ACHI 2014 PANEL

USER-CENTRIC INTERACTION CHALLENGES

MODERATOR:

ALMA LEORA CULÉN, UNIVERSITY OF OSLO, NORWAY

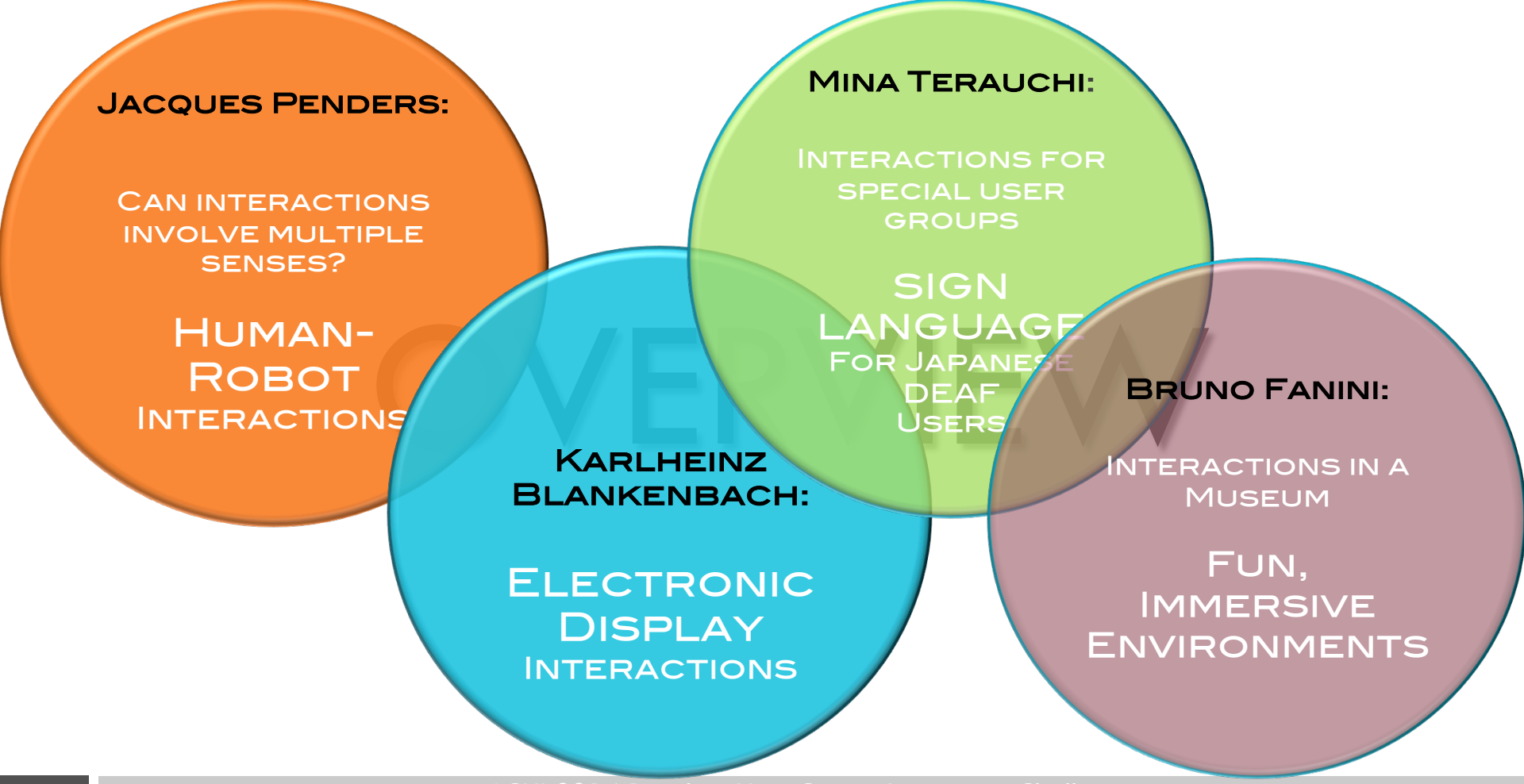
PANELISTS:

JACQUES PENDERS, SHEFFIELD HALLAM UNIVERSITY, UK

MINA TERAUCHI, POLYTECHNIC UNIVERSITY, JAPAN

BRUNO FANINI, CNR ITABC, ITALY

KARLHEINZ BLANKENBACH, PFORZHEIM UNIVERSITY, GERMANY


Jacques Penders:
Can interactions involve multiple senses?
Human-Robot Interactions
Mina Terauchi:
Interactions for special user groups
Sign Language For Japanese Deaf Users
Karlheinz Blankenbach:
Electronic Display Interactions
Bruno Fanini:
Interactions in a Museum
Fun, Immersive Environments

What are the Big Challenges In User-centric Interactions?

