Human-Computer Interaction

Week 4: Second Wave HCI (Part 2)

Chunk 3: Situated Action

COMS30029

aka #HCI_Theory

Oussama Metatla and Dan Bennett

Credits: some slides from Jared Donovan

Week 4: Second Wave HCI (Part 1)
“Mess” is the message, groups and contexts

Chunk 3: Situated Action

What is Situated Action

What HCI Problems does SA attempt to address

Methods for SA research

Week 4: Second Wave HCI (Part 1)
From Cognition to Experiences of Bodies

Chunk 3: Situated Action

What is Situated Action

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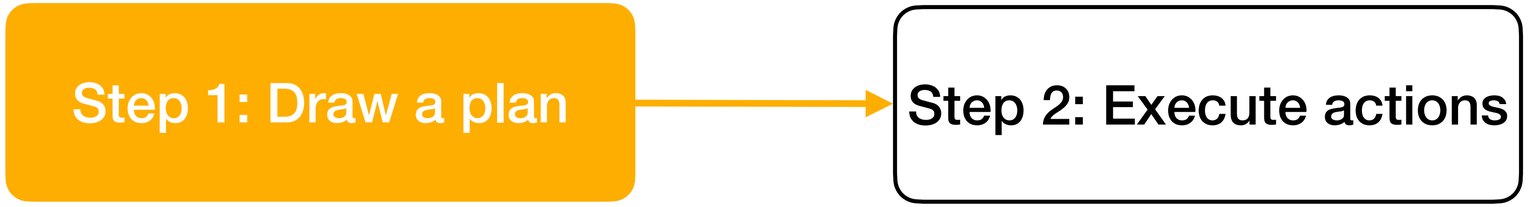
Methods for SA research

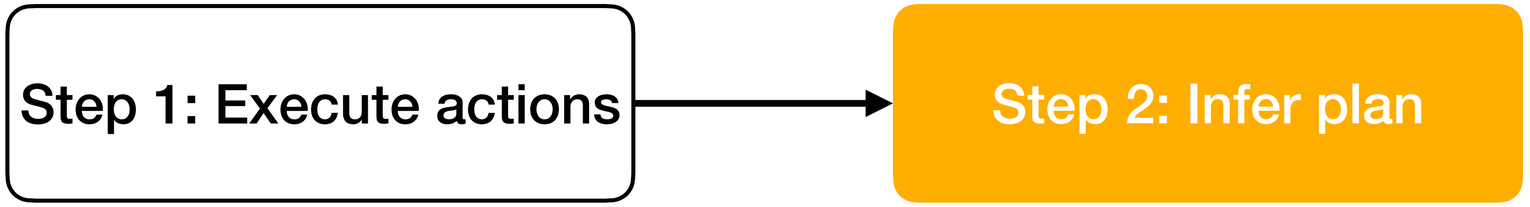
Which came first?
Plans or actions?

What is Situated Action

Traditional view of HCI



Situated Action



What is Situated Action

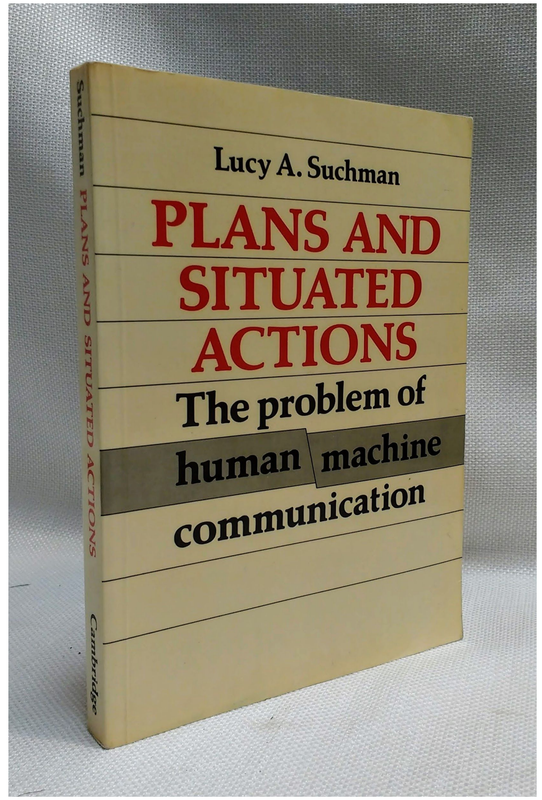
An approach developed by Lucy Suchman

Situated Actions is **not** a theory or a framework

- though sits within the tradition of Situated Cognition
- Seminal work: *Plans and Situated Actions: The Problem of Human-machine Communication* (1987)

