



CONSTEPS + Activity States Framework

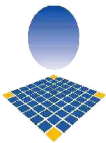
A theoretical framework for the analysis of actual human
collaboration on the Web

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Outline

- Focus, objective and goal
- Work Carried out
 - Recorded + Transcribed actual web conversations
- Theoretical Foundations
 - Hierarchy of Learning and Communications (Bateson, 1972 & 1979)
 - Situated Cognition (Clancey, 1997)
 - Activity Theory (Leont'ev, 1977 & 1978)
- Results 1: CONSTEPS + Activity States Framework
- Results 2: Structure of communication protocols
- Conclusions and Perspectives

Focus, Objective and Goal (What, Why, and How?)

Focus, Objective and Goal

- Focus:
 - Relating people to tools
 - Help tool builders to design effective tools for web collaboration.
 - Breakdown and recurrence (Winograd et al, 1986).

- Objective:
 - To understand how people *induce* communication protocols -punctuation of events (Bateson, 1972).
 - To understand how *intentions arise*.

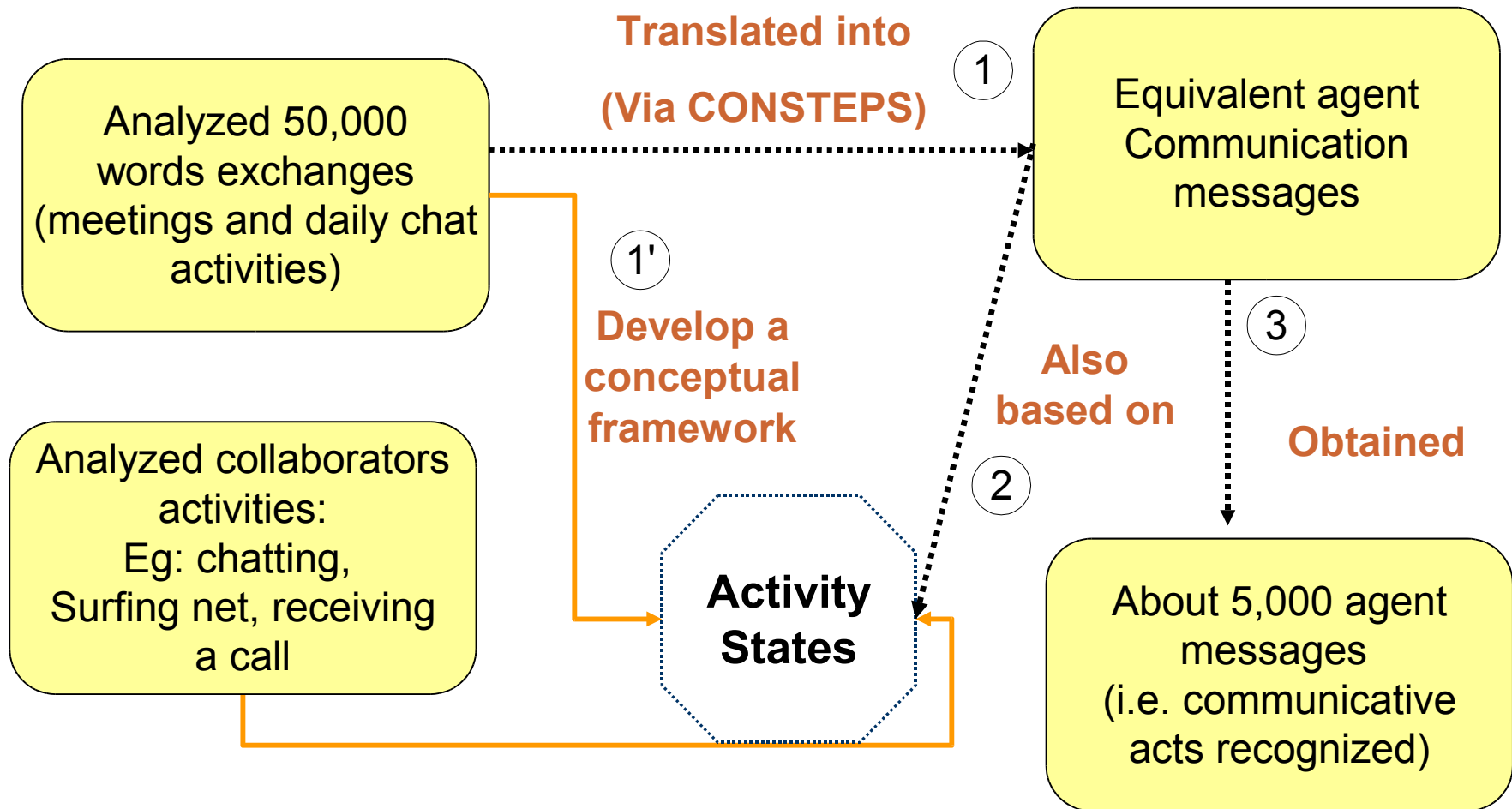
- Goal:
 - Conceptual modeling of learning and communication:
 - Using the located tool in the;
 - “Situated context”
 - Integration of human agent-artificial agent communication

