Foundations

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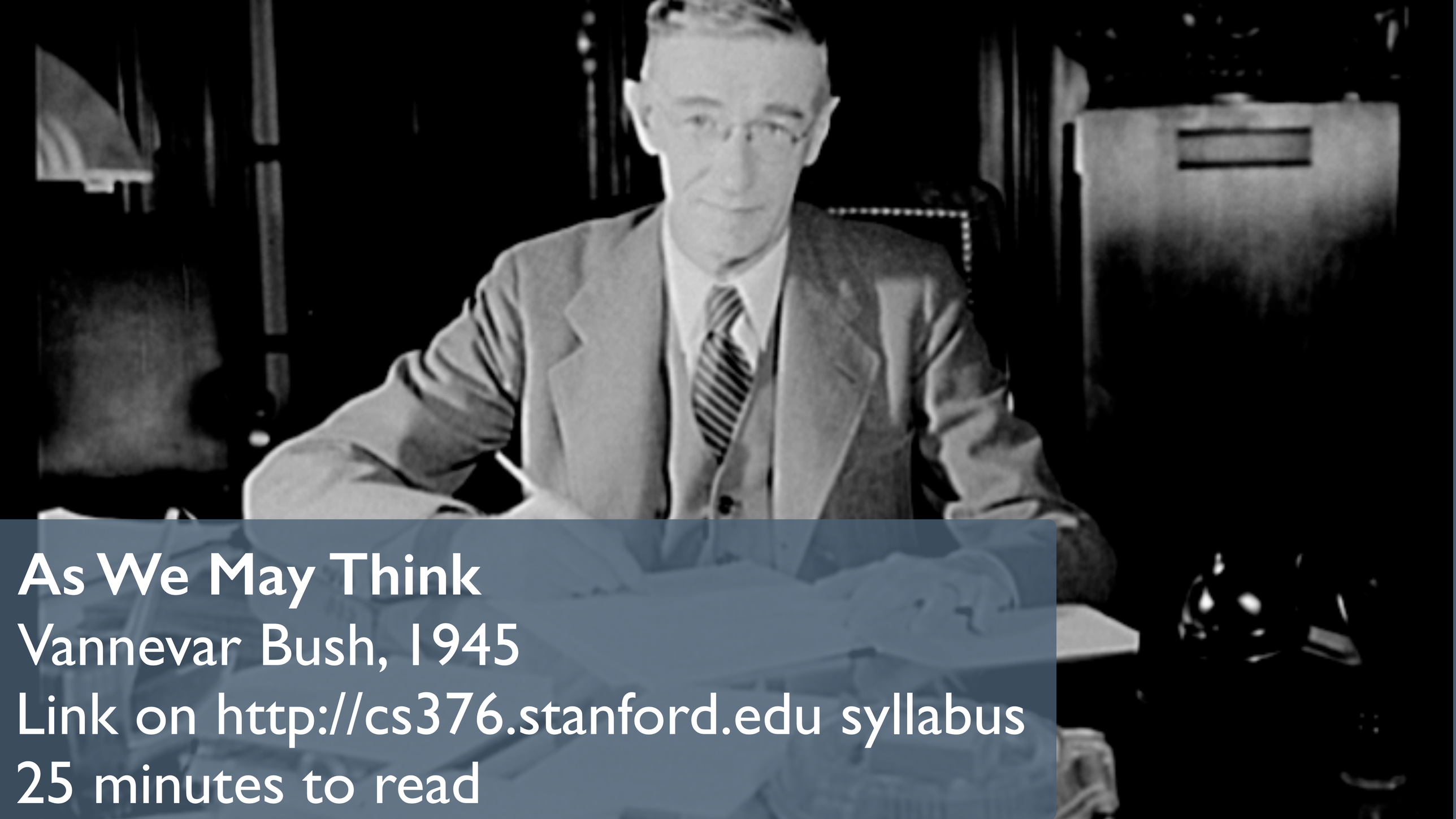
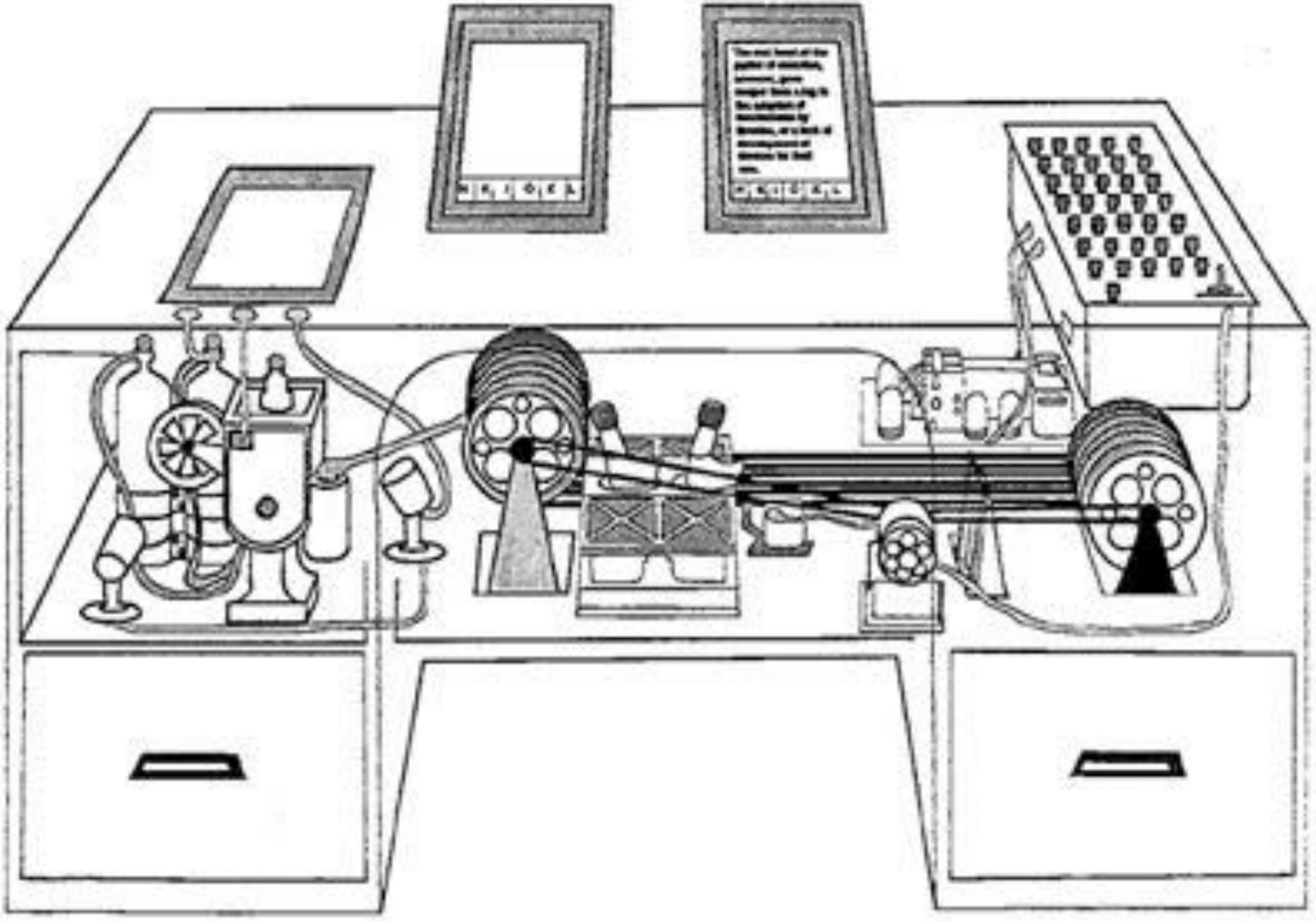
CS 376