A broad insight into the importance of the specifics of context to interaction

Actions are “situated” not planned… Meanings of actions stem from the situation in which they occur



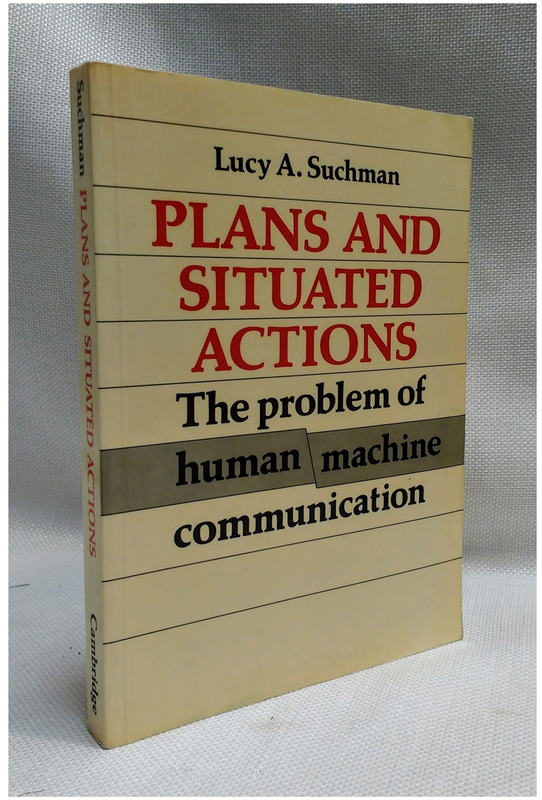
What is Situated Action

The actions of an individual are driven by the specific circumstances that they face in the present situation

Actions are linked to the specific situations and so cannot always be predicted by generic rules

Actions are situated.

