

Lecture 6 - Psychological Theories (II: Appraisal)

Jesse Hoey
School of Computer Science
University of Waterloo

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Readings:

- Clark Elliott Hunting for the Holy Grail with "Emotionally Intelligent" Virtual Actors SIGART Bulletin, Vol 9 (1), pp.20-28, June 1998 (OCC Model)

Danny Hillis, vice-president of Disney, talking about requirements for *entertainment agents*

- computable science of emotion
- virtual actors
- agent evolution
- computable storytelling

Affective Reasoner : tackles 1,2 and 4

- Ortony Clore and Collins, 1988
- Appraisal Theory
- 26 emotions are built from appraisals
- Valenced reactions to situations
- Situations: Events, Agents, Objects

In the affective reasoner:

- computable model of emotion
- virtual actors
- Individual dependent - idiosyncrasies
- story telling
- Agents don't actually "experience" emotions

OCC Model

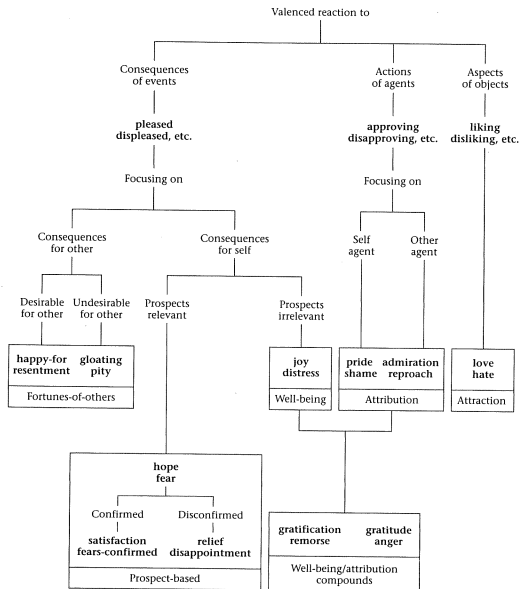


Figure 7.1

OCC Emotions are the same as those mentioned in Aristotle's *Rhetoric* (400 BC)

- anger-mildness (anger-**gratitude**)
- love-hatred (love-hate)
- fear-confidence (fear-hope)
- shame-esteem (shame-pride)
- kindness-unkindness (happy.for-**resentment**)
- pity-indignation (pity-**loating**)
- envy-emulation (**eproach**-admiration)



Steamboat Willie, Disney 1928

first ever moving cartoon

<https://www.youtube.com/watch?v=BBgghnQF6E4>

watch the movie and try to **analyze** it with OCC

OCC emotions

GROUP	SPECIFICATION	EMOTION NAME AND TYPE
WELL-BEING	Appraisal of a situation as an event	Joy: pleased about an event Distress: displeased about an event
FORTUNES-OF-OTHERS	Presumed value of a situation as an event affecting another	Happy-for: pleased about an event desirable for another Gloating: pleased about an event undesirable for another Resentment: displeased about an event desirable for another *Jealousy: resentment over a desired mutually exclusive goal *Envy: resentment over a desired non-exclusive goal Sorry-for: displeased about an event undesirable for another
PROSPECT-BASED	Appraisal of a situation as a prospective event	Hope: pleased about a prospective desirable event Fear: displeased about a prospective undesirable event
CONFIRMATION	Appraisal of a situation as confirming or disconfirming an expectation	Satisfaction: pleased about a confirmed desirable event Relief: pleased about a disconfirmed undesirable event Fears-confirmed: displeased about a confirmed undesirable event Disappointment: displeased about a disconfirmed desirable event
ATTRIBUTION	Appraisal of a situation as an accountable act of some agent	Pride: approving of one's own act Admiration: approving of another's act Shame: disapproving of one's own act Reproach: disapproving of another's act
ATTRACTION	Appraisal of a situation as containing an attractive or unattractive object	Liking: finding an object appealing Disliking: finding an object unappealing
WELL-BEING/ ATTRIBUTION	Compound emotions	Gratitude: admiration + joy Anger: reproach + distress Gratification: pride + joy Remorse: shame + distress
ATTRACTION/ ATTRIBUTION	Compound emotion extensions	Love: admiration + liking Hate: reproach + disliking

* Requires additional information, but is necessary for some stories.

Appraisals based on OCC model allow for

- hypotheses about appraisals of other agents (pity, reproach)
- temporal (previous and future states) - hope and relief
- compound emotions (anger, remorse...)

