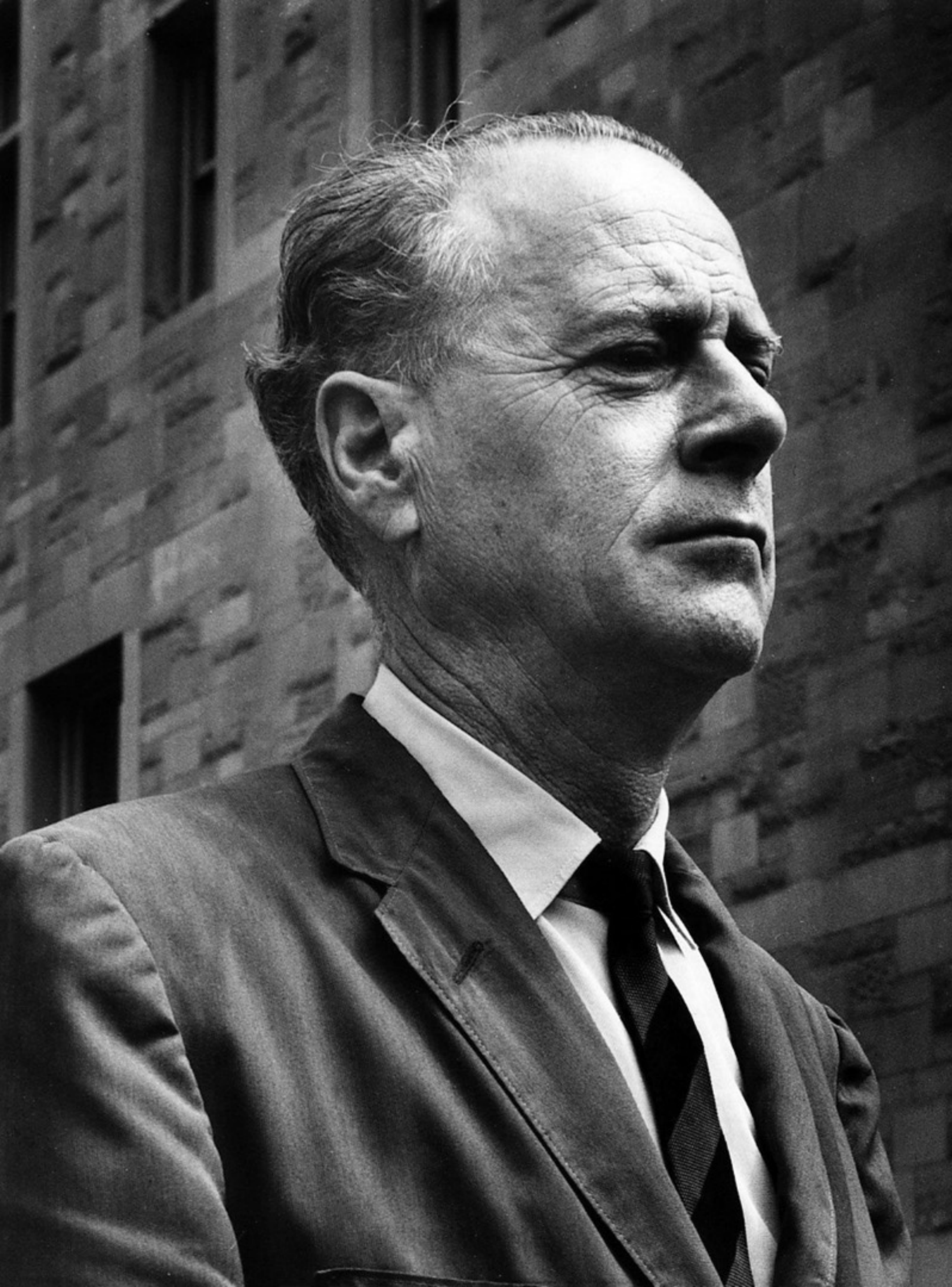


HYBRID ECOLOGIES:

Disobedient Objects, Unexpected Landscapes,
and Human Wonderment

Eric Paulos

Founder/Director, **Hybrid Ecologies Lab** • Chief Learning Officer, **Jacobs Institute for Design Innovation**
Director, **CITRIS Invention Lab** • Co-Director, **Swarm Lab** • **Berkeley Center for New Media** • **UC Berkeley**



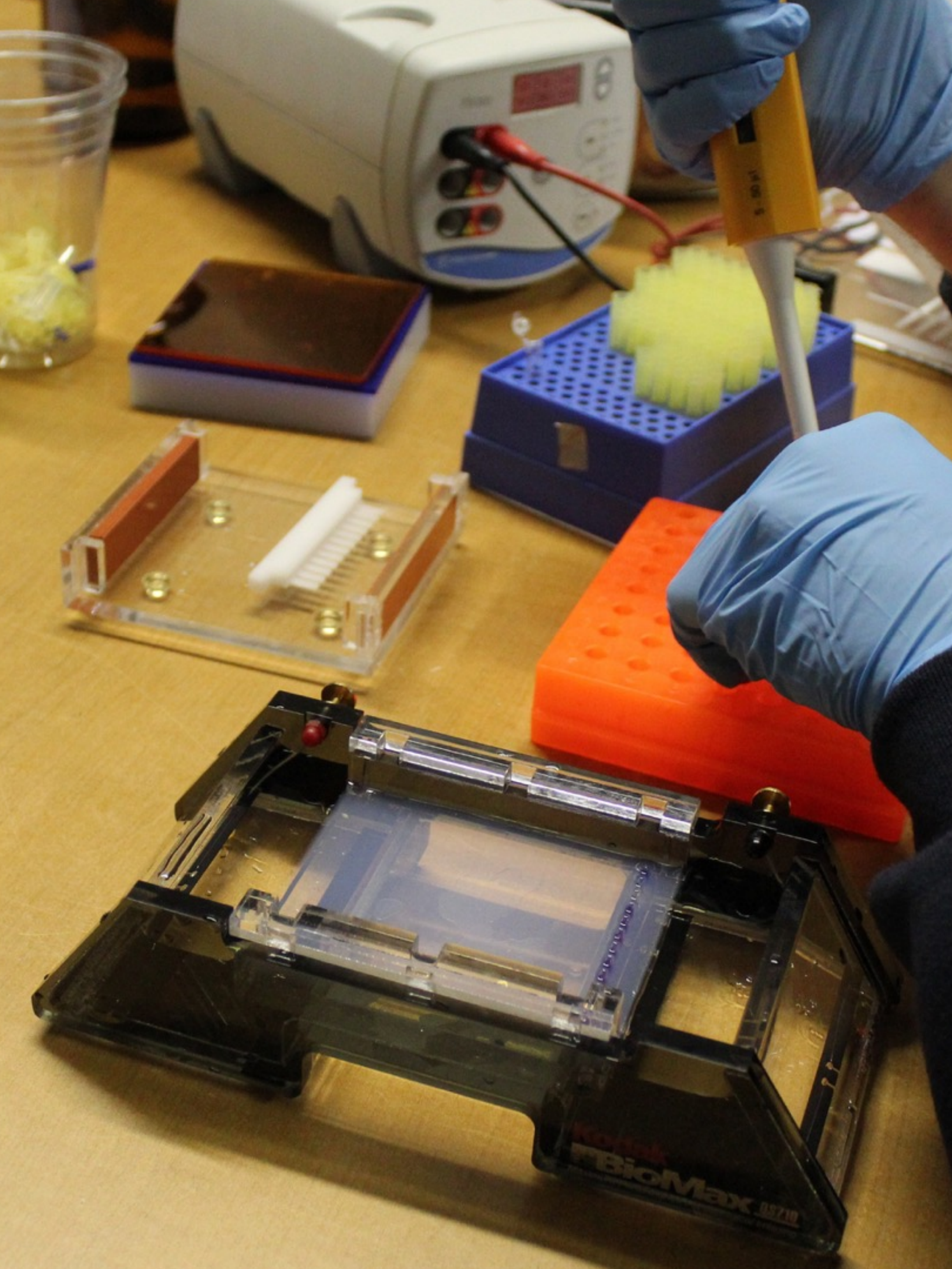
HYBRID

The **hybrid** or the meeting of two media is a moment of truth and revelation from which new form is born

- Marshall McLuhan

ECOLOGIES

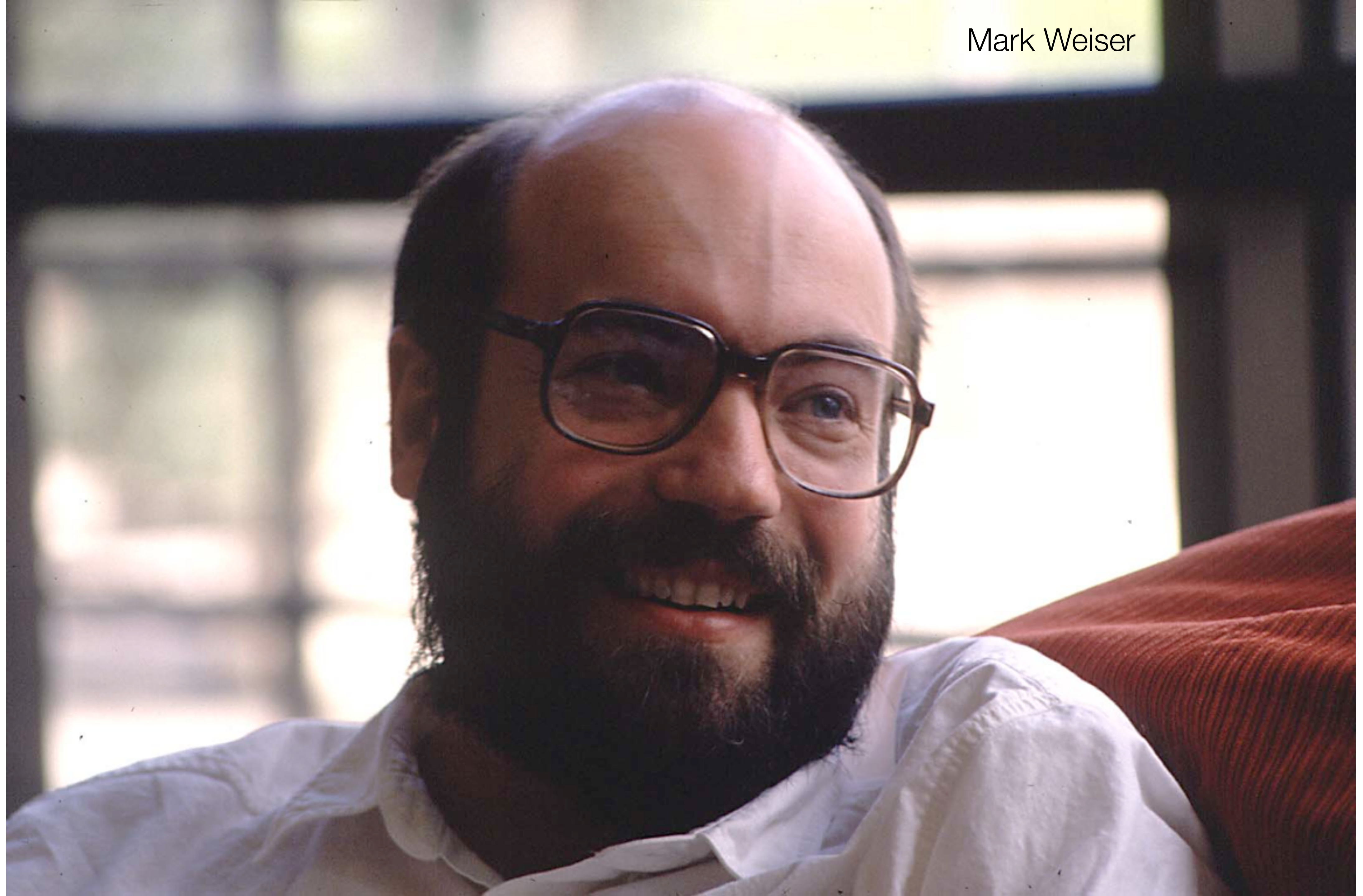
The scientific analysis and study of interactions among organisms and their environment, such as the interactions organisms have with each other and with their abiotic environment



