

# Interaction Analysis

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# Interaction analysis

Interaction analysis is an interdisciplinary method for “empirical investigation of human beings with each other and with objects in their environment.” (Jordan & Henderson, 1995, p. 39)

- Talk
- Nonverbal interactions
  - Gestures: laughter, nodding, pointing
  - Actions: handing over a document, writing in a wiki, mobile blogging

# The sequential/dialogicality of “in situ” talk

Knowledge and actions are fundamentally social in origin, organization and use, and are situated in particular social and material ecologies

Dominant Question: How people make sense of each others' actions as meaningful, orderly, and projectable.



...it responds to a previous action

An utterance needs to be crafted to fit the unique circumstances of its performance

...while simultaneously it anticipates a response in return

- Implication for interaction analysis: A focus on what comes *after* a turn; the response

# Participation trajectories

“Interaction analysis examines the temporal organization of moment-to-moment, real-time interaction.” Jordan & Henderson, 1995, p. 61.

Enables an understanding of:

- Changes in the students' *orientation* during a work process/project
- The evolving process of students' construction of conceptual understanding
- Changes in how the students' employ, engage with and make sense the (technological) tools
- Changes in participation structures

# What are we typically studying?

## – Use of artefacts

- Technological tools
- Representations (texts, models, diagrams, simulations)

## – Conceptual issues

- Scientific concepts
- Scientific phenomena

## – Institutional issues

- Classroom discourse
- "Doing school"- activities

# Main datacollection tools

- Observations with videorecordings or alternatively audiorecordings
  - WHAT PEOPLE ACTUALLY DO
- Interviews where the interviewer is seen as part of the talk – not just looking for the respondents answers
  - WHAT PEOPLE SAY THEY DO OR UNDERSTAND THINGS
- Documents and historical reproduction
  - FRAMING THE CONTEXT

# How to organize the data material?

Date	Where	Type of group	Type of activity	Number in the archive	Digitalisert / AVID	DVD brent / Transana
30.09.2010	Norwegian Science and Technology Museum	All members of the MIRACLE project: UIO, NSTM, CoDesign, Storm Studios, World Beside AS	Teasers by Anthony NSTM by Dag introduction about the museum and previous exhibitions	MIR-WS NO 01 / total 10 (MIRACLE WORKSHOP)	OK	

Mark the tapes when you are in the field and make the overview at ONCE coming back to your workstation!

# What do we transcribe?

Mercer's strategy from the book *The Guided Construction of Knowledge* (1995)

“to present my own transcriptions in a non-technical way, so as to make them accessible to audiences outside the community of language researchers who are used to reading transcripts. This means that I have only included such information about pauses, overlapping speech (...), and other non-verbal aspects of communication as I thought absolutely necessary in the circumstances.” (p. vii-viii)



# Choice of extracts I

- Mercer's approach in the book *Researching common knowledge* (1991):

"Next, the researchers (together) re-viewed the video recordings, armed with the transcripts which now included the 'context notes' as a right-hand column of typescript. This was undoubtedly the most important part of the process of analysis; but it is also the one I find most difficult to describe programmatically. Basically, it involved watching and discussing the video recordings, stopping and reviewing sequences whenever necessary, and making notes on what took place." (p. 50-51).

