

Understanding Player Interpretation

An Embodied Approach

Jonne Arjoranta
University of Jyväskylä

Embodied Cognition

- Also known as the embodied mind thesis
- Studied by cognitive and social psychology, cognitive linguistics and neuroscience
- The thesis: the nature of our mind is determined by our bodies

Embodied Cognition

1. cognition is situated;
2. cognition is time-pressured;
3. we off-load cognitive work onto the environment;
4. the environment is part of the cognitive system;
5. cognition is for action;
6. off-line cognition is body based.

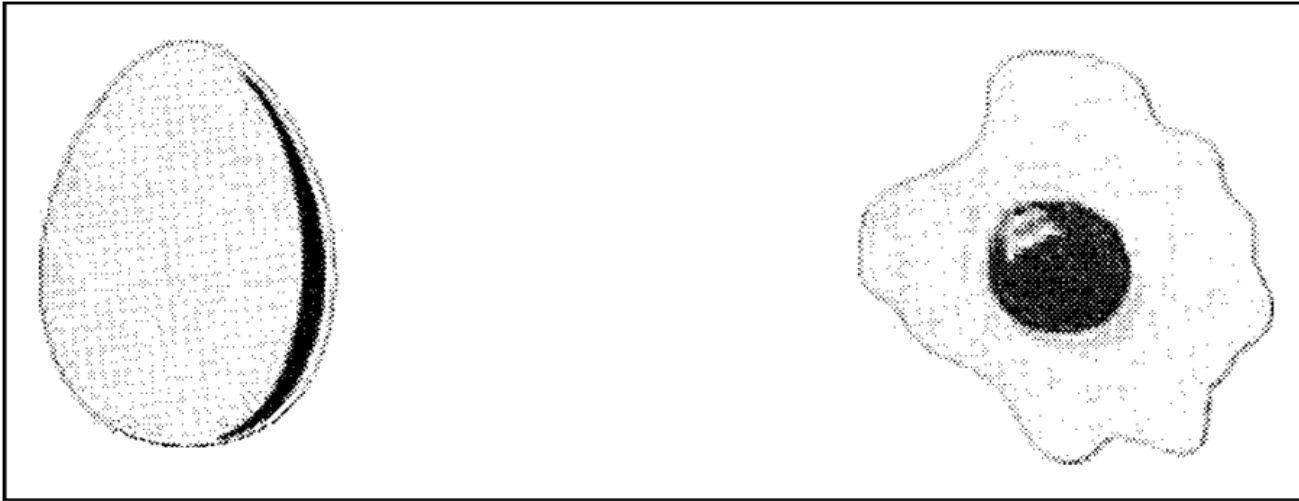


Fig. 1. Different shapes of an egg: in a refrigerator versus in a skillet.

Experiment 1: Zwaan et al. (2002)