Communication protocol: What, when, whom



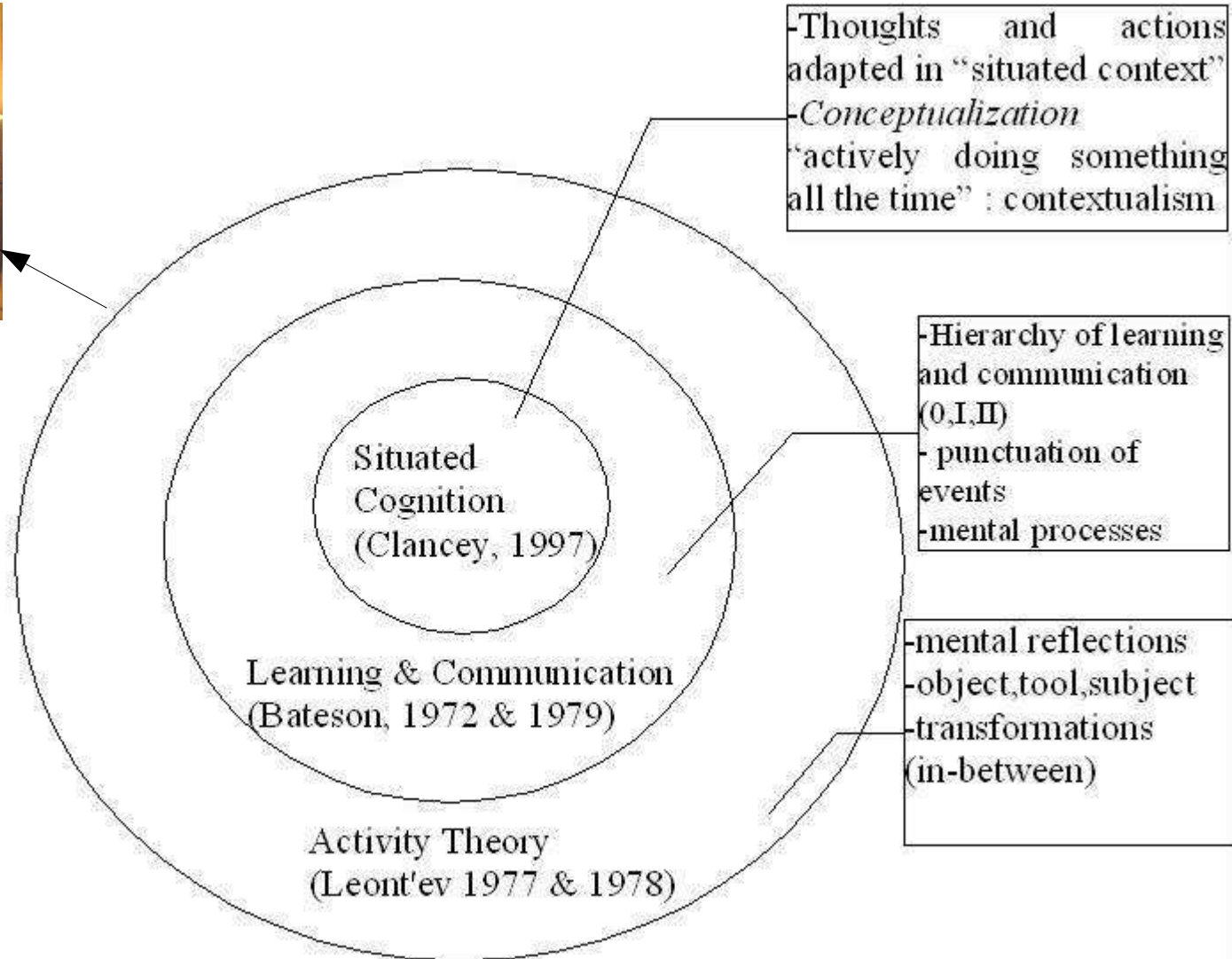
Work Carried Out

Work Carried Out

