Slide credit: J. Fogarty, S. Munson, J. Kienz, J. Landday

INTRODUCTION TO

HUMAN-COMPUTER INTERACTION

Maya Cakmak, Matt Kay, Brad Jacobson, King Xia

Winter 2015, Tue/Thu 10:30-11:50, EEB 045

dub

University of Washington

CSE 440

JAN 06 - WEEK 1 - TUESDAY

MAYA CAKMAK *pronounced "Chuck Mock"*

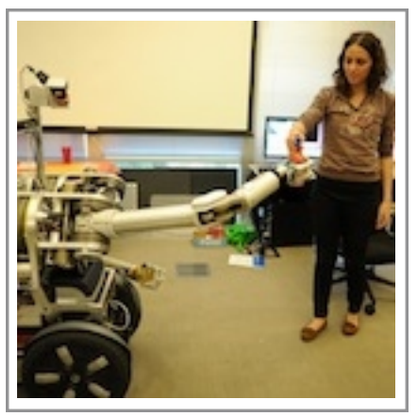
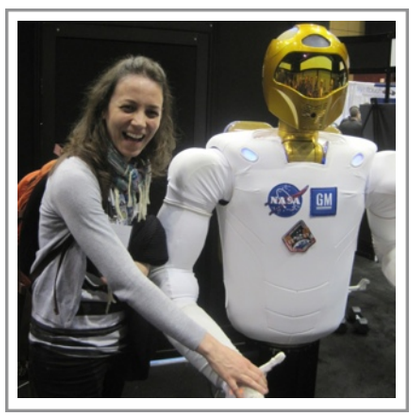
PhD in Robotics
Georgia Inst. of Technology

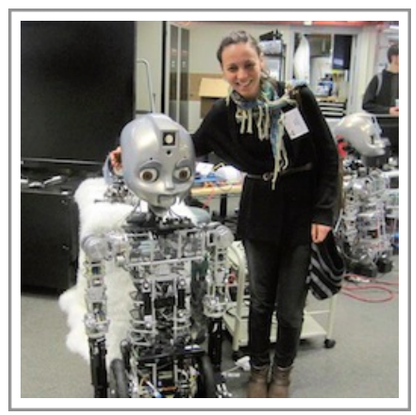
Post-doc
Willow Garage, Inc.

Assistant Professor
University of Washington

HUMAN CENTERED ROBOTICS

MAYA CAKMAK



I <3 ROBOTS

MAYA CAKMAK

MATT KAY

B.C.S. (2008) and MMath (2010)
Computer Science (minor in Fine Art)
University of Waterloo

Grad student at Washington (2010-20XX)

Research: Communicating uncertainty in end-user systems

Interests: Typography & design, visualization, experimental statistics

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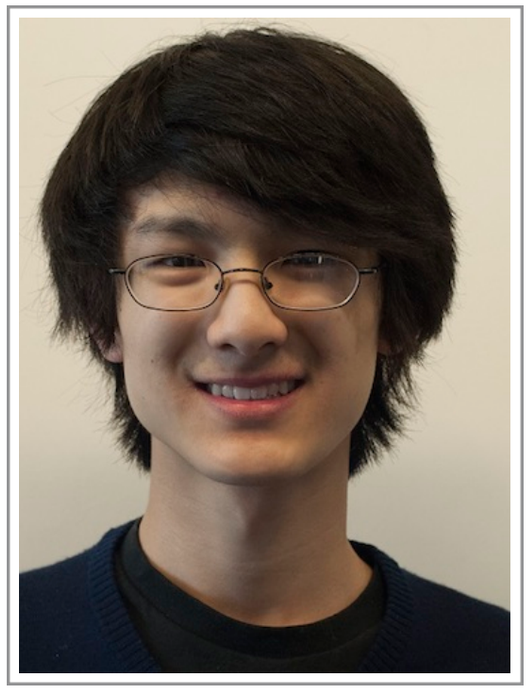
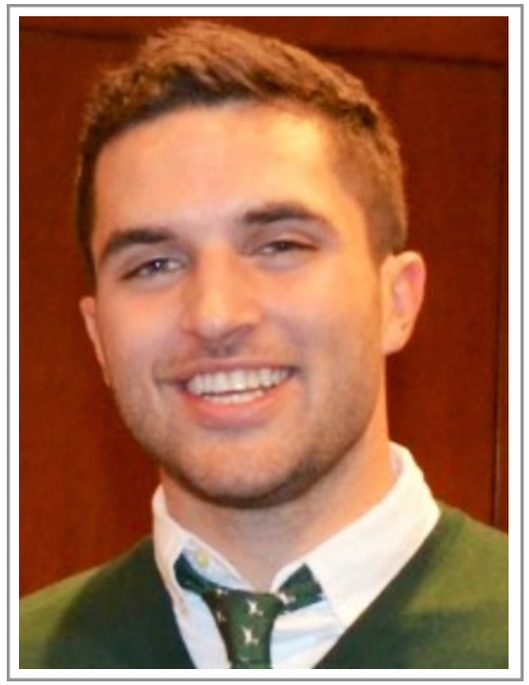
KING XIA



University of Washington, 2015
Computer Science & Business

Interests: The Kingkiller Chronicles, learning new languages, LoL, cooking, debate

