

Intention and Motor Representation in Joint Action

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'I take a collective action to involve a collective [shared] intention.'

(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)

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Reciprocal agent-neutral motor representation
enables some joint actions

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Kourtis et al., subm.



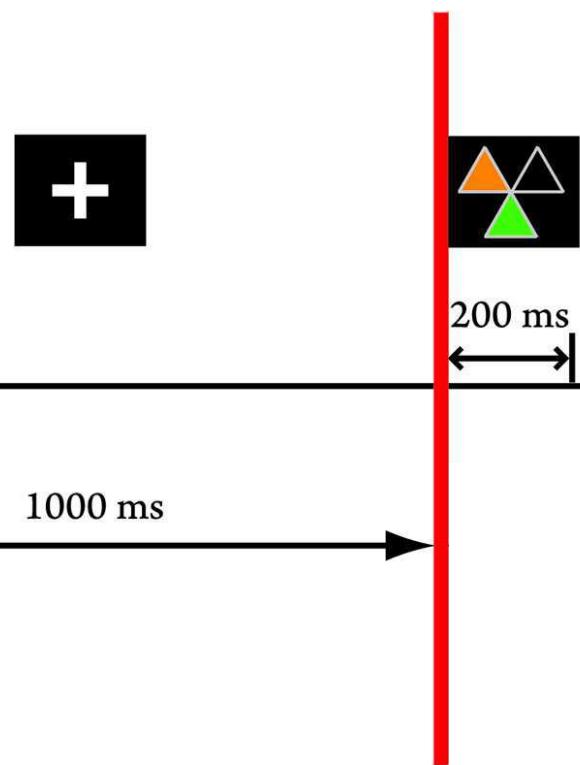
Kourtis et al., subm.



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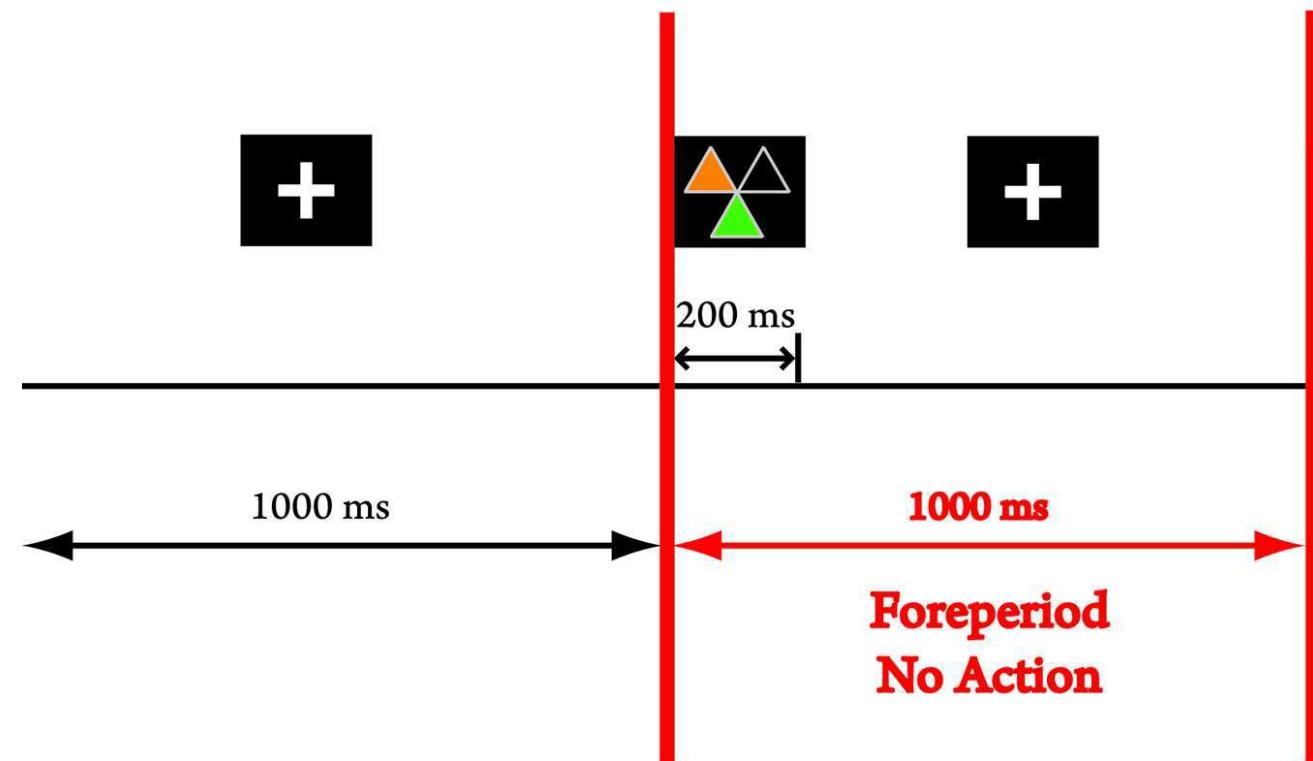
Cue Stimulus



Kourtis et al., subm.



Cue Stimulus

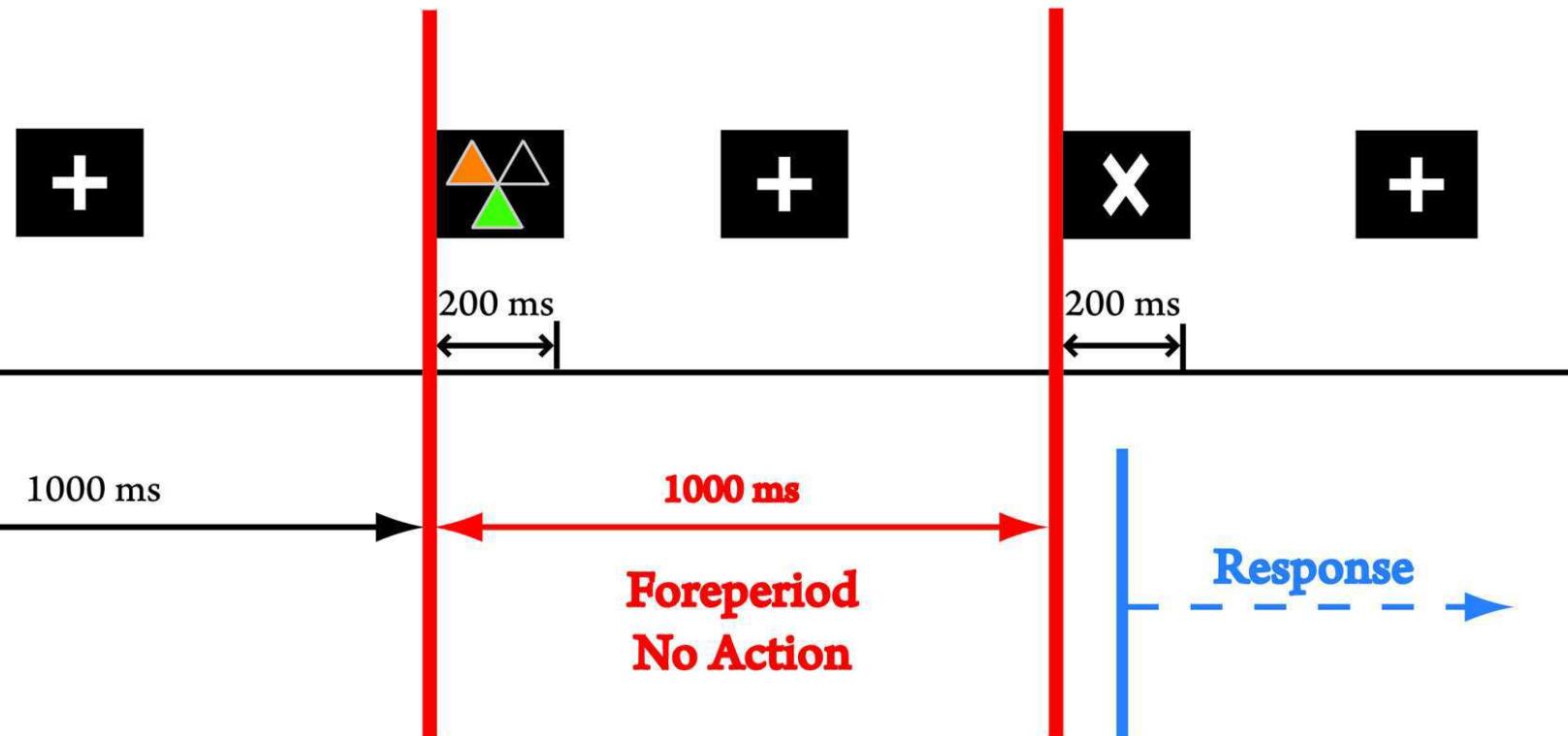


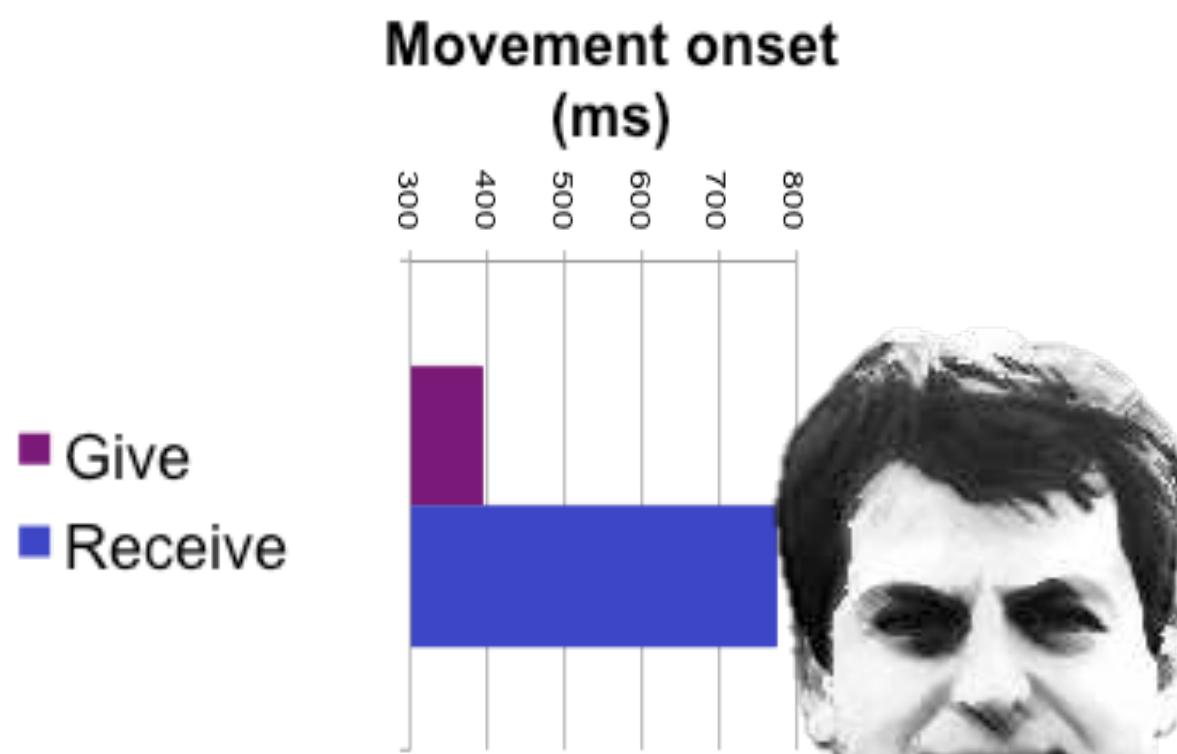
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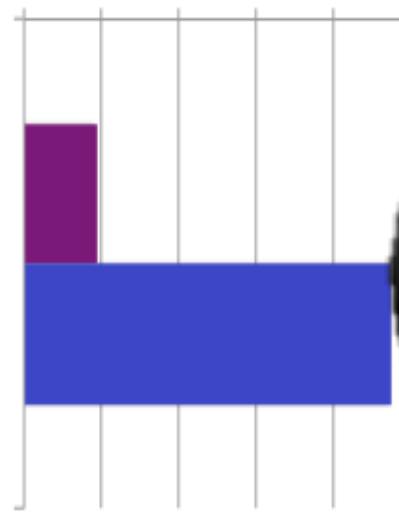
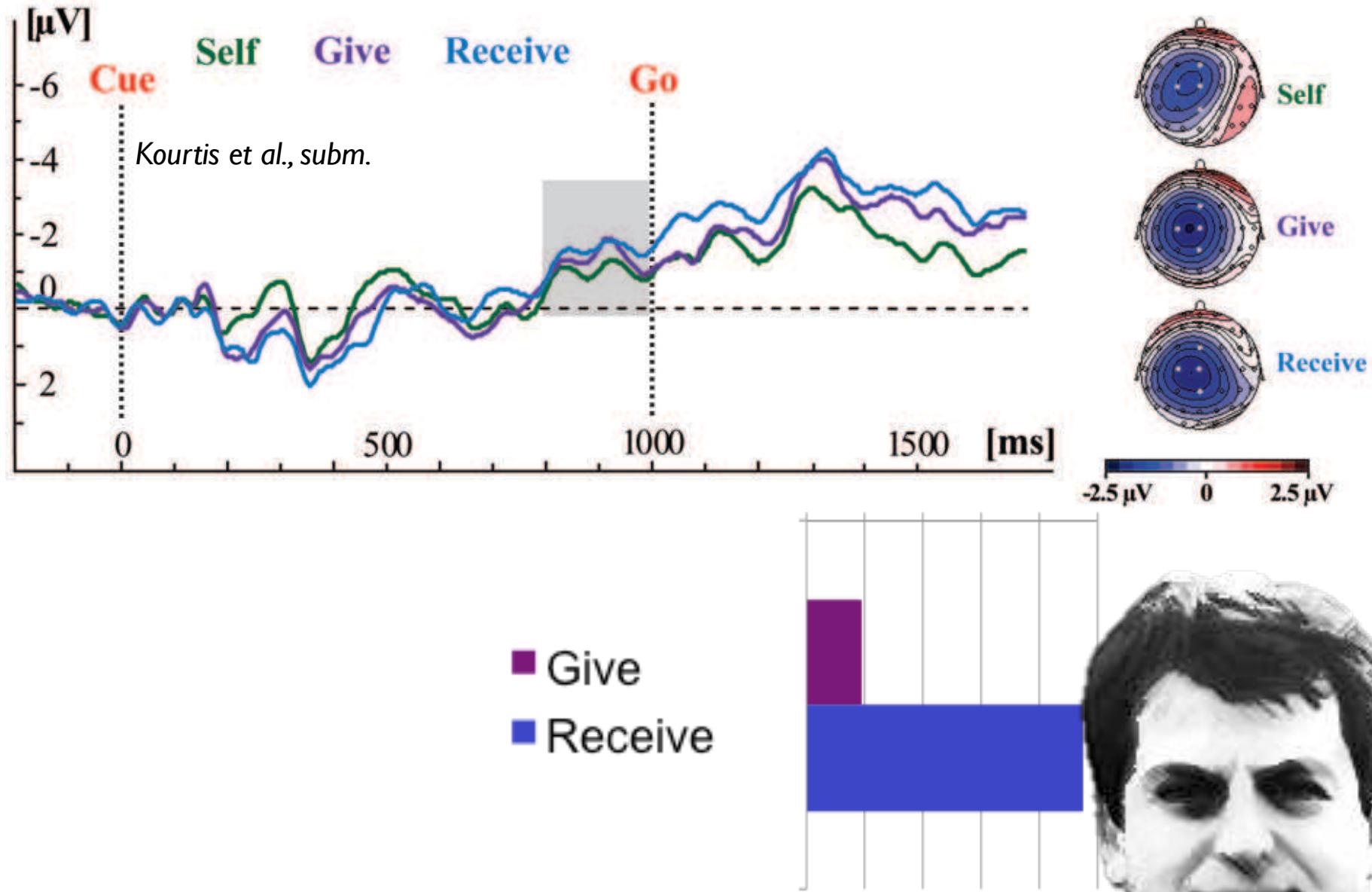


