Brainstorming

CSCI 3002 Fall 2018

Updates

- Recitation / first weekly activity
  - Feedback? Post it in Canvas chat

- This week
  - Brainstorming & exploring solutions
  - The Deep Dive
  - Introduction to course project

Brainstorming

- Why?
- How?
- Some practical tips

Against eureka-ism

In this “eureka” view, creativity is … something accessible only to persons of genius. It arises like a bolt of lightning, unanticipated, unpredictable and unanalyzable—but the bolts strike only a few special people. We ordinary mortals must stand in awe and thanks.

—Stephen Jay Gould, *Darwin’s Middle Road*

Making creativity happen

- We can't will our brains to come up with **good** ideas
- So what can we do?
  - Give ourselves structure to focus on coming up with ideas
  - Catch ourselves before we quash potentially good ideas
  - Learn how to make faster/better decisions about our rough ideas

Why we might need help

- Our brains act as **cognitive misers***
  - They're often drawn to the simplest solution that works (AKA *satisficing***)*
  - Our design ideas can lead to hill-climbing, missing or ignoring problems

*Susan Fiske and Shelley Taylor (1984). *Social Cognition.*
**Herb Simon (1956). *Psychological Review* 63(2).

Brainstorming with rules

- We can use rules and games to structure our brainstorming activities
- May help us to give sufficient time to ideas, try things we might otherwise skip over
- A key idea in this class is that **it can be really difficult to fix a bad idea later**

Cardinal rules for brainstorming

1. Spend more time coming up with ideas than you think you need to
   - Even ideas you don't pursue may be helpful in the future
2. Separate **idea generation** from **idea evaluation**
   - Give yourself room to generate ideas without worrying about their flaws

More rules for brainstorming

- Before you start, agree on a topic for the brainstorming session; set a time limit

1. Focus on one conversation at a time
2. Aim for large quantity of ideas
3. “Headlining” – try to frame what’s unique about this idea in a simple sentence
4. Build on the ideas of others
   - **In improv comedy, this is known as “hitting the ball back” or “yes, and”**

Even more rules

5. Encourage wild ideas (you can modify them later)
6. Represent ideas visually
7. Stay on topic
8. Defer judgment of ideas; no “blocking”

Rules 5-8

- The Stanford School of Design has explored this topic extensively, and documented what works (in many cases)
- Nice summary here

Brainstorming examples

- What to do
- What to avoid

Does brainstorming work?

- Research has shown mixed results regarding the effectiveness of group brainstorming vs. generating ideas alone
- Regardless, one key step is taking the time to think through all the possible ways to do something, rather than charging ahead with your first idea

Where brainstorming fails

- Move forward with an idea that has serious flaws (that will be painful to fix later)
- Get “locked in” to an idea so much that it’s hard to even think of alternatives
- Missing out on interesting ideas by thinking too narrowly
- Convincing yourself that there is no solution, or no good solution

Seeing the design process in action

- *The Deep Dive*, a TV news segment from 1999
- Investigates design from IDEO, one of the best known design firms in the world
  - and an offshoot of the Stanford d.school
- Watch the video here

Things to watch for

- How are they coming up with ideas, and curating them?
- Juicy quotes about IDEO's process?
- Where do they make mistakes or overlook things?
- Where do they break their own rules?

More brainstorming tools

Brainstorming tools

- Dealing with discomfort
- Using constraints
- Using *mashups*
- Using games and activities

Discomfort as design tool 😖

- In my experience, there are certain things we can do that will help with this process, but most people (especially engineers?) don’t want to do

Discomforting tasks

- Sitting and waiting to think of ideas 😣
- Sitting and waiting for more ideas after you have one 😫
- Asking for feedback from others 😰
- Going back and re-doing things based on that feedback 😴
- Trying to find problems with your ideas so you can fix them 😱

Learning from others

RAZ: Well, you know, the thing that really helped make Instagram a huge success was a feature that Kevin decided to add, you know, almost by accident. And it happened when he was describing the app to his girlfriend, Nicole.

SYSTROM: I'm like, you know, Nicole, I think we're going to focus on photos. And she goes, I don't think I'm going to post that much. My photos aren't that good. They're not as good as your friend Greg. And I was like, well, Greg uses a bunch of filter apps to, like, make them look nice. And she goes, oh, you should probably add filters. And I was like, ah, that's it. Like, we just need to be able to make people feel like their photos are worthy of sharing.