Steve Jobs & Steve Wozniak

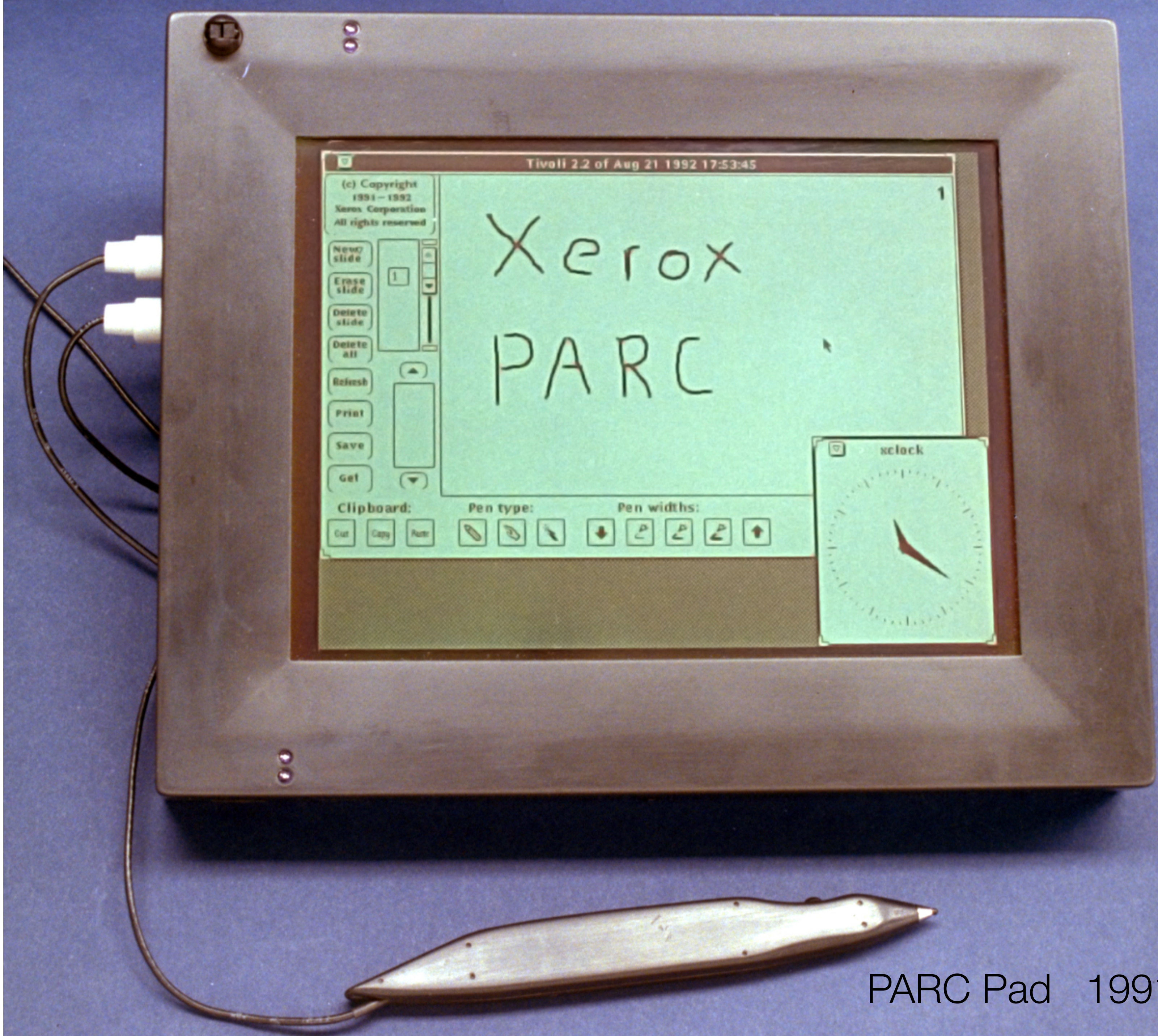


Mark Weiser

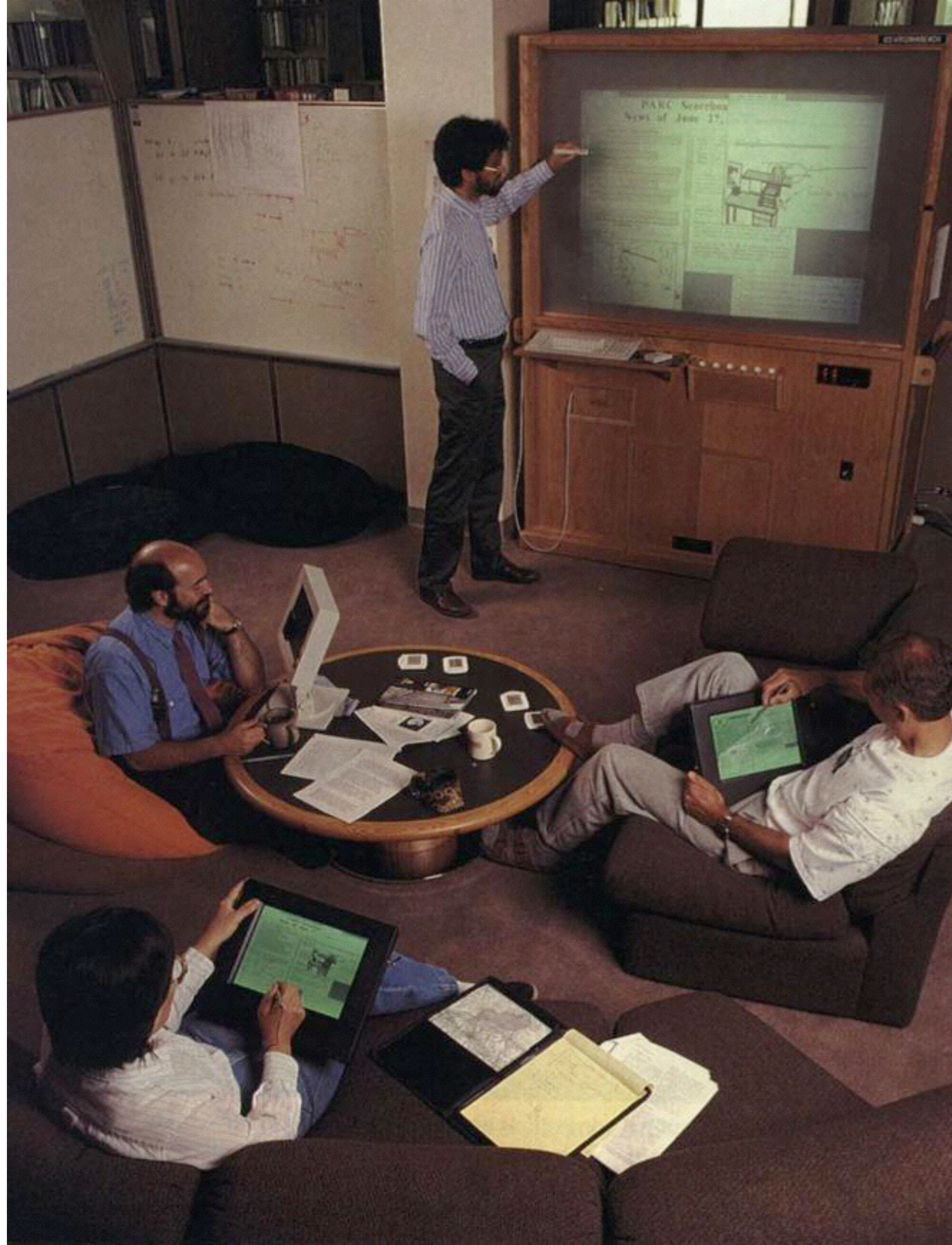




PARCTab 1991



PARC Pad 1991



Building Invisible Interfaces

Mark Weiser

Computer Science Lab

Xerox PARC

November 2, 1994

How to Build Invisible Technologies?

start from arts and humanities: Philosophy, Phenomenology, Anthropology, Psychology, Post-Modernism, Sociology of Science, Feminist Criticism, Your own experience...

This is the most important part of the talk.

You may not get it on first hearing. Patience.

When I am done you'll know what is wrong with:

creating an entertaining and dramatic user interface

computers magically meeting our desires

a computer idealized as an assistant

virtual reality as the ultimate user interface

How to Build Invisible Technologies?

start from arts and humanities: Philosophy, Phenomenology, Anthropology, Psychology, Post-Modernism, Sociology of Science, Feminist Criticism, Your own experience...

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computers magically meeting our desires

a computer idealized as an assistant

virtual reality as the ultimate user interface



The best way to make art
is to intrigue and to be a
bit seductive.

You just say, here's this
and this...you figure it out

- John Baldessari



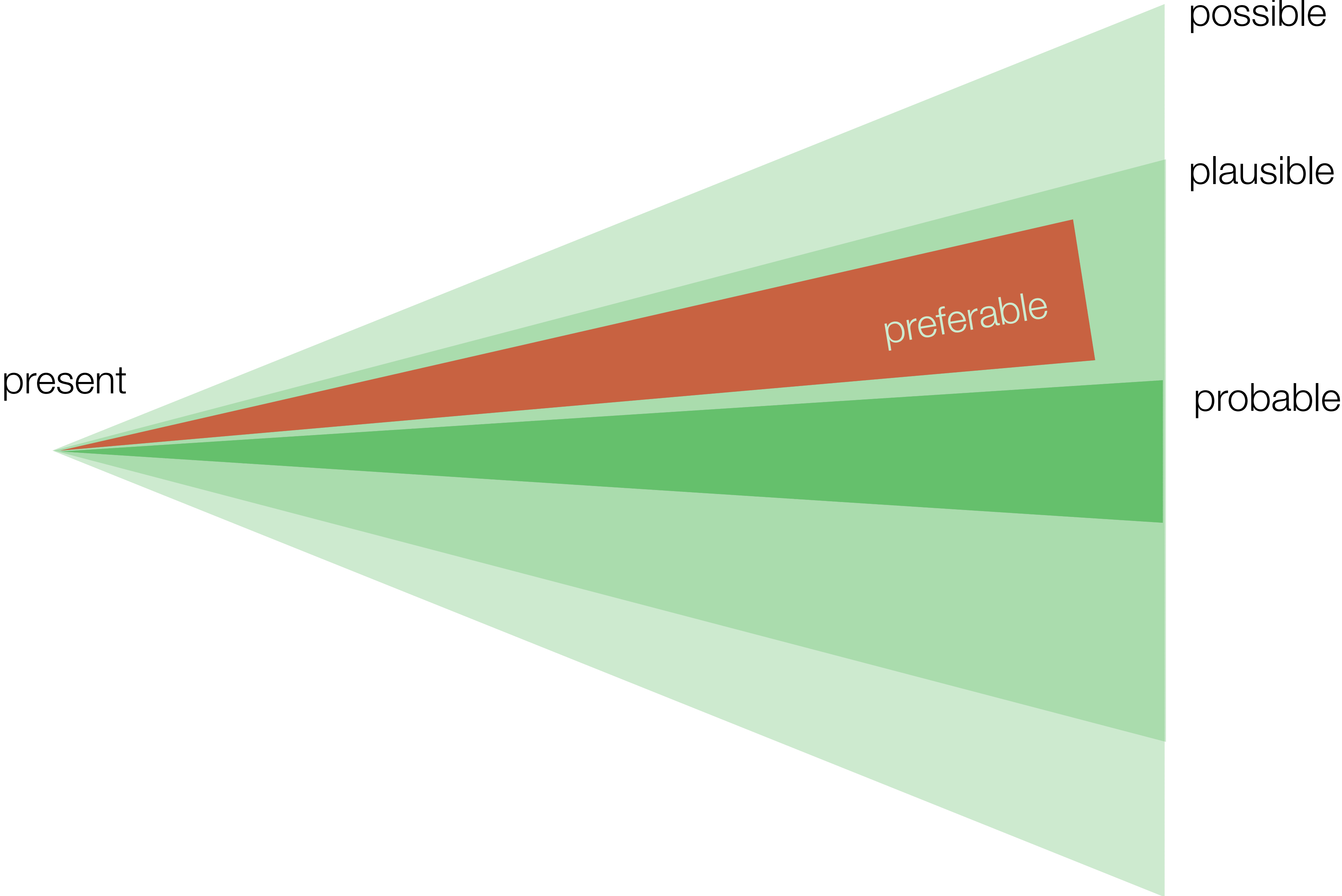




The clashing point of two subjects, two disciplines, two cultures, of two galaxies, ought to produce **creative chances.**

- C.P. Snow *The Two Cultures* (1959)

CRITICAL DESIGN



PERSONALIZATION

MATERIALS

MEMENTOS AND HEIRLOOMS

FASHIONING FASHIONABLES

INTERNET OF EXPRESSIVE ASSEMBLAGES

PERSONALIZATION





STYLISH TECHNOLOGY



A visible construction,
a loaded choice.
It directs attention to itself; it
gives itself to be read

Hebdige, Subculture: The Meaning of Style, 1979



READING STYLE



READING STYLE



READING STYLE



READING STYLE

juxtaposing “elements”
with particular meanings,
histories, and potentials

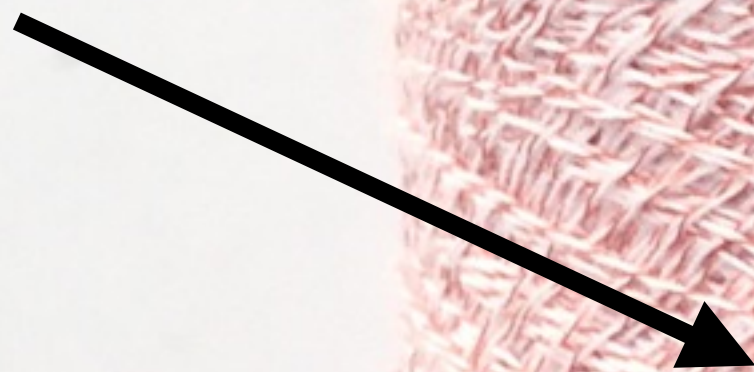




Ebb

Laura Devendorf, Joanne Lo, Noura Howell, Jung Lin Lee, Nan-Wei Gong, Mustafa Karagozler, Shiho Fukuhara, Ivan Poupyrev, Eric Paulos, and Kimiko Ryokai