BRAD JACOBSON

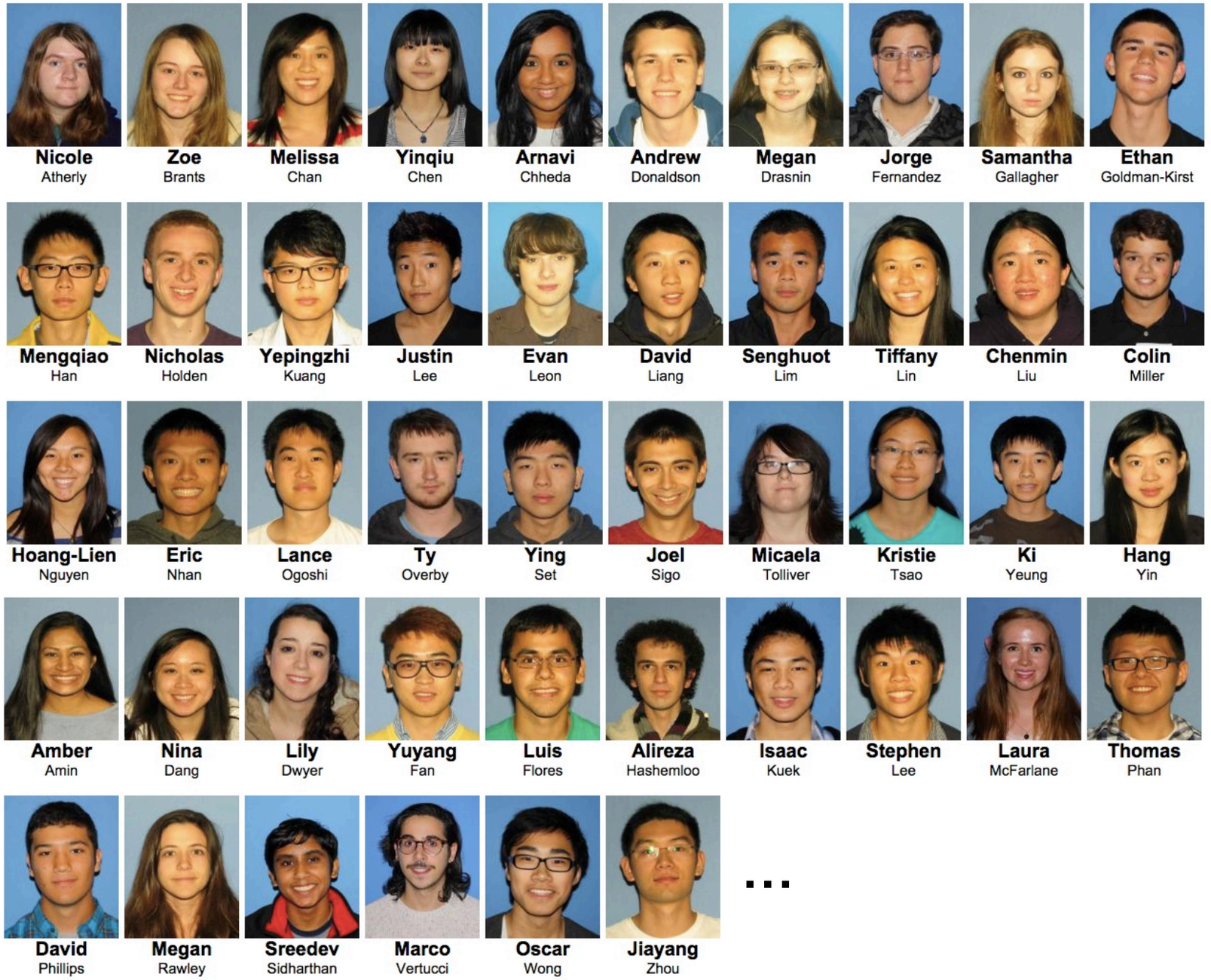


BA, Psychology
Dartmouth College, 2013

MS, University of Washington
HCDE, 2013 – 2014

Interests: User research, "pop-psych" books, soccer, skiing, and plenty of tv shows and movies

Let's meet you



Let's meet you

Let's meet you

- Who knows at least one other person in the class?

Let's meet you

- Who knows at least one other person in the class?
- Who are the non-majors?

Let's meet you

- Who knows at least one other person in the class?
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- Who has taken an HCI related course before?

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- Who has industry experience?
- Who is born/raised in Seattle?
- Who is international?

Let's meet you

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- Who has taken an HCI related course before?
- Who has industry experience?
- Who is born/raised in Seattle?
- Who is international?
- Who wants to go to graduate school?

Let's meet you

- Who knows at least one other person in the class?
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- Who has taken an HCI related course before?
- Who has industry experience?
- Who is born/raised in Seattle?
- Who is international?
- Who wants to go to graduate school?
- Who wants to build a start-up company?

Let's meet you

- Who knows at least one other person in the class?
- Who are the non-majors?
- Who has taken an HCI related course before?
- Who has industry experience?
- Who is born/raised in Seattle?
- Who is international?
- Who wants to go to graduate school?
- Who wants to build a start-up company?
- Have you heard of IDEO?

TODAY

- [05min] Intro
- [05min] What is CSE 400 about?
- [25min] IDEO video
- [10min] Course details
- [20min] Brainstorming exercise

What is this course about?

What is this course about?

- Who took CSE 332 (Data Abstractions) last quarter?

What is this course about?

- Who took CSE 332 (Data Abstractions) last quarter?
  - Remember Assignment #6?

What is this course about?

- Who took CSE 332 (Data Abstractions) last quarter?
  - Remember Assignment #6?

```
$./getpopulation -x 10 -y 50 -d [10, 10]
> Total population: 4.74M
> % US population: 1.5%
```

What is this course about?

- Who will use this?
- What will they use it for?
- Why is it important?
- Why is it this way?
- Is it really useful?

What is this course about?

..not implementation!

- Who will use this?
- What will they use it for?
- Why is it important?
- Why is it this way?
- Is it really useful?

Everything is designed

Everything is designed

- There are many ways to solve some problems
  - That's why there is so much diversity

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- Some are good, some are bad
  - The design process helps you make sure it is good

Everything is designed

- There are many ways to solve some problems
  - That's why there is so much diversity

- Some are good, some are bad
  - The design process helps you make sure it is good

- Some you like, some you hate
  - Design is subjective and emotional

What is this course about?

Introduction to Human-Computer Interaction: User Interface Design, Prototyping, and Evaluation

What is this course about?

~~Introduction to Human-Computer Interaction:~~
~~User Interface Design, Prototyping, and Evaluation~~

I'd call it

Iterative Interaction Design:
Need finding, Prototyping, and Evaluation

What is this course about?

Iterative Interaction Design:
Need finding, Prototyping, and Evaluation

What is this course about?

It is essentially a design course

Iterative Interaction Design:

Need finding, Prototyping, and Evaluation

What is this course about?

It's not only about computers

It is essentially a design course

Iterative Interaction Design:

Need finding, Prototyping, and Evaluation

What is this course about?

No one gets it right the first time!

It's not only about computers

It is essentially a design course

Iterative Interaction Design:

Need finding, Prototyping, and Evaluation

What is this course about?

Iterative Interaction Design:
Need finding, Prototyping, and Evaluation

You're great at solving problems. But can you identify them?

dub

What is this course about?

Iterative Interaction Design:

Need finding, Prototyping, and Evaluation

You shouldn't have to build a whole system to evaluate an idea

What is this course about?

Iterative Interaction Design:
Need finding, Prototyping, and Evaluation

How do you know your design is "good"?

IDEO Deep Dive

https://www.youtube.com/watch?v=taJOV-YCieI

abc

What does the course involve?

- One big team project
- Learning about methods & practicing them

Project scope

Iterative Interaction Design: Need finding, Prototyping, and Evaluation

Contextual inquiry
Scenarios, personas
Task analysis

Project scope

Iterative Interaction Design: Need finding, Prototyping, and Evaluation

Sketching, Storyboarding
Paper/video prototypes
Low fidelity and interactive prototypes

Project scope

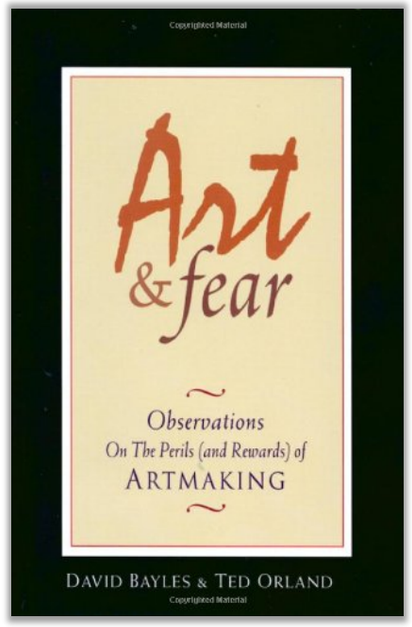
Iterative Interaction Design: Need finding, Prototyping, and Evaluation

User testing
Cognitive walkthrough
Think aloud
Heuristic evaluation

Quantity versus quality

Class-A: Graded on quantity

Class-B: Graded on quality



Which produces best quality?