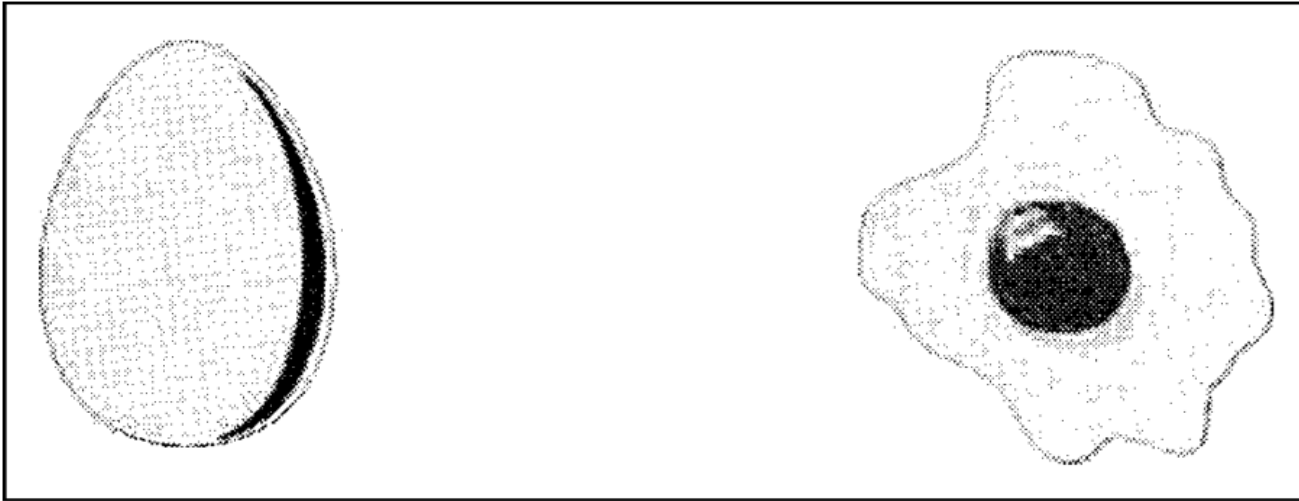
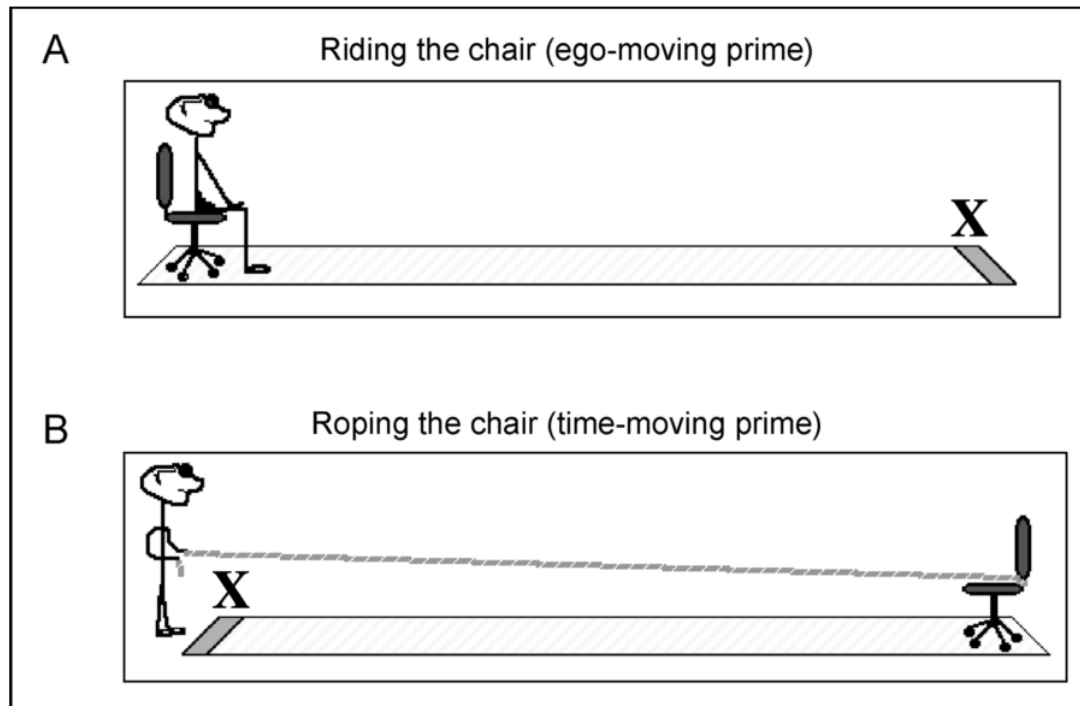


