

**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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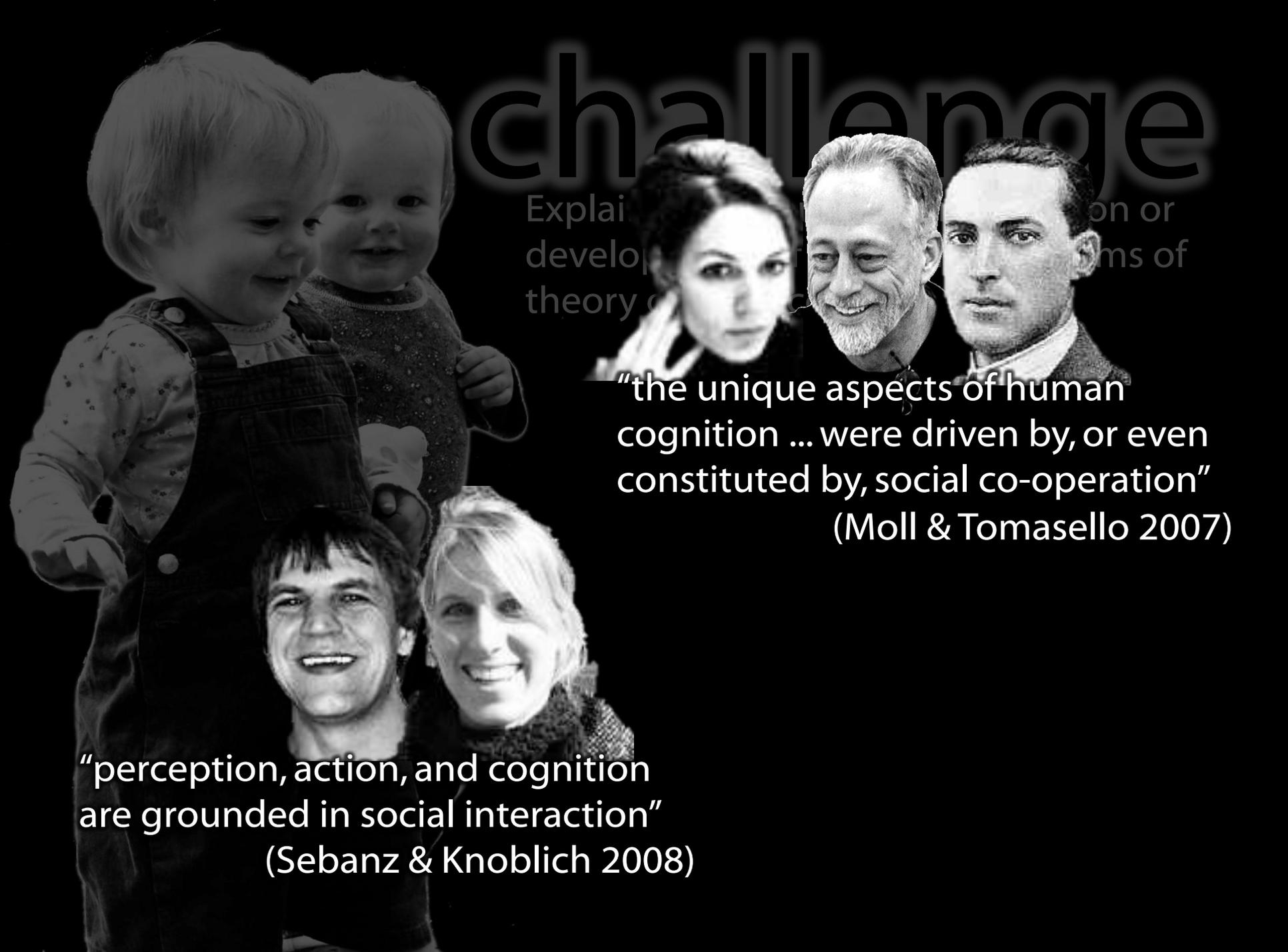


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Explaining the evolution or development of theory of mind



“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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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)

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

(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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first objection

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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Chimpanzees conceal their approach from a competitor's view, and act in ways that are optimal given what another has seen

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(a) conceptual sophistication

- takes years to develop

- development tied to acquisition of executive function and language

- development facilitated by training and siblings

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(b) scarce cognitive resources

- attention

- working memory

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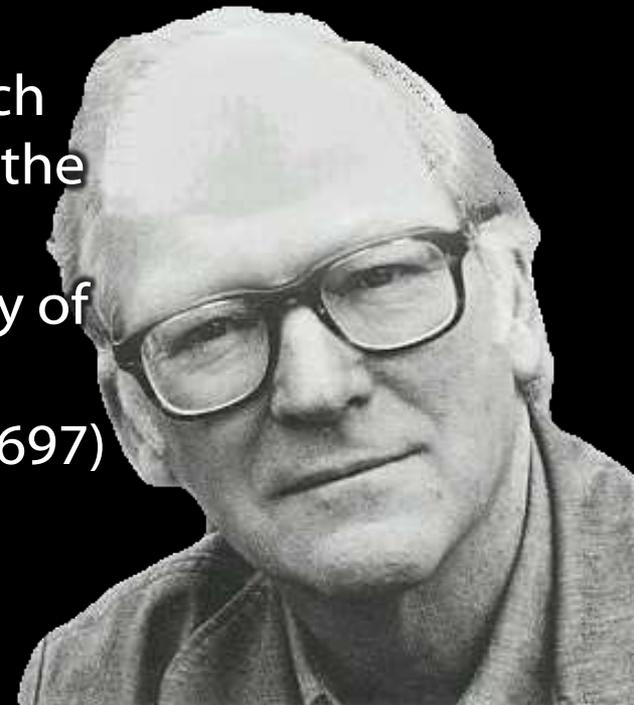
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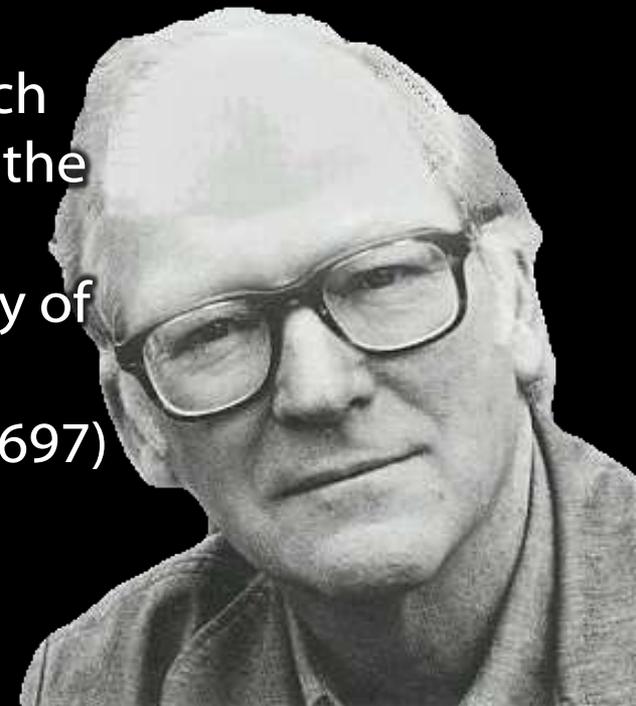
“We are stuck with our two main ways of describing and explaining things, one which treats objects and events as mindless, and the other which treats objects and events as having propositional attitudes. I see no way of bridging the gap”