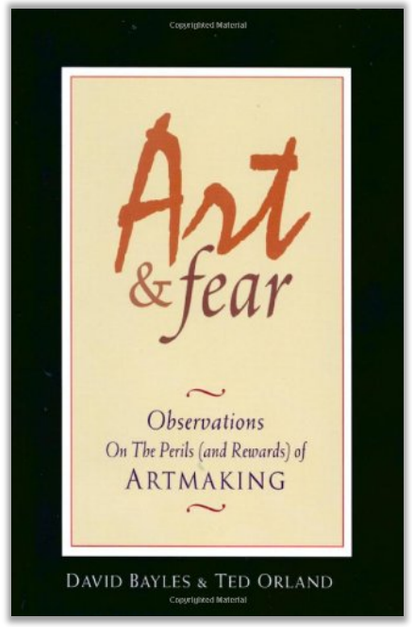
[Bayles and Orland, 2001]

Quantity **over** quality

Class-A: Graded on quantity

"busily churning out piles of work and **learning from their mistakes**"

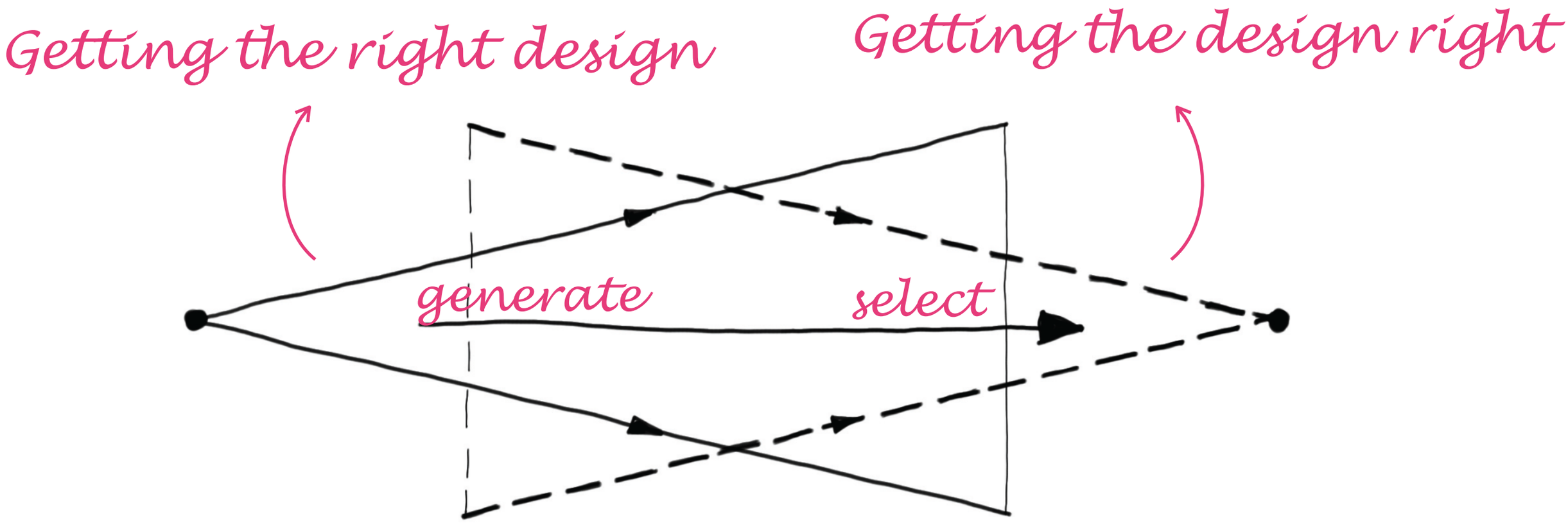
Class-B: Graded on quality

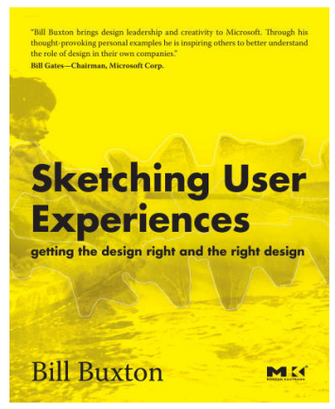


"theorizing about perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay"

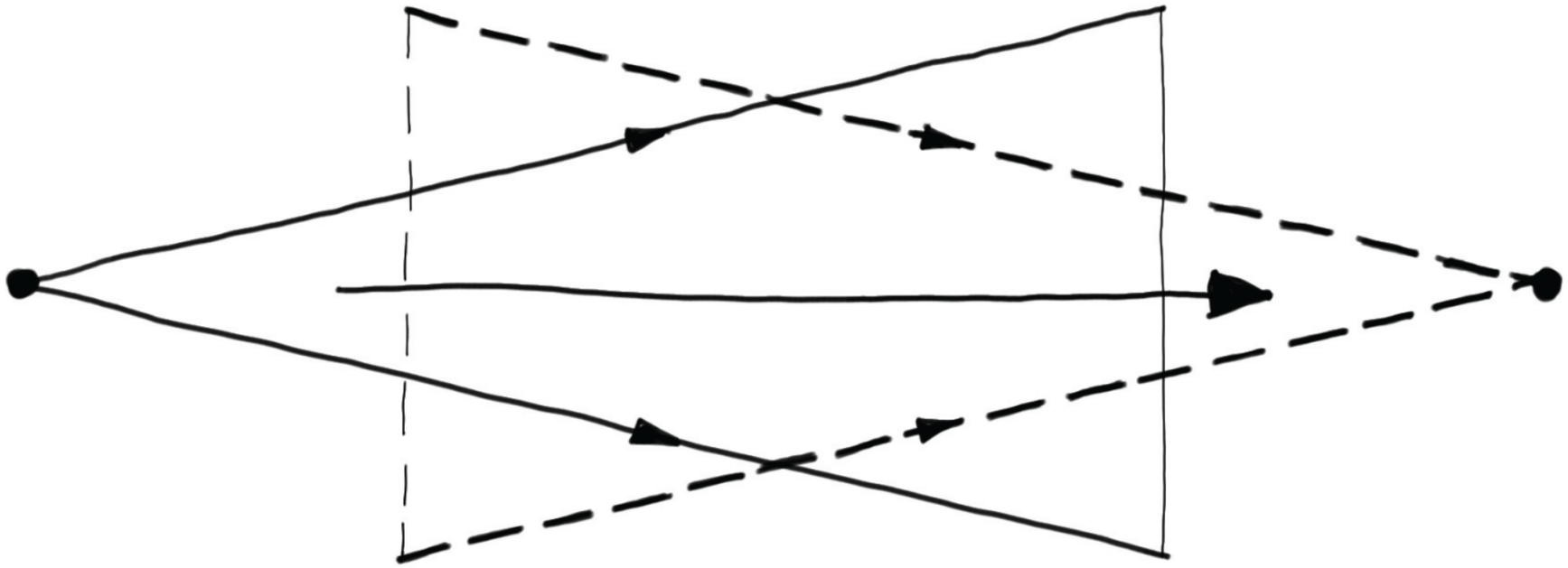
[Bayles and Orland, 2001]

