



HCI and Design

SPRING 2016

Topics for today

- Finish Contextual Design
- Discussion – chapters 4-5, usability video
- Usability

Contextual Inquiry

A design-oriented, ethnographically inspired technique for finding out what users currently do and problems they encounter.



The core premise of Contextual Inquiry is very simple: go where the customer works, observe the customer as he or she works, and talk to the customer about the work. Do that, and you can't help but gain a better understanding of your customer.

Hugh Beyer and Karen Holtzblatt, "Contextual Design"

Principles of Contextual Inquiry

Context

- Must be done in the setting of the participant.

Partnership

- Master/apprentice model; investigator is humble.

Interpretation

- Observed facts must be regarded for their design implications. Raw facts without interpretation are not very useful.

Focus

- Themes that emerge during the inquiry. You cannot pay attention to all facets of someone's work at all times.

Context

Go to the workplace & see the work as it unfolds

People summarize, but we want details

Keep it concrete when people start to abstract

“Do you have one? May I see it?”



Partnership

Designer should create a partnership with participant

Alternate between watching and probing

Withdrawal and return

- Designer observes action that indicates something meaningful
- The designer asks about this, and the pair withdraw from the task
- Discuss the question
- Then return to the task

Interpretation

Chain of Reasoning

- Fact, Hypothesis, Implication for Design, Design Idea

Design is built upon interpretation of facts

- Design ideas are end products of a chain of reasoning
- So interpretation had better be right

Share interpretations with users to validate

- Will not bias the data
- Teaches participant to see structure in the work

Interpretation

Instead of asking open ended questions...

- “Do you have a strategy to start the day?”
- “Not particularly.”

... give participants a starting point

- “Do you check urgent messages first, no matter where they are from?”
- “Actually, things from my boss are important, because they are for me to do. Messages or faxes may be for anybody.”

Participants fine-tune interpretations

- Probe contradictions, don't make assumptions

Interpretation

Non-verbal cues can confirm or negate

Yes and Nos

- “Huh?” – way off
- “Umm, could be” – usually means no
- “Yes, but...” or “Yes, and”

Commit to hearing what people actually say

- Most have not ever had people actually pay careful attention to what they are doing

Focus

Focus defines the point of view

- Clear focus steers the conversation
- Everyone in the team should have an entering focus

