

# INTRO TO HUMAN-COMPUTER INTERACTION DESIGN

CS 147 + CS 77

<http://cs147.stanford.edu>

Scott Klemmer and Michael Bernstein



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# Human Computer Interaction

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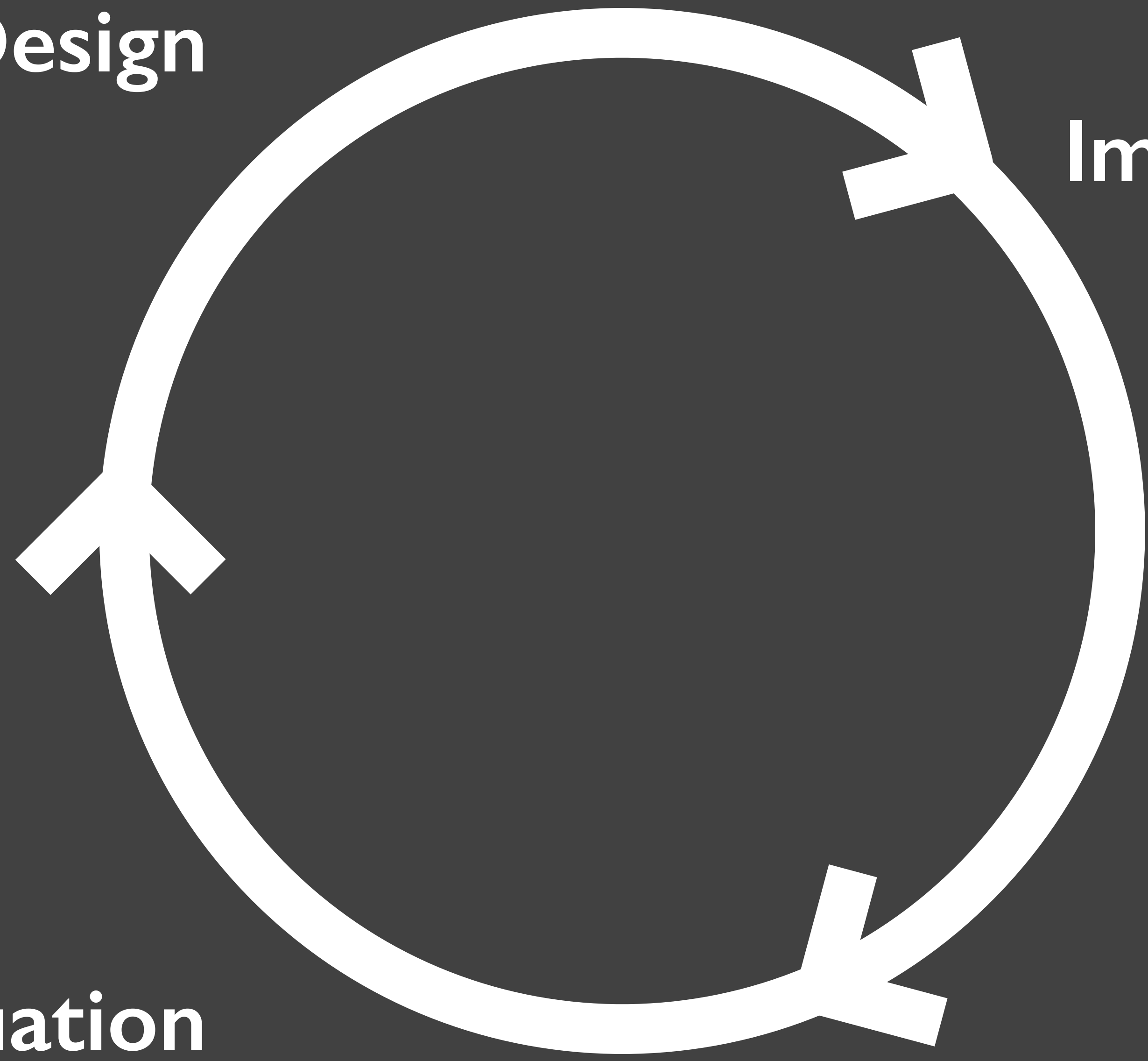
Human  
**Computer**  
Interaction

Human  
Computer  
**Interaction**

**Design**

**Implementation**

**Evaluation**





Good Design



Bad Design costs  
lives, money, & time



**300,000,000 Americans**  
**x 10 minutes per day per American**

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**3,000,000,000 minutes per day**  
**= 40,000,000 Intro to HCI lectures**



