

Week 2: Visioning

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As We May Think

Vannevar Bush: A quick primer



Photo: IEEE Spectrum

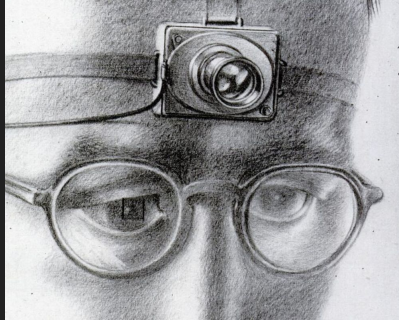
- Engineer, inventor, and gov't administrator
- Complex legacy
 - Founder and early proponent of the NSF
 - Founder of Raytheon
 - Director of the US Office of Scientific Research and Development (OSRD)
 - At OSRD, initiated the Manhattan Project, the mass production of penicillin, and many other wartime scientific endeavors

"[Applications of science] have enabled him to throw masses of people against one another with cruel weapons. They may yet allow him truly to encompass the great record and to grow in the wisdom of race experience."

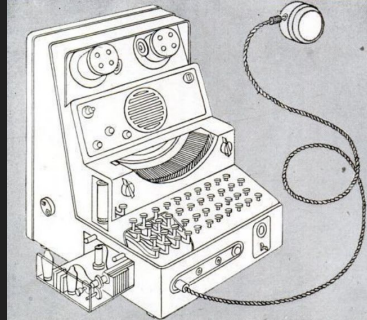
An introductory thought

"There is a growing mountain of research. But there is increased evidence that we are being bogged down today as specialization extends... specialization becomes increasingly necessary for progress, and the effort to bridge between disciplines is correspondingly superficial."

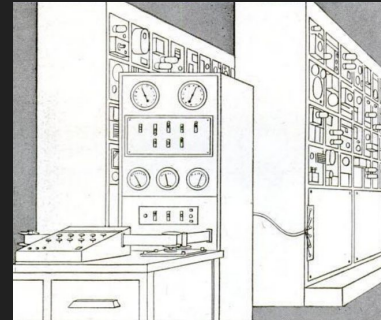
Five future ways to enhance preservation of the record



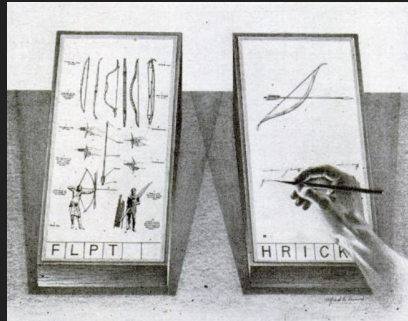
Cyclops Camera



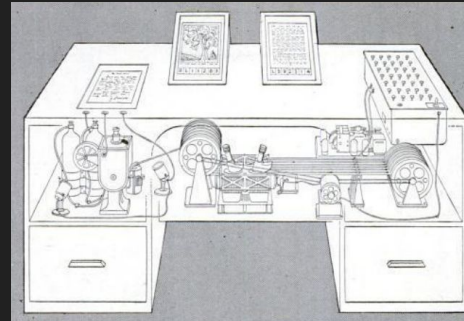
Vocoder



Thinking Machine



Microfilm

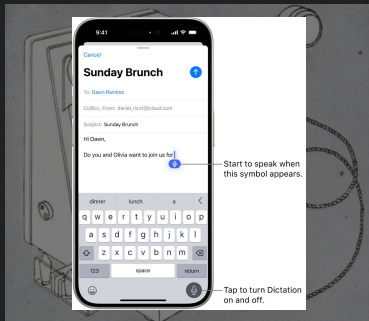


Memex Storage + Association

Five future ways to enhance maintenance of the record



Cyclops Camera



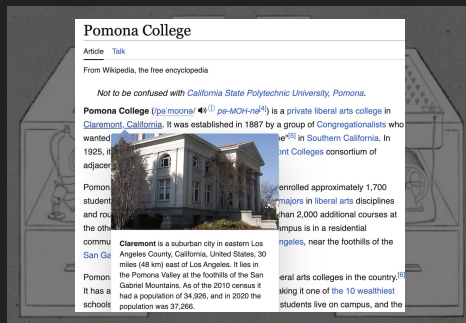
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For discussion

In “As We May Think,” Bush posits five visionary inventions that combat the discipline siloing of academic knowledge production stemming from information overload. Despite most of these predictions coming to fruition, academic siloing and information overload are still pervasive issues.

1

How can future technologies further mitigate the lack of interdisciplinary collaboration and/or information overload?