THANKS TO JEFF HEER AND SCOTT KLEMMER

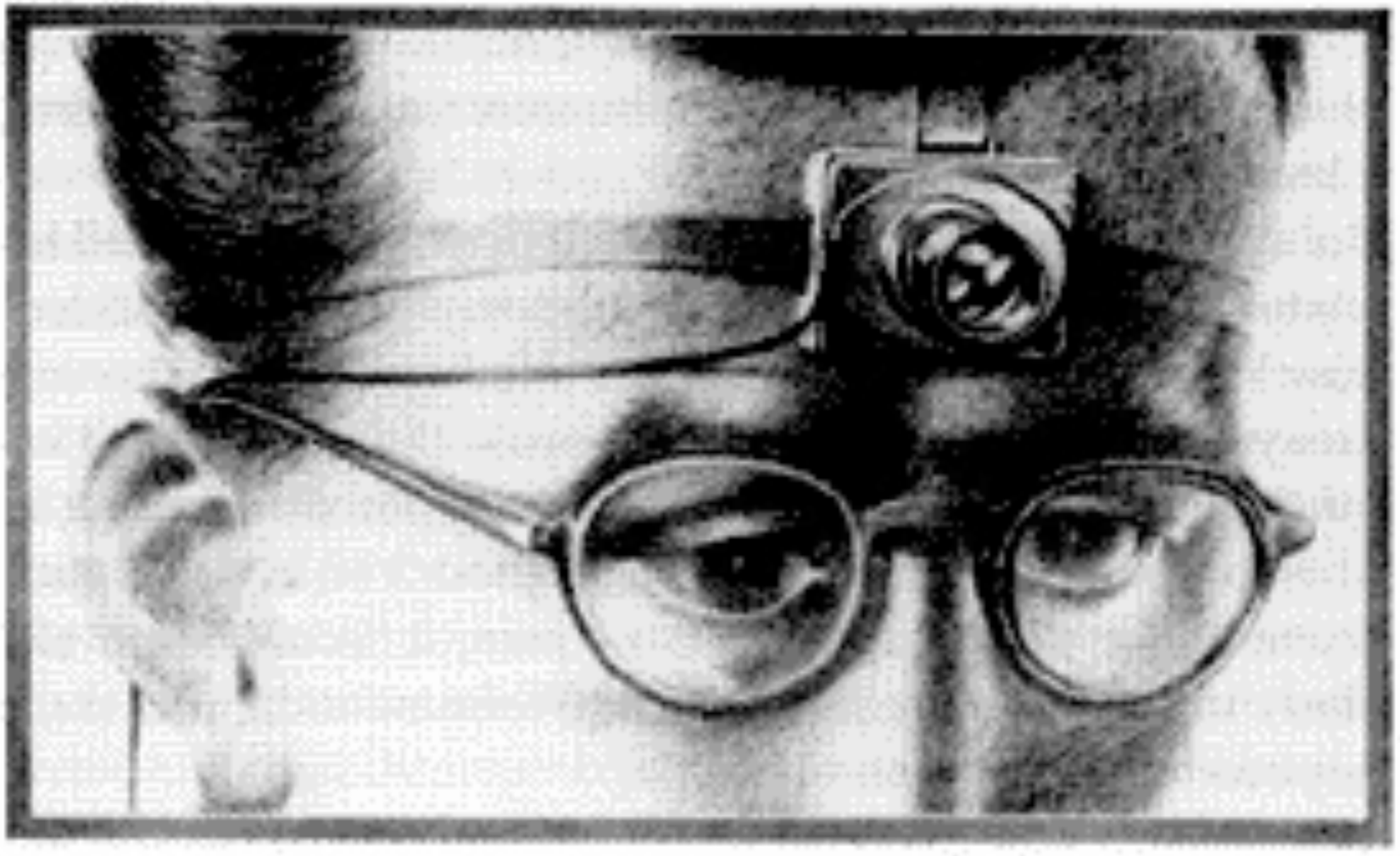
Today: an (incomplete) history



As We May Think
Vannevar Bush, 1945
Link on http://cs376.stanford.edu syllabus
25 minutes to read