Reactions to emotions

- 20 “channels of action” or “temperaments”
- specific to each emotion
- but with overlap between related emotions
- range of responses (from physiological to cognitive/planning)
- “rete” or “web” like structure (not tree-like)

Additions to OCC for Storytelling

Non theoretically “pure” additions to OCC model:

- Love (admiration + liking)
- Hate (reproach + disliking)
- Jealousy (resentment with a mutually exclusive goal)

“Storyhood”:

The boy sits in the chair

↔

*The boy sits in the chair,
but knows that he should
not*

*The boy really wanted to sit in the chair, and he did, even though
he knows that he should not*

this combines **shame** with **joy** and is a classic narrative

Story-hood

- Fix narrative
- change **personalities** of agents
- use emotional signals to do this
- flexibility in telling stories
- stories told for **effect**

"I was really worried about the game tonight. I thought Michael Jordan started out really slowly. Then he just wiped the floor with the Knicks"

Is this a **Bulls fan** or a **Knicks Fan**?

Jordan: famous Bulls player

Knicks, Bulls: rival basketball teams

wiping the floor with: winning by a large margin

Try saying the same sentence as a Bulls fan, then as a Knicks fan

- 141 subjects
- two sessions
- 14,000 responses
- match emotion scenarios to video presentations
- videos were 5 seconds “talking heads” with speech, facial expression and music

“I picked up Catapia
in Timbuktu”

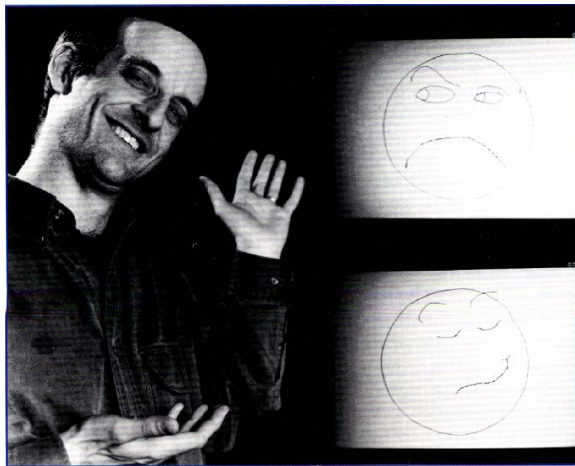
- Jack is proud of the Catapia he got in Timbuktu because it is quite a collector's prize
- Jack is gloating because his horse, Catapia, won the derby and his arch-rival could have bought Catapia last year
- Jack hopes that the Catapia stock he picked up in Timbuktu is going to be worth a fortune...
-others (12)

Formal Study

- Participants have to match the **ambiguous sentence** to the scenario description
- saw either a **sketch-based virtual agent** or a **human actor**
- Actors were **"coached"** on the emotion categories
- **"most expressive"** of 8 tapes was chosen for actor¹
- **70%** correct for computer-generated
- **53%** correct for actor generated
- Actors were asked to **"imitate" OCC**
- Actors were **artificially constrained**
- Can you think of a **better methodology** ?

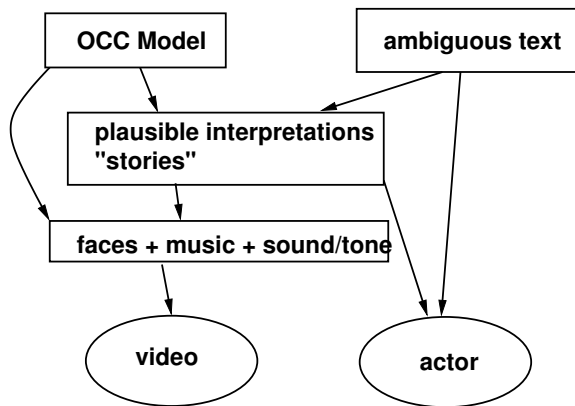
¹by whom? this is a flaw of the study! The experimenters could choose the one that is **worst** !

Elliott and Faces



Methodology (REDUX)

- Actors read the sentence
- Actors **given or choose** **an interpretation** (possibly their own)
- read the sentence under that interpretation, naturally, without OCC
- **pick the description** that matches their narrative
- or mix their own description in with the others



- participants match (video + ambiguous story) to interpretation
- participants match (actor + ambiguous story) to interpretation
- video based on AR does better than an actor

Conclusions:

- Computers can be used to convey social information
- Computers can use non-verbal displays to do this
- Real-time delivery
- Computers perform similarly to humans

Next:

- Dimensional Theories (Russell)
- Anatomical Theories and the Somatic Marker Hypothesis (Damasio)
- Wachsmuth paper (WASABI)
- Affect Control Theory