

Topic 4: User Behaviour (Part 2)

SECV2113 Human-Computer Interaction

**Faculty of Computing
Universiti Teknologi Malaysia**

SOCIAL INTERACTION

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 - 02 FACE-TO-FACE CONVERSATIONS**
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COMMUNICATION**
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BEING SOCIAL

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Social Interaction

- We live together, work together, play together, talk to each other, and socialize
- Social technologies developed to enable us to persist in being social when apart
 - They differ in how they support us
 - Some encourage social interactions (for example, family games with Alexa)
 - Others have a negative impact on everyday conversations (Turkle, 2015)

Are we spending too much time in our own digital bubbles?



Questions raised by social tech

- Are in person conversations being superseded by social media interactions?
- How many friends do you have on Facebook, LinkedIn, WhatsApp, and so on versus real life?
- How much do they overlap?
- How are the ways that we live and interact with one another changing?
- Are the established rules and etiquette still applicable to online and offline?

FACE-TO-FACE

CONVERSATIONS

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Conversational Mechanisms

- Various mechanisms and ‘rules’ are followed when holding a conversation face-to-face such as mutual greetings
 - A: Hi there
 - B: Hi!
 - C: Hi
 - A: All right?
 - C: Good, how’s it going?
 - A: Fine, how are you?
 - C: OK
 - B: So-so. How’s life treating you?

Conversational Rules

- Sacks et al. (1978) conversation analysis of conversations propose three basic rules:

Rule 1: The current speaker chooses the next speaker by asking an opinion, question, or request

Rule 2: Another person decides to start speaking

Rule 3: The current speaker continues talking

More Conversational Rules

- Turn-taking used to coordinate conversation

A: Shall we meet at 8:00?

B: Um, can we meet a bit later?

A: Shall we meet at 8:00?

B: Wow, look at him?

A: Yes what a funny hairdo!

B: Um, can we meet a bit later?

Gets
embedded

- Back channeling to signal to continue and following

Uh-uh, umm, ahh

Further Conversational Rules

- Farewell rituals
 - Bye then, see you, yeah bye, see you later....
- Implicit and explicit cues
 - For instance, looking at watch or fidgeting with coat and bags
 - Explicitly saying, "Oh dear, look at the time, I must go, I'm running late..."

Breakdowns in Conversation

- When someone says something that is misunderstood:
 - Speaker will repeat with emphasis:

A: "This one?"

B: "No, I meant that one!"
 - Also use tokens:

Eh? Quoi? Huh? What?

What happens in online conversations?

- Do the same conversational rules apply?
- Are there different kinds of breakdowns?
- How do people repair them for:
 - Email?
 - Instant messaging?
 - Texting?
 - Skype or other videoconferencing software?

