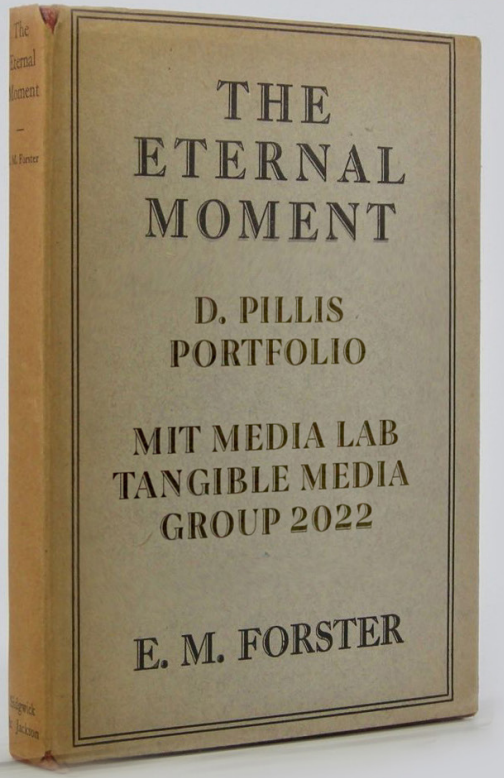

The Eternal Moment
M. Forster
THE ETERNAL MOMENT
D. PILLIS PORTFOLIO
MIT MEDIA LAB TANGIBLE MEDIA GROUP 2022
E. M. FORSTER

What are the three best projects you have led or contributed significantly to, and what are your strongest technical and design skills that are demonstrated in those best projects?

Although the question emphasizes technical and design skills, I would start by saying I value strong "soft skills"- principally, versatility, curiosity, and most importantly, courage- values that are crucial in every technical and design challenge I encounter. I thrive when I am challenged, and I embrace uncomfortable or new fields outside of my prior expertise. If I lack a technical or design skill, I can adapt, learn and develop it- collaboratively, synergistically, and dynamically. That's because I truly believe the values of curiosity paired with courage transform any obstacle into an opportunity.

I was torn between focusing on recent projects that focused on tangible experimental interfaces, such as projects about interacting with DNA using motion capture, or recording the dance of a pepper plant's growth using multi-camera capture- but, I have instead focused on three projects that are each concerned with "tangible media archaeology".

Grandmother's House, 2013-16
Technical: Architecture, embedded Arduino Controllers for lights and music, analog technology hacked (player pianos, VHS projectors)
Design: Interior Design, Fabric, Texture, Netting, interactive artifact experiences, spatial narrative experiences

Ivan Sutherland's Trojan Cockroach, 2015-16
Technical: C# coding for custom VR experience using a joystick with the Oculus DK2, 3D animation, 3D scanning, kinetic bio-mimicry sculptures, various robot programming
Design: Media Archaeology research, exhibit design, fabricated 3D replicas of robots, rare book curation and concept

Virtual Newell/Simon Simulation, 2016
Technical: AR interaction design, multi-camera AR embedded throughout a room with various vintage hardware, CNC routing
3 custom software programs for exploring 316,000 documents of Artificial Intelligence Research with gestures, AR or pedals
Design: Environment design and concept, artifact curation, narrative design, computer history artifacts, reactive audio and visuals

Grandmother's House

From September 2013 to August 2014, I lived and "performed" my life inside a re-installation of my grandmother's original New Jersey home.

My grandmother had begun to develop signs of Alzheimer's, and was forced to live in a nursing home, abandoning all of her belongings.

As a result, I developed a project- a year-long experiment in life, architecture and technology, at the intersection of set-design, immersive theatre and the advent of new mediums for reality capture.

After multiple trips with fully packed U-haul trucks, I transformed a vacant, 6 room, three story house in an appropriately working-class neighborhood of Pittsburgh- into a living "set".

I created a fully immersive domestic installation inspired by the conventions of film-making and theatre. For over a year, I inhabited this abstraction of my grandmother's home as an immersive performance environment.

Grandmother's House, 2013-2014

Living room of five room multi-part full house installation. Contents of my grandmother's living room transported and reinstalled, multiple carpets, afghans quilted together for lowered ceiling, two original sofas, an ottoman, a black and white television with VCR and library of tapes, lamps, photo albums, additional original components. Looping videos, embedded sound recordings, "clapping " sensors to trigger lamps.

Grandmother's House

Over the year, I held a series of performances, experiences, tours and gatherings; utilizing the entire house as a performance platform.

Each of the six rooms- the living room, dining room, kitchen, the grandmother's bedroom and the childhood bedroom, were meticulously re-constructed, with an underlying symbolic narrative commenting on the passage of time and what we lose with the media we use to capture it.

This project explored the home movie as a form of "video art", family photography as a portal to the past, and our obsession with documenting ourselves; furthermore, questioning what informs our desires for opening our inner lives up to the world.

This multi-faceted project also produced an experimental "virtual home video". The resulting animation was composed of thousands of images- anticipating and creating a parallel to the potential of full 3D image reconstruction of our lives, through the meta-artform of photogrammetry.

Photo Documentation of Installation View of Dining Room "set" reconstruction

Photo Documentation of Childhood Bedroom Reconstruction

Photo Documentation of Basement Reconstruction

Photo Documentation of Family Room Reconstruction

Media Archaeology

This project is part of an ongoing research practice in media archaeology, exploring how media capture devices differ in their depiction and reconstruction of the lived human experience.

This research environment was created to explore how future forms of capture technology may converge methods of computer simulation with live performance.

Textures & Materials

The environment was particularly concerned with the materials of my grandmother's life, the textures and tangible objects of her era, as well as her fabrics and sewing maching paraphenalia.

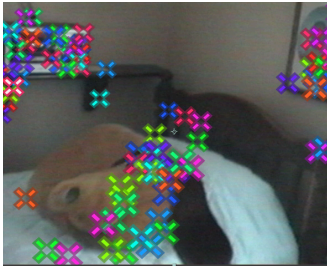
The idea of being able to understand a human through the textures, objects, and tangible surfaces they cared for was a critical part of the experience of the space.

Virtual Home Videos

As an experiment in 3D scanning, I captured thousands of photographs to recreate the house in 3D space.

Using computer vision tracking algorithms, I extracted "motion paths" of handheld camera movements from my grandmother's home videos. I retargeted the motion paths to a virtual camera, resulting in a "virtual home video" of the VHS camera's trajectory through a 3D collage.