Cue Stimulus

Imperative Stimulus

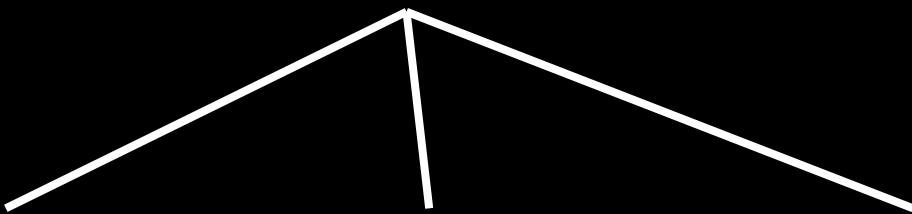




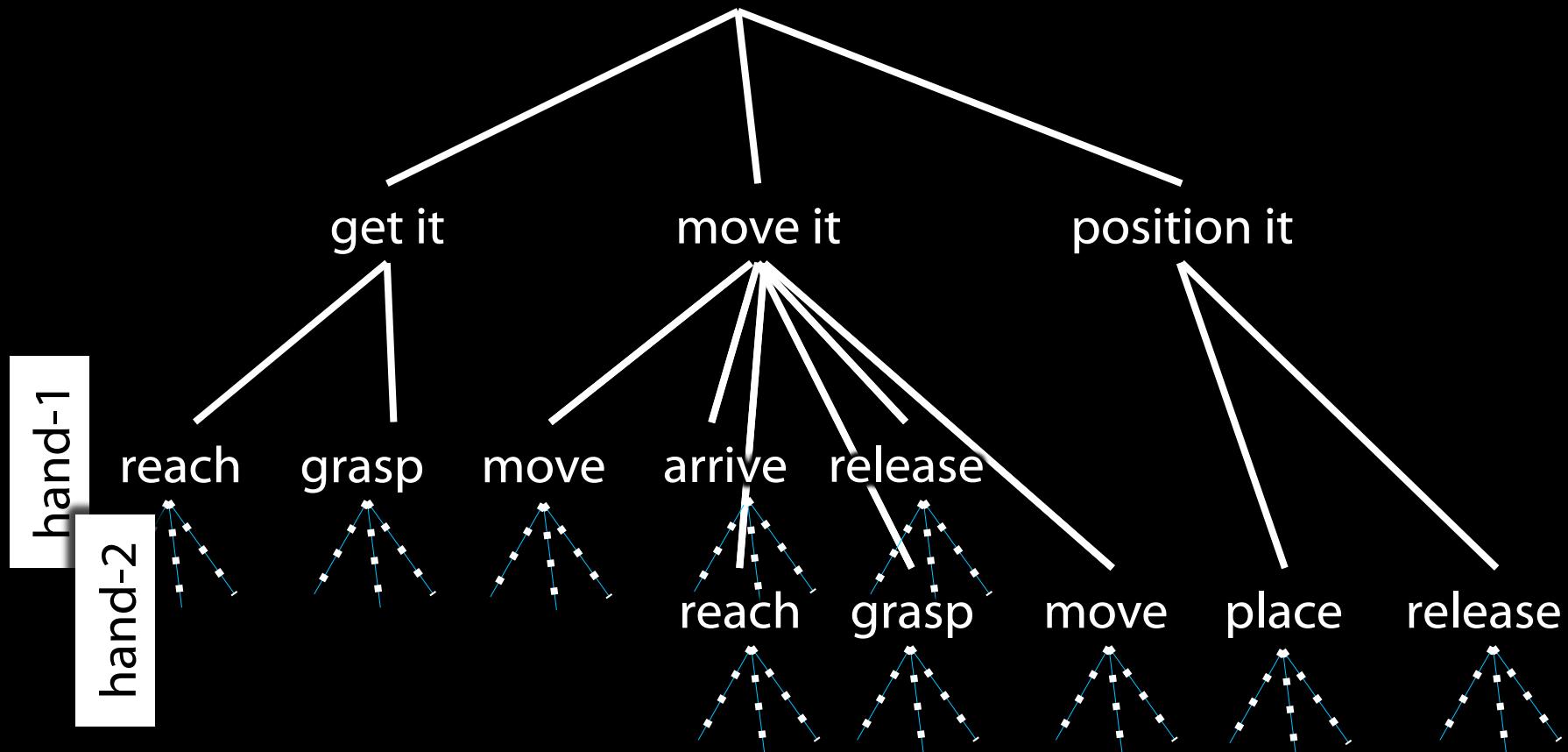


How could reciprocal agent-neutral motor representation ever enable any joint action?