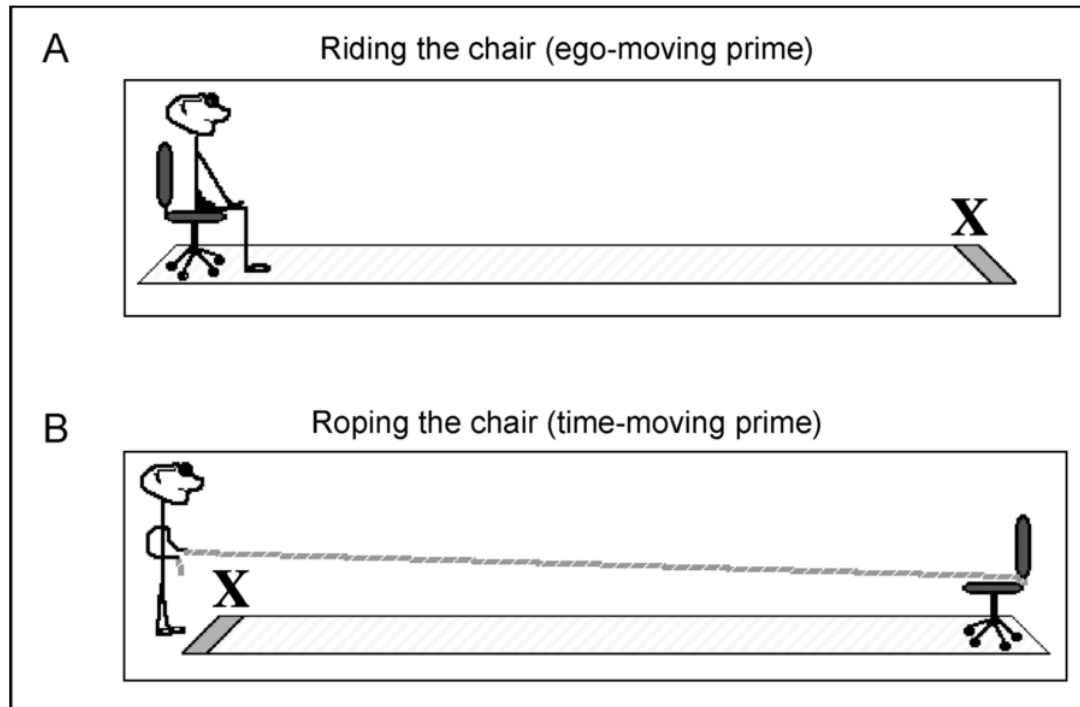
Fig. 1. Different shapes of an egg: in a refrigerator versus in a skillet.

Cross-domain mapping



Experiment 2: Boroditsky & Ramscar (2002)

Next Wednesday's meeting has been moved forward two days. What day is the meeting now that it has been rescheduled?