# Tools for local hill climbing



Avoiding local  
optima

# This class

Lecture

Lab

Studio



# Quarter-long design project

*Teams of three*  
Shared weekly in studio

FINAL PRESENTATIONS  
FRIDAY OF DEAD WEEK



# Weekly Studio Ritual

- Projects due Thursdays, 11.59pm
- Participate in studio & check out your peers' work
- Reflect on & self-assess your work

# cs147 Studio Leaders

Sanjay

Gilbert

Graham

Jon

Julie

Jingshu

Kingston

Omosola

Heidi

Stephen

Will

Community

Time

Glance

Digital Self

Change

Style

Learning

TBA

Collaboration

Space

Health



## **cs147: Intro to HCI Design**

## **cs77: Interaction Design Basics**

*Prerequisites*

cs106b or equivalent  
*(co-requisite for grad students)*

none

*Units*

4  
*(3 for grad students w/cap)*

2

*Grading*

ABC

S/NC

*Required Attendance*

MWF  
*(lecture, lab, studio)*

M  
*(lecture)*

*Counts Toward Major*

Yes

No

# The Web Site

has all the information  
it's where to send questions

<http://cs147.stanford.edu>



Visit office hours!

Forum, not email

To take cs77/147  
**you must**  
**sign up online**



Questions?

First project:  
Waiting In Line  
(due Thursday 11:59pm)







# NEED FINDING





Needs for:  
Getting to Stanford

“What do  
you need?”



“Do you need  
\_\_\_\_\_?”

Walmart's case

**OBSERVATION**







“You Can Observe a Lot  
Just by Watching”

—Yogi Berra







# Tacit Knowledge: Deep Hanging Out

1. What do people do now?
2. What values and goals do people have?
3. How are these particular activities embedded in a larger ecology?
4. Similarities and differences across people
5. ...and other types of context, like time of day

# Process v. Practice

## Jack Whalen & the Call Center



# Apprentice

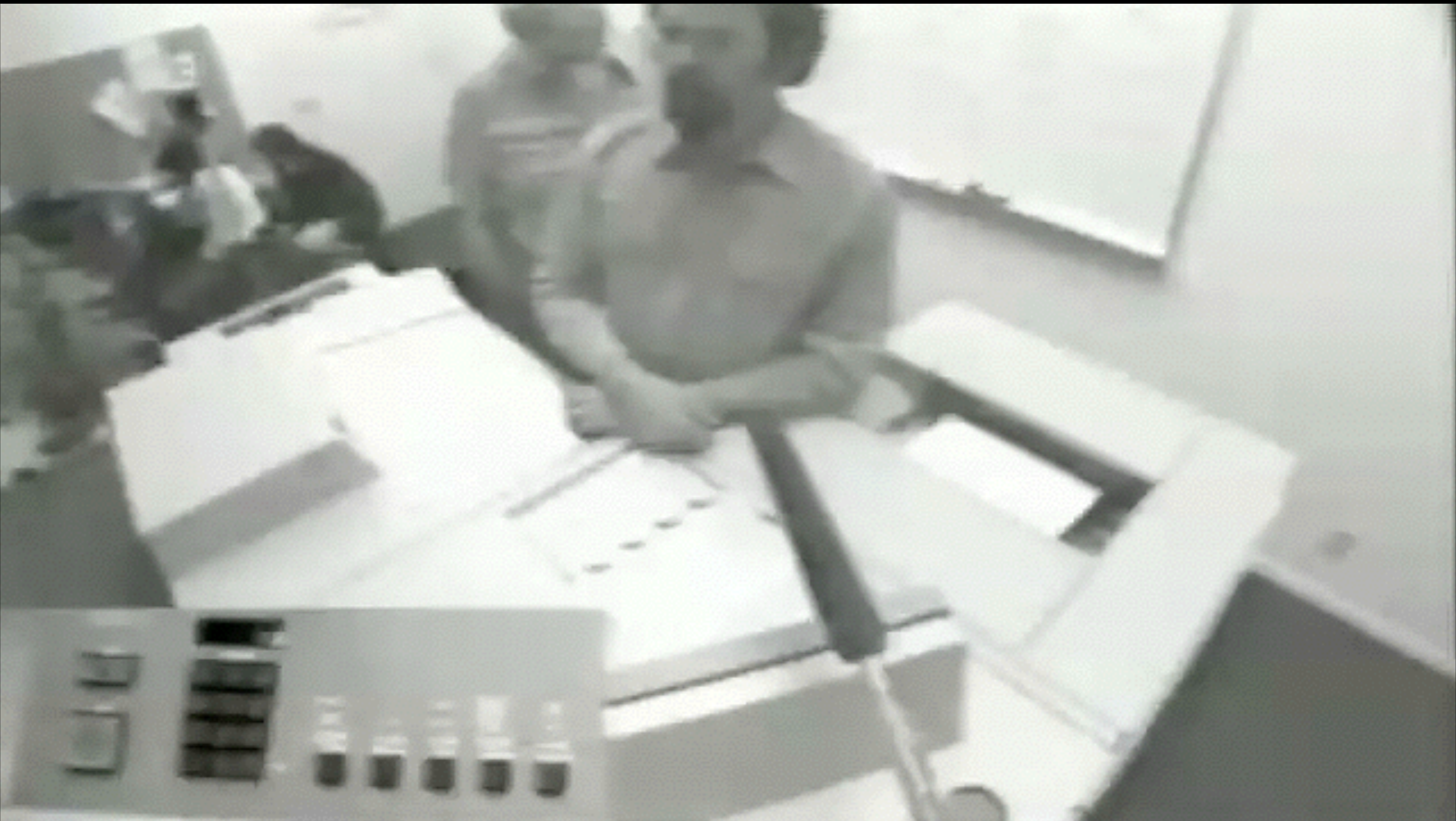
- Set up a partnership with the people to be observed
- Be taught the steps in the process
- Observe all of the practices
- Validate what you are observing with those observed as you go along