(Davidson 2003:697)



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Propositional attitude

Relational attitude

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e.g. believes that ...

e.g. intends that ...

e.g. knows that ...

Relational attitude

e.g. excited by ...

e.g. encountered ...

e.g. wants apple juice

Propositional attitude

e.g. believes that ...

e.g. intends that ...

e.g. knows that ...

arbitrarily nestable
contents

uncodifiably complex
effects on action

permit mistakes about
identity and existence

Relational attitude

e.g. excited by ...

e.g. encountered ...

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no contents

parameter-setting
effects on action

enable tracking
limited range of true
and false beliefs



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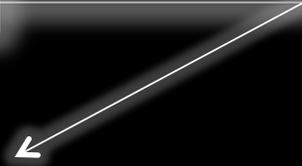
Sophisticated theory of mind cognition emerges before joint action

joint action (ability
to share goals)

minimal theory of
mind cognition

[other stuff]

sophisticated theory of
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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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[shared] intention.'

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

(Tomasello 2008, p. 181)

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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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What is shared intention?

Functional characterisation

Substantial account



What is shared intention?

Functional characterisation

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

Substantial account



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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 Ia, Ib, and
meshing subplans of Ia and
Ib; you intend [likewise] ...

“3. 1 and 2 are common
knowledge between us”

(Bratman 1993:View 4)



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Intentions about intentions



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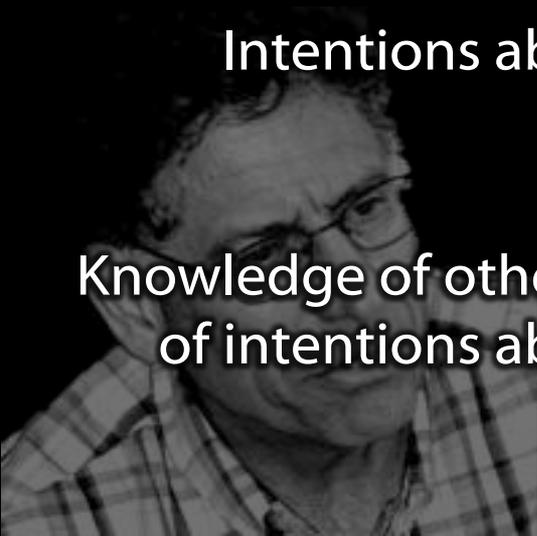
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Knowledge of others' knowledge
of intentions about intentions



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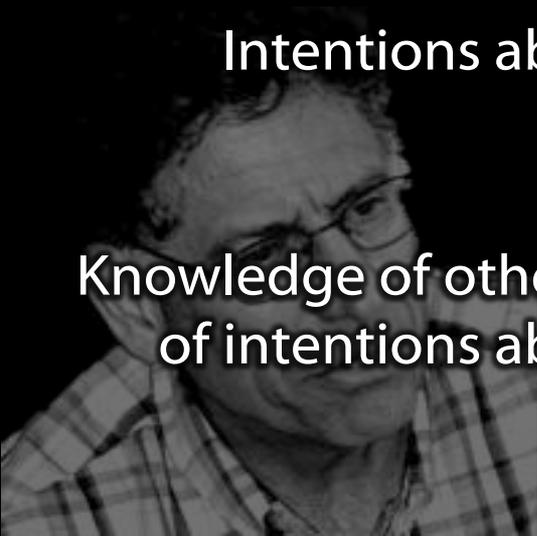
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'shared intentional agency
consists, at bottom, in
interconnected planning
agency of the participants.'

(Bratman 2011, p. 11)

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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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(not why)