The subjects used their conception of space to think about time

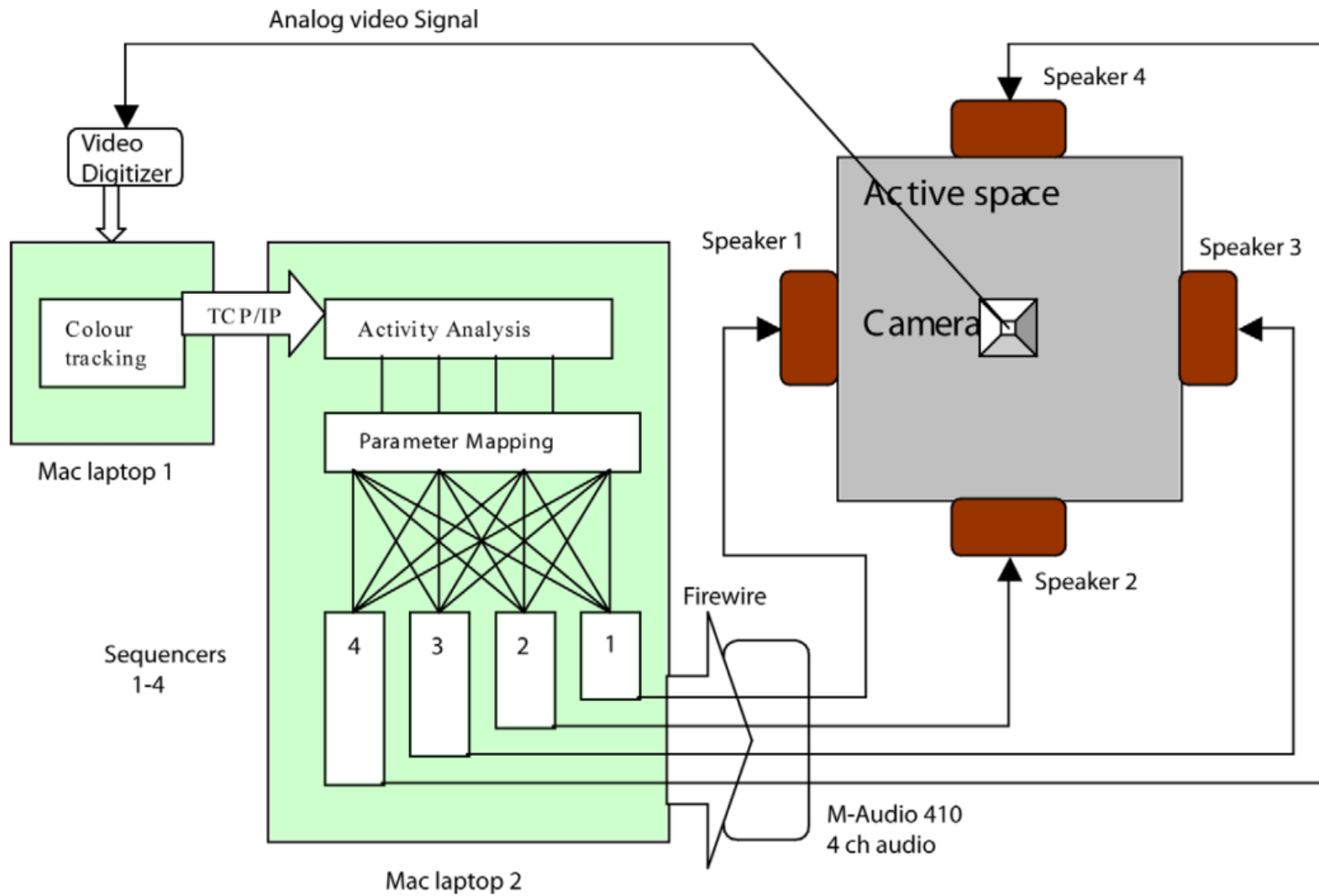


Fig. 1. The Sound Maker system infrastructure.

Experiment 3: Antle et al. (2009)

Table 1

Embodied metaphorical mappings.

Movement	Parameter	Mappings
Speed	Tempo	Fast is fast; slow is slow
Activity	Volume	More is loud; less is quiet
Proximity	Pitch	Near is high; Far is low
Flow*	Rhythm	Smooth is rhythmic; choppy is chaotic

* Only adults did tasks based on these mappings (due to session time constraints with children).

Table 2

Non-metaphorical mappings.

Movement	Parameter	Mappings
Flow	Tempo	Smooth is fast; choppy is slow
Proximity	Volume	Far is quiet; near is loud
Speed	Pitch	Slow is high; fast is low
Activity*	Rhythm	High is rhythmic; low is chaotic

* Only adults did tasks based on these mappings (due to session time constraints with children).

Table 1

Embodied metaphorical mappings.

Movement	Parameter	Mappings
Speed	Tempo	Fast is fast; slow is slow
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80 %

* Only adults did tasks based on these mappings (due to session time constraints with children).

Table 2

Non-metaphorical mappings.

Movement	Parameter	Mappings
Flow	Tempo	Smooth is fast; choppy is slow
Proximity	Volume	Far is quiet; near is loud
Speed	Pitch	Slow is high; fast is low
Activity*	Rhythm	High is rhythmic; low is chaotic

20 %

* Only adults did tasks based on these mappings (due to session time constraints with children).

Players, Bodies and Spatiality

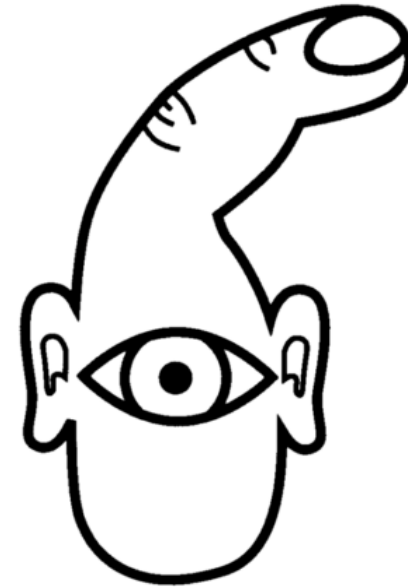


Figure 5 The GUI's mental model of a user [30].

Klemmer et al. (2006)
Igoe & O'Sullivan (2004)

