The Sutras of Contextual Inquiry

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Contextual Design Concepts

- **Contextual Inquiry**
- Work Models
- Interpreting Interviews
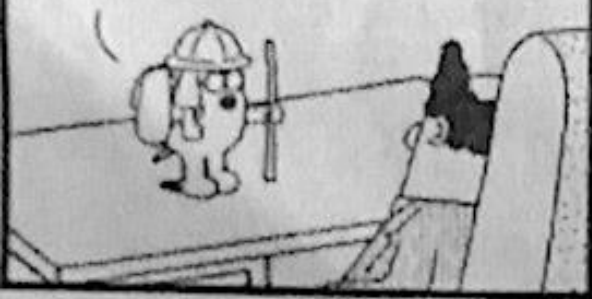- Affinity Diagram

- Consolidation of Work Models
- Work Redesign
- User Environment Design
- Mock up and test with users

Basic Principles

- Go where the user works
- Observe the user as he works
- Talk to the user about the work

DILBERT ® by S. Adams

Panel 1: I WILL STUDY THE CULTURE IN YOUR COMPANY AND MAKE DETAILED RECOMMENDATIONS.

Panel 2: "THE ONE I CALL WALLY IS A DOCILE OUTCAST WHO EATS BANANAS AND DRINKS BROWN WATER."

Panel 3: DO YOU MIND IF I STAPLE THIS TRACKING DEVICE TO YOUR EAR? NOT REALLY.

4

Models for Interaction

- Scientist / subject model
- Parent / child model
- Teacher / student model

What model is being used?

A taxi driver was asked to describe how he starts his day. He said "I just start my taxi in the morning and go about looking for passengers." He wasn't able to give any details.

After some time, the interviewer tried a different track – "Imagine that you are going on a trip to your home town today and you want me to drive your taxi while you are away. I am a good driver, but I have never driven a taxi before. Can you teach me how to get ready to drive your taxi every morning?"

"OK, the first thing you should do is wind up the meter. New people often forget to do that. If the meter stops midway during a ride, you will lose money. Next check the level of the fuel. I share my taxi with someone, and before we hand over, we are supposed to bring up the fuel to this half way mark. See it's fine today, but check every time. Third, check oil. The oil indicator does not work and you will have to open the bonnet…" he went about, demonstrating each action.

Models for Interaction

- Scientist / subject model
- Parent / child model
- Teacher / student model
- Master / apprentice model
  - *(Rather, apprentice / master model)*
- Relationship models have two sides
  - *Playing one side drags the opposite person into the other side*

Sutras of Contextual Inquiry

- Master apprentice model

Master Apprentice Model

- When you are watching the work happen, pre-planned teaching is not required
  - *Master craftsman teaches on the fly*
- Master need not remember his work explicitly
  - *Seeing the work reveals what matters*
  - *Talking while doing the work reveals details*
  - *Being in the context reminds one of many tasks*

Master Apprentice Model…

- Seeing the work reveals structure
  - *Every current activity recalls past instances*
  - *Many instances and many interviews reveal the picture*
- Apprenticeship suggests an attitude of inquiry and learning
  - *Humility, inquisitiveness and attention to detail*
  - *Requires no user preparation*

Master Apprentice Model – Differences

- Contextual Inquiry is apprenticeship compressed in time
  - *Not do the work, just learn about it*
  - *Not study a single job, but several*
- Contextual Inquiry tailors apprenticeship to the needs of design teams
  - *Remaining four sutras guide the adaptation*

Sutras of Contextual Inquiry

- Master apprentice model
  - *Learn from the master on the fly*
- Context

Context

- Go where the work is to get the best data

Context

- Go where the work is to get the best data
- Gather *ongoing experience* rather than summary
- Gather *concrete data* rather than abstract data
- Span time by *retrospective accounts*

Context:
Summary Vs. Ongoing Experience

- Avoid summary data by watching the work unfold
  - *The Imitation Game*

Context:
Summary Vs. Ongoing Experience

- Avoid summary data by watching the work unfold
  - *(CD 47-48)*

> We once asked a secretary how she started her day. Her answer was, "I guess I just come in and check my messages and get started." She wasn't able to go beyond this brief summary overview. It was the first thing in the morning and she had just arrived at the office, so we asked her to go ahead and do as she would any other morning. She unhesitatingly started her morning routine, telling us about it as she went: "First I hang up my coat, then I start my computer. Actually, even before that I'll see if my boss has left something on my chair. If he has, that's first priority. While the computer's coming up, I check the answering machine for urgent messages. There aren't any. Then I look to see if there's a fax that has to be handled right away. Nope, none today. If there were, I'd take it right in and put it on the desk of whoever was responsible. Then I go in the back room and start coffee. Now I'll check the counters on the copier and postage meter. I'm only doing that because today's the first of the month. . . ."