Pay attention to *all* the artifacts

Look for workarounds & hacks

“Errors” are a goldmine







Were the users  
just “dumb”?

# INTERVIEWS

# Choosing Participants

- Representative of target users
- May be current users of a similar system
- Might also be the *non-users*



# Say you were designing...

- A lecture support system
- Who would you interview?

Approximate if Necessary  
*(may not be ideal, but better than nothing)*

# What Are Good Questions?



“Is the daily update an important feature to you?”

“Would you like stores with less clutter?”

What would you like in a tool?



# Other Types of Questions to Avoid

- What they would do / like / want in hypothetical scenarios
- How often they do things
- How much they like things on an absolute scale
- Avoid binary Questions

“Tell me a story about yourself”

# Good Questions



# Conducting An Interview

- Introduce yourself, explain your purpose
- The interview is about them, not you!
- Begin with open, unbiased questions
- Ask the question and let them answer

*(a little bit of)*

Silence is Golden

# Follow up

- Adjust your questions to their previous answers
- Ask questions in language they use / understand
- Pick up on and ask for examples
- Be flexible



Plans are useless  
Planning is invaluable

Do a Trial Run first  
*(gives you practice, catches bugs)*

where to interview?



should you record  
audio or video?

# Audio/Video: Drawbacks

- Time-consuming to review / edit
- Can change participants' responses
- Requires permission

# Audio/video: Benefits

- A robust record
- Highlights are GREAT for communication
- Helps you focus on interviewing

# Photos Are Powerful Reminders



# What are the gems?

- You've uncovered a surprise or found what is missing
- You can explain why people do unusual things
- You want to tell others about what you have learned

# Share with your team

- Stories
- Photos
- Sketches
- Quotes

# Save Records - It'll help later

- Keep photos, notes, and artifacts
- Helps tie all design to use, rather than debating things on an abstract plane

# TARGETED NEED FINDING



# Longitudinal or Sporadic Behavior?

# Diary Studies

- Give people a diary that they complete at a specified time or interval
- Structured task
- Can use journals, cameras, voice, video
- Tailor the recording to the context
- Can scale better than direct observation
- Easier tools -> better results
- May require some practice, training, reminding