Ubiquitous, Personal Devices

In addition to personal and mobile devices, and traditional desktops, we increasingly interact with

- Large screens
- Sensors
- Tangibles etc.

Which senses are used in these interactions?

MAIN CHALLENGES – ALMA'S VIEW

- Move from user-centric view to human-centeric view of interactions
- Fewer devices, no to planned obsolesence, yes to more careful consideration of innovation in relation to interaction
- This implies a larger view over what we do as HCI practitioners, including careful consideration of values, sustainability, diversity, adaptability…

Conclusions from panelists

- Make use of other senses in interactions
- It is important to consider special user groups and their needs
- Make interactions, in particular in cars, simpler and safer
- Not all interactions need to be fun, but fun and pleasurable interactions are important in many contexts
- Emersive environments certainly have their role and space in public spaces such as museums

Human Machine Interfaces

The Visual sense is only one of several senses

Prof Jacques Penders

Sheffield Hallam University

j.penders@shu.ac.uk

Human Machine Interfaces
Usually use:
:

1. Visual sensing
2. Visual and auditive 'performative'
   - language (signs/symbols) based/like - information presentation

- Diagosis: over-reliance on 1&2 with too little attention paid to alternative modalities and missing out on their potential.

Other senses

- Audition, hearing
- Touch
- Proprioceptive
  - (Smell)
  - (Taste)
- Full/optimal use requires a rethink
  - not visual language based 'digital' signs/symbols
- Adapted, different form of presentation
  - for instance hearing provides a full 3D spatial presentation

User-centric Interaction Challenges : Automotive

Automotive interaction vs. driver distraction"

- Even today's HMIs are needed to "operate" the car.
- Knobs & pushbuttons disappear as haptic devices.
- Head Up Displays becoming more widespread.
- How can the driver interact with various displays?
- Consequences for HMI for automated driving?

Prof. Dr. Karlheinz Blankenbach
Pforzheim University, Tiefenbronner Str. 65
D-75175 Pforzheim, Germany

Phone : +49 7231 - 28 – 6658; fax - 6060
Email : kb@displaylabor.de
Web : www.displaylabor.de

All pictures: Continental

Examples of Automotive Input and Output Devices

Driver distraction ?

Duration for action steps?

All pictures: Continental

”Alerting the Driver … “

- Less than 3 glances with less than 1 sec each recommended for automotive HMIs.
- 2 sec of HMI distraction causes to lane departure rate of > 1% for 3 m lane width.
- How to “alert” the “driver” when in “automated driving mode” ?

All pictures: Continental

Future: (Fully) Automated Driving

How to alert the driver to take control of the car in case that automated driving fails?

All pictures: Continental

Bruno.Fanini@gmail.com - CNR ITABC
ACHI 2014

Challenges of Gesture-based interaction for engaging Virtual Environments

Engaging Interaction of a Virtual Museum

Low-cost sensors available to consumer market

Effective Design through Rewarding strategies?

CH Communication through Comparison?

How to Design *"natural"* Navigation Gestures?

Is this enough to engage visitors?

Gestural Skills ?

- Progressive Reward
- Non-overlapping Design
- Gradual content unlocking
- Skill ↔ Color

Bruno.Fanini@gmail.com - CNR ITABC
ACHI 2014

Providing a clear Interface?

How to *transmit* CH knowledge?
Visual Comparison?
On-site information?
Fun factor?

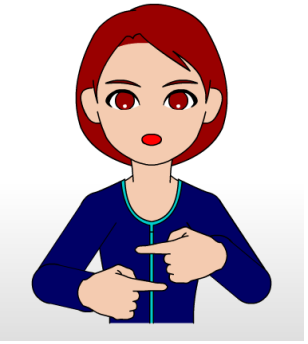
Improving User Experience:
- Color-based (visual) hints?
- Audio hints?
- *Natural* Gestures? How?