Context:
Abstract Vs. Concrete Data

~ *"In our office, people work from 9 am to 6 pm"*

~ *When did you arrive in the office **today**?*

~ *"We usually eat healthy food"*

~ *Do you have your **lunchbox**? May I see it?*

~ *"I brush my teeth twice a day"*

~ *When did you **miss** brushing your teeth last?*

~ *"Children love to watch the Discovery channel"*

~ ***Observe** today, ask them to keep a **log** for a week*

~ *"Anaesthetist sees the patient one day before surgery"*

~ ***Who** is the anaesthetist? **When** did she see the patient?*

Context:
Abstract Vs. Concrete Data

~ *When did you arrive in the office* **today**?

~ *Do you have your* **lunchbox**? *May I see it?*

~ *When did you* **miss** *brushing your teeth last?*

~ **Observe** *today, ask them to keep a* **log** *for a week*

~ **Who** *is the anaesthetist?* **When** *did she see the patient?*

- Start with real experiences, not abstractions
  - *You will abstract when you consolidate*
- Indicators of abstraction in interviews
  - *Lean back, look at ceiling vs. lean forward, do the work*
  - *Present tense vs. past tense*

Context:
Retrospective Account

- Sometimes you need to understand things that happened in the past
- Span time by replaying past events in detail
  - *Tendency to skip details and give summary*

Context:
Retrospective Account

- Span time by replaying past
  - *Tendency to skip details and*
- (CD 49-50)

Customer: *When I got this problem report I gave it to Word Processing to enter online—*

Context:
Retrospective Account

- Span time by replaying past events in detail
  - *Tendency to skip details and give summary*
  - *Look for holes*
  - *Ask questions to fill in the holes*
  - *Use artifacts to provide context*
  - *If story has not yet ended, go back to a story in the past that did end*

Sutras of Contextual Inquiry

- Master apprentice model
  - *Learn from the master on the fly*
- Context
  - *Ongoing work, Concrete, Retrospective account*
- Partnership

Partnership

- Traditionally, interviewer has too much power
  - *You don't know what will turn out to matter*
- Apprenticeship model tilts power back to the user
- Interviewer should create a partnership, not just an apprenticeship
  - *Alternate between watching and probing, withdrawal and return*

Partnership

We first did an interview with the geography teacher, trying to find out how she teaches the concepts of rotation and revolution. The ideas she discussed were pretty standard and did not go much beyond the text book.

We then did a session where we taught these concepts to children who had not learnt these concepts before. We did some activities and demonstrated some models. The teacher sat through as we conducted our session.

This was our early session and many of our plans did not work out – we had underestimated the time required and found that some of the students in the class did not get even some of the 'simpler' concepts.

After the session, we had an informal chat with the teacher – and this time she volunteered a lot more information. How much time she plans for each concept, what activities she carries out, what homework she gives etc. A partnership had developed…

Partnership…

- Let the user get an understanding of what you are looking for
  - *Share design ideas and interpretations*
  - *If you are right, great; else, user corrects you*
- People interrupt themselves to reveal insights and design ideas, answer unasked questions
  - *Let the user shape your understanding of the work*
- People haven't had others pay so much attention to them
  - *Partnership creates a sense of shared quest*
  - *Leads to truly user-centred design*

Partnership:
Avoiding Other Relationship Models

- Interviewer / Interviewee
  - *You ask a question, customer answers and falls silent, so you ask the next question*
  - *You aren't there to get a list of questions answered*
  - *Return to ongoing work*

Partnership:
Avoiding Other Relationship Models…

- Interviewer / Interviewee
- Expert / Novice
  - *You aren't there to answer questions. If you developed the system in use, this is a temptation*
  - *Help only if the user is stuck and you can't observe work*
  - *Get back to CI asap*

Partnership:
Avoiding Other Relationship Models…

- Interviewer / Interviewee
- Expert / Novice
- Guest / Host
    - *Move closer, ask questions, be nosy*
    - *It's a goal to be nosy*

Sutras of Contextual Inquiry

1. Master apprentice model
   - *Learn from the master on the fly*
2. Context
   - *Ongoing work, Concrete, Retrospective account*
3. Partnership
   - *Withdrawal and return, Avoid other relationships*
4.