early stage
Google ATAP
Project Jacquard
thread



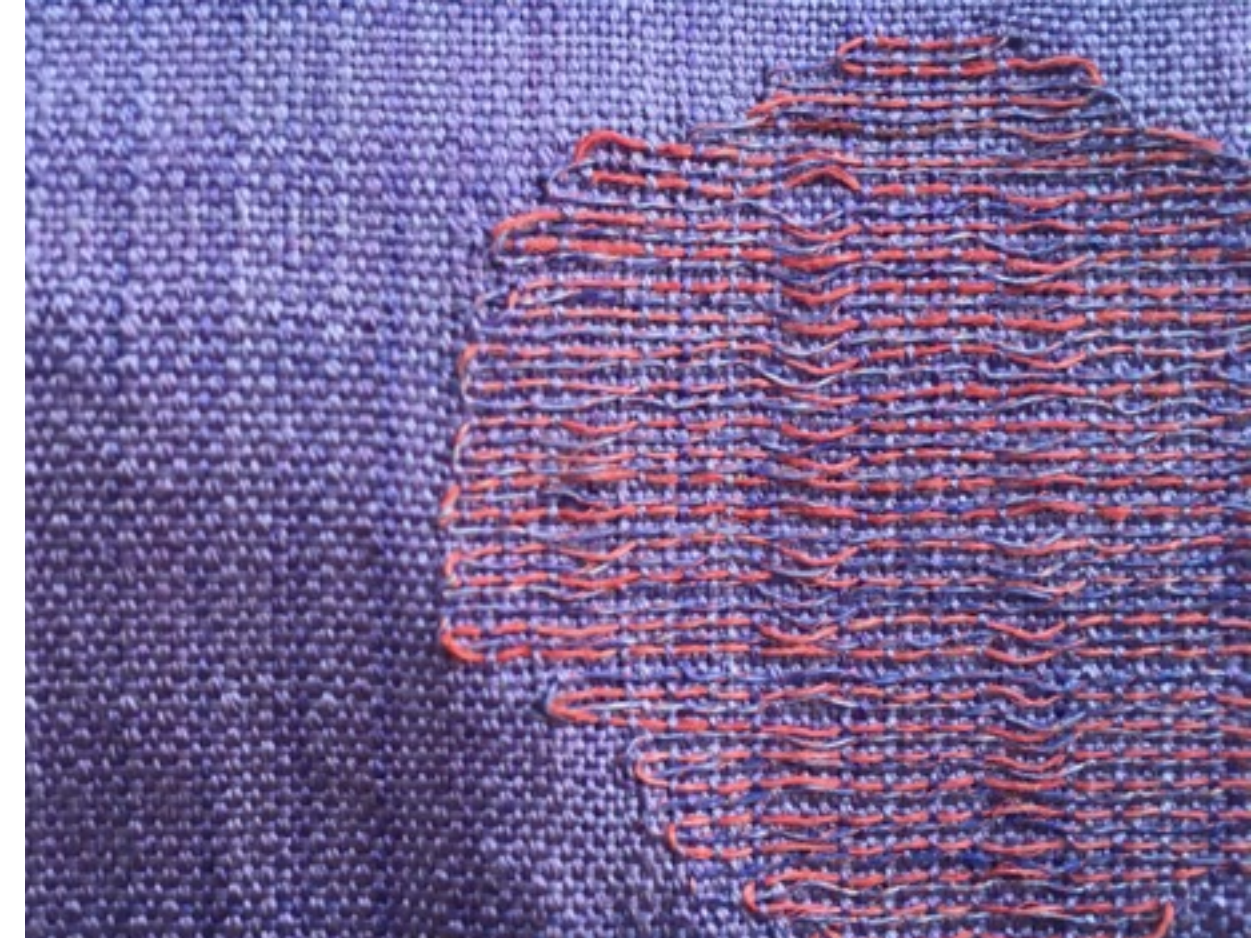
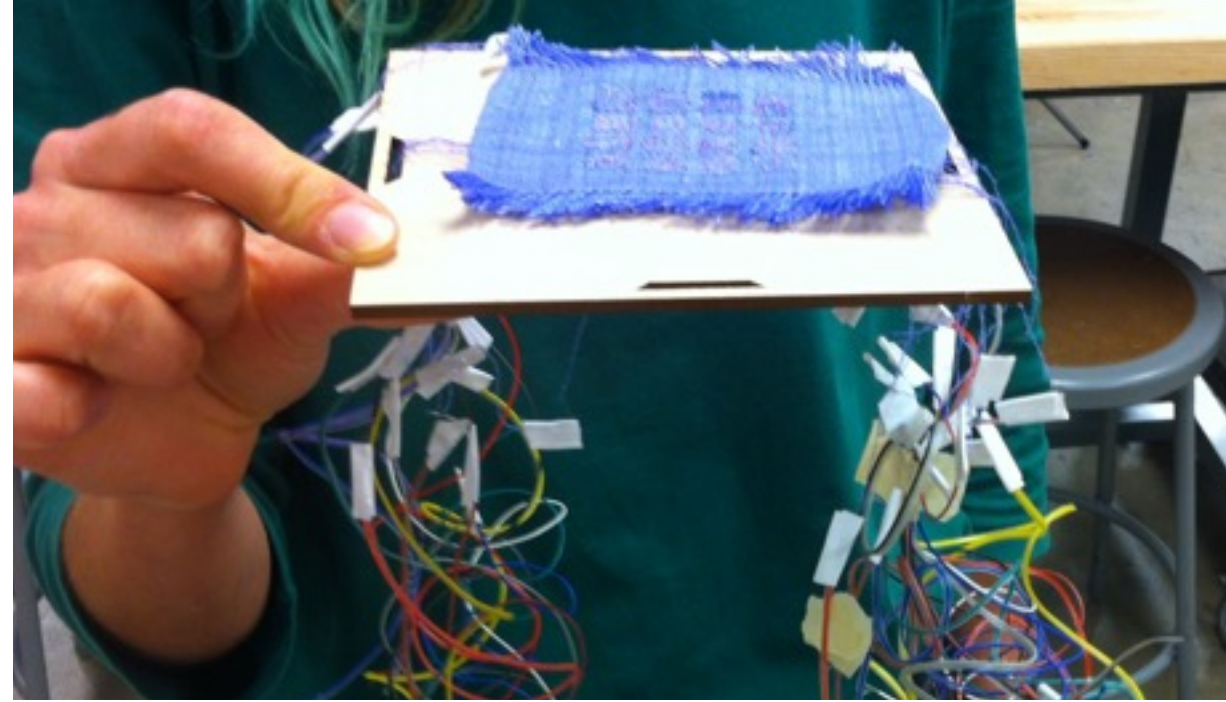
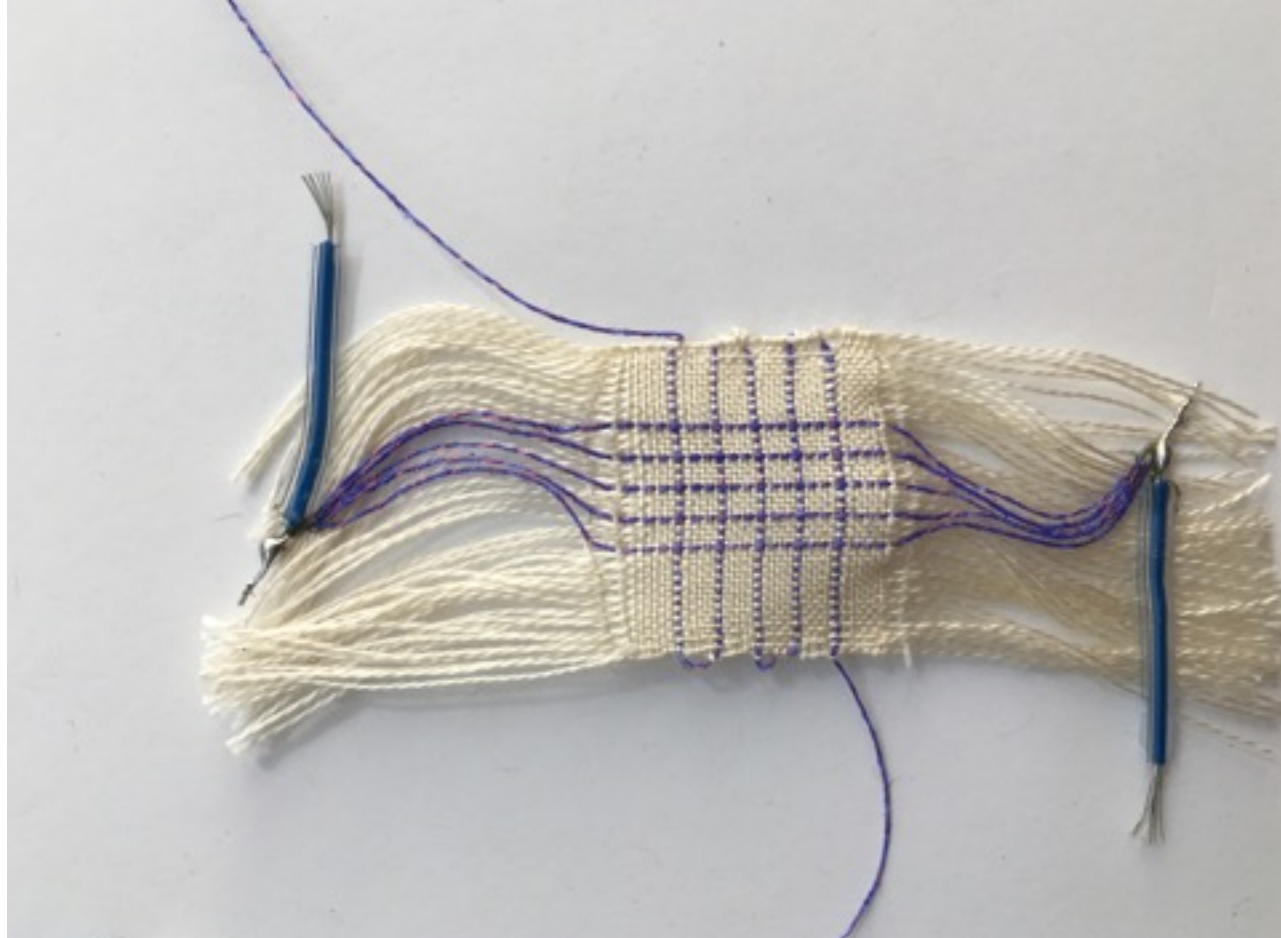
Ebb: conductive thread coated with thermochromic paint



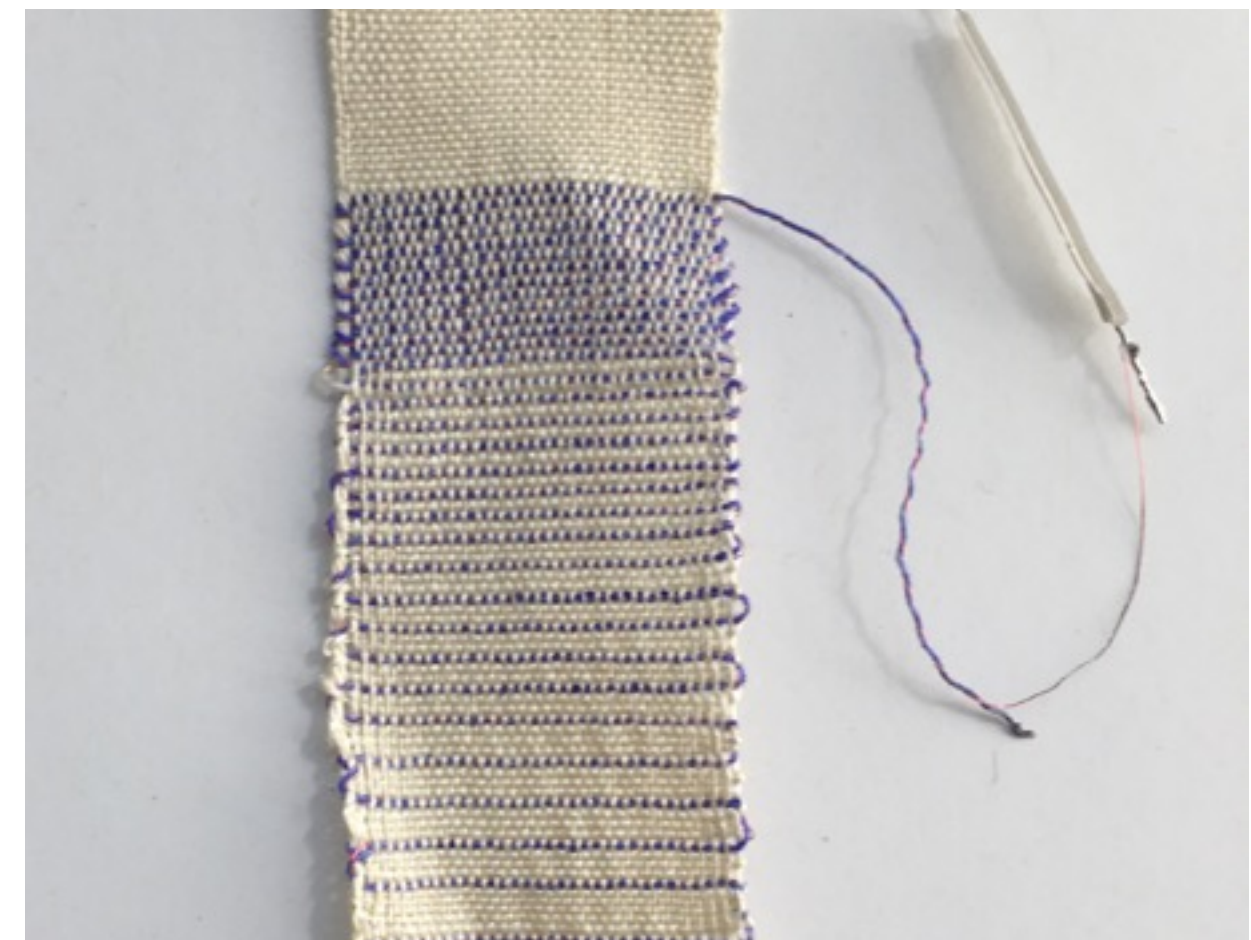
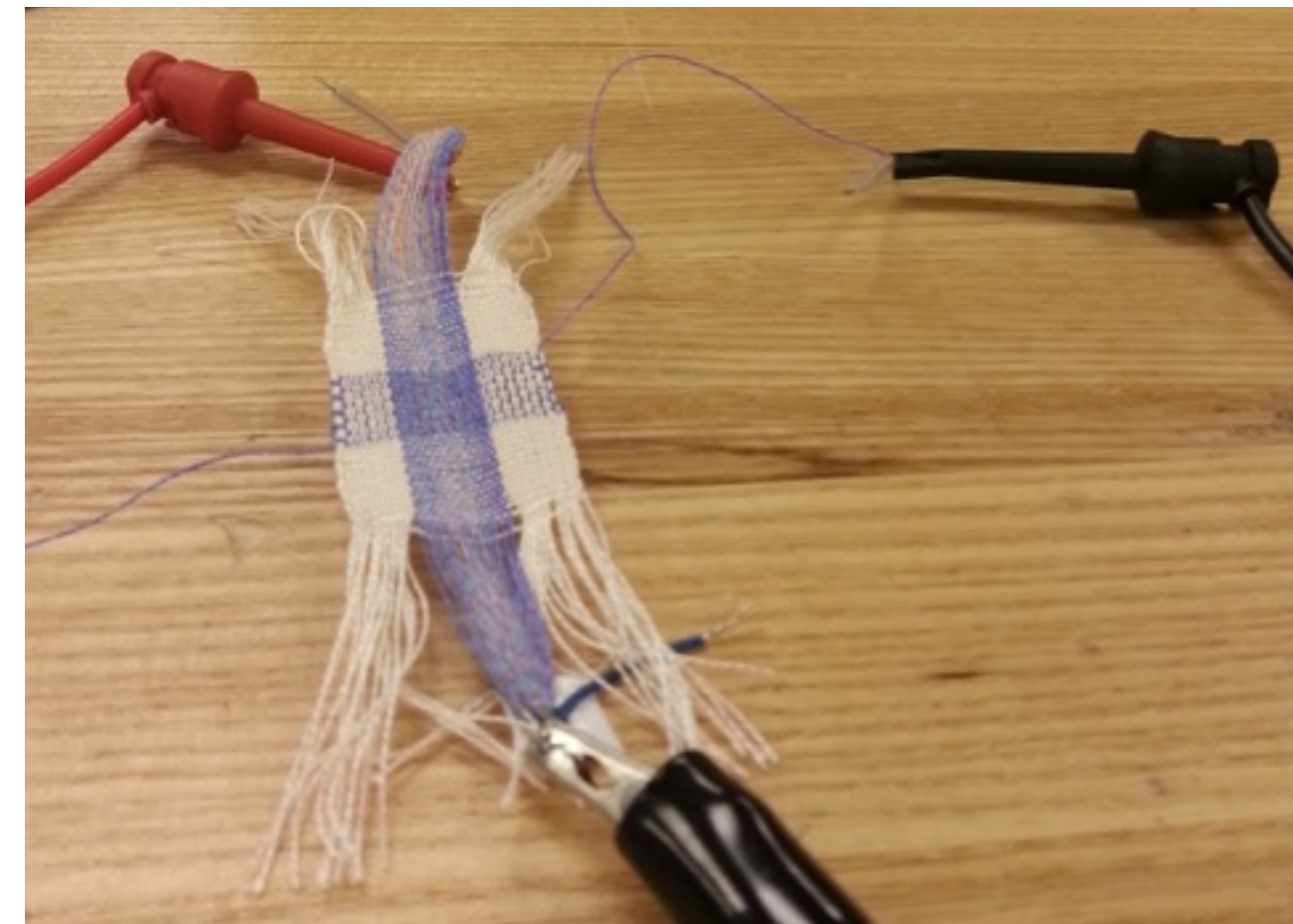
thermochromic pigments

