



# gettingstarted.md: Prototyping and the Cold Start Problem

CS 278 | Stanford University | Michael Bernstein

# Last time

We act differently in different spaces.

Norms — informal rules that govern behavior — play a massive role in determining how you act in a give space, giving the character to that socio-technical system.

Descriptive and injunctive norms operate differently, but people notice them remarkably quickly, and they are most influential when they are made salient.

Design defaults can influence norms; seeding the community can likewise set expectations.

 **Today: how?**

# Where we are, and where we're going

So far: Basic ingredients

- Social spread, contributions, and norms

- Methods: design tied to social science

Starting now: How to create it

- From prototyping and the cold start problem, to growth and the breadth problem

- Methods: design process

**I have an idea.**

**Where do I start?**

Why “build it and launch” is a bad approach, and how to do better.

# Why? Because you never know where things will go...



↑ Posted by u/TncsTurtlJAH 19 1 day ago

10.5k ↓ My professor wants us to make a meme for homework, can we make him the meme

Meme

“He looks like an old retired Tom Holland”



# Today: getting started

Focus on when things are small, and just beginning.

Prototyping

The cold start problem

# HCI 101

If we've learned anything from human-computer interaction (HCI), it's that it's a really bad idea to have your idea and then Just Build It. 

Just Building It is an immense waste of time, energy and resources in order to find out that your idea was terrible.

Instead of Just Building, HCI pushes for the concept of **prototyping**.