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

Video

Sketchpad inspires Doug Engelbart

NLS: Mouse, Hypertext

1 ROUTE

2 MARKET SEE 1

2A PRODUCE

2A1 ORANGES

2A2 APPLES

2A3 BANANAS

2A4 CARROTS

2A5 LETTUCE

2A6 BEANS

2B CANS

2B1 APPLE SAUCE

2B2 BEAN SOUP

2B3 TOMATO SOUP

2C CEREALS

2C1 BREAD

2C2 NOODLES (ELBOW FIN

2C3 FRENCH BREAD

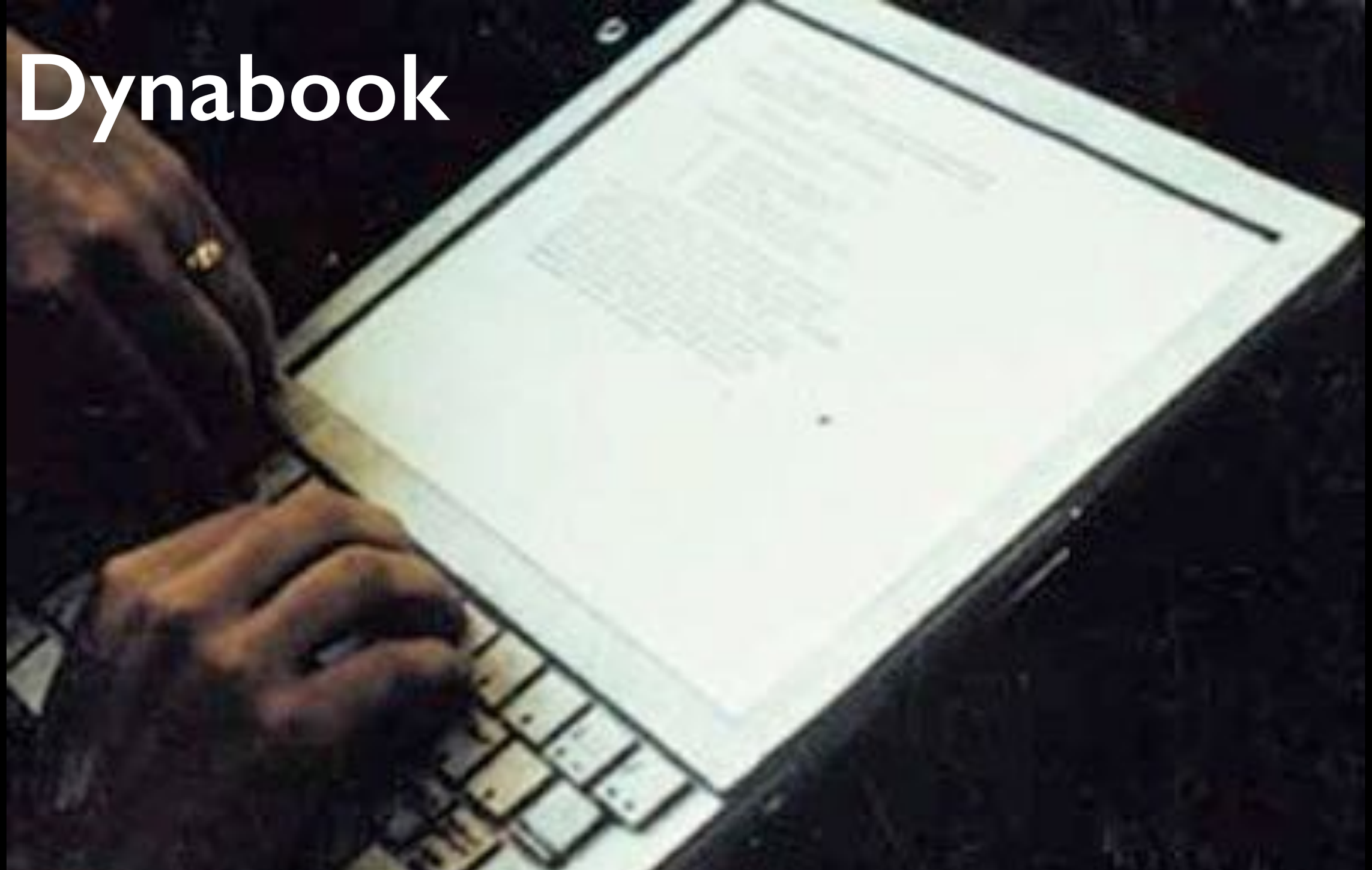
2D COLD LOCKER

2D1 MILK

The NLS inspires Alan Kay