3D software aligning 2D images



Motion Tracking of original home videos

"Virtual Home Video" combining motion and 3D

Ivan Sutherland's Trojan Cockroach

The exhibit, **Ivan Sutherland's Trojan Cockroach**, a multimedia spatial narrative, tells the interwoven story of the development of virtual reality, the origins of computer graphics, and the genesis of walking robots. The primary protagonist of the exhibit, Ivan Sutherland, is considered the "father" of the field of computer graphics, for developing the world's first computer drawing program, *Sketchpad,* as well as an early XR simulation.

Hosted in a rare books archive, the exhibit featured eight vitrines of rare texts coupled with robotic artifacts, including a first edition of Mary Shelley's "Frankenstein" (1818) as well as "R.U.R.", the 1920 play that coined the term "robot". Staged in the archive were displays of the original core components of the "Trojan Cockroach" robot, hoisted on wooden crates.

The exhibit featured a custom virtual reality simulation on the Oculus DK2- recreating Sutherland's original research for a new generation of VR enthusiasts.

Ivan Sutherland's Trojan Cockroach, 2016

Installation view of parts of the robot, the "Trojan Cockroach", showcased in The Posner Center, Carnegie Mellon's rare books archive.
Each vitrine featured parts from the "Trojan Cockroach" throughout the exhibit. Each vitrine featured a combination of rare books, walking machine artifacts, robots, and ephemera from related research. The exhibit also included rare books underlying the origins of the field, such as Aloysii Galvani's *Effects of Electricity on Muscular Motion* (1791), Bernouilli's *Hydronamica* (1738), *The Human Figure in Motion* (1830-1904) by Eadweard Muybridge, Sutherland's influential MIT thesis, *Sketchpad: A Man-machine Graphical Communication System* (1963) & Sutherland's essay, *Technology and Courage,* a first printing of *R.U. R* (1920), by Karel Capek, and a first edition of *Frankenstein* (1818), by Mary Shelley.

Ivan Sutherland's Trojan Cockroach

Roles:

Curator
Virtual Reality Developer

Themes:

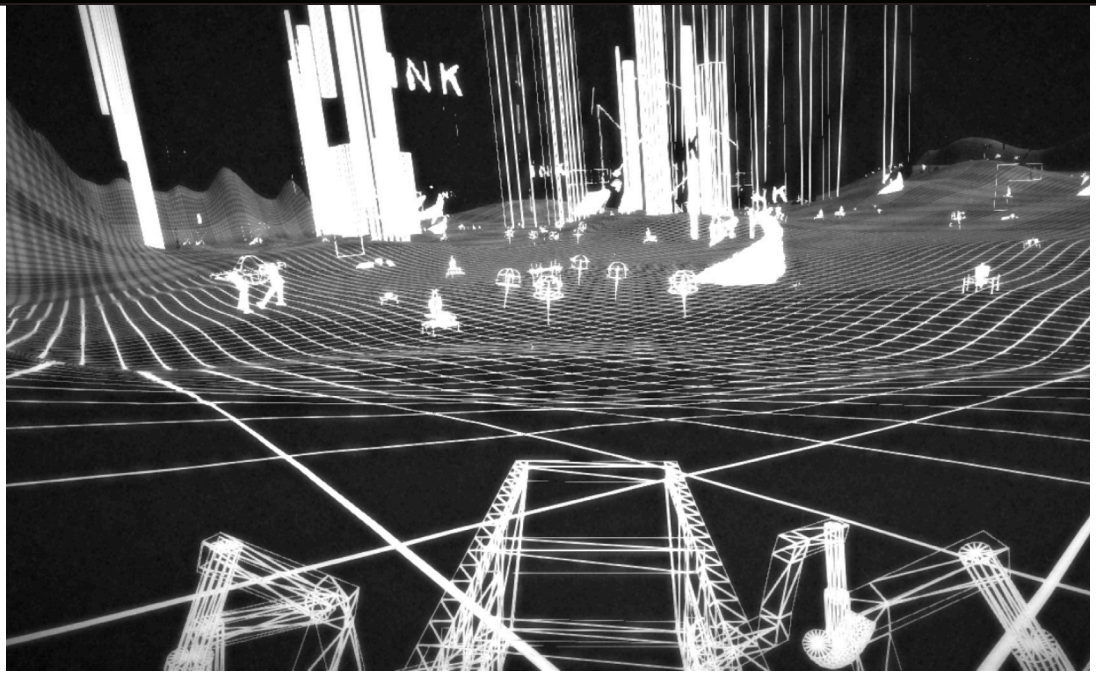
An experimental curatorial project
Interactive History Exhibit
Oculus DK2 VR Experience

VR Simulation:

Inspired by the aesthetic of Ivan Sutherland's groundbreaking AR/VR experiment from 1968, I developed an interactive virtual reality experience as an homage to his work, developed in Unity for the Oculus Development Kit.

Visitors could ride the "Trojan Cockroach" through a virtual reality simulation based on Ivan's early graphics work. This interactive virtual reality landscape was filled with computer-generated animated artifacts and crude early iterations of walking machines, derived from early research in VR & robotics. Sutherland's original drawings from the first computer graphics program, Sketchpad, were converted into animations that filled the skyline of this virtual world.

For many, this was their first experience of virtual reality (when the Oculus DK2 was still new). exploring a wireframe world populated by other significant robots-walking machine schematics brought to life by primitive AI algorithms.



A virtual reality experience developed on the Oculus DK2, using joystick, original Sutherland Sketchpad drawings, animated walking robots, developed in Unity.

Marcia Sutherland viewing the Trojan Cockroach Simulation

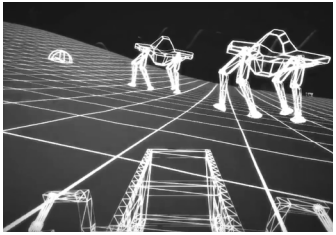


Photo Documentation of VR Experience

Opening night VR Simulation Documentation

Rare Books & Robots

Each vitrine featured images & objects from Sutherland's groundbreaking research in computer graphics, virtual reality, and robotics; as well as subsequent research and influential work that came after.

Backdrops and stands for each display were Boston Dynamic's "terrain simulations" used to train a robotic dog, the "Little Dog" version of "Big Dog".

The Leg Laboratory

The exhibit connected the work on the Trojan Cockroach with the influence it had on the future of "machines that walk", such as the "Leg Laboratory", a group of researchers at M.I.T. whose work led to the development of robotic animals; such as "Little Dog", featured alongside a first printing of "Frankenstein".

Events + Experiences

The exhibit's opening featured a unique audience of students from both engineering and the arts, creating a context for disciplines to converge.

In collaboration with The Robotics Institute, we hosted a joint lecture featuring Ivan Sutherland with his longtime friend and protege, Marc Raibert, founder of the influential robotics company, Boston Dynamics.

