LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

LFE Medieninformatik • Deyan Peev

Hybrid interaction on interactive surfaces

Medieninformatik Hauptseminar
Sommersemester 2009
„Interactive Surfaces“

Outline

- Terms/Making of/Concept Structure
- What is hybrid interaction on interactive surfaces (Hybrid Interaction) good for?
- Examples
- Perspective
- Literature
- Questions, Thanks and Bye

Terms

- Tangible User Interfaces (TUIs) are user interfaces in which physical objects are used to represent and control computational abstractions [1].

- Hybrid interaction i.e. across physical and digital information [2]

Making of TUIs

- A New Peripheral for Three-Dimensional Computer Input [3]
- Hiroshi Ishii’s "Tangible Bits“ [4]
- Urban planning: A Luminous-Tangible Workbench for Urban Planning and Design [5]

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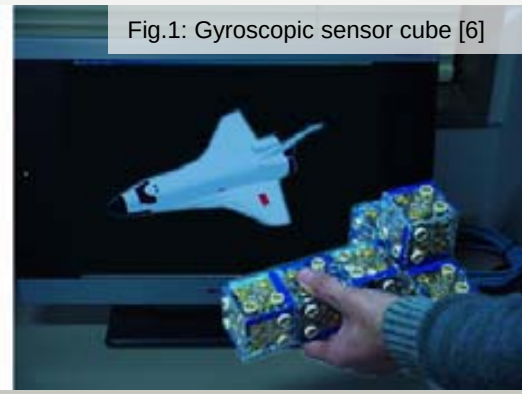

Fig.1: Gyroscopic sensor cube [6]

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Fig.2: metaDesk[4]

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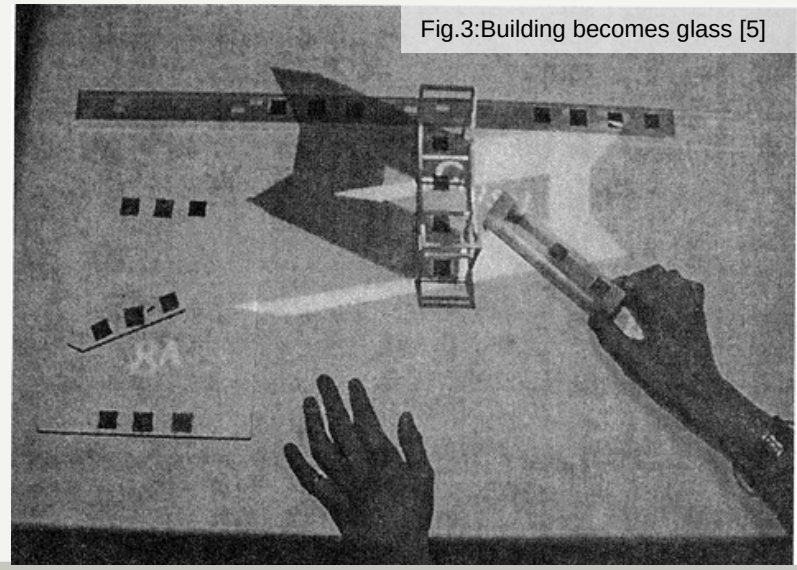

Fig.3:Building becomes glass [5]

Concept Structure

- Touch sensitive surface
  - Touch displays
  - SmartSkin [7]
- Projection System
  - SecondLight [8]
  - Computer vision
  - reacTable [9]

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Fig.4: SmartSkin sensor [7]

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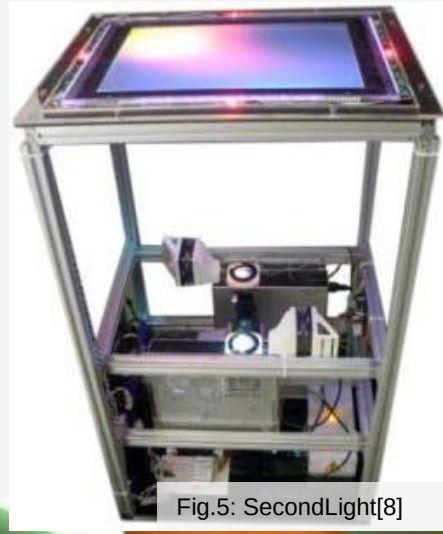

Fig.5: SecondLight[8]