2

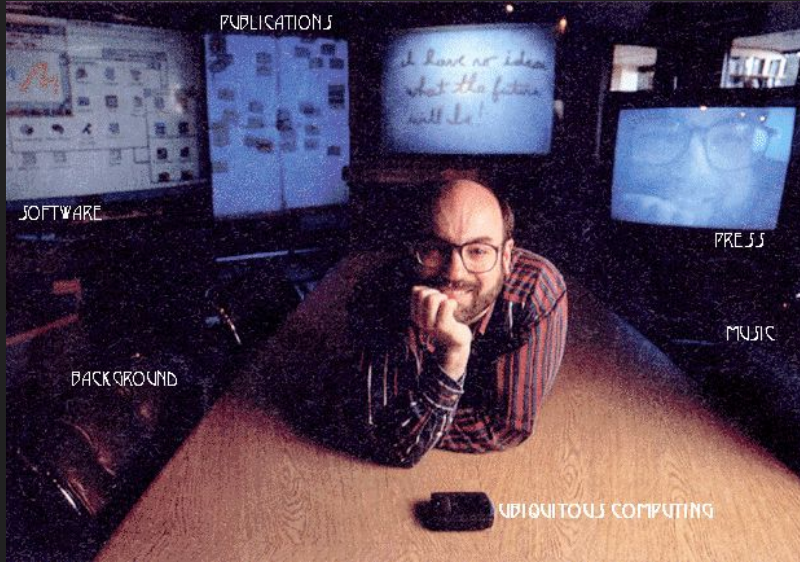
In what ways are other factors responsible for this academic siloing, and how could they be remedied/addressed?

3

What are the implications of this lack of collaboration for HCI, an inherently interdisciplinary field, and how can they be mitigated in an HCI-specific context?

The Computer for the 21st Century

Mark Weiser: A quick primer



- Head of Computer Science Lab at Xerox PARC
- Coined "ubiquitous computing" in 1988
 - Computer seamlessly integrated to disappear from conscious awareness
 - Computers should enter our world, not force us to enter theirs (critique of VR and PCs)

An introductory thought

*"The most profound technologies are
those that disappear."*

Three scales of ubiquitous devices

Tabs

- Post-it note computers
- Location aware badges
- Hundreds per room



Pads

- Digital paper
- Shared, not owned
- Dozens per person



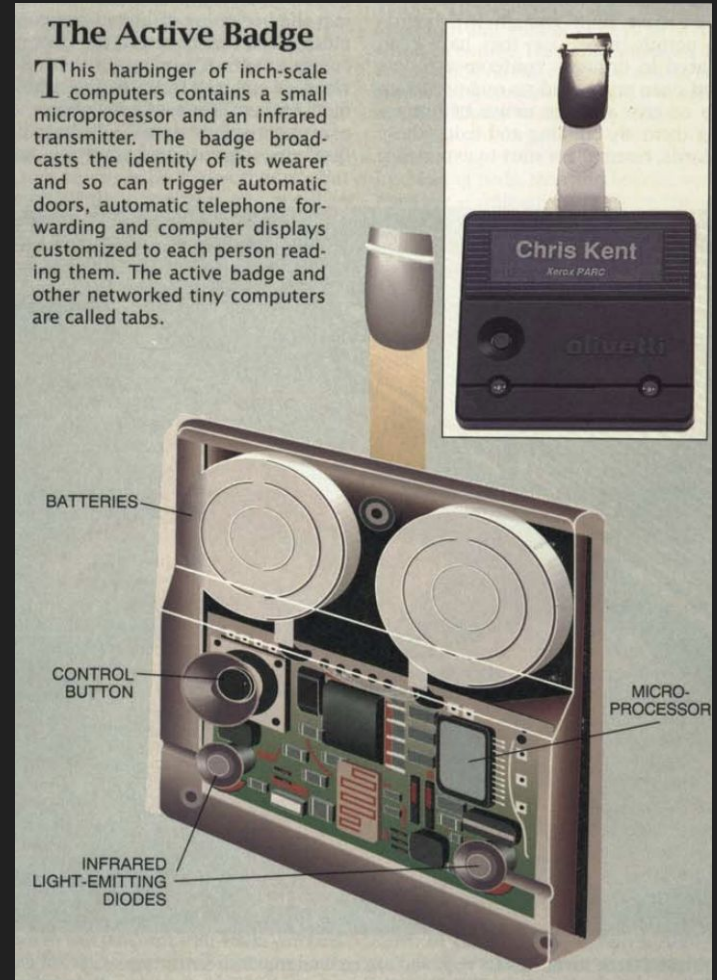
Boards

- Interactive walls
- Collaborative spaces
- Multiple per room



Example: Active Badge

- Implementation of ubiquitous computing principles at Xerox PARC
- Unique to individual, used to personal access security key



Present Day

What came true

- Smartphones (super-tabs)
- Tablets (pads)
- Smart boards
- IoT devices everywhere
- Wireless everything

What was limited

- True invisibility
- Attention-free computing
- Seamless device interoperability
- Shared vs. personal devices
- Privacy solutions

For discussion

In "The Computer for the 21st Century," Weiser pushed for the idea for technology to become invisible and fully integrated into our lifestyle, but the opposite seems to be occurring as we are becoming more aware in the devices we are interacting with each day. Why do you think this is?

- 1 Weiser mentioned many challenges including privacy and supply of devices. How have these challenges prevented ubiquitous computing to come to fruition?**
- 2 Individual smartphones and laptops seem to be capturing our attention more and more. How will this be a barrier to ubiquitous computing in the future?**
- 3 Weiser's argument mostly assumes that ubiquitous computing is an inherently good/productive end goal. Do you agree with this vision? Why or why not?**

Cross-text discussion question

Both Bush and Weiser got some of the “what” but nearly none of the “how” of future technologies correct, showcasing the difficulty in making these “moonshot” predictions. **Where does the difficulty arise from?**

Both articles were published in mass media venues (LIFE and Scientific American) and thus geared towards engaging the general public in science; **how do these publicly-facing, more sci-fi/moonshot articles serve/help academic researchers, if at all?**