The design diamond

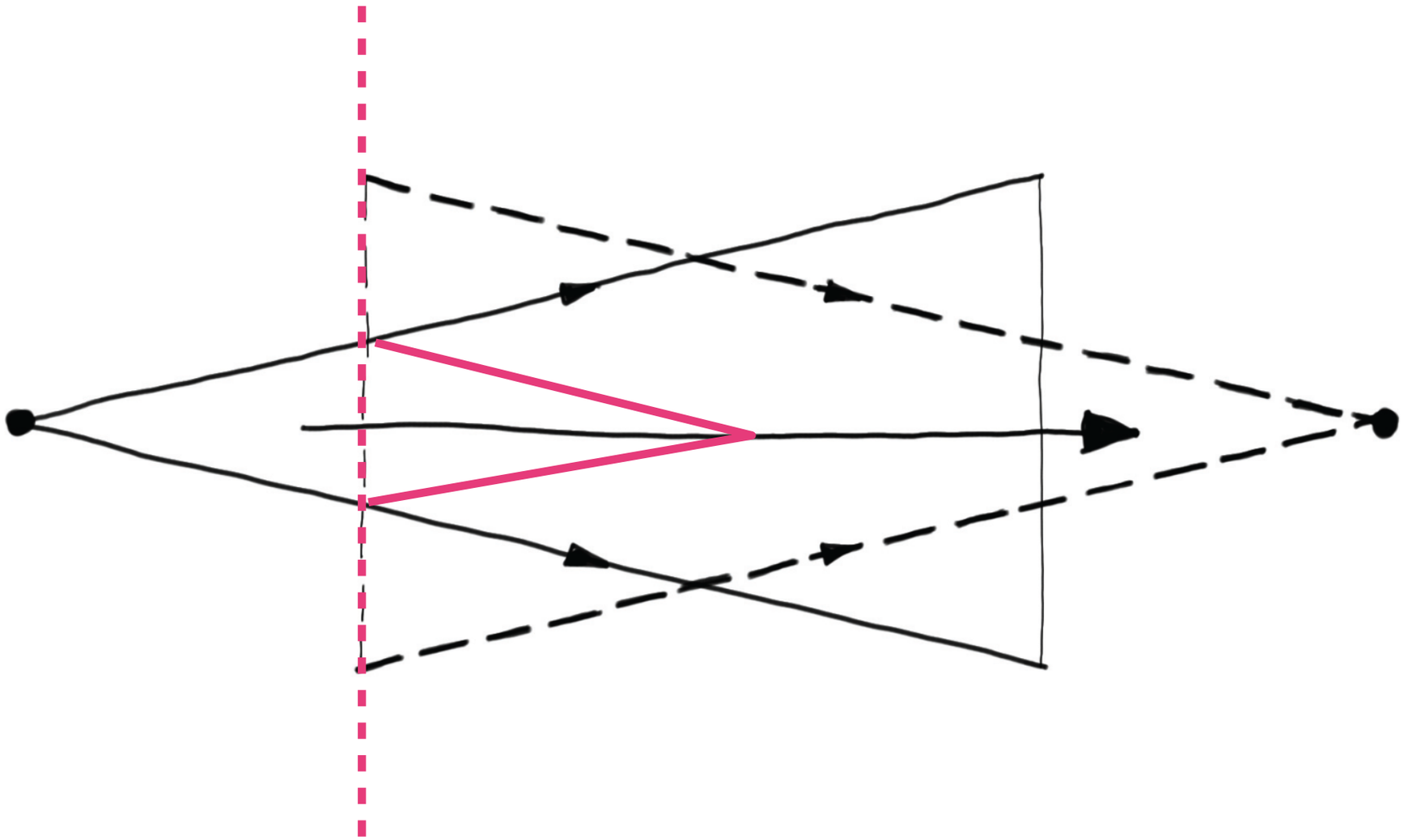




The design diamond



The design diamond



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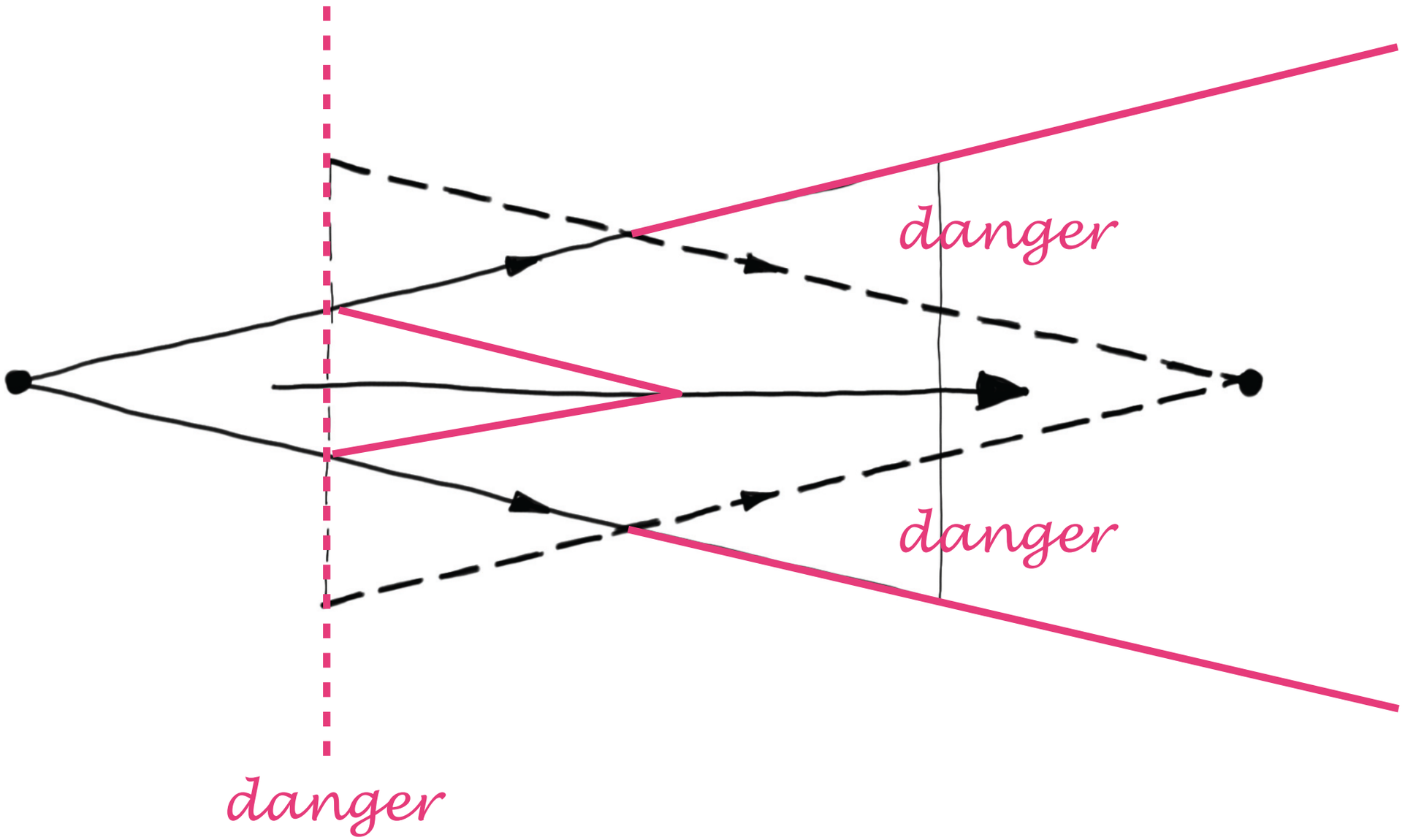
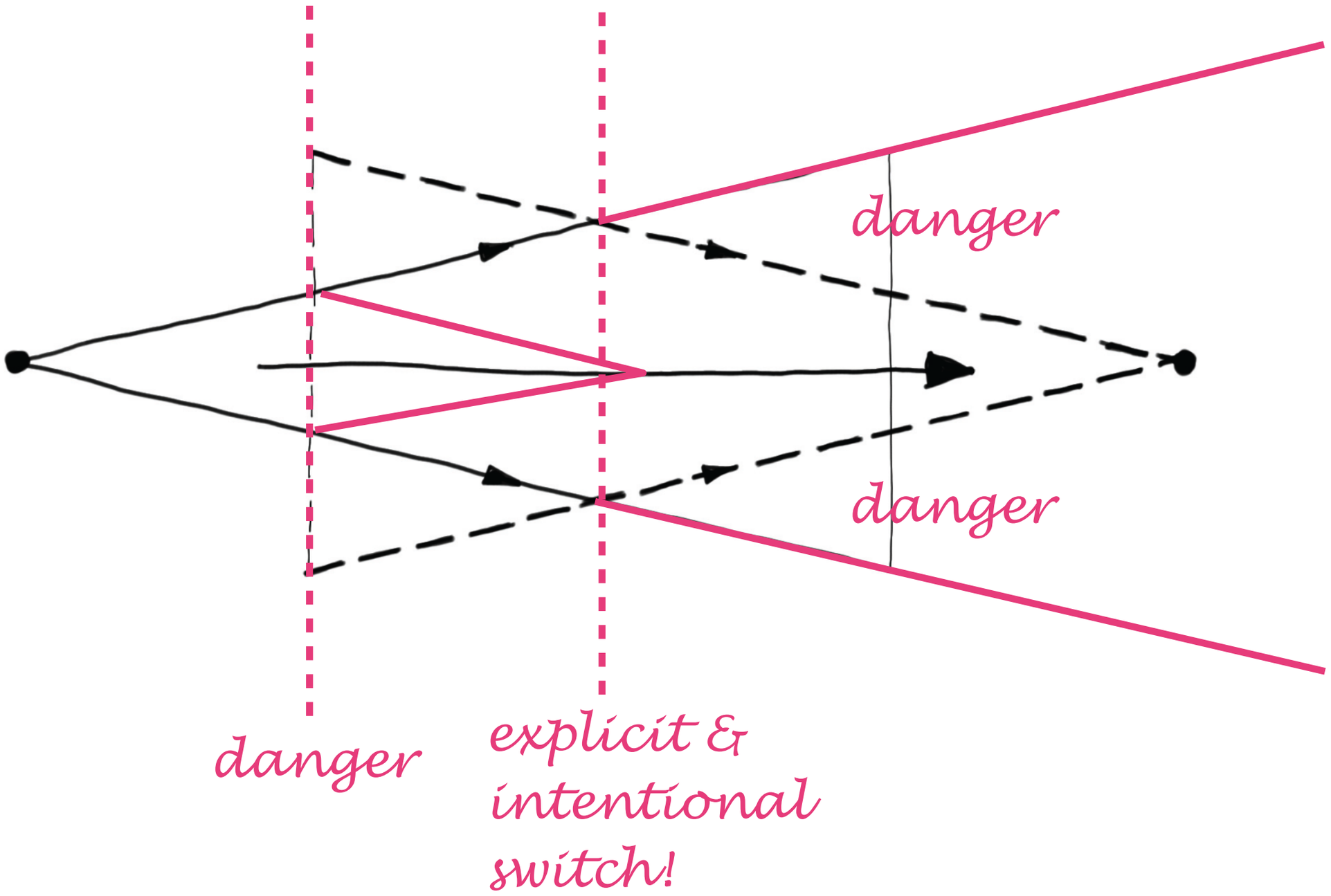
