Human-Computer Interaction Design Studio

Scott Klemmer and Bill Verplank
TAs: Kevin Collins & Nundu JanakiRam

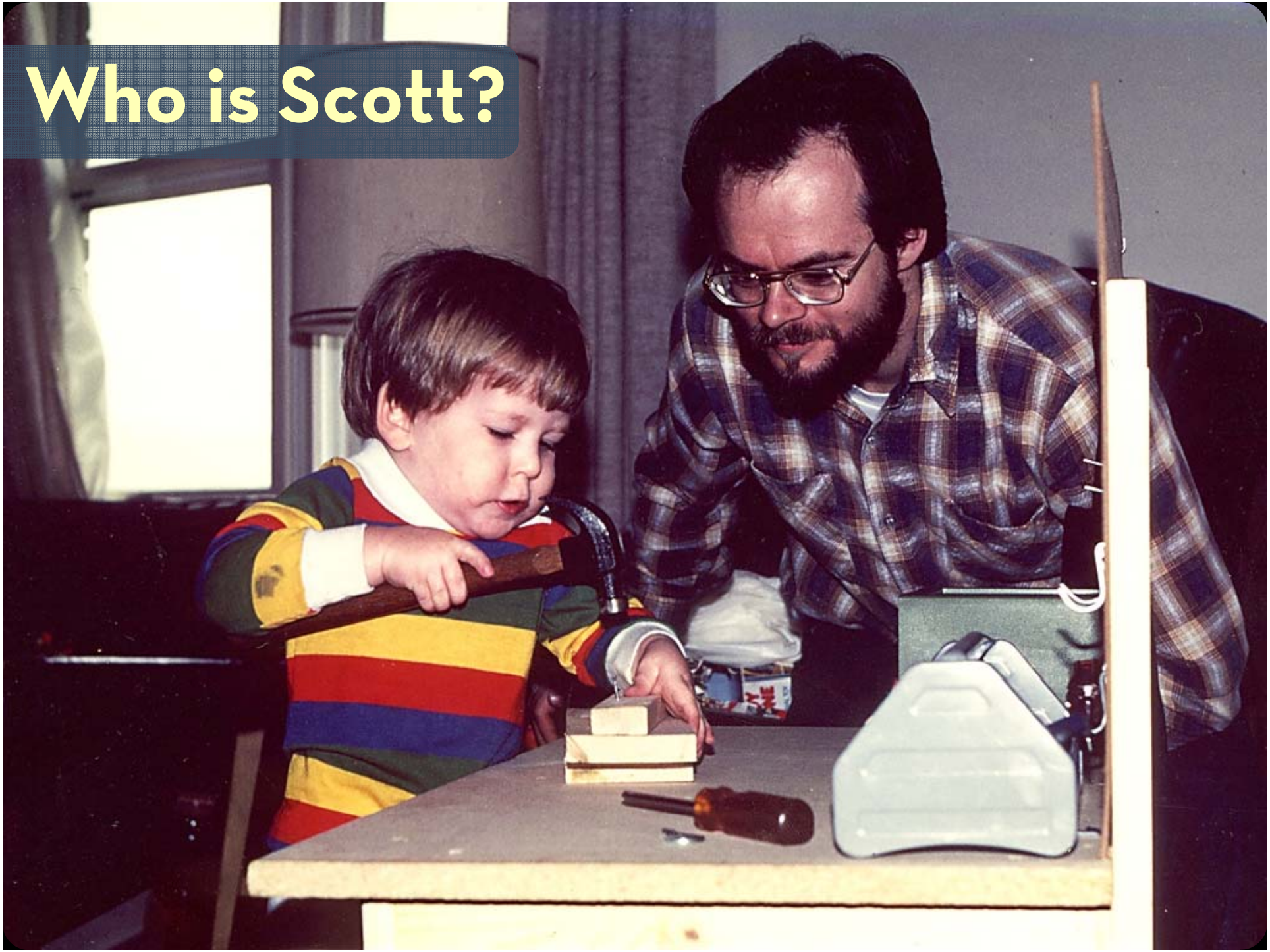
09 January 2007

http://cs247.stanford.edu

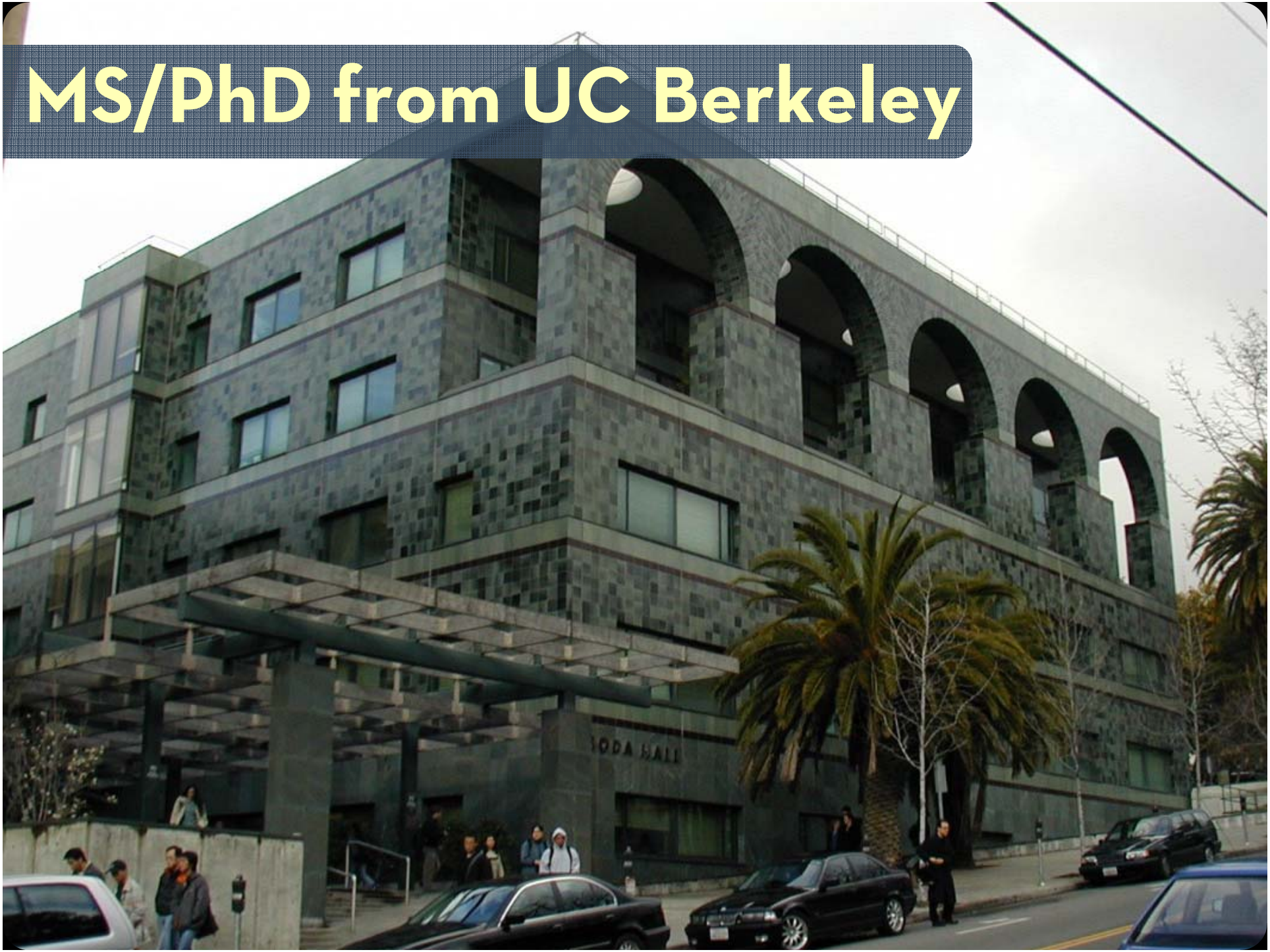
Today

- **Teaching staff & student introductions**
- Course content
- Lab section
- Course administrivia

Who is Scott?

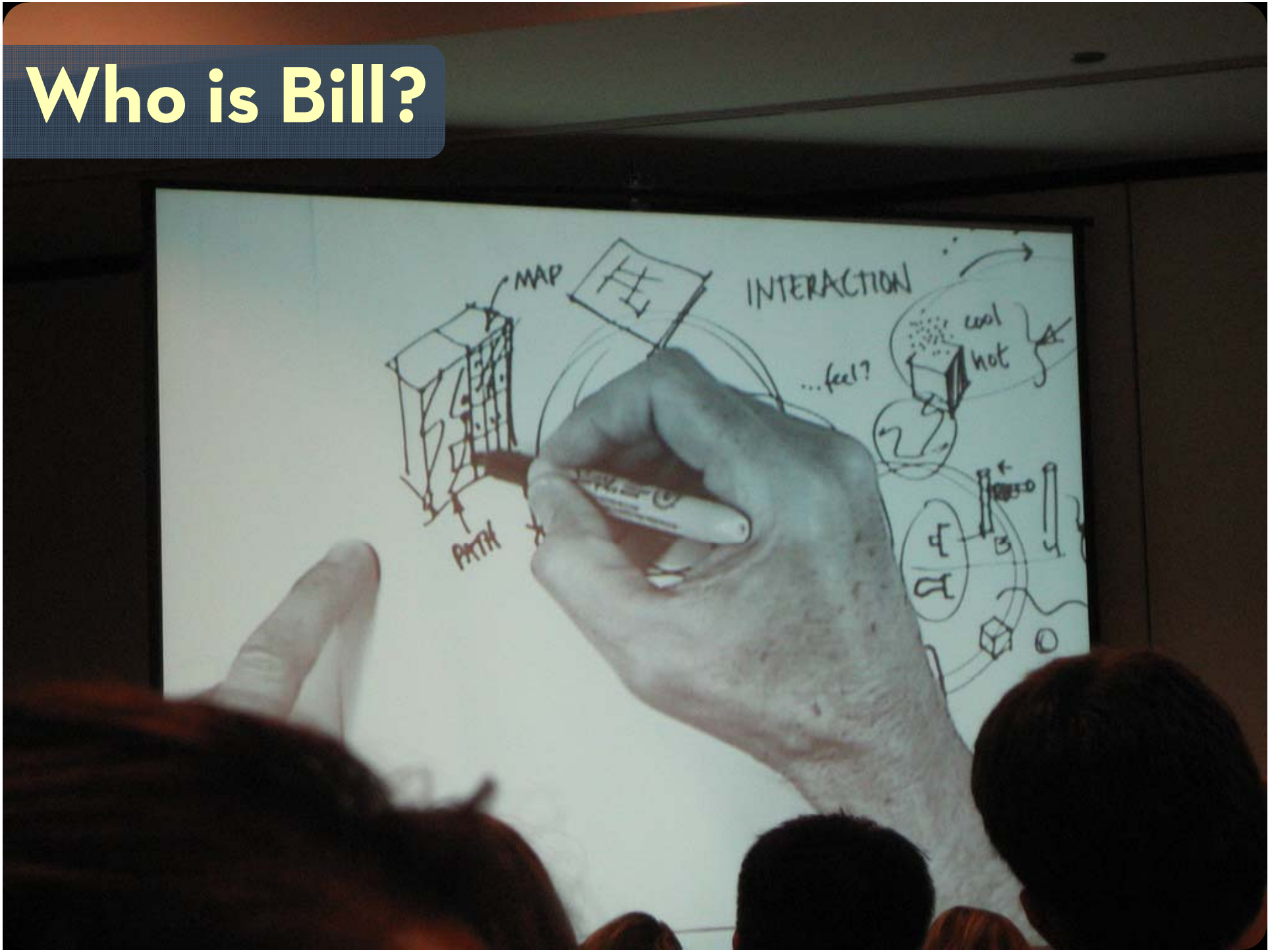


MS/PhD from UC Berkeley



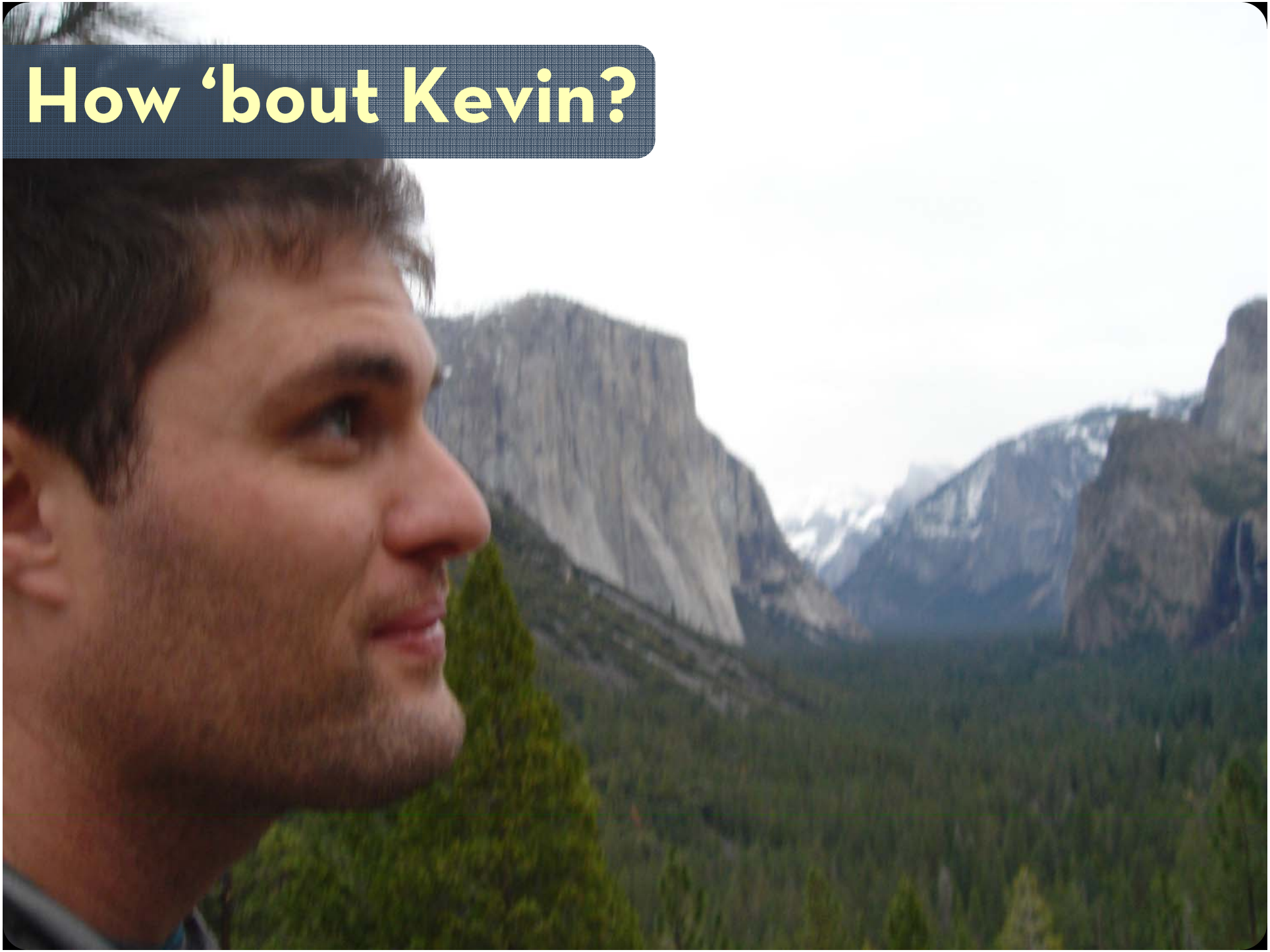
BA from Brown University

Who is Bill?

