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Emotion Models and their Implications for System Design

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Emotion Models mostly used in HCI

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- Cognitive, rule-based:
 - OCC (Ortony, Clore, Collins)
 - Cognitive structural approach, rule-based
 - Emotions as *functions* specific to certain emotions, expressed as the desirability of an event (emotion as valenced *reaction* to an event)
 - ➔ Made for synthesis, functions are good to be implemented in digital systems
 - Roseman
 - Cognitive appraisal model, rule-based
 - Categorisation of appraisals people make about events (6 interacting appraisals)
 - Depends on what people pay attention to
 - ➔ Difficult to assess for the computer, lots of unknown side aspects, unclear about mixed emotions/multiple events





Emotion Models mostly used in HCI

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- Representation oriented (1)
 - Basic emotions (e.g. Ekman)
 - 2 – 20, depending on the theory
 - Most accepted: anger, disgust, fear, happiness, sadness, surprise
 - + Known by everybody, can be easily assigned
 - Problem 1: labelling with emotion words, differences depending on social and cultural background, language used
→ unclear meaning, uncertain assignments
 - Problem 2: mixed emotions (e.g. happiness + surprise)
→ how to represent them?
 - Problem 1+2 = 3: overlapping categories with blurry borders and arbitrary positions

- very ambiguous, unclear meaning, uncertain assignments
- bad for digital systems



Emotion Models mostly used in HCI

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- Representation oriented (2)
 - Dimensional approach (e.g. Russell)
 - Emotions represented on 2-3 dimensions (or more):
 - Arousal (calm/excited)
 - Valence (negative/positive)
 - Power/control
 - + Emotional states need no naming, no categorisation
 - + Unambiguous position in coordinate system
 - + Mixed emotions no problem
 - Unfamiliar, abstract construct, difficult to understand by laypersons (bad in experiments)

- good for digital systems



Implications

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- Decision for one emotion model critical for design process of emotion-aware systems
- Implications on system characteristics, like
 - Number and sort of user states,
 - Level of detail of emotion information,
 - Storage and communication of emotion information,
 - Which analyses can be performed with which degree of accuracy
- Implications on compatibility/sustainability
- Implications on output generation (emotional response)



Questions

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- Other implications you can think of?
- Is there a „best“ model?
- Do we need a new, HCI-specific one?