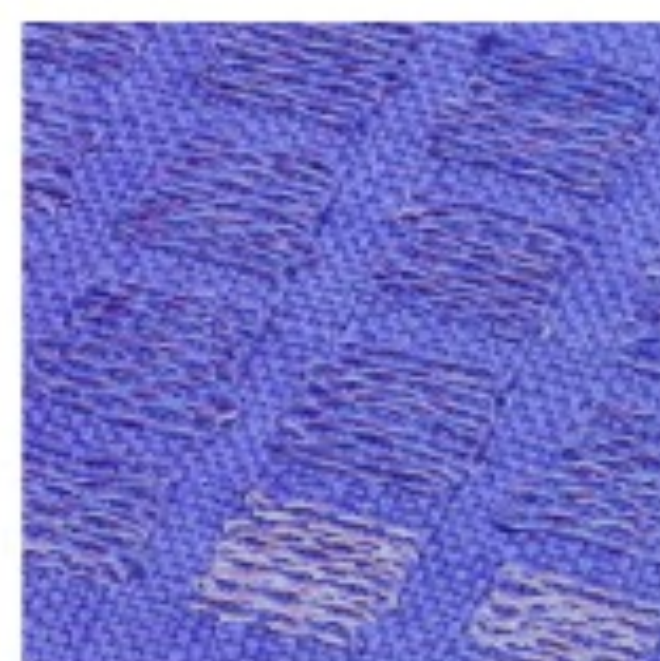
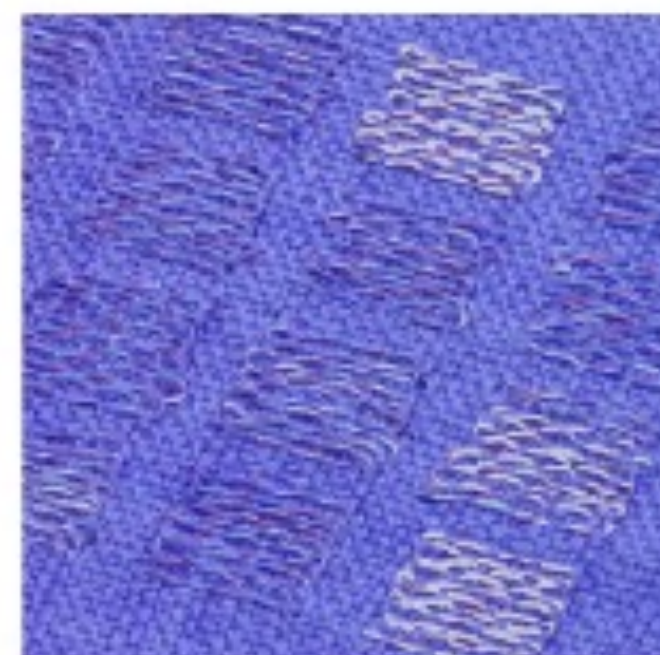
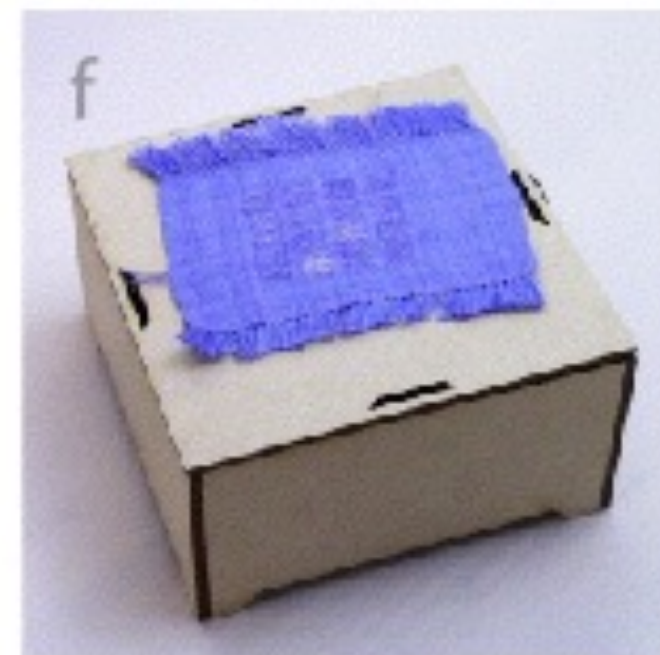
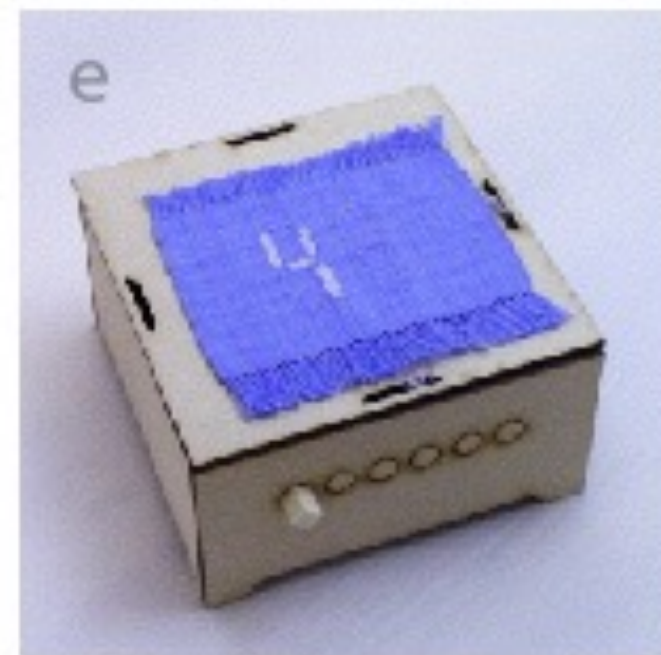
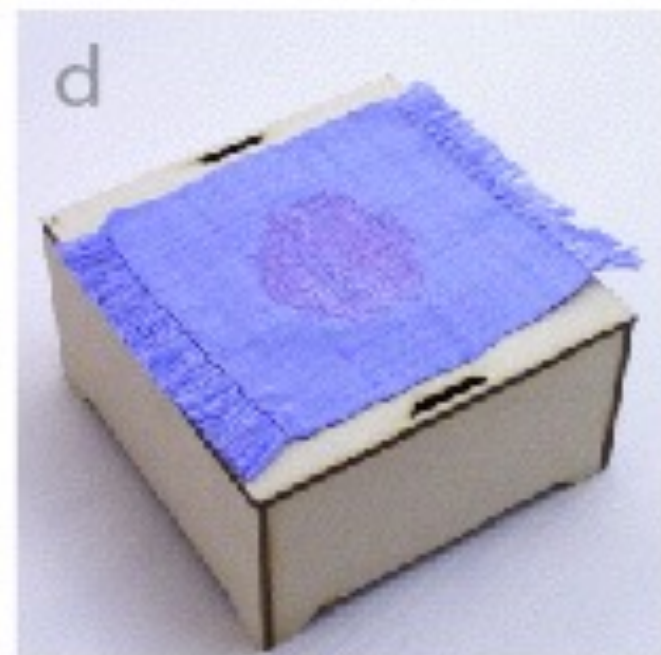
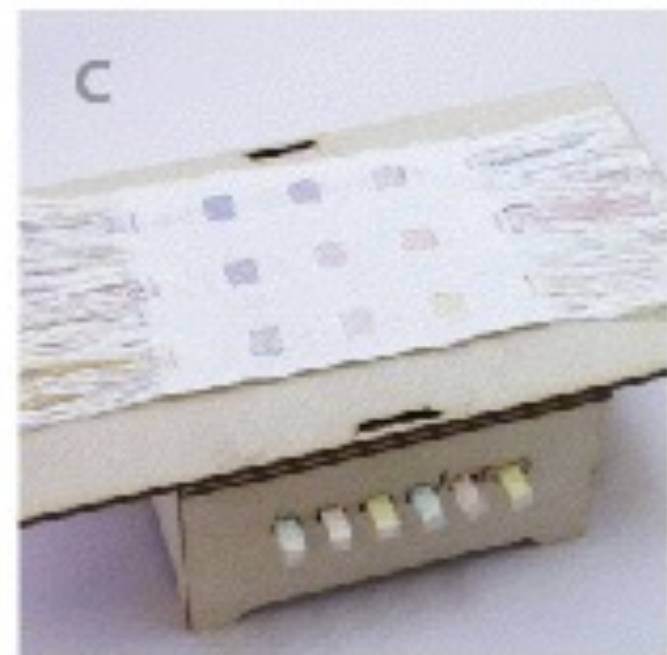
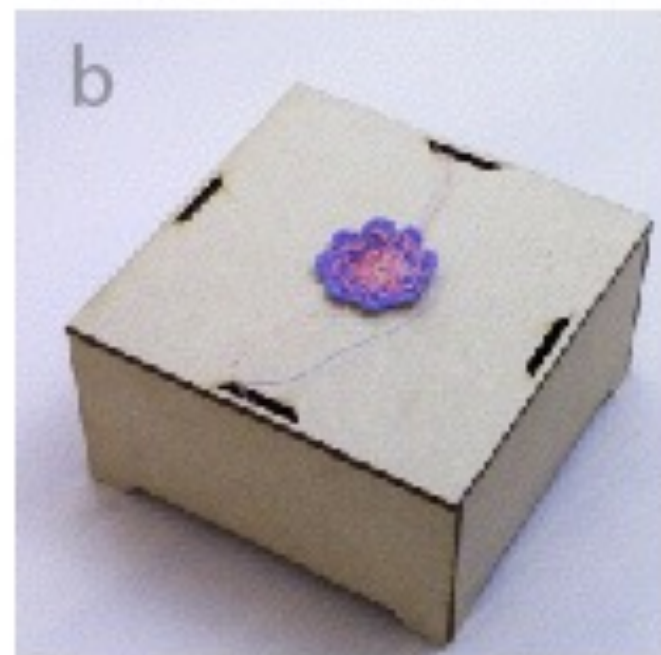
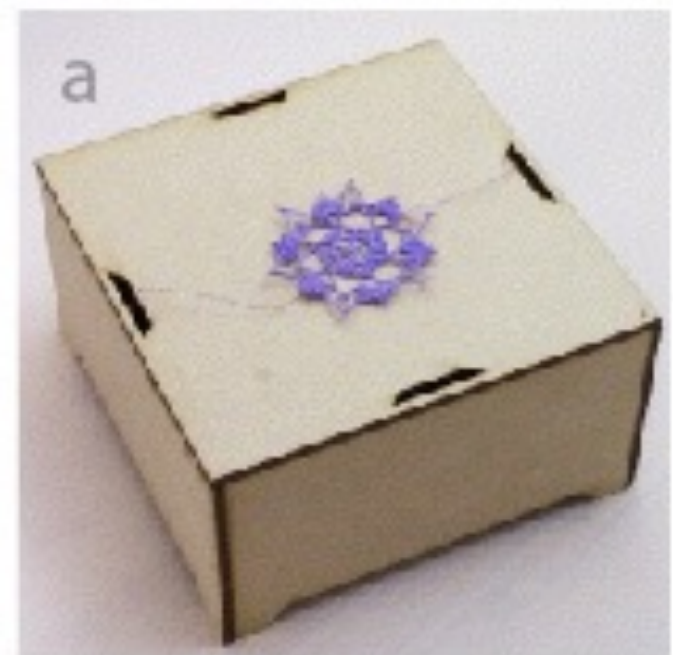