# Choices of extracts II

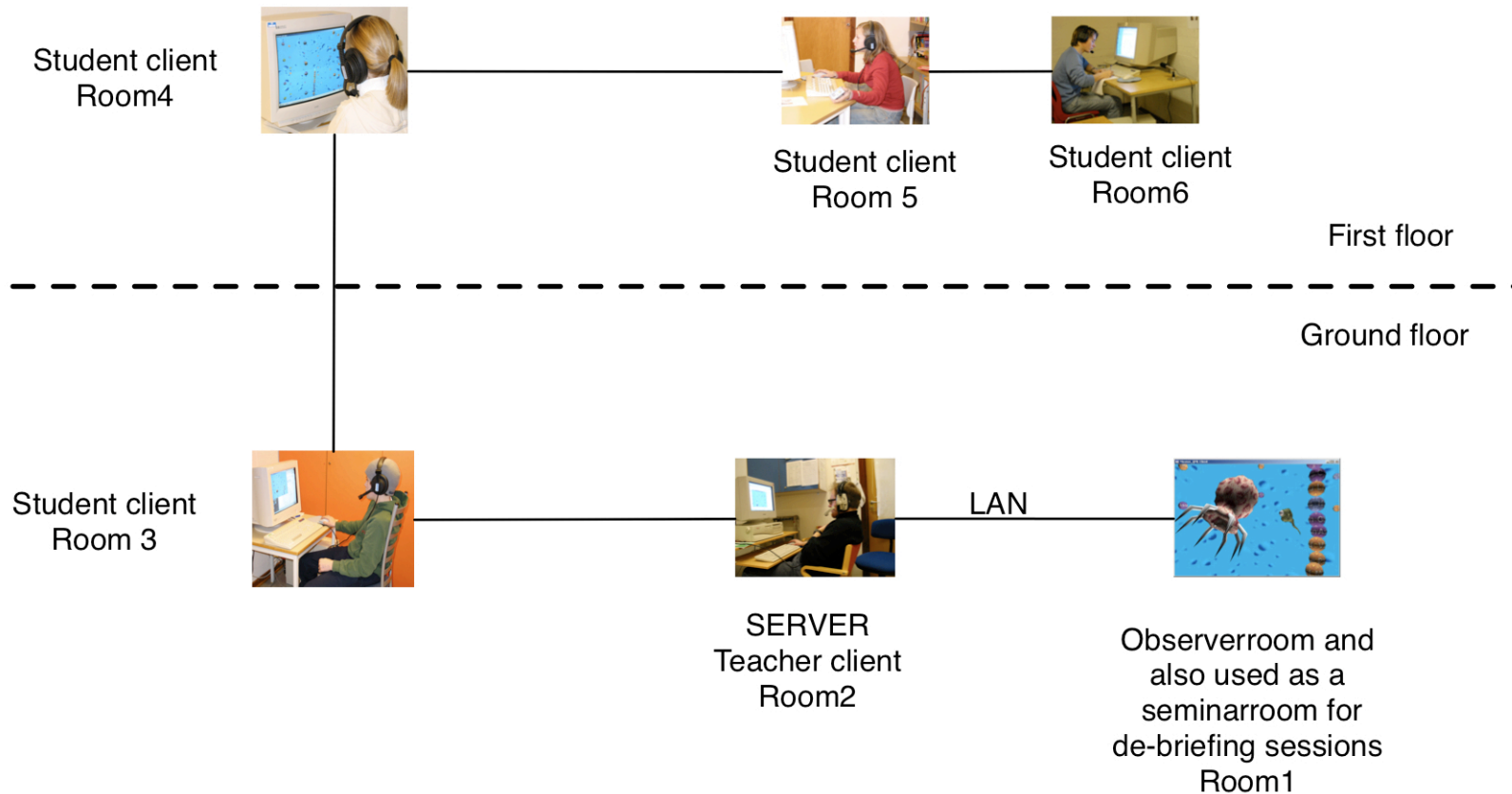
- Mercer's strategy from the book *The Guided Construction of Knowledge* (1995)

"Imagine that you are on a moving ship, watching a school of dolphins swim alongside. You may notice that they appear and disappear at irregular intervals. As you are watching, you notice that a dolphin with a distinguishing mark appearing, disappearing and then reappearing above the surface. Sometimes that dolphin appears to drop out, though others continue to shadow the ship. You can follow the progress of the marked dolphin, even though it regularly disappears under the surface. The analyst of topics and themes in discourse has a similar experience; topics are introduced, discussed and then the conversation moves on. Some never surface again, but others do; when they do, this is because they are made to do so by the speakers." (p. 68)