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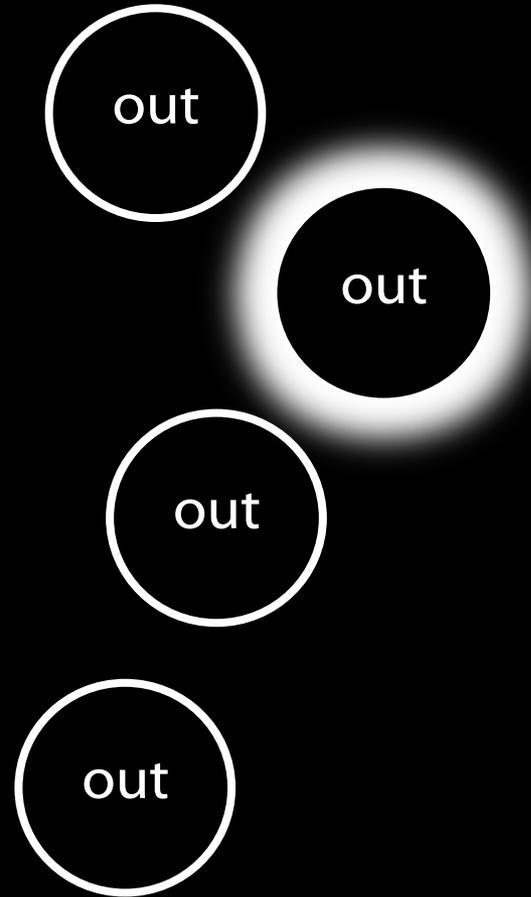
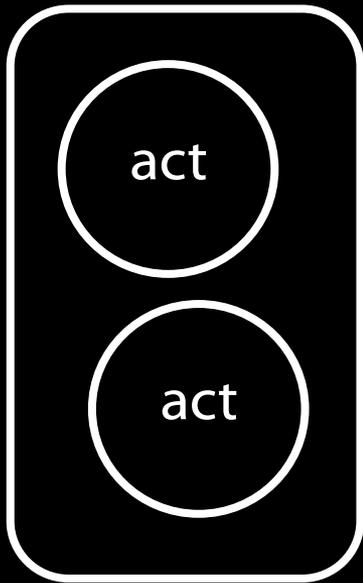
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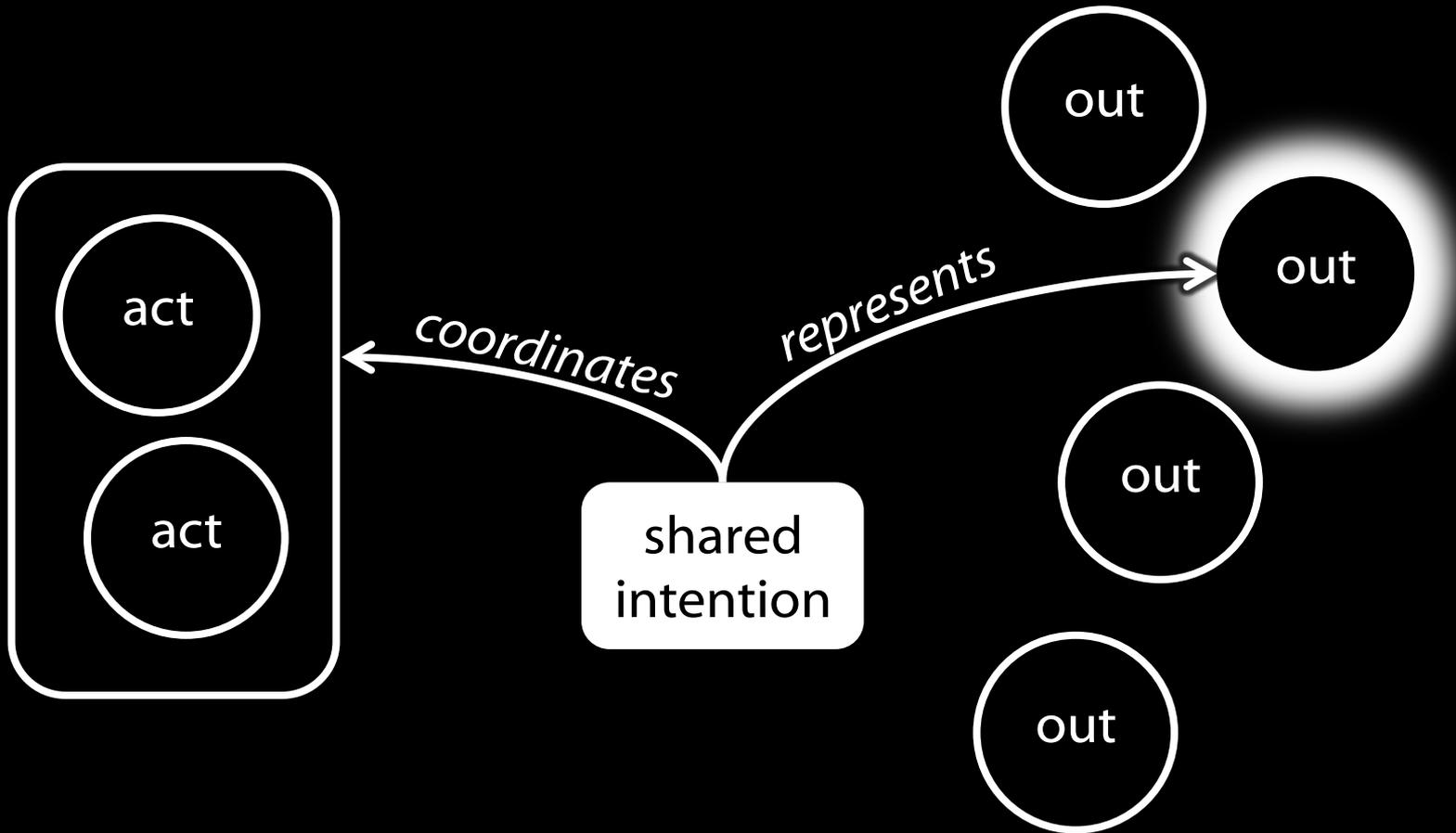
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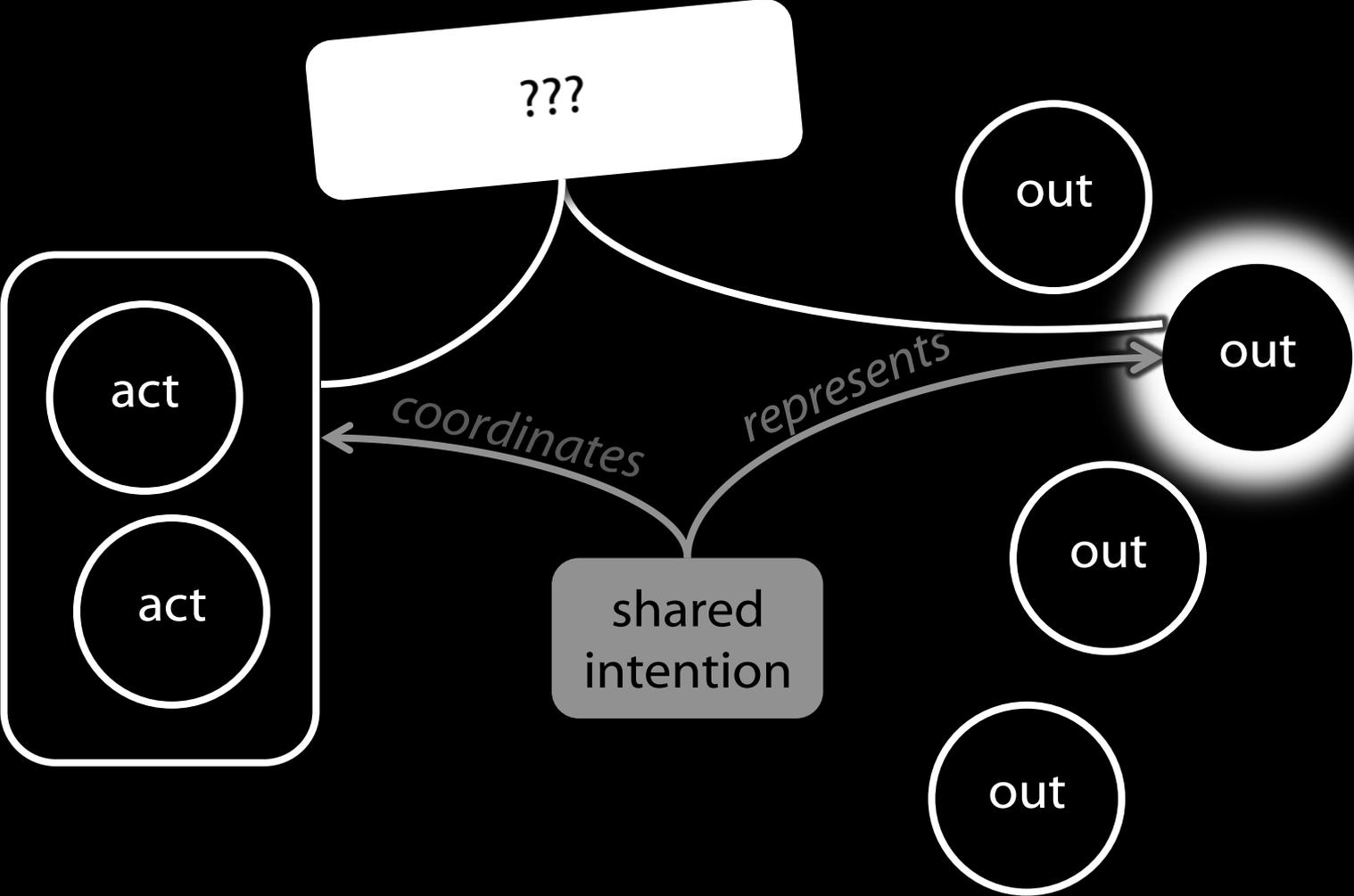
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Detour
Goals are not intentions

