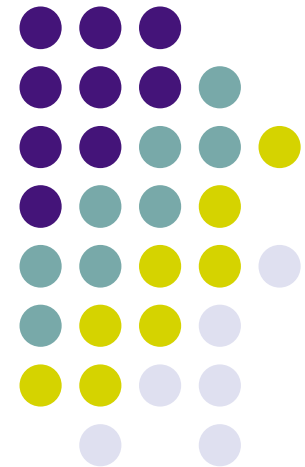# Spontaneous gestures of hearer in a collaborative work

Hiromichi Hosoma

(University of Shiga Prefecture)

"Mirror" and "imitation"

- Rethinking "Mirror image" as the typical metaphor for "imitation".

The mirror self-recognition and communication

- Clear mirror images are rare in nature, but communicative "the other" are plenty in nature.

- Face-to-face communication including imitation might be easier to evolve than mirror self-recognition.

# "Mirror " metaphor makes "imitation" too simple

- Ignoring the problem of unit.
    - Mirror image perfectly synchronizes the model, no matter what unit the model has.
- Ignoring of problem of timing.
    - Mirror image perfectly synchronizes the timing of actions, no matter what kind of time structure the model takes.
- e.g. what is the action unit of "mirror" neuron when a chimpanzee imitates a man licking gelato?

Exploring imitating sequences would help to think about imitation because...

- We don't know much about the communicative organization of imitation.
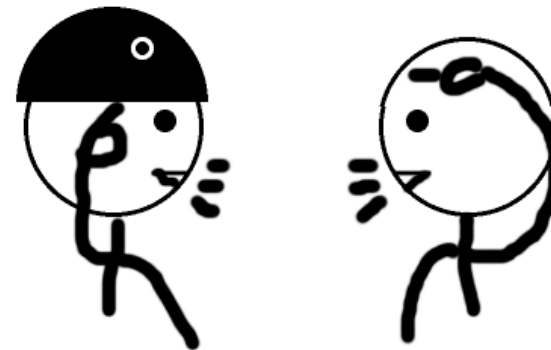
A cooperative work similar to the mirror self-recognition test
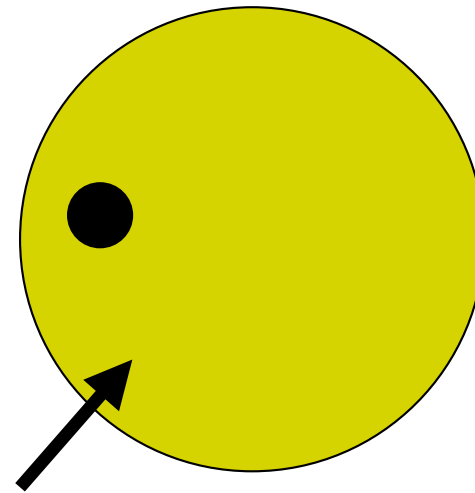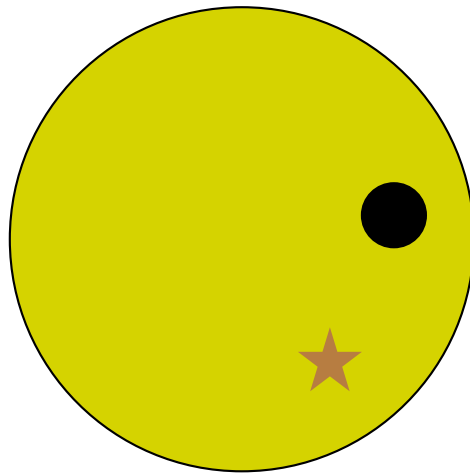
Collaborative work in an experimental situation

- "Point the mark" game.

- The recipient puts on a helmet with a small mark without looking it.

- The informant watches the helmet and the mark, and instructs to the recipient with speech and gesture.

- The recipient uses only the index finger to point.

An imaginary efficient instruction

Anchoring and describing in 2 axis:

horizontal and vertical

"Put your finger on your nose. Move it to your right…stop. Then move it up…stop"

An imaginary efficient instruction(2)

- The informant presents a model, the recipient imitates.

- One-way information flows
(because only the informant know the place).

Questions

- What is the unit of the instruction?
- How the instruction and the imitation take turn each other?
- Where is the end of the instruction?

Terminology

- imitator : the person who imitate
- model : the person who is imitated
- Imitating action: the action of imitating
- target (action): the target action of the imitation
- Imitating phrase/unit: a gesture phrase/unit of an imitating action

An example of imitation sequence.
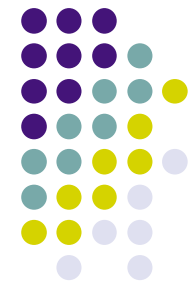
Imitation sequence has a micro-sequential structure

- (GeScript will show the structure)

Target-imitating organization

- Target - imitating sequence can be divided into phrases.

