HCI: History in 3 Waves

Week 1

Stephen Gilbert

https://youtu.be/QUQsqBqxoR4?t=7s

Some Computer History

Charles Babbage (1822)

Difference Engine:
a mechanical calculator.

Analytical Engine:
1st general purpose computer

Designed but never built.

Ada Lovelace:
1st computer programmer

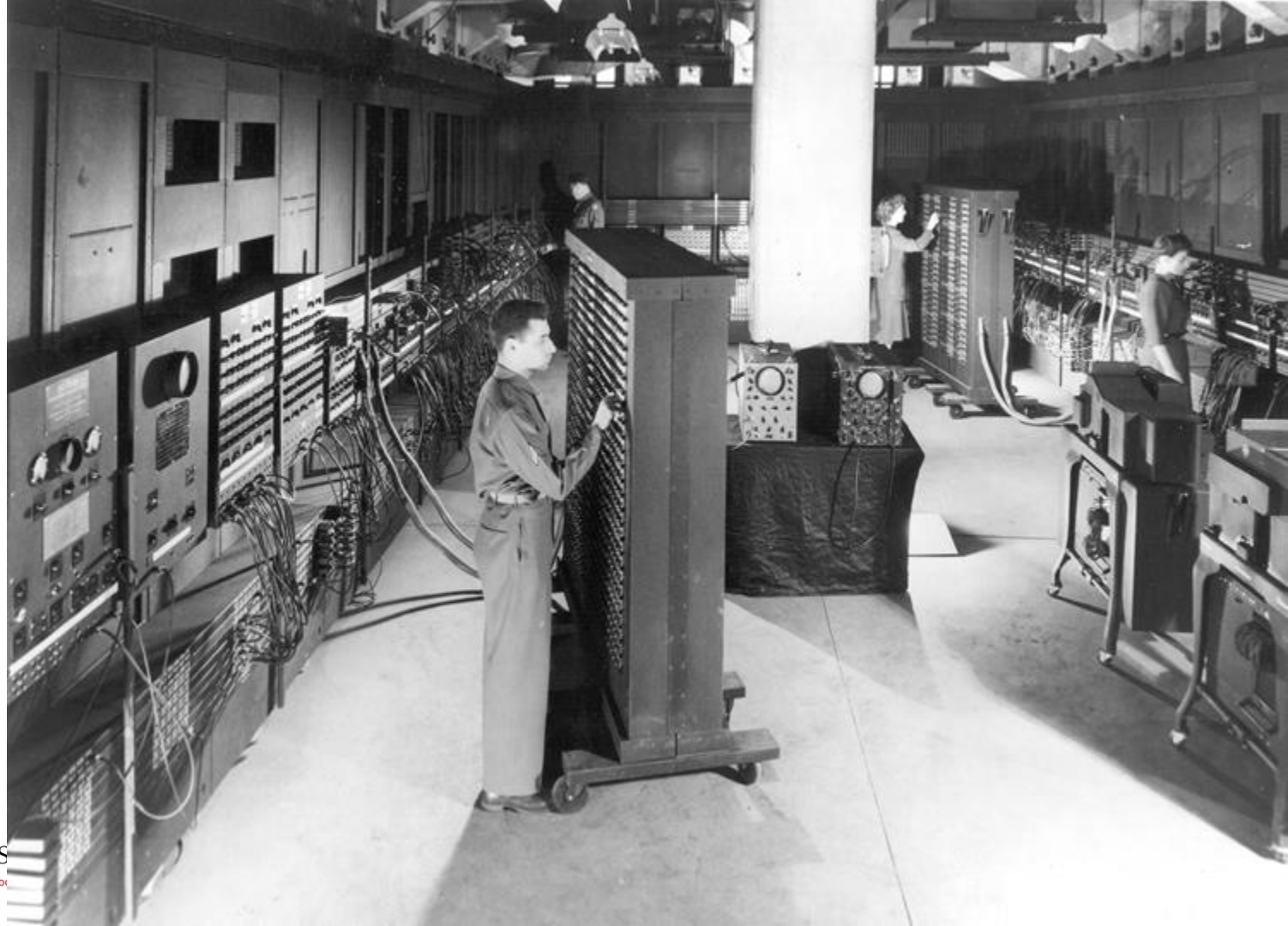
Lady Ada (Limor Fried)