Plans is determined by action, not the other way around

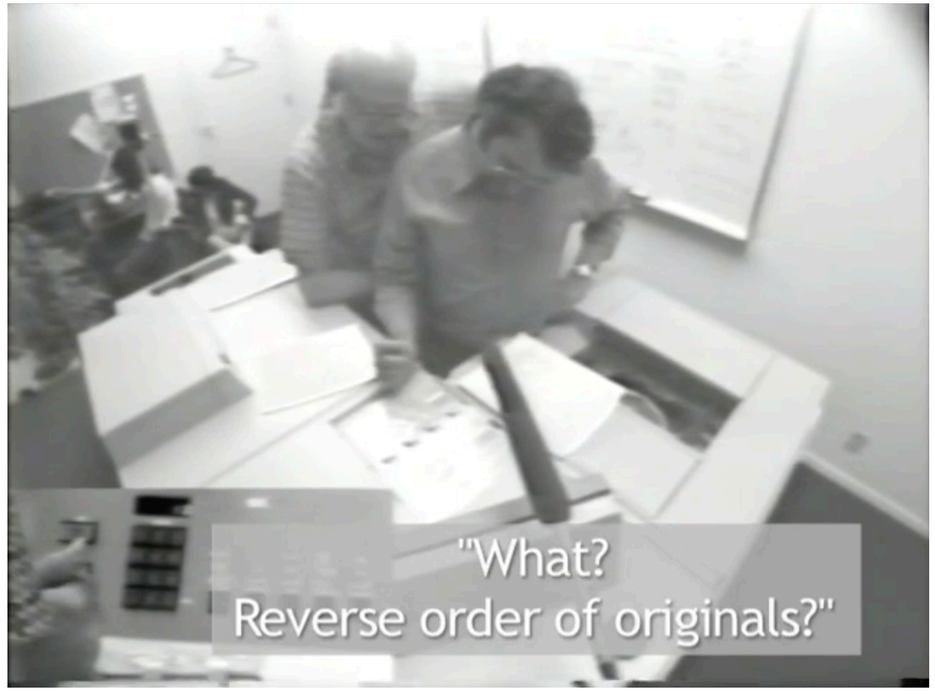


Once there was a photocopier interface…

Suchman working for a company that released a new photocopier model

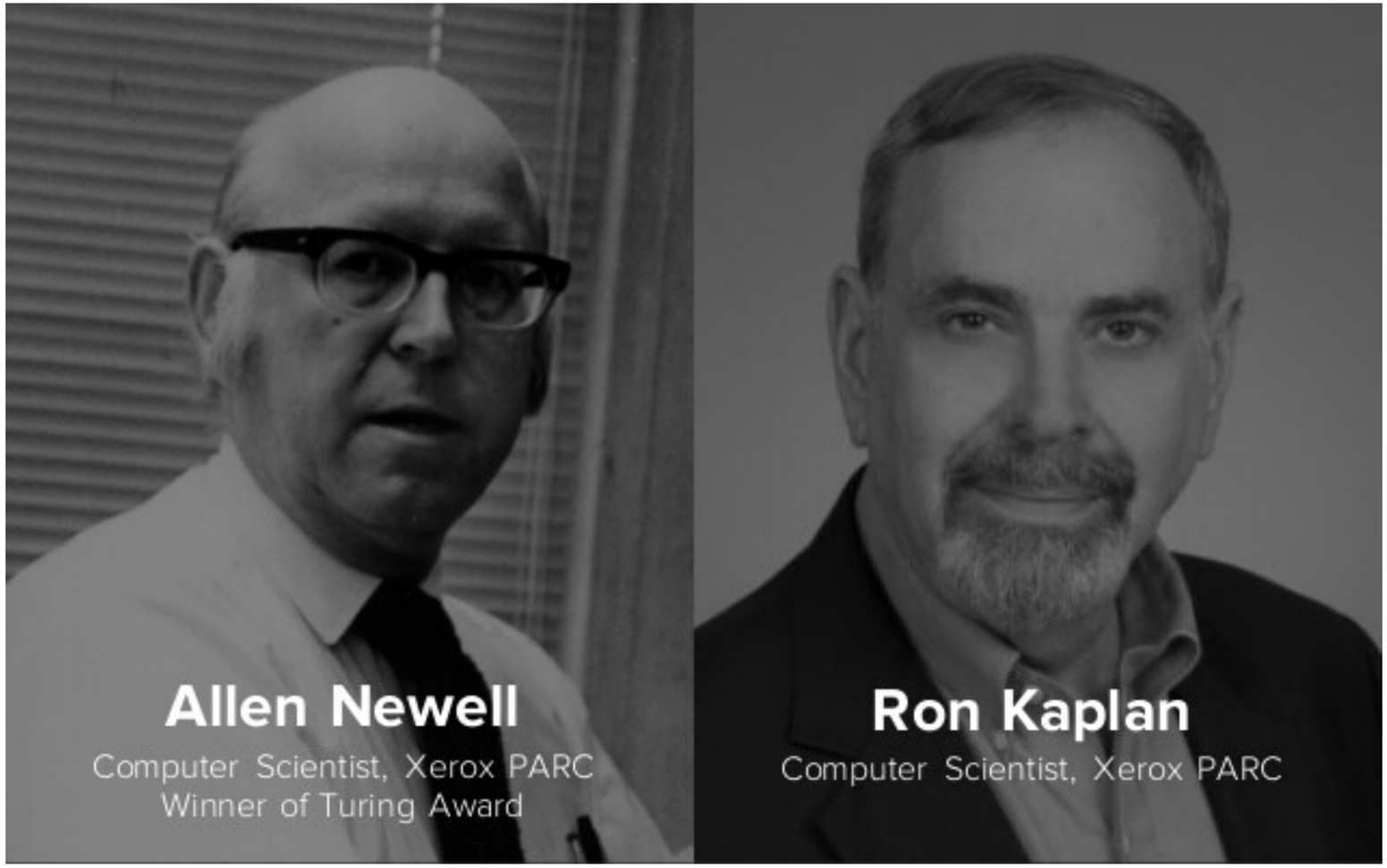
Promise: very easy to use

Reality: confusing, difficult, complicated



Watch this video:
https://www.youtube.com/watch?v=DUwXN01ARYg

Once there was a photocopier interface…

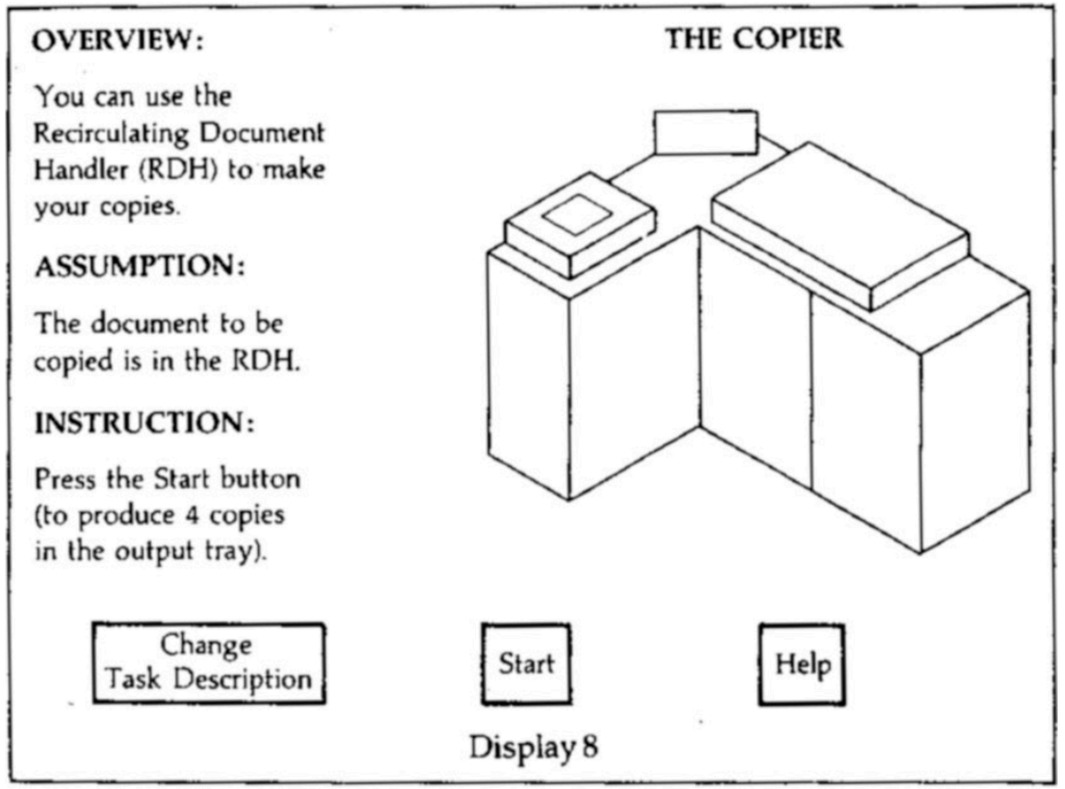


A possible solution

Build an “expert system” to guide users through the process of making copies

Idea:
- Model the steps need to realise a task
- Eliminate usability problems!

E.g. A screenshot
- Overview of where the user is in the sequence
- System’s assumptions
- Instructions about how to proceed
- Some graphical illustration as an aid



Suchman’s arguments

The quest to make a photocopier able to interpret users’ actions is futile!

Why?

Kayaker analogy: do plans really guide our actions?

The Users		The Machine	
Not Available to the Machine	**Available to the Machine**	**Available to the User**	**Design Rationale**
		DISPLAY 6	Iterative procedure for using the BDA
B: “If more pages are to be copied, then place the next page face down on the glass.”			
A: Just keep it up until we’re finished with the, with the, uh:			
B: Oh, well how do you – she was – she said on both sides, right?			
A: Well that’s after we finish getting this (indicating document). We’re just getting the originals to stick up here [i.e., RDH].			
B: Oh, you’re right, you’re right.			

Suchman’s arguments

Human-machine communication

Three concepts that drive an alternative perspective on plans and actions:

1. Indexicality
2. Ad hoc
3. Mutual intelligibility

Suchman’s arguments: Indexicality

Language is indexical: Meaning of actions and communication depends on a reference to things around us - depend on the situation at hand

Example: deictic references

- Point to a button
- Say “try pressing this”
- The phrase “try pressing this” and the pointing gesture *indexes* the button in way that clarify the reference

Suchman's arguments: Ad Hoc

Ad Hoc = Latin for "for this purpose"

Actions / solutions have specific purpose; not a general purpose

Plans have general purposes

Actions have an "ad hoc" nature —> must support improvised action in response to specific situations

Suchman’s arguments: Mutual Intelligibility

Understanding each other is not to be taken for granted

We put efforts in to make ourselves understandable to one another
-> to reach mutual intelligibility

- People put in this efforts
- Photocopiers (and computers in general) don’t!