—Guy Raz and Kevin Systrom, *How I Built This*

Using constraints

- In general, we often think of constraints as a bad thing
- In this view, a design with lots of constraints is worse than a design that works everywhere
- In engineering and CS we often seek solutions that handle all possible test cases
- … but there are limitations to this approach

Constraints in design

- Think of a brand new app
- Now, think of an app for new mothers

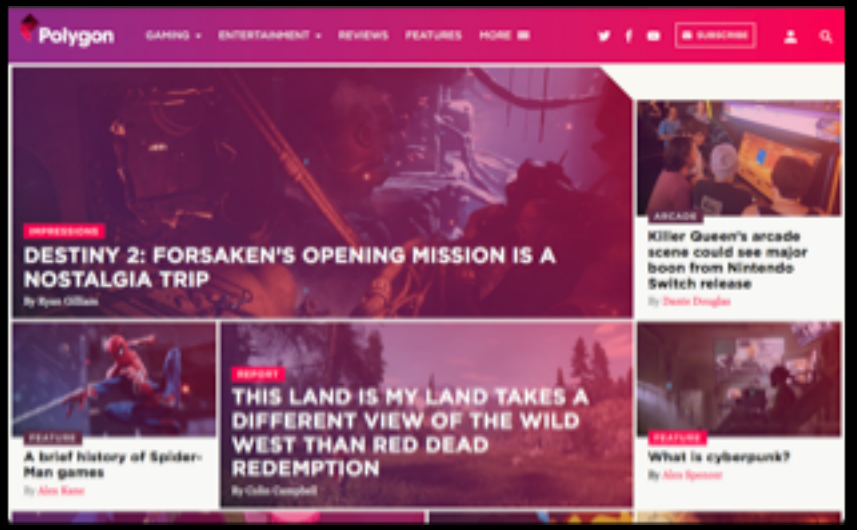
Benefits of constraints

- Can help us get unstuck
- It's often easier to come up with solutions to specific problems
  - More ideas to try
  - Fewer edge cases to derail our thinking

General vs. specific solutions

- If we design for every possible user and usage scenario, we may end up with generic solutions
  - Search sites look like Google; stores look like Amazon
- These solutions end up boring, with no need to even think about design
  - No opportunity to demonstrate your skills as a designer

How specialization can help

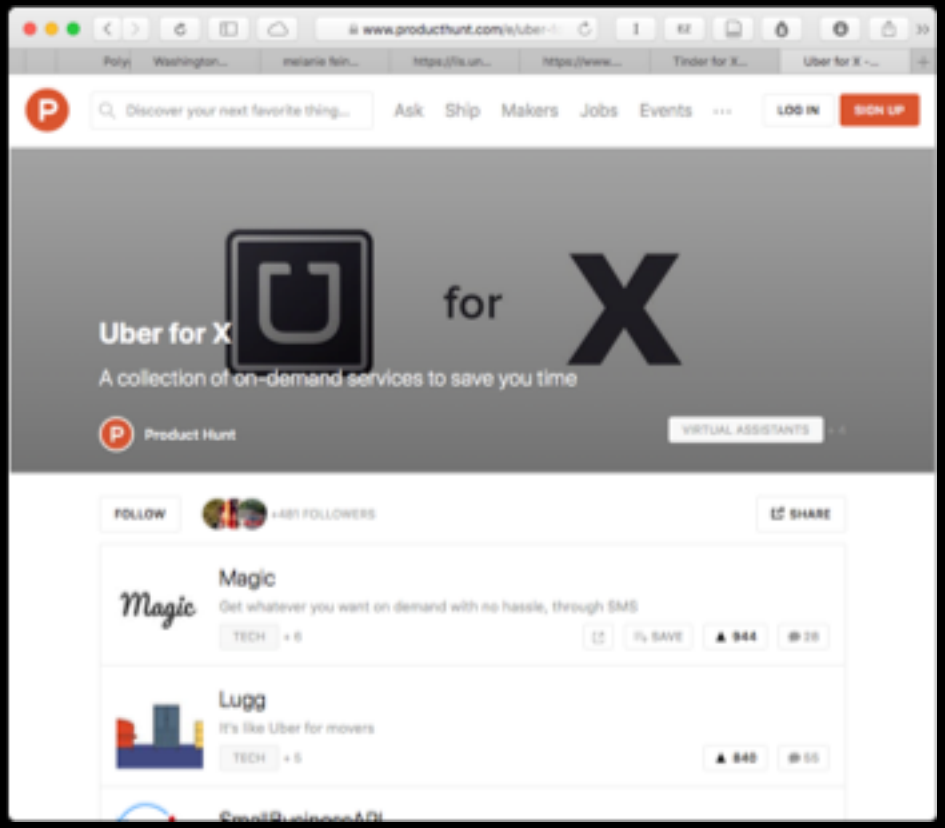


More on specialization

- What's unique and creative about NYTimes?
- What's unique and creative about Teen Vogue?