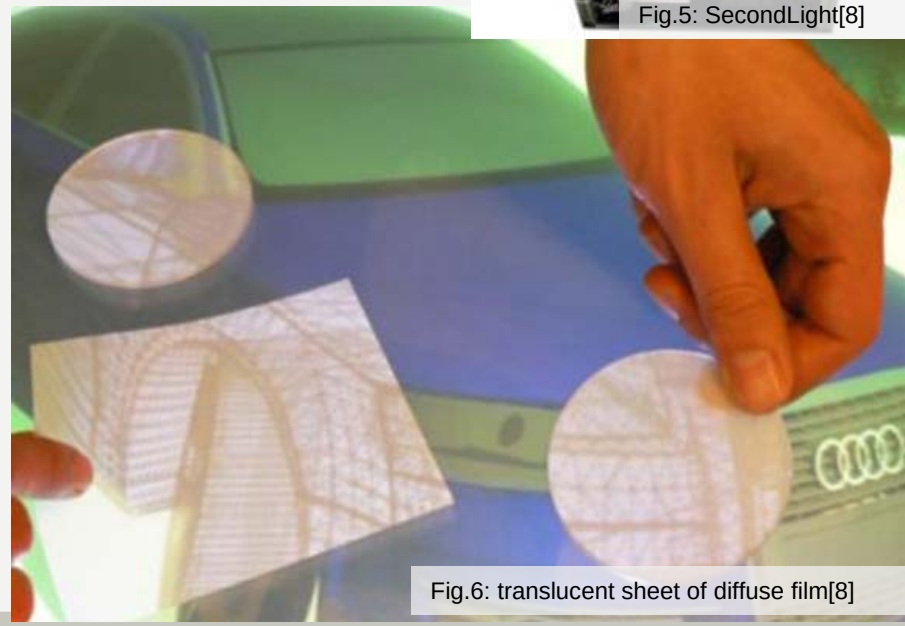

Fig.6: translucent sheet of diffuse film[8]

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Fig.7: 4 markers from the reacTIVision ‘amoeba’ set [9]

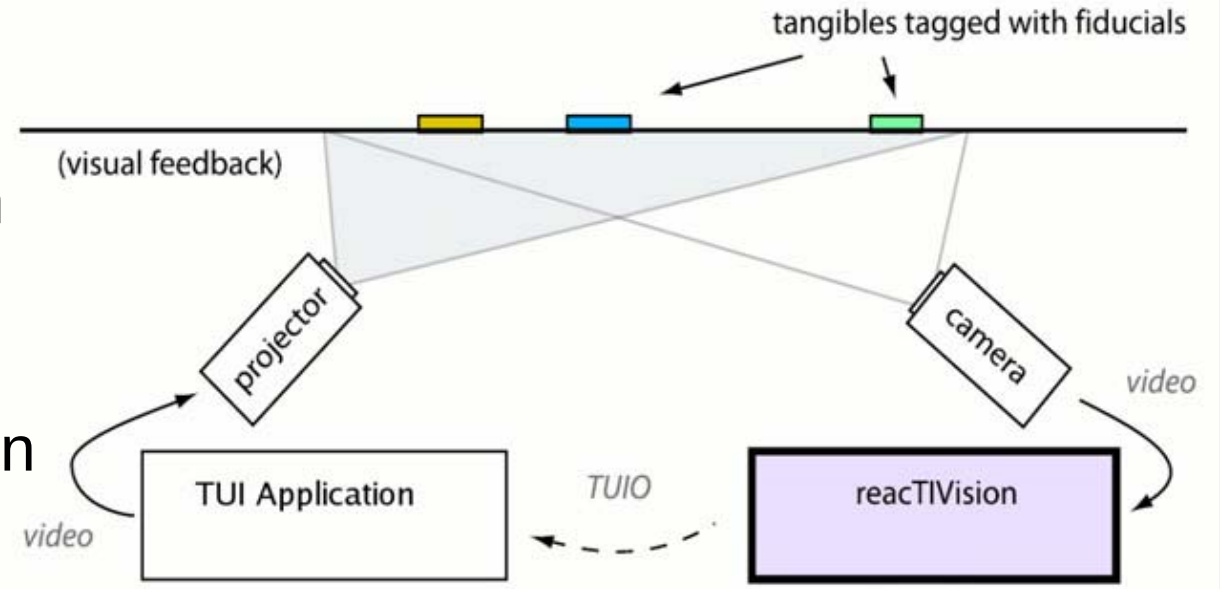

Fig.8: reacTIVision diagram [9]

What is Hybrid Interaction good for?