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From Cognition to Experiences of Bodies

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Methods for SA research

Problems in HCI Addressed by SA

Assumptions of cognitivist approaches to HCI

- HCI is a structured and procedural phenomenon
- Studying HCI =
  - Understand the structure of interaction
  - Specify the procedures

Cognitivist HCI focuses on **plans** and their formal of **execution**

Problems in HCI Addressed by SA

BUT

HCI is a lot about informal and unstructured interaction

Structure is an **outcome**, actual execution is different from the plan

SA postulates:

- It is more useful to view HCI as practical action, rather than structured procedures
- Understand situations and how they affect users' actions
- Reject formal models and generalisations

Problems in HCI Addressed by SA

Remember “What is Interaction?” Paper?

Interaction as communication (or dialogue)

Bandwidth is limited = problem of mutual intelligibility

- Human doesn’t know all the actions
- Computer doesn’t know the particulars of the situation as it unfolds

Communication must include both an awareness of the local context and a mechanism to solve problems in understanding

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Methods for Situated Action Research

You can only study action by observation in the real world
- Rich descriptions are preferred over generalisable theories
- Lab studies lead to unwanted abstractions

Behavioural methods:
- Record behaviours and conversations
- Follow user to study their actions
- Trace artefacts
- Capture interactions
- Study the same tasks in different contexts

Methods for Situated Action Research

Focus on:

- Regularities and irregularities in different contexts
- Deviations from adherence to protocols and their reasons

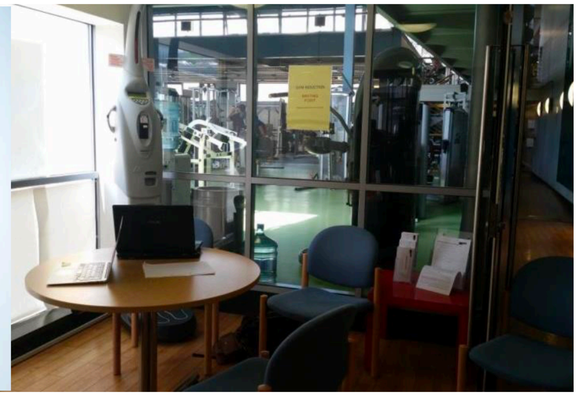
Don’t trust:

- What people plan to do
- What people say they do

Examples: Situated Wearables Use in Gym

- Explored **technology in the gym** with wearable adopters
- Used an autoethnography, observations, contextual interviews, and contextual project meetings

Image from http://bit.ly/1U9rYVg



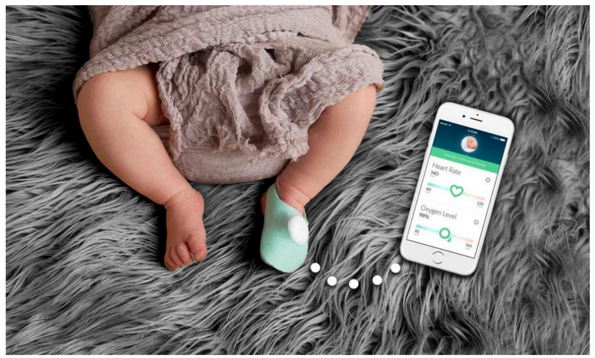
Collaboration with MSc HCI+Ergonomics student Misha Patel

- Distraction vs. Disruption
  - **Boring** treadmill VS. **concentrating** on form during weights
- Information Needs vs Avoidance
  - **Sooo** much time left VS. **not much** time left!
- Exercise Influencing Use vs Use Influencing Exercise
  - Not able to track **spinning** VS. not using arms on **elliptical**
- Influence of the **exercise**, **temporal**, **motivations** on use and non-use

M. Patel, and A.A. O'Kane. "Contextual Influences on the Use and Non-Use of Digital Technology While Exercising at the Gym" CHI 2015.