Mashups in design

- Another way to explore ideas is to combine elements from existing ideas
- Identify what is useful and interesting about one design, and bring it to a new context


Discover your next favorite thing...
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Makers
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Events
LOG IN
SIGN UP
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for
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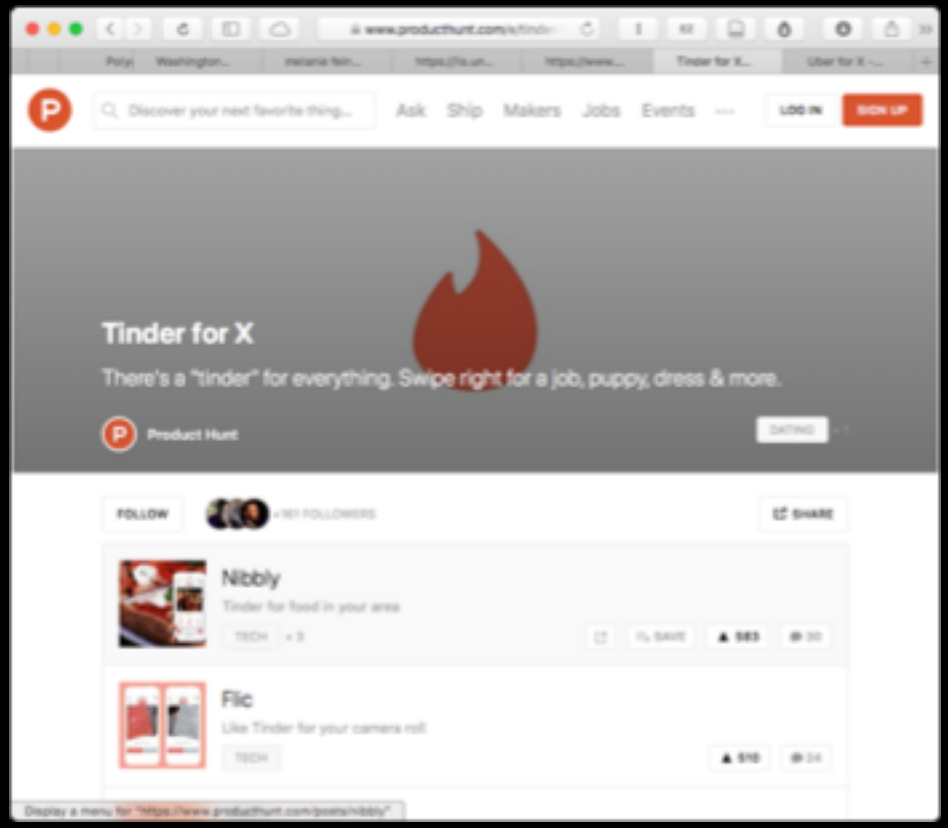
A collection of on-demand services to save you time
Product Hunt
VIRTUAL ASSISTANTS
FOLLOW
SHARE
Magic
Get whatever you want on demand with no hassle, through SMS
Lugg
It's like Uber for movers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LOG IN
SIGN UP
Tinder for X
There's a "tinder" for everything. Swipe right for a job, puppy, dress & more.
Product Hunt
FOLLOW
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Including randomness

- We can even mash up totally random ideas and get something useful
- The more ideas we add, the clearer the possible designs can be
- Follow improv principle of “yes, and”
  - Incorporate all new ideas

Yes, And

- A new mobile app for _____

Brainstorming Technique: Bootlegging

- Brainstorming "mashups"
- Process
  - Individual generation
  - Mixing categories
  - Brainstorming
  - Final idea

Lars Erik Holmquist (2008). Bootlegging: multidisciplinary brainstorming with cut-ups. P

Bootlegging Example: Everyday Robots

Categories

- Type of robot (e.g. humanoid, wheeled robot, etc.)
- Property of robot (e.g. autonomous behavior, collaboration with others, etc.)
- Place or situation (e.g. in the kitchen, running, commuting to work, etc.)
- User or user group (e.g. grandmothers, musicians, a secret agent, etc.)