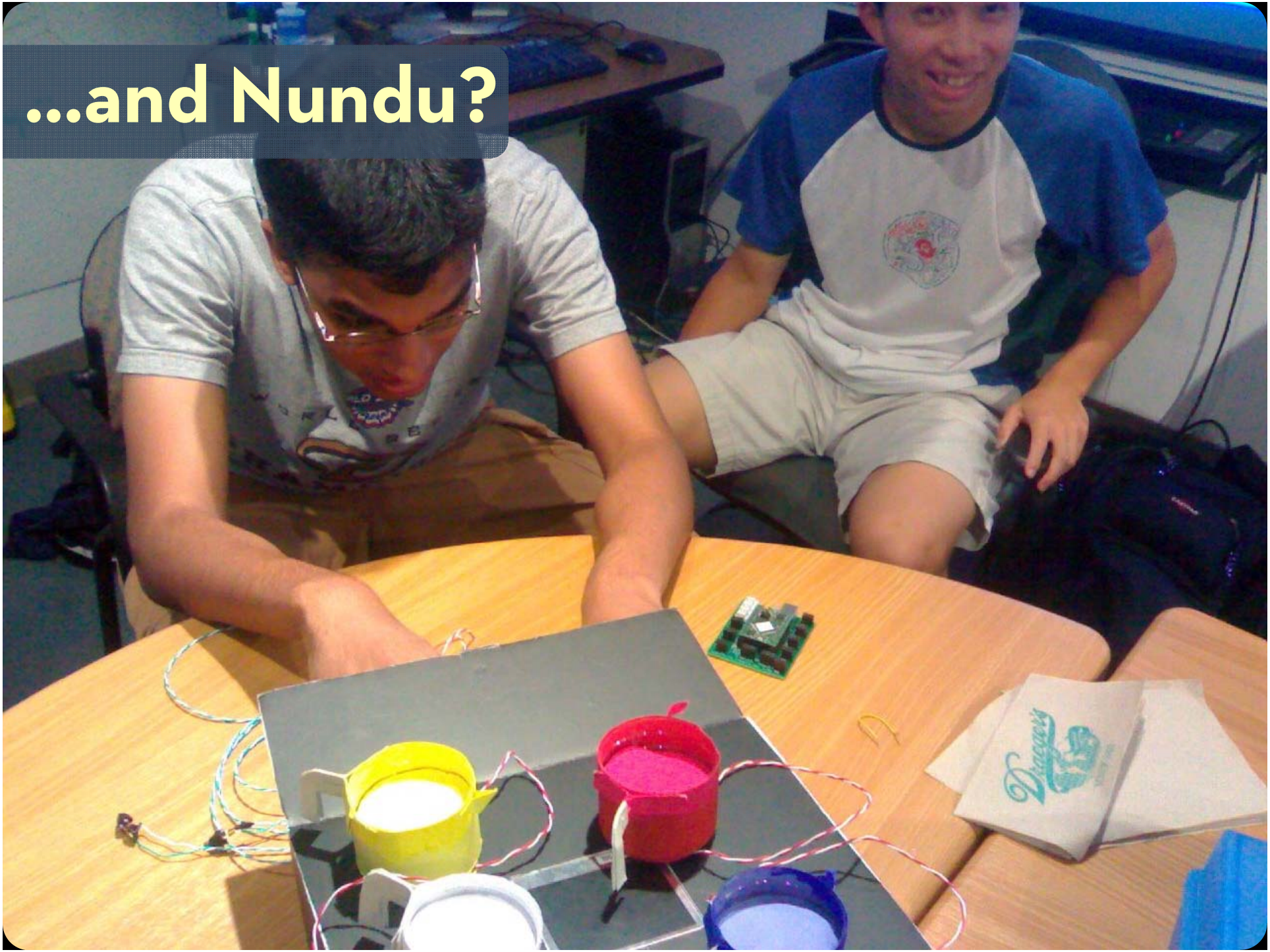


How ‘bout Kevin?

How ‘bout Kevin?



...and Nundu?