Atanasoff-Berry Computer (1941)

First electronic digital computing device

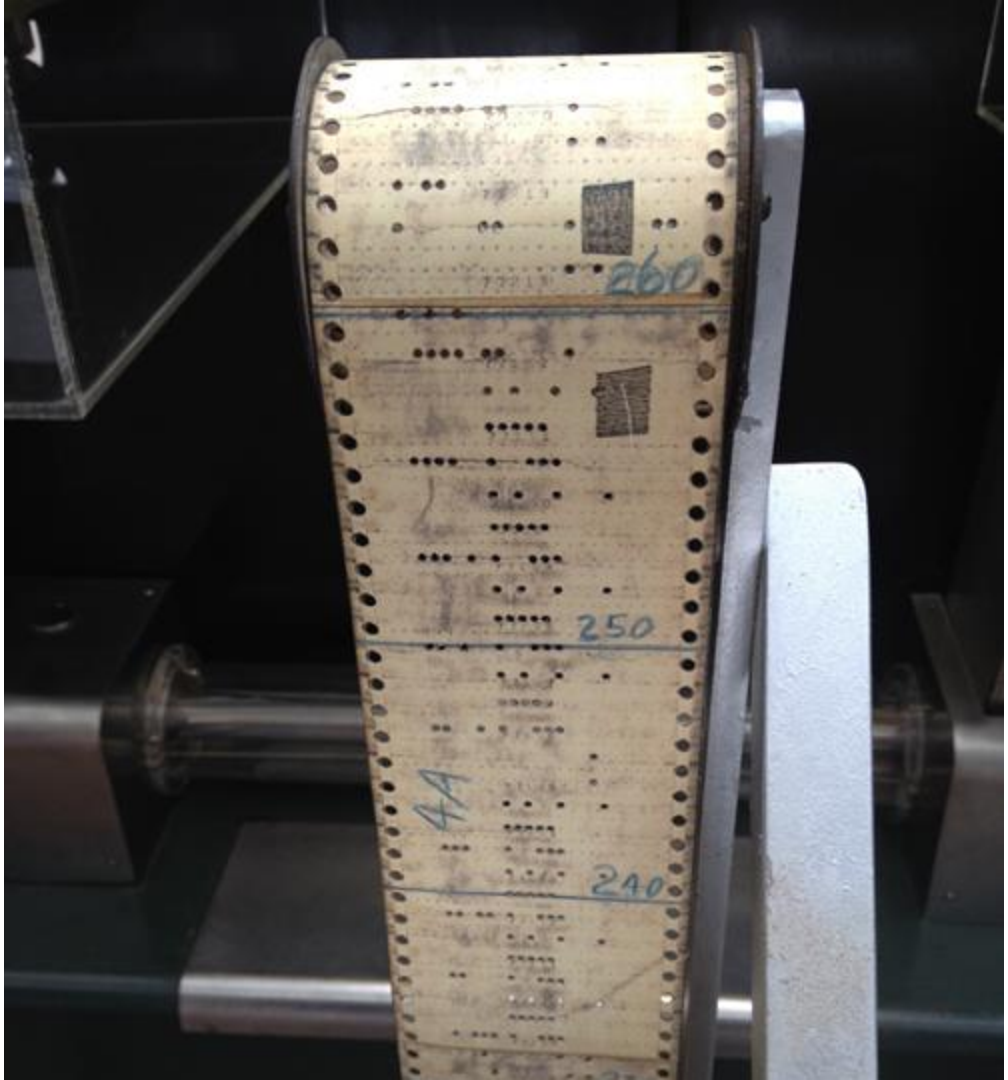
At Iowa State!

