digital  physical
materialize

Embodying ideas in
digital/physical materials as
new way of thinking

Tangible Media Group
Radical Atoms: Beyond Tangible Bits, Toward Transformable Materials

Cover Story by Hiroshi Ishii, Dávid Lakatos, Leonardo Bonanni, and Jean-Baptiste Labrune
A *graphical user interface* only lets us see information and interact with it indirectly, as if we were looking through the surface of the water to interact with the forms below.

A *tangible user interface* is more like an iceberg: there is a portion of the digital that emerges beyond the surface of the water—into the physical realm—so that we may interact directly with it.

*Radical Atoms* describes our vision for the future of interaction, in which all digital information has physical manifestation so that we can interact directly with it—as if the iceberg had risen from the depths to reveal its sunken mass.

"*Radical Atoms* is our vision of human interactions with the future dynamic physical materials that are conformable, transformable, and informable."
rapid phase shift
cross d/p boundary
ice, water, vapor
BOS

Body · Object · Space
BOS

Embodied Interactions with Information and Objects in Space

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Space
inter.actions
with d/p objects in space

Tangible UI
+ Gestural UI
+ Graphical UI
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MIT Media Laboratory  April 2012

Radical Atoms

Collaboration

beyond Tangible Bits, towards Radical Atoms

Telepresence & Collaboration
Radical Atoms

beyond Tangible Bits, towards Radical Atoms
Relief
Understanding Through Form and Motion
Daniel Leithinger, Hiroshi Ishii
- Computer interface inspired by sculpture
- Users can see and touch information
- We invent applications and investigate interactions through body expression
Recompose based on Relief

Anthony DeVincenzi, David Lakatos, Matthew Blackshaw
ALPS: Actuated Surfaces + Digital Shadows

Daniel Leithinger, Sean Follmer, & Hiroshi Ishii
ZeroN
Scientific Visualization Simulation

Jinha Lee, MIT Media Lab
Rehmi Post, MIT Center for Bits and Atoms
Hiroshi Ishii, MIT Media Lab
Amphorm

(Amphora + Form)
Vase that uses kinetic elements to transform its shape in sync with a digital model

Dávid Lakatos & Hiroshi Ishii
How will we interact with future dynamic materials in our environment?

How can we experiment without these materials?
Collaboration
Augmented Reality Communication And Distance Education

Collaboration between TMG and NYU

Murphy Stein
Jonathan Thompson
Ken Perlin
(NYU)

Xiao Xiao
Hiroshi Ishii
(TMG, Media Lab)
FocalSpace is a video conferencing system to help users focus on the foreground by diminishing the background through synthetic blur effects. “AR through DR” is proposed based on our philosophy of “Less is More”. By Lining Yao, Anthony DeVincenzi, Hiroshi Ishii.
Through 3D audio and video tracking and localization, space is divided into foreground and background layers. We diminish the background (DR) while augment (AR) the foreground.
FocalSpace is for remote collaboration. It is a space where participants and objects are treated as interactive elements.

FocalSpace
(real time application)

- To diminish irrelevant pixels and direct remote participants’ focus
- To save up display space for augmented content
- To save transmission bandwidth while keep focus clear
**Ambient Furniture** by David Rose (5F)

- **Glanceability**
  - Energy Clock

- **Incidental interfaces**
  - Facebook CoffeeTable

- **Ambient sound design**
  - Google Latitude Doorbell

- **Peripheral awareness**
  - Skype Cabinet

- **Everyday gestures**
  - Pandora Chair
  - Amazon Trash Can
T(ether)

T(ether) allows people to manipulate virtual objects directly and collaboratively

Dávid Lakatos
Matthew Blackshaw
Dictionary of gestures for direct volumetric data manipulation

Dávid Lakatos
Matthew Blackshaw
Collaboration with multiple people simultaneously

Dávid Lakatos
Matthew Blackshaw
GeoSense
Create and share beautiful geospatial visualizations

What should we call your map?

Anthony DeVincenzi & Samuel Luescher
180K Earthquakes
Time dimension
Safecast Radiation Data
Expose data

Fukushima Daiichi Nuclear Power Plant
Coastal flooding
Tangible Media Group (3F)
MIT Media Laboratory  April 2012

Radical Atoms

beyond Tangible Bits, towards Radical Atoms

Collaboration

Telepresence & Collaboration
Thanks!

Tangible Media Group
MIT Media Laboratory
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Thanks!