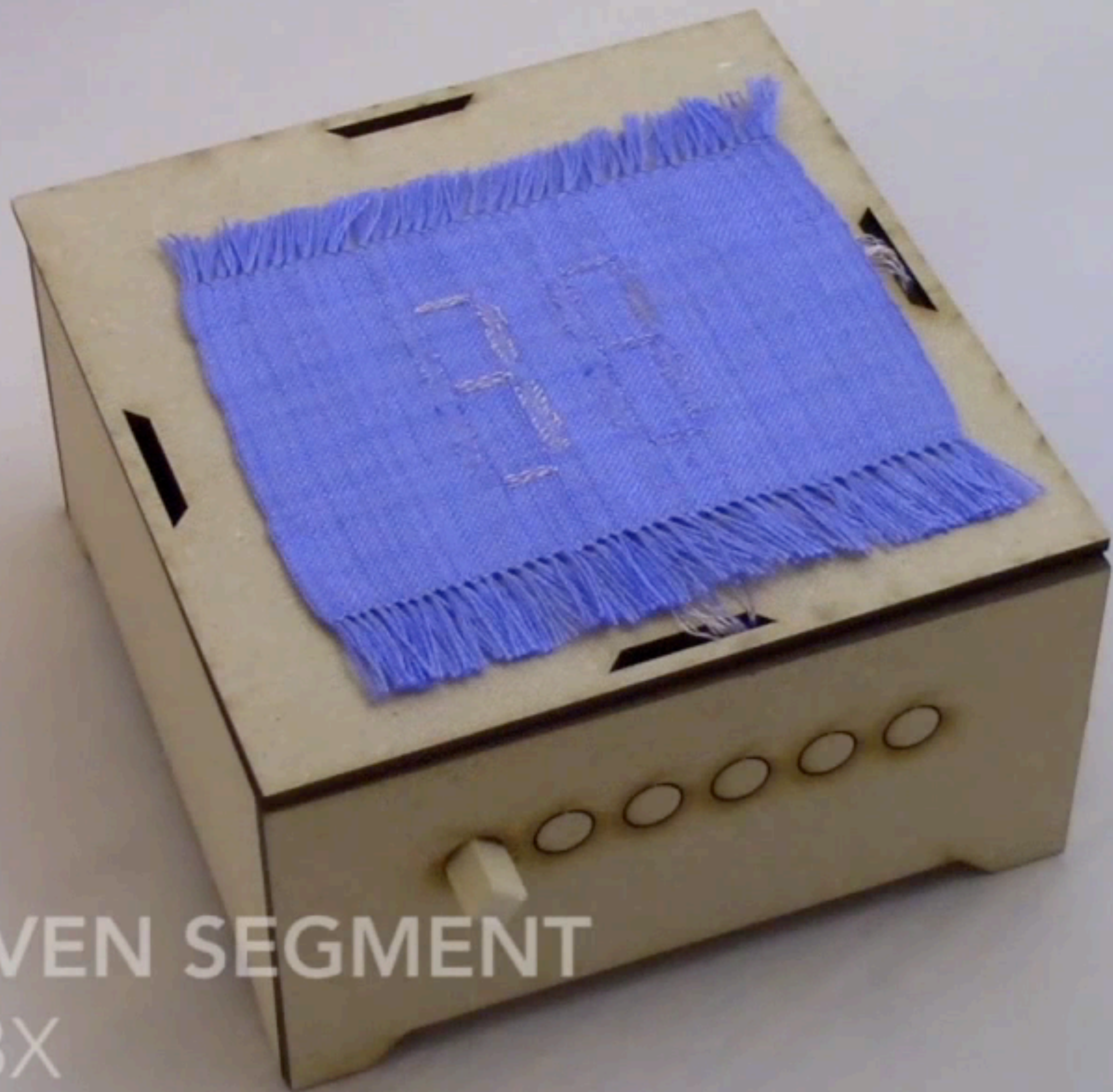
jacquard thread coated
with thermochromic paint



woven explorations







WOVEN SEVEN SEGMENT
SPEED UP: 8X







A photograph showing the back of a person's head and neck, wearing a white t-shirt. A white rectangular sign is taped to the back of the shirt with the words "KICK ME!" written in blue marker. The background is plain white.

KICK
ME!





MATERIALS











I'm from the upper Sierra foothills near the Navarro River in Mendocino County, California

I was logged on a warm June 3rd in 2014



I was brought to a home in Berkeley, California

I was cut and drilled over three days in early July 2015



Part of me was discarded

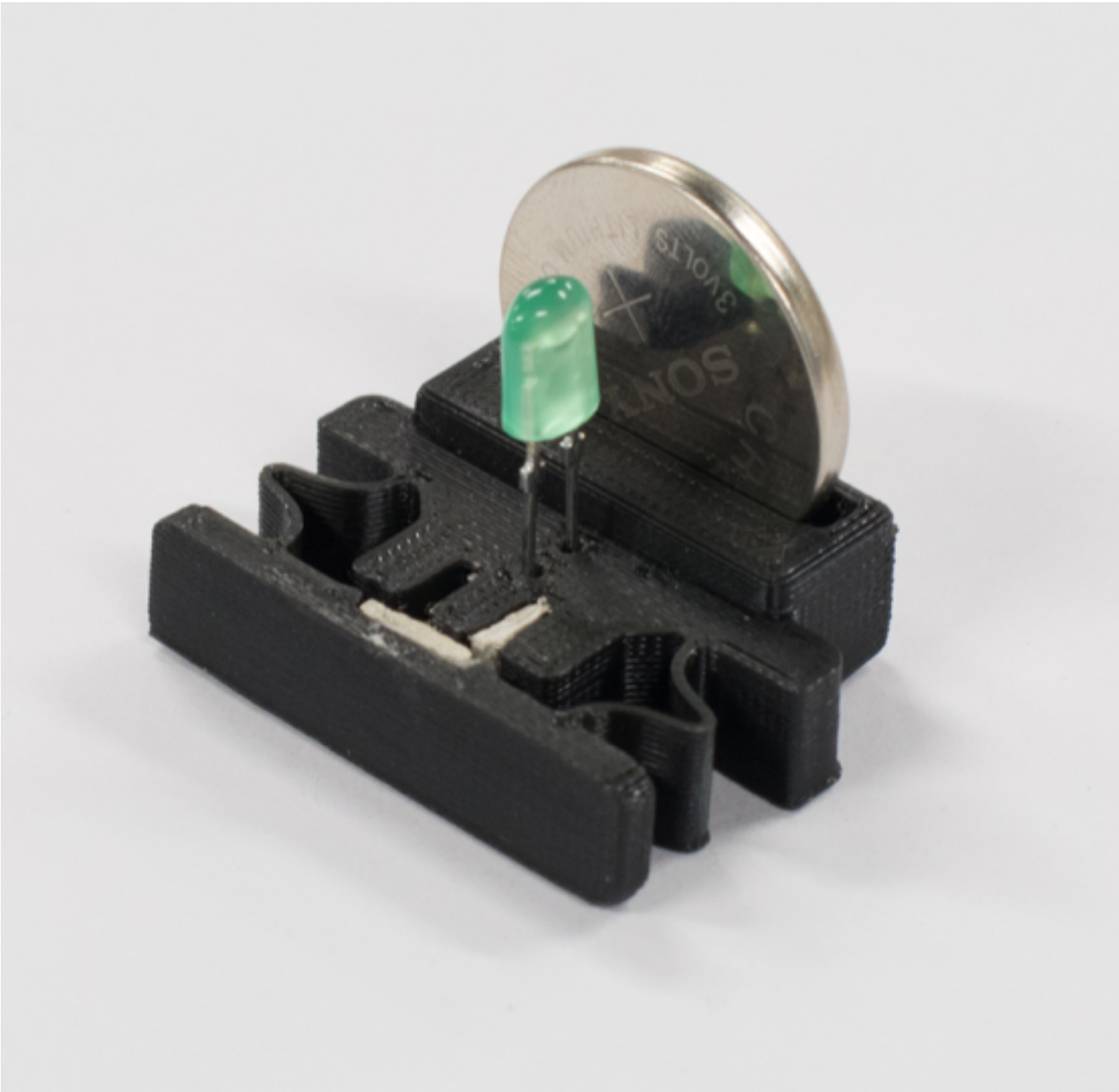
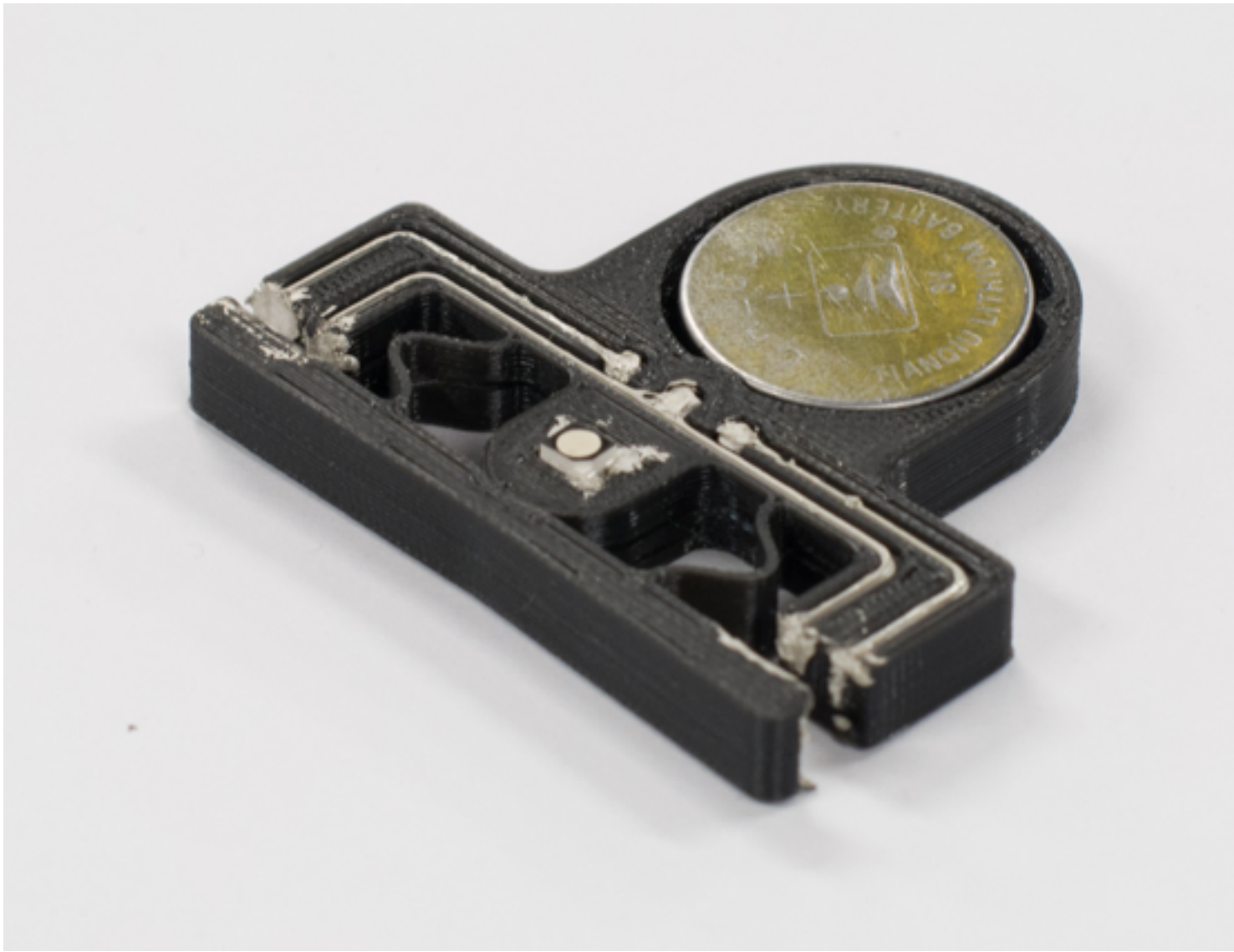
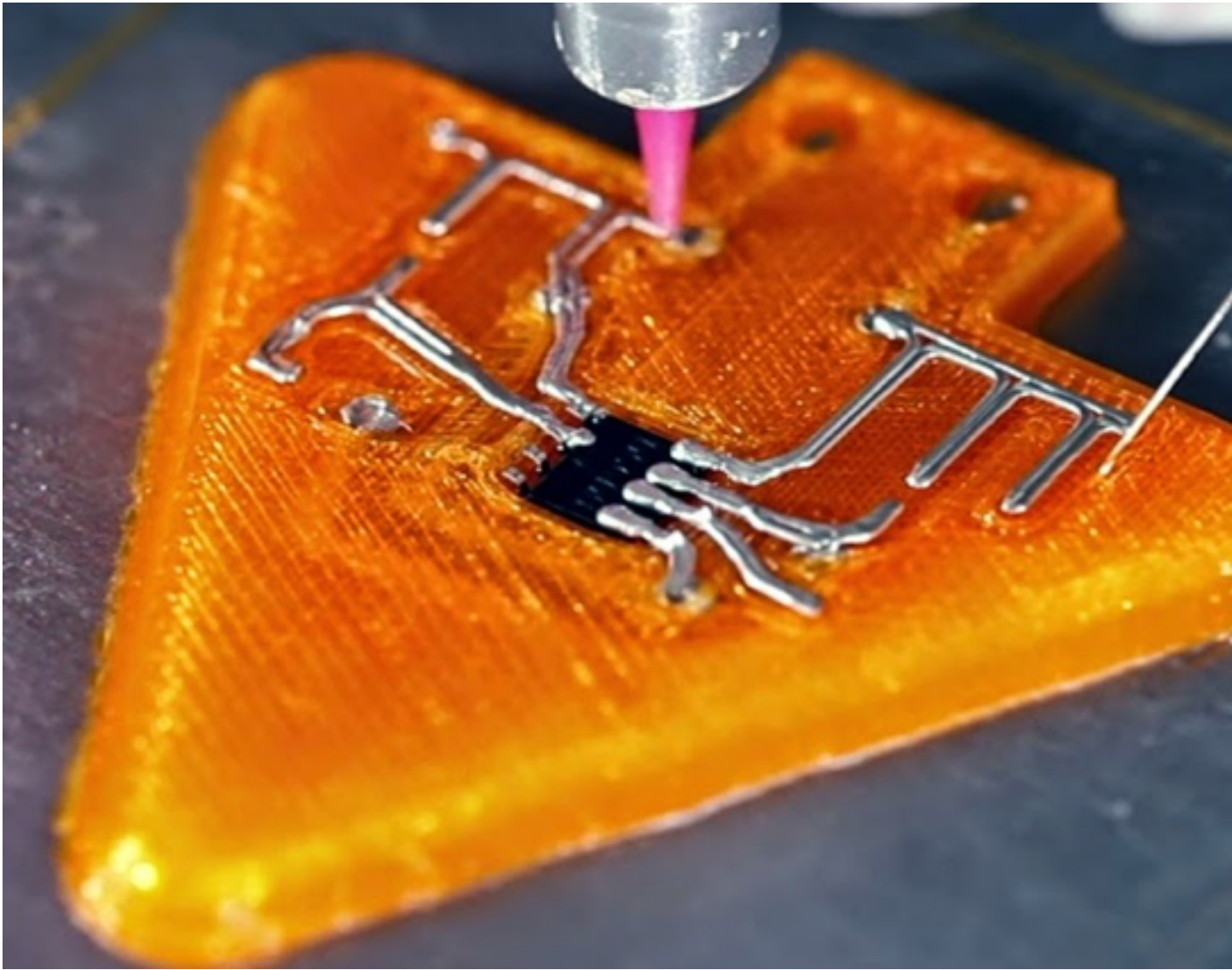


Part became a doorstop...