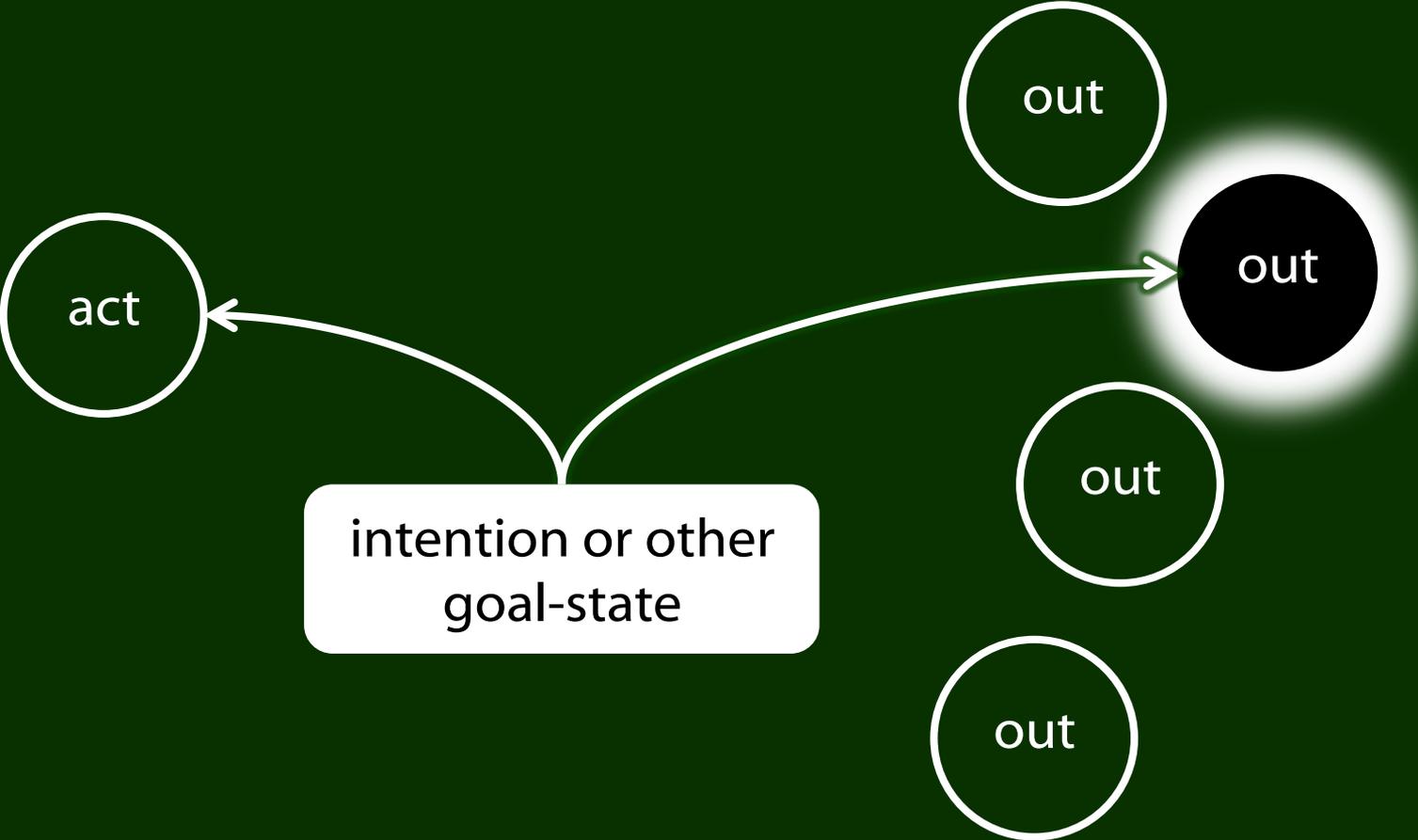
What is the relation between an action and the goal (or goals) to which it is directed?



