational events”
 - Non-anaphoric reference



Linguistic structure of communication

- Topics in discourse and dialogue
 - Sentence locating adverbs as markers of topic shifts in discourse (IRIT-LILaC)
 - **Intonation rises as markers of topic shifts in dialogue** (IRIT-LILaC & ISTC-LOA)
 - Topic segmentation in dialogues, a starting work (UNITN-DIT, with UNIBZ)



Linguistic structure of communication

- Annotating discourse and dialogue (UNITN-DIT; IRIT-LILaC)
 - Rhetorical relations / dialogue acts
 - Coreference (anaphoric and deictic links)
 - Ambiguity, misunderstandings
 - Intonation
 - Semantic roles
 - ...
- Discourse parser (IRIT-LILaC, with Univ. of Texas)



Agents' attitudes in dialogue

- Dynamic logics and epistemic logics
 - Speech acts and epistemic logic (IRIT-LILaC)
 - Application to indirect speech acts
 - Application to dialogue analysis
 - Public and private announcements (visit of Hans van Ditmarsch to IRIT-LILaC - PhD in co-tutorship)
 - *Johan van Benthem's invited talk*
- SDRT and PTT
 - although primary role given to utterances, beliefs and intentions are needed for dialogue (rationality and cooperativity principles)



Communicative interaction as a social process

- Logic of grounding (IRIT-LILaC)
 - Semantics of speech acts in terms of group-beliefs (common ground)
 - Application to FIPA ACL semantics
- **Commitments and grounding** (IRIT-LILaC & ISTC-LOA, with Univ. Paris-Dauphine)
 - Social constraints on dialogue structure, public commitments
- Cooperation in dialogue
 - PTT: Obligations and we-intentions in dialogue; Completion and continuation: coordination in sentence production, (UNITN-DIT&CIMEC)
 - SDRT: Common Ground, Corrections and Coordination (IRIT-LILaC)



The visual dimension of communication

- **Signed languages and coverbal gestures** (ISTC-LOA, ISTC-SSL, IRIT-TCI)
→ *Carola Catenacci's talk*
- **Dialogues with avatars**, starting collaboration work (UNITN-DIT&CIMEC, ISTC-Padova)



Discussion

- Grounding
 - Where linguistic, epistemic and social approaches meet
 - and gestual modality?
- How much does taking gestual/visual modality into account impact our current theories of discourse semantics?
- Is there a shift from beliefs to emotions as the central agent attitude in communication?