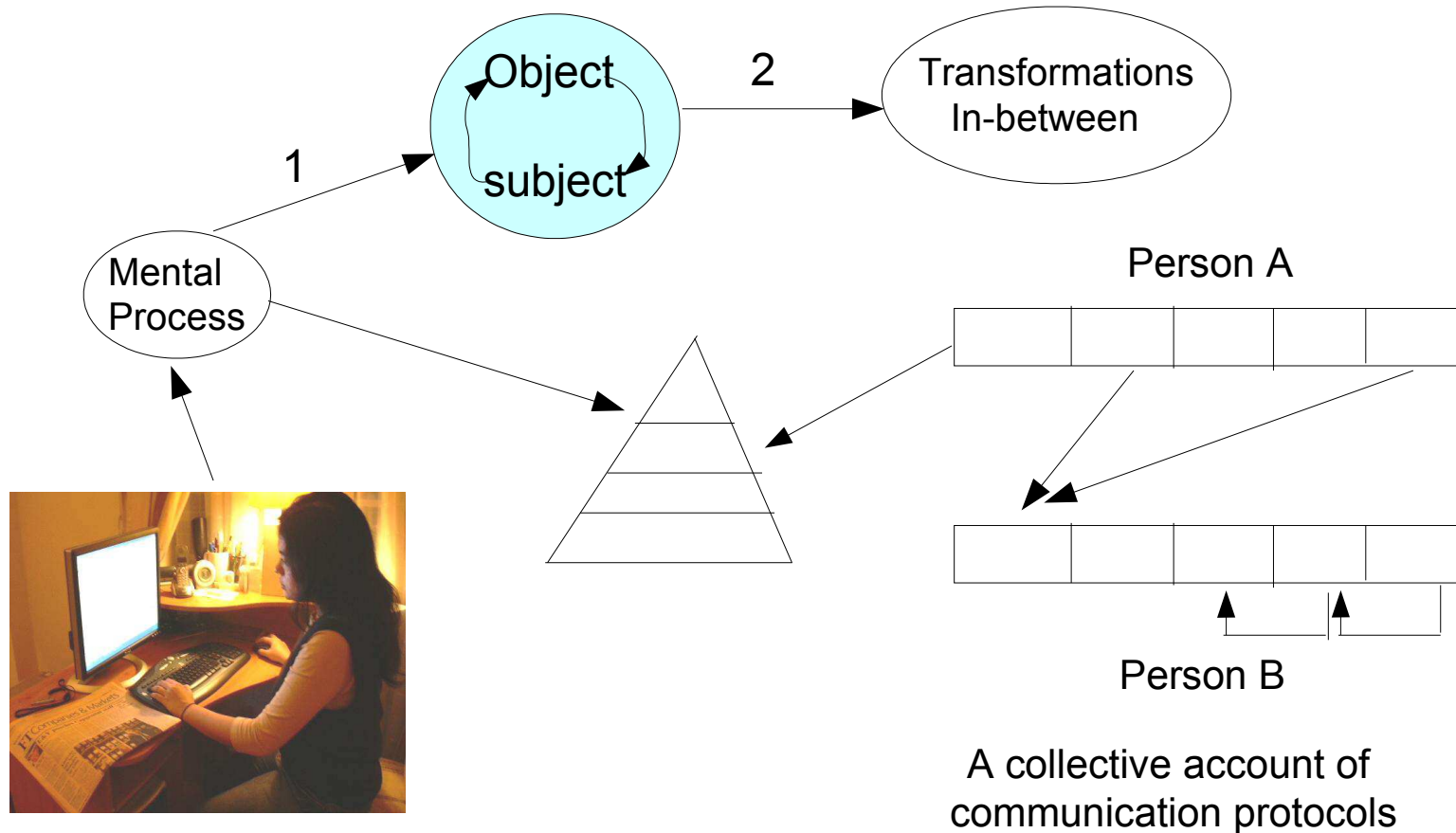


Theoretical Foundations: Situated Cognition Learning and Communication Activity Theory