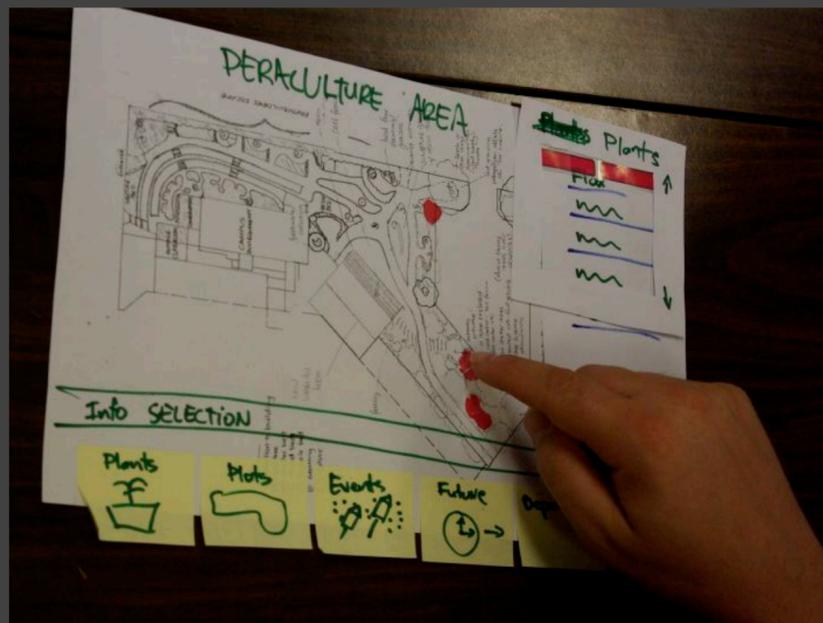
# Prototyping

Progressive fidelity increases as you gain confidence in your idea

Gas state: Low-fidelity paper prototypes that are rapid to create and explore

Liquid state: Richer instantiations that answer lingering questions

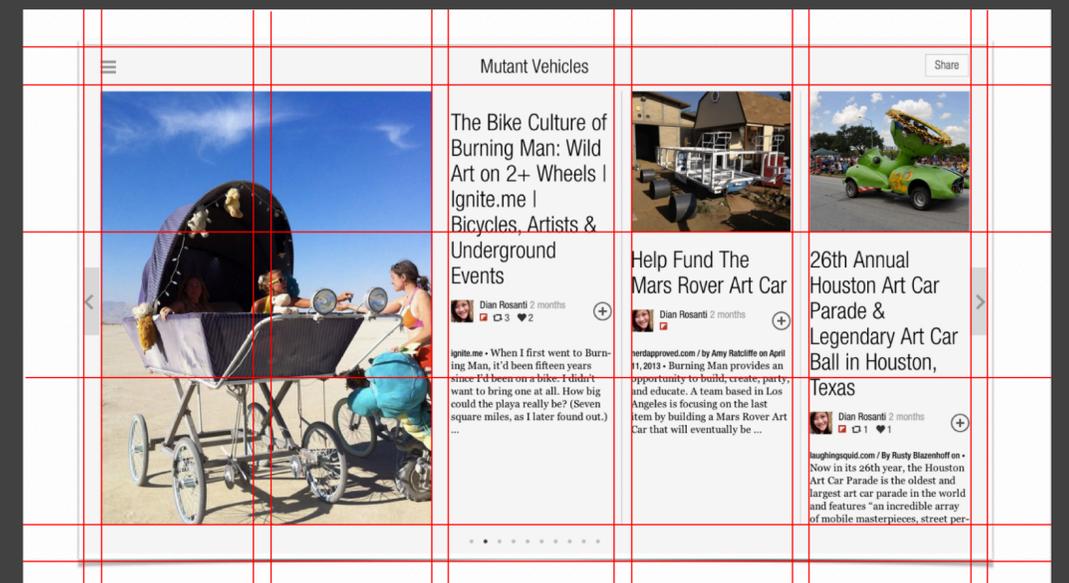
Solid state: detailed refinements of the approach