Robot Archive: The Robotics Project

I transported Ivan Sutherland's Trojan Cockroach as part of an ongoing robot archive to a gallery in New York., This project evolved into an experimental museological practice; to create pop-up, site-specific experiences where discussions around the complexity of modern robotics could happen in unconventional contexts. By engaging audiences of nonspecialists, the esoteric and idiosyncratic marvels of modern robotics were made accessible to a wider public.

For the last several years, various installations were hosted as pop-up archives and experiences- including installations in Pittsburgh, PA, Brooklyn, NYC, Virginia, Princeton, NJ, and even Ahmedabad, India.

Featuring a range of robots, ephemera, texts and tools- from the 1940s to the present- these exhibits were hosted by a humanoid robot, who recounted oral histories of robotics, on-demand!

Robot Archive: The Robotics Project, 2016-ongoing

Image of a miniature pop-up museum of robotics relics housed in Interstate art gallery in Brooklyn, NYC, NY.

The installation contained various objects and robotic ephemera, including: First model of the "Roomba", over fifteen "RS Media humanoid robots", Boston Dynamics relics used for training robots, Boston Dynamics aluminum truss structure for motion capture, a "little dog robot", HTC Vive, found footage from "The Leg Laboratory" on videotape, models of Honda Asimov, steel Planetary robotics cases, motion capture truss.

Robot Archive: The Robotics Project

Virtual Experience

A virtual duplicate of the Brooklyn edition of the exhibit allowed users to explore interactive robotics simulations in the space that directly matched the physical environment they were in. Users could reliably navigate the physical space while totally immersed in VR, since each object was present in both the VR and real environment.

Social Media

Broadcasting daily live Facebook video series of performances and robot demonstrations, this project garnered an engaged social media following, where the sharing resources of robotics history continues to this day. Here, the conversation of contemporary robotics and robotics history was engaged and cataloged by a broad audience of individuals, from a variety of disciplines and backgrounds.

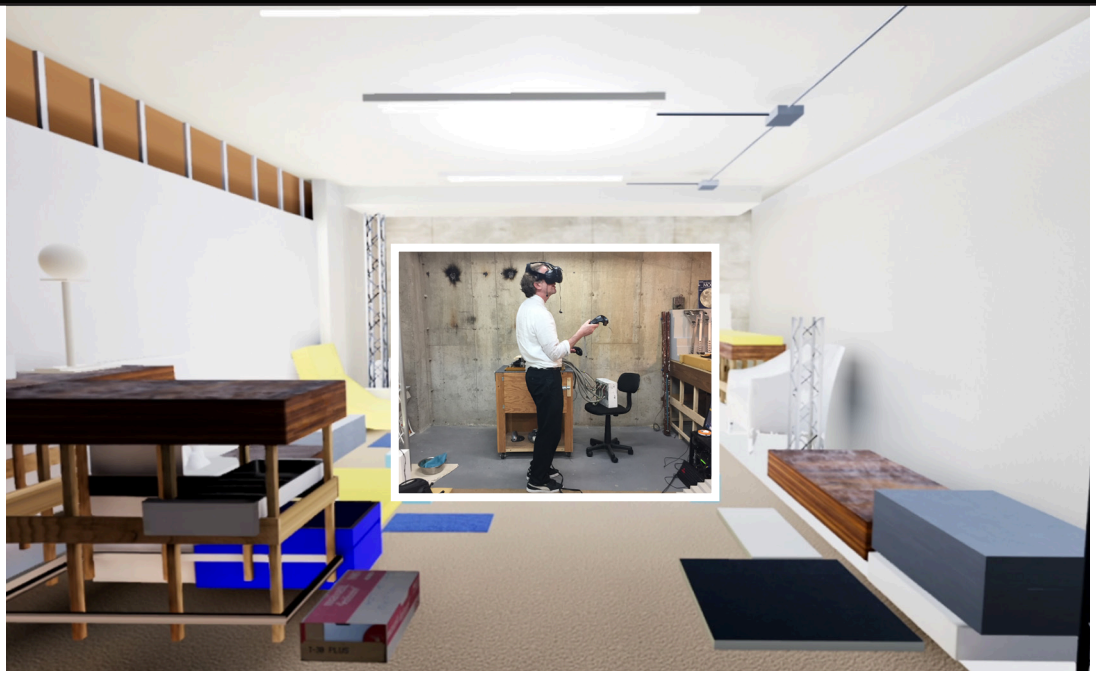


Photo Documentation of Virtual Environment inside HTC Vive, with image of user in real installation environment, which were identical and allowed for full integration.

Human-Robot Interaction

Thinking about the museum as a “robot”, various components featured embedded sensors, microprocessors, and actuated elements.

Visitors were guided through multimedia displays; incorporating VR, human-robot interactions, archival explorations of photographs and original VHS research documentation.

Point-Cloud Capture

A virtual version of the project constantly accrues elements from each temporary installation.

By incorporating 3D scans of the installation environments, as well as 3D models of various robotic artifacts, the virtual version acts as both an archive and interactive educational tool.

Events + Experiences

A combination of physical environments, virtual experiences and innovative methods for archiving robotics research, this project has resulted in Carnegie Mellon’s University Library developing new initiatives for archiving robot artifacts.

Virtual Newell/Simon Simulation

Virtual Newell/Simon Simulation incorporated both computer-generated and analog interactive experiences in a large-scale mixed-reality environment, to engage visitors with the history of artificial intelligence.

A type of “augmented reality archive”, this environment was inspired by the architecture of the offices of notable scientists Allen Newell and Herbert Simon, often considered the “fathers of artificial intelligence”.

A collage of period-specific computing environments- stretching from the 1960s to the 1980s- the space was embedded with augmented reality image triggers and gesture-controlled interactive applications.

By “embodying” the original researchers, and interacting with their immense archive of research in a technologically advanced format, this interactive research environment provided a rich and engaging way for visitors to learn about the origins of artificial intelligence.

Virtual Newell/Simon Simulation, 2016

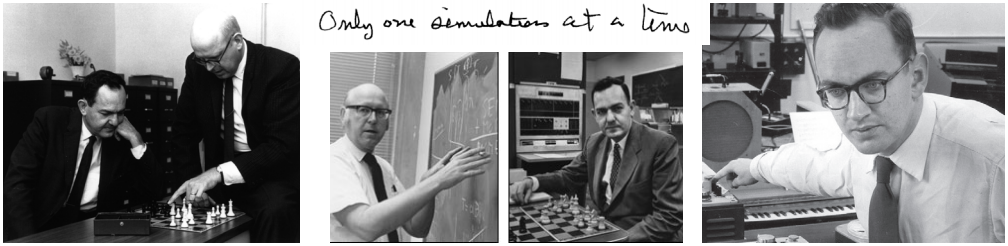
Image of a full custom room installation. Components: Herbert Simon’s chairs, Allen Newell “standing desk” re-created with cement blocks, multiple embedded audio speakers, 8 empty standard-issue filing cabinets, multiple bulletin boards (with removable facsimile documents from the Newell Simon archives), a Perq workstation, a Mac Plus, a Commodore Pet, an iPad and camera system running custom augmented reality software, two Tektronix Oscilloscopes with a live feed of speech-to-text files of artificial intelligence research read by standard text-to-speech software, various period-specific accouterments, plants, vintage TV monitor with video cassette of Herbert Simon lecturing, found 1970s chalkboard with a recreation of a writing from a photograph of Newell’s original chalkboard.