Eniac (1943)



Harvard Mark I (1944)

Paper tape readers with physical patches



IBM SSEC (1948)

From IBM Archives

Programming Languages

Moving beyond punch cards

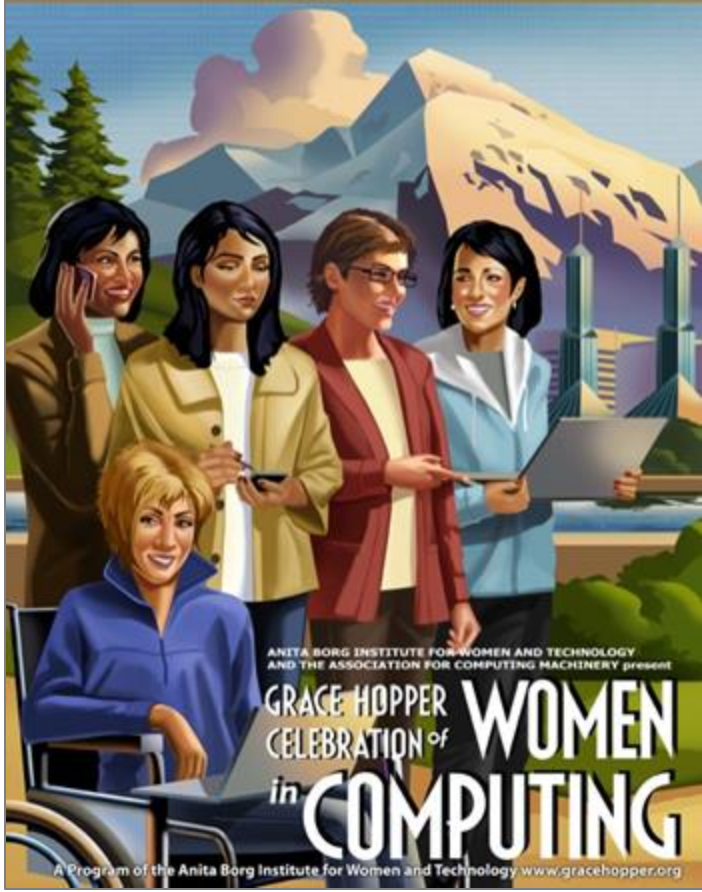
FORTRAN, 1957 from IBM

– Dorothy Vaughan

COBOL, 1960

– Grace Hopper, “Mother of COBOL”

Still “Batch Processing” – no interaction



Figures

Vannevar Bush (1945)

"As We May Think" in Atlantic Monthly

> "wholly new forms of encyclopedias will appear, ready made with a mesh of associative trails running through them, ready to be dropped into the memex and there amplified"

http://www.theatlantic.com/doc/194507/bush

J.C.R. Licklider

1960 – Described “Man-Computer Symbiosis”

- Time-sharing
- Networking
- Human-centered focus

Ivan Sutherland

MIT Ph.D. thesis: Sketchpad, 1963

Light pen

Hierarchy: pictures & subpictures

Icons

Copying

3D rotation

Douglas Englebart

NLS: oNLine System

"Mother of all demos" at 1968 conference

- Hypertext
- Windows
- Audio + video conferencing
- File version control
- Mouse & control box

Note: no Unix, no ARPAnet/Internet yet

Alan Kay

Dynabook, 1969

Xerox PARC

"Imagine having your own self-contained knowledge manipulator in a portable package the size and shape of an ordinary notebook. Suppose it had enough power to out-race your senses of sight and hearing, enough capacity to store for later retrieval thousands of page-equivalents of reference materials, poems, letters, recipes, records, drawings, animations, musical scores..."

Personal Computers

IBM XT/AT, 1981
- – Command line
- – Many sold

Mark Dean
Dennis Moeller

Xerox Star, 1981
- – WIMP GUI

(Windows, Icons, Menus, Pointers)
- – Commercial failure

Apple Lisa, 1983
- – Based on Xerox Star
- – Failed

Apple Macintosh, 1984

1987: Apple's Knowledge Navigator vision

Takes place in 2011

What does it get right?
What's wrong?
What do we still need to do?