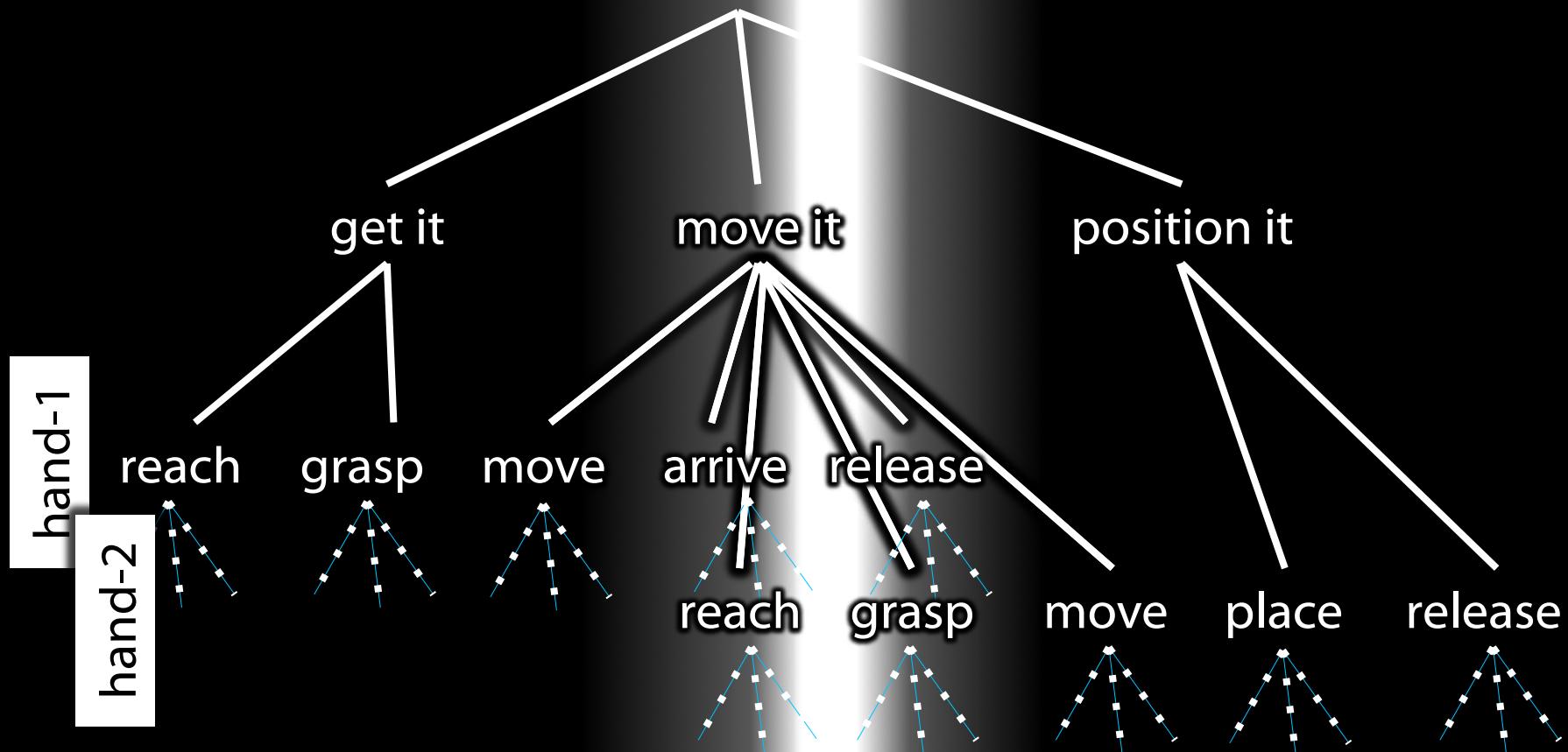
Move it from there to here



Move it from there to here

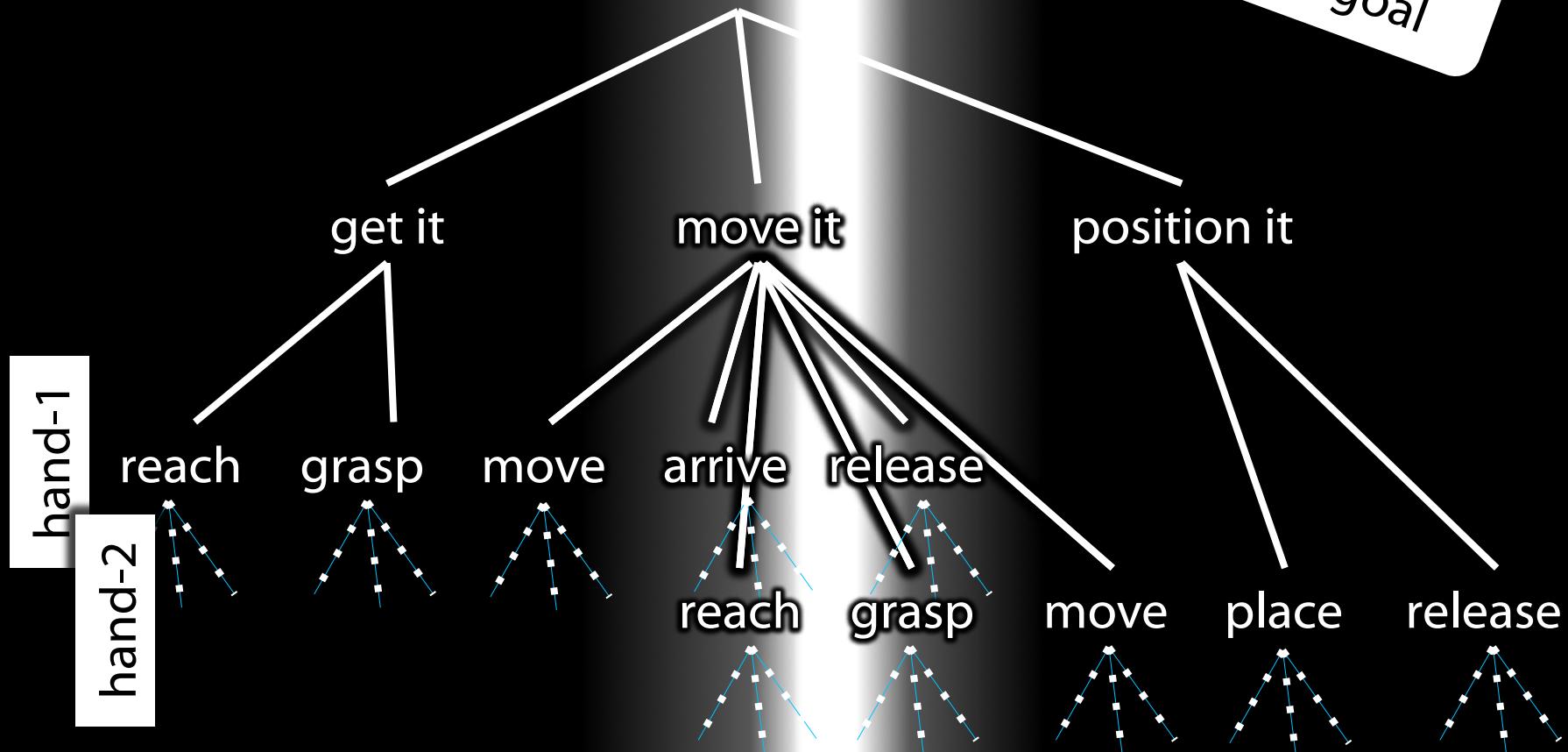


Move it from there to here



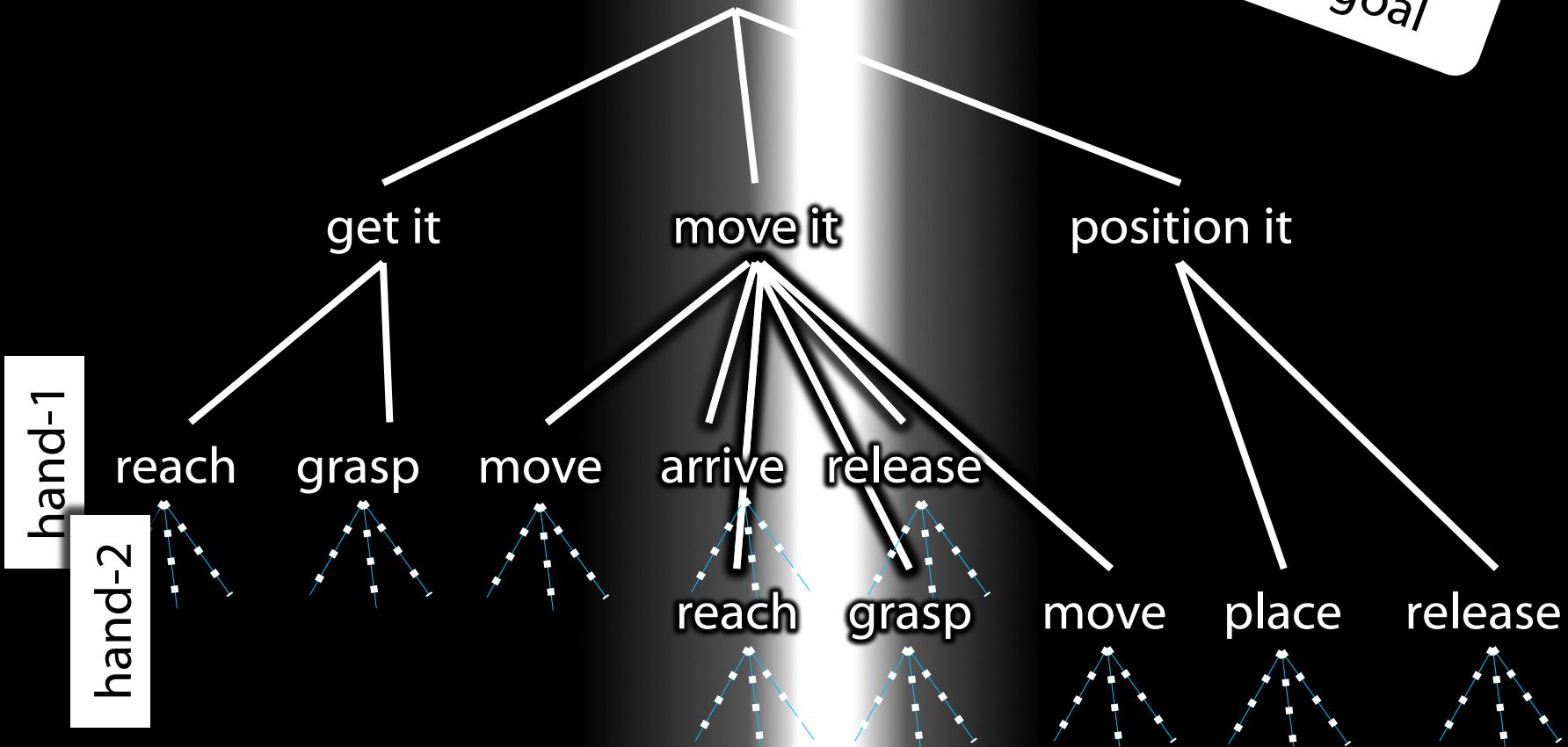
*joint action:
same goal*

Move it from there to here



Move it from there to here

joint action:
same goal



similar timing
problem

Move it from there to here

joint action:
same goal

get it

move it

position it

hand-1

reach

grasp

move

arrive

release

hand-2

reach

grasp

move

place

release

similar timing
problem

same
planning

Move it from there to here

joint action:
same goal

get it

move it

position it

hand-1

reach

grasp

move

arrive

release

hand-2

reach

grasp

move

place

release

inhibition
needed

similar timing
problem

same
planning

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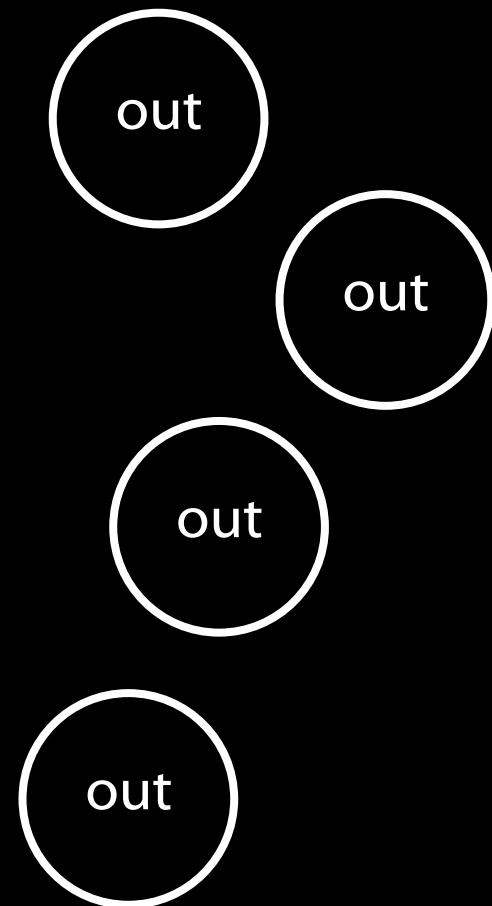
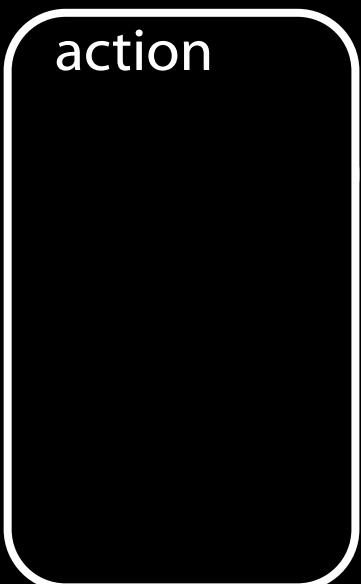
question:

Does reciprocal agent-
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representation also play a
role in explaining what
joint action is? [Yes]

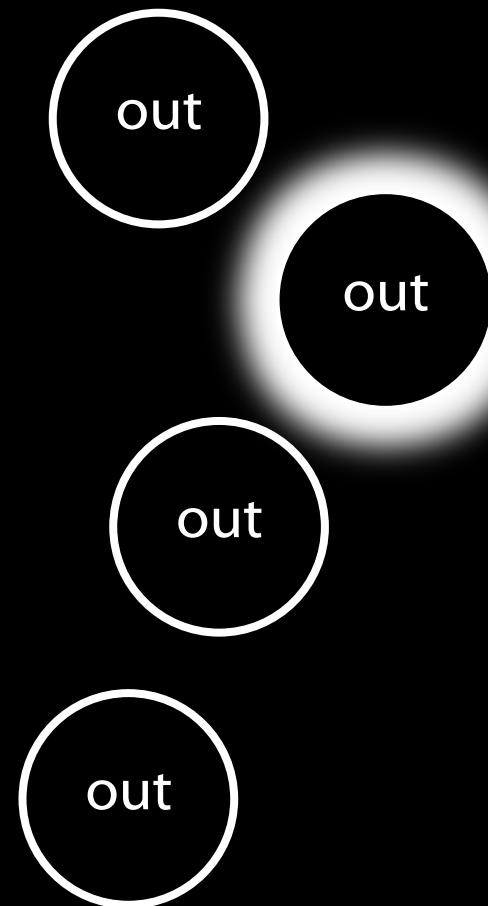
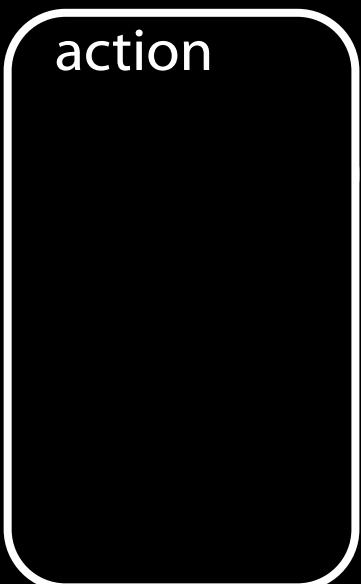
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How could social motor
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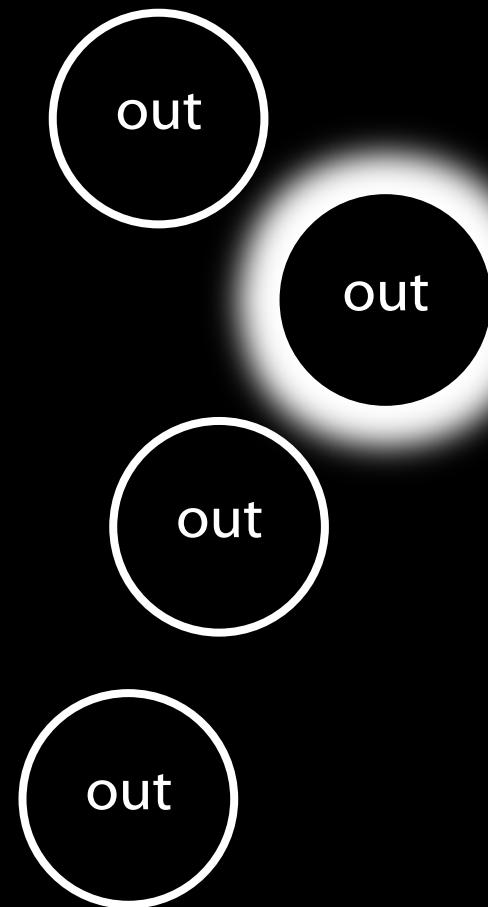
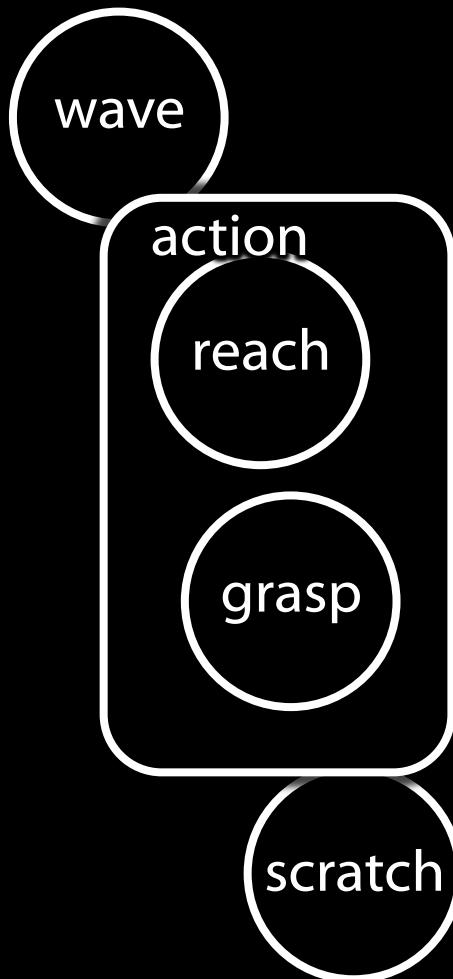
What is the relation between a purposive action and the outcome or outcomes to which it is directed?