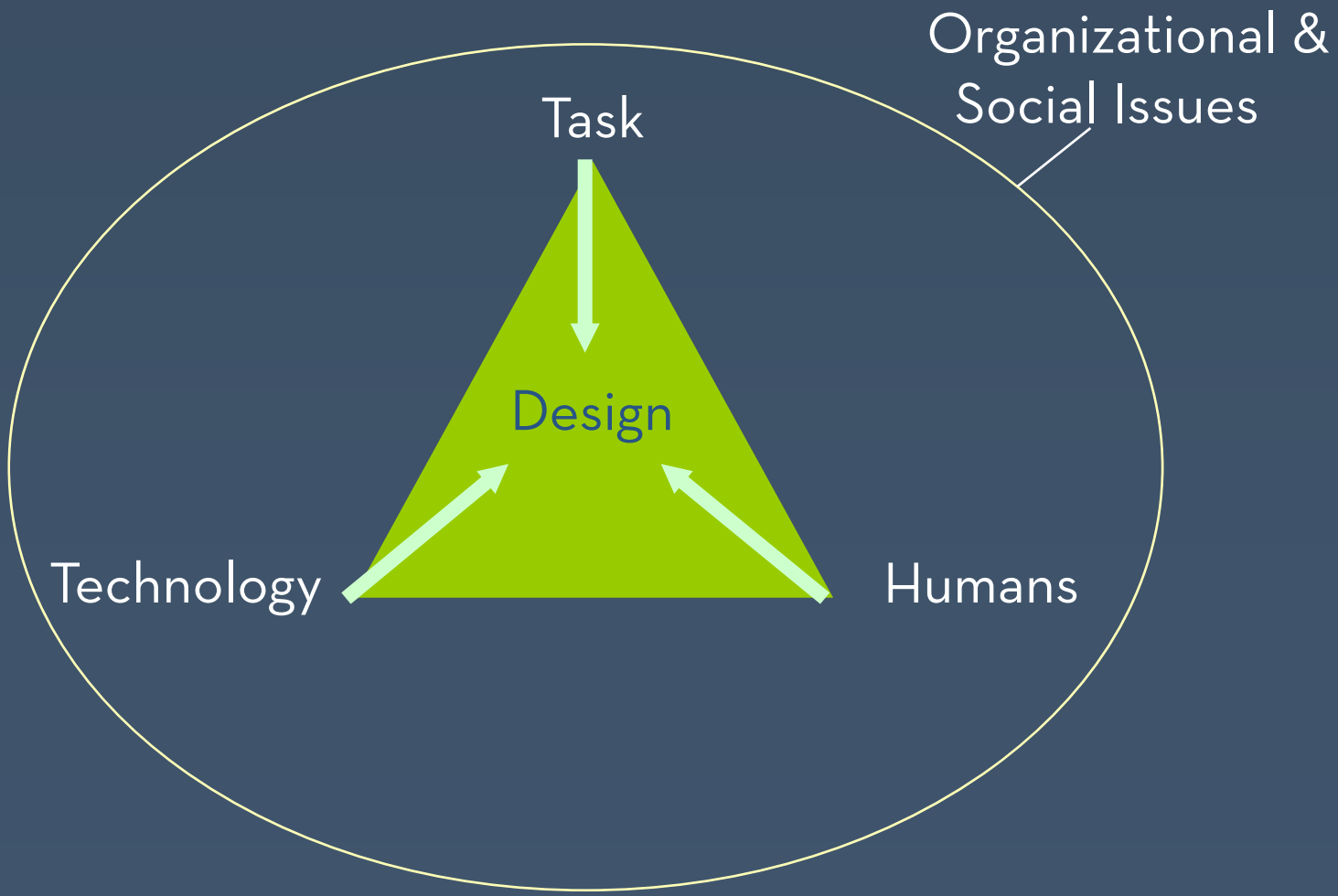


...and you

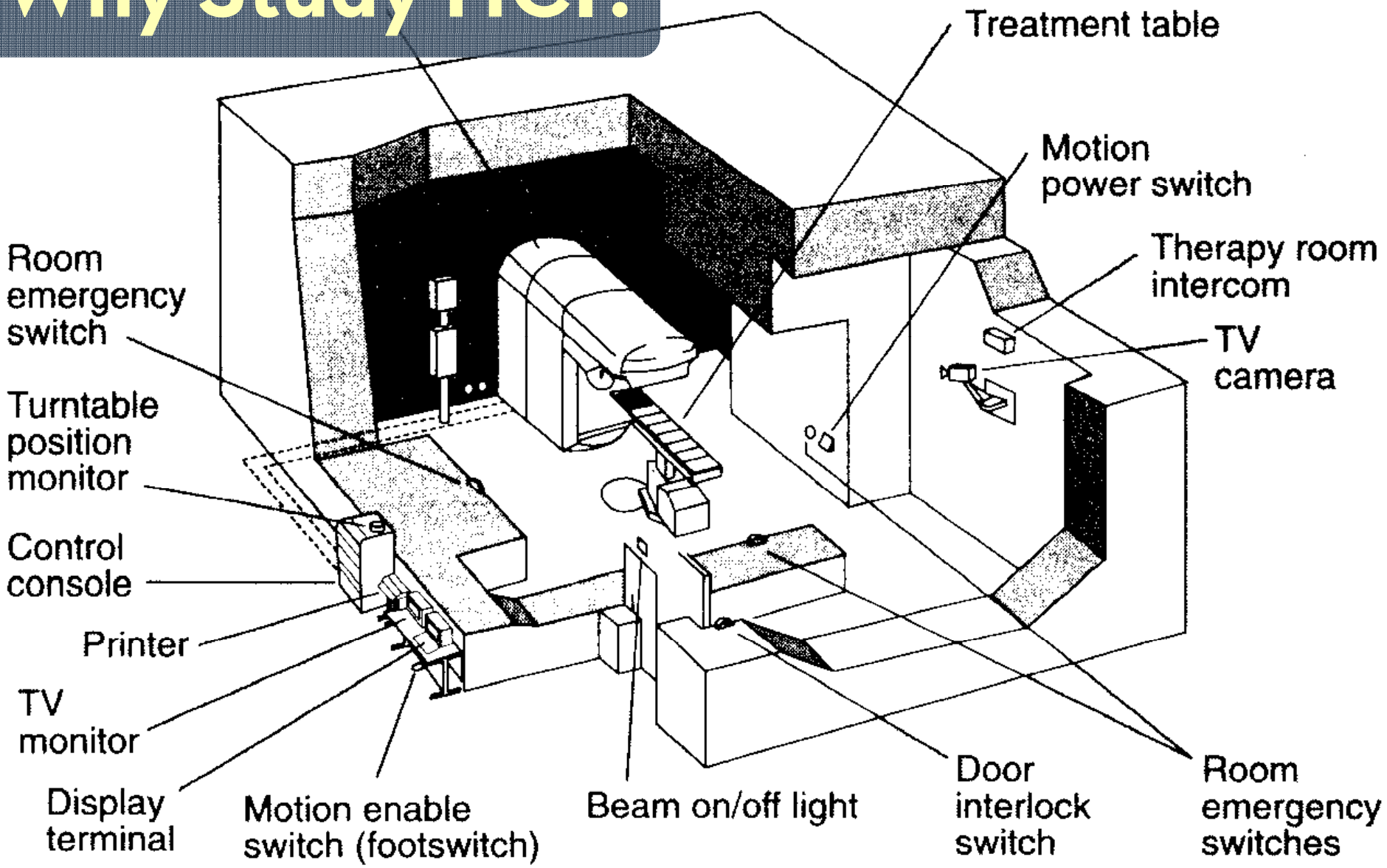
Today

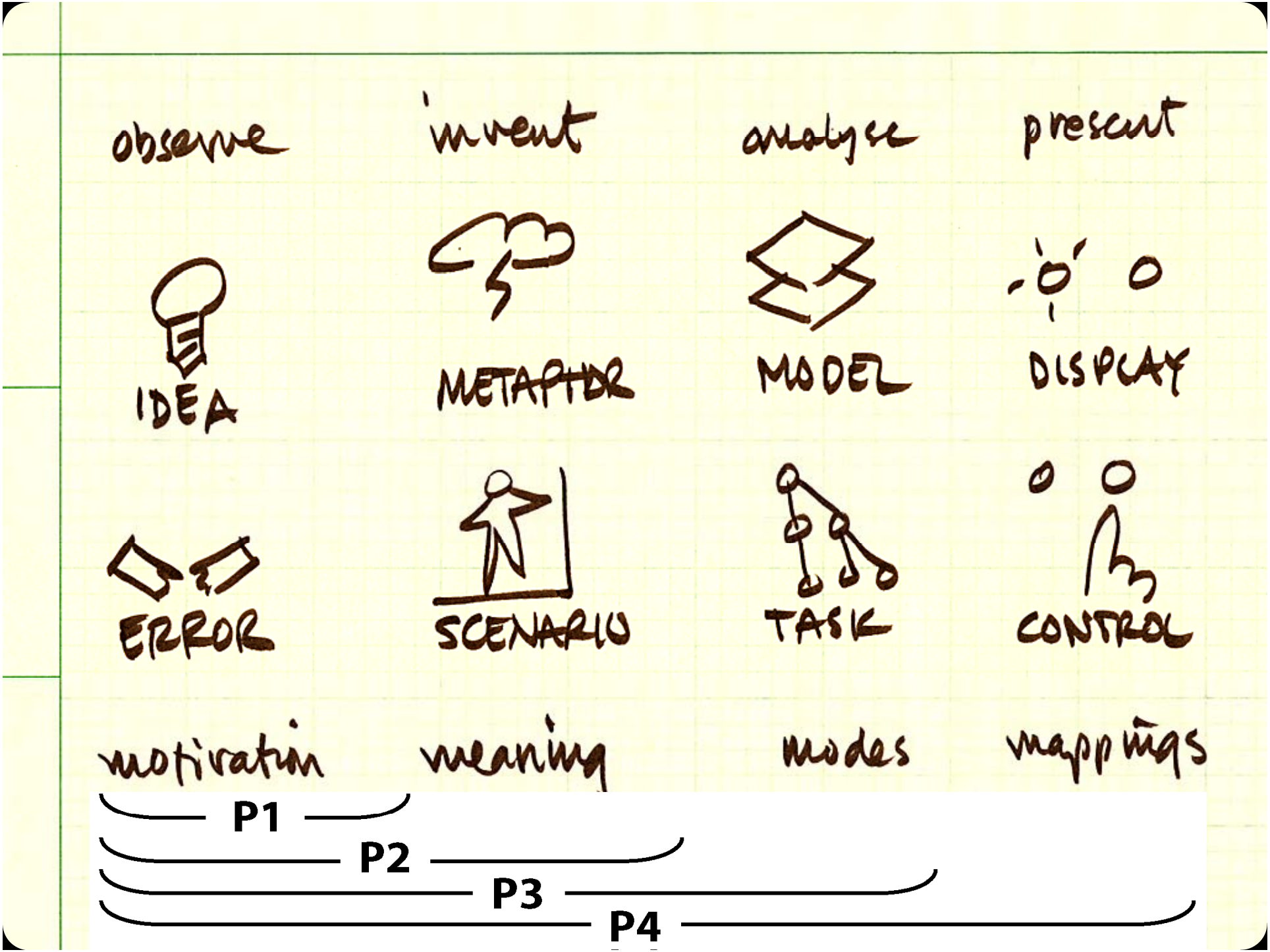
- Teaching staff & student introductions
- **Course content**
- Lab section
- Course administrivia

What is HCI?


Organizational &
Social Issues
Task
Design
Technology
Humans

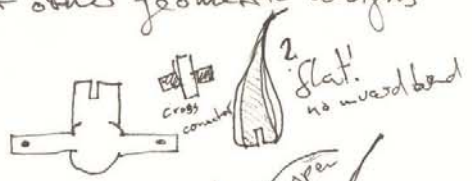
Why Study HCI?

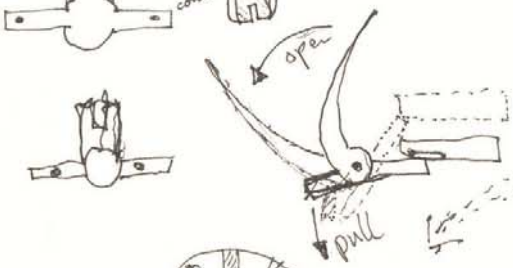


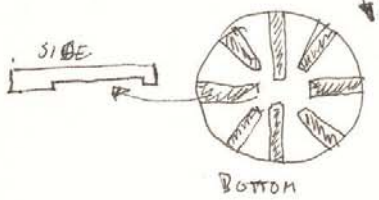

observe
invent
analyse
present
IDEA
METAPHOR
MODEL
DISPLAY
ERROR
SCENARIO
TASK
CONTROL
motivation
meaning
modes
mappings
P1
P2
P3
P4


Webster
Webster
視聴率 (TV) rating
しちょうりつ

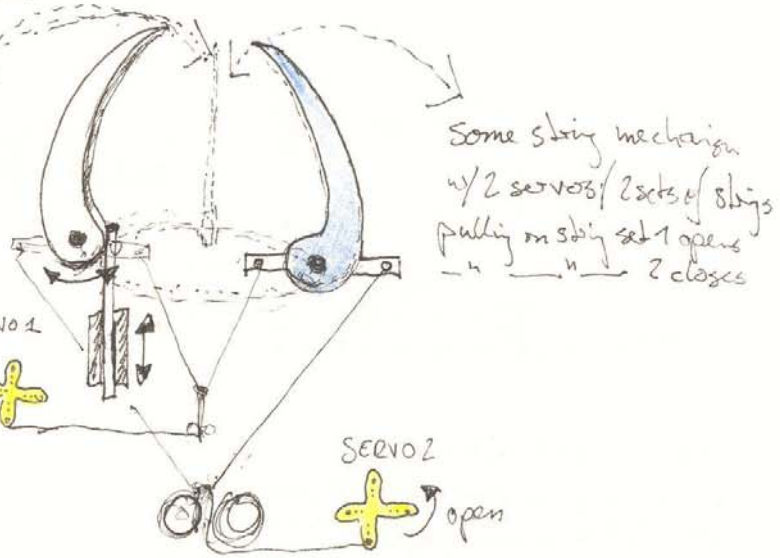
Origami? → see Stanford P.D. professor or others geometric designs



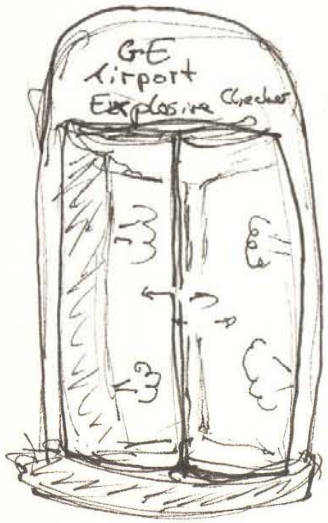


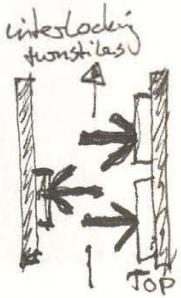


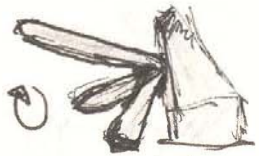
crown/claw



Some string mechanism w/ 2 servos / 2 sets of strings
pulling on string set 1 opens
" " 2 closes







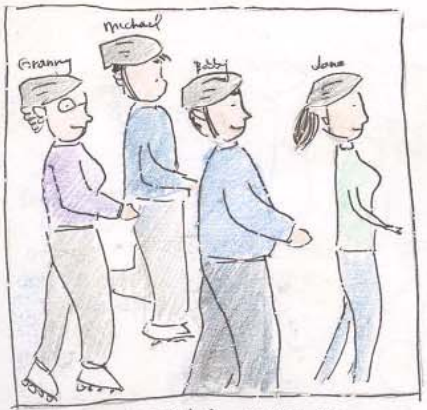
Alan's idea: attach the wires to the middle tubing

Bill: copyright visualization of lic

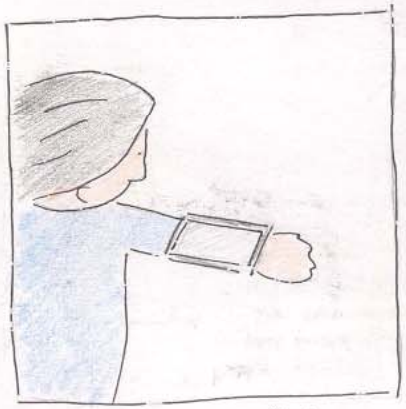
passive gate array

Scott: a gate that sh
who walked through it lo

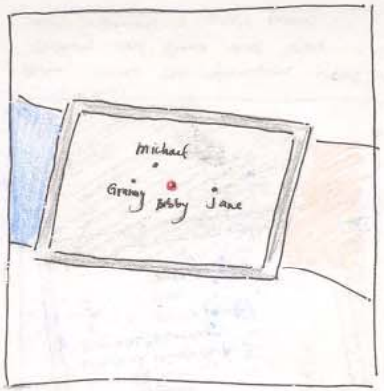
Bill: a gate that meas
ceremonial gates



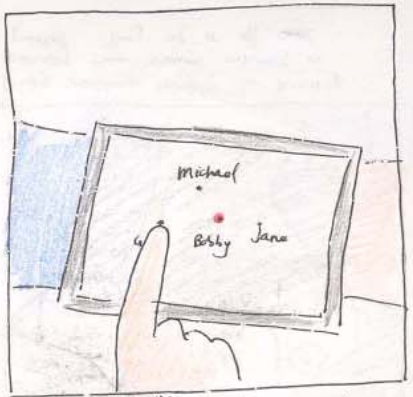
Bobby is interested in meeting new people. He wants to learn more about the people around him, but he's shy.



Bobby, as well as everyone else in the group, is equipped with a wristband which broadcasts his location and can be used to look up information on nearby people.



Bobby looks at his community info tool and sees the people around him represented on it



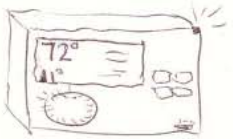
Bobby browses the information on the people that they're chosen to

SMART THERMOSTAT
Target SCENARIO

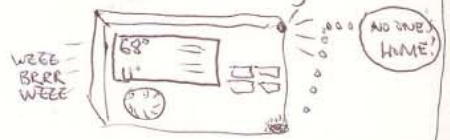
① Jen is a busy bee — it's a cold winter in her NYC studio Apt. & she doesn't want to have to worry about turning off/on her thermostat every time she leaves the apt

② Jen has to run off to work in the morning... she doesn't even have time for breakfast!

③ Luckily, according to the settings Jen preset (only once!) in her Smart Thermostat...



④ The SmartThermostat recognizes that Jen has left the apartment and automatically turns down the target room temp. to 65°, according to heuristics that take into account how much money Jen wants to save each month on her energy bill, and what the actual temp. is outside, and what the forecasted temp. is during the rest of the day.

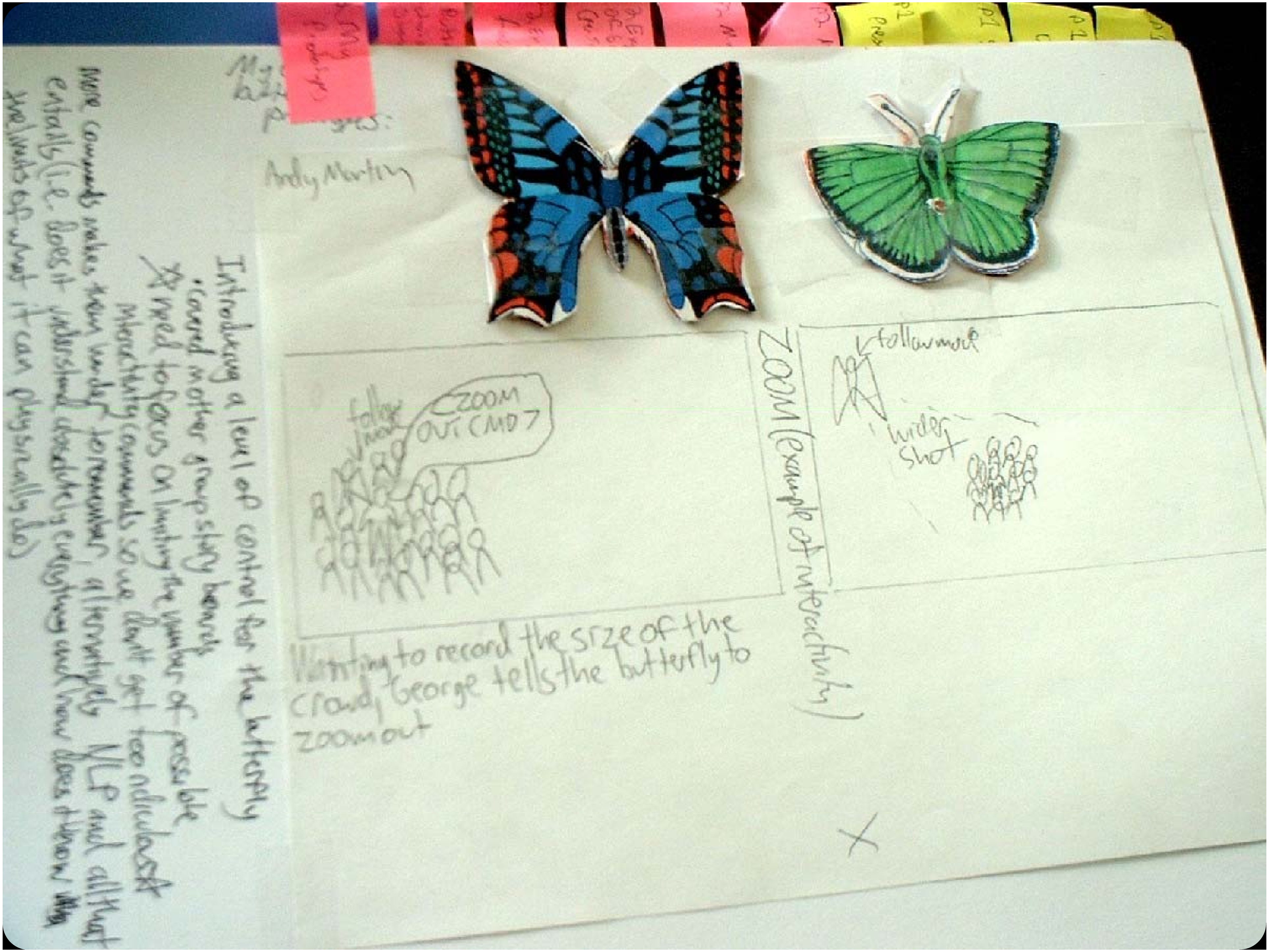


⑤ When Jen comes back from work in the evening, SmartThermostat recognizes her presence and increases the target room temp. automatically according to the preset heuristics!