Notes:

- iPhone 2007
- iPad 2010
- Siri 2011

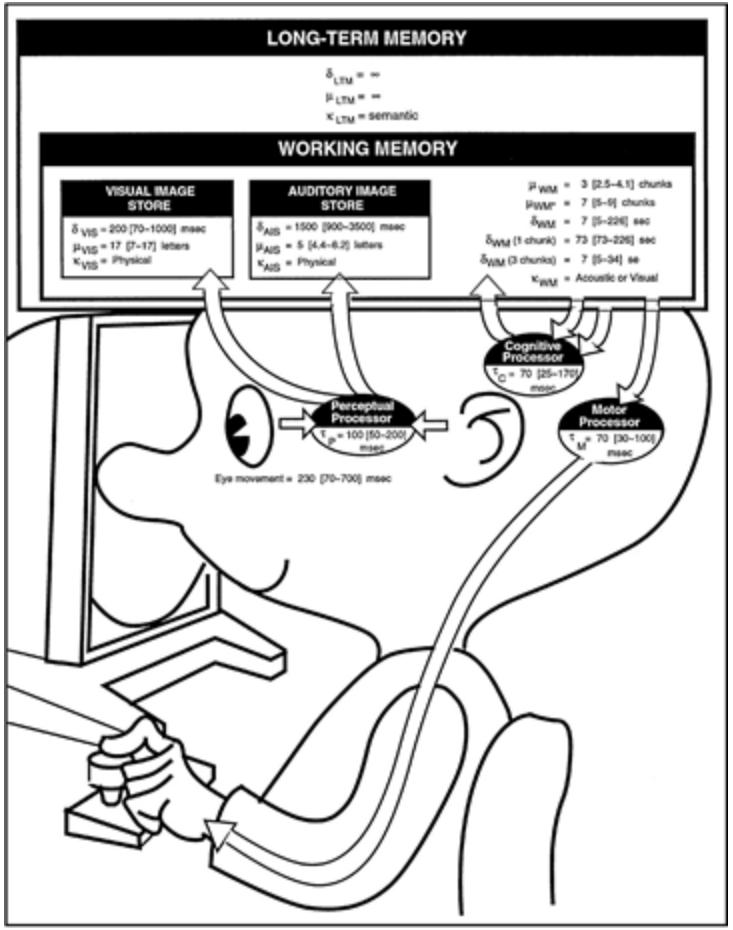
HCI History: 3 Waves

First Wave

Treat human like a machine.
What can it do?