Virtual Newell/ Simon Simulation

In the 1950s', Allen Newell and Herbert Simon developed the first program that could "solve problems like a human"; a program named "The Logic Theorist", a program presented at a conference at Dartmouth that has since been considered "the birth of artificial intelligence".

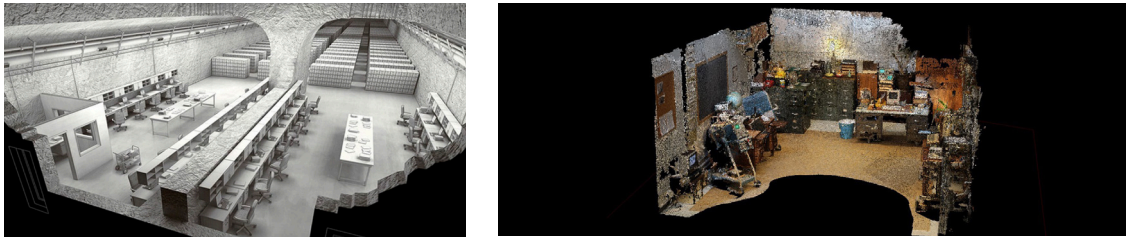
Drawing inspiration from images and oral histories of Newell & Simon's offices, the installation featured Herbert Simon's original leather chairs, a Perq workstation- (the computer used by Allen Newell)- and a range of period specific objects. A plaster model hand, produced from a preserved cast of Herbert Simon's actual hand, had retained hairs from Simon's arm- the resulting model storing a sample of his DNA!

As a "spatial collage", the room combined elements of their offices with the architecture of a archival facility, Iron Mountain, where Newell & Simon's original corpus of AI research is stored. Iron Mountain's underground storage facility, built in a former limestone mine in Butler, PA, has the ideal climate provided by limestone for preserving paper ephemera.



Images of Herbert Simon and Allen Newell in their original offices, used as source material for the aesthetic of the abstract re-construction.

A Mac Plus, Herbert Simon's original chairs, and a Perq workstation were used as the foundational elements of the installation, enabling users to access "desks" from the point of view of the original researchers.

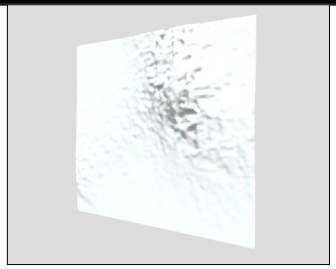


From Left to Right: underground facility, "Iron Mountain", where the archives of Newell & Simon are stored – a 3D dense cloud scanned computer resconstruction scan of the "re-installation"

Digitally Fabricated Environment

The limestone of Iron Mountain was re-created in the installation with a 3D printed relief as the backdrop of the space, extruded from an image of an actual office at Iron Mountain.

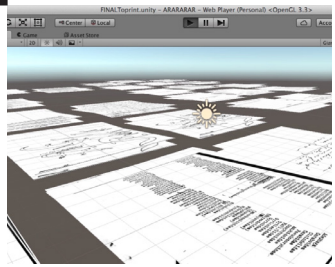
The image was used to generate a 3D digital model, which was cut with a CNC router into a large multi-paneled relief, painted silver for lining the back wall.



From Left to Right: office of facility, “Iron Mountain”, image was used to create the 3D mesh, seen to the right extruded as a backfrop to the installation.

Mixed Reality Interactions

Newell & Simon were known for having copious amounts of paper in their offices. This installation used AR to re-create the clutter by using animated paper simulations. Over 100 document facsimiles from the Newell Simon archives were printed on cardstock. Each physical document acted as a “QR” code when viewed through the custom AR application.

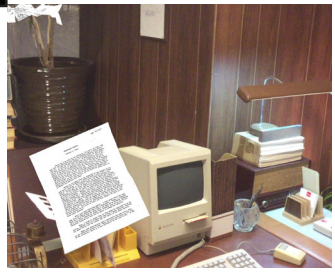


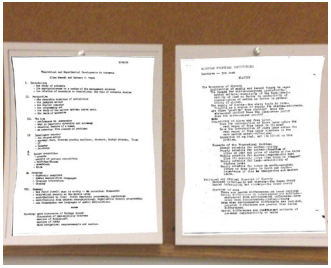
From Left to Right: Unity Application showing the AR development workflow, document tray featuring an embedded display that showed 3D simulations of each document, screen capture of AR

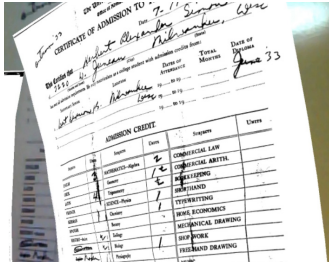
AI Research Comes to Life

As “image targets” when viewed through a tablet or cameras embedded in the room, each physical document triggered an augmented reality simulation of paper simulations, filling the office.

The application was coded to recognize each document and duplicate it, triggering physics based animations based on the angle and movement of the tablet in the environment.