Flickr: Samuel Mann

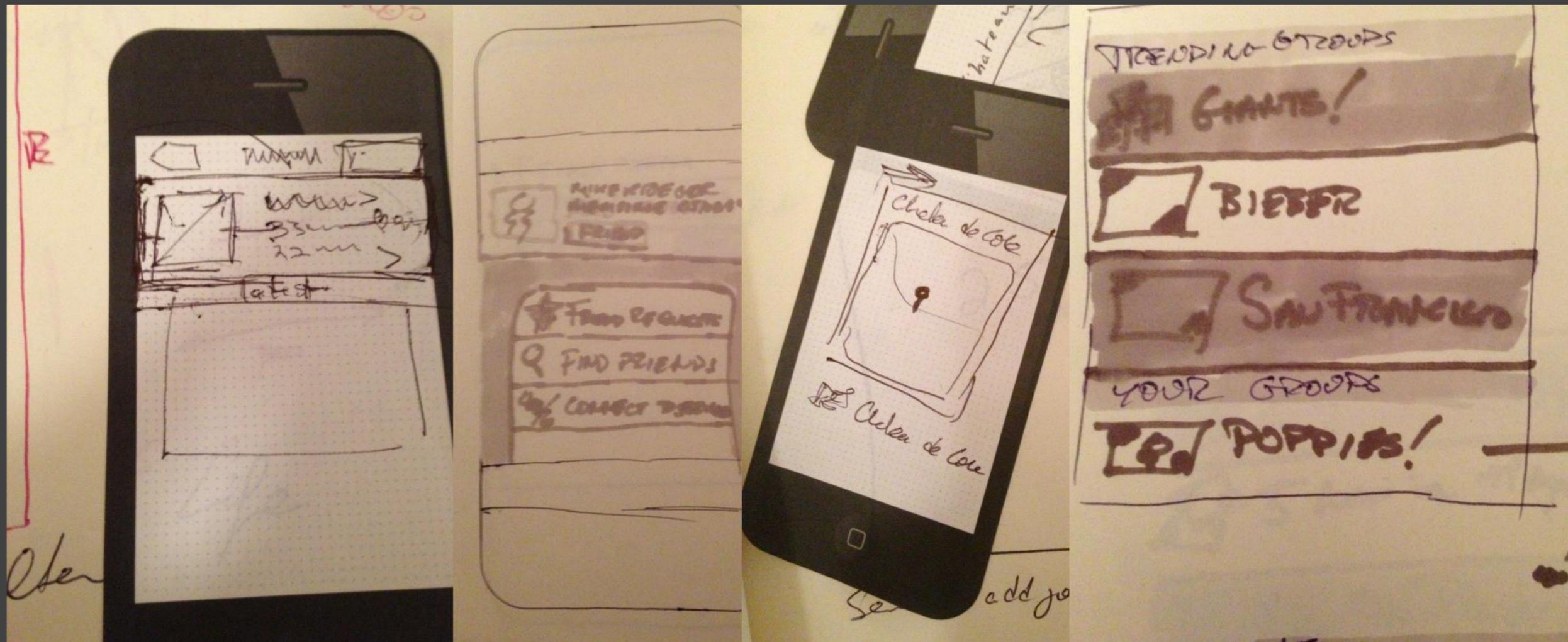


IDEO



Erin Malone

# But traditional low-fidelity prototypes aren't the right fit here.



Why?  
[2min]

The basic interface flows aren't what need to be tested.

# Example: On-demand office hours

Imagine that the CS department had allocated a few floating TAs across classes to offer ad-hoc help/support/tutoring on demand.

Your idea is to create a social computing system where you can request help, and if any of the floating TAs had previously TA'ed the class you need help with, and are awake, they'll swing by.

Why is a paper prototype a waste of time here? [1 min]

You're not really answering the question at the core of the idea.

# A prototype answers a question

Prototypes shouldn't focus on a specific modality, e.g., paper.

Instead, prototypes should focus laserlike on what's the big risky unanswered question about the idea.

Typically, that question is not whether the interface is usable. It's **how the social dynamics will play out.**

# Social computing **bricolage**

For social computing systems, it's often unnecessary to build the entire social stack just to answer a question. Instead, piggyback on existing social computing systems that get you similar affordances.  
[Grevet and Gilbert 2015]

I call this **social bricolage**: duct taping other systems together so you can layer your social computing design on top to prototype it.

Push messaging? Use texts.

Collaboration? Use GDocs or GSlides.

Chat? Use Slack.

# On-demand office hours II

What's the big unanswered social dynamics question about the on-demand office hours idea?

How could we use social bricolage to answer it in 24 hours?

[3min]

# Example 2: Peer emotional support

Imagine an anonymous social computing system where Stanford students can suggest other Stanford students who need support: conversation, a hug, &etc.

Student volunteers fulfill the request themselves (e.g., go swing by their room), or find and recruit a friend of the target to do it.

No guarantees that this is a good idea. How would you find out?

# Prototype simple social formulas

It's very tempting to try and design out an entire social ecosystem.

Don't.

← Sounds like a Dungeons and Dragons campaign

“Oh we'll let people post photos of their dogs. If it gets more than 33.5% upvotes, it'll get a Pupper badge. But then others can sidevote the photos, and if there are enough sidevotes, it starts a chain. Chains are groups of Puppies that are displayed together and aggregate their upvote counts. If someone uploads an old Pupper, the mod (oh by the way there are mods. they're called Doggos.) can remove the sidevotes and...

Instead, identify the simplest set of social interactions that is possible. This focuses the social formula you're prototyping down to its core.

# Prototy

It's very tempti  
Don't.

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Instead, identify  
This focuses th

## My zombie apocalypse team

Fighter



Sniper



Zombie bait



Insane guy



Driver



Navigator



Most likely to survive



Leader



# Formulas

al ecosystem.  
ragons campaign

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that is possible.  
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# Don't prototype sparsely

Typically these systems rely on network effects, like a bunch of friends all using them together. Getting sparse networks by having a few friends from here and there won't work.

Instead, get a small **clique** (the graph sense, not the high school sense) to join the prototype together. In other words, a small dense group  $\ggg$  a larger diffuse group.

# Bootstrapping content and interest

Prototypes do not magically become bustling spaces. Often they feel like ghost towns, because there's nothing there yet.