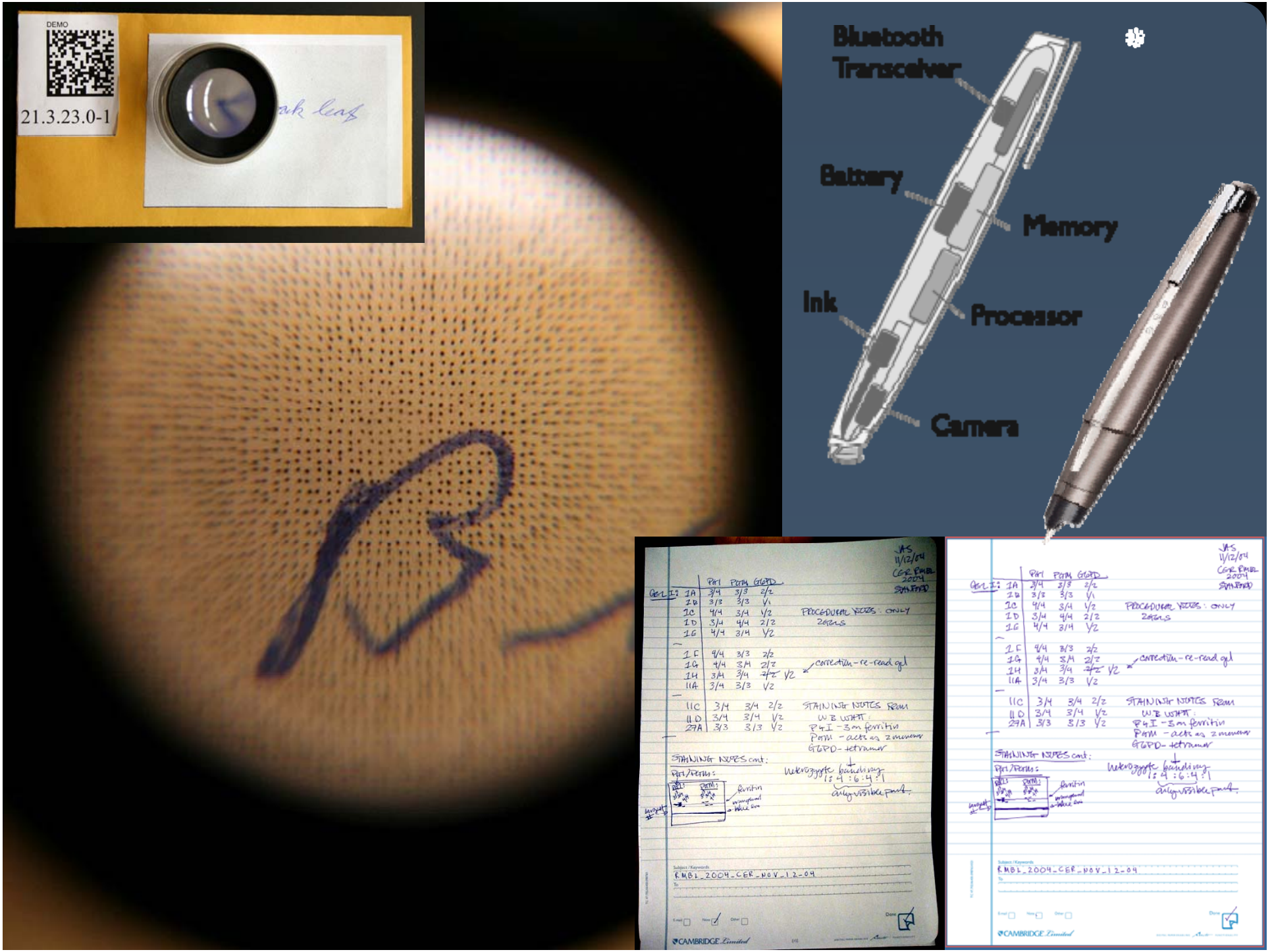
SATISFACTION

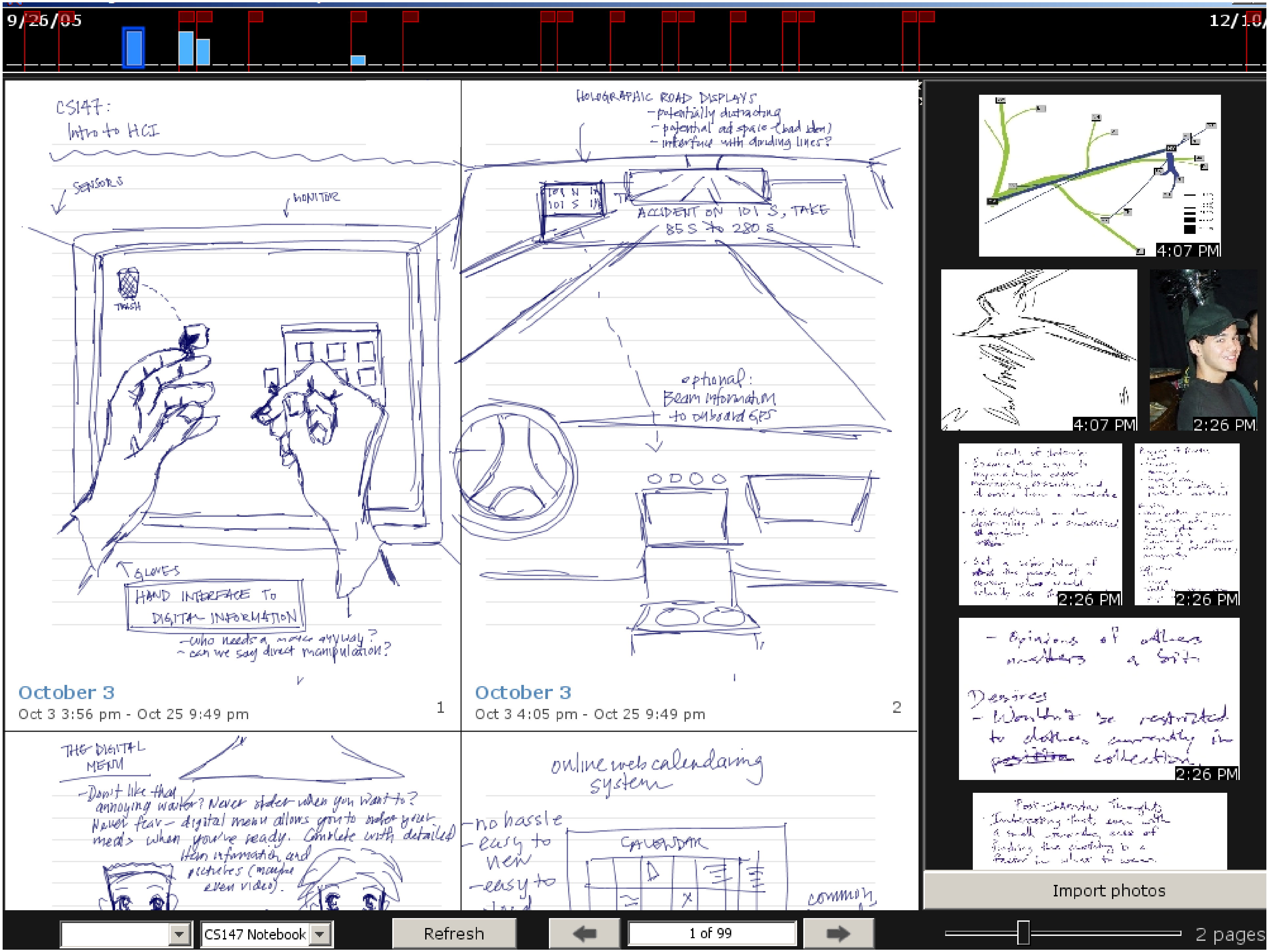
- Jen doesn't have to worry about the thermostat anymore!

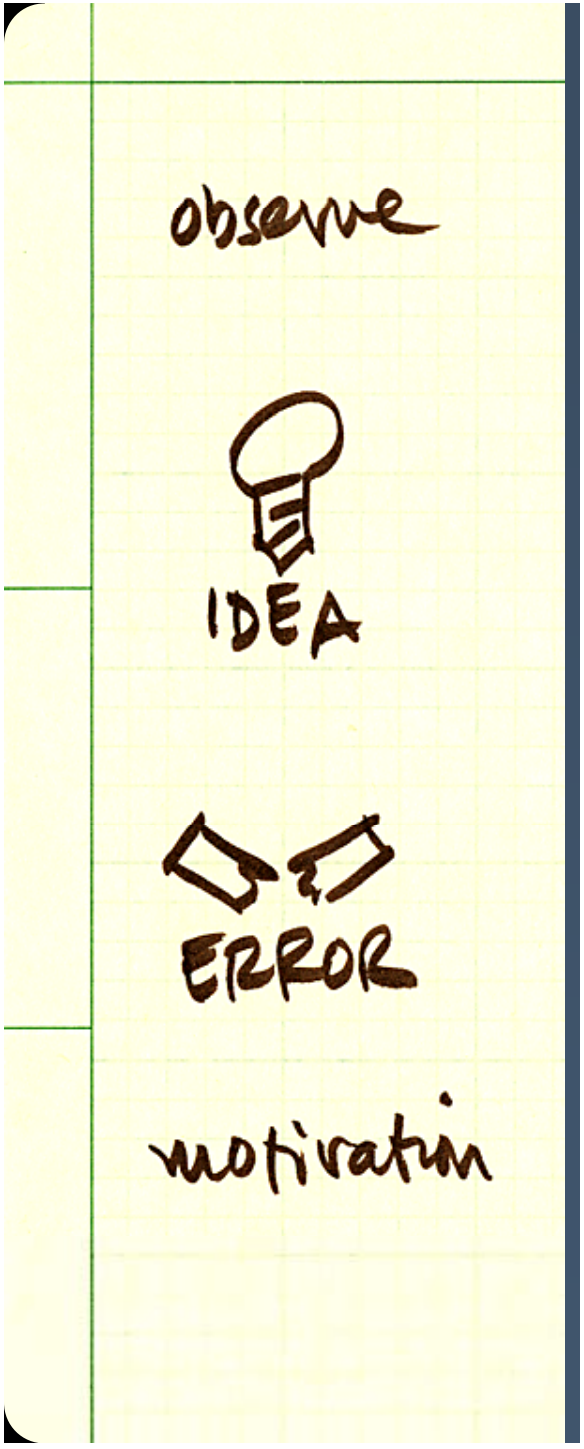
- When Jen receives her energy bill, she saves a lot of money and the energy company is happy because she conserved lots of energy!


Andy Martin
Introducing a level of control for the butterfly
follow mode
ZOOM OUT CMD
Wanting to record the size of the crowd, George tells the butterfly to zoom out
ZOOM (example of interactivity)
follow mode
wider shot

WHAT IS A WHITEBOARD
DARTS
IDEAS
PHYSICAL VS. DIGITAL
REMOTE VS CO-LOCATED
TECHNOLOGY
RFID'S
PHYSICAL PUCKS ON BOARD
MAGNETS
DOMAINS
SMALL GROUPS
BRAINSTORMING
MEETINGS
IN MORE THAN ONE
SOCIAL NORMS
DISPLAYS
PASSIVE / AMBIENT DISPLAY
ACTIVE RESPONSE
FORM FACTORS
BUTCHER PAPER
DIGITAL PROJECTION + WRITE W/ PEN
MULTIPLE DEVICES
CONTROLLERS
MOUSE
BUTTON
KEYBOARD
JOG DIAL
RANGE SENSOR
"PEOPLE ORIENTATION" SENSOR
CAMERA
IDENTITY RECOGNITION
AMBIENT MEDIA
SHARED CALENDAR
WEATHER
BUSINESS
3-D
BOUNDRIES
PREPARATION
RELATED WORK
SCENARIOS
MEETINGS
REPEAT SKETCHING
ITERATION ON DESIGN
WHITEBOARD PLOTTER
COMPUTERS
WHITEBOARD OF FUTURE
WALK INTO ROOM
DISPLAY DESIGN WORK
AMBIENT DISPLAY OF WORK
DRAW & EXTRUDE 3-D
WHITEBOARD
MULTIPLE USER CONTROL
PERSONAL TABLETS
VOICE
INVISIBLE INK
ANNOTATION
AMBIENT MONITORING OF OTHER DATA STREAMS
TIME BASED WHITEBOARD
AUDIO WHITEBOARD
ANIMATION
STORYBOARDING
GUEST BOOK FOR STORYBOARD
LAZY SUSAN


DEMO
21.3.23.0-1
Bluetooth Transceiver
Battery
Memory
Ink
Processor
Camera


9/26/05
12/10/
CS147:
Intro to HCI
SENSORS
MONITOR
TRASH
GLOVES
HAND INTERFACE TO DIGITAL INFORMATION
-who needs a mouse anyway?
- can we say direct manipulation?
October 3
Oct 3 3:56 pm - Oct 25 9:49 pm
1
HOLOGRAPHIC ROAD DISPLAYS
-potentially distracting
-potential ad space (bad idea)
-interface with dividing lines?
ACCIDENT ON 101 S, TAKE 85 S to 280 S
optional:
Beam information to onboard GPS
October 3
Oct 3 4:05 pm - Oct 25 9:49 pm
2
THE DIGITAL MENU
online web calendaring system
-no hassle
-easy to view
CALENDAR
4:07 PM
4:07 PM
2:26 PM
2:26 PM
2:26 PM
Desires
2:26 PM
Import photos
CS147 Notebook
Refresh
1 of 99
2 pages



P1 Human Error

What happens when things don't work?

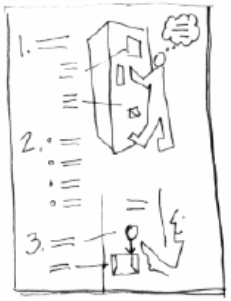
As Yogi Berra said, "You can observe a lot by watching." In this project you will practice observing people and their interaction with objects or machines, with an eye to understanding what happens when things don't work as intended. Find a situation where you can observe a human "error" and pay attention to what really happens. Consider an error to be any noticeable mismatch between what the person desired or intended and what actually resulted in the interaction.

The goals of this project are to

- Observe human-machine or human-computer interaction in detail
- Analyze the interaction to understand the situation and the factors that contribute to the "error"
- Explore alternative design solutions that mitigate or eliminate the error.
- Make a strong start in your Idea Log.

Error Sketches: Read the Norman section on errors and look around you for potential situations of human error – just watch your own behavior and that of people you are familiar with. Consider situations or machines where "human errors" might happen (vending machines, copiers, *etc.*). These could be low tech (like a door handle) or high-tech (like a PC interface). In your Idea Log, compile a list of these situations and bring it to class on Thursday. During class we will discuss the diversity of errors, and you will select a particular situation for more intensive observation.