Theoretical Foundations

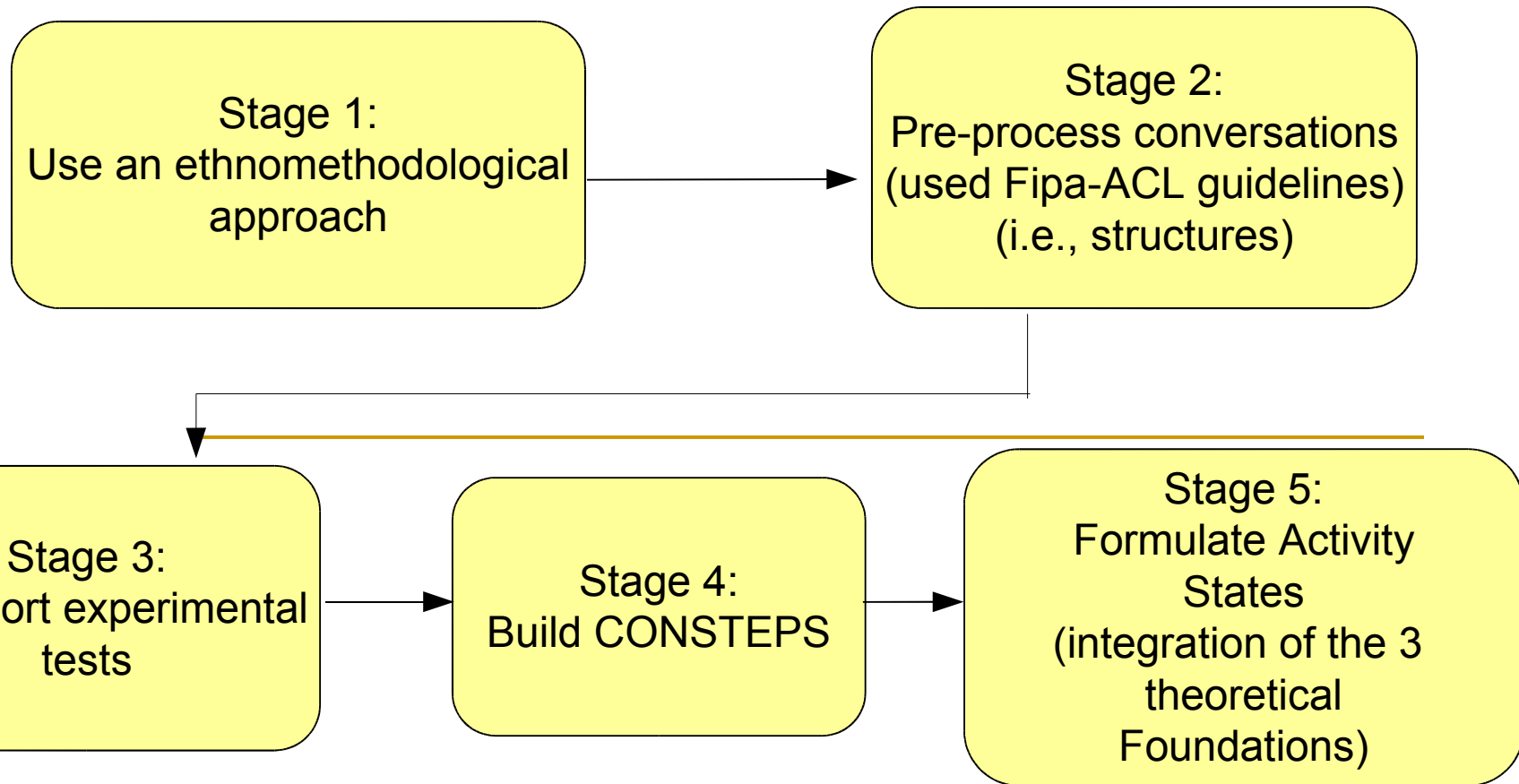


How the theoretical foundations help to explain communication protocols



Result 1: CONSTEPS + Activity States

CONSTEPS + Activity States Framework : How it originated



History of Consteps

A Sample of a participant answer to the short experimental test

- Participant 1: Pedro Kouri Paim. Nationality: Brazilian. Age : 21 years old. Male. Occupation: 5th year Engineering (mechatronics) student.
Sentence, Possible to send this file?

Step 1: object : possibility

subject: send this file

Step 2: model A:

ut (A, B, possible (this file, send))