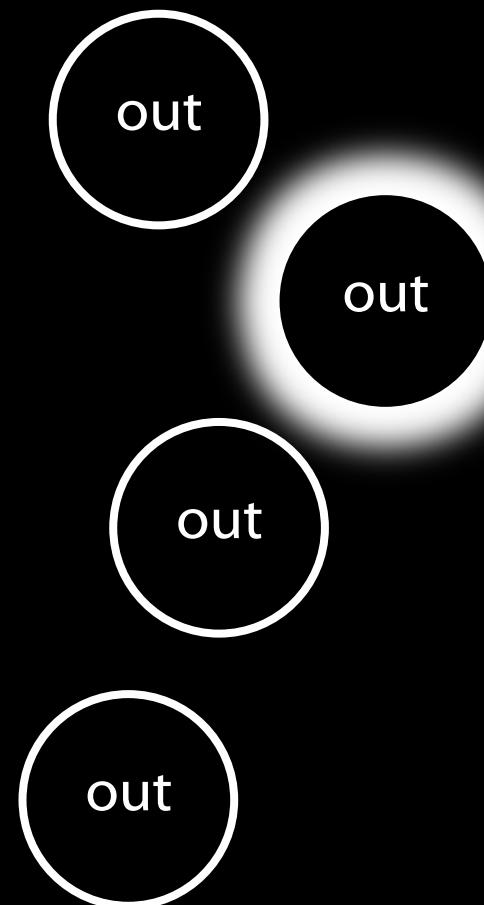
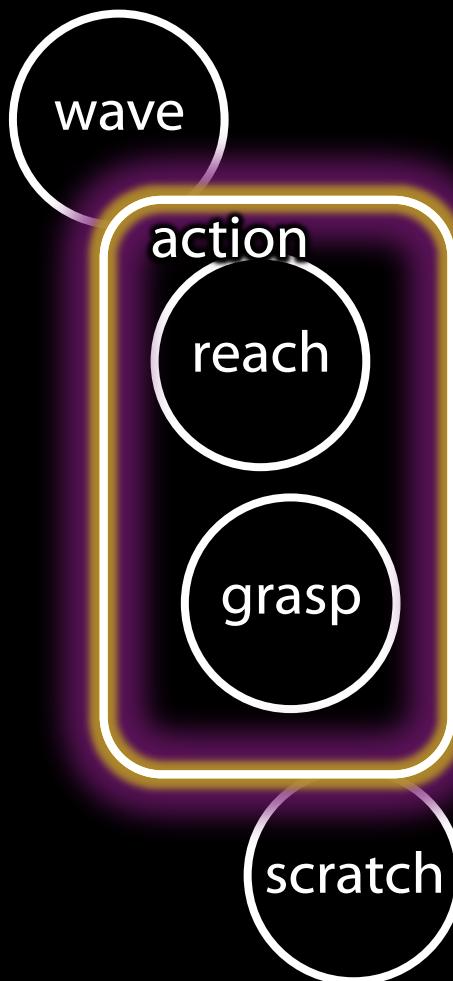
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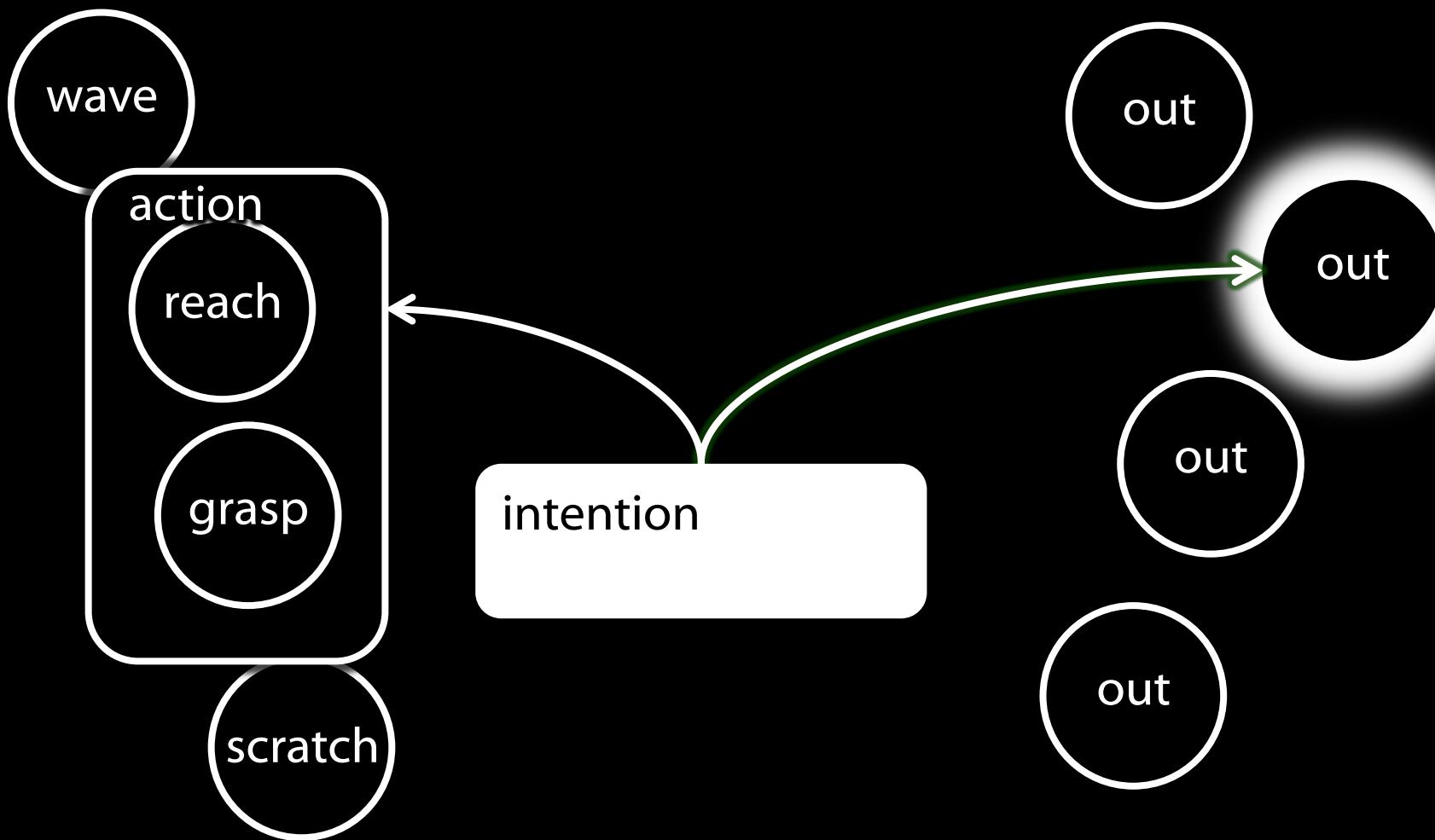
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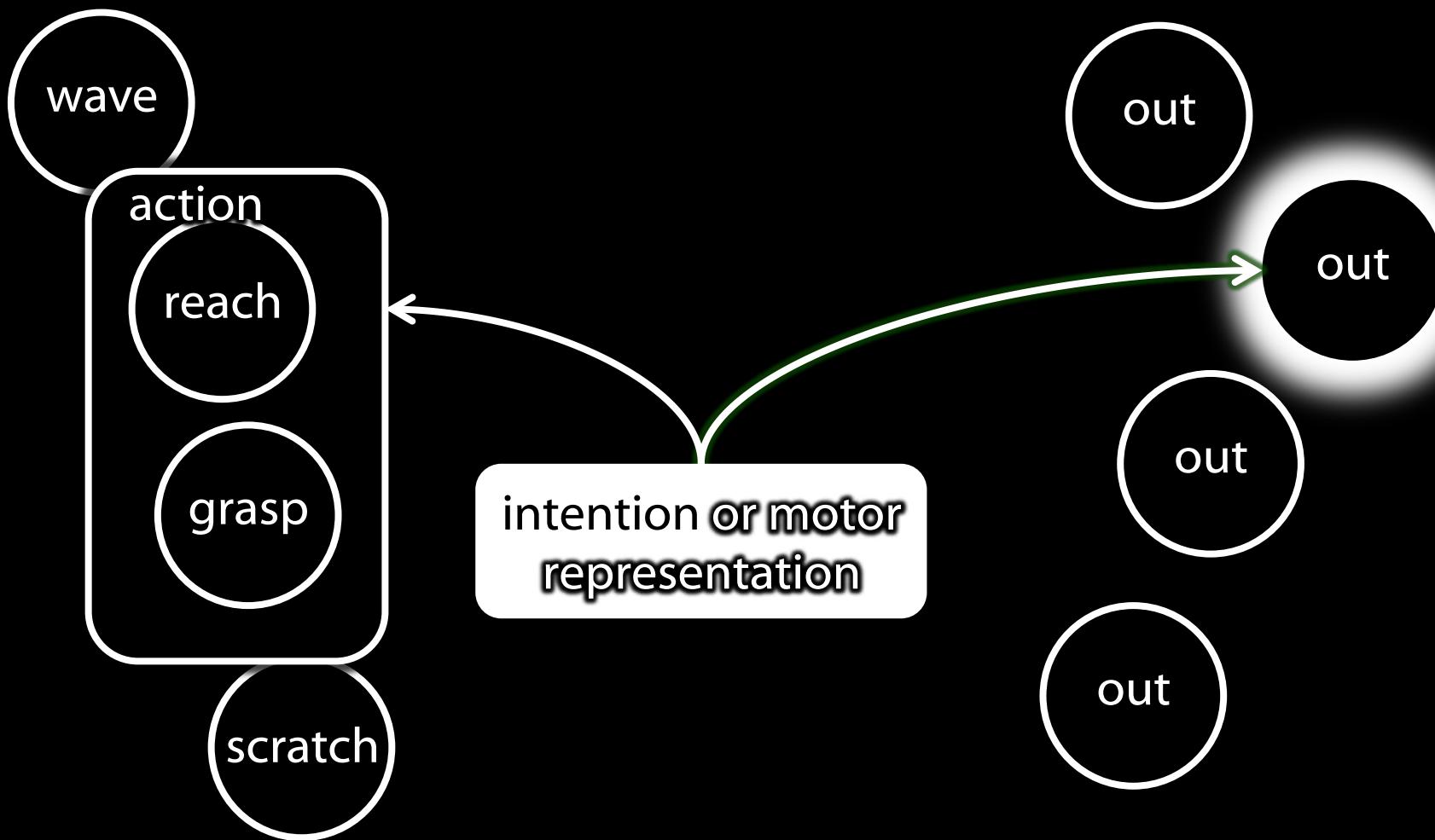
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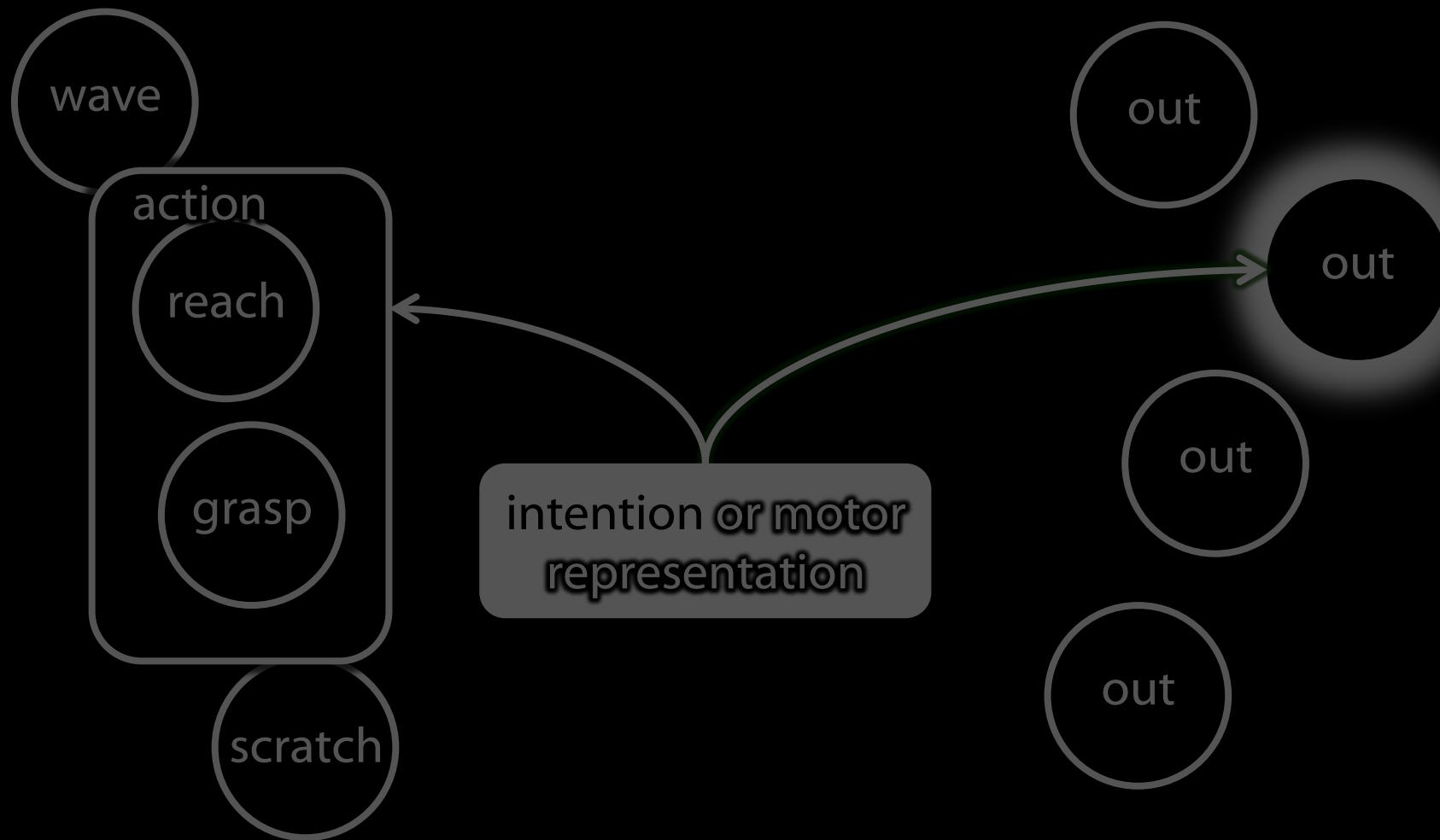
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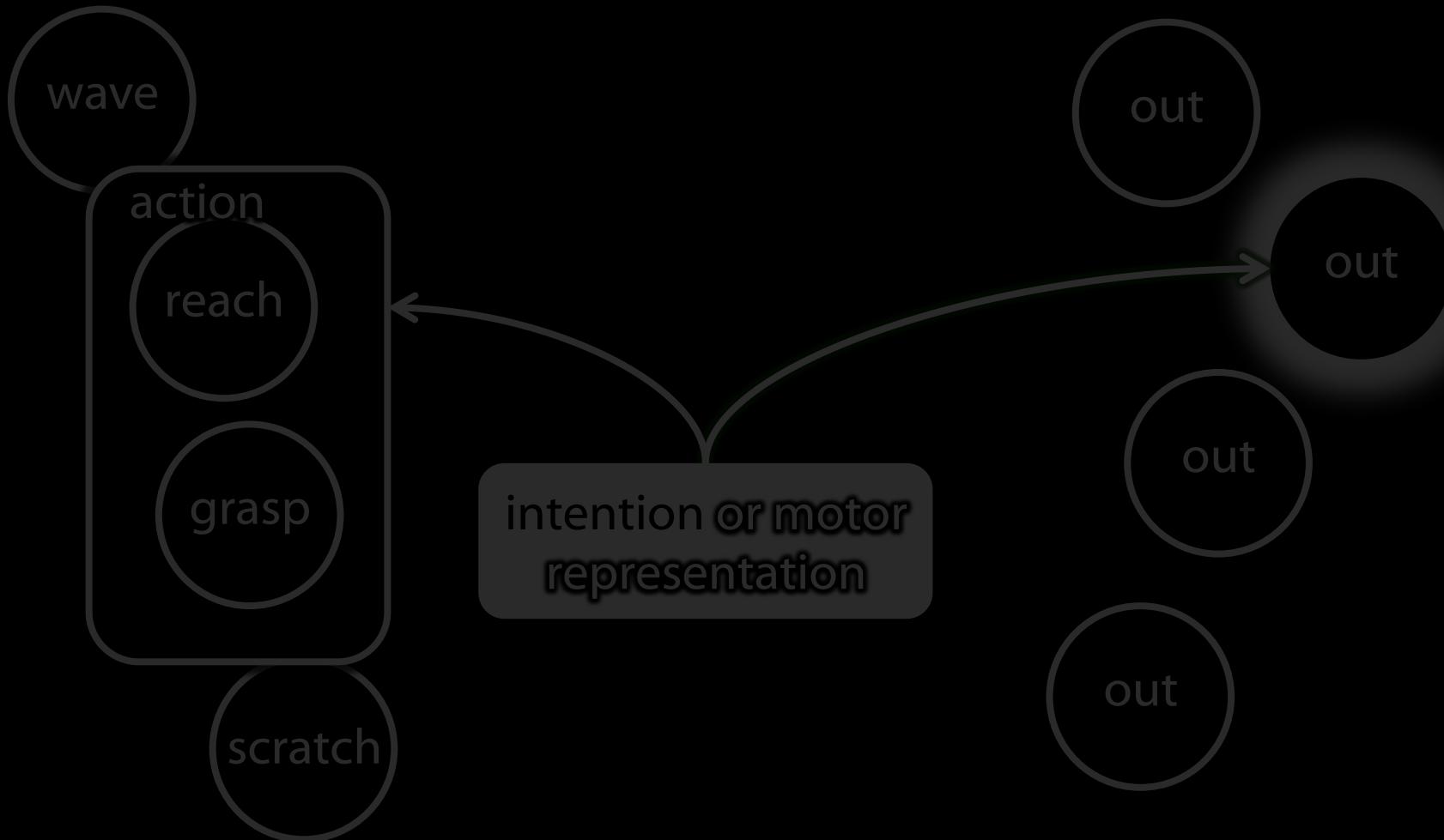
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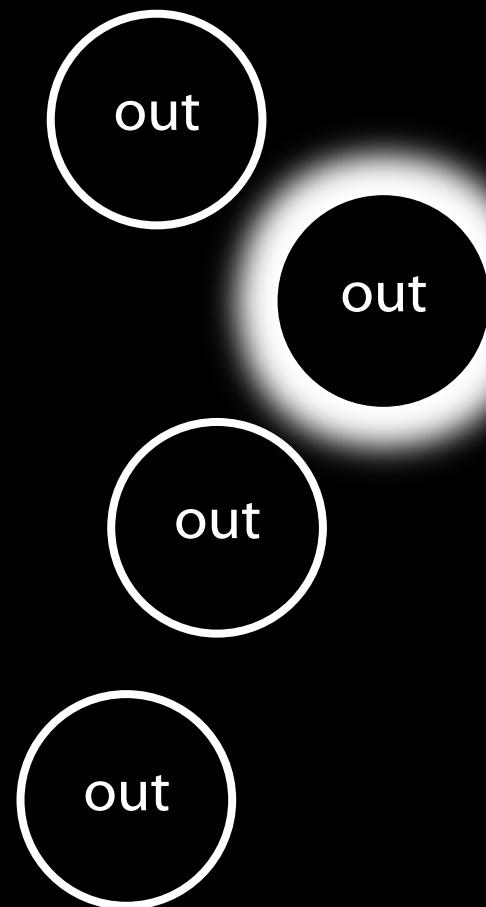


