Joint Action and the Emergence of Mindreading

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challenge
Explain the emergence, in evolution or development, of sophisticated forms of theory of mind cognition.

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Explai on or
develop ms of
theory

"the unique aspects of human cognition ... were driven by, or even constituted by, social co-operation"
(Moll & Tomasello 2007)

"perception, action, and cognition are grounded in social interaction"
(Sebanz & Knoblich 2008)

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Explain the emergence, in evolution or development, of sophisticated forms of theory of mind cognition.

conjecture

The existence of abilities to engage in joint action partially explains how sophisticated forms of theory of mind cognition emerge in evolution or development (or both)

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(Behne et al 2005)

cooperatively pulling handles in sequence to make a dog-puppet sing

(Brownell et al 2006)

bouncing a ball on a large trampoline together

(Tomasello & Carpenter 2007)

pretending to row a boat together

painting a house together
(Bratman 1992)

lifting a heavy sofa together
(Velleman 1997)

preparing a hollandaise sauce together
(Searle 1990)

going to Chicago together
(Kutz 2000)

walking together
(Gilbert 1990)

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first objection

Sophisticated theory of mind cognition emerges before joint action

Theory of mind *abilities* are widespread

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- development tied to acquisition of executive function and language

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(b) scarce cognitive resources

- attention

- working memory

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Propositional attitude

Relational attitude

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e.g. believes that ...

e.g. knows that ...

Relational attitude

e.g. excited by ...

e.g. engaged in ...

Propositional attitude	Relational attitude
e.g. believes that ...	e.g. excited by ...
e.g. knows that ...	e.g. engaged in ...
arbitrarily nestable contents	no contents
uncodifiably complex effects on action	parameter-setting effects on action
permit mistakes about identity and existence	enable tracking limited range of true and false beliefs

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2nd objection
Joint action presupposes sophisticated theory of mind cognition

shared intention

‘I take a collective action to involve a collective [shared] intention.’ (Gilbert 2006, p. 5)

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‘the key property of joint action lies in its internal component [...] in the participants’ having a “collective” or “shared” intention.’
(Alonso 2009, pp. 444-5)

‘Shared intentionality is the foundation upon which joint action is built.’ (Carpenter 2009, p. 381)

“the partners ... have to be aware that they are pursuing a joint goal, which both jointly intend”
(Wareneken, Graefenhain & Tomasello 2011)

What is shared intention?

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Functional characterisation

Substantial account

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shared intention serves to (a) coordinate activities, (b) coordinate planning and (c) structure bargaining

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Substantial account

We have a shared intention that we J if

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"3. 1 and 2 are common knowledge between us"

(Bratman 1993: View 4)

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(Bratman 2011, p. 11)

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2. Shared intention requires sophisticated theory of mind cognition.

Therefore:

3. Abilities to engage in joint action could play no significant role in explaining how sophisticated theory of mind cognition emerges.

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4 Supposedly paradigm cases are not joint actions.

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Grounding

events $D_1, \ldots D_n$ *ground* E, if:

$D_1, \ldots D_n$ and E occur;

$D_1, \ldots D_n$ are each (perhaps improper) parts of E; and

every event that is a proper part of E but does not overlap $D_1, \ldots D_n$ is caused by some or all of $D_1, \ldots D_n$.

Agency

For an individual to be among the agents of an event is for there to be actions $a_1, \ldots a_n$ which ground this event where the individual is an agent of one or more of these actions.

(Adapted from Pietroski 1998)

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Detour
Goals are not intentions

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It is possible to represent goal-directed actions without representing intentions.

End Detour

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G is a collective goal

(a) it is a distributive goal;

(b) the actions are coordinated; and

(c) coordination of this type would normally facilitate occurrences of outcomes of this type.

"we need a principled way of distinguishing genuine joint actions from mere joint happenings or joint doings."

(Pacherie 2011, 175)

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Joint

Not joint

Joint

Jack and Sue walk together

Not joint

Jack and Sue walk alongside each other

(Gilbert 1990)

Joint	Not joint
Jack and Sue walk together	Jack and Sue walk alongside each other (Gilbert 1990)
We collectively perform a dance by running to a shelter at the same time	We each individually run to a shelter at the same time (in response to a sudden shower). (Searle 1990, 92)

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(Pacherie 2011, 175)

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(Pacherie & Dokic 2006, 110)

G is a collective goal

(a) it is a distributive goal;

(b) the actions are coordinated; and

(c) coordination of this type would normally facilitate occurrences of outcomes of this type.

sting
sting
sting
sting
sting
sting
sting
sting
death of fly

Goal-directed joint action: an event with two or more agents which, taken as a whole, is directed to a goal.

G is a distributive goal: it is an outcome to which each agent's actions are individually directed and it is possible that: all actions succeed relative to this outcome.

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Each agent most wants and expects the goal to occur as a common effect of all their goal-directed actions.

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etc...

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challenge
Explain the emergence, in evolution or development, of sophisticated forms of theory of mind cognition.
conjecture
The existence of abilities to engage in joint action partially explains how sophisticated forms of theory of mind cognition emerge in evolution or development (or both)
2nd objection
Joint action presupposes sophisticated theory of mind cognition

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3rd objection

But how ~~does~~ could it work?

failed reach

point

source: Hare & Tomasello (2004)

The problem of opaque means

The problem of false belief

your-goal-is-my-goal

your-goal-is-my-goal

1. We are about to engage in some joint action* or other

2. I am not about to change my goal.

Therefore:

3. Your actions also will be directed to this goal.

[*in at least the minimal sense associated with distributive goals]

failed reach

point

source: Hare & Tomasello (2004)

failed reach

point

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"to understand pointing, the subject needs to understand more than the individual goal-directed behaviour. She needs to understand that ... the other attempts to communicate to her ... and ... the communicative intention behind the gesture"

(Moll & Tomsello 2007)

failed reach

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3rd objection

But how ~~does~~ could it work?

joint action (ability to share goals)
minimal theory of mind cognition
understanding communicative intent
other stuff
communication by language
other stuff
full-blown theory of mind cognition