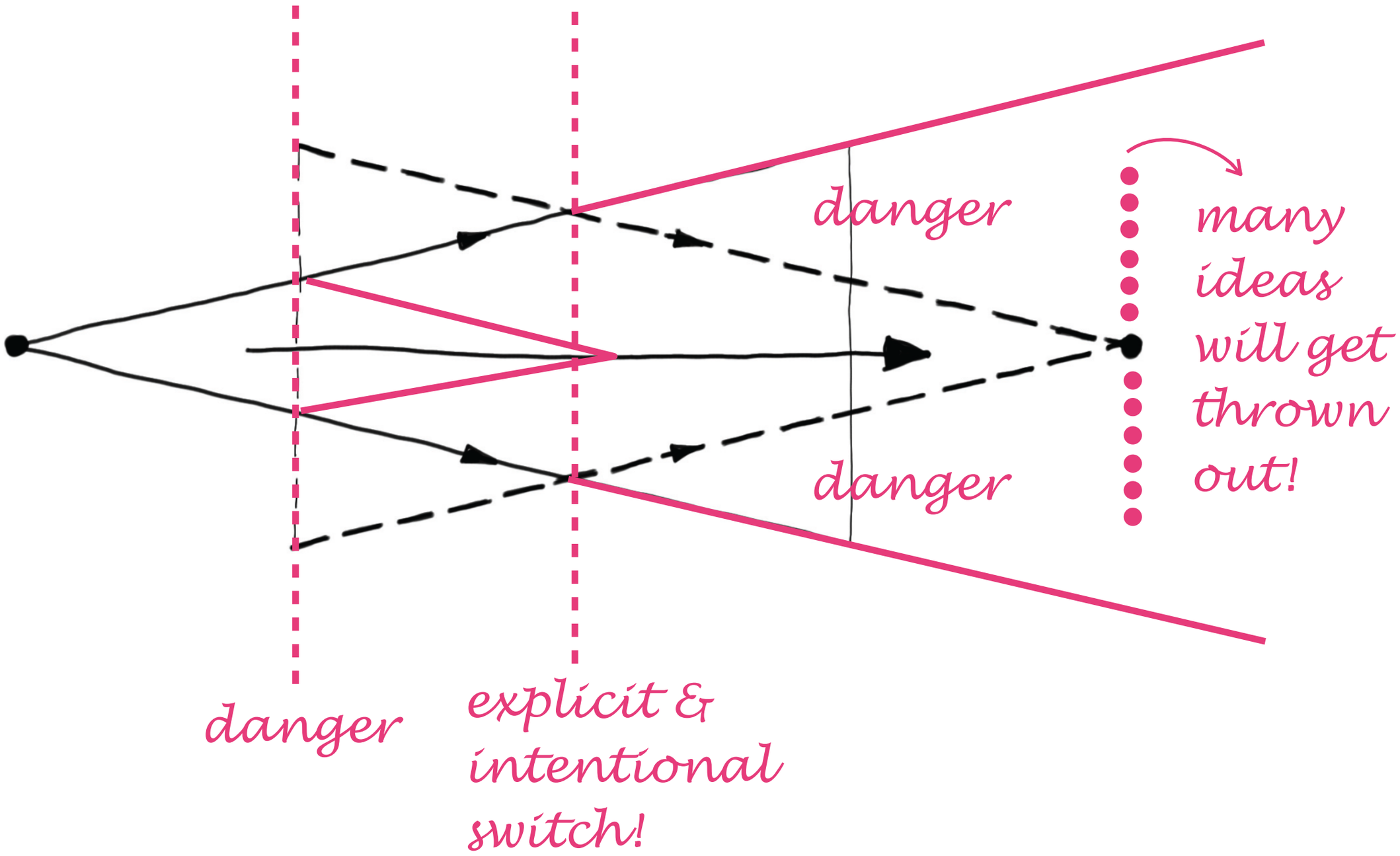


The design diamond



The design diamond



What does the course involve?

- One big team project
- Learning about methods & practicing them
- **LOTS of critique and feedback**

What does the course involve?