New Social Rules during COVID-19

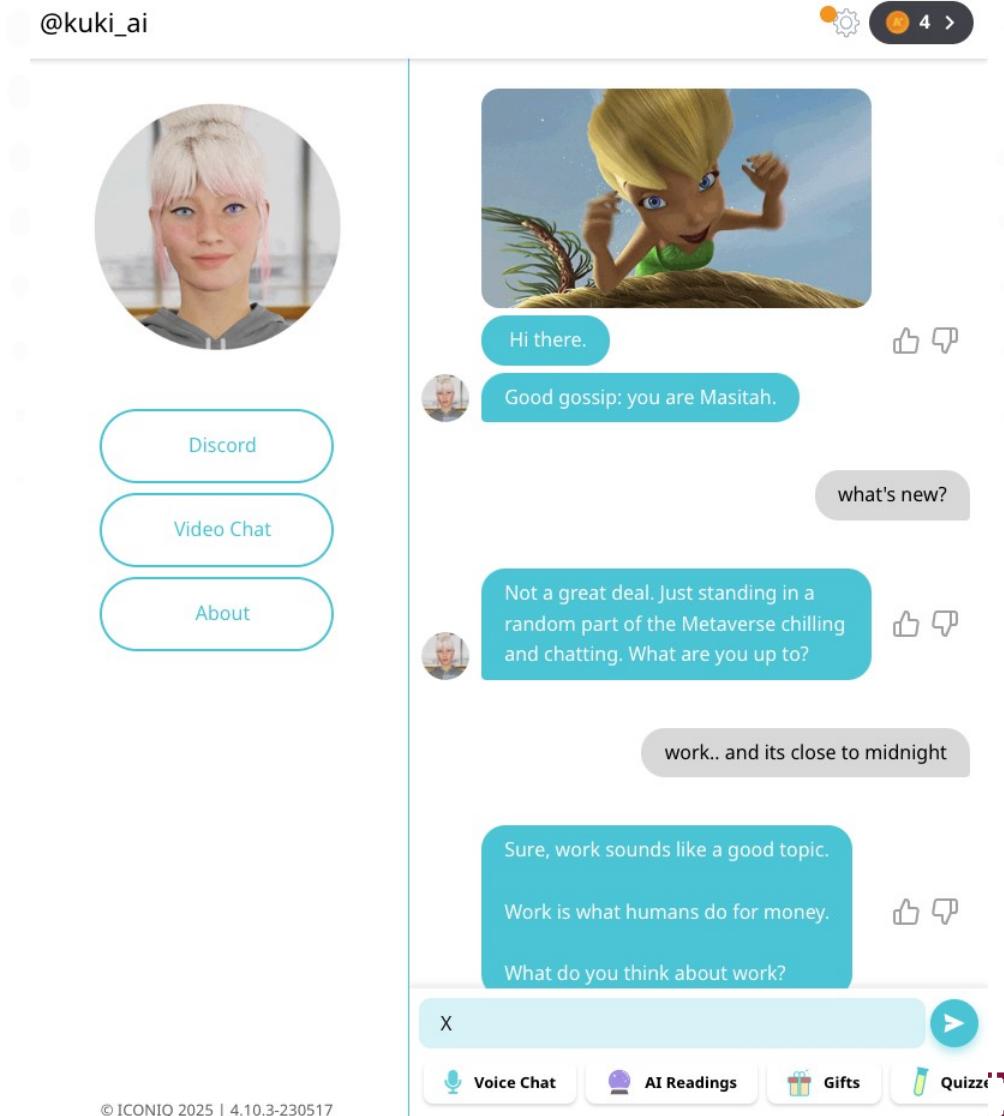
- For how to behave and interact with others when communicating via video conferencing
- Muting yourself when not talking
- Raising a yellow hand when wanting to speak
- Other emoji reactions became commonly used to signify various forms of praise, emotions and non-verbal feedback, e.g.
 - clicking on the red heart and party hat icons that momentarily appear in someone's window and then disappear after 10 seconds

Online Collaboration and Communication

- Much research on how to support conversations when people are remote
- Many applications have been developed
 - email, videoconferencing, instant messaging, chatrooms
- To what extent do they mimic or move beyond existing ways of conversing?

Talking with Chatbots

- Conversational User Interfaces, such as chatbots, are more sophisticated in how they emulate turn-taking in conversations
 - e.g. Kuki.ai
- Recent developments in AI are changing how we converse and interact with AI
 - e.g., ChatGTP



Dilemma: Is it OK to talk with a dead person using a chatbot?

- Eugenia Kuyda lost a close friend in a car accident who was only in his 20s
- She took all his texts sent over the course of his life and made a chatbot using them
- Chatbot responds to text messages so that Eugenia can talk to her friend as if he was alive
- Is this a creepy or comforting way to deal with grief?
 - Is it respectful of the dead person?

REMOTE COLLABORATION & **COMMUNICATION**

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Early Videoconferencing: VideoWindow (Bellcore, 1989)

- Shared space that allowed people 50 miles apart to carry on a conversation as if in same room drinking coffee together
- 3 x 8 foot 'picture-window' between two sites with video and audio
- People did interact via the window, but strange things happened (Kraut, 1990)

Diagram of VideoWindow in Use



Findings of how VideoWindow System was used

- Talked constantly about the system
- Spoke more to other people in the same room rather than in other room
- When trying to get closer to someone in the other place it had opposite effect— participants went out of range of the camera and microphone
- No way of monitoring this

Videoconferencing and Telepresence Rooms

- Many to choose from to connect multiple people (e.g. Zoom, Teams, Google Meet, Webex)
- Customised telepresence rooms for groups



Current Videoconferencing

- Webex, Zoom etc., have greatly extended how we communicate while providing tools to make it easier to switch between talking and working together
- Zoom fatigue came into being (Bailenson, 2021)
 - excessive amounts of close-up eye gaze
 - intense cognitive load
 - increased self-evaluation from staring at a video of oneself
 - physically being in the same place for hours on end