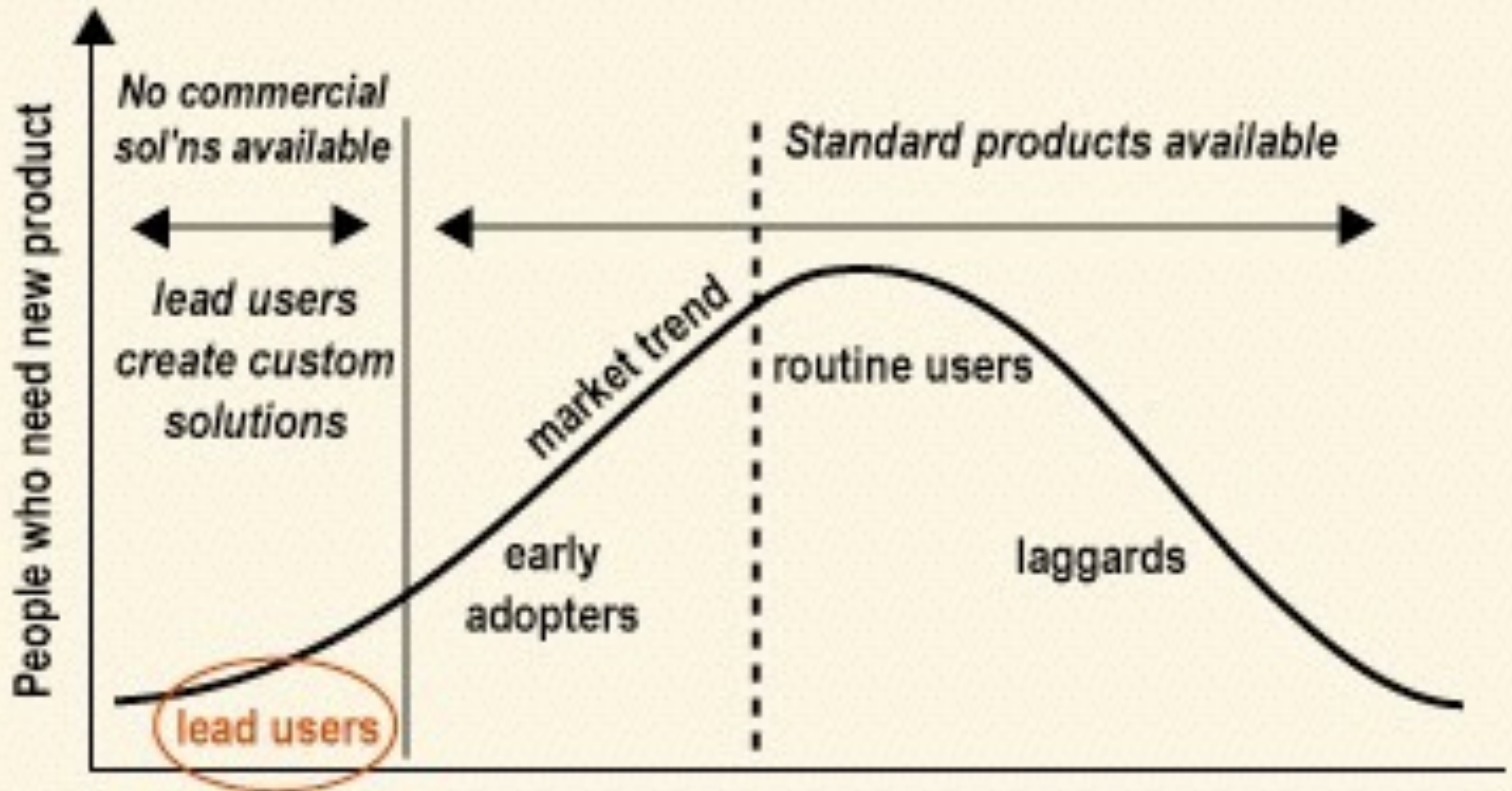
# Experience Sampling



# Lead Users







Source: von Hippel, Eric (1986) "Lead Users: A Source of Novel Product Concepts," Management Science 32, no. 7 (July):791-805.

# Extreme Users

# **DISTILLING YOUR INSIGHTS**

Your goal:  
a point of view



Flare, then focus.

# Personas

- A model of a person, an example.
  - includes demographic information, but should also capture a person's motivation, beliefs, intentions, behavior and goals
- Draw a picture of your persona or use a photo
  - give him or her a name, an occupation, a background, a social situation, some hopes, dreams, and goals etc. Give the persona a story to tell
- Knowing what our persona thinks, does, and feel help build empathy
  - so that you can understand the state of mind, emotion, philosophy, beliefs, or point of view of the user
- Empathy leads to insights which leads to design opportunities

Observation alone does not  
guarantee a great design.

# To learn more...

- HCI classes
- Institute of Design at Stanford, <http://dschool.stanford.edu>
- Don Norman, *The Design of Everyday Things*
- Annual ACM CHI Conference
- Kuniavsky, *Observing the User Experience*
- Beyer & Holtzblatt, *Contextual Design*