Focus lets the interviewer see more

- Focus reveals detail

Focus conceals the unexpected

- Focus on one, and lose the other

Start with a focus and then expand



Focus

Surprises, contradictions, idiosyncrasies

- Nothing any person does is for no reason

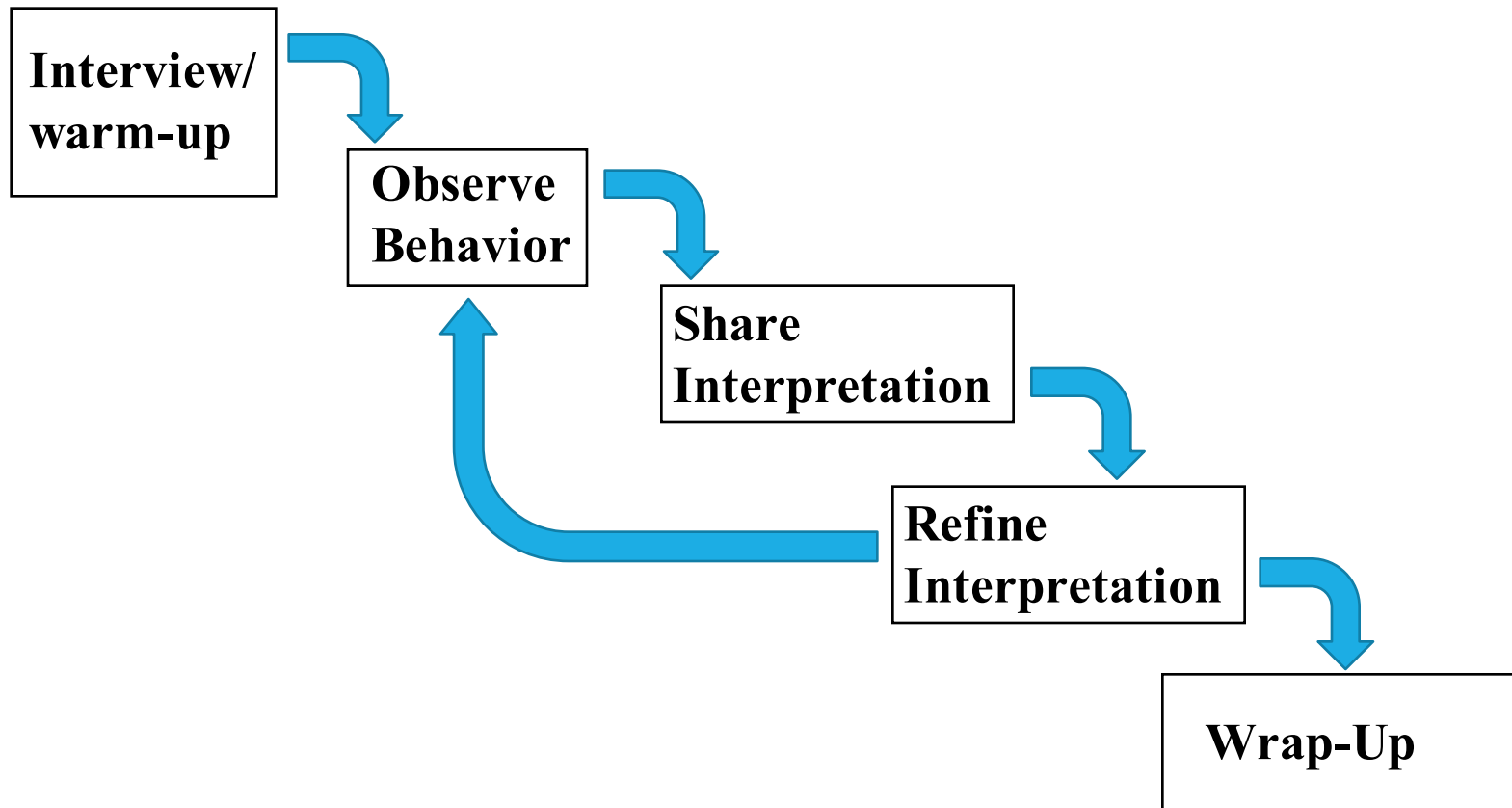
Nods

- Question assumptions even if they match
“Do they really do that? Why would they do that?”

What you don't know

- Treat the interview as an opportunity to learn new stuff
- Even if the participant is not knowledgeable, the extent of their knowledge / misinformation will be useful

Stages of Contextual Inquiry



How To Mess It Up

Be sure you explain “the rules” of how you’ll be interacting

- If this isn’t clear, may devolve into a traditional interview (since this relationship is more familiar to people)
- If you could have done it in a coffee shop, then you didn’t do a contextual inquiry

Slipping into abstraction

- Keep it concrete, in the work, in the details

Not being inquisitive or nosy enough

- If you have the impulse to ask, do it right away

Overly disrupting the task

- Don’t ask so many questions that participants stop doing their tasks

Data interpretation and analysis

Start interpretation/analysis soon after data gathering

Contextual inquiry yields a lot of data

- Does not reduce to a statistical test

Use data to distill models

- Help to understand the workflow
- Highlights gaps in understanding
- Identify breakdowns and workarounds
- Different approaches emphasize different elements
- Many types of models (e.g., flow, sequence, artifact, cultural, physical)

More on data analysis techniques later in the course...

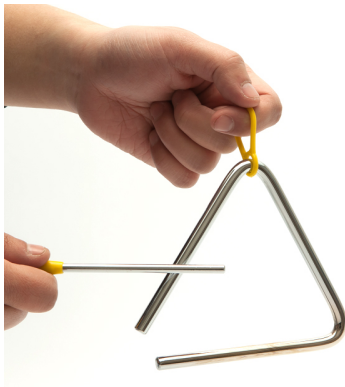
Summary

- Product success depends on designing systems/tools that can be used effectively, efficiently, enjoyably, safely.
- Understanding users is critical
- There are many techniques you can use:
 - Surveys
 - Interviews
 - Contextual design
 - More...

Discussion

What is usability?

- More than just “easy to use”.



VS.



- ISO definition of usability:

"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

Why do we care about usability?

What do you do if you go to a website that is difficult to use or confusing?

What do you do if you download an app that is confusing?

How much stuff would Amazon sell if people couldn't find the product they want?

(...you probably don't go and read the documentation)

Usability is important for everything: employee productivity, customer happiness, safety, making billions of dollars...

Understanding usability (Nielsen)

Learnability: How easy is it for users to accomplish basic tasks the first time they encounter the design?

Efficiency: Once users have learned the design, how quickly can they perform tasks?

Memorability: When users return after a period of not using it, how easily can they reestablish proficiency?

Errors: How many errors do users make, how severe are these errors, how easily can they recover from errors?

Satisfaction: How pleasant is it to use the design?

Utility: Does it do what users need?

Learnability

One of the biggest objections to "usability" comes from people who fear that it will be used to create products with a low barrier to entry but that are not powerful enough for long, sustained use.

