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

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

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

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)

coopertatively pulling handles in sequence to make a dog-puppet sing  
(Brownell et al 2006)

bouncing a cube on a large trampoline together  
(Warneken, Chen & Tomasello 2006)

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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Sophisticated forms of theory of mind cognition emerge before joint action.
Theory of mind *abilities* are widespread
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18-month-olds point to inform, and predict actions based on false beliefs (Liszkowski et al 2006)

(Onishi & Baillargeon 2005; Southgate et al 2007)
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**18-month-olds** point to inform, and predict actions based on false beliefs

**Scrub-jays** selectively re-cache their food in ways that deprive competitors of knowledge of its location

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- takes years to develop
- development tied to acquisition of executive function and language
- development facilitated by training and siblings
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- working memory

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(Davidson 2003: 697)
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Propositional attitude  Relational attitude
<table>
<thead>
<tr>
<th>Propositional attitude</th>
<th>Relational attitude</th>
</tr>
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<tbody>
<tr>
<td>e.g. believes that ...</td>
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</tr>
<tr>
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<td>e.g. encountered ...</td>
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<td>uncodifiably complex</td>
<td>parameter-setting</td>
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<tr>
<td>effects on action</td>
<td>effects on action</td>
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<tr>
<td>permit mistakes about</td>
<td>enable tracking</td>
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<tr>
<td>identity and existence</td>
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</tr>
<tr>
<td></td>
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Wellman & Phillips 2001  
Apperly & Butterfill 2009
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Sophisticated theory of mind cognition emerges before joint action.
joint action (ability to share goals) ➔ minimal theory of mind cognition

[other stuff]

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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 sine qua non of collaborative action is a joint goal [shared intention] and a joint commitment’

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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
What is shared intention?

**Functional characterisation**
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
“1. (a) I intend that we J and (b) you intend that we J
“2. I intend that we J in accordance with and because of la, lb, and meshing subplans of la and lb; you intend [likewise] …
“3. 1 and 2 are common knowledge between us”

(Bratman 1993: View 4)
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Intentions about intentions

Knowledge of others’ knowledge of intentions about intentions
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‘shared intentional agency consists, at bottom, in interconnected planning agency of the participants.’

(Bratman 2011, p. 11)

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(Bratman 1993: View 4)
1. All (significant) joint actions require shared intention.

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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Detour

Goals are not intentions
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intention or other goal-state

act

out

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It is possible to represent goal-directed actions without representing intentions.
End Detour
Goal-directed joint action: an event with two or more agents which, taken as a whole, is directed to a goal.
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(Pacherie 2011, 175)
Joint

Jack and Sue walk together

Not joint

Jack and Sue walk alongside each other

(Gilbert 1990)
Joint

Jack and Sue walk together

We collectively perform a dance by running to a shelter at the same time

Not joint

Jack and Sue walk alongside each other

We each individually run to a shelter at the same time (in response to a sudden shower).

(Searle 1990, 92)

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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.

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

(Pacherie & Dokic 2006, 110)

“...seems useful to draw a distinction between elementary or thin forms of joint action common to humans and other social mammals and sophisticated or thick forms of joint action, perhaps unique to the human species.”

(Pacherie 2011, 175)
sting sting sting sting sting sting sting sting
death of fly
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Each agent most wants and expects each of the other agents to perform activities directed to the goal.

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3rd objection
But how does 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)
“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”

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