- One big team project
- Learning about methods & practicing them
- LOTS of critique and feedback
- **LOTS of assignment**
  - Two project deliverables every week
  - Due Mon and Thu nights, feedback on the next day
  - Additional reading assignments
  - Two powerpoint presentations, one poster presentation

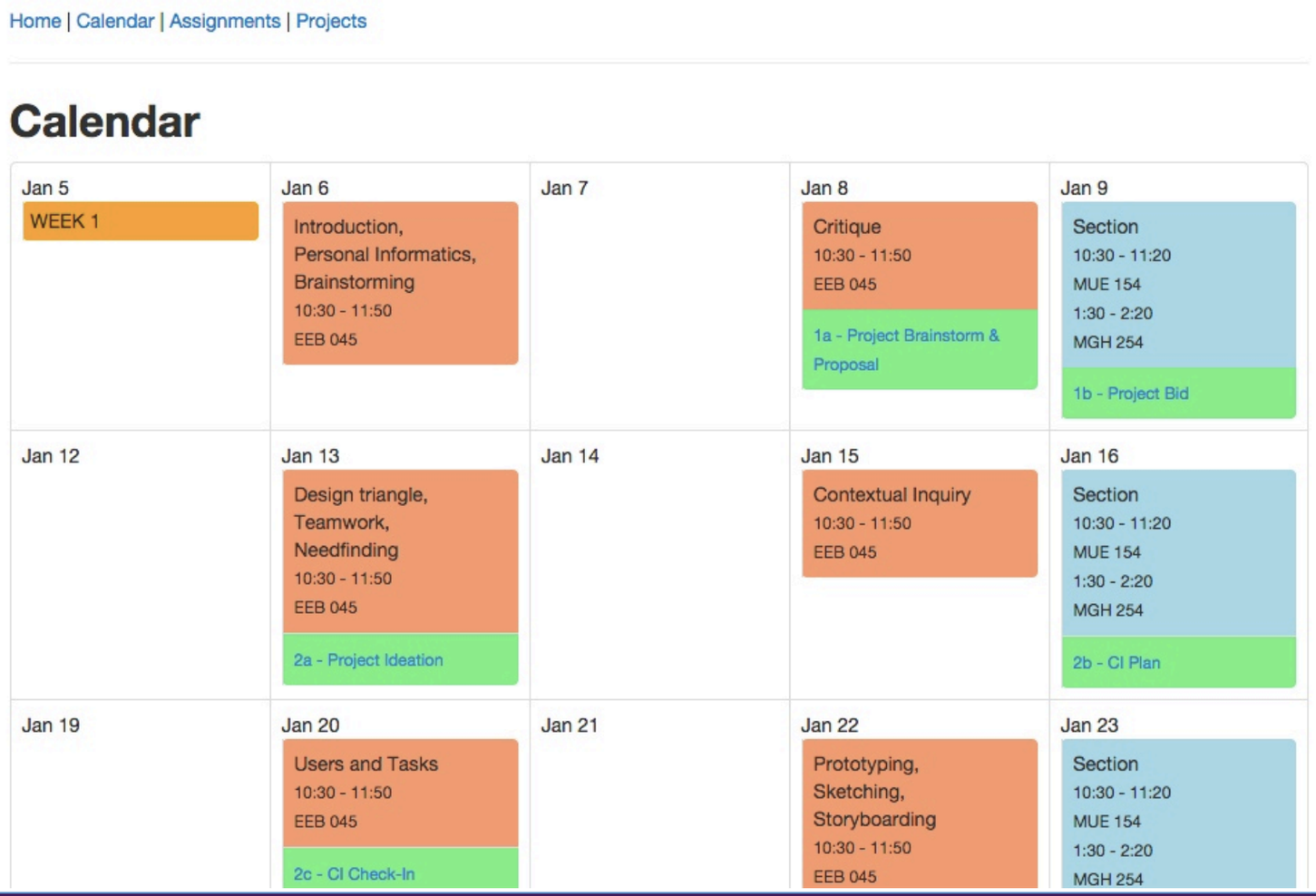
Warning!

- Things I do not want to see in the teaching evaluation feedback form:
  - The workload was too high
  - The course was subjective
  - Evaluation with friends should have been okay
  - There was no implementation

Webpage

http://courses.cs.washington.edu/courses/cse440/15wi/

- Assignments
- Readings
- Slides
- Calendar



Canvas (Catalyst is on its way out)

- Assignment submission
- Your grades
- Discussions

Contacting us, office/studio hours

- **Contact:** Email all teaching staff at once:
  - cse440-instr@cs.washington.edu
- **Office hour:** See calendar or take appointment by email.
- **Studio/section:** Assigned but there might be some changes; all team members in the same section.

Grading

- Group project (65%)
  - We will provide grading scales
  - Full grade on a milestone does not mean you are done, you still need to act on the feedback!
- Readings (5%)
- Exam (last day of classes) (20%)
- Participation and teamwork (10%)

This week

Assignment-1a

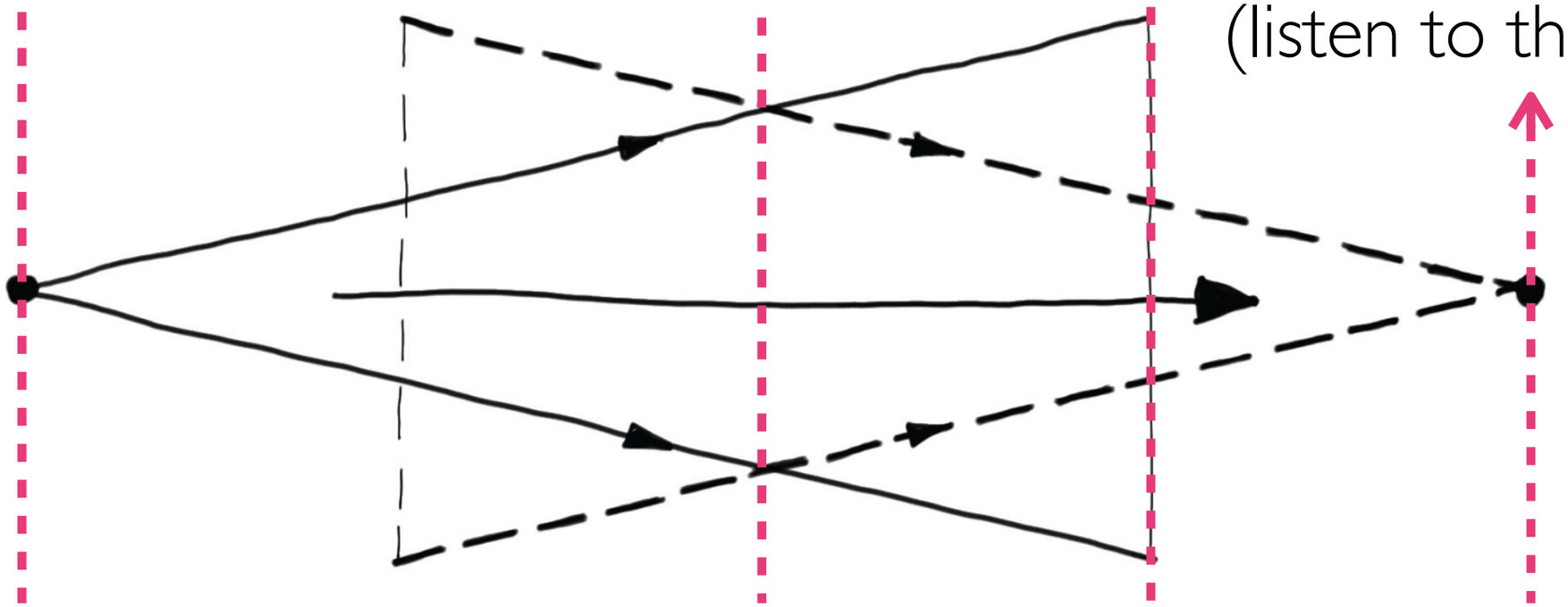
Three project ideas

(problems, not solutions!)