Sample Outcomes

Type: Small flying robot
Property: Can perform face recognition
Place/situation: Plate
User: Dancer
Application idea: A flying plate at a discothèque offering drinks when it recognizes the face of customers

Type: Entertainment robot
Property: Wireless communication
Place/situation: Gym
User: Hyperactive kid
Application idea: A personal trainer or playmate for hyper-active children. The robot represents another friend some where else through wireless communication and lets the kids compete remotely

Let's try bootlegging with sports wearables

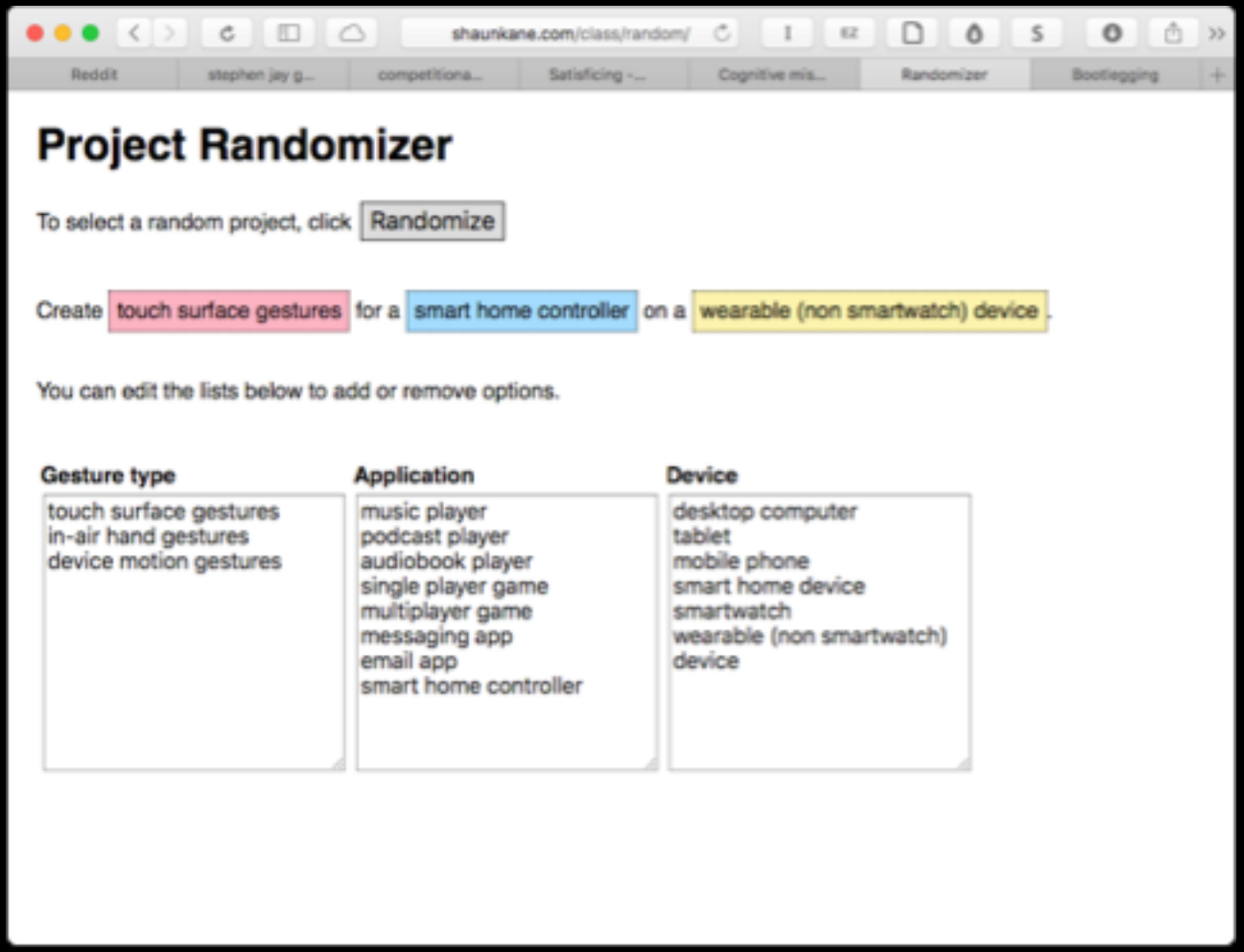
- What are some key variables?