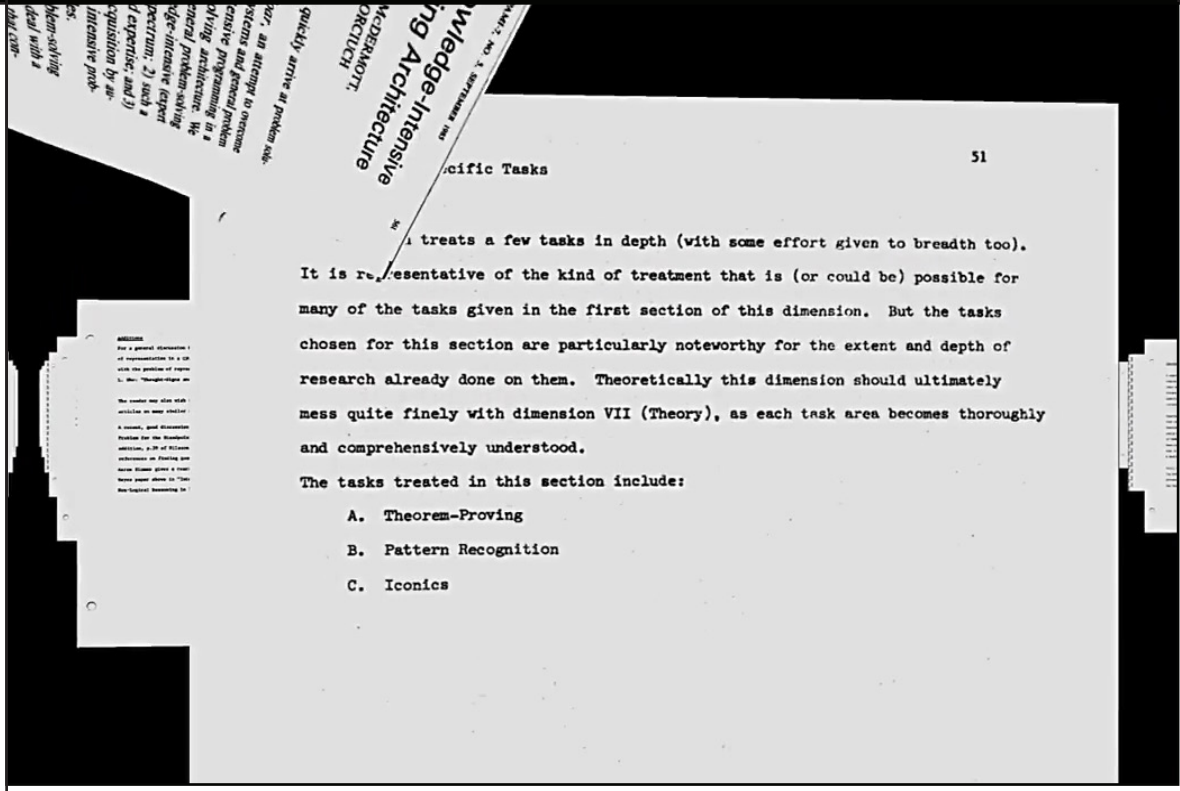
Screen Captures of Augmented Reality interface

Virtual Newell/ Simon Simulation

The “Memex”, a device designed by Vannevar Bush, considered a prototype for the modern computer, served as the inspiration for a desktop application for exploring the database of the research archives of Newell & Simon.

I developed a “Memex”-inspired application, with over 316,000 documents in a 3D space, enabling visitors to explore the entire archives of Newell & Simon.

By waving one’s hands over a Leap Motion Controller, users could navigate an infinite data-space of Artificial Intelligence Research, each document randomly populated from the original scanned documents, preserved in the Newell/Simon archive.



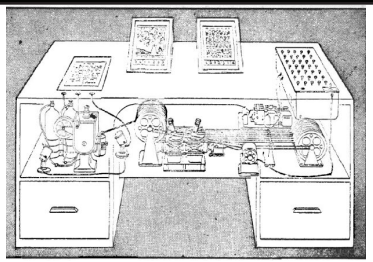
Screenshot of Interactive Memex Software:

Interactive Unity software, an infinite database featuring over 316,000 documents from research archives, embedded inside a desk. Controlled by gestures through a Leap Motion Controller.

Archives courtesy of Carnegie Mellon School of Computer Science and University Library Archives.

Modern Memex Interactions

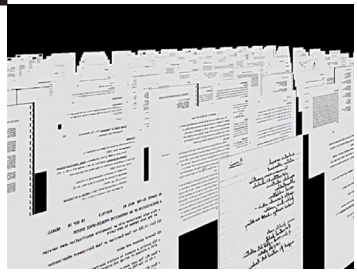
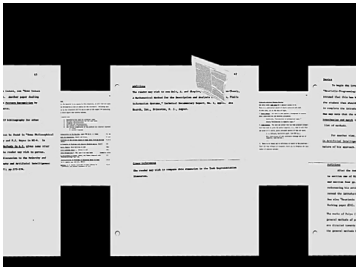
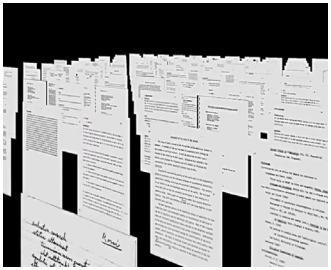
Visitors used gestures via Leap Motion controllers to interact with the archive; allowing them to read, scroll, shift and move through hundreds of thousands of documents. A pedal on the floor controlled foward motion. The interface emulated both the “micro-fische” and the “Memex”, commonly considered a prototype of the internet.



From Left to Right: Original Prototype of the “Memex”, re-creation of the “Memex in the installation, view of the interactive archive application with Conway’s Game of Life running above.

Infinite Archive

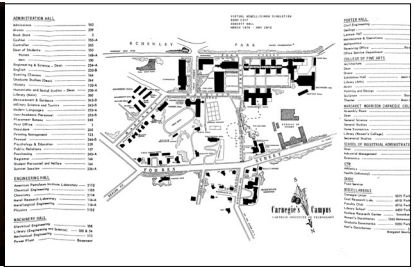
The “reading apparatus” designed and embedded inside the modernized “Memex” was novel in that it allowed for a fast and spatial experience of reading- enabling 6 degrees of freedom, both vertically, horizontally, and through a 3D space that was constantly repopulated.

Social Experiences

A video stream in a public gallery showed a live feed of the real space. Visitors to the gallery were guided by a vintage campus map to discover the installation.

The live video feed was a mixed reality program, incorporating overlaid computer graphics, responding dynamically to the physical space.


From Left to Right: Display installed in gallery showing computer simulated “documents” overlaid on a live video feed of the space. Directions to the installation and sample of gesture interactions.

What is your vision for the future of Human-Machine/Material Interaction?

When speaking of the future of design, many emphasize the term “Human-Centered”, but I prefer “Community-Centered”. My visions for the future of human-machine/material interaction are optimistic and genuine. I dream of sculptural computing, expanding the interface towards an actual “object”-oriented language of computerism, where the kinesthetic and mobile potential of the human is complemented, not constrained, by the interfaces we use to compute.

Designing with this in mind, accessibility, flexibility, and versatility is key- as humans come in all shapes, sizes, ages, languages, and logics. To create interfaces that transcend inequities and embrace inclusivity is of critical importance.

We live at a time where there is a growing convergence of the digital and physical, as massive amounts of data and information become virtual while new types of data are being created by emerging devices and technologies.