Posters: make a closer observation of the situation you have selected, analyze what's going on, and describe your design solutions. Prepare a two-page (11" × 17") poster illustrating the human error that you observed. The poster should include:



1 A sketch (or annotated photo) of the **situation** indicating the **person** and the **interaction**.
2 A description of their **motivation** and **task goals.**
3 A description and analysis of **what the error is** and a list of the **contributing factors** (and people) to the error.
4 One or more **design ideas** about how to avoid or survive the error.

Come to class prepared to display and discuss your poster. Use **simple sketches** and **bold lettering** on your poster so it can be easily read from 4 to 6 feet away.

More on the Idea Log

We will give you a notebook that will serve as your Idea Log for the quarter. As you collect your observations and prepare your poster presentation for this project, begin making your Idea Log the center of your conceptual workspace for the course. Use your log as a place to:

- Compile a list of errors or mistakes you have personally experienced
- Brainstorm a list of places you might go to watch for people and errors

① HUMAN ERROR – DOORKING ENTRY SYSTEM

LEOR VARTIKOVSKI

② MOTIVATION: ENTER THE BUILDING & DELIVER PACKAGE TO CORRECT RECIPIENT

TASK GOALS: LOCATE CODE FOR RECIPIENT NAME → RING UP TO CORRECT APT. → OPEN THE DOOR

INTERACTION

- READ INSTRUCTIONS
- PRESS (A)/(Z)

⇓

"M" NAMES DISPLAYED

⇓

ABANDON NAME SEARCH

⇓

TYPE IN APT.*

⇓

WRONG APT.

⇒ GIVE UP!

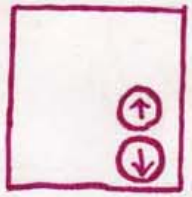
NAME SCROLL BUTTONS

CODE ENTRY DIGITS

③ CONTRIBUTING FACTORS

- UNNATURAL LABELING OF BUTTONS (WHERE IS REST OF ALPHABET?)
- INSUFFICIENT FEEDBACK – OTHER NAMES?
- INADEQUATE INSTRUCTIONS
+ MUST KNOW SURNAME

④ DESIGN IDEAS

- 

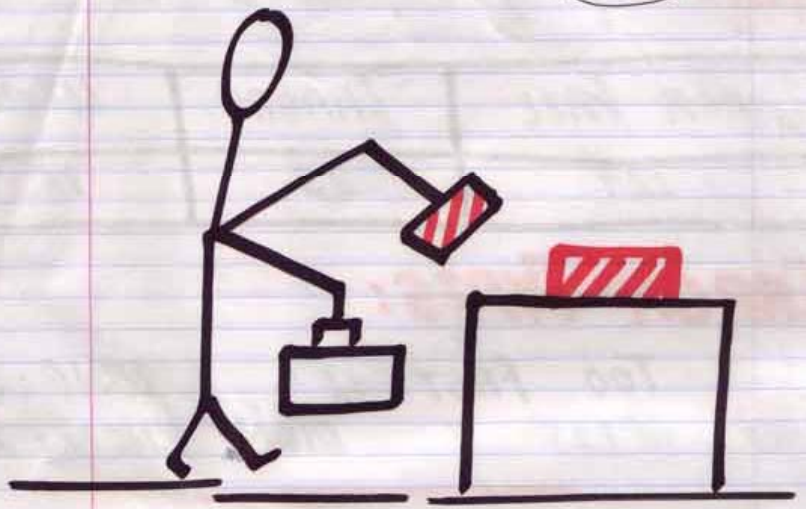
LABEL BUTTONS WITH ARROWS: MOVE UP & DOWN IN ALPHABET OR FORWARD/BACK

OR

- NO NEED TO "FIND" CODE JUST ENTER APT. *

HUMAN ERROR @ THE GREEN

ADI



TASK: ENTER GREEN

MOTIVATION: TO READ.

ISSUES:
1) REMOVAL
2) SLOWS DOWN
3) HURRY
4) LINE UP SLOT

'BOOKS BEHIND BARRIERS'

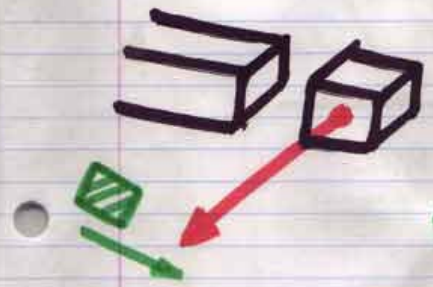
DATA: 1/10/04, 1332 - 1433

ERROR FREE	ERRORS	'LET-IN'
127	23	16

ERROR TYPES:

TOO FAST: 12 WRONG: 3
NO ACCESS: 5 DIDN'T KNOW: 2

SOLUTIONS:



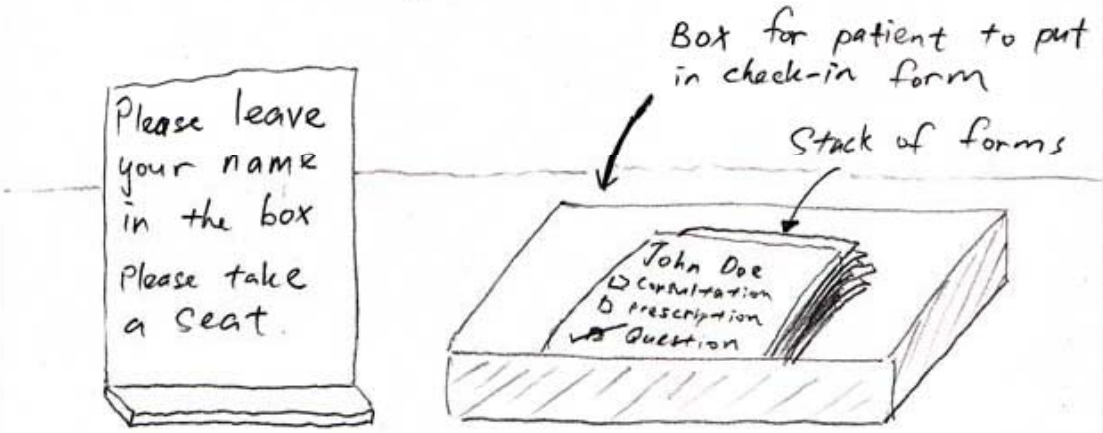
'HOW-TO'

ADI

Vaden Pharmacy Bin

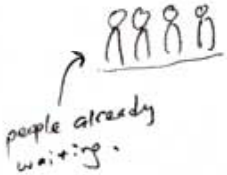
Wilson Chew

In Vaden Pharmacy dept, they take order like this



Problem

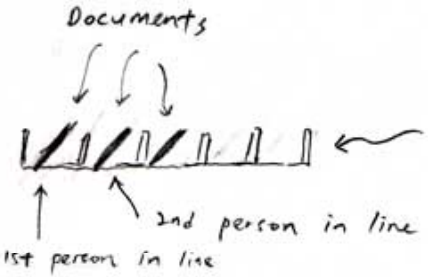
- should I stack my form on top of others that are already there?



- or should I put mine at the bottom of stack? What if the pharmacist assume most people would put their form on top and therefore take the order from the bottom. (I found out they actually do.)

Motivation - line up to see a pharmacist.

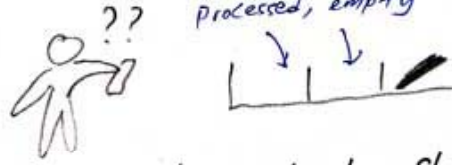
An Alternate



- Better
person
several
[instead

Disadvantages

① After first few people had been deal-
slots on the left become empty, la-
know which side to put in his/he



② After a while, forms have to be sh
left manually for new empty sl

so new c

IDEAS

① For the Vaden Bin, put a sign specif
people to stack on top.

② - A round rack
- Put a sign asking people to put forms

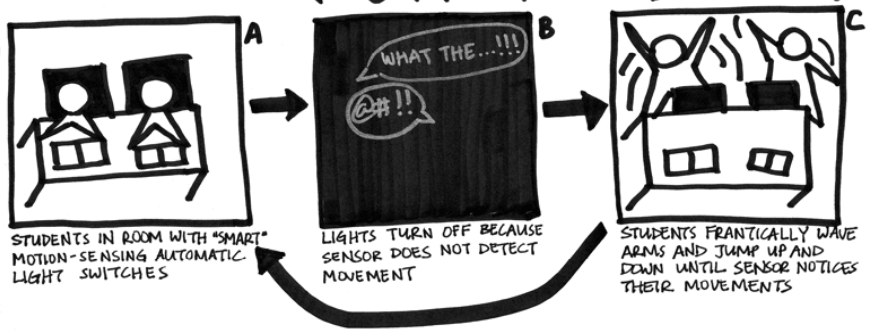
Birds E

P1 HUMAN ERROR

By Clara Shih

(NOT) ^SMART MOTION SENSORS

1. SITUATION...



STUDENTS IN ROOM WITH "SMART" MOTION-SENSING AUTOMATIC LIGHT SWITCHES

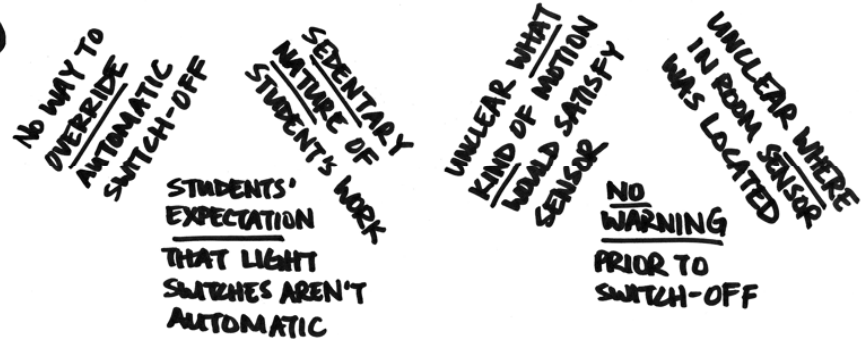
LIGHTS TURN OFF BECAUSE SENSOR DOES NOT DETECT MOVEMENT

STUDENTS FRANTICALLY WAVE ARMS AND JUMP UP AND DOWN UNTIL SENSOR NOTICES THEIR MOVEMENTS

2. MOTIVATIONS...

- INITIALLY, THE TASK GOAL IS TO MAINTAIN THE STATUS QUO OF A LIT ROOM. THE STUDENTS BELIEVE THIS CAN BE ACCOMPLISHED BY DOING NOTHING (IE, CONTINUING TO STUDY AT THE TABLE).
- ONCE THE LIGHTS TURN OFF (IN 'B') THE NEW MOTIVATION IS TO TURN THE LIGHTS BACK ON BY ACTIVATING THE MOTION SENSOR. THE STUDENTS ARE UNSURE AS TO HOW THIS CAN BE DONE SO THEY HAPHAZARDLY MOVE AROUND (INCREASING FREQUENCY AND RANGE OF MOTION) UNTIL LIGHTS COME BACK ON IN 'C.'

3. CONTRIBUTING...



4. IDEAS...

AVOID	SURVIVE
- manual overrides "ON means ON!" - or, no automation in the first place! - students bring in moving toy or antsy friend - stretch breaks every 5 mins	- bring your own flashlight! - learn to live in the dark - continue the haphazard-jumping technique!

1. SITUATION / INTERACTION

STERN DINING HALL'S Juice Dispenser

2. TASK GOAL

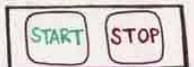
Student wants a cup of juice

3. FACTORS

- dining hall cups are the same size
- machine can't accommodate big cups
- button behavior is inconsistent
- buttons are deceiving, confusing
- different conceptual models

4. IMPROVEMENTS

- fewer buttons
- automatic start/stop buttons



(color-coded)

- [weight-sensitive] sensors
- use words instead of pictures

P2 Farmers Market

Due Tuesday, 31 January

The traditional graphical user interface—with a keyboard and mouse input, and a desktop display as output—was designed for seated office workers. Increasingly, computing is extending beyond the desktop and into the world. In this project, we'll explore a particular location—the San Francisco farmers market—as a way of introducing need-finding and ideation skills. This urban location features several distinct user groups (*e.g.,* farmers, grocery shoppers, tourists), each with distinct goals. And like most practices in our lives, the nominal task of purchasing groceries serves as a vehicle for many other goals. From the CUESA website, "farmers markets and local food systems build community ties and encourage civic life, offering urban residents a 'small-town experience' of buying directly from farmers, feeling connected to the land where their food is grown, and exercising consumer choice about how their food is grown."

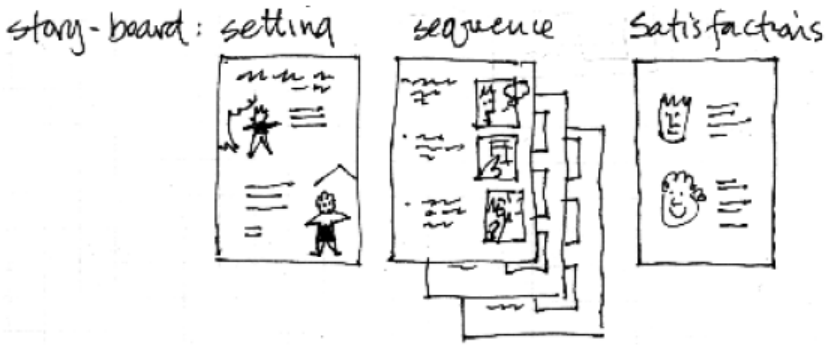
The *skills* we will learn in this project are

Observation Use the contextual inquiry techniques described in the Beyer and Holtzblatt reading. We first spent time observing for P1; this time, we're observing the practices of a community *that's not us*, which means that we must work *more critically* and *more actively*. Bring your idea log and a camera! Take pictures, write notes, sketch.

Ideation Brainstorm, brainstorm, brainstorm – and get the ideas on paper. Work on getting as much *breadth* as possible.

Storyboarding Flesh out your ideas by *writing scenarios* and *creating storyboards.*

Bodystorming Show how users might interact with your envisioned technology by performing a *skit*. This skit should demonstrate both the *motivation* for your idea and an *interaction scenario*. Integrating pictures, costumes, and props will help.