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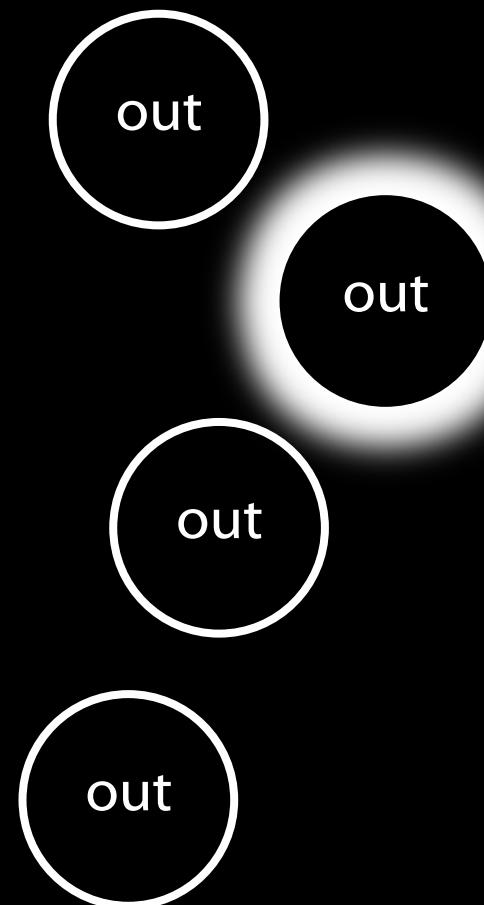
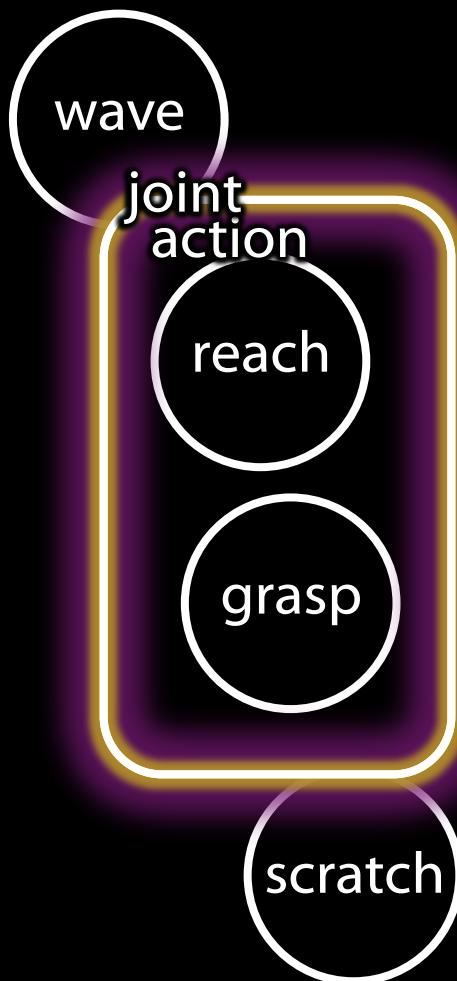


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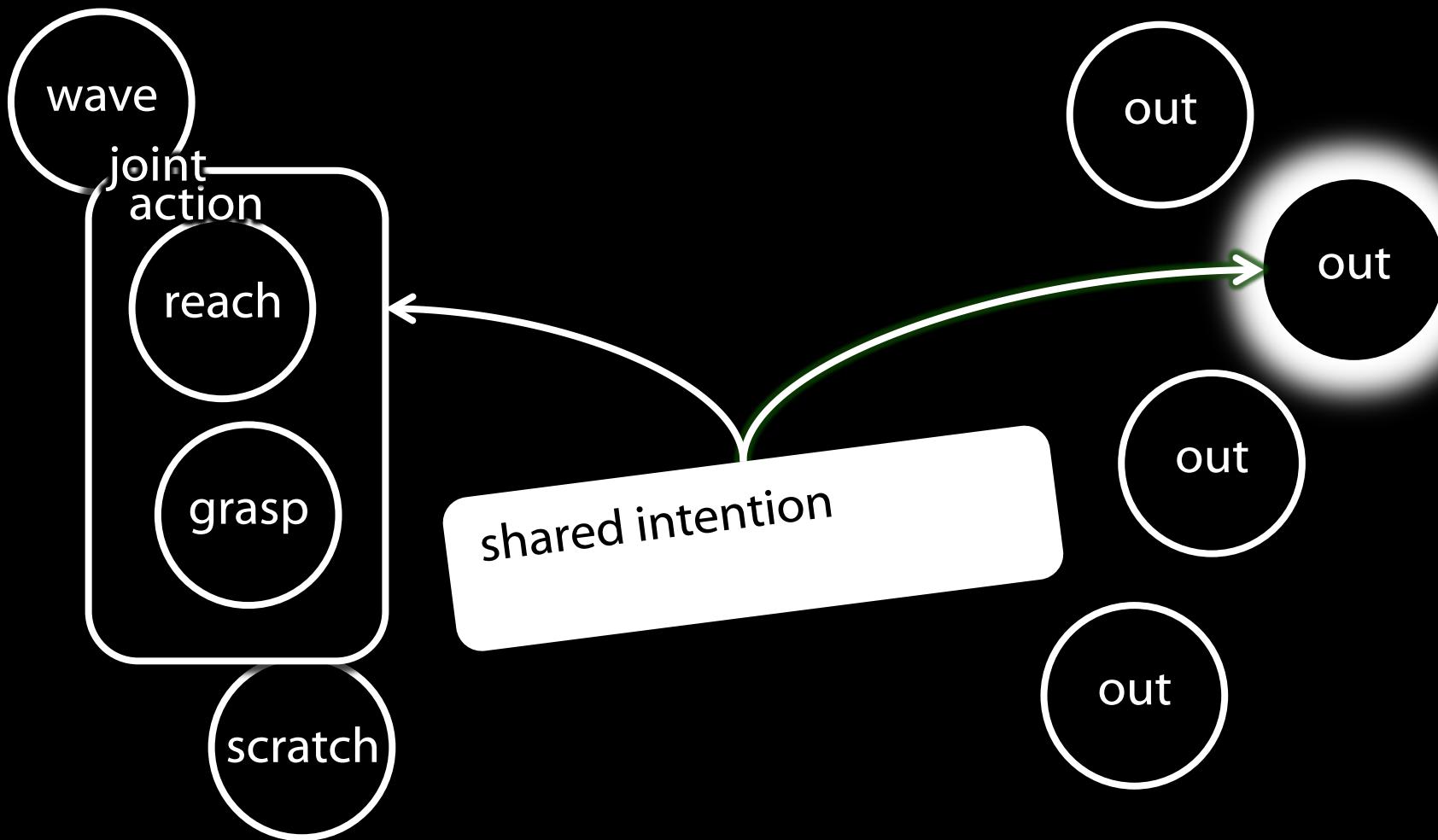
joint
action