An 18th century “Stammbuch”, small boxes that look like books, but are tangible miniature libraries with small “cassette” type cases of individual pages

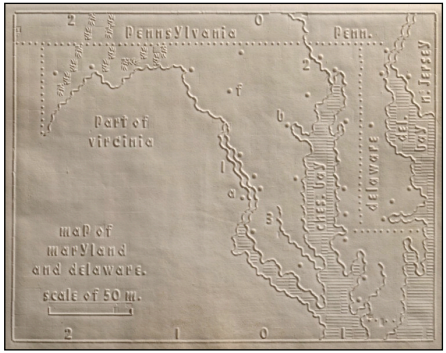
What is your vision for the future of Human-Machine/Material Interaction?

Our contemporary paradigm of computing is still built on the legacy of linear and rectangular design logics, inherited by the technology of “the book”, the “cinema” and the evolution of the “television”. I believe computing has been limited by its media archeology and hegemonic genealogy, the odd contemporary kludge of a “computer” some type of TV connected to a typewriter- somehow containing both local and global files that are constantly changing format and updating in perpetuity.

I envision a future of computing without “computers” as the term has come to be defined.

Get rid of the display- make digital objects and tangible interfaces everyday objects in our environment. Drawing from previous work in “distributed computing” ‘the internet of things” “wearable computing” and ‘spatial computing” I am interested in redesigning the idea of “computing” by conceiving of new sculptural interfaces that would leverage advances in depth-camera tracking technology and mixed reality with physical computing, microcomputers and mini-GPU’s.

Braille Typewriter, Perkins Brailler Manual Mechanical Braille Printer from 1951



“Atlas of the United States Printed for the Use of the Blind” from 1837

What is your vision for the future of Human-Machine/Material Interaction?

I am interested in software objects- physical/digital tools that serve specific yet integrated and versatile purposes. These novel platforms for both reality capture and content interaction must be intuitive and integrated, allowing for synthesis of different sensory, auditory or visual stimuli.

Modular visual physical voxels that can be sculpted, connected and integrated to shape novel displays designed to maximize accessibility, user customizability, enabling the rapid creation of dynamic multi-channel media environments for work, research or play.

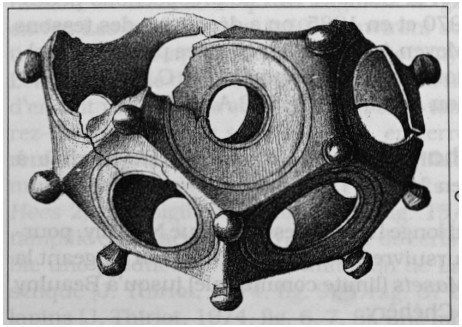
Object. Paris 1936. Meret Oppenheim. (Swiss, 1913-1985). Fur-covered cup, saucer, and spoon, cup 4 3/8" (10.9 cm) in diameter; saucer 9 3/8" (23.7 cm) in diameter; spoon 8"

"Looking Glass" Holographic Display, first edition

What is your vision for the future of Human-Machine/Material Interaction?

In particular, I am passionate about the potential of “mixed reality” merged with tangible interfaces, specifically. through the remarkable potential of the HoloLens 2 integrated with the Kinect Azure. I would like to further develop research projects using wearable holographic displays and ubiquitous sensing applied to practical everyday applications.

A single physical marble tablet could be the mixed-reality palimpsest by which one views the entire library of human history. A banker could sit at an empty desk and view a pile of documents and files through their regularly sized glasses, the documents not existing as abstractions or symbols, but as three-dimensional accurate simulations- fixed physically in any designated environment- the operating system of everyday life.



Drawing of a partial “dodecahedron”- objects which there is no clear function or purpose- found in the late 19th century in France. Credit: G. Garitan, CC BY-SA 4.0

An ancient dodecahedron found in Avenches, Switzerland, once the Roman city of Aventicum. Credit: Woudloper, CC BY-SA 3.0

What is your vision for the future of Human-Machine/Material Interaction?

I think my “smartphone” should be a completely transparent digital prism, acting as a fully augmented reality interface- if I move it around a space, I could see applications I use, spatially placed and persistent.

Once I’m in my bedroom at night, there will already be a virtual newspaper by my bedside- depending on where I place the digital prism, different content will be salient and dynamically interactive. Spatially aware, I could rotate the prism up to see the news on my ceiling, before turning it over, to become a digital alarm clock.

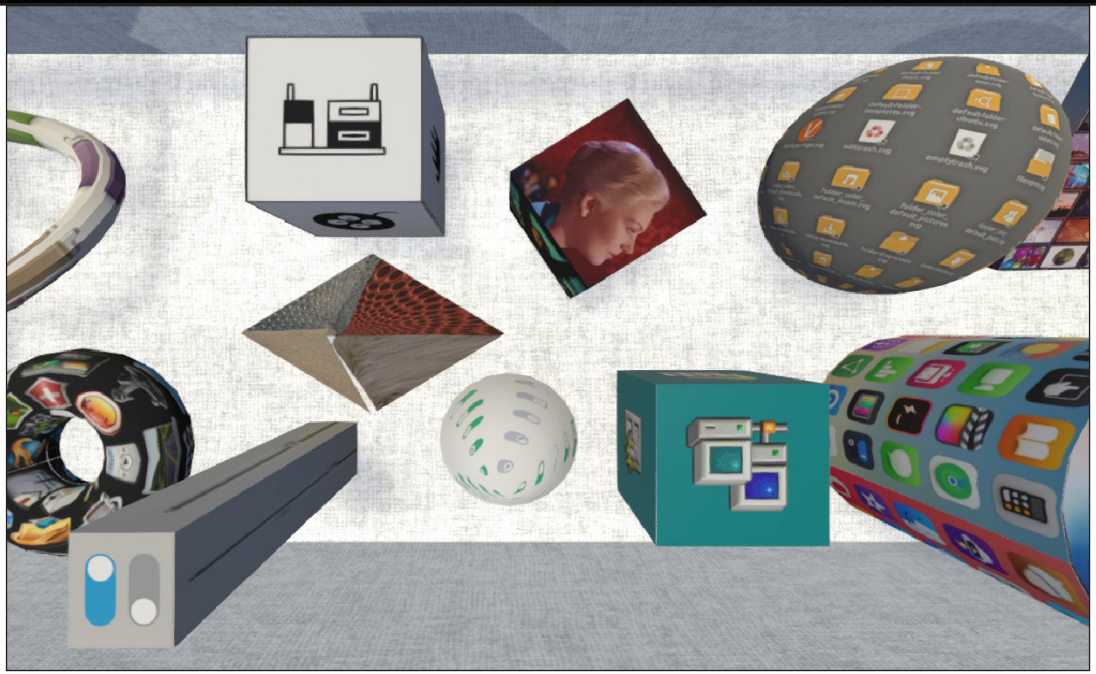
“Diorama of King Ludwig’s Canal”, about 1846, printed in Germany. Seven hand-colored etchings with front and back boards, each 16 x 22 cm. The Getty Research Institute, 2013.PR.37

A “perspective theater (also known as peepshow or diorama) composed of seven hand-colored prints connected by an accordion-like structure. When expanded, a sense of depth is viewable through a peeoplhole showing a three-dimensional space.