- Target action phrases and imitating action phrases can be different.

- Imitating action phrases can begin to "chase" without waiting the end of the target phrases.

- Target action phrases can begin to "escape" without waiting the end of the imitating phrases.

Time structure of imitation (1)
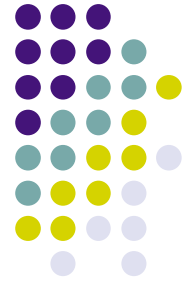
- Gesture transition relevance place (G-TRP)
  - The final phase of gesture phrase/unit (slowing down or stopping a stroke, recovery) as the gesture transition relevance place.

- Turn-taking
  - The imitator uses G-TRPs to begin imitating actions.

Time structure of imitation (2)

- Overlapping
  - The imitator starts an imitating action during a stroke of the model.
  - The model starts an action during a stroke of the imitator.

Time structure of imitation (3)

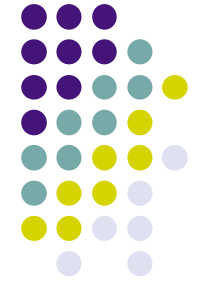- ## Speed control
  - The imitator or the model change the rate of speed watching the other's rate of speed. This control provides the synchronization of 2 actions, the target and the imitating acts.

G-TRP as the resource of turn-taking and overlapping

- G-TRP provides the candidates of "chunk" for the next imitation.
- G-TRP provides the place for the next imitation.
- G-TRP can be overlapped

Spontaneous gesture of the imitator

- The imitator divides a imitating action into different phases from the model.

Even a "wrong" imitating action helps the work (1)

X: *wakatta?/* Y: *toriaezu* *age* (1.8) *so,* *kore* *de*
understood?   for the meantime raise   yes, this and
X: You got it?/ Y: for the first, upward (1.8) yeah, and now

X̃-RH: S1 ***************/~rec̃oṽer~·~·~·

X̃-LH: S1 ***************/~rec̃oṽer~·~·~·
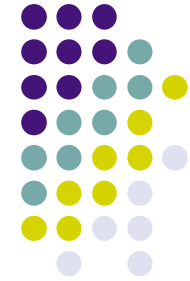
S2 ********/********************* hold

S2 ****~rec̃oṽer

Y-RH ***************/~·~·~·~·~·
up & twist   recover

X: spontaneous right hand raising and holding

Even a "wrong" imitating action helps the work (2)

- Y:From my view point, left eye

- …

- X: …this side?

Spontaneous action of the recipient helps the informant

X: spontaneous <u>left hand</u> raising and slowing

preparation	twisting	LH:recover / RH: preparation

X:	kocchi?	(0.4)	Y: Ah	X: kocchi?	Y: Un
	this side		ah		
X:	this side?	(0.4)	Y: Ah	X: this side?	Y:Yes

(hp)
X-LH: ~~~~~~~~~~~~~/******************* /~.~.~
           fast preparation   slow pointing   recover

(hp)
X-RH: /~~~
                                                         preparation

(hp)
Y-LH: ***/**********
                                              twist/upward

Template Hosoma7

"Oh-plus-assessment turn structure (Heritage 1987)

- Typical using of the particle "oh", which indicates the change of knowledge state

> J: I w's j'st eh ringing up t' say I'll be comin' down inna moment,
>
> (.)
>
> I: Ohgh goo:d

The recipient's action to "Oh"

The informant provides the change of the knowledge state

The recipient's spontaneous action.

The informant makes an assessment.

In multimodal sequence, "Oh-assessment phrase" can be "Oh - (the recipiient's action) - assessment.

Spontaneous gestures without the model
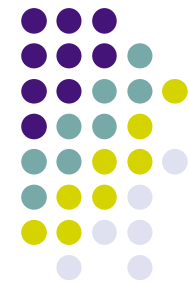

Y: no infromation of right/left

Y: confirmation

Y:Etto	mayuge	no(h)/	X:uhhhhhh	mayuge	no	ue?/	Y:un
well	eyebrow	GEN		eyebrow	GEN	up	yes

Y:Well, the eyebrow/   X:uhhhhh   the eyebrow, up?/   Y:yeah

X-RH

***************/***************/***
S1(pointing)   hold   S2

X: spontaneous right hand raising and holding

X: raising more

Template Hosoma8

Without spontaneous gestures…

- The instructor meets difficulty to explain without the recipient's spontaneous gesture.

Conclusion & Discussion

- Imitating sequence uses G-TRP with overlapping makes the cooperative work fast.

- The imitator imitates the action not only because it's easy to repeat, but it will provide useful resource for the next action of the model.

- Spontaneous gestures of the recipient makes the cooperative work fast.

- A mirror image might be a super "other" with perfect synchronization, but it lacks rich our interactive abilities. This might be the reason why we can so easily communicate with a mirror.