

Human-Computer Interaction

Foundations & Visions of HCI

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Today's Agenda

- Topic overview: *Foundations & Visions of HCI*
- The frame: *enduring fundamental* → *how AI changes it*
- Provocation: *Augmentation or automation?*
- Discussion

This term's frame

Enduring fundamental → How AI is changing it → Depth (a claim to argue with)

Fundamentals are not a relic to move past – they are the **instrument** you use to read the AI moment.

- **Today's fundamental:** HCI's founding dialectic – *augmentation vs. automation*, and *plans vs. situated action*
- **Depth: Moderate** – the coordinate system you'll replot all term

Topic overview: ***Foundations & Visions*** ***of HCI***

The founding dialectic

Two answers to "what is the computer *for*?"

Augmentation

Amplify human intellect; the human stays in the loop
(*Bush · Licklider · Engelbart*)

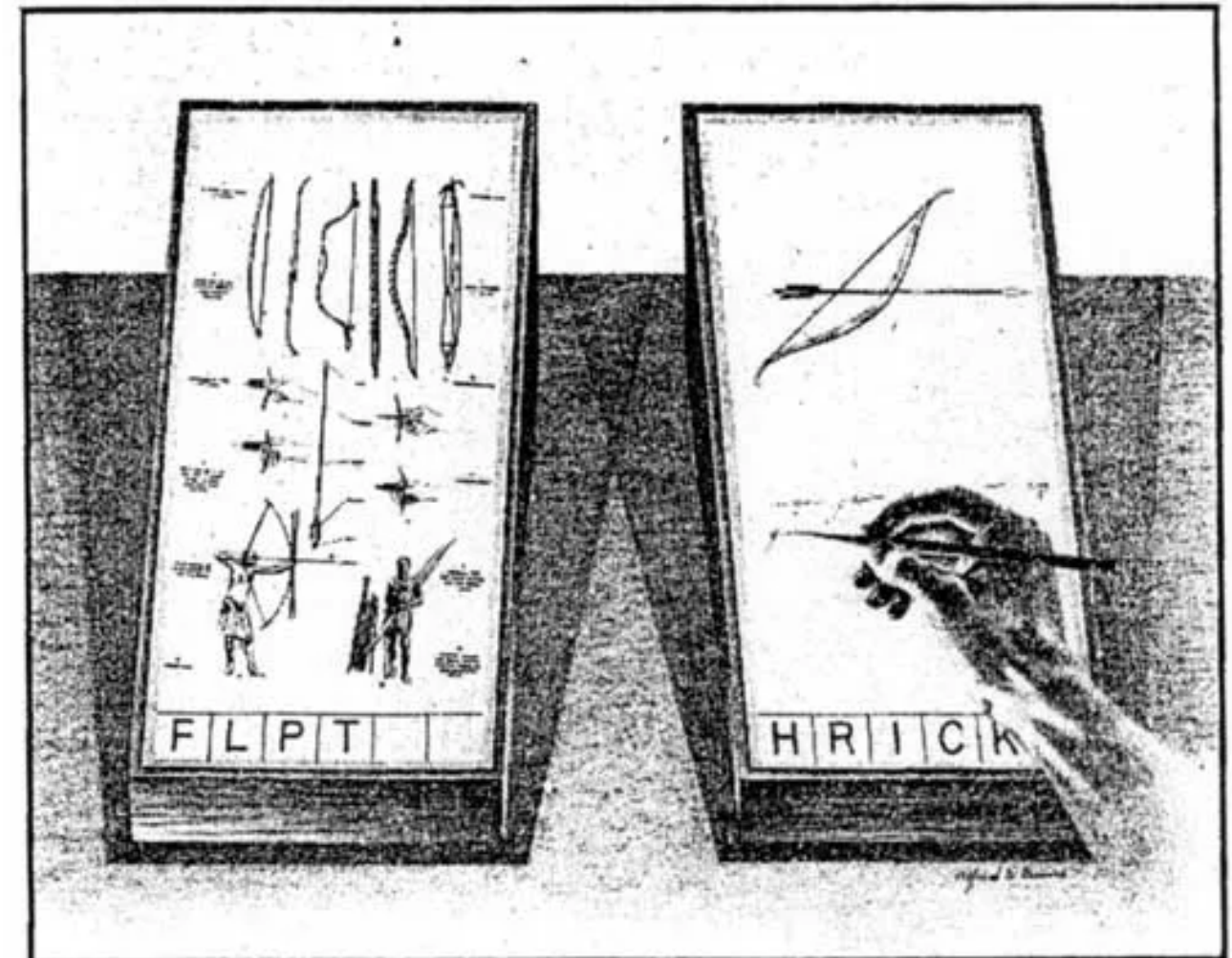
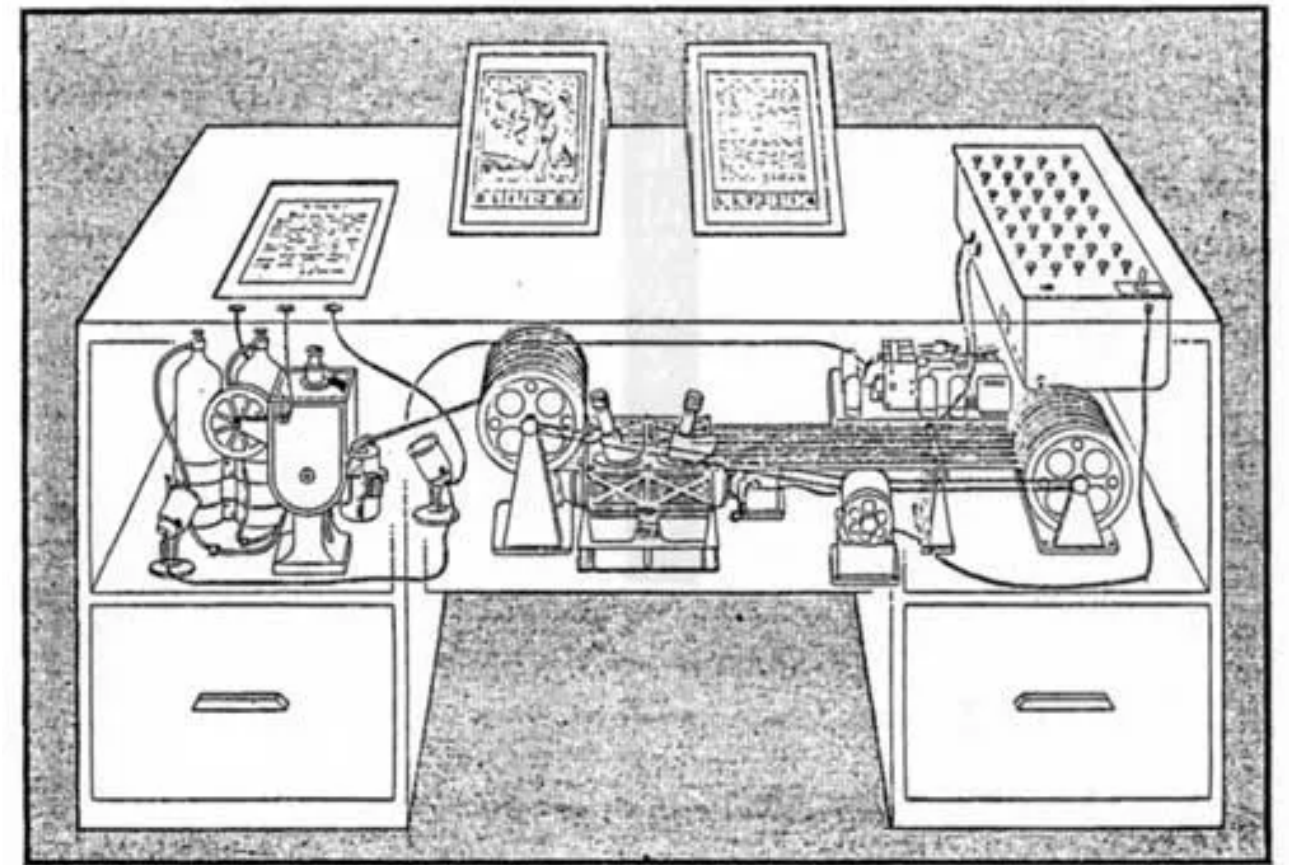
Automation

Replace human effort; the machine acts alone

1945 – The vision¹

Memex, Vannevar Bush – "As We May Think," *The Atlantic*

- Stores all records, linked by *associative trails*
- The origin of "tools for thought"



¹ Bush, V. (1945). As We May Think. *The Atlantic*. <https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/>

1960 – Symbiosis²

Man-Computer Symbiosis, J.C.R. Licklider, ARPA

"Men will set the goals, formulate the hypotheses, determine the criteria, and perform the evaluations. Computing machines will do the routinizable work that must be done to prepare the way for insights and decisions..."