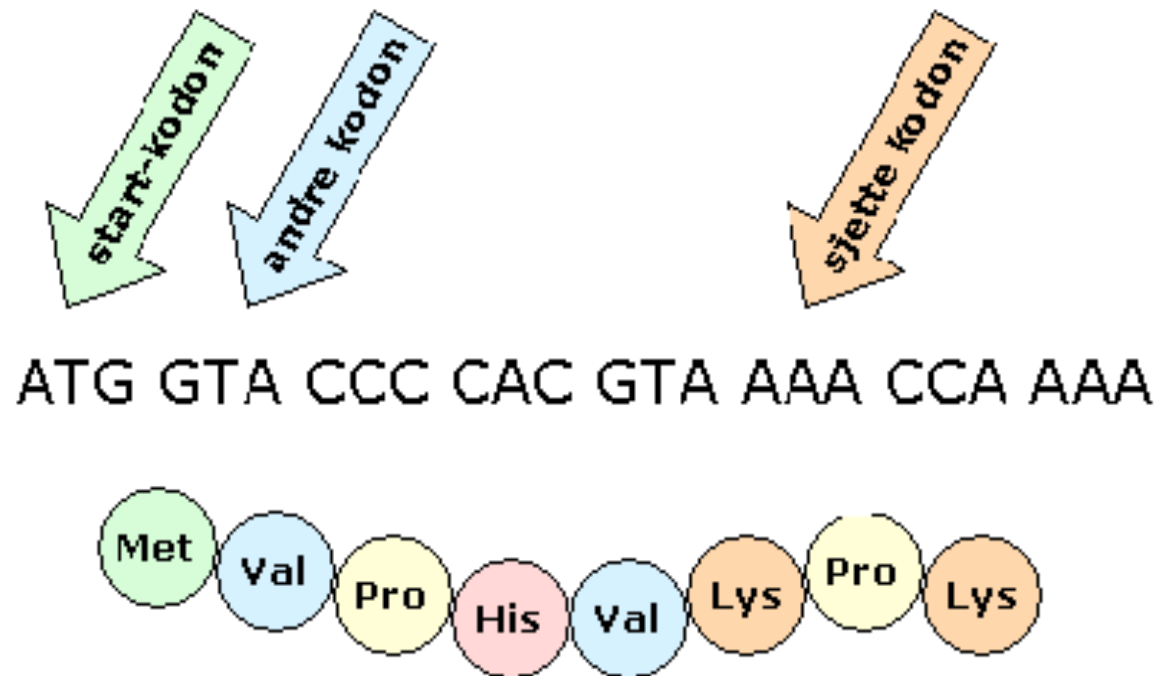
# Analytical procedure; circling in the interaction data

- Videorecording gives the possibility for playback during analysis
- **Step 1:** Rough transcription of (video)recorded interaction (often a collective activity)
- **Step 2:** Identification of sequence locus
  - Accounts (explanations, justifications, clarifications)
  - Thematic episodes (e.g. conceptual themes within the discussion, engagement with a specific tool, or “doing school” sequences)
- **Step 3:** Thorough transcription of selected sequence extracts

# An example: Students collaborating in a network



# The relation between a DNA sequence and a aminoacids (figure 2)



# The Codon table

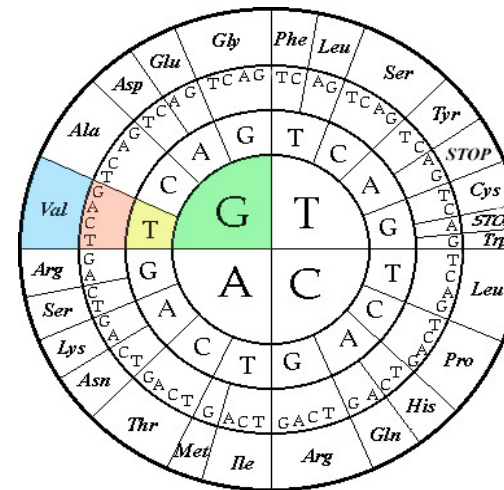
This aims to read the genetic code.  
This entails finding out what codon (GTA) that correspond to a particular amino acid (Val)

How to read the genetic code? [\(the website\)](#)

<< Back to the mission.