Microsoft Prototype of a Technology-enhanced Hybrid Meeting

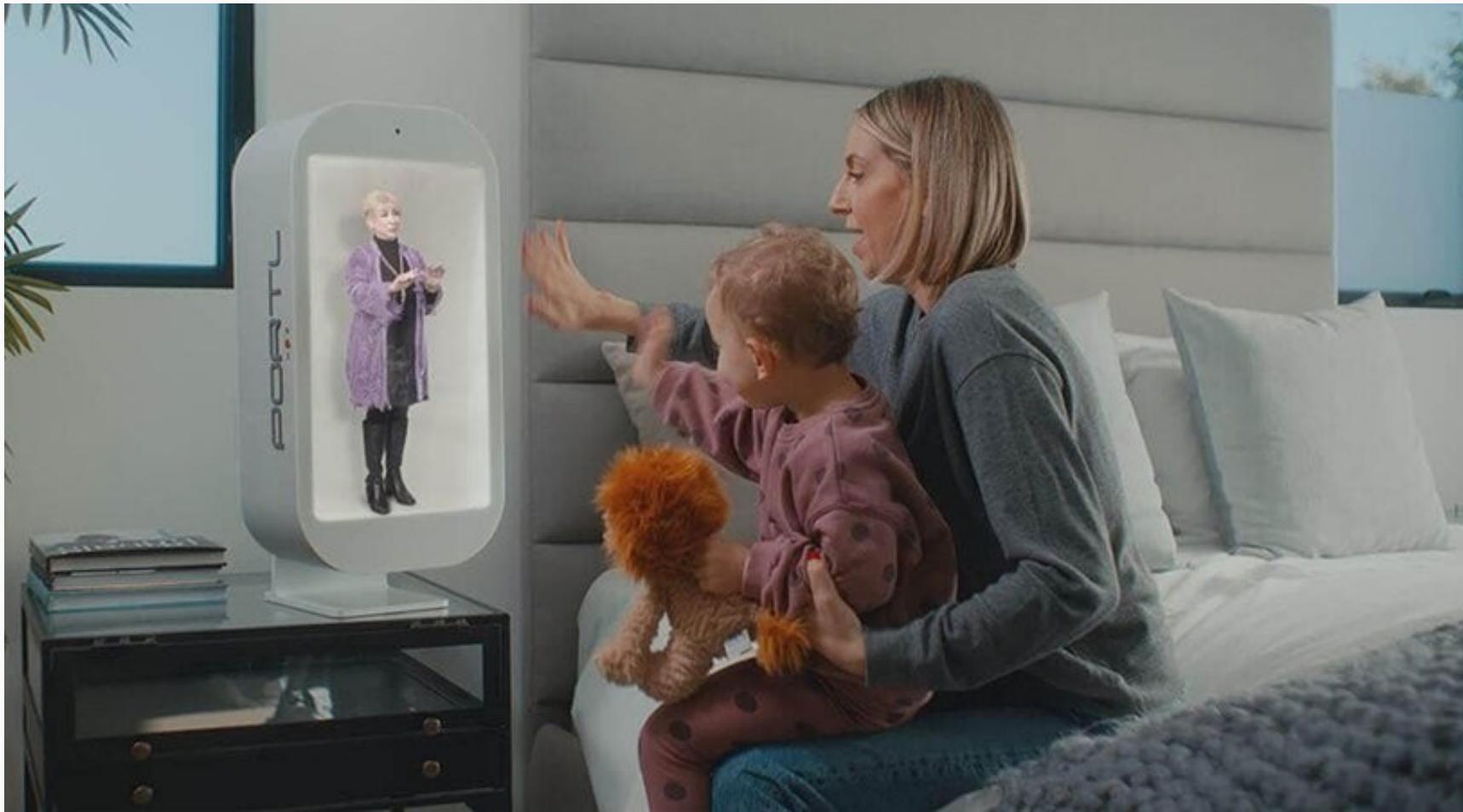


The future: 3D person in a box?



David Nussbaum demonstrating how they capture and present the Proto person in a box

Proto M



Talking with a 3D video of granny in a box. The embedded camera at the top of the box faces the mother and child so that Granny can see and hear them in real time.