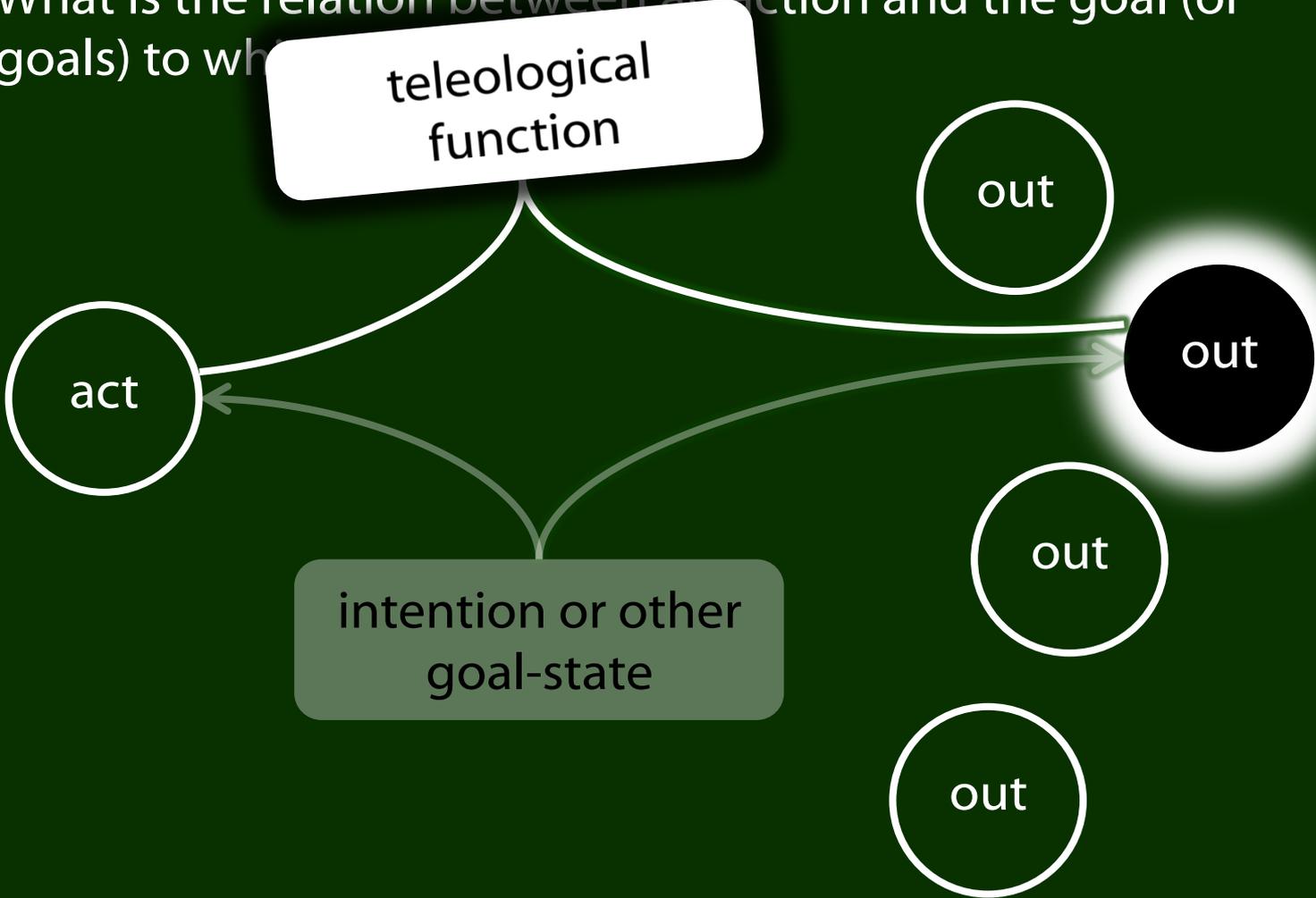
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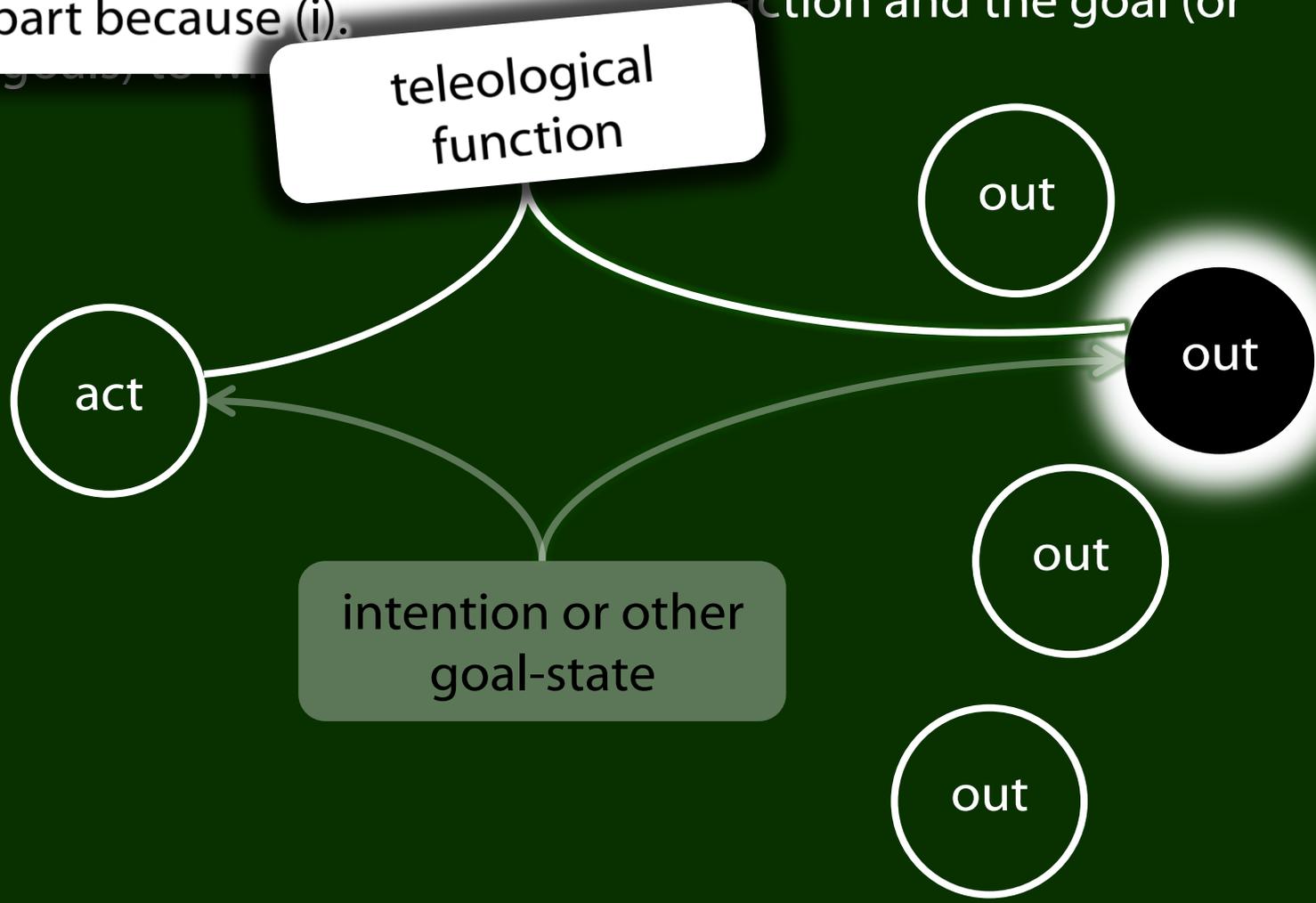