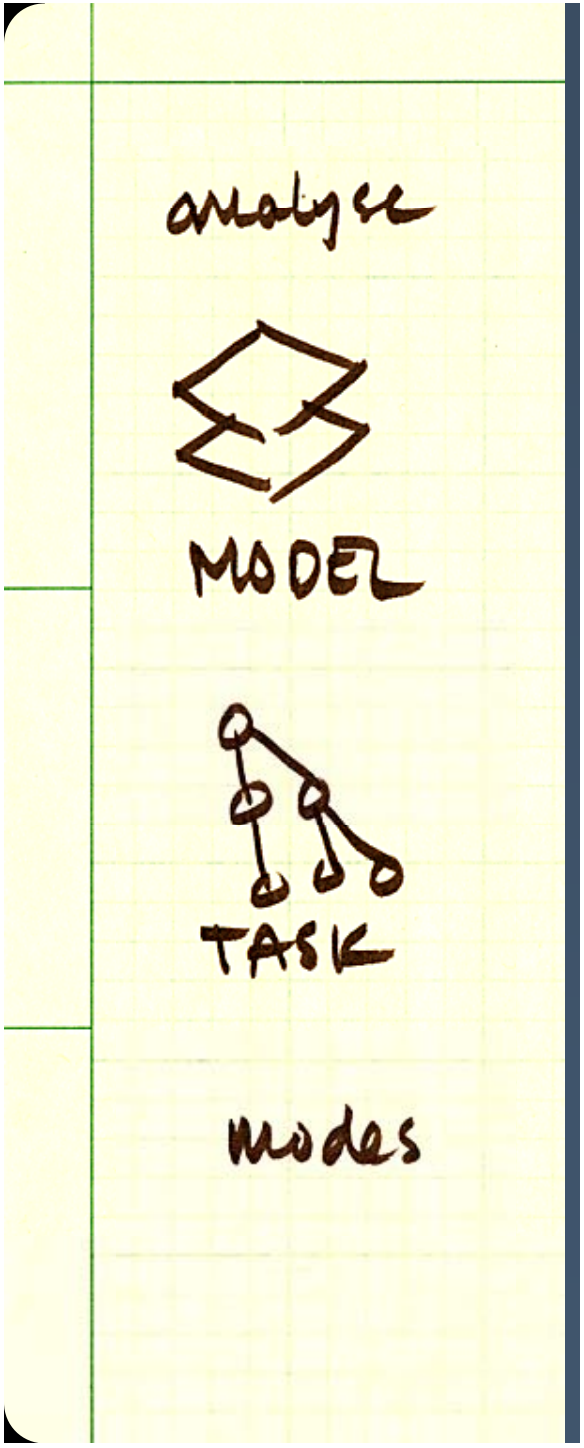
The *deliverables* are due on the following schedule

Thu, 19 Jan **Individual brainstorm and observation plan**
- Read pages 36-60 of Contextual Design.


FUYU
PERSIMMON
DRIED TOMATO
Juliette
DRIED TANGERINE
DRIED ASIAN PEAR
SWEET


SAMPLING
IS
MANDATORY!
WE'RE WATCHING


ORGANIC
OLIVE OIL
250ML 500ML 1000ML
$7.00 $11.00 $19.00
BALSAMIC VINEGER $12
Balsamic
TAMRON XR



P3 Connections

Prototypes are the pivotal medium for innovation, collaboration, and creativity. Prototypes help in four ways. First, visually and physically representing your ideas will yield surprising, unexpected discoveries that uncover problems or generate suggestions for new designs. Second, prototypes help team communication and understanding because the tacit knowledge of individuals is rendered visible to your entire team. Third, prototypes enable user feedback and usability testing. Finally, prototypes are also important sales tools in client relationships. P3 is about building and testing prototypes.

In this project and in P4, we will work with the Reuters Digital Vision Fellows. These fellows spend one year on Stanford's campus developing their ideas for social entrepreneurship and technology. They will describe the technology problems and opportunities in their work, and will serve as mentors to groups. The theme of our partnership is *connections*—between people, between devices, between services… (we'll let you interpret).

The *skills* we will learn in this project are

Mental Models What are a user's theories about the design and functioning of your prototype? What organizing principles should structure your design of the prototype, and what mental models do these principles yield?

Prototyping In P3 for the first time, we will create an *interactive* prototype. This can be in Flash, Java, C#, or whatever other tools you are most comfortable with.

Heuristic Eval Heuristic evaluation is a usability method that employs "experts" (in this case, your peers) to inspect an interface. Long advocated by Jakob Nielsen, It has gained wide appeal as a "discount" usability method because heuristic evaluation can be much faster and cheaper than traditional usability testing.

Iterative Design We prototype to gain feedback (from ourselves or others). With that new knowledge, we iterate. We prototype to gain feedback (from ourselves or others). With that new knowledge…

The project has the following *deliverables* (see course website for due dates)

Brainstorm and Proposal

- In your idea log, *brainstorm* at least 30 ideas related to the digital vision presentations.
- *Bring in* a simple one-page text-graphic proposal describing your favorite concept from your list. Include a brief outline of your target user persona – who wants to use this and why? You will turn this proposal in at the end of class.
- In class, *form pairs*.

Interaction Models

- In your idea log, explore *alternatives* for organizing principles, metaphors, models, and representations that might be used for organizing your selected concept or process

P4 Integrating Physical and Digital

> *The body is the ultimate instrument of all our external knowledge, whether intellectual or practical... experience [is] always in terms of the world to which we are attending from our body.* — *Michael Polanyi*

Physical media and electronic media have powerful—but distinct—sets of affordances. Today, our physical devices and electronic devices are proximate yet unaware of each other. Considering the limited interface of the PC, one might presume that current computers think we look something like the image to the right (drawing courtesy Dan O'Sullivan and Tom Igoe). However, our experiences in the world beyond the PC engage our entire bodies. This project is about putting mind and body, bits and atoms back together. You will use sensing and actuation technologies (*mechatronics*) to transcend the confines of the desktop and engage the user and their environment more fully. You will be working in groups of three or four, and the Digital Vision Fellows will be mentors again. Based on the results of a P3 *connections* prototype (not necessarily your own), form a group, and extend your chosen connection with a tangible interface. We suggest using d.tools, which we have made available, but you are welcome to use any physical interface components you are comfortable with.

The *skills* we will learn in this project are

Production Until now, we have concentrated mostly on ideation and prototyping. In P4, completeness and panache count.

User Testing Testing is an essential part of user-centered design, and a good way to get empirical information about how real users work with interactive systems.

Physical UIs This project will focus on the *controls* and *displays* that your user interface provides. We will learn both the technology and the design skills for creating these interfaces.

Teamwork This is the most comprehensive project of the course, and to make it work, you will need to work together as a team to acquire new skills and complete the assignment.

The project has the following *deliverables* (see course website for due dates)

Group Proposal

- Using the results of a P3 *connections* prototype as a starting point, form a group of four.
- Write in your Idea Log one critique of the P3 you are building on, and one inspiration that seeing the prototype gave you.
- Come in with a storyboard of your physical interaction design (in your Idea Log).

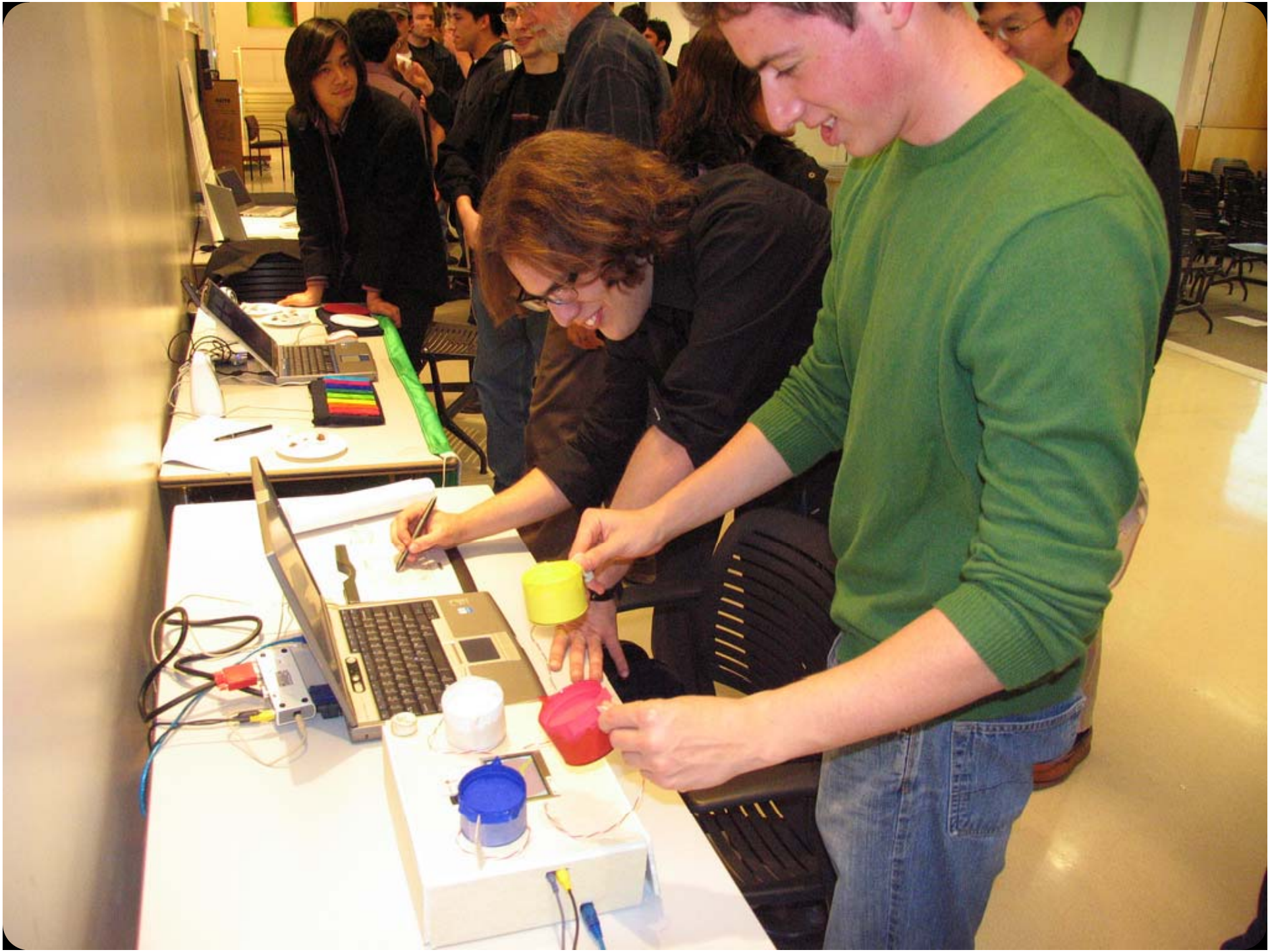
Interactive Prototype

- Bring a prototype to class.

User Test Preparation

- Bring in an updated prototype.


Is Sutra about?
- fair trade
- fashionable clothing

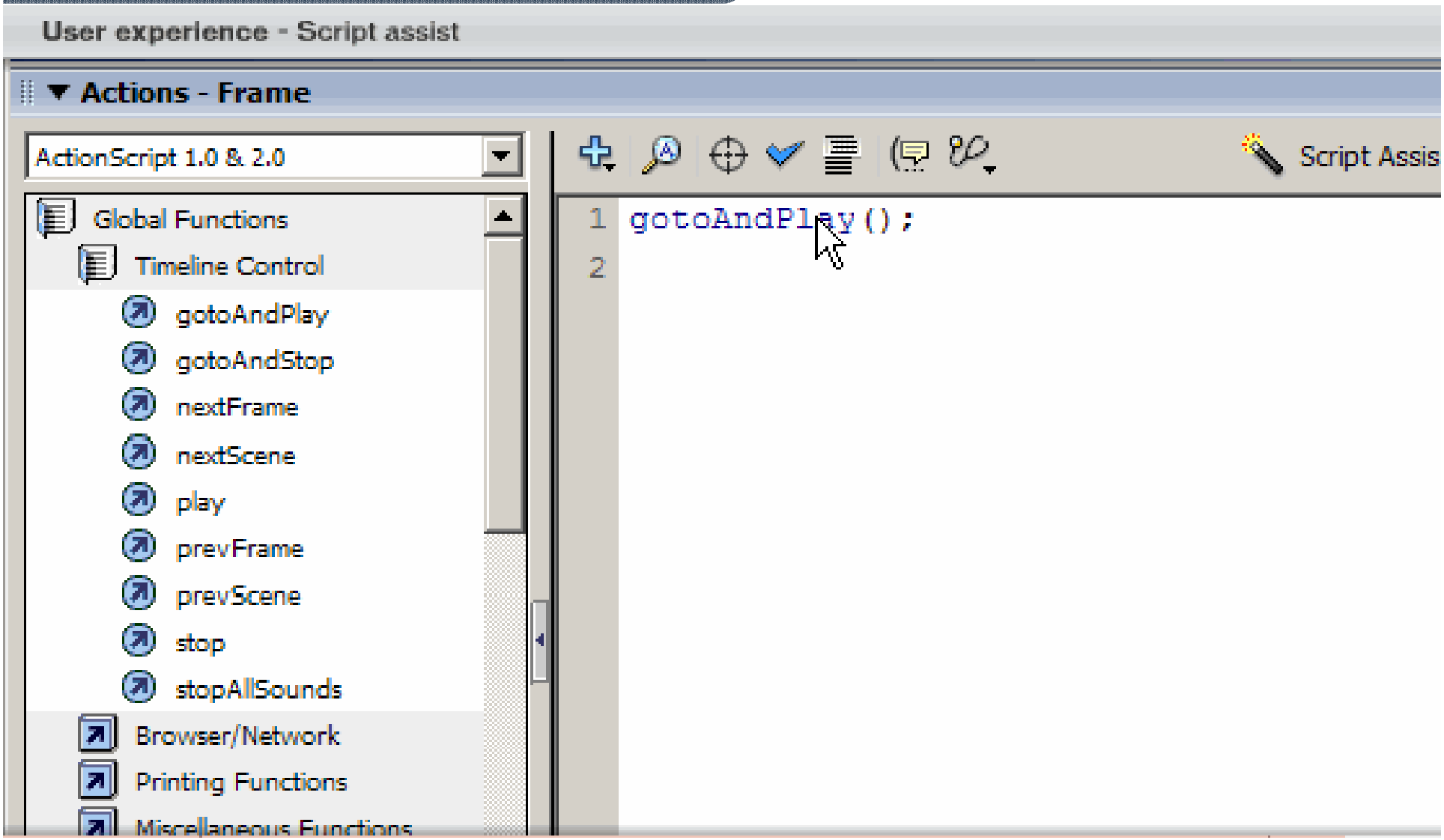


Today

- Teaching staff & student introductions
- Course content
- **Lab section**
- Course administrivia