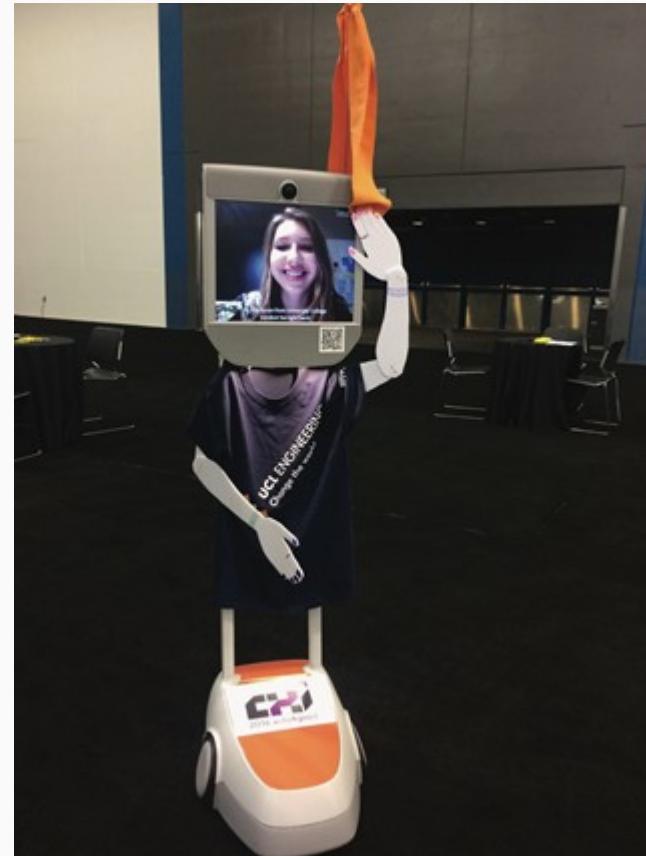
Telepresence and Social Presence

- *Telepresence* refers to one party being present with another party, who is present in a physical space, such as a meeting room
- *Social presence* refers to the feeling of being there with a real person when in virtual reality (VR)

Telepresence Robots

Enable people to attend events who could not do so, such as by controlling their robot remotely

- In places such as schools, conferences, and museums
- Early example: Beam+
- Often dressed up to appear like the person to others at the event
- Positive experience of being there



Susan Lechelt at ACM CHI

The Metaverse



- Meta's vision of three friends socializing in a 3D world represented as torso avatars
- Users experience each other through donning VR headsets

How much realism and immersion are necessary...?

- ...in telepresence to make it compelling?
- *Telepresence rooms* try to make remote people appear to be life-like
 - Use multiple high-definition cameras with eye-tracking features and directional microphones
- Does FaceTime have as much presence as more high-definition settings?

Online Collaborative Tools

- Now more commonplace in our everyday and working lives
 - e.g. the sharing of calendars, word processing, design and project management tools like Slack
- Places for sharing knowledge
- Tools like Miro, Figjam and Google Docs enable online collaborative creation and editing of reports, designs, etc.,

Collaborative Online Tools

The Figjam board displays several user interface design examples with annotations:

- Gaming Laptop**:
 - 1. **Visibility** - Reduces and increases brightness and contrast levels. Instant feedback when the slider is moved.
 - 2. **Affordance** - The system indicates the current temperature level with a color-coded scale.
 - 3. **Feedback** - Fast speed and smooth monitoring shows the system's performance for the system.
 - 4. **Consistency** - The history bar is consistent across different applications.
 - 5. **Affordance** - Large or prominent buttons indicate high performance, while small buttons indicate low performance.
 - 6. **Feedback** - Icons provide visual feedback on the system's status, such as battery level and network connection.
- Playstation DualShock Controller**:
 - 1. **Visibility** - Clearly identifies the buttons as an L1/R1 button, a D-pad, a player status, and an arrow key.
 - 2. **Feedback** - Haptic feedback provides visual and haptic feedback on button presses.
 - 3. **Consistency** - Limited buttons have a consistent shape and placement.
 - 4. **Affordance** - Large, distinct button shapes help users identify them quickly.
 - 5. **Affordance** - Large buttons provide clear feedback for button presses.
 - 6. **Feedback** - Tactile feedback on button presses.
- Mechanical Keyboard**:
 - 1. **Feedback** - Mechanical keyboard provides immediate feedback on key presses.
 - 2. **Consistency** - The layout of keys is consistent across different manufacturers.
 - 3. **Affordance** - The keyboard provides visual feedback on key presses.
- Scientific Calculator**:
 - 1. **Visibility** - Has a clear display showing the characters entered by the user.
 - 2. **Feedback** - Displays the result of the operation.
 - 3. **Consistency** - The layout of buttons is consistent across different calculators.
 - 4. **Affordance** - Clearly labeled buttons such as decimal operations.
- NFT Page**:
 - 1. **Visibility** - Buttons are represented by different colors: red for sell, green for buy, blue for trade, and yellow for withdraw.
 - 2. **Feedback** - Icons provide visual feedback on button presses.
 - 3. **Consistency** - The interface uses a single branding style across all sections.
 - 4. **Affordance** - Large buttons are used for key actions.
- Smartwatch**:
 - 1. **Visibility** - The watch face clearly indicates the time and date.
 - 2. **Feedback** - Icons provide visual feedback on button presses.
 - 3. **Consistency** - Standardized button placement across different smartwatches.
 - 4. **Affordance** - Large buttons are used for quick access to notifications.
- Smartphone**:
 - 1. **Feedback** - On screen feedback is clearly visible.
 - 2. **Consistency** - Standardized button placement across different smartphone models.
 - 3. **Affordance** - Large buttons are used for quick access to notifications.
- Traffic Light**:
 - 1. **Feedback** - Use a standard color coding system (red = stop, green = go, yellow = caution).
 - 2. **Consistency** - Standardized button placement across different traffic light models.
 - 3. **Affordance** - Traffic lights include specific symbols for pedestrians and cyclists.
- Microwave Oven**:
 - 1. **Feedback** - Digital display clearly indicates the functions currently selected.
 - 2. **Consistency** - Buttons are arranged in a grid.
 - 3. **Affordance** - Buttons are clearly labeled with their functions.
- Wireless Charger**:
 - 1. **Feedback** - The LED indicator changes color when the device is being charged.
 - 2. **Consistency** - Standardized button placement across different wireless chargers.
 - 3. **Affordance** - Large buttons are used for quick access to power settings.
- Microphone**:
 - 1. **Feedback** - LED indicators show the status of microphone connection.
 - 2. **Consistency** - Buttons are arranged in a grid.
 - 3. **Affordance** - Easy to hold with both hands.
- Water Dispenser**:
 - 1. **Feedback** - Buttons are represented by different colors: red for hot water, green for cold water, blue for filtered water, and yellow for ice.
 - 2. **Consistency** - The water dispenser has a consistent layout across different models.
 - 3. **Affordance** - Large buttons are used for quick access to water selection.
- Drone Remote**:
 - 1. **Feedback** - To hold.
 - 2. **Consistency** - The handle suggests where to hold it.
 - 3. **Affordance** - Shuts off when held.
 - 4. **Visibility** - On/off switch.
- Water Dispenser**:
 - 1. **Feedback** - The water dispenser has a consistent layout across different models.
 - 2. **Consistency** - The water dispenser has a consistent layout across different models.
 - 3. **Affordance** - Large buttons are used for quick access to water selection.
- Smartphone**:
 - 1. **Feedback** - The water dispenser has a consistent layout across different models.
 - 2. **Consistency** - The water dispenser has a consistent layout across different models.
 - 3. **Affordance** - Large buttons are used for quick access to water selection.

Screen shot of a Figjam board used in an online class on Human-Computer Interaction where students upload their examples

CO-PRESENCE

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What is Co-presence?

- Co-located groups who want to collaborate
- Many technologies have been designed to:
 - Enable groups to work, learn and socialise more effectively together
 - For example, tabletops, whiteboards, and public displays



Coordination Mechanisms

- When a group of people act or interact together, they need to coordinate themselves
 - For example, when playing football or navigating a ship
- To do so, they use:
 - Verbal and non-verbal communication
 - Schedules, rules, and conventions
 - Shared external representations

In Person Coordinating Mechanisms

- Talk is central
- Non-verbal also used to emphasize and as a substitute
 - e.g., nods, shakes, winks, glances, gestures, and hand-raising
- Formal meetings
 - Explicit structures such as agendas, memos, and minutes are employed to coordinate the activity

Awareness Mechanisms

- Involves knowing who is around, what is happening, and who is talking with whom (Dourish and Bly, 1992)
- Peripheral awareness
 - Keeping an eye on things happening in the periphery of vision
 - Overhearing and overseeing—allows tracking of what others are doing without explicit cues
- Situational awareness
 - Being aware of what is happening around you in order to understand how information and your actions will affect ongoing and future events
 - For example, air traffic control or an operating theatre