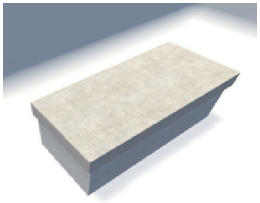
Visual Sketches

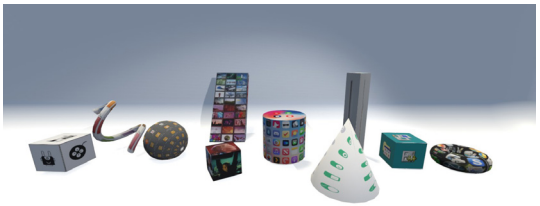
I think a “computer” should be a box of objects that I can sort through- sift, pull, expand or squeeze- like a shoebox filled with trinkets and family memorabilia.

I think computing shouldn’t be about the “internet of things” as much as it should be simply about “things”- like Heidegger’s “Dasein”- the philosophical notion of “thingness” and the ontological dimension of the human somehow fully encapsulated in the “ontic” object- that which is “there”, with or without us, but somehow, still possible of conveying us.



Prototype of a shoebox computer with multiple interactive connected components, spherical displays and cinema-cubes.

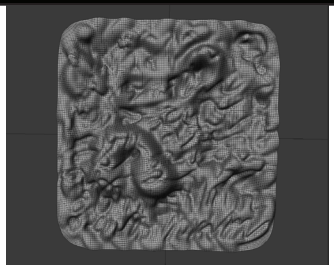




PalimpNext

I am mesmerized by the tactile experience of the world- I love the texture of real materials, the sensations produced by the nerve endings of the fingers and the full spectrum of sensory cognition embodied in the human body.

I love the history of writing and glyphs on tablets and in clay. I'd like a clay tablet that recorded its history of shape.

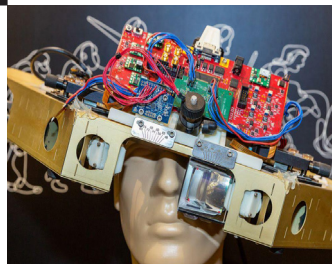


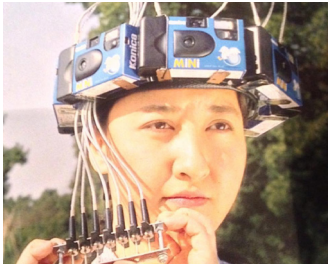
The history of writing and palimpsests can merge with physical tactile surfaces that can dynamically be etched or marked and return to a flat surface, however all writing is contained within.

Head-Mounted Hats

Why head mounted display? Why not a mixed reality hat?

Looking at the history of women's hats, the use of mesh, nets, and various complex structures, embedded mixed reality devices could enable wearable visors and head mounted computing without the gaudy design of many HMD's for mixed reality.





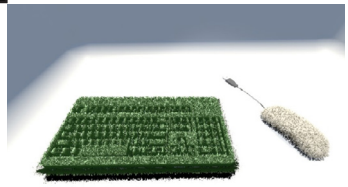
Experimental wearable displays like Magic Leaps first wearable prototypes and Jindo tools "360-degree camera" are just like hats- last image on the right is a mockup "holo-mesh-lens" concept

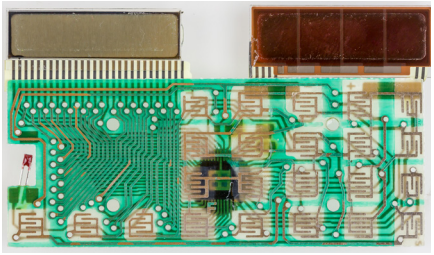
MossBoard & SoftMouse

Why are trackpads designed to replace the mouse, when they should be designed to reinvent how we actually touch digital objects?

I would like a "lazy Susan" style rotating trackpad with a spectrum of textures.

I would like to grow a keyboard out of moss. I would like my mouse to actually grow the hair of a mouse.



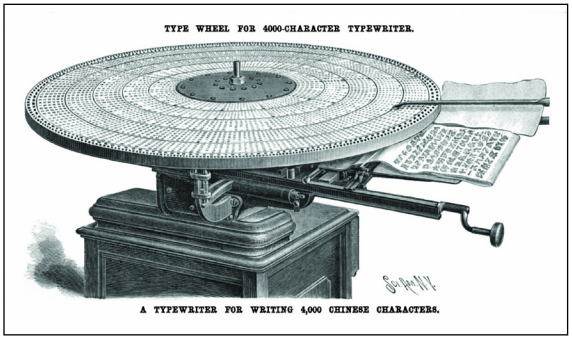


A visual sketch of a keyboard grown from a membrane to have moss keys, with a mouse that actually feels like one.

What trail would you blaze if you join the Tangible Media Group?

I am fascinated by the idea of the human as a form of media. Likewise, I am invested in developing media tools that enable individuals to have greater autonomy and versatility in the instrumentation of computing in their everyday life.

Thus- my goals are twofold- study how tangible media can enable new methods for embodying or translating the human story? Secondly, how can digital/tangible approaches to computing reinvent the way we communicate, collaborate, and integrate digital data into virtual, augmented, wearable, and modular physical computing mediums?



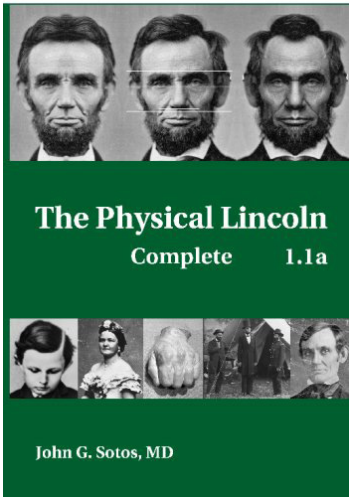
Devello Zelotes Sheffield's "Chinese typewriter". From "A Chinese Typewriter," Scientific American, June 3, 1899. Credit: Scientific American"

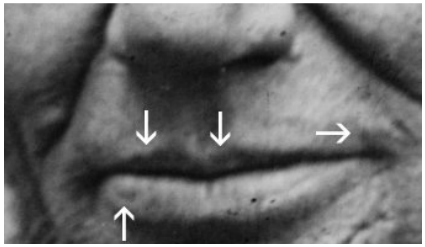
A receipt from ~3,100 BC Mesopotamia, one of the earliest texts from the oldest known writing system, Mesopotamian cuneiform. Credit: Yale Peabody Museum of Natural History; photo by K. Wagensonner

What trail would you blaze if you join the Tangible Media Group?