- Support learning
- Support human work
- Support teamwork

Learning

- Using physical laws [10]
  - Learning by playing
  - predict the effects of various actions
- “Scaffolding”[9]
  - Visual and voice feedback
  - Encourages the right decision making
- Easy moving from simulations to abstract model[12]

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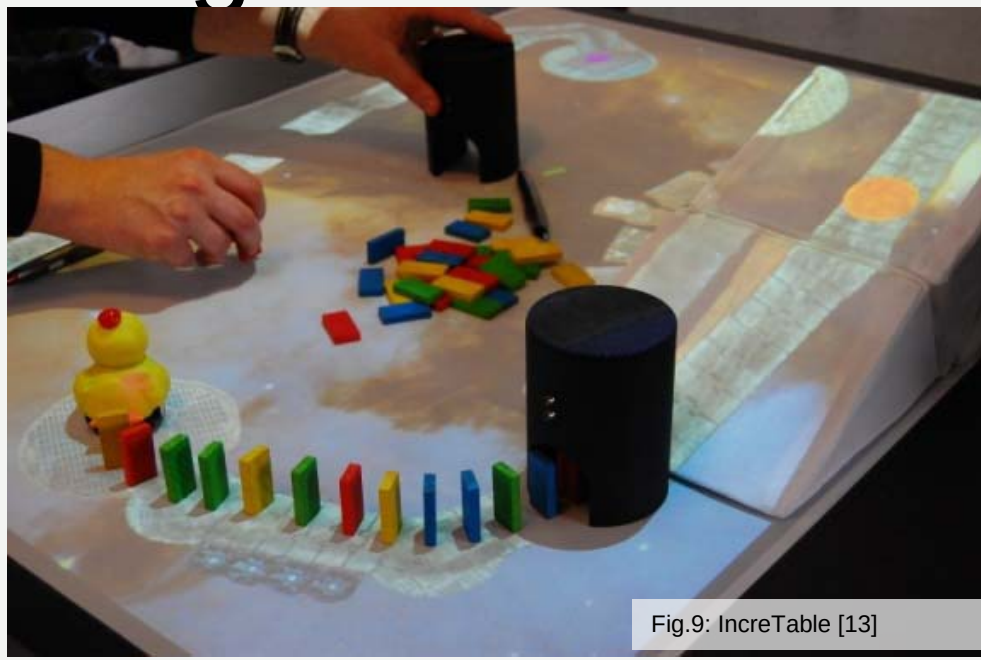

Fig.9: IncreTable [13]

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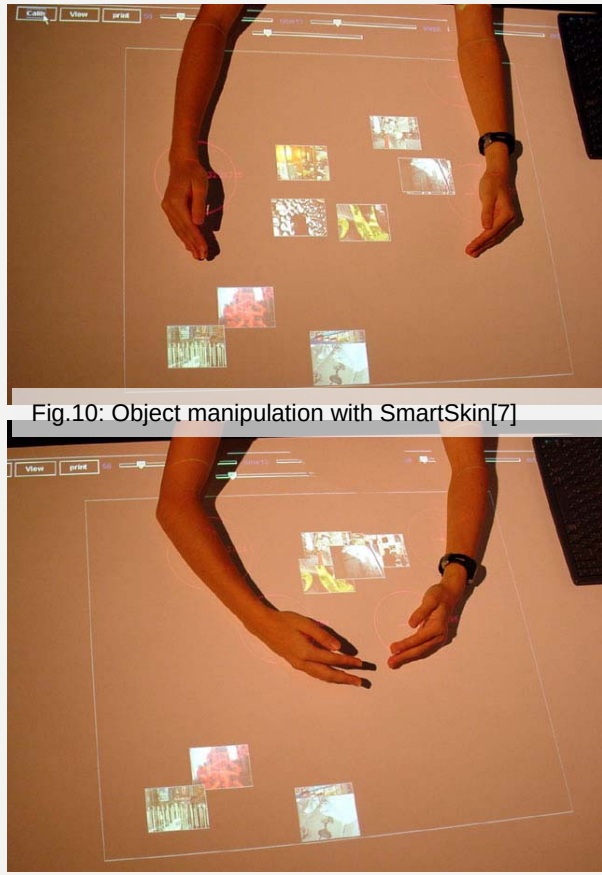