Shareable Interfaces

- Designed to capitalize on existing forms of coordination and awareness mechanisms
- Several studies investigating whether they help people to work together better, have found:
 - More equitable participation
 - More natural to work around
 - More comfortable sitting around a table than standing in front of a display

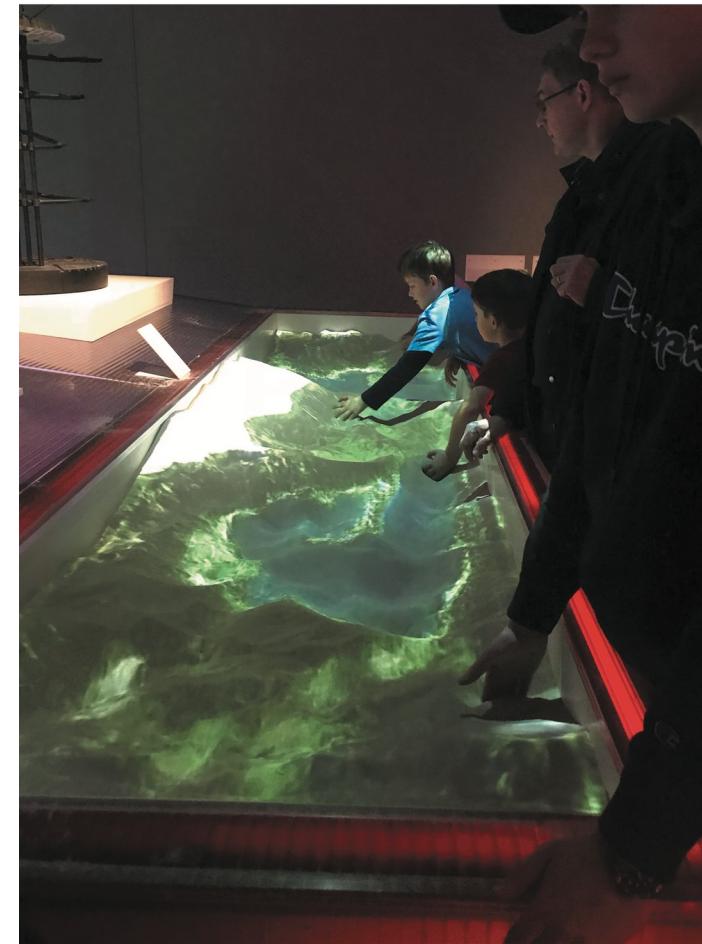
The Reflect Table

- LEDs lit up to reflect how much each member of the group spoke
- Used microphones in front of each individual to do this
- Study showed those who spoke the most changed their behaviour the most
- Those who spoke the least did not change their behaviour
- Why do you think this is?



Playing Together in Same Space

- Visitors using an AR sandbox at the V&A museum in London
- Visitors sculpt landscapes out of sand
- System reacts with changing superimposed digital colored landscape
- Enables creative forms of collaboration



PeopleLens: A head mounted device that enhances a blind child's spatial awareness of those around them



Video See PeopleLens in action: <https://youtu.be/astmNfjHT4A>.

SOCIAL GAMES

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Social Games

- Designed to facilitate social interaction
- Can be played indoors or outdoors, with and without technology.
 - examples include board games, tabletop games, and videogames (such as Minecraft)
- Each player is aware of other players' presence, their actions and how well they are playing

Social Online Games

- Can involve creating a community, where competition, collaboration, peer pressure, rebellion, jealousy, and so on are all played out in their various forms
- Matt Richetti (2022) has proposed three heuristics for evaluating them:
 - Does the social game involve synchronous or asynchronous player interaction, where players either chat with each other or they take turns.
 - Is the social interaction symmetrical or asymmetrical, in the sense that does forming a relationship require input from both parties or can they be formed unilaterally by a single party?
 - Does the social relationship involve strong or weak ties in the sense of whether the relationships between players become deep and long lasting or are they transitory?
- By asking these questions, game designers can think about the kinds of social interactions they want to support

Summary

- Social interaction is central to our everyday lives
- Social mechanisms, like turn-taking, enable us to collaborate and coordinate our activities
- Keeping aware of what others are doing and letting others know what you are doing are important aspects of collaborative working and socialising
- Many technologies have been built to support telepresence, social presence, and co-presence
- Social online games media has brought about significant changes in how online games can support social interaction