

Facial Displays
Emotional Expressions
Conversational Acts

Dirk Heylen

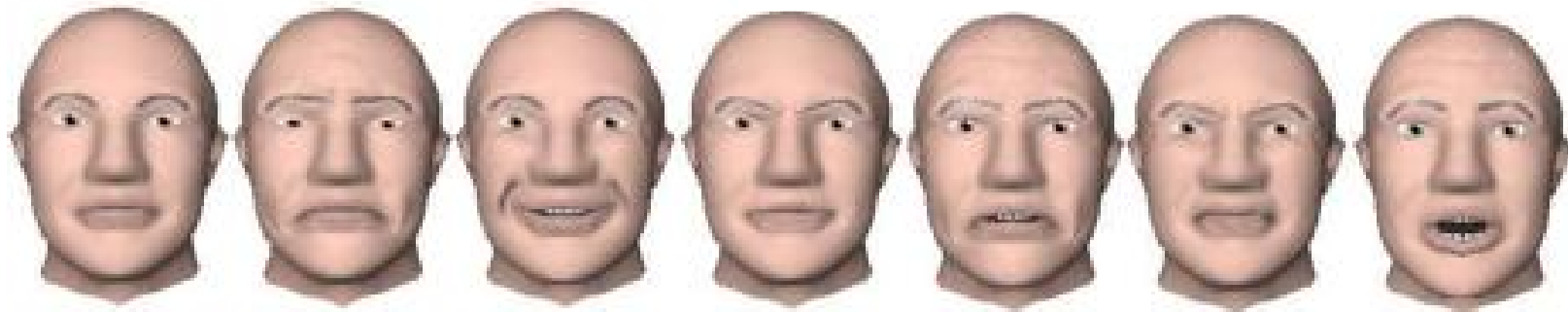
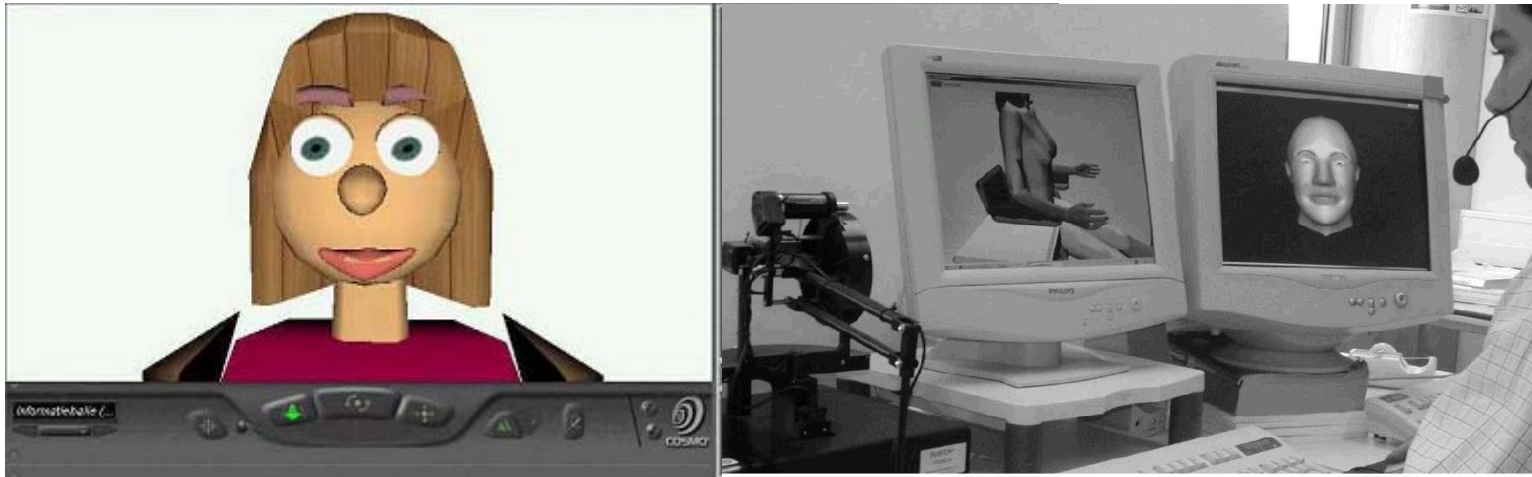
Human Media Interaction

University of Twente

Virtual Humans

- Conversational agents
- Facial expressions, gaze, head movements
- Q: do emotions have a role to play in this or not?