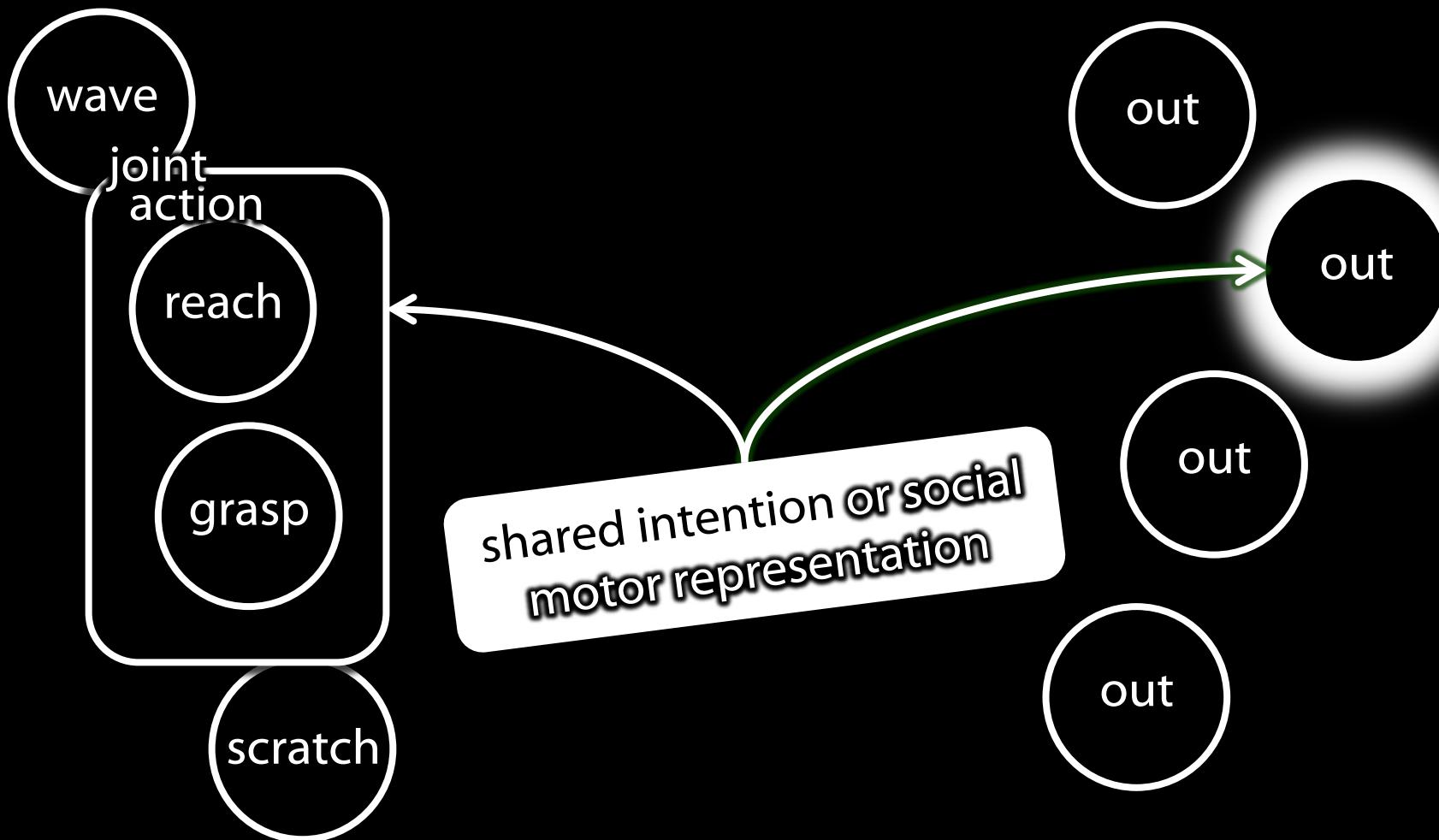
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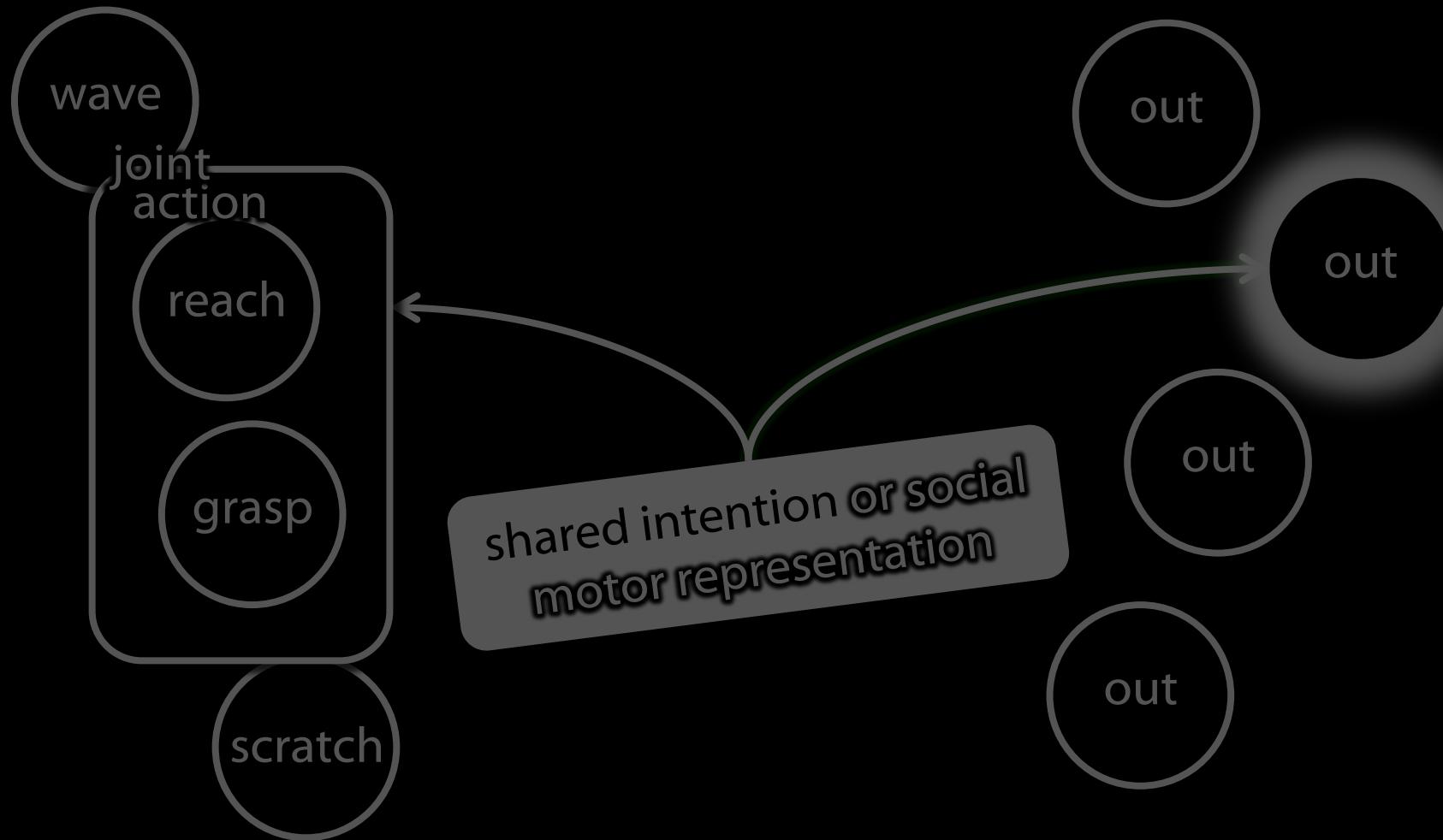
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A black and white portrait of Michael Bratman, a man with dark hair and glasses, wearing a plaid shirt, looking slightly to the right.

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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A black and white photograph of Michael Bratman, a middle-aged man with dark hair and glasses, wearing a plaid shirt, looking slightly to his left.

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Does reciprocal agent-
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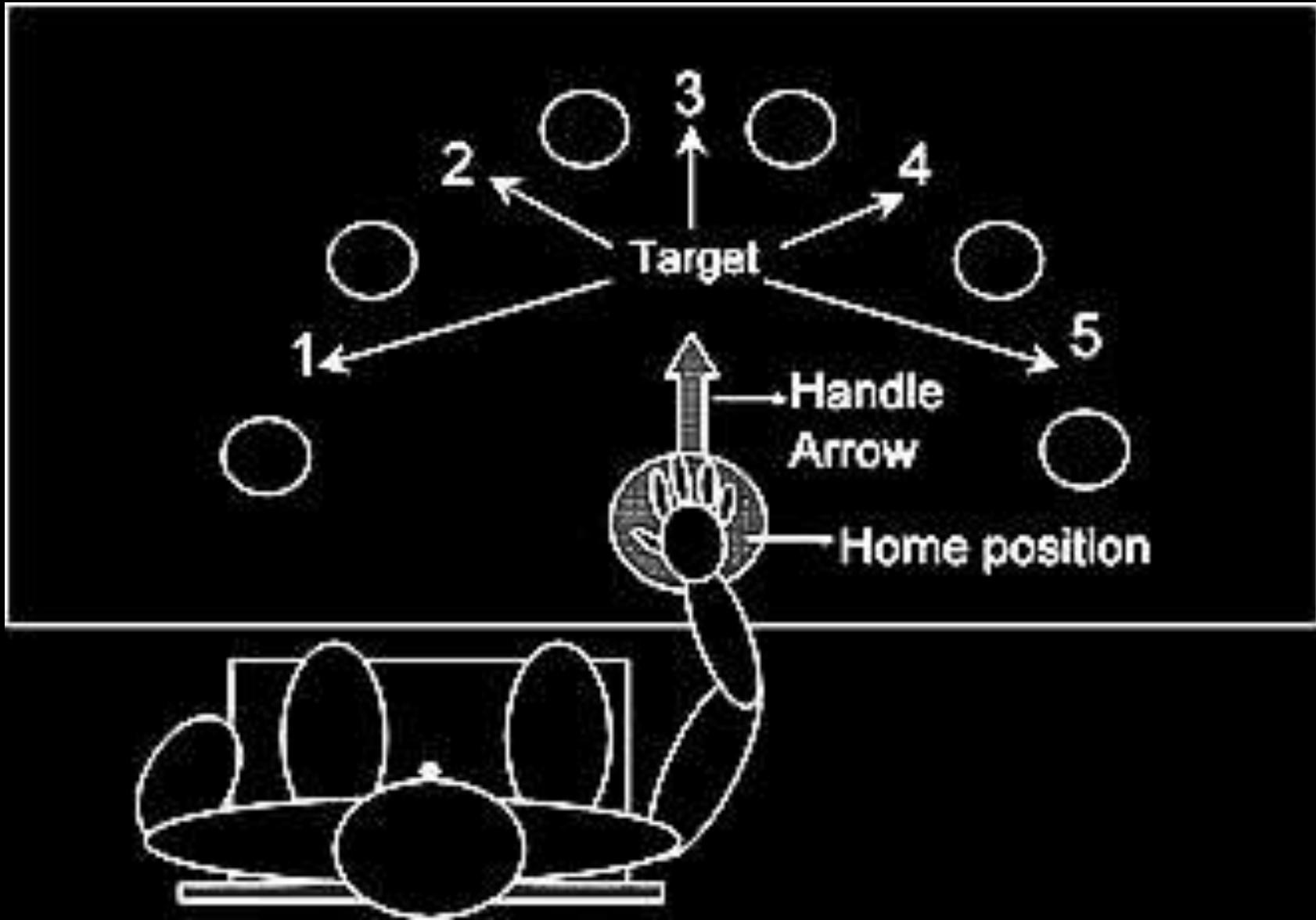
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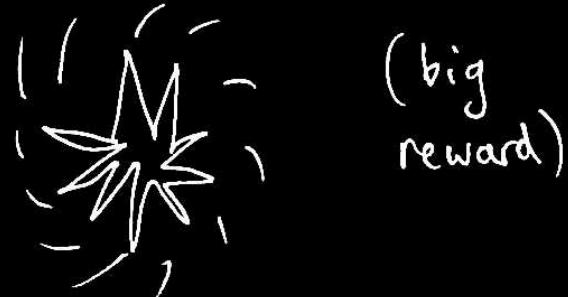
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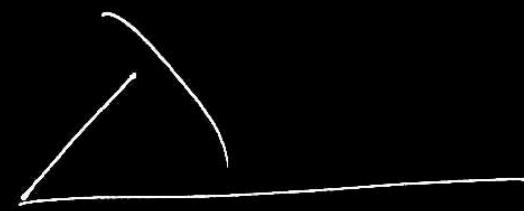
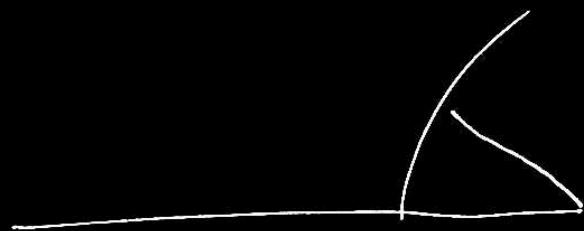
What are intentions for?