“The best way to predict the future is to invent it”

Dynabook



Meanwhile, in Pittsburgh…

Xerox
Note 1
(Correction Copy)

Allen Newell
(retyped 11 Feb 73)

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 and 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).

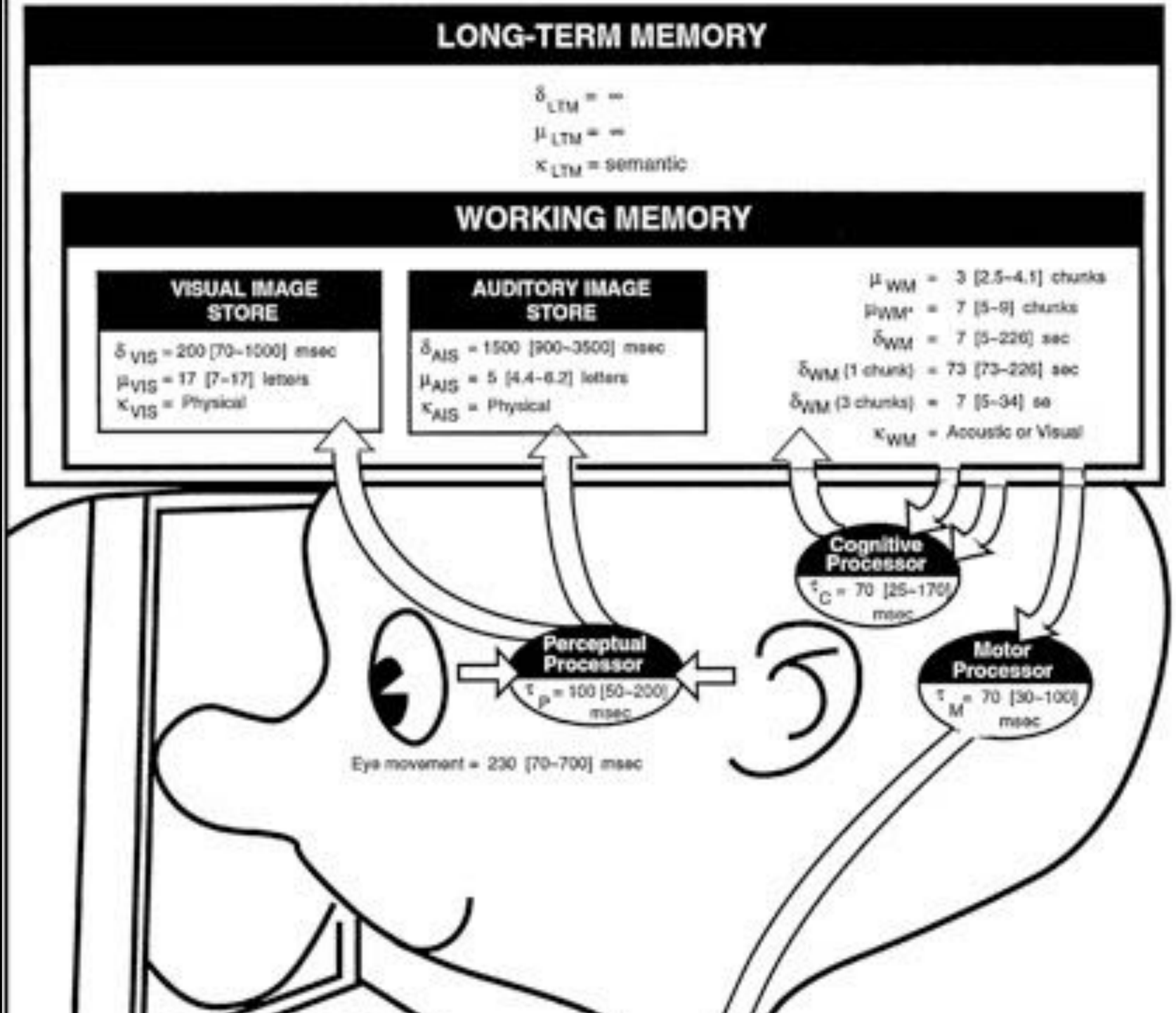
(2) Several of the tasks that are central to the activities of computing -- programming, debugging, etc. -- are tasks that appear to be within the early scope of this emerging theory.