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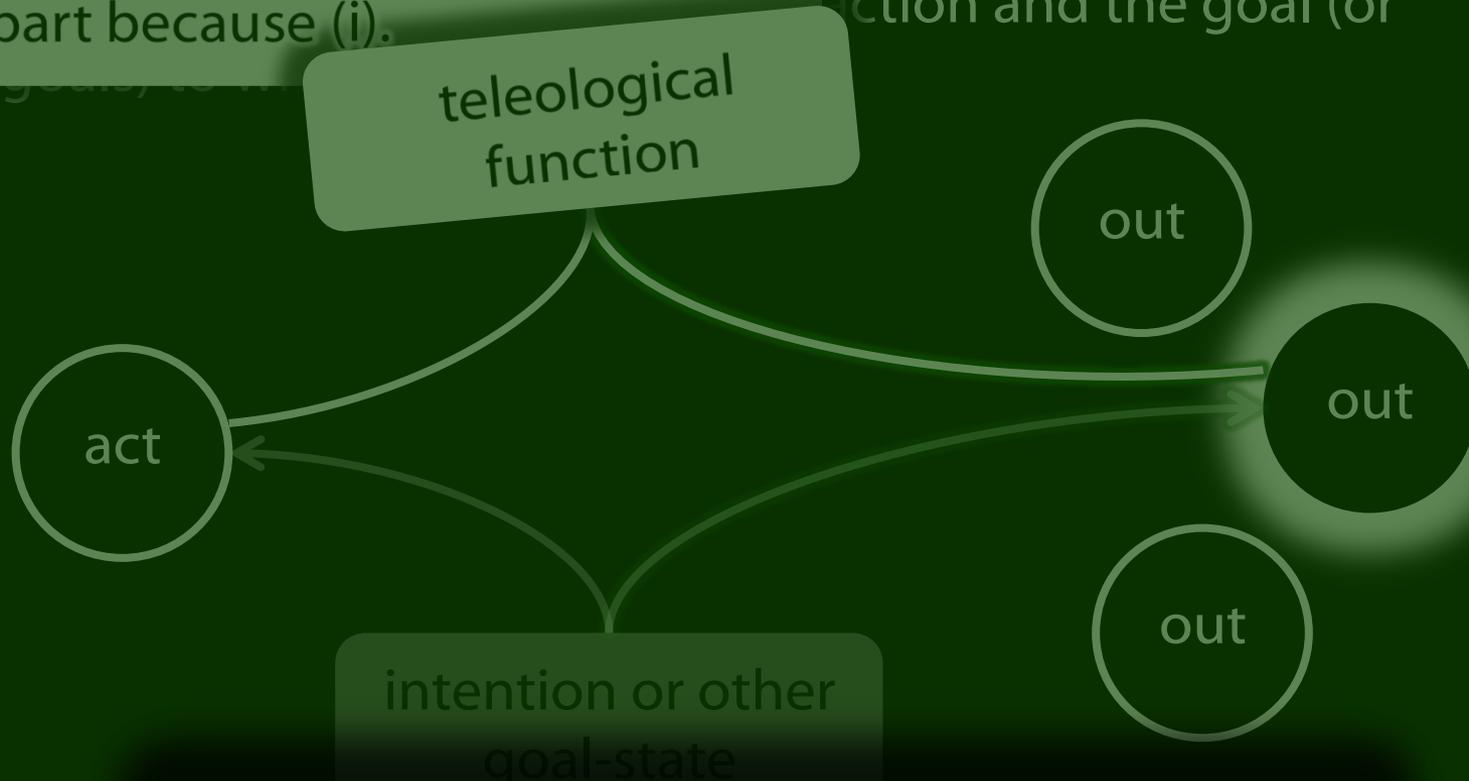
(i) in the past, actions of this type have caused outcomes of this type; (ii) this action happens now in part because (i).