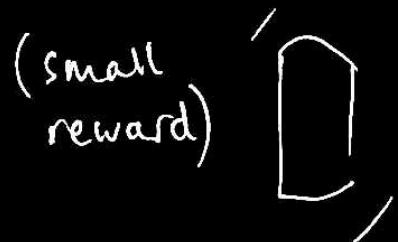
(Zhang and Rosenbaum 2007)



(big
reward)



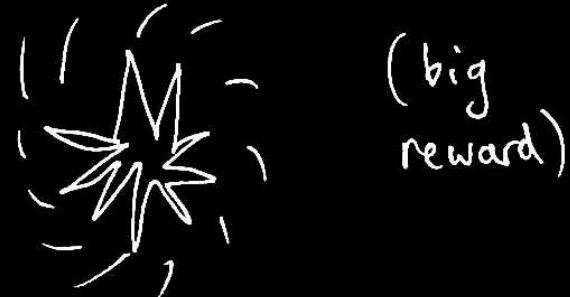
↑
ONE
WAY



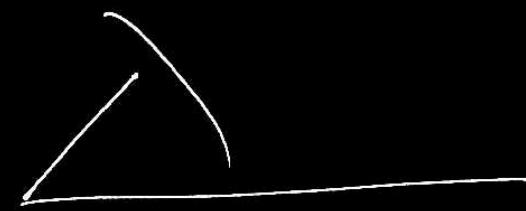
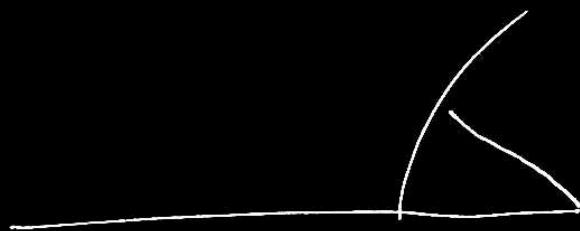
(small
reward)

X start here

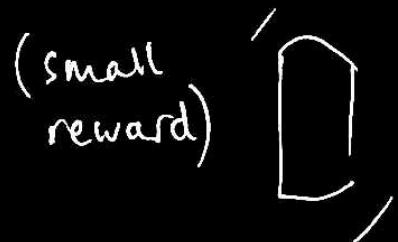
What are ^{shared}
intentions for?



(big
reward)



↑
ONE
WAY



(small
reward)

X start here

moving an object together

(Kourtis et al 2010)



tidying up the toys together

(Behne et al 2005)

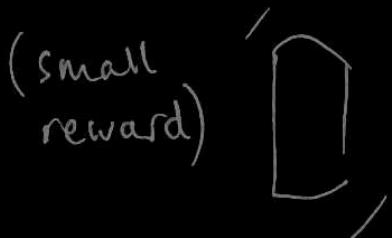
cooperatively pulling
handles in sequence to
make a dog-puppet sing

(Brownell et al 2006)

bouncing a cube on a large
trampoline together

(Tomasello & Carpenter 2007)

ONE
WA
pretending to row a boat
together



X

start here

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< different content >



< different content >

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.



< different format >

Head southeast on Rue
Cujas toward Rue
Victor Cousin. Turn
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==



?

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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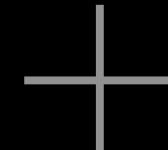
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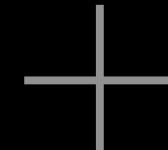
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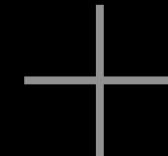
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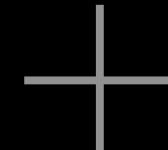
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No motor representations are intentions

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Does reciprocal agent-
neutral motor
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role in explaining what
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challenge:

How could social motor
representation and
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reciprocal agent-neutral
motor representation
= shared intention?



The Interface Problem

The Interface Problem

Some joint actions involve both shared intention and reciprocal agent-neutral motor representation

The Interface Problem

Reciprocal agent-neutral
motor representations:

- i. represent outcomes;
- ii. ground the
purposiveness of some
joint actions

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The Interface Problem

Reciprocal agent-neutral
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- i. represent outcomes;
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Two outcomes, A and B,
match in a particular context
just if, in that context, either
the occurrence of A would
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The Interface Problem: How are non-accidental matches possible?

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The Interface Problem: How are non-accidental matches possible?

Reciprocal agent-neutral
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- iii. differ in format from (the constituent attitudes of) shared intentions.

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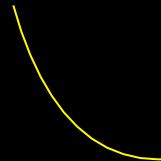
Follow that route

=



?

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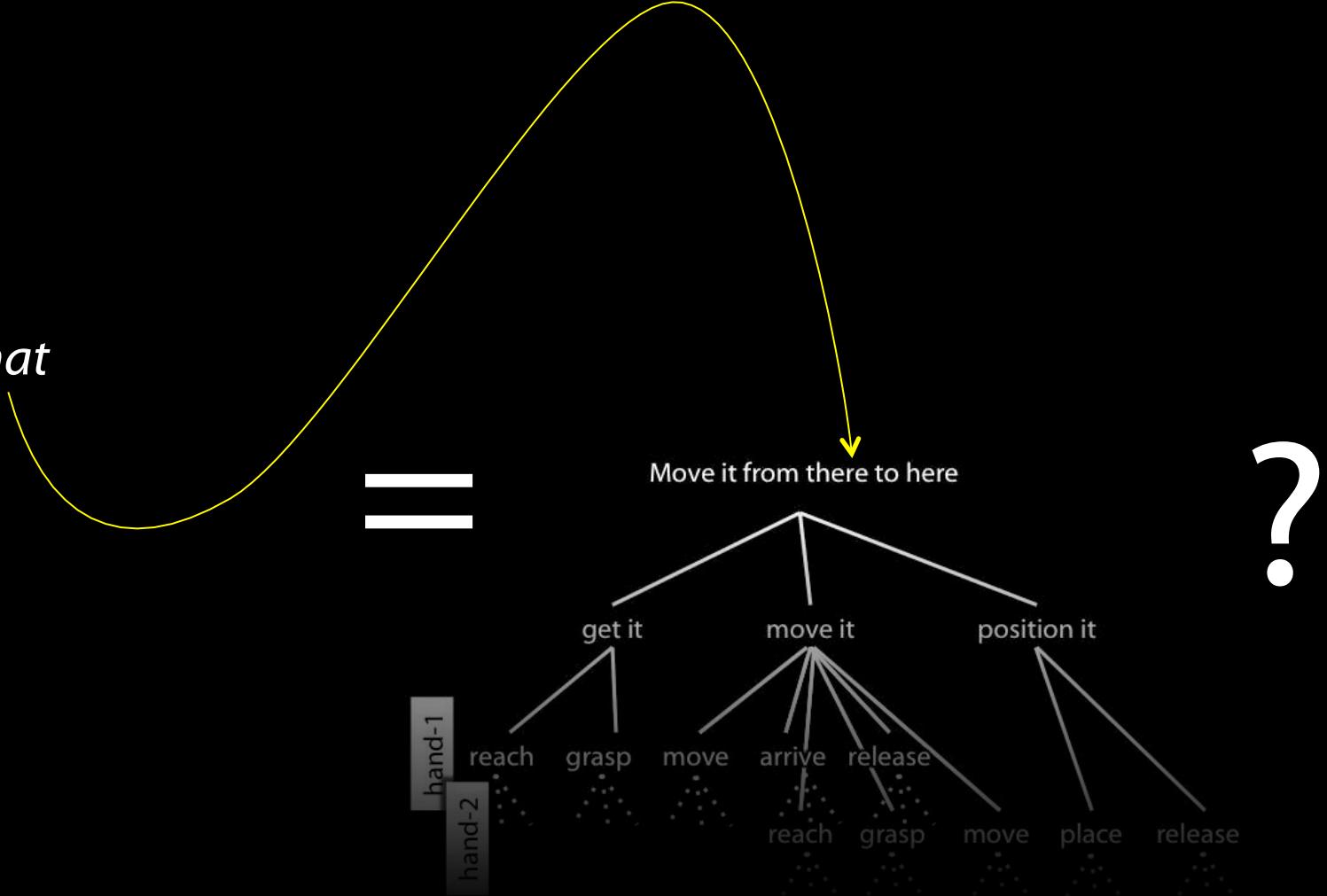


=



?

Do that



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- i. represent outcomes;
- ii. ground the purposiveness of some joint actions; and
- iii. differ in format from (the constituent attitudes of) shared intentions.

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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premise:

Reciprocal agent-neutral motor representation
enables some joint actions

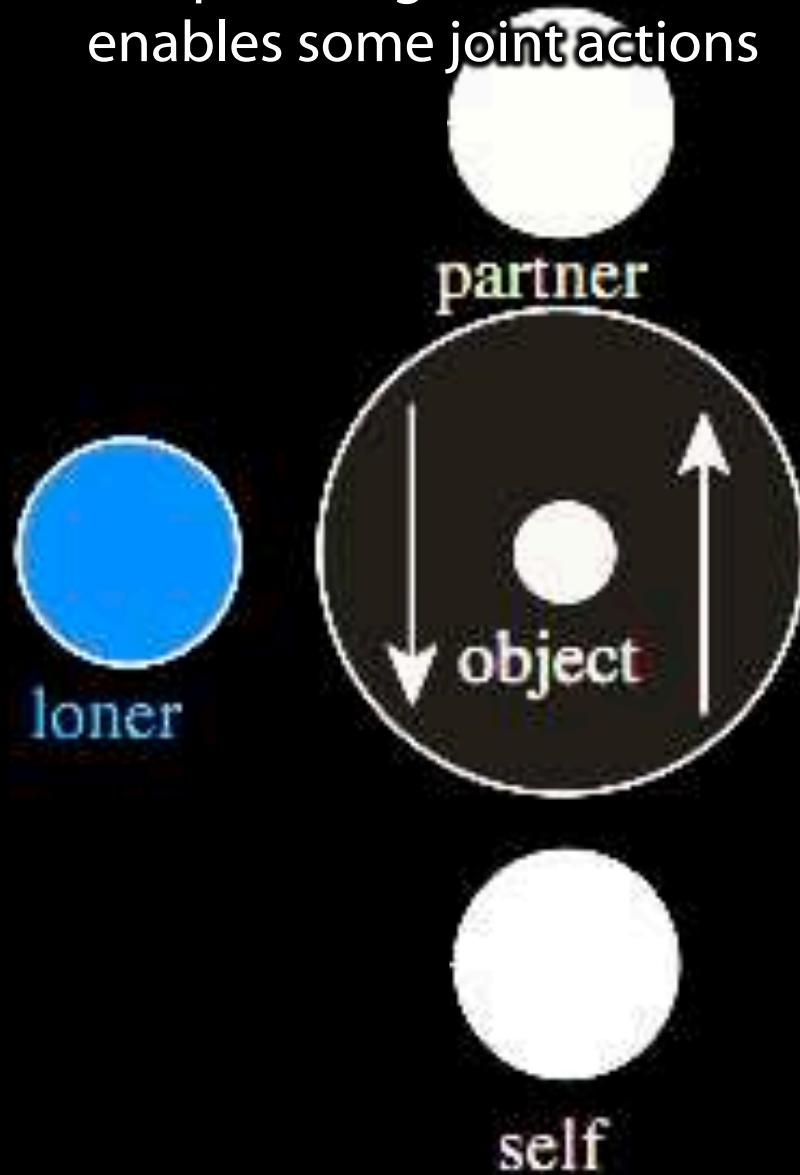
“Simulation of another person’s action, as reflected in the activation of motor cortices, gets stronger the more the other is perceived as an interaction partner.”

--- Kourtis, Sebanz & Knoblich (2010, p. 4)



premise:

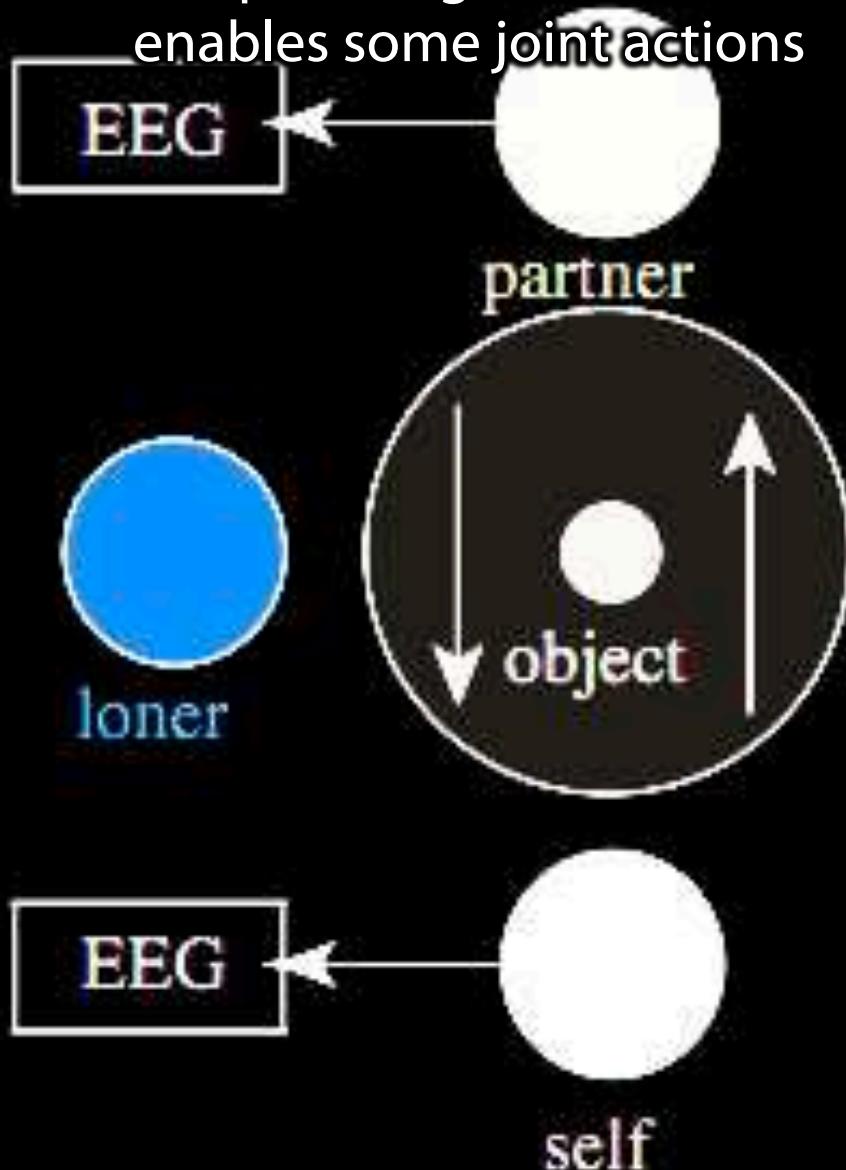
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Kourtis, Sebanz & Knoblich (2010)