Step 3 : model B

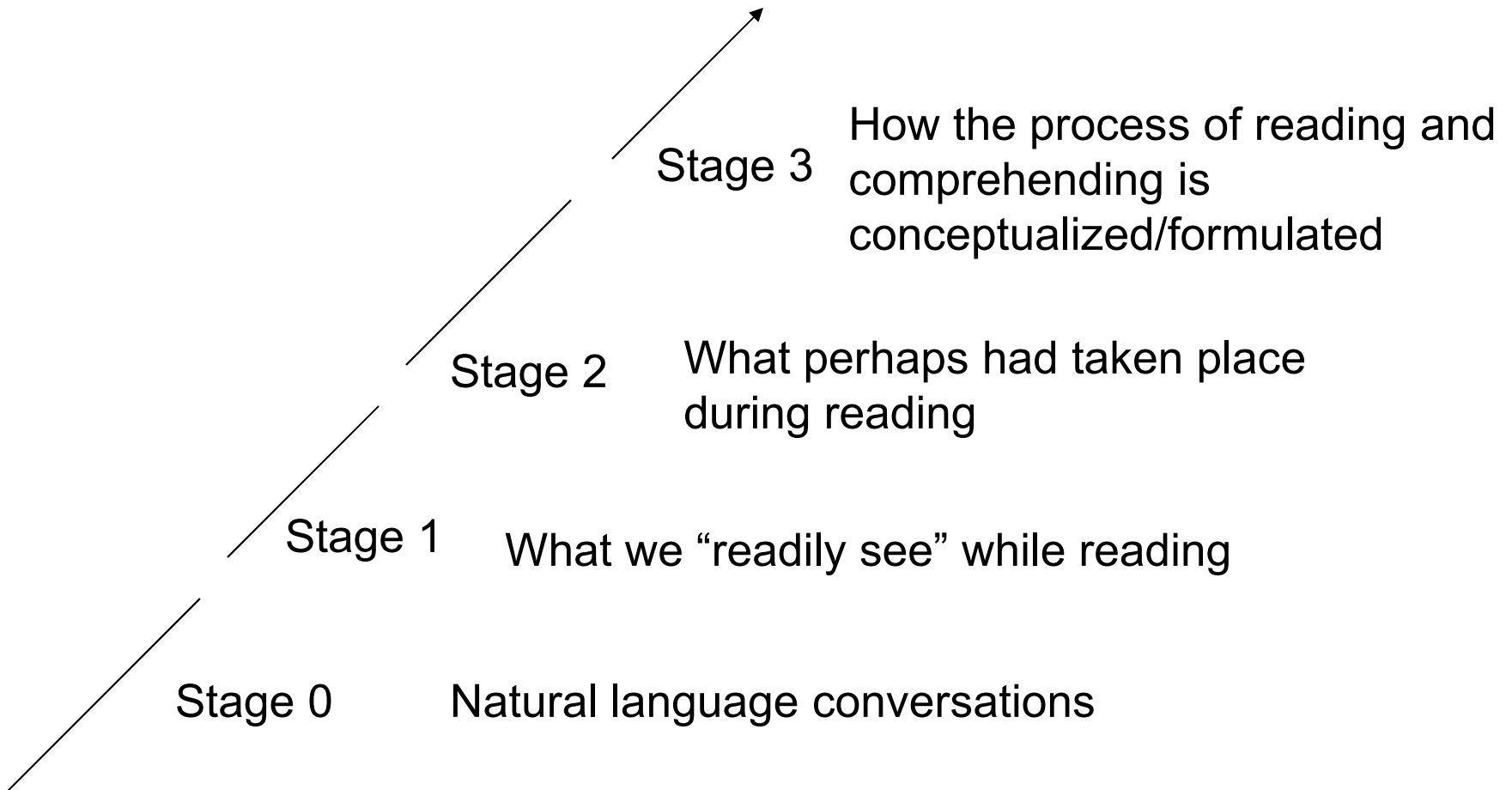
ut (spk, ls, act (who, object))

act = send; who = B; object =this file

Step 4: possible (A,B, send (A, this file))

Step 5: inquire (A, B, send (A, this file))

An analysis using a cognition process approach at the neural level



What we readily see while reading: what each person is actively conceptualizing

well.. today there is a 'green dot' in Lithuania!! can you see it on your map?



Ranger is at KMi, Milton Keynes, England in his (quite) big room. Ranger is chatting with his BuddySpace group member Darcy. He is actively “conceptualizing” his activity on the BuddySpace within this situated environment.

Was I right to send a message in order to broadcast (it worked very well), or could I have started a "global chat" ?

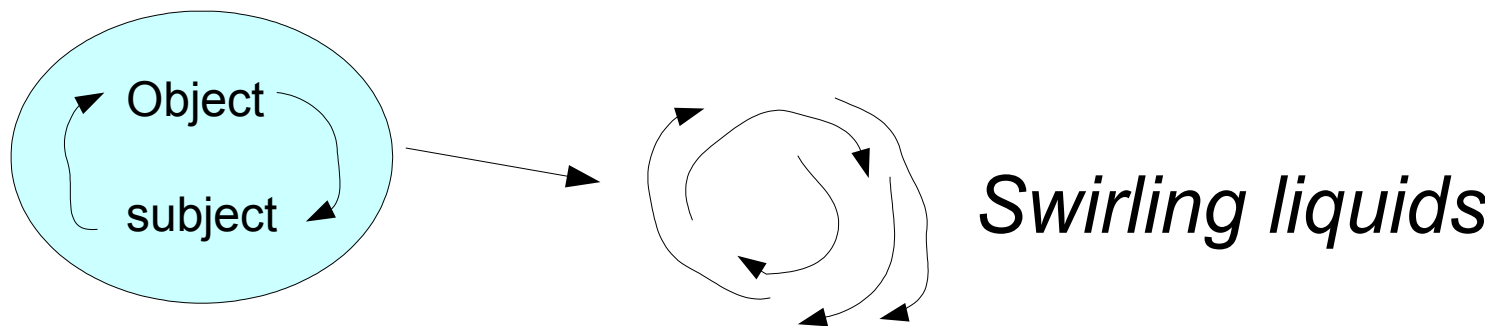


Jack is at Lirmm, at, Montpellier, South of France, the window is behind him and shares an “open office” along with 2 other Phd students. He is actively “conceptualizing” his activity on the BuddySpace within this situated environment.

