Foundations

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CS 376

THANKS TO JEFF HEER AND SCOTT KLEMMER
Course Overview

- **Intro to Interaction; Intro to Social Computing**
- **Intro to Design; Interaction**
- **Interaction; Social Computing**
- **Social Computing**
- **Design**
- **AI+HCI; Media**
- **Foundations**
- **Access; Programming**
- **Collaboration; Visualization**
- **Education; Critiques of HCI**
Today: an incomplete history of foundational HCI research
As We May Think
Vannevar Bush, 1945
The Memex
What innovations did Vannevar Bush foresee?
A scientist of the future records experiments with a tiny camera fitted with universal-focus lens. The small square in the eyeglass at the left sights the object (*LIFE* 19(11), p. 112).
“There is a new profession of **trail blazers**, those who find delight in the task of establishing useful trails through the enormous mass of the common record. The **inheritance from the master becomes**, not only his additions to the world’s record, but **for his disciples the entire scaffolding** by which they were erected.”
Memex inspires Ivan Sutherland
Sketchpad
Ivan Sutherland, 1963
Memex also inspires Doug Engelbart
NLS: Mouse, Hypertext
The Mother of All Demos
Doug Engelbart, 1968
The NLS inspires Sutherland’s PhD student, Alan Kay
“The best way to predict the future is to invent it”
Xerox PARC draws on Engelbart and Kay’s ideas.
Xerox Star

- 1981
- Invented or popularized:
  - Desktop metaphor
  - Direct manipulation
  - Bitmapped display
  - Windows
  - WYSIWYG
  - Two-button mouse
Xerox Star

- Its inheritance, as described by Johnson et al.

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Steve Jobs: “I was so blinded by the first thing they showed me, which was the graphical user interface. I thought it was the best thing I’d ever seen in my life. [...] And within – you know – ten minutes it was obvious to me that all computers would work like this some day. It was obvious. [...] You could argue about how many years it would take. You could argue about who the winners and losers might be. You couldn’t argue about the inevitability, it was so obvious.”
Meanwhile, in Pittsburgh...
Notes on a Proposal for a Psychological Research Unit

The purpose of these notes, of which this is the first, is to act as a working vehicle to explore the notion of a psychological laboratory within a computer science oriented industrial research laboratory. The specific context is the Xerox Research Laboratory in Palo Alto.

I consider these notes to be working documents -- not the record of prior analysis, but an integral part of an analysis in progress. Hence ideas expressed in them may be exploratory or stipulative, to be contradicted by ideas expressed subsequently. They may also be somewhat discursive.

Basic proposition. The central idea that these notes are to explore is contained in a set of somewhat independent propositions:

1. There is emerging a psychology of cognitive behavior that will permit calculation of behavior in new situations and with new humans (called information processing psychology currently).

2. Several of the tasks that are central to the activities of computing -- programming, debugging, etc. -- are tasks that appear to be within the early scope of this emerging theory.

3. Computer science in general is extremely one-sided (for understandable reasons) in that it tends to follow in the path of scientific or technological development for the sole purpose of increasing the speed and efficiency of the machine.
Stu Card does his PhD with Allen Newell...
Model human processor
The inheritance of the Memex

And further...

[Bodker 2015]

First wave HCI
80s-90s
Cognitive science
Human factors
Models, pointing

Second wave HCI
90s–00s
Focus on work
Groups of people using a collection of applications
Ubicomp, CSCW

Third wave HCI
00s-10s
Multiplicity: of use contexts and application types
Makers, crowds, religion, assistive, ICT4D, …
And further...

[Bodker 2015]

Third wave HCI
00s-10s
Multiplicity: of use contexts
and application types
Makers, crowds, religion,
assistive, ICT4D, …

Fourth wave HCI
?

Fourth wave HCI
?
What components of Bush’s Memex vision are still missing?