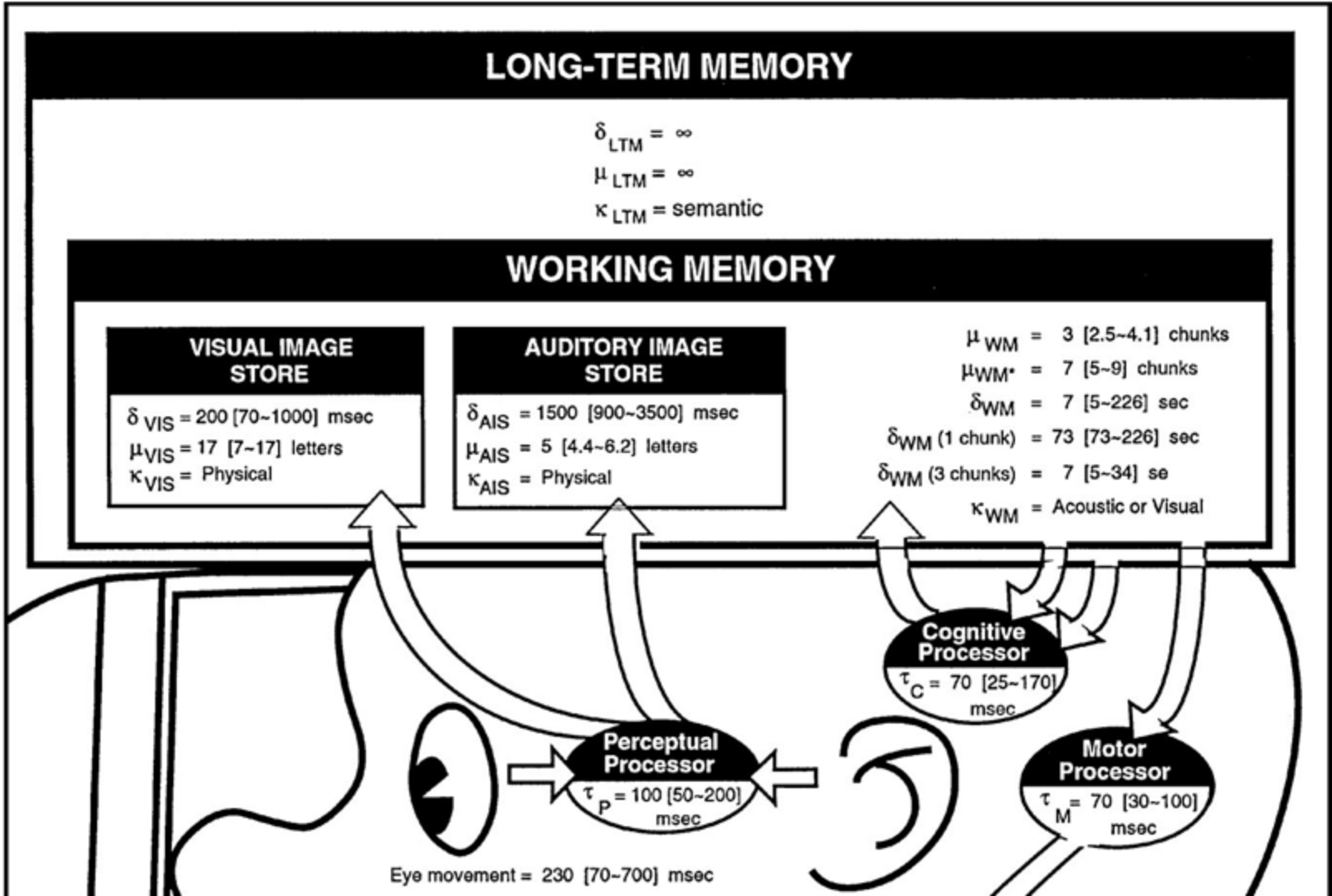
Cognitive Science
Psychophysics
Human Factors

People at desks at work.



Info Processing Model

Card, Moran & Newell



Stroop

Tell me the colors of the words on the next 2 slides.

E.g.

