Situated Action

Fundamentals of Human-Centered Computing

Situated Action

First real turn to the social

Move away from generalizable theory and formal models

Today we will cover:

- What problems does Situated Action try to solve?
- How does Situated Action solve these problems
- How can we apply Situated Action?
- What are good and bad aspects of Situated Action?

The problems

What problems does Situated Action try to solve?

The problem

Cognitive approaches (including DCog):

- HCI is a structured, procedural phenomenon

How to study HCI (according to these approaches):

- Understanding the structure behind the interaction
- Specifying the procedures

HCI theory more about the **plan** than its **execution**

The problem

Realization: Lots of HCI is informal or unstructured

Even HCI that is part of office work, which is generally believed to be formal and structured!

Structure is an **outcome** of an orderly process, not a **condition**!

The procedures are inherently ambiguous

The problem

Example: an accounting office with a payment procedure

Goals:

- Timely payment
- Orderly keeping of records

Orderly keeping records does not result from compliance; keeping records allows for the procedure to hold

Users may not always do it (it depends on the situation)

The problem

The actual execution can be different from the plan

Kayak example

Consequences:

- It is more useful to view HCI in all circumstantial detail
- HCI should be seen as practical action rather than as a structured following of procedures
- Situation becomes vitally important

The problem

A new goal for HCI: Understand the situation and how it affects the user's actions

> Design based on an understanding the situation than design based on an assumption of how users will act

Reject formal models and generalizations

> Instead, "explore the relation of knowledge and action to the particular circumstances in which knowing and acting invariably occur"

The solution

How does Situated Action solve these problems?

The solution

Situation Action studies interactions between people and the world they inhabit

- Highly detailed account of what they do

Assumes that actions are constrained and supported by social and physical circumstances

- People use these circumstances to achieve their goals

Goals are retrospective reconstructions of what happened

- The situation is the driving factor

Assumptions

You can only study action by observation in the real world

- Rich descriptions are preferred over generalizable theories
- Lab studies and interviews lead to unwanted abstractions

Generalizations do not happen, due to the idea of moment-by-moment analysis

- Less purist versions suggest a very high-level structure

Assumptions

Situation is an essential resource that makes knowledge and action possible

- Situation enables and constrains knowledge and action

Plans are an outcome of situational interaction

- Between actors (= people + machines), and between actors and their environment

Humans are pulled to the artifact side

- They are reactive ciphers that react to stimuli in a behaviorist manner (controlled by the situation)

Result of study

An account of how technology is actually used, contrasted with how it is supposed to be used

From a reasoned to an observed user model

Why are they different?

Because plans may change due to the situation!

Describe how this happens… how can we design for the situation?

Practical result

Make technology fit the work practice

Rather than the other way around

If you assume that work is conducted according to procedures, your system becomes a mere repository for outcomes

It cannot assist the actual actions taken to do the work

Situated action approach: embrace the inherent ambiguity of work, thereby creating a tool for doing the work

Supporting situated rather than modeled interactions

The method

How can we apply Situated Action?

The method

Mostly behavioral methods:

- Record behaviors and conversations
- Following users around to study their actual movements
- Trace artifacts
- Capture interactions (e.g. screen recording)
- Study the same tasks in different contexts

Focus

Focus on:

- Regularities and irregularities across contexts
- Deviations from and adherences to protocols, and their reason

Don't trust:

- What people plan to do (only use it for comparison)
- What people say they do (use real observations)

Abstractions

Distributed coordination

How are tasks divided? Does this happen ad hoc or by plan?

Plans and procedures

Compare against real actions: do they allow procedures to take hold? If not, why not?

Awareness of work

How actions are communicated or made visible to others?
One person's action is another person's context

Interaction

Interaction as communication: HCI is a special case of human communication

Bandwidth is limited

- Human doesn't know all the actions
- Computer doesn't know the situation

Design implications

Allow systems to understand and support the actions and circumstances of the users

- If impossible, compensate for the lack of context

Demonstrate the limitations of the machine to the user

Allow ad-hoc coordination and signaling between users

Support rather than enforce adherence to procedures

- Allow people to do the work in whatever way they want

Reflection

What are good and bad aspects of Situated Action?

Reflection

Criticism: The exclusive focus on the situation may reduce the usefulness of Situated Action

Analysis is at a very low level, hard to compare

Response: There are some abstractions that can occur

- Distributed coordination
- Plans and procedures
- Awareness of work
- Supporting rather than enforcing procedures

Reflection

Criticism: Situated Action does not account very well for regularities that span situations

- Patterns could be important for understanding the situation

Response: Focus on the situation first

- Regularities can emerge from observing the same action in different situations
- Regularities are seen as an exception rather than the rule

Reflection

Criticism: Situation Action ignores the subjective

User goals stem from the situation… is this the death of subjectivity?

Response: Use think-aloud, but be skeptical

Think-aloud helps to understand how the situation influences the users' actions

Users may not see the situational influence; observer needs to factor this in!

Questions

Can you give an example of an interaction that depends on the situation? Is it supposed to? Why (not)?

Can you give an example of an interaction that didn't go according to plan because of the situation?

How would you support these interactions?

Questions

How much are our goals dictated by the situation?

How much regularity is there in our behavior? At what level? Is that level appropriate for HCI?

How can we best support situational flexibility? Context-awareness? Flexible systems?

How does interactional learning occur if actions are situated?