Fig.10: Object manipulation with SmartSkin[7]

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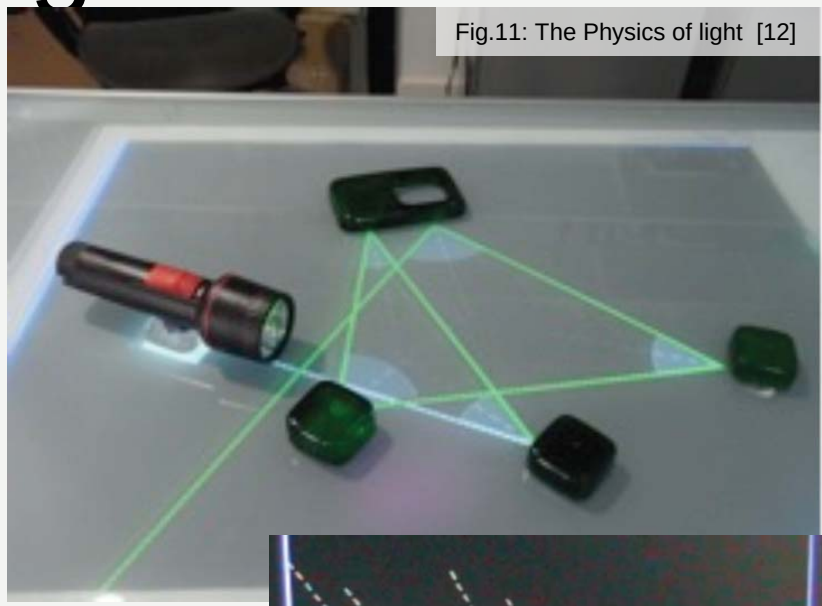

Fig.11: The Physics of light [12]

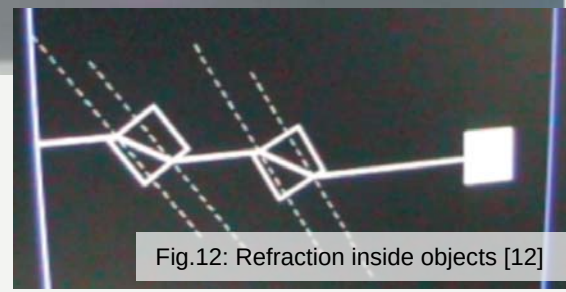

Fig.12: Refraction inside objects [12]

- **Easy moving from simulations to abstract model[12]**

Working

- Better performance and organization
- Focus on the work
- Easy information sharing
- Collaboration

Focus on the work

- Using both hands for interaction simultaneously [14]
- Using interactive instruments without visual control [14][15]
- Merge physical and virtual instruments/documents [16][18]
  - Teamwork: funktional distribution
  - Anoto Pen
- Easy planning [3][5][17]

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Fig.13: Interaction with the 3D PhotoLens[14]

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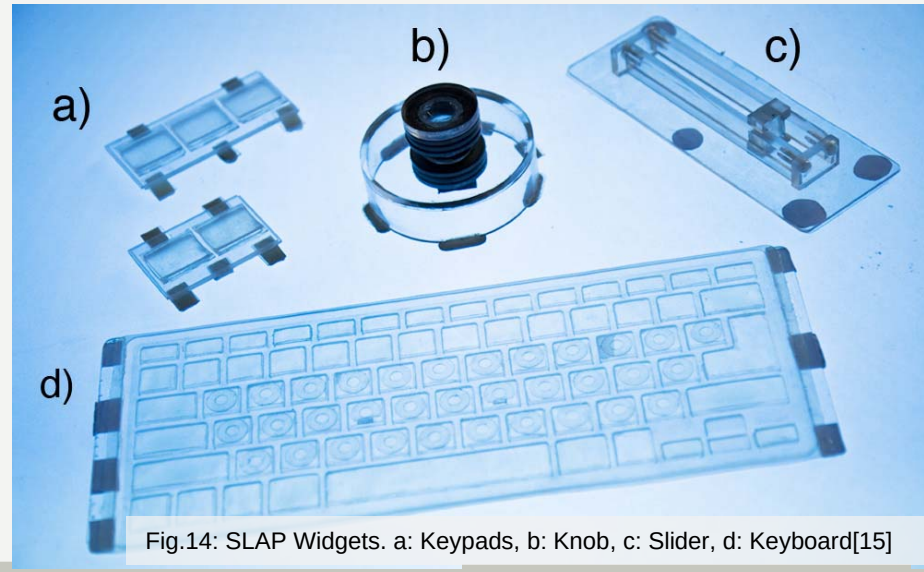