Let us take the codon "GTA" as an example. To find what amino acid this refers to, you do the following:

1. Start to find the first letter (G) in the middle of the circle (marked by green).
2. Thereafter, find the second letter (T) in the next inmost circle (marked by yellow).
3. Find the third letter (A) in the next circle (marked by pink), and you see that the actual amino acid is Val – "Valin" (marked by blue).



(Figure 3)

In our example we found the amino acid "Val" (Valin). Note that all codons starting with "GT" corresponds to Valin. In other words, "GTA", "GTG", "GTC" and "GTT" correspond to Valin. The genetic code is so-called 'degenerated'. Also note that some codons are absolutely unique, e.g. "TGG". There are no other codons than this one that correspond to the amino acid "TRP" (Tryptofan).

<< Back to the mission.

# Summing up the analysis

**Level 1** – how do you understand what the participants are saying and doing and how is it followed and not followed up

**Level 2** – are there any patterns, themes?

**Level 3** – how can your analytical approach enlighten these findings?

## Summing up the analysis

How do the extracts relate to each others?

How do they answer the research questions?

Identify your contribution according to other research findings.

# Task

- You will now look at an interaction analysis taken from an article I have written with Sten Ludvigsen, 2008. "What does it mean..." *Computer-Supported Collaborative Learning*, 3, 25-51.
  - Mark out what you think should be in cursive in the extract
  - Try to identify analysis levels 1, 2 and 3 in the text



# Students sequencing a gene

## Extract 1: Learning scientific concepts

1. Pat: So – then you can do the same, CCC. Then you have C C C. *Pat uses the codontable (see Figure 3) to examine the relation between the codons and the amino acids in Figure 2.*
2. Cornelia: Then it is Pro. *Cornelia is using the codontable (see Figure 3) to examine the translation of the next codon, C C C, in the DNA sequence into an amino acid, Pro, in Figure 2.*
3. Pat: Pro, yes. Then you can do it with C A C. *Pat refers to the next codon, C A C, in the DNA sequence in Figure 2.*
4. Cornelia: C A C, then it is His. Now I have got it. *Cornelia is using the codontable (see Figure 3) to examine the translation of the next codon in the DNA sequence into an amino acid, His, in Figure 3.*
5. Pat: Yeah, you got it now?
6. Cornelia: Yes, but I don't understand hat it is – what is it?
7. Pat: It is the genetic code. *Pat refers to the heading of the website where the use of the codontable is explained (see Figure 3).*
8. Teacher: It is the code. If you are going to build something genetic, then it is the code, the instructions for how you should do it – what protein that should chain together. *The teacher uses references from the website; instructions for how you should do it.*
9. Mark: Then we ...
10. Pat: Have we finished this task then?

## How I did it

- 12 times – what does it mean
- Identified extracts from different settings in their trajectory
- Wrote down what they said
- Added non-verbal aspects like how they moved in the 3D environment. Here I have written this in cursive but it could be done more technically
- Gave the whole extract a number and a title to make the later analysis more transparent and comparable with other extracts
- Number each utterance to make the later analysis more transparent and comparable with other extracts
- I went through each utterance and explained how I understood it in relation to the other utterances  
**Level 1**
- Looked for patterns/themes **Level 2**
- Brought in my analytical framework **Level 3**

# Examples of interaction analysis that you can find in the syllabus

- Krange, I. (2007). Students' Conceptual Practices in Science Education - Productive Disciplinary Interactions in a Participation Trajectory. *Cultural Studies in Science Education*, 2(1), 171-203.
- Furberg, A. (2009). Socio-cultural aspects of prompting student reflection in Web-based inquiry learning environments. *Journal of Computer Assisted Learning*, 25(4), pp. 397-409.