When prototyping, you will need to bootstrap the bustling spaces to help set the norms and encourage contributions.



Reddit co-founders initially pushed content until the community took over. (They used many sibyl accounts, which may be...ill-advised...)

If it's a two-sided system — e.g., students and huggers — be prepared to prop up one side of the system to make it useful to the other side.

# Diary studies

Mike Krieger of Instagram: early on, running diary studies of Instagram users provided a really useful grounded understanding of what people were actually using the platform to achieve.

Diary study: ask people to keep a structured diary each day of when they used the system, what for, and how they felt.

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# The cold start problem



Close to 25,000 people had signed up for an account in Instagram's first 24 hours. The next day, "after getting three hours of sleep," Systrom recalls, "we were exhausted, but we knew we had created something different. We had a really good feeling about it."

This is an outlier.

# Cold start problem

The problem: the social computing system isn't really very enjoyable or useful to anybody when nobody's there yet.

...but then, why would someone join and start populating it, if there's nobody there?

The entire effort struggles to hit critical mass, like how a car engine on a freezing day can't start up because it's too cold, and if it can't start up, it can't warm itself up to start. Thus, a **cold start** problem.

# Cold start: how do you hit critical mass?

## Critical Mass and Prisoner's Dilemma Problems

Most groupware is only useful if a high percentage of group members use it. Different individuals may choose to use different word processors but two coauthors must agree to use the same coauthoring tool! Achieving a "critical mass" of users is essential for communication systems [8]. Even one or two defections may cause problems for meeting scheduling, decision support, or project management applications. Even in an idealized situation in which every individual will benefit once critical mass is achieved, the early adopters may well abandon it before the critical mass of users is reached.

[Grudin 1998]

Cited by 1903



Going broad, and trying to get all users at once, typically fails.

Building a focused, engaged core initially is better design.

Why?

- The designer has a clear sense of who the users are, what issues they face, and what norms they expect
- Cliques help overcome the cold start problem