Fig.14: SLAP Widgets. a: Keypads, b: Knob, c: Slider, d: Keyboard[15]

Focus on the work

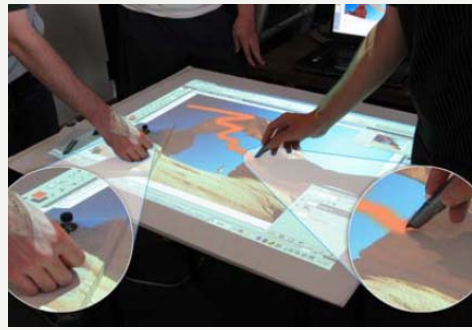

Fig.16: Anoto pen interaction [16]

- Using both hands for interaction simultaneously [14]
- Using interactive instruments without visual control [14][15]
- **Merge physical and virtual instruments/documents [16][18]**
  - Teamwork: functional distribution
  - Anoto Pen
- Easy planning [3][5]

Fig.15: Voodoosketch [16]

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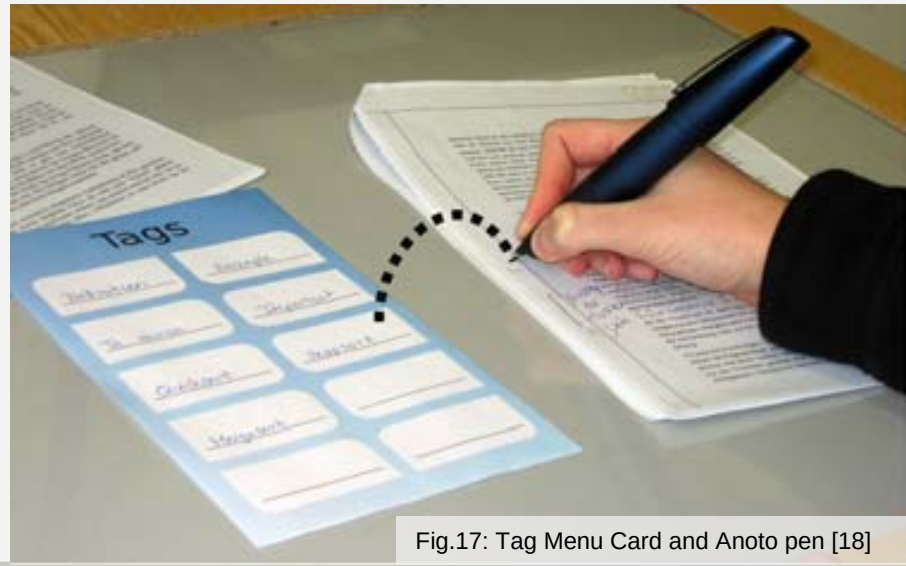

Fig.17: Tag Menu Card and Anoto pen [18]

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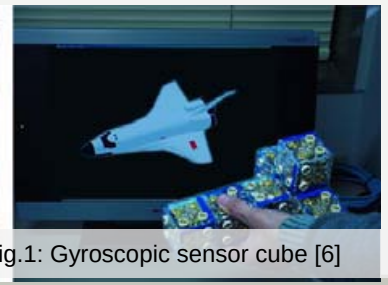

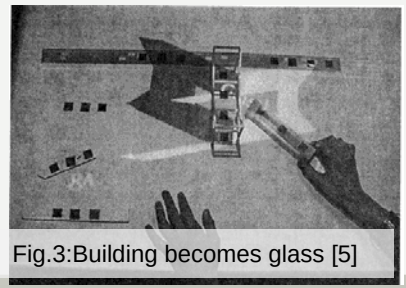

Fig.3:Building becomes glass [5]

Fig.18: Tag Menu Card and Anoto pen [17]

Collaboration: easy information sharing

Fig.19: Media Crate[19]

Perspective

Bringing Hybrid Interaction near to our everyday's life

Making technology more mobile

Literature

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Questions?

Thanks!

Bye.