Product Realization Lab

Flash (2 sessions)

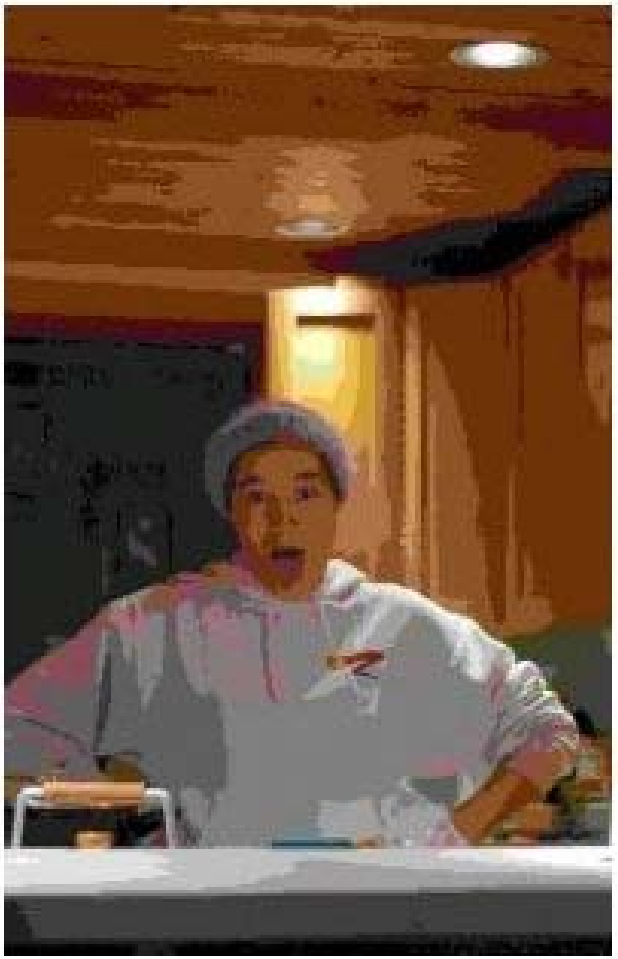


Storing Data

facebook

home search browse invite help logout

Marie Collins' Profile **La Canada High**



View More Photos of Marie (9)

Marie Collins

La Canada High '07
Los Angeles, CA

Share +

Sex:	Female
Birthday:	August 7
Hometown:	CA
Political Views:	Liberal
Religious Views:	Much better than yours

▶ **Mini-Feed**

▼ **Information**

Contact Info

Email:	bagelchica@yahoo.com
Website:	http://liquidcycles.com/gy/Maries-Album

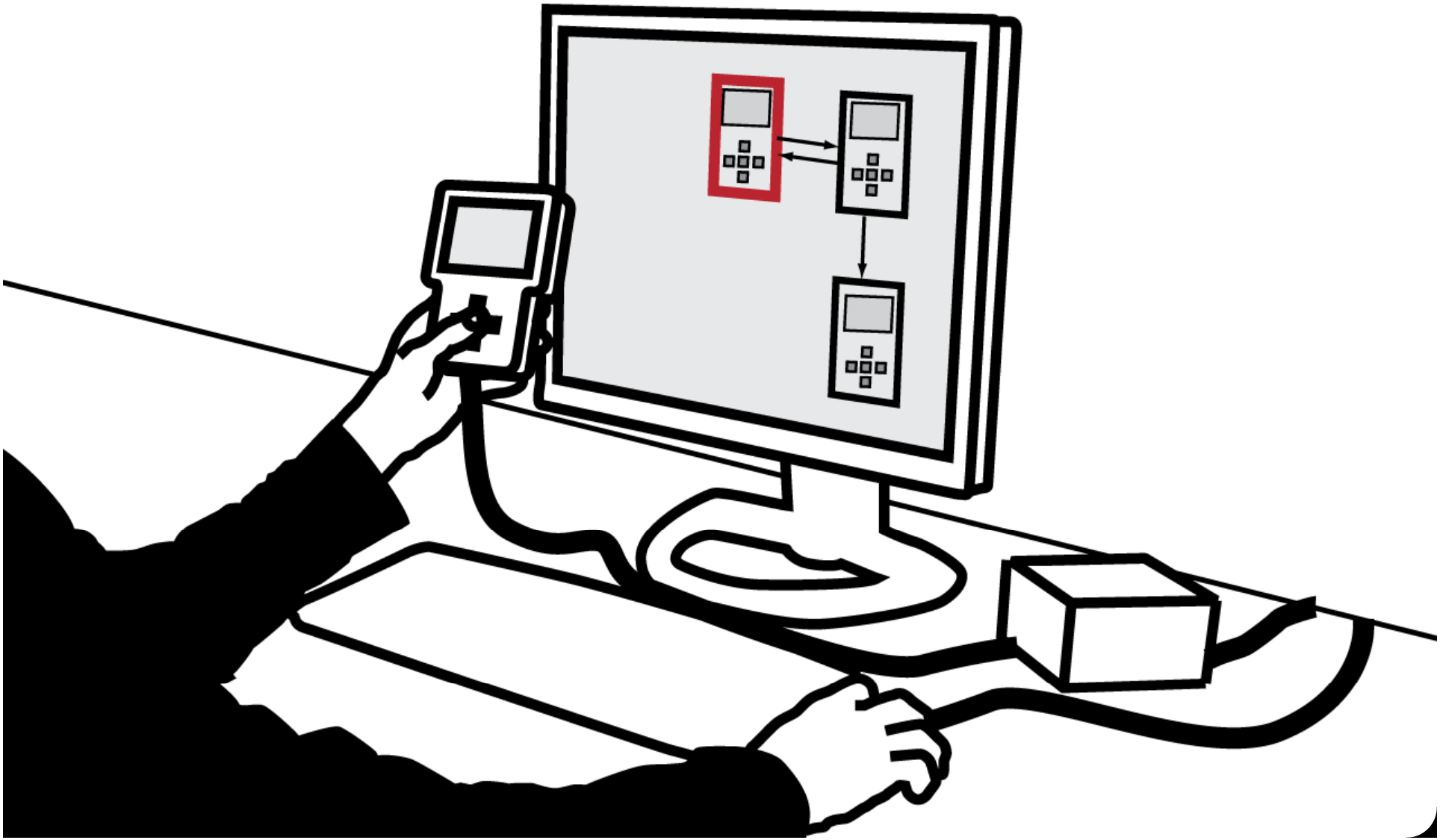
Personal Info

Favorite TV Shows:	Simpsons , Seinfield , Grey's Anatomy , Desperate Housewives , Scrubs , The Office , and Beauty and the Geek because it is just that good.
Favorite Movies:	Notre Voyage au Cameroon , Fight Club , Little Miss Sunshine , Dumbo , Marijuana the Musical.

Mobile Computing

Soldering and Electronics

Physical Computing (d.tools)



Leveraging Web Systems

Video Making and Editing

Lab Questions or Suggestions?

Raise them –

this is a new addition to the course

Today

- Teaching staff & student introductions
- Course content
- Lab section
- **Course administrivia**

Administrivia

- Course Info

  Tuesdays and Thursdays
  1:15-3:05pm, Wallenberg 124 & 127

  http://cs247.stanford.edu

  cs247@cs.stanford.edu

- My Info

  Office Hours: Tuesdays 11:15am-12:15pm, Gates 384

  http://hci.stanford.edu/srk

  srk@cs.stanford.edu

cs247@cs

Two Sections

- We'll sometimes meet together and sometimes separate
- We'll announce section assignments on Thurs

Projects & Grading

16 Jan **P1: Errors** *(individual)* 5%

25 Jan **P2: Design Implications** *(groups)* 10%

15 Feb **P3: Connections** *(pairs)* 25%

19 Mar **P4: Integrating Physical & Digital** *(groups)* 35%

Idea Logs 20%

Participation 5%

REUTERS FOUNDATION

Digital Vision Program at Stanford University

Technology for the social enterprise

The Digital Vision Program supports social entrepreneurs who seek to leverage technology-based solutions in the interest of humanitarian, educational, and sustainable development goals. The Program fosters interdisciplinary projects and prototyping efforts that address real needs in underserved communities.

The core of the Program is a nine-month fellowship that brings outstanding technologists and social entrepreneurs from around the globe to the Stanford University campus. Digital Vision Fellows collaborate with faculty, students, private sector firms, non-governmental organizations, and, most importantly, each other.

2006-2007 Fellowship Application

Applications are now being accepted for the 2006-2007 academic year! For more information, visit the Become a Fellow page.

Program Highlights

More Highlights

John Sherry spoke about current projects at Intel's Digital Health Group . More »

Sohaib Abbasi, President & Chief Executive Officer of Informatica. More »

Akhtar Badshah, Microsoft Community Affairs: "The value of technology is when you bring social and economic change."

Upcoming Events

More Events

- Speakers: Mena Trott & Andrew Anker, SixApart
  12 January - 3:00 pm
- Speaker:Tony Fadell, Apple
  19 January - 3:00 pm
- Speaker: Sam So, Asian Liver Center
  26 January - 3:00 pm
- Speaker: Charly Kleissner
  2 February - 3:30 pm
- Speaker:Mirek Jach, AMD
  9 February - 3:00 pm

January 2006

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

« Dec Feb »

Alumni News

More Profiles

Dipak Basu: Linkage India

Dipak Basu's project, Ganges Delta Network, has evolved into a newly established NGO in Kolkata (formerly Calcutta) called Linkage India. Linkage's mission is to to create livelihood opportunities for unemployed and marginalized poor. Linkage will fulfill its mission through computerized resource centers for rural entrepreneurs, to train and empower them with access to markets and capital. Read more »

From the Fellows' Blogs

Poverty Is Unnecessary

helenwang (Jan 5, 10:55 pm)

Muhammad Yunus, founder of Grameen Bank, was nominated as one of the 25 most influential business leaders in the world along with Bill Gates, Steve Jobs and Alan Greenspan, etc.

In an interview with Nightly Business Report, Muhammad Yunus said poverty is unnecessary. Human beings are quite capable of taking care themselves. but we have created a society that denies some unfortunate people the opportunities.

Read More

From Seasonal Website to National TV

carlosmirandalevy (Dec 23, 11:40 am)

Bubbler.net - turnkey website development tool/ASP

margaritaquihuis (Dec 22, 1:49 pm)

Business Leadership for the 21st century

ritasandhu (Dec 13, 12:03 pm)

The Multiple Value Proposition of a Social Project

(Dec 13, 6:22 am)

Stakeholders and Forces in Conflict

(Dec 13, 1:09 am)

The Ups and Downs of Blogging

Expected background

- This course has cs147 as a prerequisite – we'll assume basic HCI knowledge.
- You're also responsible for having sufficient skills in your group to "do the projects"

HCI Courses at Stanford 2006-2007

Will be updated as the year goes along. Some listings may change and new courses will be added.
See also the list of courses related to HCI

Weekly HCI Speaker Series (CS547)
Seminar on People, Computers, and Design
Every Friday at 12:30 during the academic year
Open to the public and available on the web

Winter 2007

- CS247. Interaction Design Studio (Klemmer, Verplank)
  Tu-Th 1:15-3:05 *(sections will be divided on the first day)*
- CS377 Topics in HCI *[See note at bottom of page]*
  - CS377G Digital Multimedia Tools and Environments (Stephan Schwanauer, CCRMA)
    Fri 2:15-4:05.
  - CS377S Designing Applications that See (Maynes-Aminzade)
    3 units 11:00-12:15 PM T/Th Gates 498
- CS378. Phenomenological Foundations of Language, Cognition, and Computation (Winograd)
  3-4 units, Thu 1:15-4:05 Nora Suppes 103 (CSLI)

- CS547. Human-Computer Interaction Seminar (Winograd)
  1 unit, Friday 12:30-2:00 Gates B03 (available as video on the web, as well as live on SITN).

Special visiting professor course (not full quarter)

- SymbSys 246. Cognitive Crash Dummies (Bonnie John, CMU)
  1 unit, (Jan. 16 - Feb. 13), 7-9 pm, location TBA

Today

- Teaching staff & student introductions
- Course content
- Course administrivia
- **Resources**

P1 Human Error

Due [redacted]esday, January 17

What happens when things don't work?

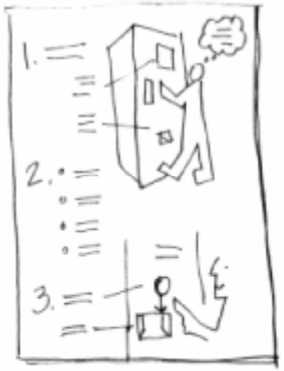
As Yogi Berra said, "You can observe a lot by watching." In this project you will practice observing people and their interaction with objects or machines, with an eye to understanding what happens when things don't work as intended. Find a situation where you can observe a human "error" and pay attention to what really happens. Consider an error to be any noticeable mismatch between what the person desired or intended and what actually resulted in the interaction.

The goals of this project are to

- Observe human-machine or human-computer interaction in detail
- Analyze the interaction to understand the situation and the factors that contribute to the "error"
- Explore alternative design solutions that mitigate or eliminate the error.
- Make a strong start in your Idea Log.

For Thursday, Read the Norman section on errors and look around you for potential situations of human error – just watch your own behavior and that of people you are familiar with. Consider situations or machines where "human errors" might happen (vending machines, copiers, *etc.*). These could be low tech (like a door handle) or high-tech (like a PC interface). In your Idea Log, compile a list of these situations and bring it to class on Thursday. During class we will discuss the diversity of errors, and you will select a particular situation for more intensive observation.

For Tuesday, make a closer observation of the situation you have selected, analyze what's going on, and describe your design solutions. Prepare a two-page (11" × 17") poster illustrating the human error that you observed. The poster should include:



1 A sketch (or annotated photo) of the **situation** indicating the **person** and the **interaction**.
2 A description of their **motivation** and **task goals.**
3 A description and analysis of **what the error is** and a list of the **contributing factors** (and people) to the error.
4 One or more **design ideas** about how to avoid or survive the error.

Come to class prepared to display and discuss your poster. Use **simple sketches** and **bold lettering** on your poster so it can be easily read from 4 to 6 feet away.