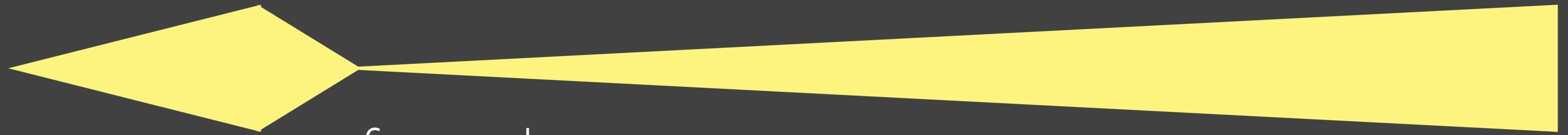


Harvard  
undergraduates



urban LGBTQ, burners, bloggers

launched as justin.tv,  
tried to be relevant to  
everybody, but failed



refocused

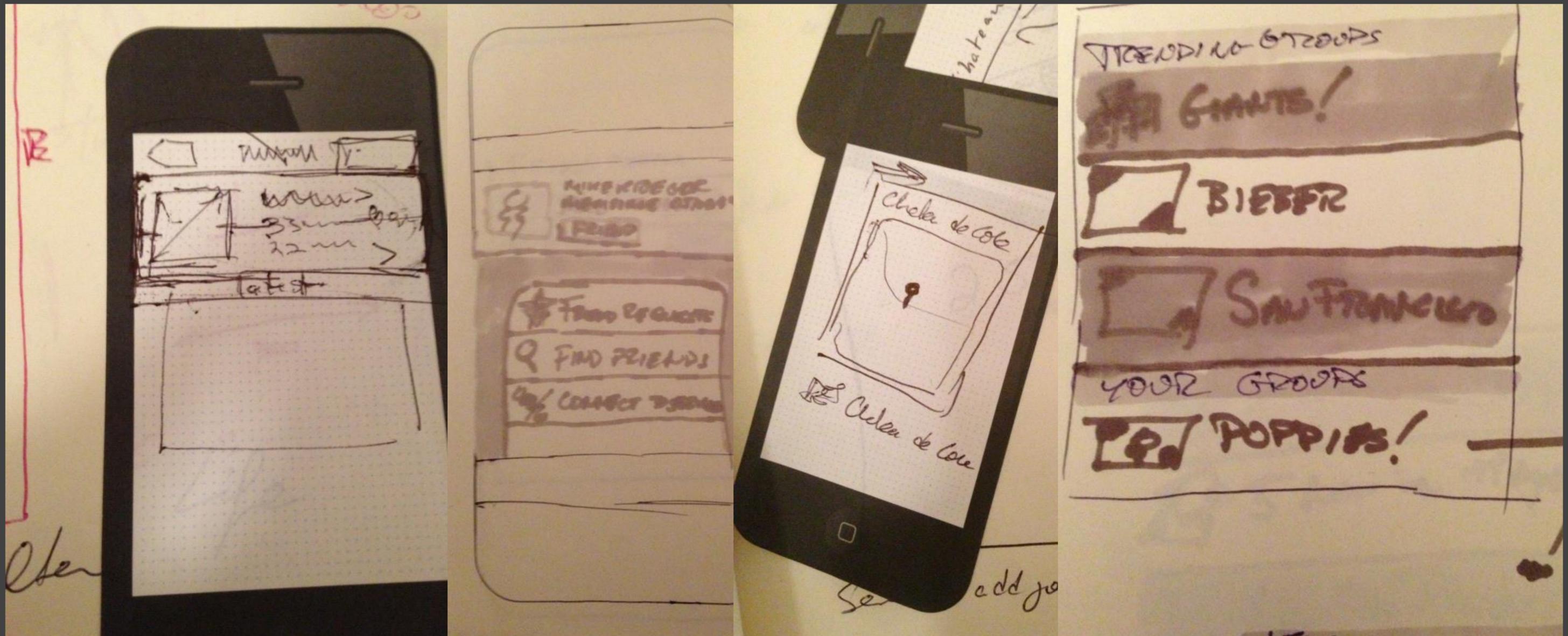
gamers





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~~This is an outlier.~~  
This is a lie.



Instagram grew out of a “failed” app called Burbn. Burbn was a mobile check-in app. They realized that people were ignoring the check-ins and just sharing photos. They started over and built an app just focused on photo sharing.

# Who is the prototypical user?

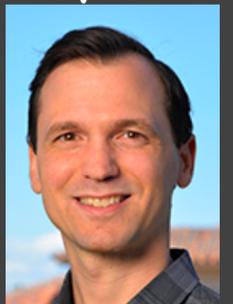
Starting narrow helps in part because it provides a concrete set of user personas to focus on.

But it's also important to ask critically: who are we assuming is that prototypical user? Do they look like this?:

Who are we silently assuming is **not** the prototypical user, and are they often excluded from these dialogues?

Examine the answers to those questions and whether you are comfortable with them.

Hi, I'm a  
white cis CS  
guy



# Assignment 2: Norms

Goals: exercise your skills in designing norms and prototyping social systems

Time: 2 weeks

Task: design a social interaction strategy for a small team that's brainstorming titles for GoFundMe campaigns. The strategy needs to maximize the team's level of psychological safety.

Extra credit competition: we will launch your designs with real teams. Extra credit to the submission that leads to the highest level of psychological safety reported by the teams.

# Assignment 1: crowd assessment

Go to: <http://hci.st/a1>

Participate in as many paired comparisons as you can. Participation necessary as part of the Assignment 1 grade.

Have fun, but take it seriously!

Remember, your grade will be the higher of {staff grade, crowd grade}.

# Summary

Prototyping social computing systems requires a different approach than usual. Use social bricolage to tie together existing social systems in order to understand the social dynamics you're creating.

The cold start problem occurs when a system is too empty to attract initial usage, so it remains empty. Two solutions:

- Focus on a narrow group initially, and broaden out later

- Be prepared to bootstrap activity

# Social Computing

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