²Licklider, J.C.R. (1960). Man-Computer Symbiosis. *IRE Trans. Human Factors in Electronics*, HFE-1, 4-11.



1962-68 – Augmenting intellect³

Augmenting Human Intellect (1962) → the "Mother of All Demos" (1968), Douglas Engelbart, SRI

Introduced *hypertext, windows, shared files, the mouse* – all in service of **augmenting**, not replacing, the human.

³ Engelbart, D. (1962). *Augmenting Human Intellect: A Conceptual Framework*. SRI Summary Report AFOSR-3223.

The counter-lens: situated action⁴

Lucy Suchman – *Plans and Situated Actions* (1987)

- Action is not the *execution of a plan*
- It is **situated** – improvised in an unfolding, contingent context
- A plan is a *resource* for action, not its controller

⁴Suchman, L. (1987). *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge Univ. Press. (Intro + ch. 1)

Why situated action matters *now*

An agent turns your goal into **a plan** – then runs it.

When the situation stops matching the plan, does the agent notice?

- Suchman's critique of AI planning applies again
- A design test, not a history lesson

A theoretical lens: the two gulfs⁵

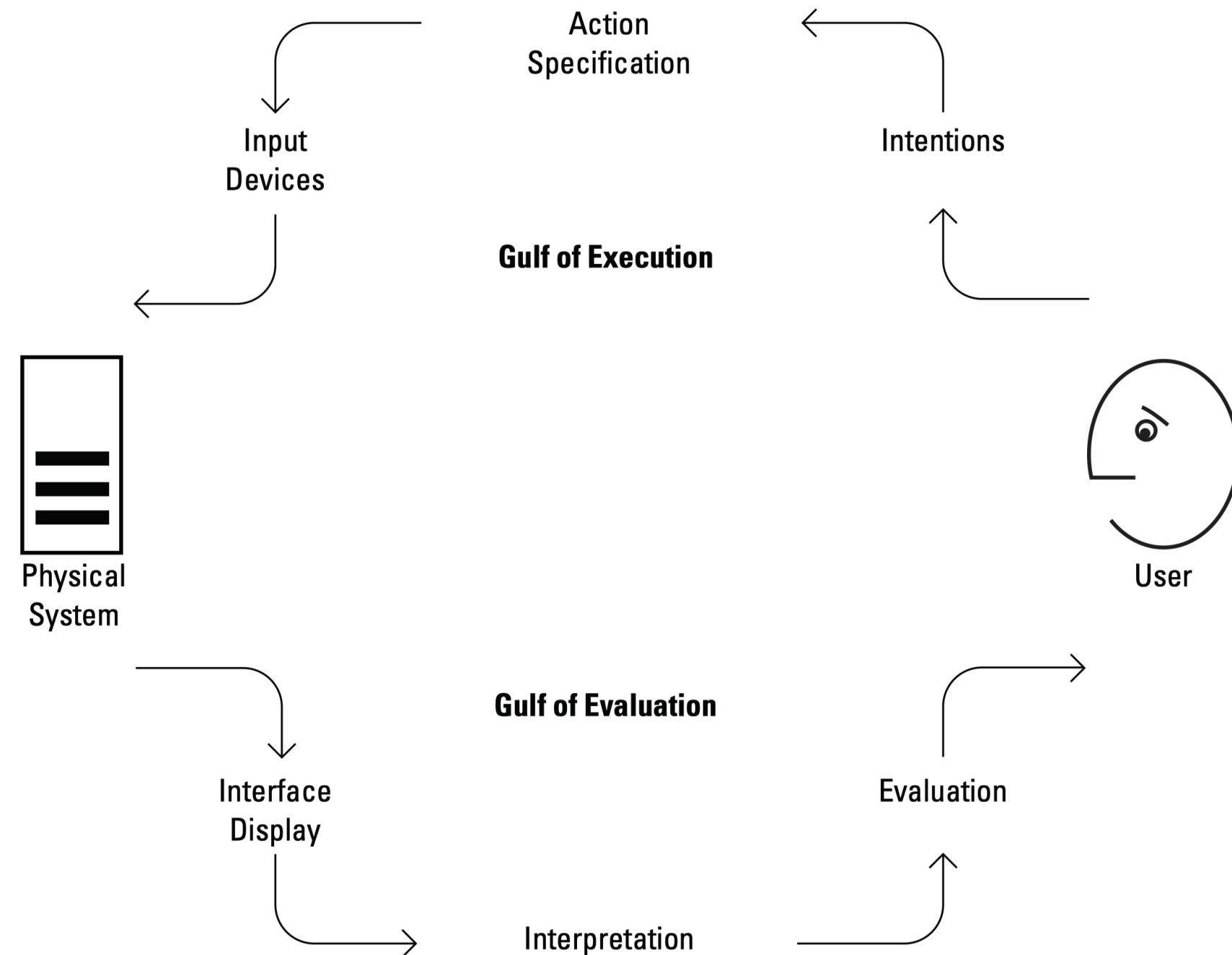
Don Norman – *conceptual models* & the gulfs