Experimental Study into the Time Taken to Understand Words when Reading Japanese Sign Language

Mina TERAUCHI
Polytechnic University
Visiting Fellow of Kogakuin University

Keiko WATANABE

Yuji NAGASHIMA
Kogakuin University



Sign Language Animation of Kogakuin University

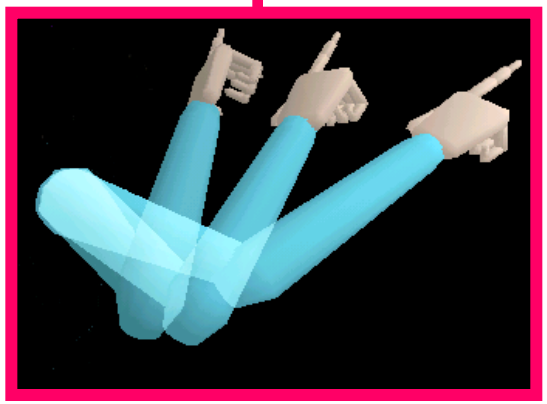
Component of Sign Language

Manual Signals

(MS)

Non Manual Signals

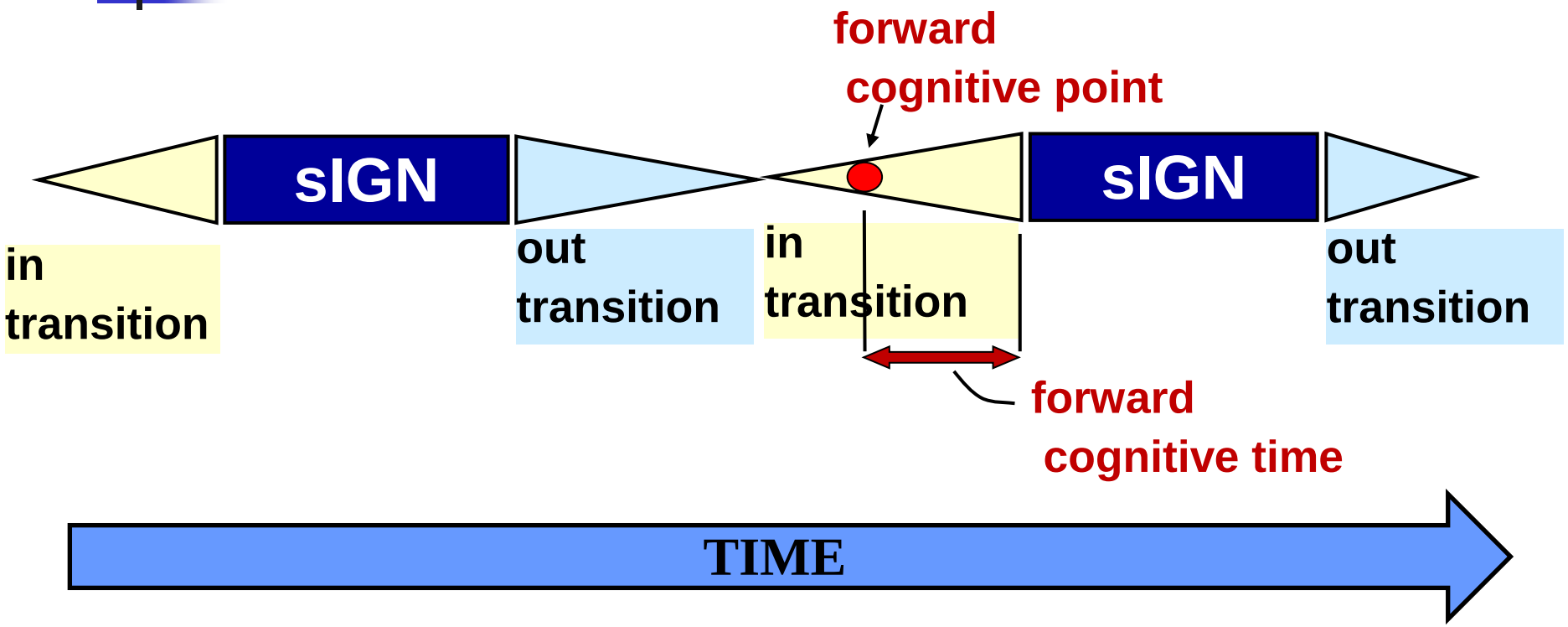
(NMS)



Used to form words

used for semantic and syntactic purposes

Temporal Structure of Sign Language



Native Signer :
Predict and understand words at the ends of sentences when reading JSL

- Deaf people to predict and understand words when reading Japanese sign language

⇦ Effectively utilizing the information required to form correct sentences, including expressions and intonation

- ➢ Can be learnt through sign language education
- ➢ Helpful in generating sign language animation