INTEGRATION OF INFORMATION IN SPOKEN COMMUNICATION

Central question: How is language understood?

Much too broad for a sensible project!
Restrict the question to the on-line understanding of Speech

A lot is known about the processing of speech in terms of:
- Pragmatics
- Discourse & Conversation
- Syntax
- Lexicon
- Morphology
- Phonology
- Phonetics

How are these processes integrated?

On-line speech processing is successfully studied using Word Recognition Paradigms (Non-Word and Un-Animated decisions)
Possible Interference from
- Lexical access
- Production factors

It remains unclear how to study non-lexical 'levels' of processing

WANTED:
A 'natural' on-line task that involves many levels of processing but no lexical access or production

IDEAL:
MRI or EP recordings (mind reading) of 'Understanding'
Sadly, this is not yet possible

Second Best: Reaction Time experiments of a behavior showing 'understanding'

Chosen behavior: Turn-Taking in conversation
- A natural behavior
- Shows an elementary understanding of current utterance
- Really FAST
  response 'precedes' the stimulus

EXAMPLE (Schegloff)
(before, another speaker has asked for the butter)
Nancy: C'n I have some [oo
Michael: mm-hm-hm ...

Michael understood the question at or before 'too' and reacts EARLY
The Turn Relevant Point (TRP) can have been at 'some' or 'too'
What aspect(s) of Nancy's question gave Michael the position of the TRP?
FACTORS PROJECTING Turn Relevant Points (TRP’s)

- Grammatical completion
- Gaze Direction
- Facial Expression
- Hand movements
- Intonation
- Pauses (filled or not)
- Prosody in general
- Phonetic make-up?

Turn-switch seems to be default
Above factors used to repress a turn-switch

EXPERIMENTAL METHODS

Reaction Time Experiments
An RT experiment should probe the earliest understanding 'real-time'

Classical:
Press button when you would take turn
Well understood, but rather slow (>0.8 s) and involves a conscious (cross-modal) decision

Option:
Shadow (repeat) the next turn
Fast (>0.3 s), but involves production

Combine them:
Take turn with 'eh'
- Natural, we all do it without thinking
- Should point to expected TRP
- Fast, like shadowing
- Uncomplicated, like a push-button

Added twist (innovation):
Record pre-utterance glottal closure (and breathing)
Allows to probe early decision point

Experimental procedure:
- Prepare conversational recordings with desired TRP
- Present to properly wired subjects
- Subjects say 'eh' whenever they would take-turn
- Record subject response (audio, larynchograph, breathing band)
- Compare effects of different types of manipulations

MATERIALS
Spoken Dutch Corpus (CGN), Map Task, New Video, Whatever else we can get

ANNOTATION
All TRP’s used will be annotated for phonemes, intonation, syntax, gaze, etc.

MANIPULATIONS: Remove or Present
- Gating and Masking parts
- Picture
- Sound
- Intonation
- Intensity variations
- Intelligibility

START
1 Januari 2004
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1 Post-Doc
1 AIO (starts later)
Annotations are outsourced