...but most of me became part of a children's fort







Ron Rael







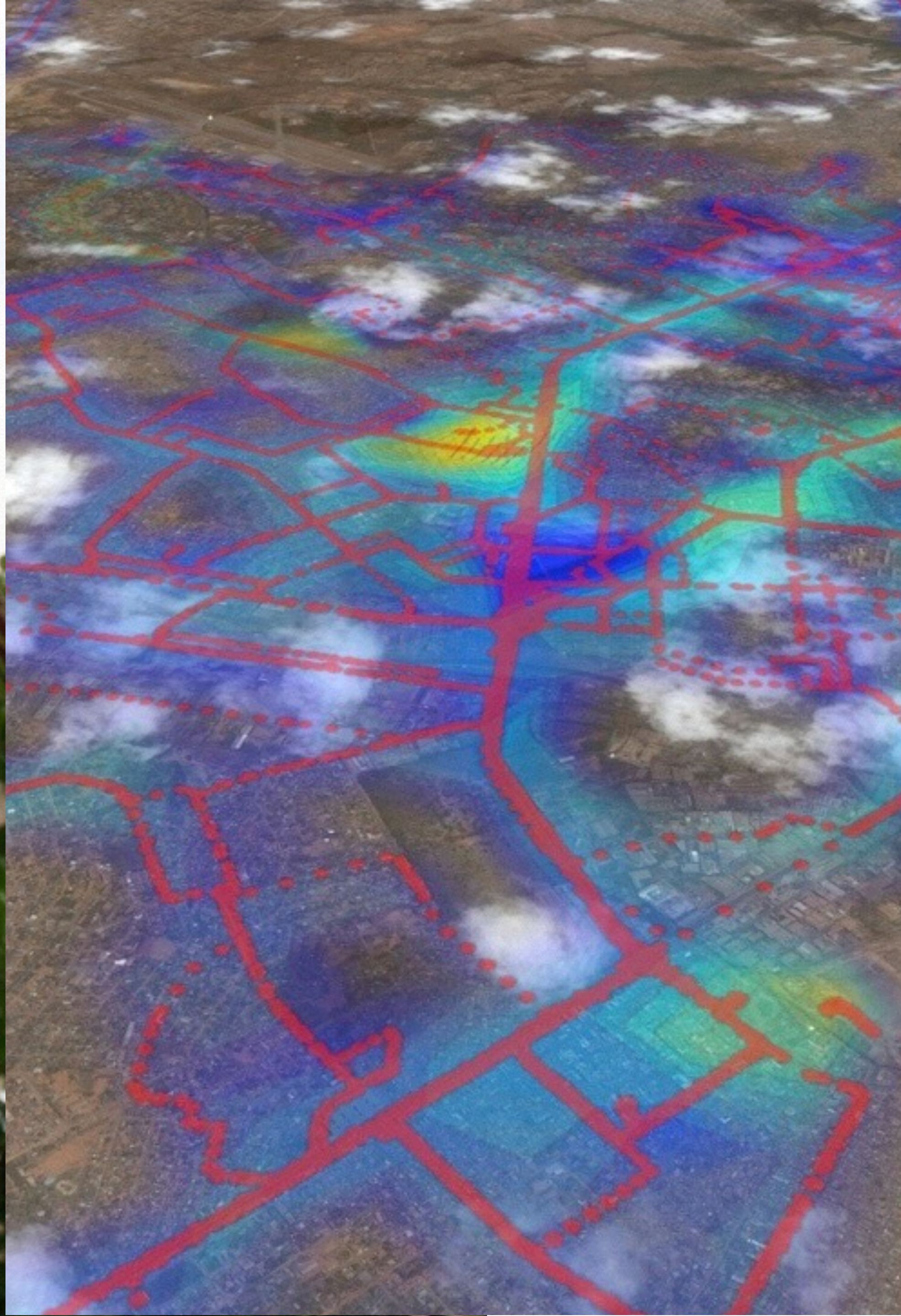
Who has been nearby?

Lots of room now for a picnic!

This is the best sun and cleanest air quality this week!