For Thursday

- Read the Norman “Information Appliances”
- Make a list of places to look for errors / ideas

On Thursday

We'll meet all together here in Wallenberg 124

1:15 – 1:30	Hand out Nokia digital pens
1:30 – 2:00	Intro to sketching
2:00 – 2:20	Idea Logs & Storyboards
2:20 – 2:40	Brainstorm for P1
2:40 – 3:05	iDeas installation & demo by Brian Lee

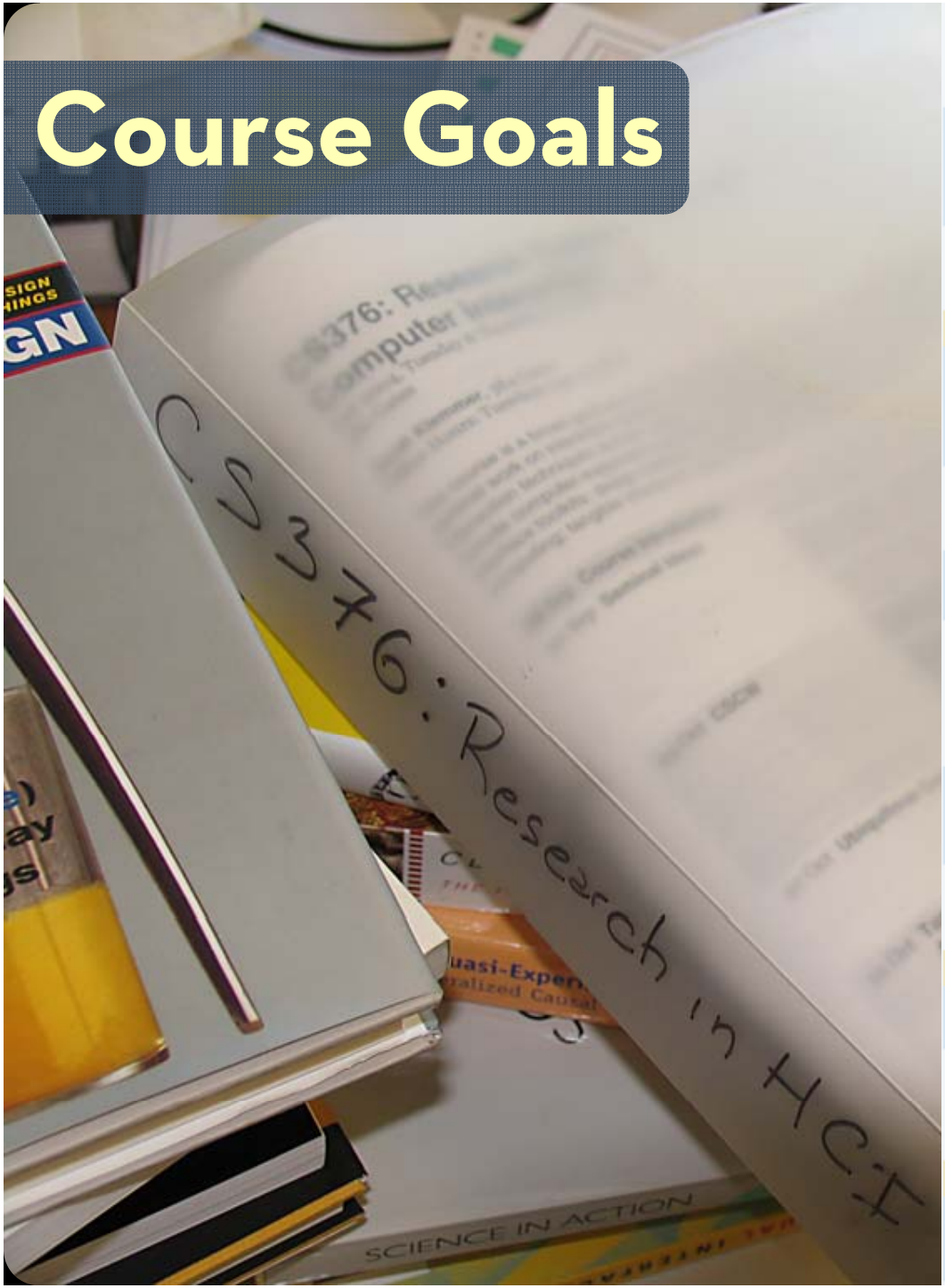
Questions

Questionnaire

- Please fill out and hand to Kevin before leaving

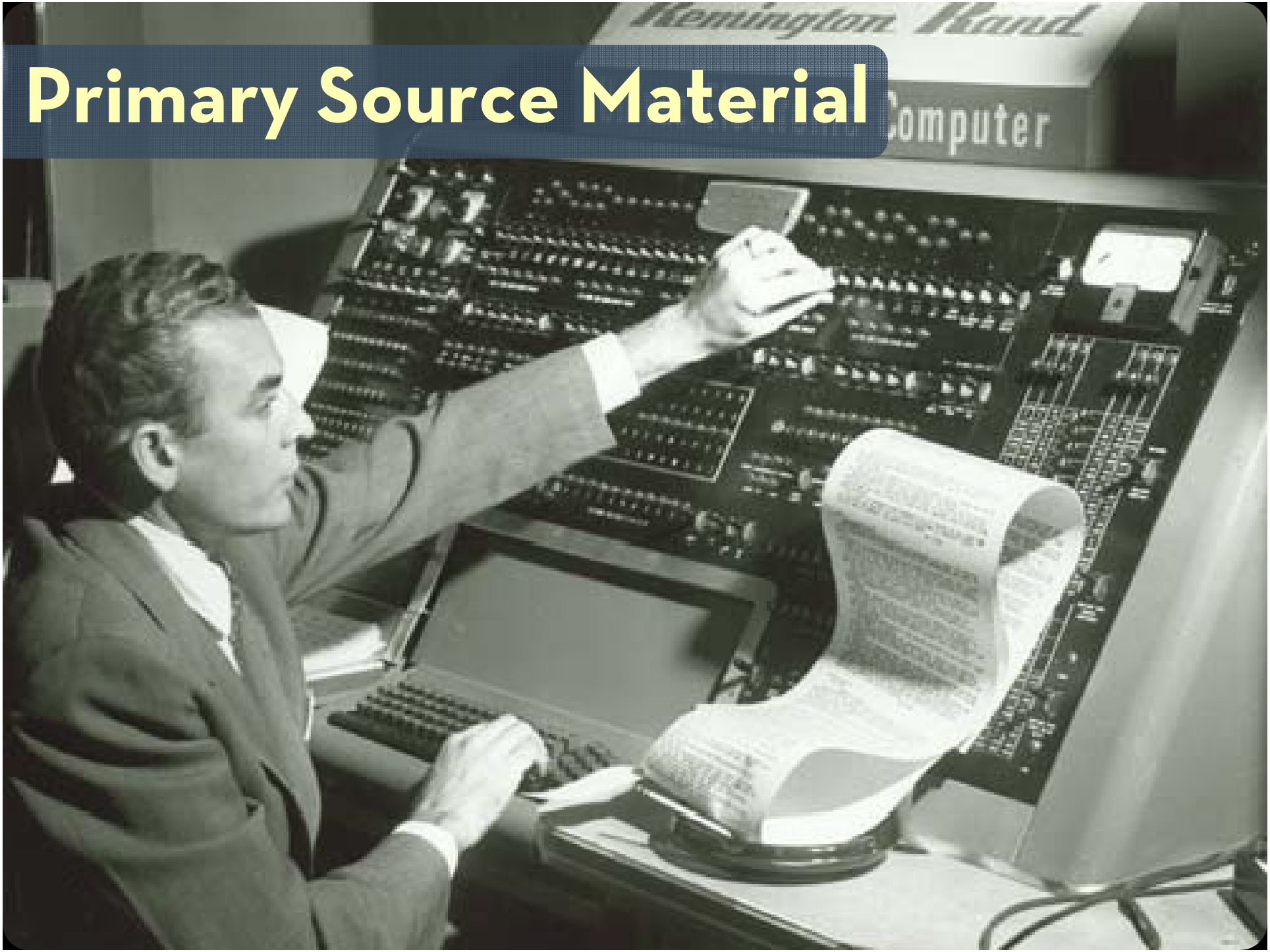
Here's where we need the "Design Studio" take on HCI

Course Goals



28 Sep	**Seminal Ideas** (ppt)	**As We May Think**, Vannevar Bush, *The Atlantic Monthly, July 1945* **Direct Manipulation Interfaces**, Edwin L. Hutchins, James D. Hollan, and Donald A. Norman, *Human-Computer Interaction*, 1985, pp. 311-338 **User Technology: From Pointing to Pondering**, Stuart K. Card and Thomas P. Moran, *ACM Conference on the history of personal workstations*, 1986, pp. 183-98
03 Oct	**CSCW** (ppt)	**Beyond Being There**, Jim Hollan and Scott Stornetta, *CHI 1992: ACM Conference on Human Factors in Computing Systems*, pp. 119-25 **Groupware and social dynamics: Eight challenges for developers**, Jonathan Grudin, *Communications of the ACM*, January 1994, pp. 93-105 **Social, Individual & Technological Issues for Groupware Calendar Systems**, Leysia Palen, *CHI 1999: ACM Conference on Human Factors in Computing Systems*, pp. 17-24
05 Oct	**Ubiquitous Computing** (ppt)	**The Computer for the 21st Century**, Mark Weiser, *Scientific American*, September 1991, pp. 94-104 **Charting Past, Present, and Future Research in Ubiquitous Computing**, Gregory D. Abowd and Elizabeth D. Mynatt, *ACM Transactions on Computer-Human Interaction*, March 2000, pp. 29-58
09 Oct 9:00am	***Project Proposals due***	
10 Oct	**Fieldwork / Prototyping** (ppt)	**Contextual Design**, Chapters 2 & 3, Hugh Beyer and Karen Holtzblatt, Morgan Kaufmann, 1997, pp. 29-66. (Download the PDF w/ your Axess login) **Prototyping for Tiny Fingers**, Marc Rettig, *Communications of the ACM*, April 1994, pp. 21-27. **Informing the Design of an Information Management System with Iterative Fieldwork**, Victoria Bellotti, Ian Smith, *DIS 2000: ACM Conference on Designing Interactive Systems*, August 2000, pp. 227-237.
12 Oct	**Evaluation** (ppt)	**Heuristic Evaluation**, Jakob Nielsen, in *Usability Inspection Methods*, Nielsen & Mack eds., 1994, pp. 25-62. (Download the PDF w/ your Axess login) **Methodology Matters: Doing Research in the behavioral and social sciences**, Joseph E. McGrath, in *Readings in Human-Computer Interaction: Toward the Year 2000*, R. M. Baecker and J. Grudin and W. A. S. Buxton, ed. pp. 152-169.
17 Oct Scott at UIST	**Collaborative Spaces** (ppt)	**Iterative Design of Seamless Collaboration Media**, Hiroshi Ishii, Minoru Kobayashi, Kazuho Arita, *Communications of the ACM*, August 1994, pp. 83-97 **Interacting with Paper on the DigitalDesk**, Pierre Wellner, *Communications of the ACM*, July 1993, pp. 87-96
19 Oct	**Tangible Interaction / Augmented Reality** (ppt)	**Tangible Bits: Towards Seamless Interfaces between People, Bits, and Atoms**, Hiroshi Ishii and Brygg Ullmer, *CHI 1997: ACM Conference on Human Factors in Computing Systems*, pp. 234-41 *(metaDESK video, ambientROOM video)* **Wearable Computing: A First Step Toward Personal Imaging**, Steve Mann, *IEEE Computer*, February 1997, pp. 25-32. **Reinventing the Familiar: Exploring an Augmented Reality Design Space for Air Traffic Control**, Wendy E. Mackay, Anne-Laure Fayard, Laurent Frobert and Lionel Médini, *CHI 1998: ACM Conference on Human Factors in Computing Systems*, pp. 558-65
24 Oct	**Physical Representations** (ppt)	**Haptic Techniques for Media Control**, Scott S. Snibbe, Karon E. MacLean, Rob Shaw, Jayne Roderick, William L. Verplank, Mark Scheef, *UIST 2001: ACM Symposium on User Interface Software and Technology*, pp. 199-208 **Distributed Cognition: Toward a New Foundation for Human-Computer Interaction Research**, James Hollan, Edwin Hutchins, and David Kirsh, *ACM Transactions on Computer-Human Interaction*, 2000, pp. 174-196.
26 Oct	**Software Tools** (ppt)	**Past, Present, and Future of User Interface Software Tools**, Brad Myers, Scott E. Hudson, Randy Pausch, *ACM Transactions on Computer-Human Interaction, March 2000*, pp. 3-28 **Natural Programming Languages and Environments**, Brad A. Myers, John F. Pane, Andy Ko, *Communications of the ACM*, September 2004, pp. 47-52.
30 Oct 9:00am	***Project Milestone 1 due*** *(see examples from 2004)*	
31 Oct	**Design Tools** (ppt)	**DENIM: An Informal Web Site Design Tool Inspired by Observations of Practice**, Mark W. Newman, James Lin, Jason I. Hong, James A. Landay, Human-Computer Interaction, 2003. 18(3): pp. 259-324 *(DENIM video, SUEDE video, Outpost video, DAMASK video)*
02 Nov	**Information Visualization** (ppt)	**Readings in Information Visualization: Using Vision to Think**, Chapter 1, Stuart K. Card, Jock D. Mackinlay, Ben Shneiderman, Morgan Kaufmann Publishers, pp. 1-34 *(FilmFinder video, Treemap video)* **The Table Lens: Merging Graphical and Symbolic Representations in an Interactive Focus+Context Visualization for Tabular Information**, Ramana Rao and Stuart K. Card, *CHI 1994: ACM Conference on Human Factors in Computing Systems*, pp. 318-22 *(Table Lens demo)*
03 Nov 6:00pm	***Project Milestone 1 feedback and midterm grades sent out***	
07 Nov Scott at CSCW	**Intelligent User Interfaces** (ppt)	**Direct Manipulation vs. Interface Agents**, Ben Shneiderman and Pattie Maes, *ACM Interactions*, December 1997, pp. 42-61 **Models of Attention in Computing and Communications: From Principles to Applications**, Eric Horvitz, Carl Kadie, Tim Pack, David Hovel, *Communications of the ACM*, March 2003, pp. 52-8

Primary Source Material



Literature Index

Literature Index

Research Methods


DOING

Writing

Technical Presentation

Critical Thinking