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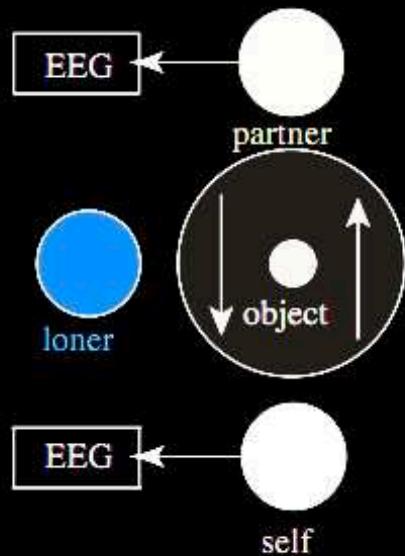


Kourtis, Sebanz & Knoblich (2010)

premise:

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(a)



Kourtis, Sebanz & Knoblich (2010)

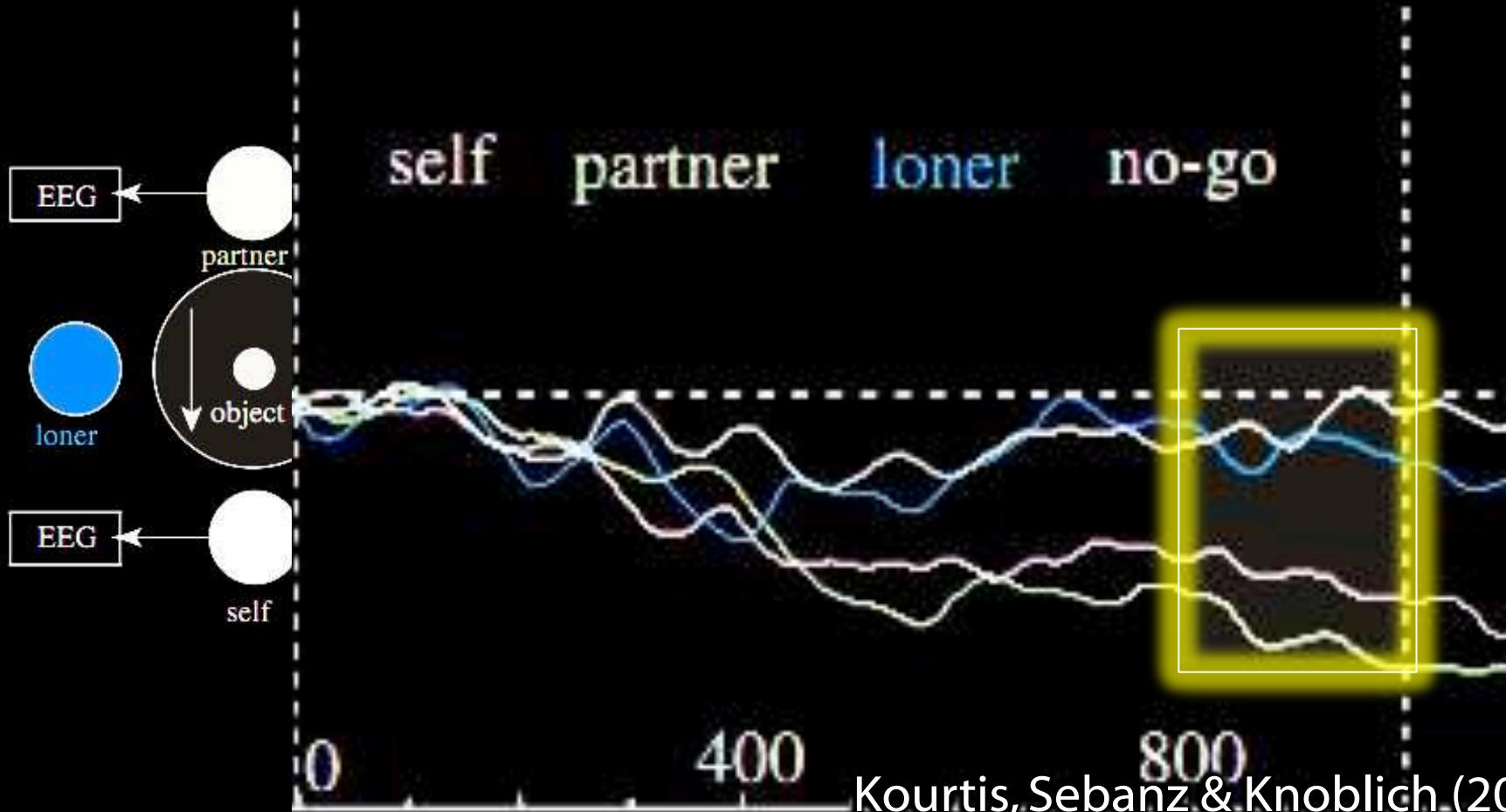
premise:

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(a)

cue

imperative

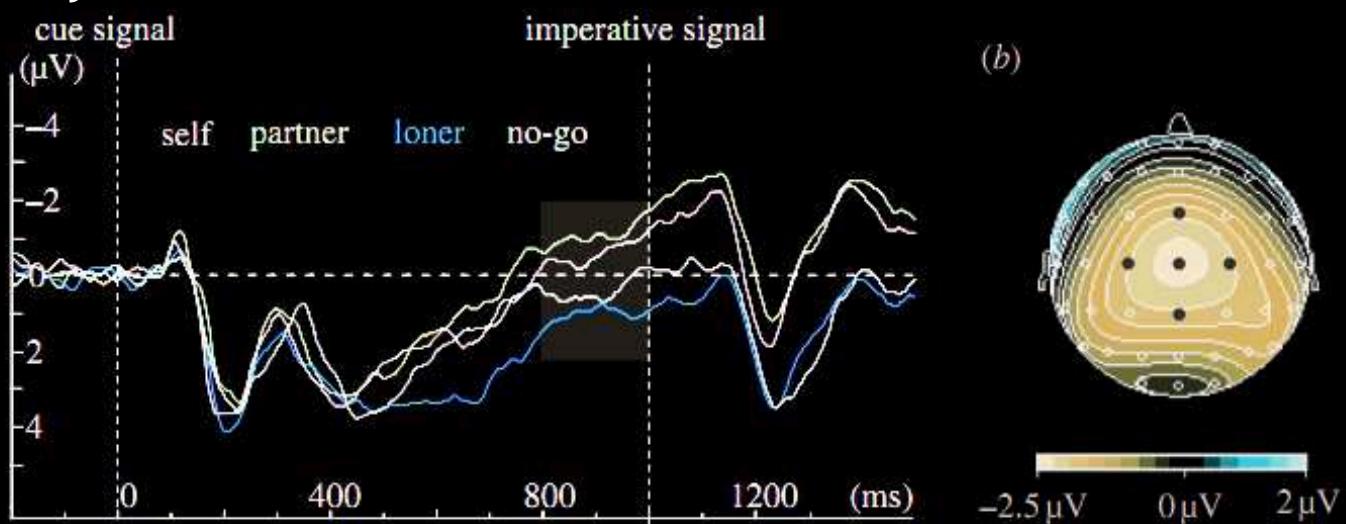
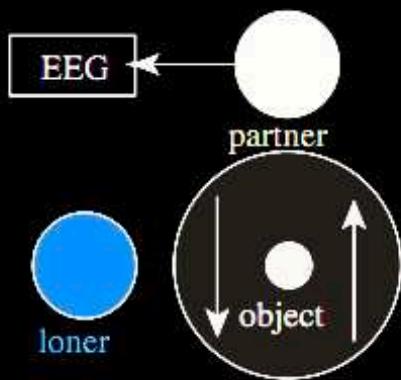


Kourtis, Sebanz & Knoblich (2010)

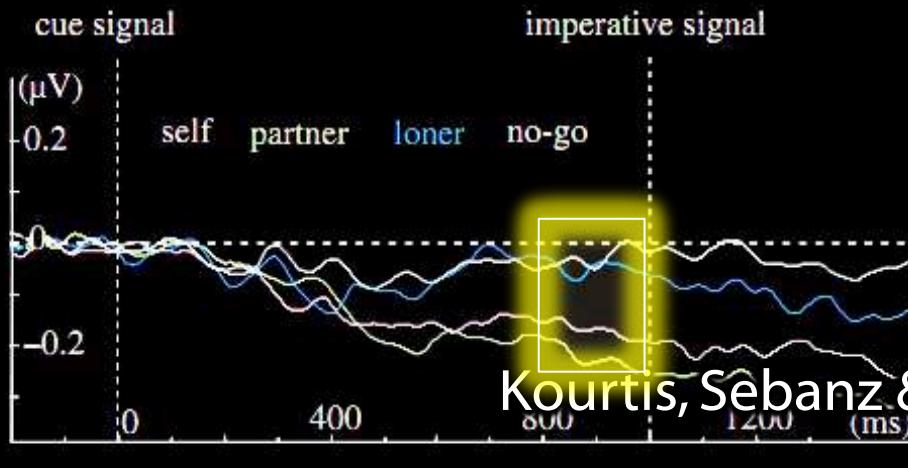
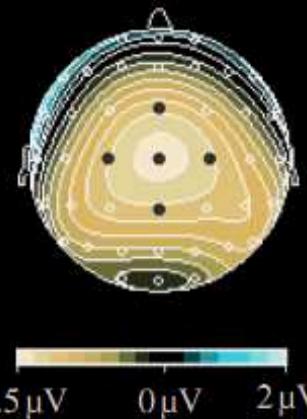
premise:

Reciprocal agent-neutral motor representation
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(a)



(b)



(c)

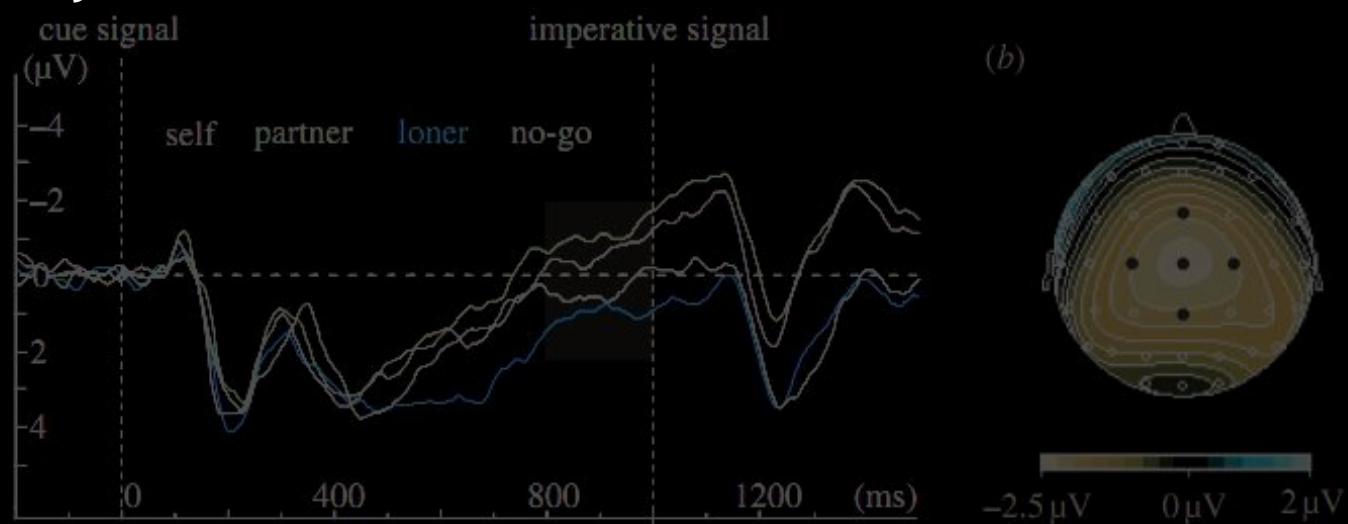
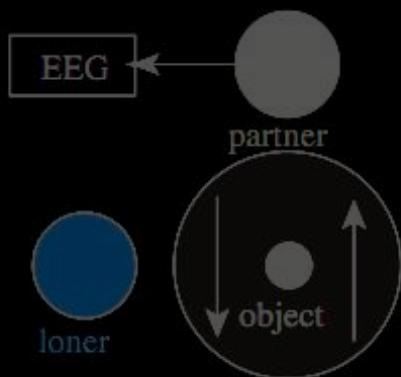


Kourtis, Sebanz & Knoblich (2010)

premise:

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(a)



(b)



(c)