Agents I



Agents II



Modules

- Dialogue management
- Facial expression... libraries
- Emotion model

- Emotion model → Facial Expression
- Emotion model → Dialogue manager
- Faces ?? Dialogue ?? Emotion

Faces and Agents

- Focus on (basic) emotions
- Focus on universal expressions
- Dialogue & emotion modules remain unconnected

Ekman

- There are universal facial expressions for certain emotions*.
- A set of basic emotions can be distinguished.
- Certain emotions give rise to involuntary facial expressions.
- Cultural display rules may inhibit the expressions.
- **What does this mean?**

Not Ekman

- Emotions are only expressed through universal facial displays.
- Facial displays only express basic emotions.
- Only emotions are displayed on the face.

Issues

- Universality of the expressions
- Basic emotions are linked to specific expressions
 - Dimensional
 - Componential
- Neuro-Cultural. Two-factor model.

Fridlund

- Social view: the primary function is not to “express” internal states but to “signal” one’s intention to others.
- Evolutionary view: less relevant: synchronous view
- About mechanism: not very specific

Social Views

- Facial expressions have social function
- Facial expressions are determined by social variables
- In the middle of the forest a huge oak tree falls down. Does it make a sound?
- On the other hand: 80%+ expressions: no emotional content

Fridlund – Ekman

- Differ in models / mechanism
- Evolutionary perspective
- Not synchronous account
- Ekman: focus on non-conversational
- Fridlund: social

Bavelas-Chovil/Wagner-Lee*

Most studies of facial expressions have used highly constrained laboratory situations. These studies have been very informative about a number of theoretical issues that are relevant to noninteracting persons. However, there has been a tendency, explicit or implicit, to generalize the results of such research to less constrained, more social situations. This has led to the general assumption that the main function of facial expressions in social, interactive situations is to express emotional feelings. We have argued that, in order to understand nonverbal behavior in social situations, it is necessary to study that behaviour together with its verbal context.

Bavelas-Chovil* /Wagner-Lee

The research represents the first stage in a program of study to investigate facial displays as discourse-oriented actions. In this research, facial displays are regarded as linguistic elements of a message rather than outputs or "spillover" of emotion processes.

Semiotics

- Emotional expression (Ekman): a symptom of the emotion expression.
- Symptom changes its character:
 - When it is being read
 - When one knows it is being read
- Mutual knowledge leads to convention:
 - Symptoms become Symbols

Important to separate

- Evolutionary from synchronical view
- Role of emotion in conversation
- Possible role of signaling emotion
- Various modes of signaling
- Role of facial expression in conversation

Advice: a conversational approach

What is conversation?

- Action!
- So: goals, intentions, plans, believes, concerns, motivation...
- Action of a particular kind:
 - Joint action
 - Multi-level action
 - Multi-track action

Multi-level

- S proposes a joint action by
- Performing a speech act consisting of
- A linguistic sign (utterance) that is produced as
- A vocalisation

Joint

- The utterance is meant to be heard
- Taken as a kind of signal
- With a particular interpretation
- For a particular reaction

Joint

- Means: doing things together
- Proposals / Reject / Accept
- Prepared to engage in joint action
- Express one's "concerns" + be receptive to concerns of other...
 - Excuse me, can I ask you a question...
 - Would you mind...

Joint

- S proposes a joint project
- S concern is for L to join the project
- S should voice his/her concern
- L's concern:
cooperative/antagonistic
- Is it good or bad for S/L
 - Plead, Offer, Bargain, ...

Joint + Closure

- Feedback on action / Reaction on all levels
- Show willingness to listen, attend, consider the proposal, accept the proposal
- **= show how one evaluates what is being said**

Social Psychology

- Impression management
- Self-presentation
- Empathy
- Face-work
- Politeness
- Cooperation - Antagonism
- Theory of Mind

What to do

- Take into account the social aspects to appraise
- Economy of interaction: benefits/costs, interpersonal variables and needs ...
- Example: INES & politeness (Johnson et al.)

Facial Expressions

- Act as comments
- Controlled expressions
- Because of perspective taking / self-presentation: direct showing of emotion may not benefit the goal of the interaction

How does it really work?