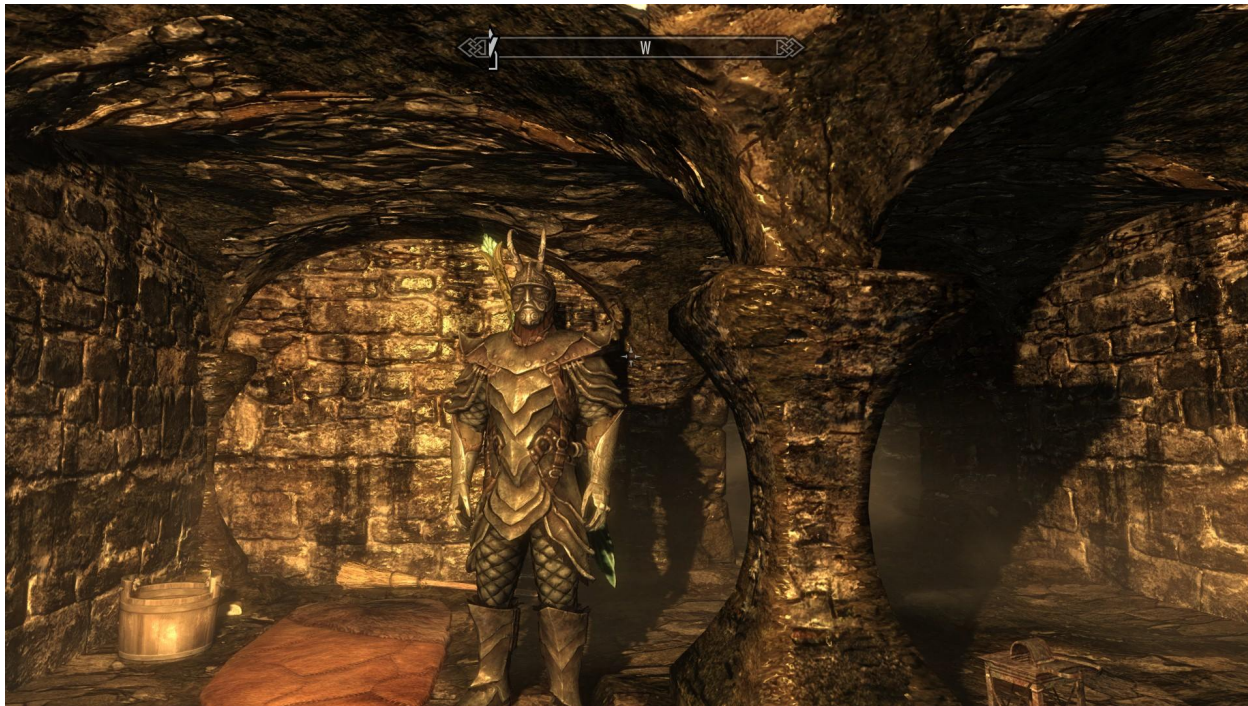
Players, Bodies and Spatiality



Wikimedia: Sangj1938

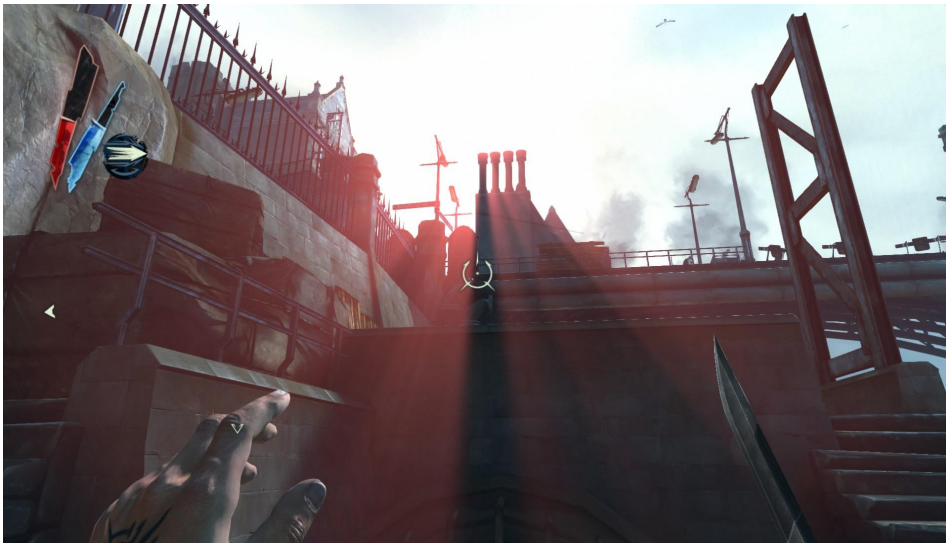
Embodied Interfaces

Elder Scrolls V: Skyrim



Embodied Interfaces

Dishonored



Flickr: spicagames



Wikimedia: Benjamin.nagel

Conclusions

- Embodied cognition affects players
- Game studies can benefit from theories of embodied cognition
- Taking embodied cognition into account when designing games need not be complex
- Possible future directions:
 - Study game-specific effects of embodied cognition
 - Use games for studying embodied cognition

Questions?

Or contact me at
University of Jyväskylä
jonne.arjoranta@jyu.fi