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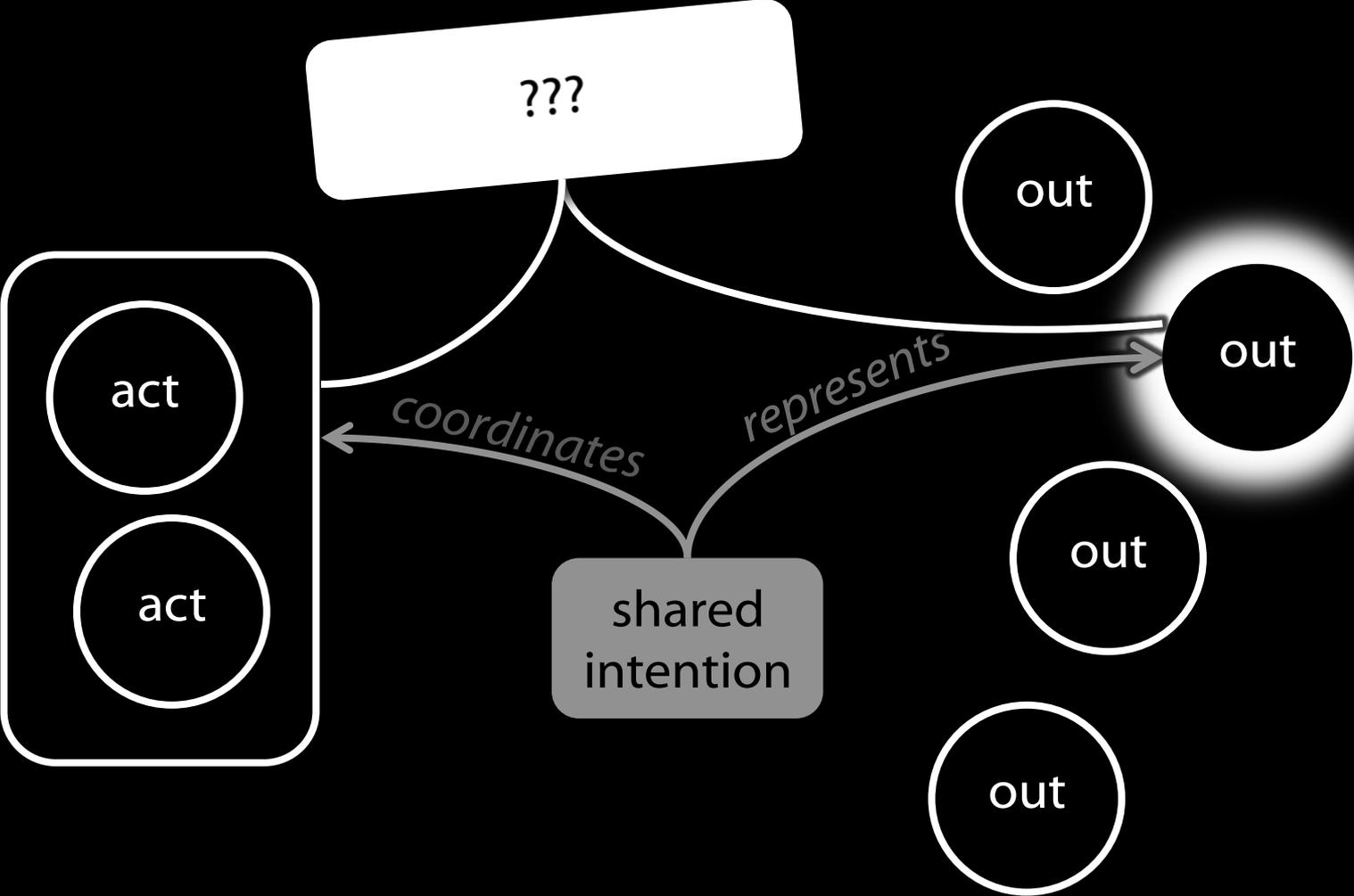
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It is possible to represent goal-directed actions without representing intentions.

End Detour

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(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

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

(Searle 1990, 92)

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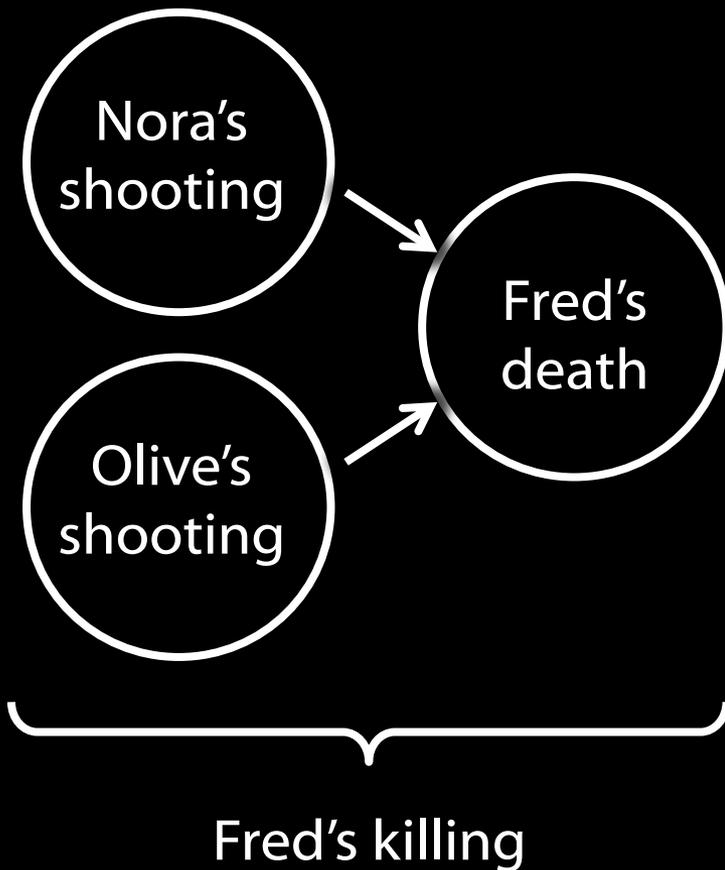
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- (a) it is a distributive goal;
- (b) the actions are coordinated; and
- (c) coordination of this type would normally facilitate occurrences of outcomes of this type.

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“It ... 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 & Dokic 2006, 110)