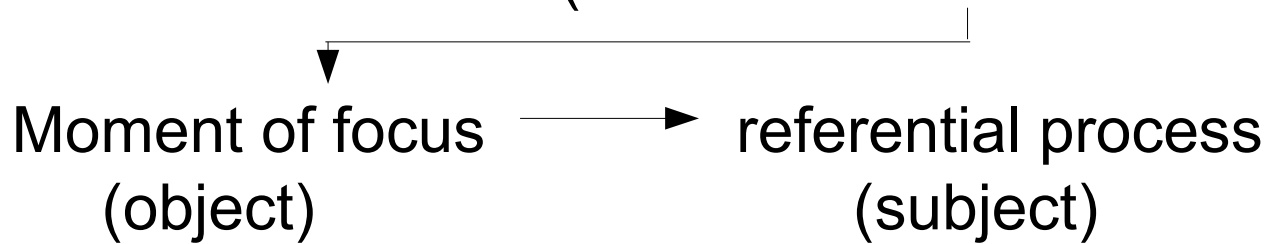
What perhaps had taken place during reading: transformation of the “in-between”

Object (denoted by (1))	The “perceiving” act of the speaker at that moment
Subject (denoted by (2))	The referential process of the speaker in respect to what she is “perceiving”

How the process of reading and comprehending is conceptualized: Participant Observers Acting between two conflicting impulses



Narrator 1: Observer (Person A is informing person B)
Narrator 2: Observed (Person A's moment of focus is..)



Sample of an annotated sentence

Q says: would you be interested in using a version of that 'map with faces' I showed in Barcelona?

Divides into three kinds of information:

1. would you be interested in using.
2. a version 'map with faces'
3. I showed in Barcelona?

Sample of an annotated sentence

Part 1: *Would you be interested in using* is a stimulus reaction to the previous sentence .

Part 2: *a version map* is giving information of part 1

Part 3: *I showed in Barcelona* is giving reference to the information of part 2

Sample of an annotated sentence: Applying object-subject

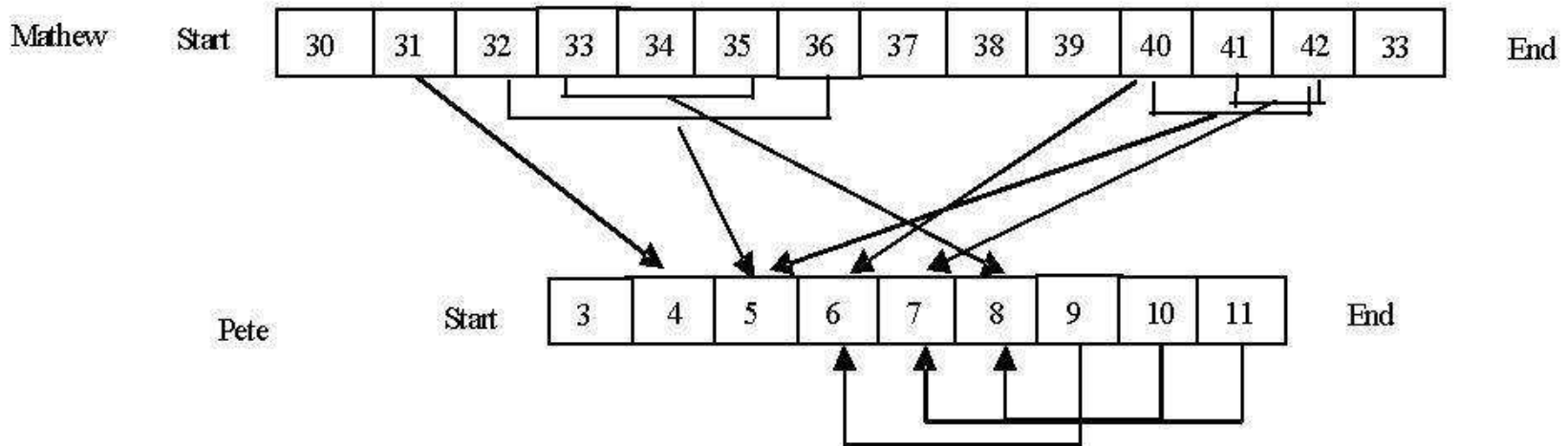
Part 1: Would you be interested in using
(1) (2)

Part 2: a version map
→
(1) (2)

Part 3: I showed in Barcelona
(1) (2) (1) is object
(2) is subject

Result 2: Conversation Structures Analyses

Relating the CONSTEPS + Activity States to communication protocols



- Structured conversations → conceptualized into “blocks” of conversations (*re-sequencing and re-enacting of memory*).
 - Blocks = “start”, “pause/breakdown”, “end”.
 - Start and end = Events and Experiences