RED

BLUE

1

BLACK

RED

GREEN

BLACK

BLUE

RED

BLACK

GREEN

BLUE

RED

2

RED

BLACK

BLUE

GREEN

RED

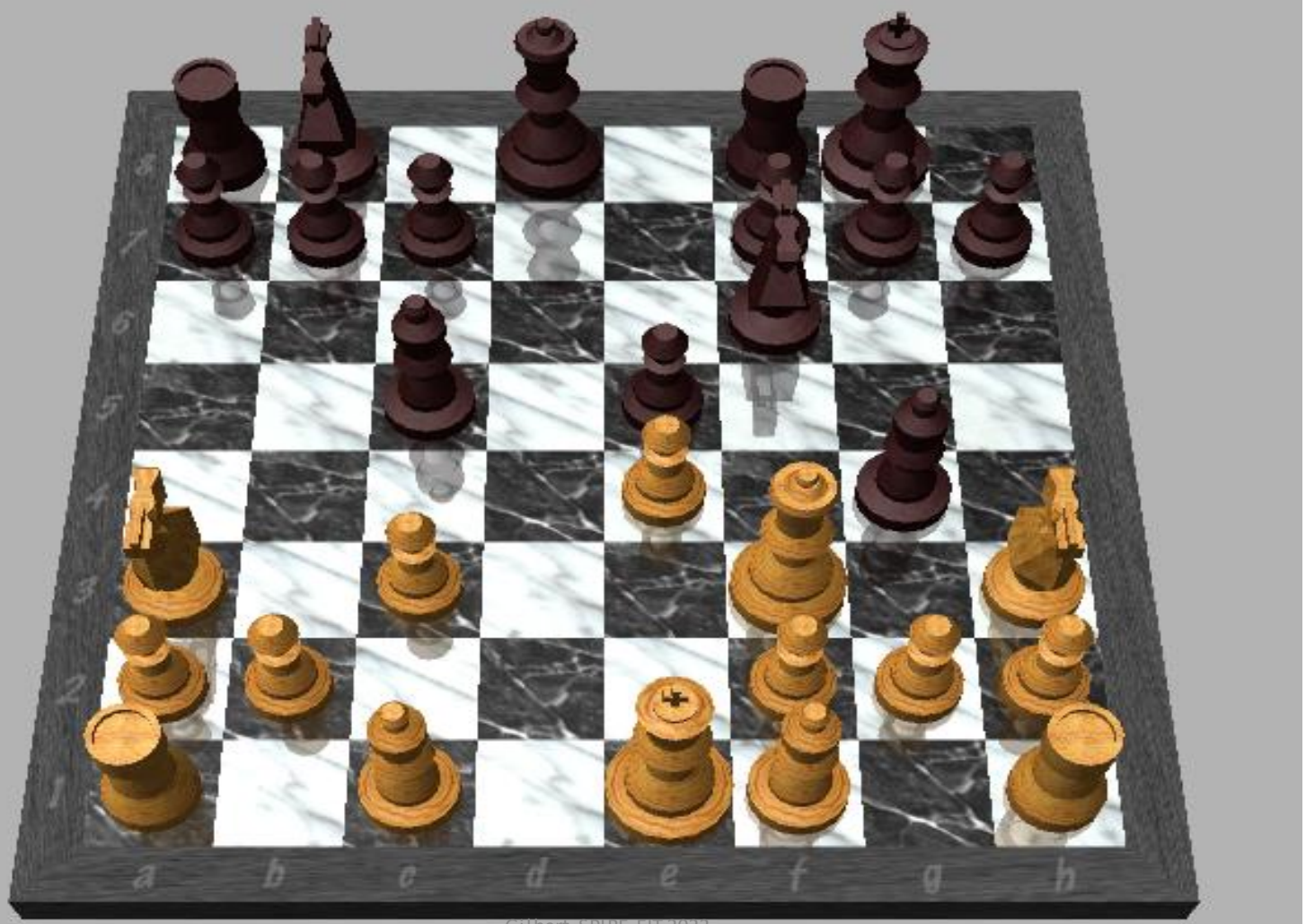
BLUE

RED

BLACK

GREEN

BLACK



Chess

Who is winning?

Chess

Who is winning?

How do you know?