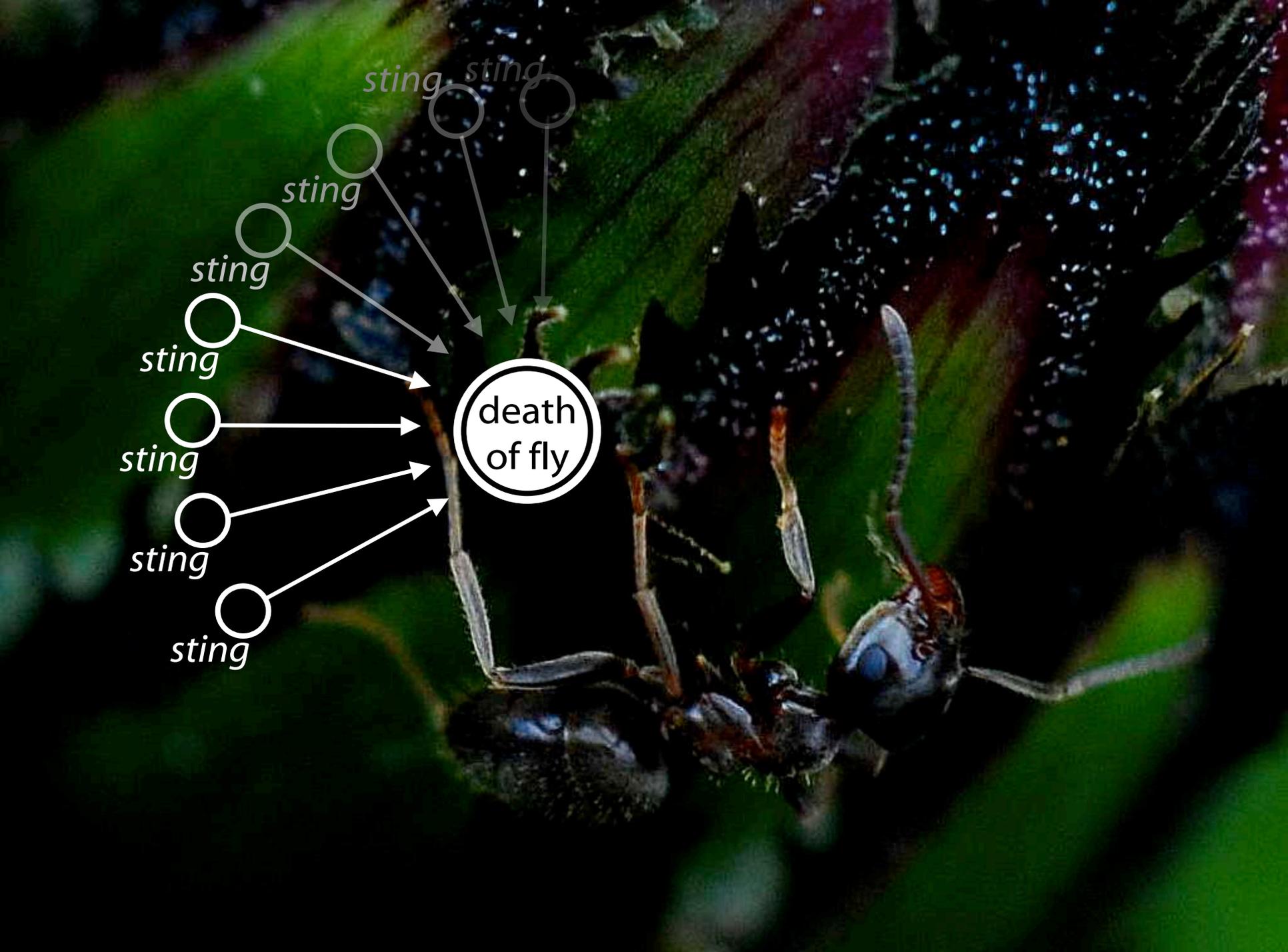
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sting sting

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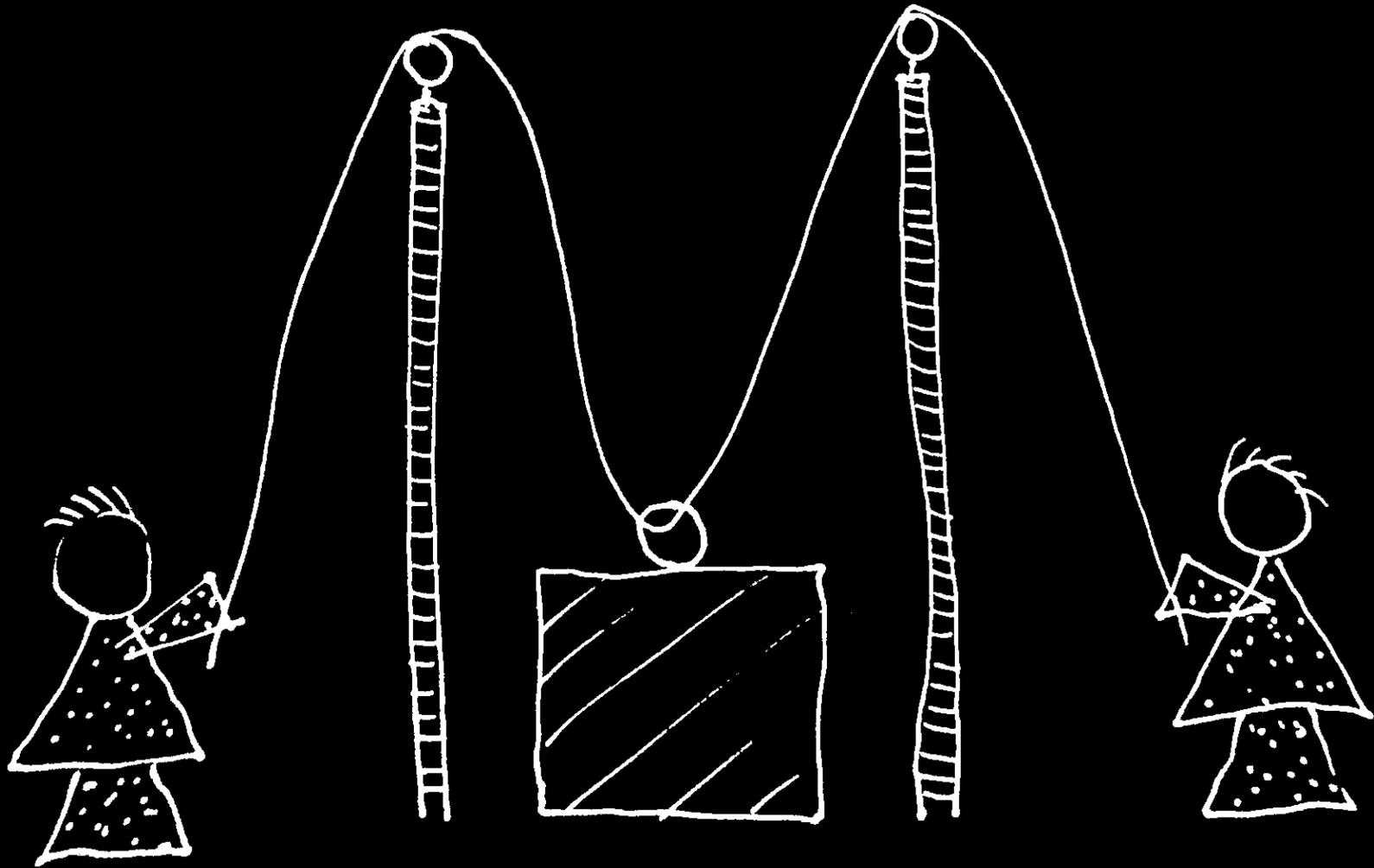
sting

sting

sting

sting

death
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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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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)



challenge

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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)

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 & Tomasello 2007)

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