Relating the CONSTEPS + Activity States to communication protocols

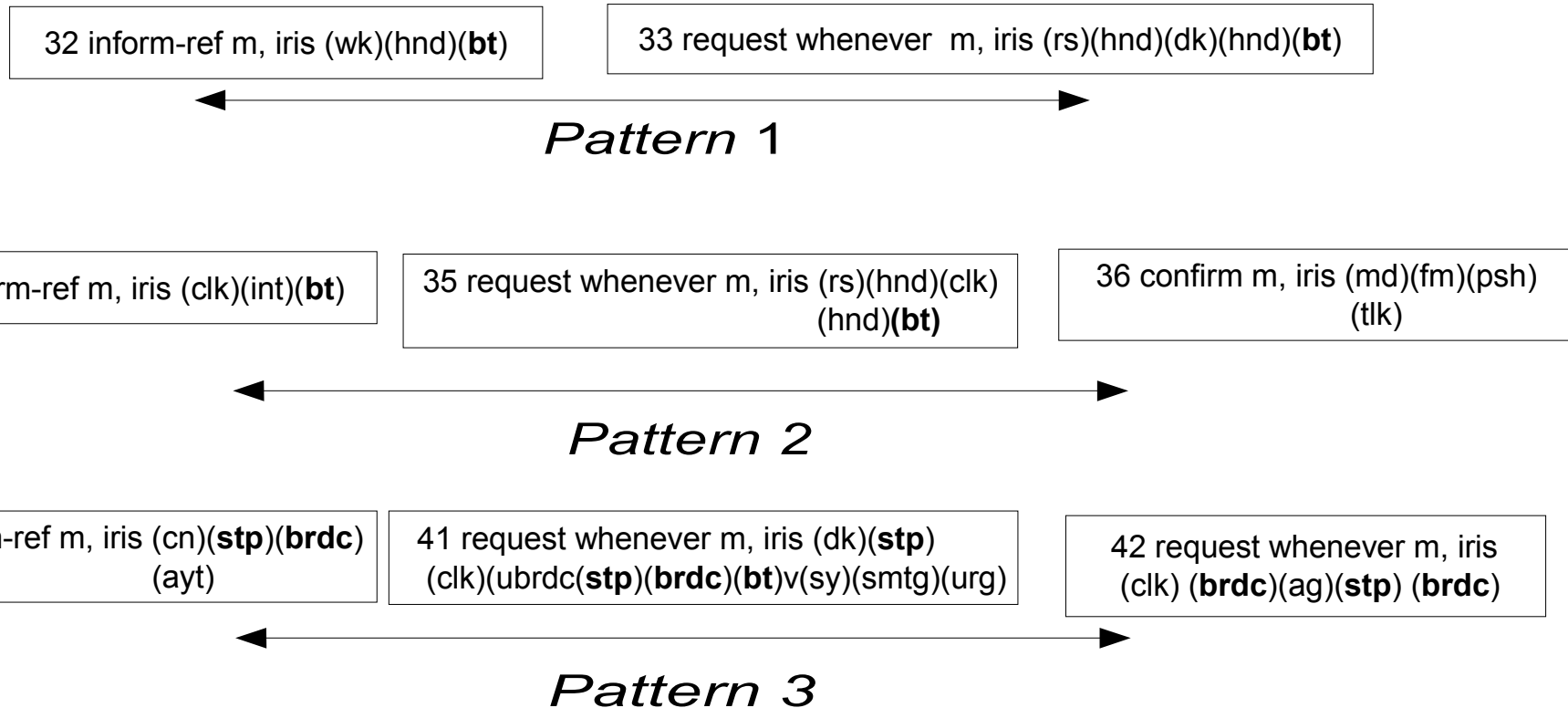


Figure 1. Patterns of Mathew's Conversational Structures

Relating the CONSTEPS + Activity States to communication protocols

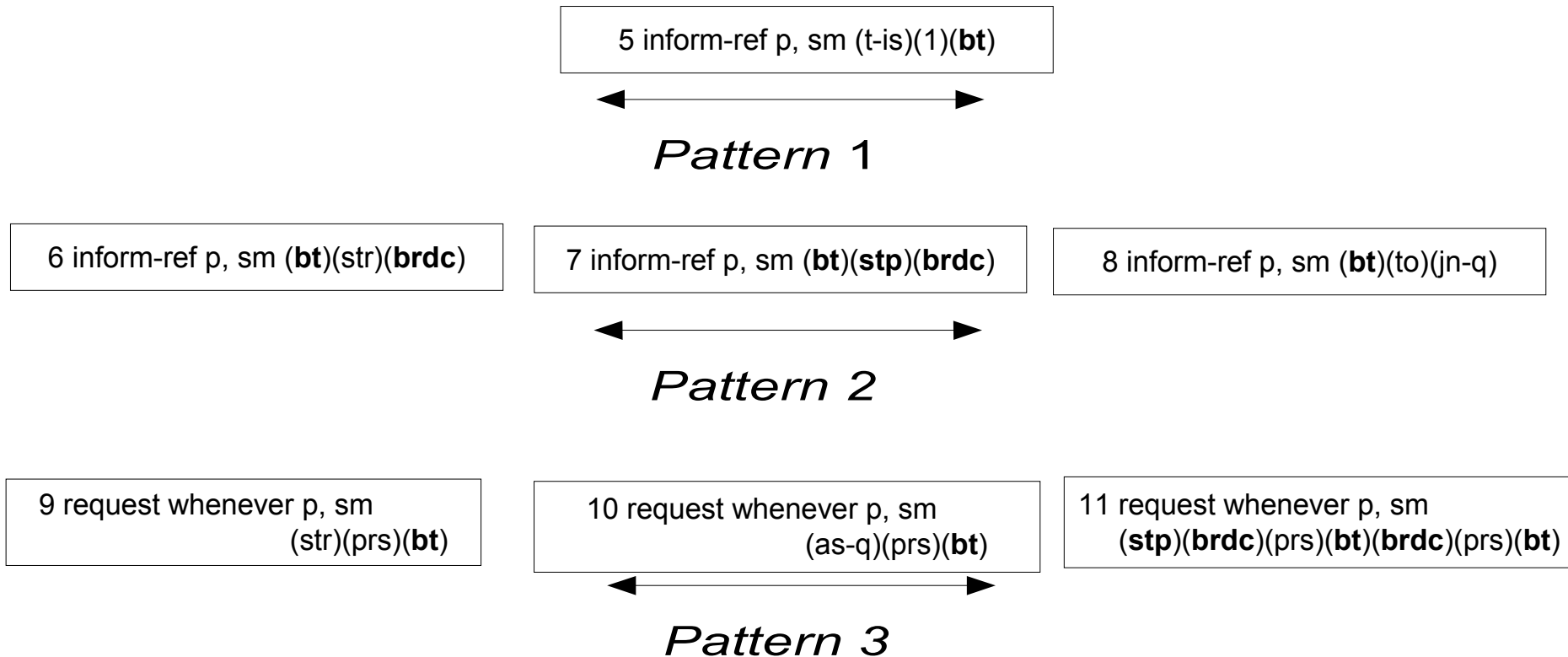


Figure 2. Patterns of Pete's Conversational Structures

Conclusions and Perspectives

Conclusions and Perspectives

■ **Conclusions**

1. The mark of a beginning not a mark of ending.
2. A guideline to recognize intentions for converting actual conversations into marked up agent messages.
3. A framework that attempts to understand the existing theory on memory, learning and communication in relationship to conversation analysis.

■ **Perspectives**

1. Find incoherency and ambiguities. Understand why there are ambiguities so we can understand regularities.
2. Continue to analyze concrete conversations.
3. Polish framework, validate it, test it, and re-use.

Annex: Marked up ACL messages form

- (1) Hello iris, welcome to FlashMeeting. Hope the technology is working well for you. You probably work out on the hand button to raise your hand or you click on the interrupt button if you have something urgent to say. It's a strictly push to talk