Chess

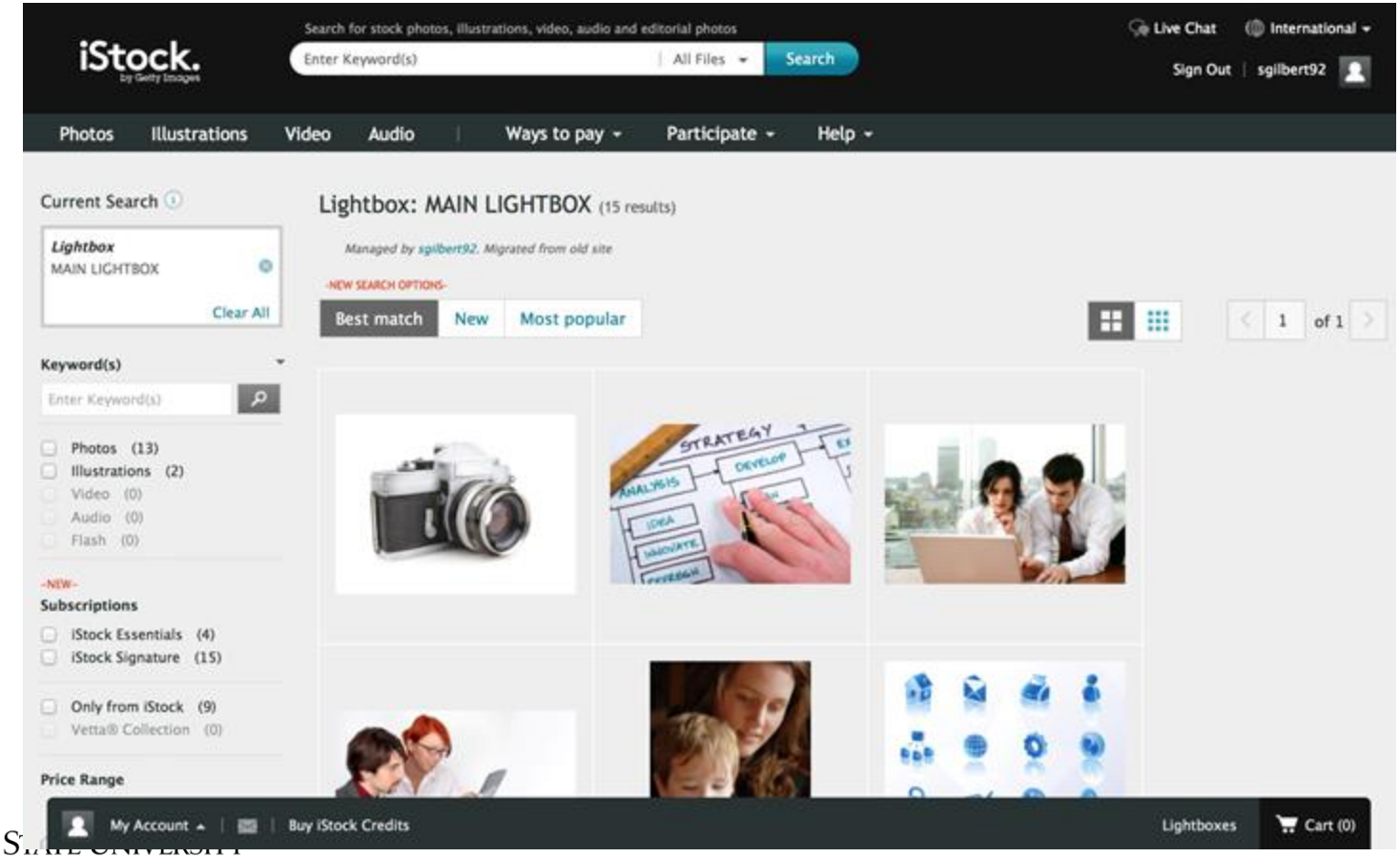
Who is winning?

How do you know?

What do you remember?

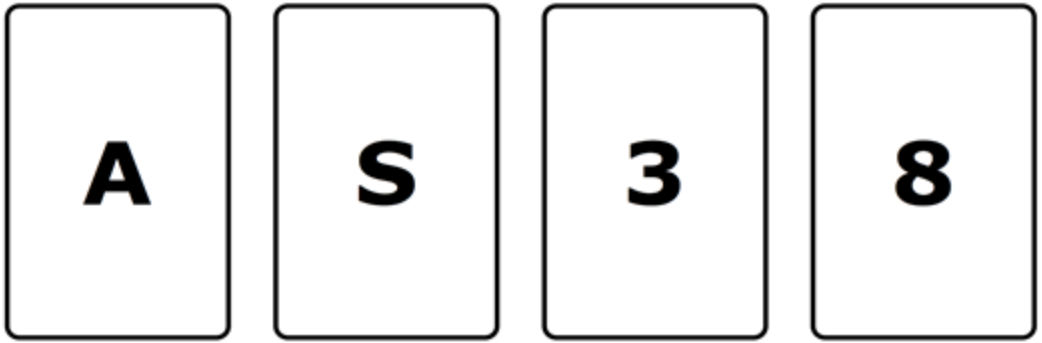
Experts vs. Amateurs

QUICK! How many items do I have in my shopping cart?



QUICK! How many items do I have in my shopping cart?