Brainstorming

Now, in class, generate

32 project ideas



Assignment-1b

Project proposal

(listen to the feedback!)

DUE:
Wed night

DUE:
Fri night

Project Theme: Personal Informatics

QUANTIFIED SELF

YOU ARE JUST A NUMBER

Can you make yourself healthier and happier by logging every snore, step and mood swing? As a Californian trend for obsessional data-tracking makes its way over here, **Tim Chester** covers his body in gadgets to find out if self-knowledge is power. Photograph by Paul Stuart

Today I have climbed the equivalent of a tall giraffe. Coffee is my most frequent food. On average, I walk 11,726 steps a day, burning 3,089 calories, over 2.4 hours of activity. I sleep for 6 hours and 9 minutes a night. This week, my sleep efficiency is 72% and my food is 77% healthy. My BMI of 23.5 is 14 percentage points below the median for men my age, and my average daily Met score is 1.71, although I have no idea what a Met score is.

I am, it seems, nothing more than a bundle of numbers and milestones, spurred on by LEDs and chided by pop-up messages. A wireless accessory for the iPhone; perhaps its most sophisticated yet.

My arms are covered in bands, my pockets augmented with accelerometers, my eyes numb from all the charts, my heart pumping to the beat of a heart-rate monitor and forcing its ventricles to keep up with the national average. My head is about to implode from all the positive affirmation and gentle nudging, but it's OK because my memories are being saved to my hard drive and my mood swings are earning me *hugs* from strangers.

I am producing, analysing and socially sharing personal data. I am becoming fitter, happier, and more productive. I am staying motivated by earning badges. I have become a Quantified Self (QS).

The QS movement that I've temporarily joined began, as these things tend to do, in San Francisco's Bay Area in 2007. Two Wired magazine editors, Gary Wolf and Kevin →

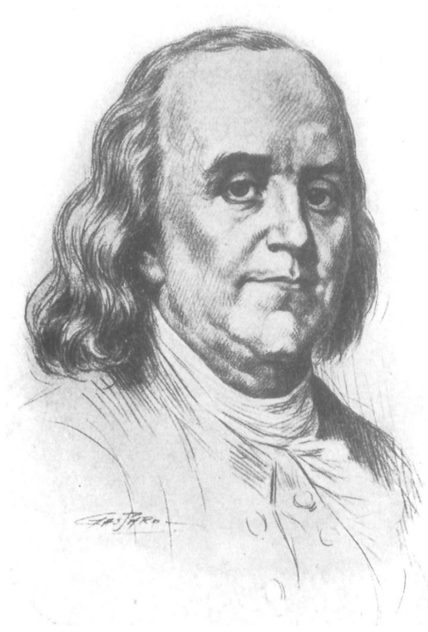
Project Theme: Personal Informatics

"We define personal informatics systems as those that help people collect personally relevant information for the purpose of self-reflection and gaining self-knowledge. There are two core aspects to every personal informatics system: collection and reflection."

Dey&Forlizzi, CHI 2010.

Old idea..

DaVinci



Temperance
Silence
Order
Resolution
Frugality
Industry
Sincerity
Justice
Moderation
Cleanliness
Tranquility
Chastity
Humility

TEMPERANCE.

EAT NOT TO DULLNESS.
DRINK NOT TO ELEVATION.

	S.	M.	T.	W.	T.	F.	S.
T.							
S.	*	*		*		*	
O.	* *	*	*		*	*	*
R.			*			*	
F.		*			*		
I.			*				
S.							
J.							
M.							
C.							
T.							
C.							
H.							

Benjamin Franklin

..re-popularized with smartphones

..and wearables / sensing devices

Pedometer

Heart rate monitor

Blood glucose meter

Thermometer

Blood pressure monitor

Closely related: Quantified self

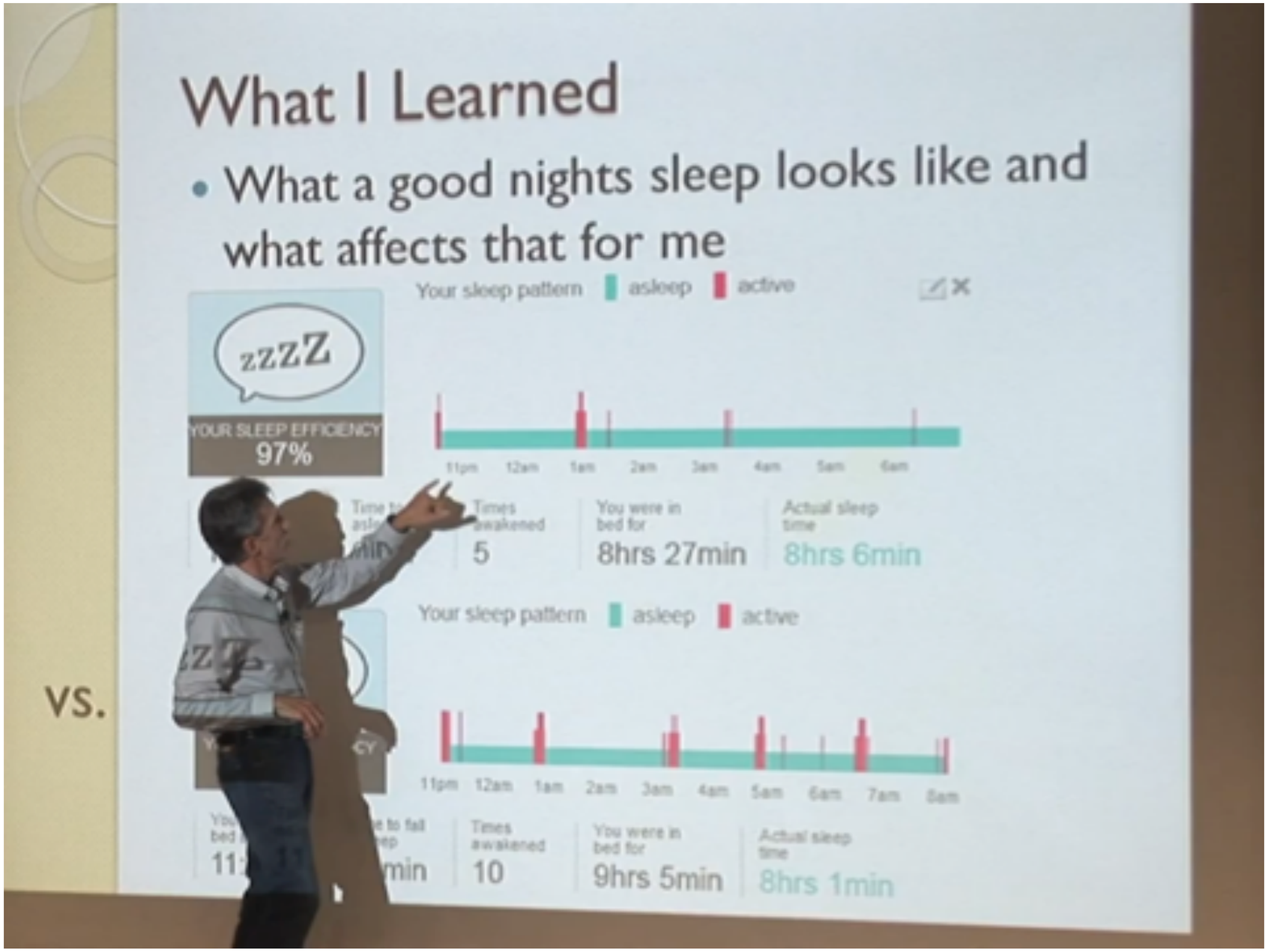
"The Quantified Self is an international collaboration of users and makers of self-tracking tools."