This is a big problem in HCI.

Keep in mind:

- Learning can go on for life of the product.
- People's willingness to learn depends on how much they need/want the product.



Efficiency

How quickly can people perform tasks?

- Metrics could be number of clicks, keystrokes, 'time on task', etc.

Important to define tasks from the user's point of view
(rather than what will make you or your product look good!)

- e.g., a search engine which gives out small snippets of information might appear to be very efficient if each retrieval is considered one task, but inefficient when the entire task of learning enough to answer a person's question is considered.

Memorability

When users return after a period of not using it, how easily can they reestablish proficiency?

(knowledge in the head, knowledge in the world)

Make it easy to find things

Don't require people to remember anything

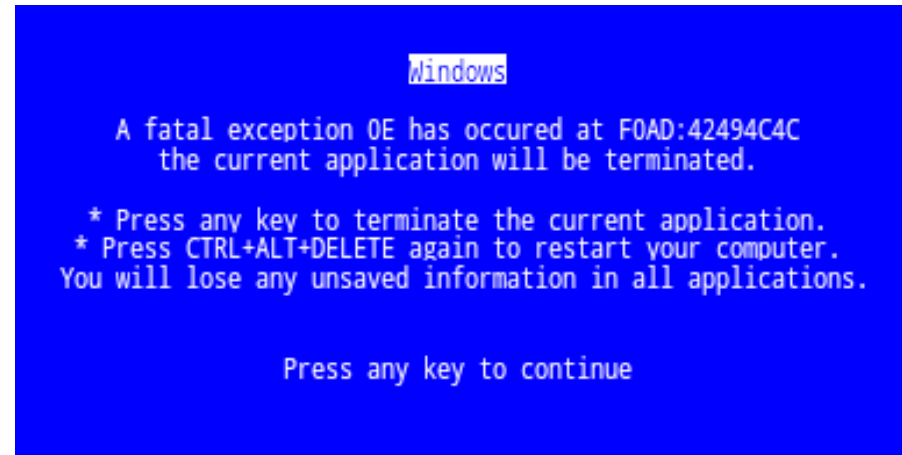
Take advantage of common practices/standards

Errors

Try to make errors impossible

Errors will happen!

- Product developers are human
- System failures, other disasters



So, make the design “error tolerant”

- Deal with errors gracefully
- Make it easy to recover from errors, easy to undo, give feedback, plan for the unexpected, don’t blame the user, etc.

Satisfaction

- How pleasant is it to use the design?
- Increasingly important in today's techno-centric world
- Tradeoffs
 - Beauty, cost, functionality, human preferences/differences



Usefulness

It's no good if something is usable but doesn't do what the user needs/wants

Similarly...

It's no good if the system can hypothetically do what the user wants, but they can't make it happen because it's too difficult to use

Utility + Usability = Useful

When to work on usability

DON'T WAIT until you have a completed design! **Why?**

Consider usability at ***every stage*** of the design process.

Start early and iterate.

Usability *engineering* – part of the design process

Usability *testing* – evaluating a completed design

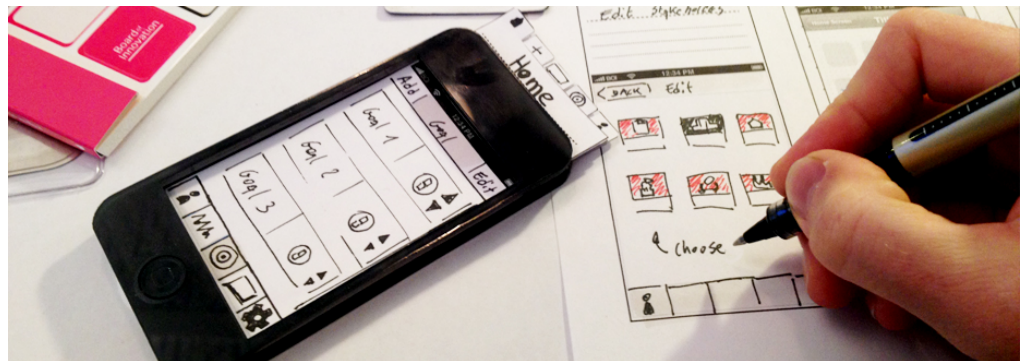
How do we design for usability?

Problem:

- We can't evaluate a design until it's built
But...
- After building, changes to the design are difficult
- What to do?

Solution

- Prototype!



Next time...

- Prototyping techniques
- Reading: “Design of Everyday Things”, chapters 6-7
- Discussion leaders: Mark Liber, Bill Marino, Shreyas