Element 1	Element 2	Element 3	Element 4

Why bootlegging works

- Requires you to think through the possibilities, and generate some plausible options
- Randomized solutions are specific enough to generate ideas for

Automating the process

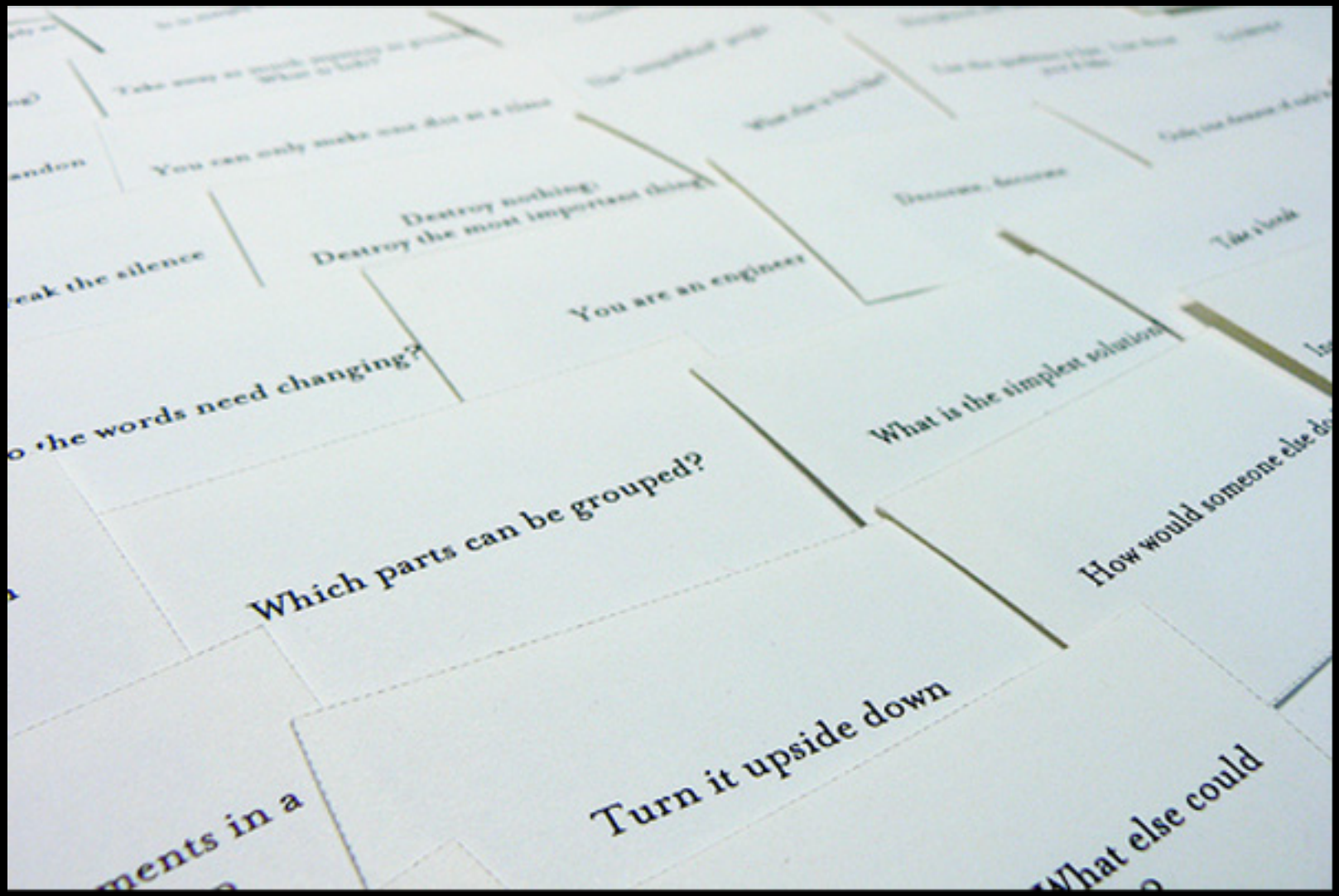


http://shaunkane.com/class/random/

Toolkits for generating ideas

- IDEO Method Cards: introduce activities for exploring design problems
- Oblique Strategies: introduce randomness to help you get unstuck

http://www.ideo.com/work/method-cards/



http://en.wikipedia.org/wiki/Oblique_Strategies
http://www.joshharrison.net/oblique-strategies/

Example: Oblique Strategies

- Using online generator
- Problem: Designing a restaurant search app

Final thoughts on creativity and brainstorming

- It's not an inherent personality trait
  - But practice helps
- It helps to know common pitfalls and try to recognize when they are happening
- Many opportunities to use structured activities and tools to help guide the process

Next time

- More on brainstorming and creativity
- Exploring possible class projects