Reasoning



Fact:

- All cards have letter on one side and number on the other

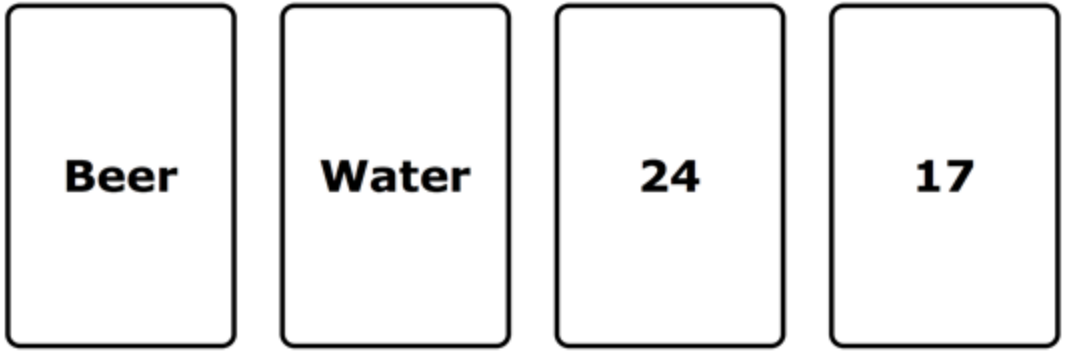
Rule:

- If there's a vowel on one side, there's an odd number on the other side.

Question:

- Which card(s) do you turn over to verify the rule?

Reasoning (2)



Fact:

- All cards represent people - the person's drink is on one side, age is on the other.

Rule:

- If the person is drinking alcohol, he or she must be over 21

Question:

- Which card(s) do you turn over to verify the rule?

What's missing from the First Wave?

Second Wave

The whole human
Groups of Humans
Situated action / intent

CSCW
Participatory Design

Workplace groups
Technology is separate

Flight 1549: Lands in the Hudson (2009); movie Sully

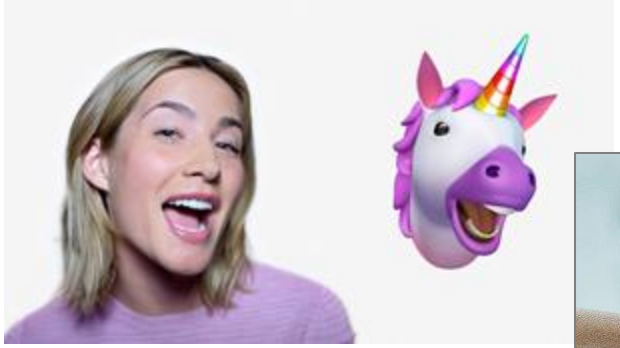
What's missing from the Second Wave?

Third Wave

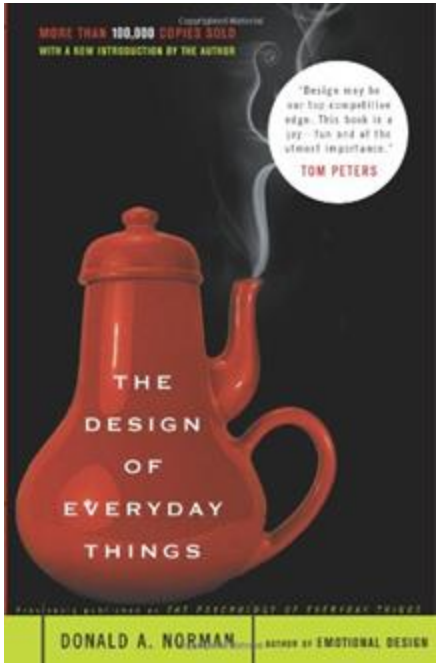
Social dynamics
Culture
Emotion

Affective computing
Human-Agent
Teaming

Non–work activities



HCI Homework: Bad Usability Scavenger Hunt



Find 2 interfaces that are frustrating for the user (websites or physical items: Doors, Chairs, Game Controllers, etc.) and capture them (photo or screenshot) by end of Sunday.

Describe:

- The user's task and context
- What is working/not working, what could make it better
- Blog them: start post title with **"HCI: "**
- Due by end of Sunday