"I always buy premium products – they are better. One product costs Rs. 10, the other costs Rs. 12. Generally the Rs. 12 product will be a better product…"

"So what do you

"I always buy premium products – they are better. One product costs Rs. 10, the other costs Rs. 12. Generally the Rs. 12 product will be a better product…"

"So what do you think about products that cost 20, 25, 30 etc."

"No I wouldn't buy them. They wouldn't be that much better beyond a point. They are just being sold because of their name. Suppose a company is selling a Rs. 10 product for Rs. 12, then that product is selling because of the name of the company. That is a different thing, right? … It depends on the company as well."

Interpretation:
The Chain of Reasoning

- Interpretation is assignment of meaning to observation
- Good facts are only starting points
    - *Designs are built on interpretation of facts*

Interpretation:
The Chain of Reasoning

- Fact: the observable event
  - *People don't add location info while deciding upon the meeting*
- Hypothesis: an initial interpretation of meaning or intent
  - *Can't because not sure yet, don't need, need but ignore, lack of location info disrupts meetings*
- Implication for design
  - *Location doesn't matter, location is important but unavailable, location is needed at the last minute*
- Design idea is realization of implication
  - *Force location info, suggest location info, display location info but allow blank, remind later*

Interpretation…

- Interpretation is assignment of meaning to observation
- Good facts are only starting points
  - *Designs are built on interpretation of facts*

Fact → Hypothesis → Implication → 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 the users 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 users 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."*

- Users fine-tune interpretations
  - – *Probe contradictions until assumptions fit*
  - – *Beware of asking leading questions*

Interpretation…

- Non-verbal clues confirm or negate interpretations
- Yes and No
  - *"Huh?" – way off*
  - *"Umm, could be" – usually means no*
  - *"Yes, but…" or "Yes, and" – depends*
  - *Varies based on language, culture and relationship*
- Commit to hearing what the user is actually saying

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- **Partnership**
  - *Withdrawal and return, Avoid other relationships*
- **Interpretation**
  - *Validate your chain of reasoning*

Close your eyes for 30s and

don't think of elephants

Pick a design project…

- App so that customers can shop for groceries at a kirana store
- Billing system for kirana shops
- Furniture for kirana shops
- Packaging design for sanitary napkins

… and note your observations from the picture that follows…

Focus

- Focus lets the interviewer sees more
  - *Focus defines the point of view*
  - *Focus reveals detail*
  - *It allows us to see what we might miss otherwise*
  - *It helps us separate the wheat from the chaff*
- Focus guides the interview
  - *Clear focus steers a conversation*
  - *Everyone in the team should have the same entering focus*
  - *User should understand your focus*

Expanding Focus

- Focus reveals detail, but
- Focus conceals the unexpected
  - *Focus on one, and loose the other*
- Trick – start with a focus and then expand
  - *Internal feelings guide you to expand focus*

How to Expand Focus?

- Surprises, contradictions, idiosyncrasies
  - *Nothing any person does is for no reason*
    - ~ *Mobile phone games for the elderly*
    - ~ *A paanwala who deposits cash in ATMs in 2002*

How to Expand Focus?

- **Surprises, contradictions, idiosyncrasies**
- **Nods**
  - *Try to learn something new each time*
  - *Question assumptions if they match too much*
    - ~ *"I always buy premium products because they are better"*
    - ~ *"We give the patients all the information they need"*
    - ~ *"Do they really do that? What are their limits? When are exceptions made?"*

How to Expand Focus?

- Surprises, contradictions, idiosyncrasies
- Nods
- What you don't know
  - *Treat the interview as an opportunity to learn new stuff*
    - ~ *Something technical - IRIS*
  - *Even if user is not knowledgeable, the extent of knowledge / misinformation will be useful*
    - ~ *Village temple priest*

Focus

- Start with an explicit focus for a CI
  - *Project focus gives the team a shared starting point*
- Commit to challenging your initial assumptions
  - *Not validating them*

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   - *Withdrawal and return, Avoid other relationships*
4. Interpretation
   - *Validate your chain of reasoning*
5. Focus
   - *Statement of user work, focus reveals details, expand focus to challenge entering assumptions*

Questions?

Mindmap by Anirudha Joshi, Kirti Kanitkar