Intention and Motor Representation in Joint Action

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(Gilbert 2006, p. 5)

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

(Tomasello 2008, p. 181)

'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)
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premise:
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Kourtis et al., subm.
Cue Stimulus

Kourtis et al., subm.

NoGo  Individual Action  Joint Action

200 ms

1000 ms
Kourtis et al., subm.

Cue Stimulus

NoGo  Individual Action  Joint Action

Foreperiod
No Action

1000 ms
200 ms
1000 ms
Joint Planning

Kourtis et al., subm.

![Diagram showing the sequence of stimulus presentation with annotations for no-go, individual action, and joint action conditions. The timeline is marked with 200 ms intervals between cue and imperative stimuli, and a 1000 ms foreperiod before the response.](image-url)
Kourtis et al., subm.
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How could reciprocal agent-neutral motor representation ever enable any joint action?
Move it from there to here
Move it from there to here

get it

move it

position it

reach

grasp

move

arrive

release

reach

grasp

move

place

release
Move it from there to here

get it
reach
hand-1

grasp
move
arrive
release

hand-2

move it

position it

reach
grasp

move
place
release
Move it from there to here
Move it from there to here

joint action: same goal

get it

hand-1
reach grasp move

hand-2

move it

arrive release

move position it

reach grasp

move place release

similar timing problem
joint action: same goal

Move it from there to here

get it
reach
grasp
move
arrive
release
reach
grasp
move
place
release

same planning

similar timing problem
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premise:
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question: Does reciprocal agent-neutral motor representation also play a role in explaining what joint action is? [Yes]

challenge: How could social motor representation and shared intention harmoniously contribute to joint action?
What is the relation between a purposive action and the outcome or outcomes to which it is directed?
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intention or motor representation

wave

action

reach

grasp

scratch

out
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Sufficient conditions

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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(Alonso 2009, pp. 444-5)
What are intentions for?
(Zhang and Rosenbaum 2007)
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(small reward) \( \rightarrow \) \( \rightarrow \) \( \rightarrow \) (big reward)

\( \text{ONE WAY} \)

\( X \) start here
moving an object together (Kourtis et al 2010)
tidying up the toys together (Behne et al 2005)
cooperatively pulling handles in sequence to make a dog-puppet sing (Brownell et al 2006)
bouncing a cube on a large trampoline together (Tomasello & Carpenter 2007)
pretending to row a boat together
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reciprocal agent-neutral motor representation = shared intention?

‘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)
Head southeast on Rue Cujas toward Rue Victor Cousin. Turn right onto Rue Saint-Jacques. ...

Take RER B and get out at the Luxembourg station, from there it's less than 5 minutes walk.
Head southeast on Rue Cujas toward Rue Victor Cousin. Turn right onto Rue Saint-Jacques...
Only representations with a common format can be inferentially integrated.

Any two intentions can be inferentially integrated in practical reasoning.

My intention that I visit Paris on Friday is a propositional attitude.
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The Interface Problem
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Some joint actions involve both shared intention and reciprocal agent-neutral motor representation.
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Reciprocal agent-neutral motor representations:

i. represent outcomes;

ii. ground the purposiveness of some joint actions

Some joint actions involve both shared intention and reciprocal agent-neutral motor representation
# The Interface Problem

Reciprocal agent-neutral motor representations:

1. represent outcomes;
2. ground the purposiveness of some joint actions

Two outcomes, A and B, *match* in a particular context just if, in that context, either the occurrence of A would normally constitute or cause, at least partially, the occurrence of B or vice versa.

Some joint actions involve both shared intention and reciprocal agent-neutral motor representation.
The Interface Problem:
How are non-accidental matches possible?

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