Gulf of execution

"How do I *do* this?" – intent to action

Gulf of evaluation

"What did it *do*?" – system state to understanding



⁵ Norman, D. A. (1986). Cognitive Engineering. In D. A. Norman & S. W. Draper (Eds.), *User Centered System Design* (pp. 31-61). Lawrence Erlbaum.

Norman, recast for AI

Gulf of execution – natural language *seems* to close it

- You can ask for anything, but you can't tell which phrasing will work

Gulf of evaluation – fluent output *widens* it

- The answer looks right, and there's **no visible conceptual model** to check it against
- So trust miscalibrates: people over-rely, or give up

A plotting tool: the HCAI 2x2⁶

Ben Shneiderman – control and automation are **two axes**, not one tradeoff.

	Low automation	High automation
High human control	reliable, effortful	★ the goal
Low human control	limited	runaway over-automation

⁶Shneiderman, B. (2020). Human-Centered AI: Reliable, Safe & Trustworthy. *Int. J. Human-Computer Interaction*, 36(6), 495–504.

The dialectic, today

Agentic AI is the newest move on the augmentation ↔ automation axis – and it tempts **"automate more."**

- **Suchman:** automation hides the human labor that makes it work
 - **Norman:** the conceptual model goes dark → trust miscalibrates
 - **Shneiderman:** control *and* automation, not one or the other
- 👉 The fundamentals are your instrument for reading the AI moment.

Your provocation (*post one slide*)

Pick one:

1. **Provocation** – is today's agentic *AI augmentation or automation*?
Or is that the wrong axis?
2. **Critical artifact** – plot a real AI system on the Shneiderman 2×2;
annotate one control-vs-automation choice its designers made.
3. **Design / policy** – one principle for keeping a system *symbiotic*
rather than fully automated.

Discussion

Form your pod

1. **Sit with your team.**
2. **Find a second team** and share a table – two teams, six seats.
3. **Number off 1-6**, starting at the seat left of the monitor.

This table is your pod for the rest of the term.

Today's roles

Reporter

Synthesizer

Skeptic

Connector

Seat 1

Seat 2

Seat 3

Seat 4

Same in every pod. **Seats 5 and 6** carry no role today – you are still in the argument.

Discussion Format

In your pod, on your pod monitor – ~30 minutes.

- **Everyone shows their slide** – about 2 minutes each, cast from your own laptop
- **Skeptic** puts a counterargument on the table · **Connector** ties it to an earlier week
- **Synthesizer** writes the pod's three lines: what you agreed, where you split, what's unresolved
- **Reporter** delivers those three lines to the room

What's Next?

- **Friday – Methods: Choosing Methods + Research Ethics & IRB**
 - Textbook **Ch. 15** (working with human subjects), plus **Ch. 16** on participants
 - Skim **McGrath (1995)**, *"Methodology Matters"*
 - Post your 3-line project status