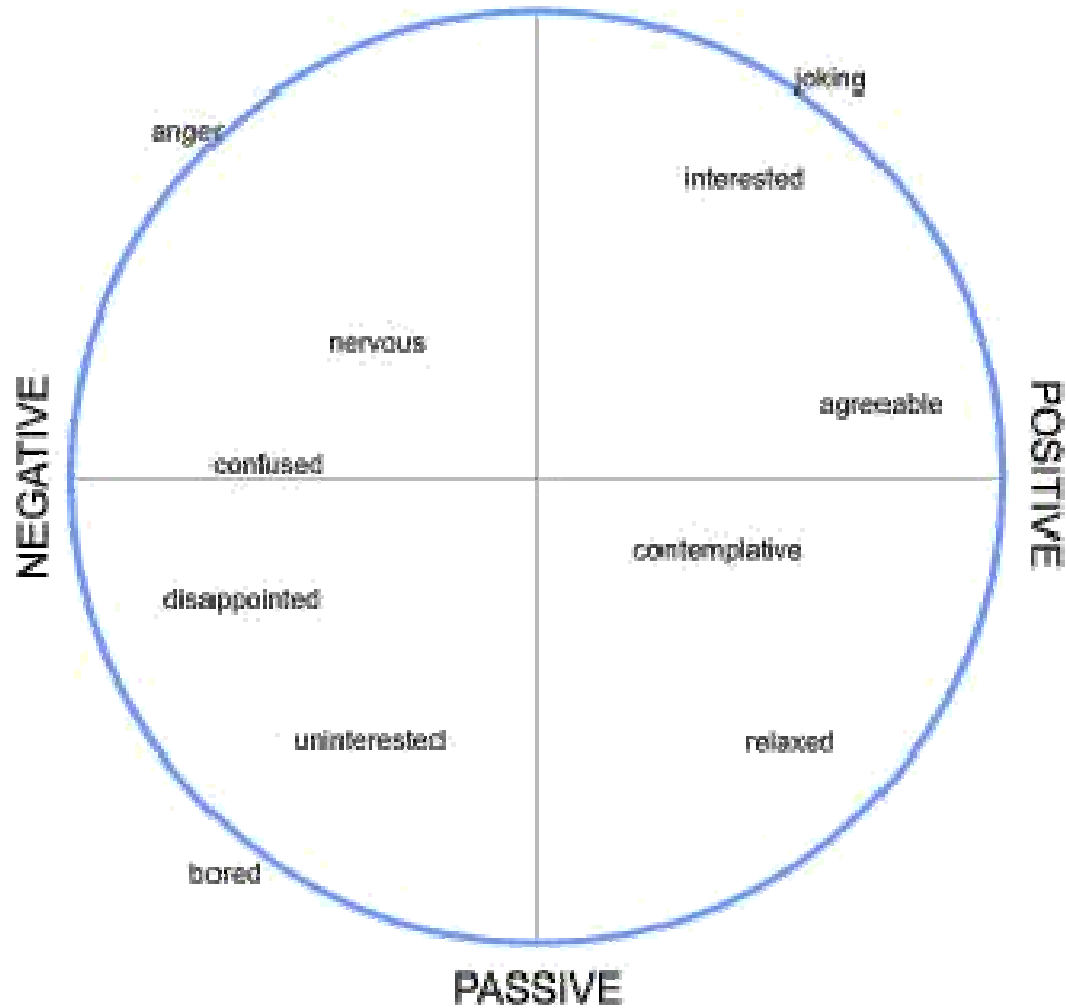
Conversation Analysis

- Speech
- Dialogue Acts
- Emotion / Mental state
- Focus of Attention
- Individual action
- Gestures
- Facial expressions
- Argumentation schema

VIDEO

AMI

Landmark distribution



Expressed "Emotions"

Neutral	
Attentive	interested, curious, involved
Amused	cheerful, joking
Distracted	not attending
Bored	
Confused	puzzled, don't understand
Surprised	hadn't expected
Decisive	confident, certain
Dominant	challenging
Supportive	empathy
Disbelief	scepsis
Uncertain	
Affirmative	agreement
Frustrated	

Facial Expressions

- Expressions will be interpreted
 - Take into account the perspective of the other (mimick as feedback)
 - Portrayals / Stylized: intended as symbol not as symptom.
- Comment / Feedback (expression or elicitor)
- Mental markers

Mental Markers

- Attitudes about what is said and being proposed.
- Signal: good or bad; agreement, liking...
- Levels: processing (don't understand), interpretation (don't believe...), action (don't want to do)
- Modal operators/Propositional attitudes (epistemic, deontic...)
- Question markers

Current Work

- Implementation
- Test-case: Sensitive Artificial Listener
- Behaviours: facial expressions and gaze (+ some brow movement + smiles)
- Experiments:
 1. Animations +perception/interpretation
 2. Real-Time ([sample](#))

Conclusions

- Mechanism: meeting of conversational organisation with social psychology
 - Levels of action
 - Semiotic processes
- Discourse/Conversation analytic analysis of the expressions in their context
- We hope that data analysis in context leads us to a better understanding and theoretical models.