model because that makes the audio simply work a lot more reliably and it also it makes the replay of the meeting well coz we know exactly who's talking at any moment. And you can stop broadcast anytime just by clicking on the..., in fact un-broadcasting or broadcasting again and someone will take the floor.

Agent messages correspond to (1).

30 greet m, iris û

31 inform-if m,iris (tch)(wk)(wl) = =true

32 inform-ref m,iris (wk) (hnd)(bt)

33 request whenever m,iris (rs)(hnd)(clk)(hnd)(bt)v

Annex: Marked up ACL messages form

34 inform-ref m,iris (clk)(int)(bt)
35 request whenever m,iris (nd-to) (sy)(smtg)(urg)
36 confirm m,iris (md)(fm)(psh-to)(tlk)
34 inform-ref m,iris (clk)(int)(bt)
35 request whenever m,iris (nd-to) (sy)(smtg)(urg)
37 inform-ref m,iris (mk)(ad)(rlb)
38 inform-ref m,iris (mk)(repl) (wl)
39 inform-ref m,iris (knw)(wh)(tlk)(pt)
40 inform-ref m,iris (cn)(stp)(brdc)(ayt)
41 request whenever m,iris (clk)(stp)(ubrdc)(stp)(brdc)
42 request whenever m,iris (clk) (brdc)(ag)(stp)(brdc)

Fin....

*“L'imagination est plus important
que le Connaissance.*

La Connaissance est limitée.

L'imagination encercle le Monde”



Physicien Germano-Américain,

Prix Nobel de Physique 1921, 1879-1955

Albert Einstein