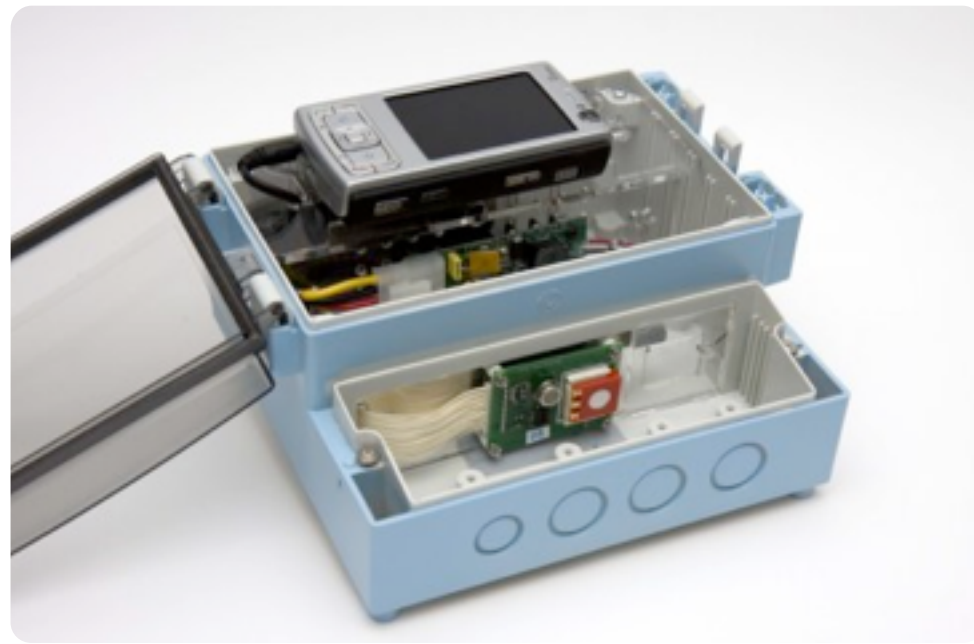


CITIZEN SCIENCE



CITIZEN EXPLORATION



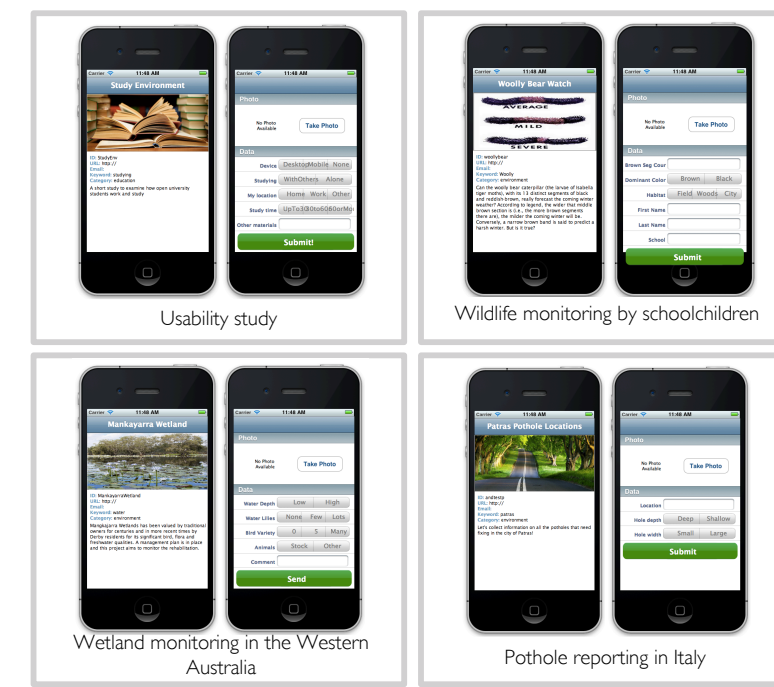


Common Sense



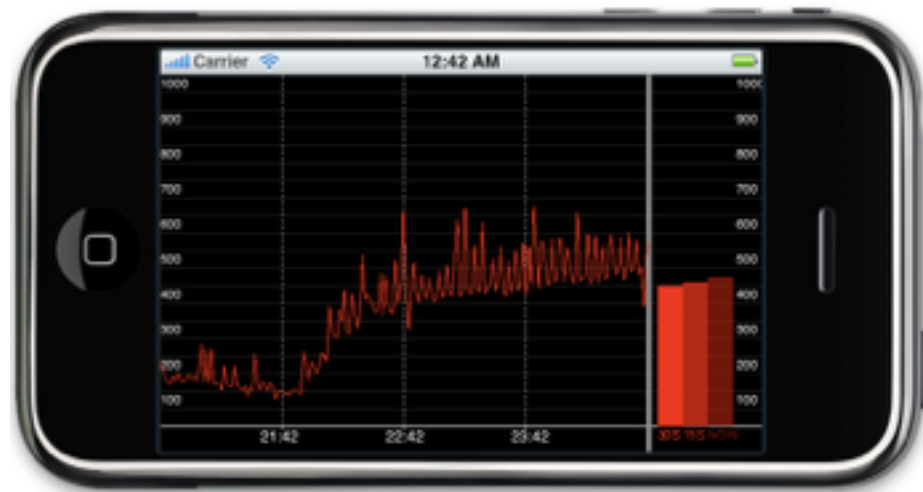
Community Sensing

Stacey Kuznetsov



Sensr

Sunyoung Kim



InAir

Sunyoung Kim



Spectacle Computing

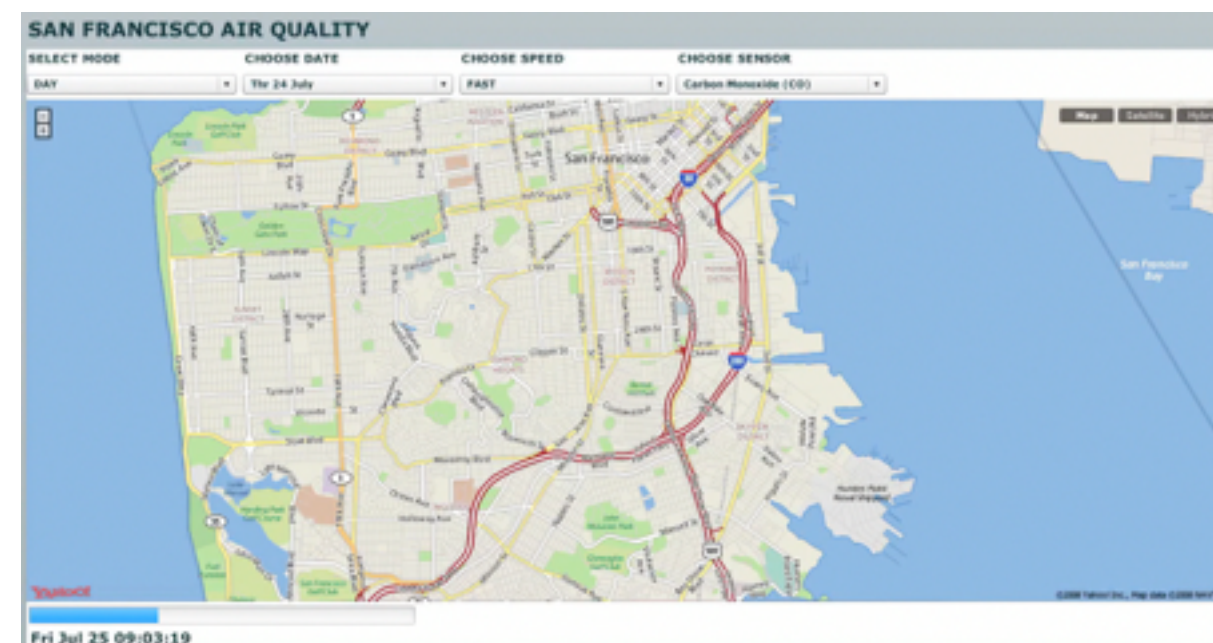
Stacey Kuznetsov



Vapor Exhibition



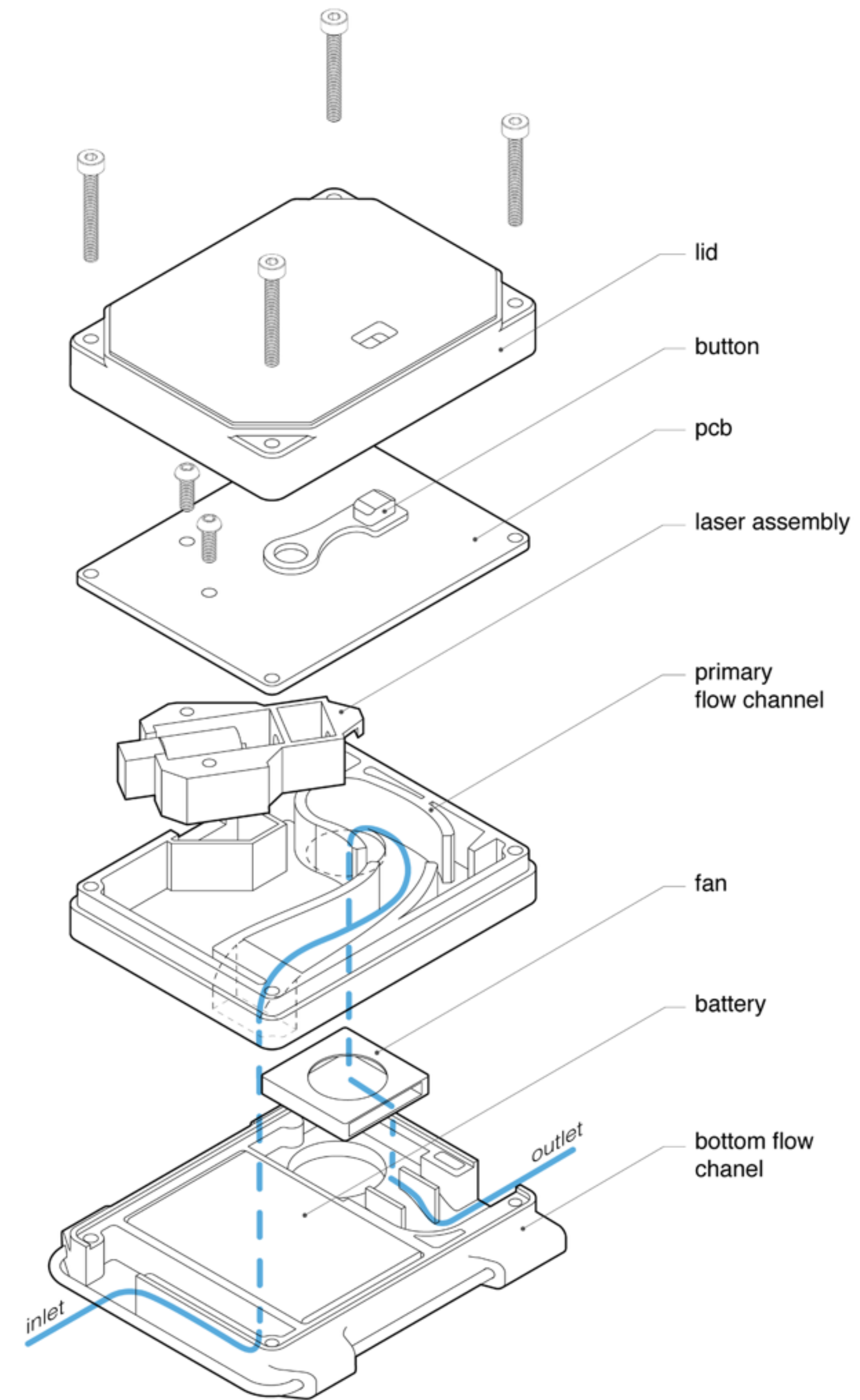
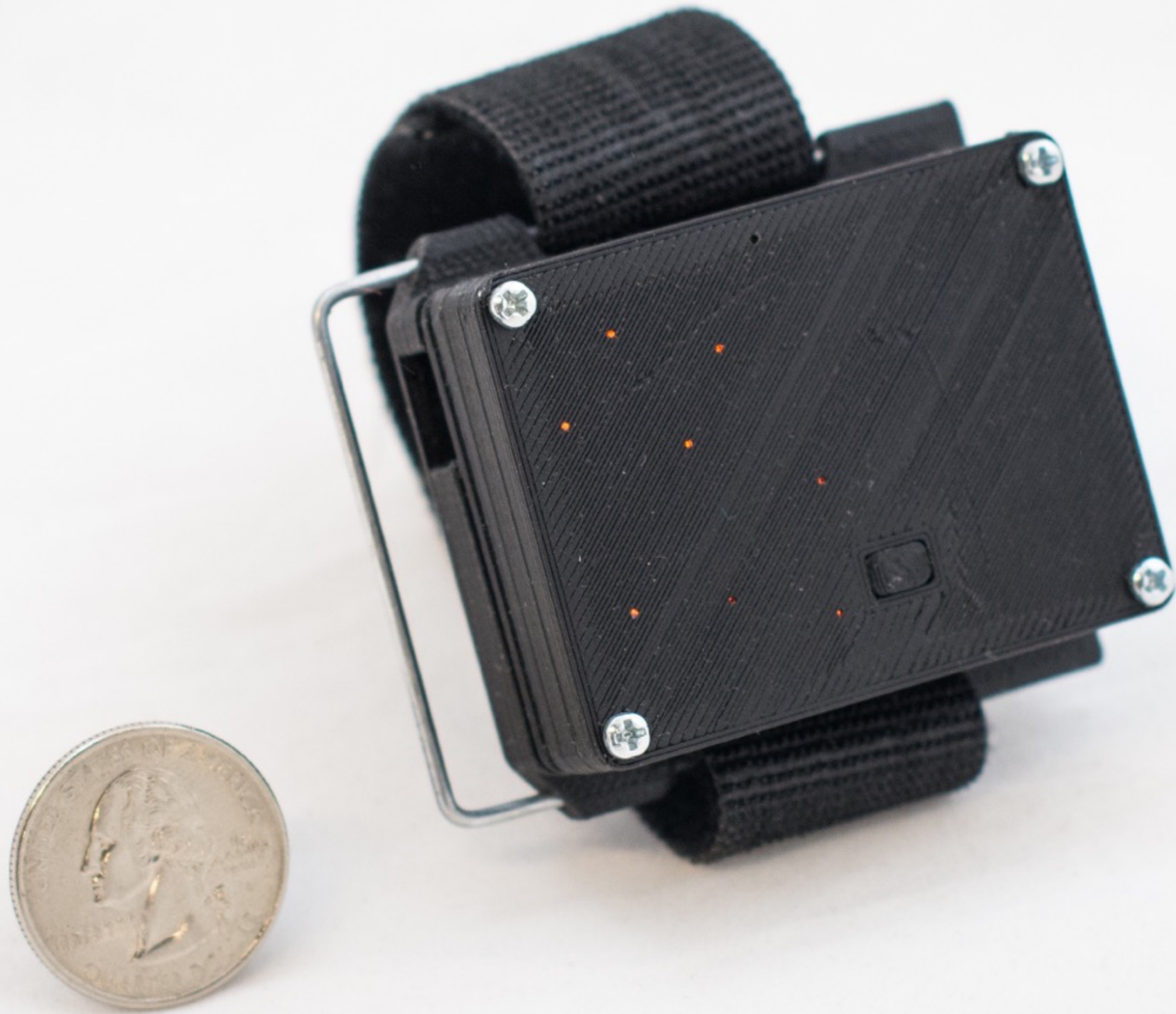
WearAir Sunyoung Kim



Participatory Sensing



Crowd Sourced Air Sensing









AIR EXPLORER



WATER EXPLORER

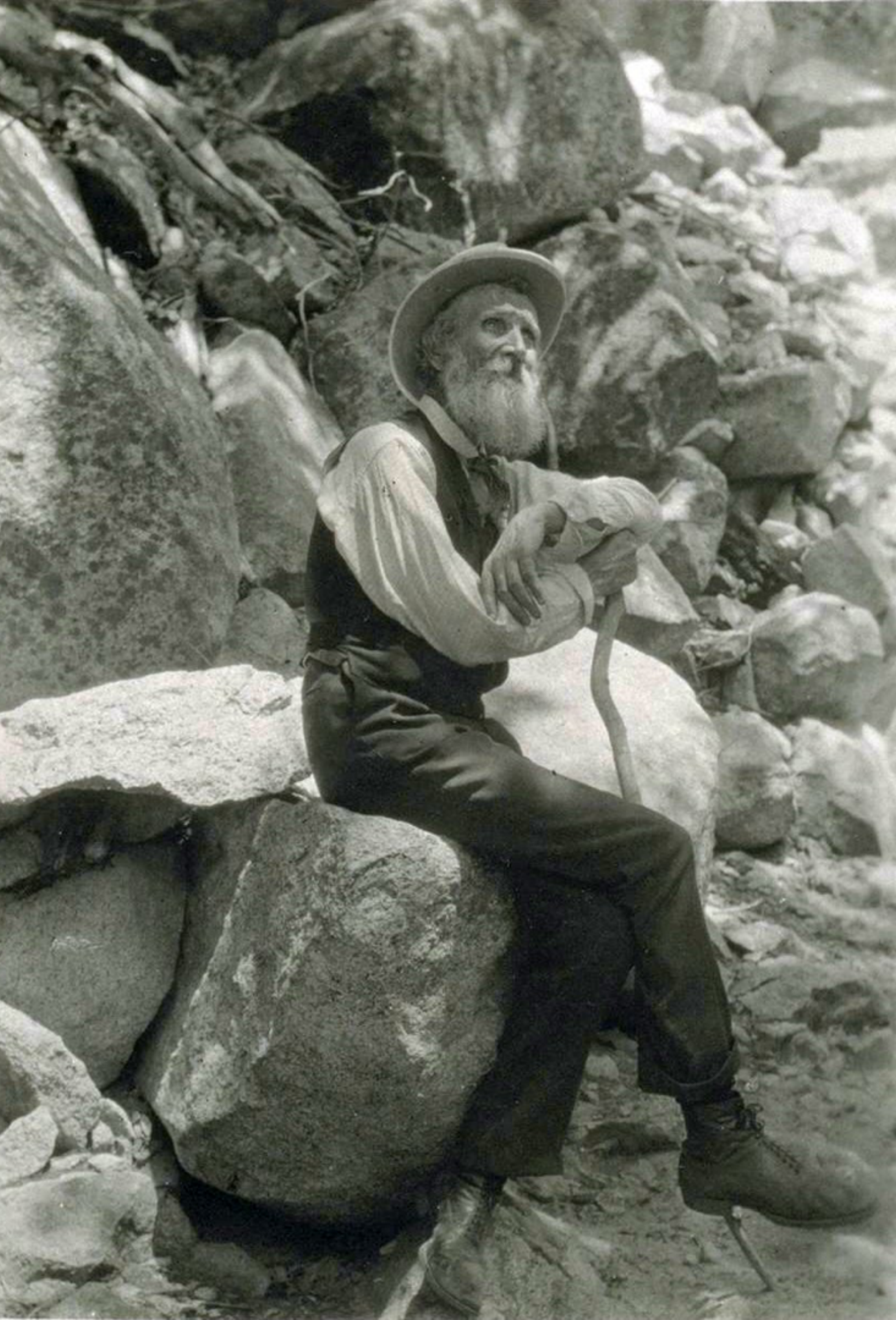


EARTH EXPLORER

MEMENTOS AND HEIRLOOMS







How infinitely superior to
our physical senses are
those of the mind

- John Muir



NETWORK OF NEIGHBORLY OBJECTS



WHY DON'T SOME OF OUR OBJECTS HAVE....