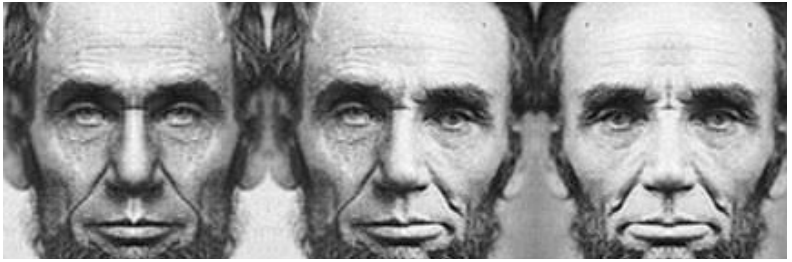
An analog example of the human genome or the body as data is a book I love, titled “The Physical Lincoln”. The title of the text goes on to describe itself as “A Photo-Medical Solution to the Puzzle of Abraham Lincoln’s Height, Face, Pseudo-Depression, and Imminent Cancer Death”. This 818-page tome encapsulates all known medical records, ancestry, DNA, genealogy, biometrics- all extant data constitutive of the human being, “Abraham Lincoln”.

Thinking about how a bound index of paper could encapsulate the physical and temporal existence of “Abraham Lincoln”, I consider- how can we make new portable, virtual and tangible compressions of the human experience?





“The Physical Lincoln: Complete” by John G. Sotos



What trail would you blaze if you join the Tangible Media Group?

Through the creation of novel tangible/digital storytelling technologies, I am passionate about creating physically manifest mediums and intuitive kinesthetic interfaces for humans to document and generate traces of their lived experiences.

By innovating with integrations of AI, volumetric displays, haptic surfaces, physical computing, and mixed reality, I am driven by the potential of creating a computationally tangible future form of storytelling.

A German “fake book” containing a clock

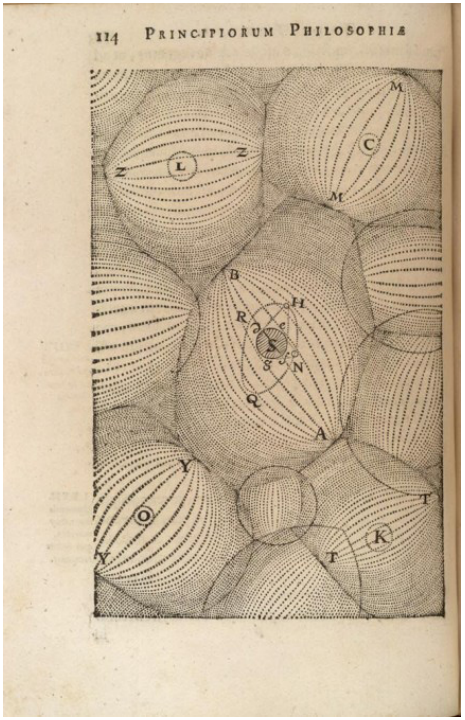
Where will this trail eventually lead?

Time travel! Seriously.

To travel through time, first, we have to start capturing every bit of it completely.

In a future where the internet of things, holographic wearable displays, and embedded ubiquitous computing is commonplace, there will be an ongoing need for innovations in how we analyze and experience large datasets and the history of recorded media.

I want to develop theoretical models and genealogical contexts for both experiencing and interacting with the mass of the human experience, focusing on making simulations as rich and tangible as the real itself.



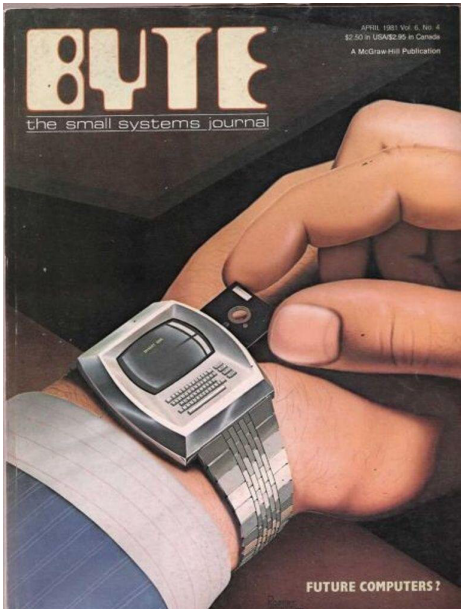
A “map of the universe” by René Descartes showing the concept of “vortexes”, published in “Principia philosophiae” (‘The Principles of Philosophy’, 1644)

Where will this trail eventually lead?

I am passionate about achieving this through expanding on new forms of experimental and computational capture technologies. I am interested in leveraging light field photography, 360 stereo-depth tracking cameras, pose estimation algorithms, and virtual, augmented, and mixed mediums to explore new experiential and tangible dimensions, expanding on media's capacity to capture the human experience.

I believe a thoughtful evolution of technology requires careful consideration of past innovations, merging and remixing media relics with advances in the capacity, compression, and intricate complexity of contemporary media.

By doing so, I hope to reconcile the lineage of past media (analog or otherwise physically manifested as discrete relics) with the potential enabled by the rapid acceleration of tangible and simulated media- both by integrating discrete and obsolete media relics with enhanced and embedded tangible/digital potential, as well as drawing inspiration from pre-digital media to enhance the future of media with the depth of its past.



"Byte Magazine" cover, 1981

Where will this trail eventually lead?

The experience of a tangible virtual memory is possible.

Building on the vision of Ivan Sutherland's ultimate display- "a room within which the computer can control the existence of matter"- I believe we will be able to capture, replay and reconstruct reality in the future.

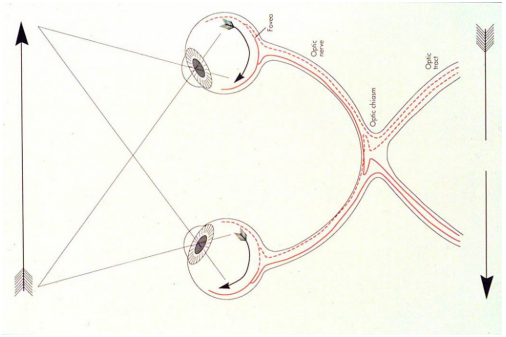


Diagram of the Visual System, showing the Optic Chiasm

NASA astronauts use virtual reality hardware in a Space Vehicle Mock-up Facility at NASA's Johnson Space Center (from nasa.gov)

Vintage "Compuserve" 1983 advertisement