"Our aim is to help people get meaning out of their personal data."

"Self knowledge through numbers."

Wolf, 2009 Wired Magazine.

Quantified self conference



[Choe, Lee, Lee, Pratt, Kientz. CHI 2014.]

What do people track?

[Choe, Lee, Lee, Pratt, Kientz. CHI 2014.]

What do people track?

- A Diabetic Experience with Self-Quantification
- Analyzing My Cancer Data
- Going Vegan in December
- Improving Skin Health
- Cognitive Performance
- 15 Weeks of Self-Tracking
- Diabetes, Exercise, and QS
- Experience Sampling of My Stress
- Hacking Your Subconscious Mind

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[Choe, Lee, Lee, Pratt, Kientz. CHI 2014.]

Motivations for tracking

Motivations	Sub-categories
To improve health	To cure or manage a condition
	To achieve a goal
	To find triggers
	To answer a specific question
	To identify relationships
	To execute a treatment plan
	To make better health decisions
	To find balance
To improve other aspects of life	To maximize work performance
	To be mindful
To find new life experiences	To satisfy curiosity and have fun
	To explore new things
	To learn something interesting

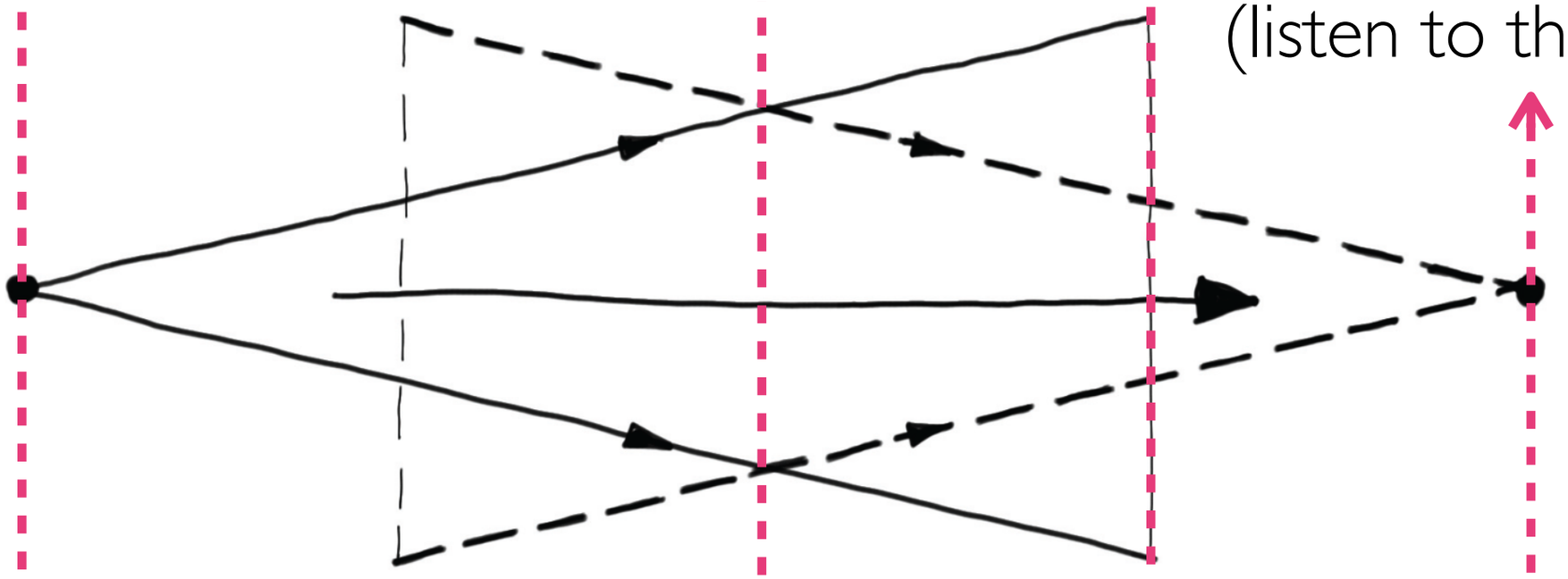
[Choe, Lee, Lee, Pratt, Kientz. CHI 2014.]

This week

Assignment-1a
Three project ideas
(problems, not solutions!)

Brainstorming
Now, in class, generate
32 project ideas

Assignment-1b
Project proposal
(listen to the feedback!)



DUE:
Wed night

DUE:
Fri night

This week

Teaching staff

Will post selected projects

↑

DUE:
Saturday noon

Assignment-1b

Project proposal
(listen to the feedback!)

↑

DUE:
Fri night

Assignment-1c

Project bid
(select your pick)

↑

DUE:
Sun night

Brainstorming

- No time today but next week we will learn about:

7

secrets to good brainstorming

6

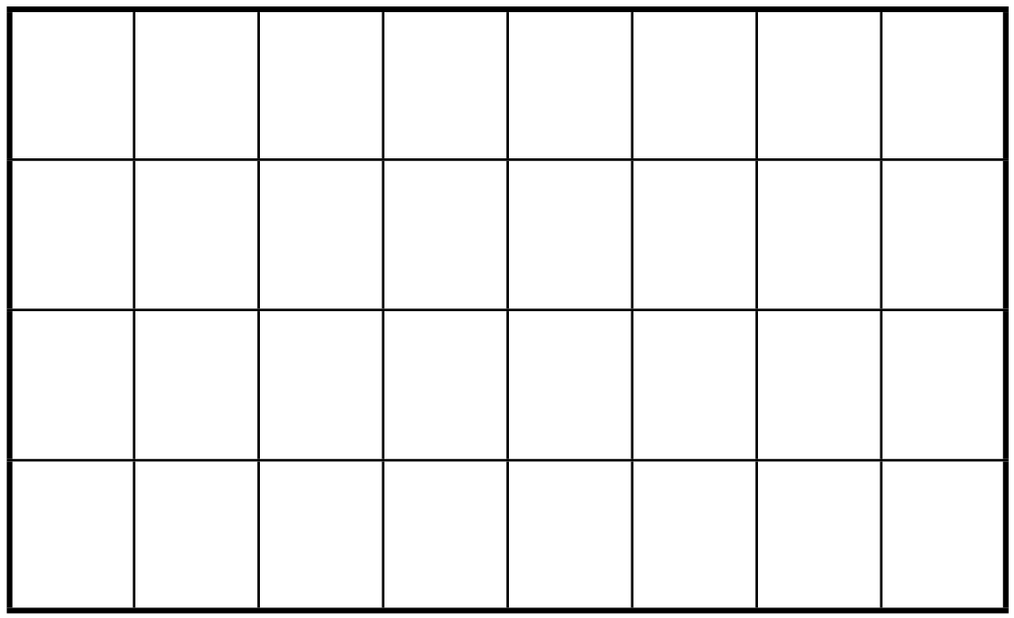
ways to kill a brainstormer

Go for quantity
Encourage wild ideas
Refrain from critiquing

Tom Kelley from IDEO

Brainstorming

- Get into groups of 4
- Take a paper and fold it 4x8 and reopen it
- Write a project idea in each square
- Write down your names behind the paper
- Drop it on your way out



Reminders

- Drop immediately if you are not taking the class
- [Not registered?] Sign the overload sheet
- Fill out the section availability sheet
- Submit Assignment 1a by tomorrow night!