MAX

Nada Almeddine, Justin Berner, Eldon Schoop,
Eugene Song, Janette Tang





needy skateboard



shy fork

absentminded controller



picky batteries



daydreamy watering can

chatty brush



nervous razor



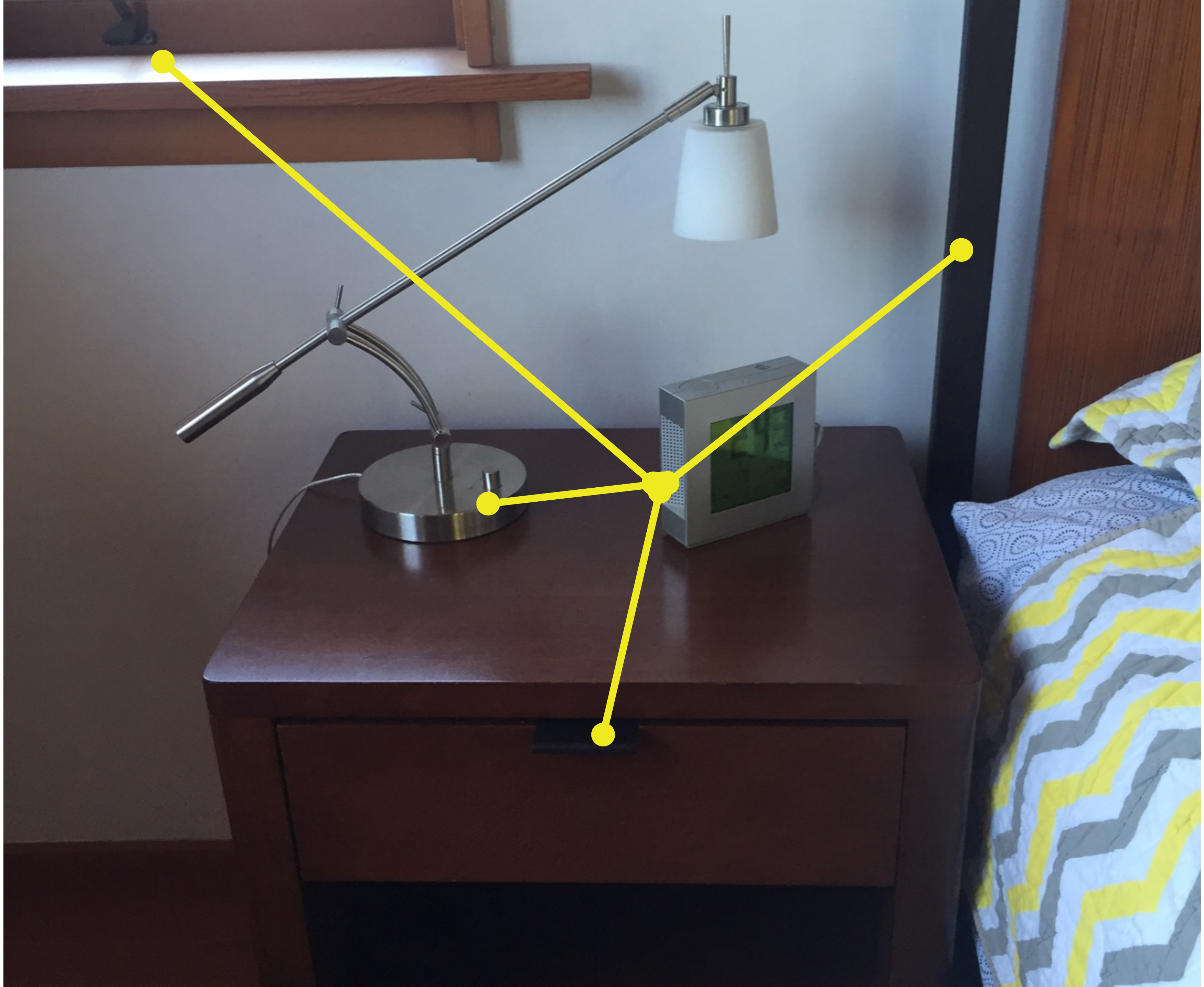


bossy toothbrush

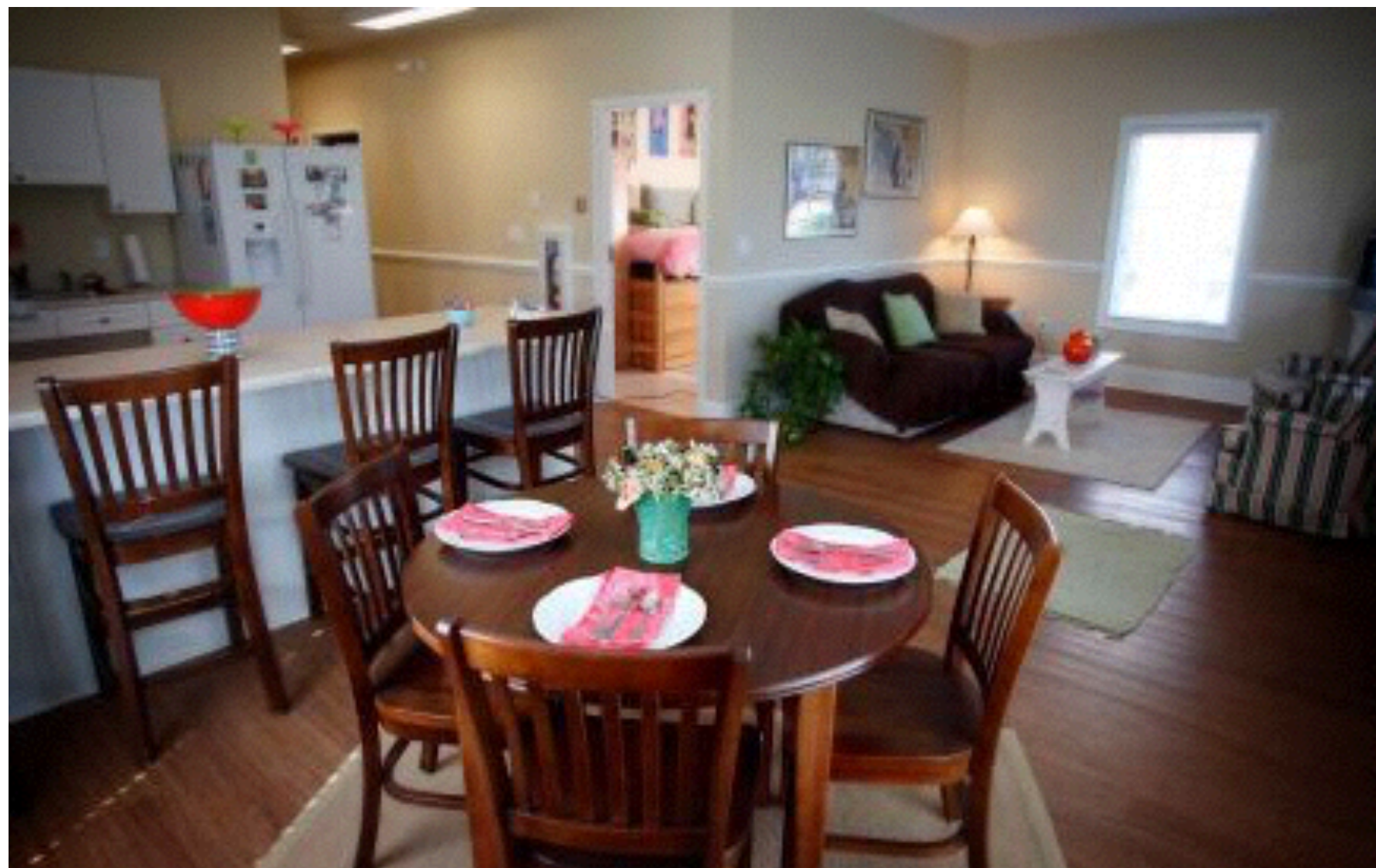
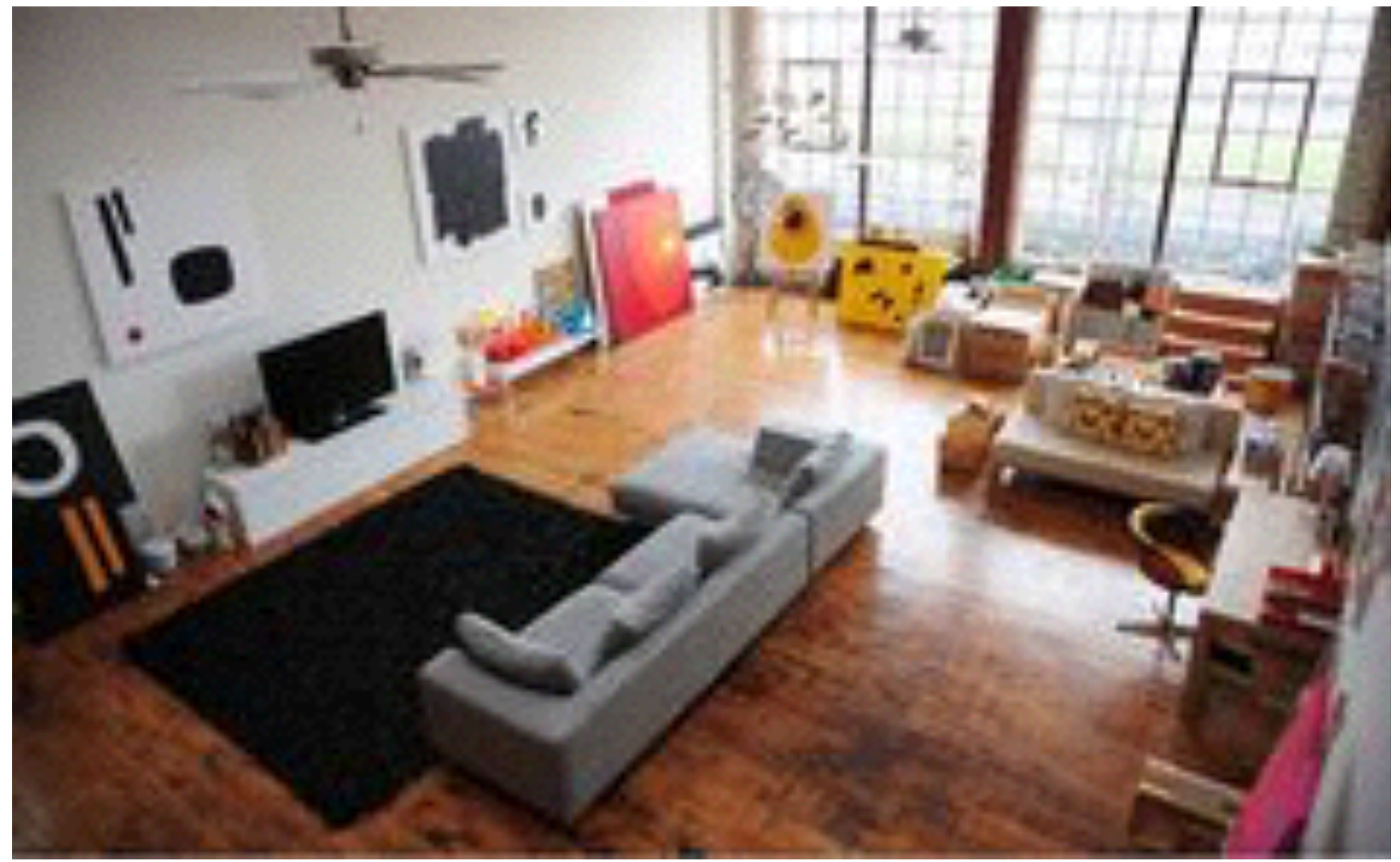
gossipy nail clipper





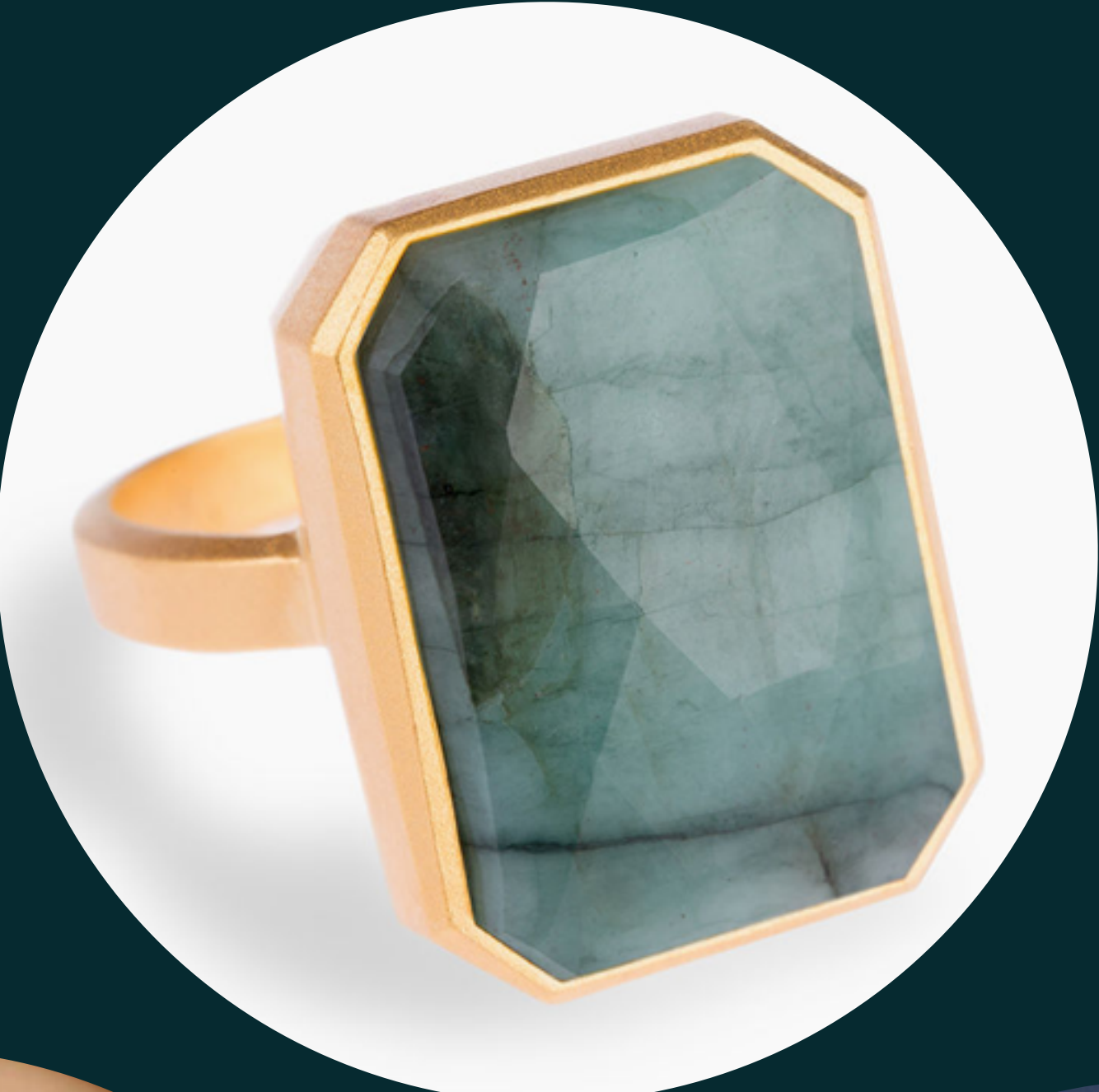






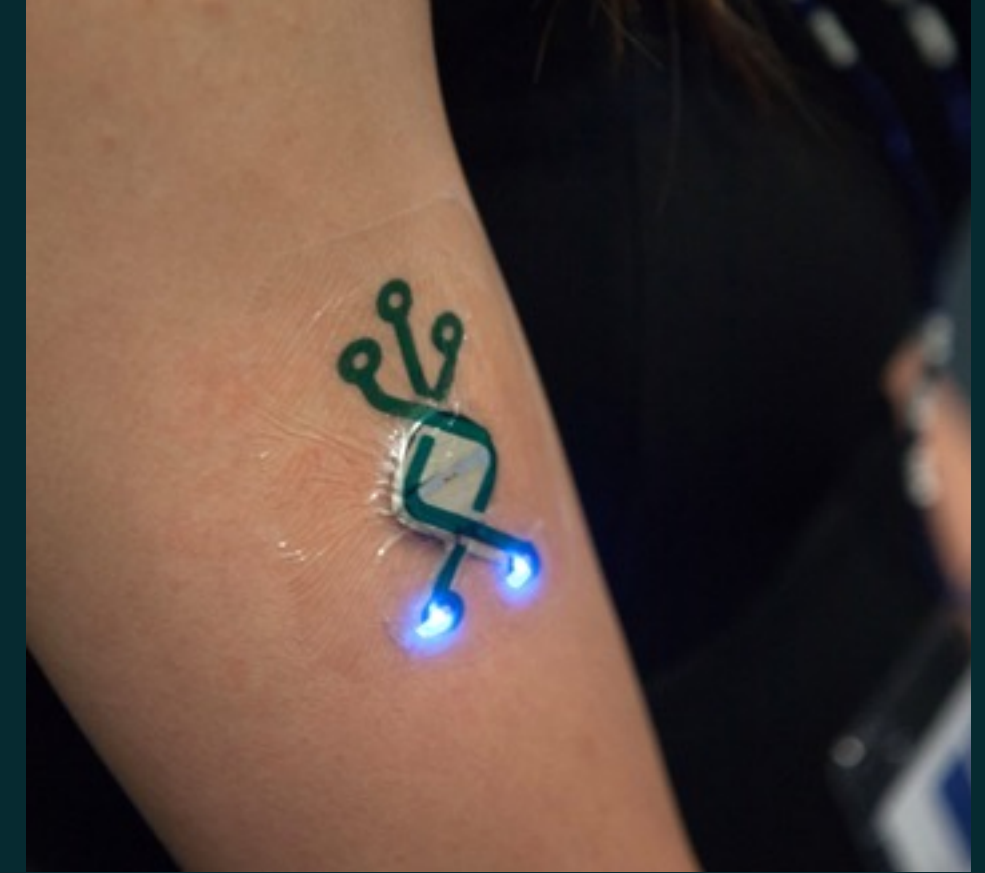
FASHIONING FASHIONABLES





SKINTILLATES

Joanne Lo



A person's back is shown from behind, wearing a black top with a large, open back. A tattoo is visible on the upper back, depicting a heart with intricate floral and vine-like patterns extending from it. The background is a plain, light-colored wall.

Skintillates

Conformal, Flexible, Wearable Electronics

INTERNET OF EXPRESSIVE ASSEMBLAGES



César Torres

Expressive Objects

CHALLENGES

INTERCONNECTIVITY

How do our phones, smartwatches, clothing, cosmetics, and epidermal electronics communicate?

DISCOVERY

How do these new objects discover each other and us? Do they forget?

PROGRAMMABILITY

How will you program across and with this ecosystem of devices?

APPROPRIATE NARRATIVES AND STORIES

Will our objects understand etiquette and proper behavior when relating stories? Will they betray us?

FACTORY RESET

How do you reset your couch, home, car, or neighborhood sidewalks?

SECURITY

How can I prevent hacking of my clothes, bandages, and medicine?



Stacey Kuznetsov



César Torres



Sunyoung Kim



Kevin Tian



James Pierce



Christine Dierk



Joanne Lo



Chris Myers

@epaulos