Examples: Situated Wearables Use in Gym

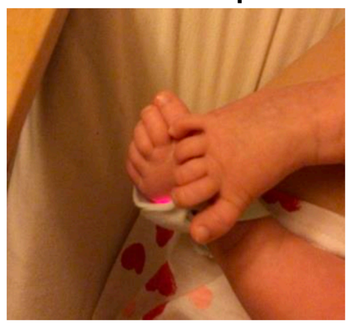
- With Georgia Tech, explored qualitative and quantitative use of **a baby wearable monitor system for home use**
- Used contextual interviews, out-of-box, diary study, and the mobile sensing AWARE platform (and autoethnography)

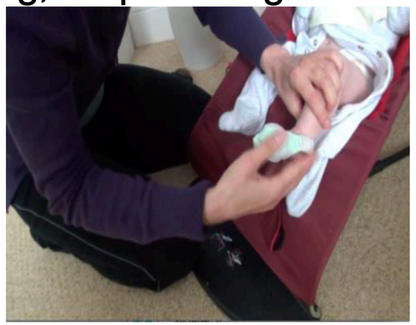


Collaboration with Kaya de Barbaro (Georgia Tech), Junqing (Kaylee) Wang (UCL), Geraint Jones (UCL), and Nikki Newhouse (UCL)

Image from http://bit.ly/293oeGG

- Experimenting, supplementing **knowledge**, and curiosity
- Ongoing worrying, situational **anxiety**, and past experience
- Physicality of parenting and **physicality** of the device
- **Social** parenting, co-parenting and it takes a village





J. Wang, A.A. O'Kane, N. Newhouse, G. Jones, and K. de Barbaro. "Quantified Baby: Parenting and Use of a Baby Wearable in the Wild," accepted to CSCW 2018.

C. Elsden, A. Durrant, A.A. O'Kane, P. Marshall, R. Fleck, J. Rooksby, and D. Lupton, "Workshop: Quantified Data & Social Relationships," Proceedings of CHI 2016: Extended Abstracts, 2017, pp. 644-651.

Design implications

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

- If possible compensate for the lack of context

Demonstrate the limitations of the machine to the user

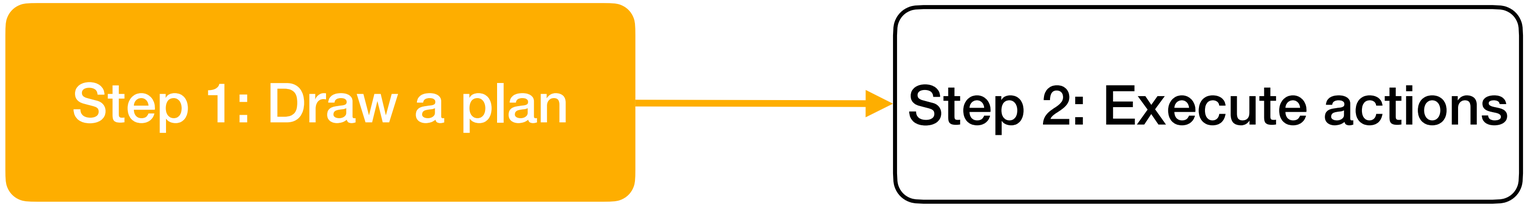
Allow ad hoc coordination and signalling between users

Support rather than enforce adherence to procedure

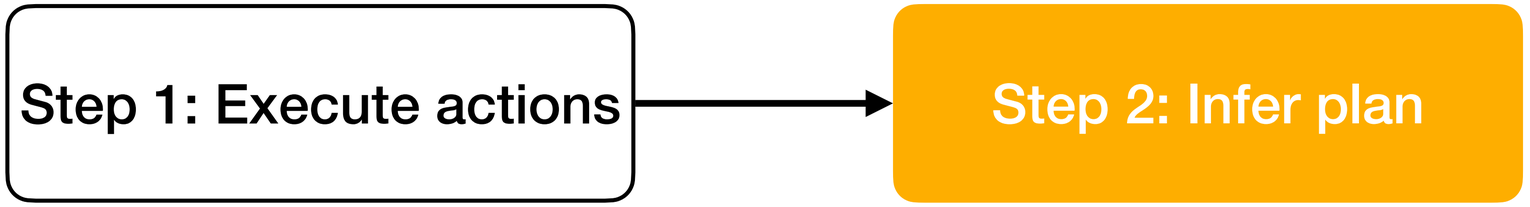
- i.e. allow alternative courses of actions

In Summary…

Traditional view of HCI



Situated Action



Next…

Week 5: Third Wave HCI

Towards Experience and Play

#HCI _Theory