(3) Computer science in general is extremely one-sided (for understandable reasons) in the treatment of its phenomena: almost no effort goes into understanding the nature of the human user. This applies to the design of programming languages, debugging systems, operating systems, etc.

(4) There is a substantial payoff (in dollars) to be had by really

Stu Card does his PhD with Allen Newell…

Model human processor

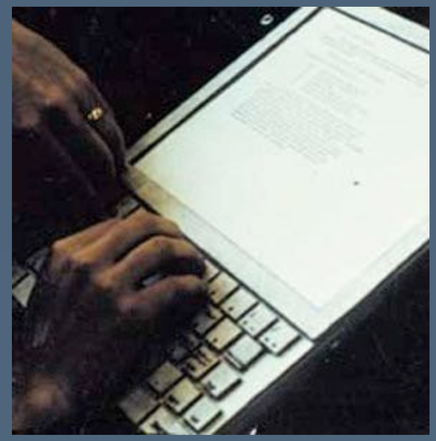


The inheritance of the Memex

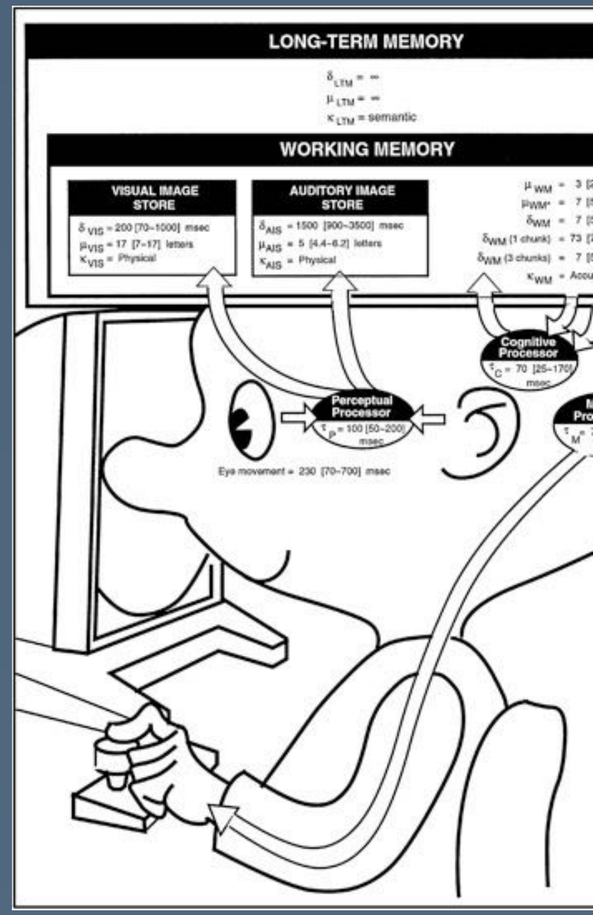
Sketchpad [Sutherland]

NLS [Engelbart]

Dynabook [Kay]



Model Human Processor [Card et al.]



What components of Bush's vision are still missing?