



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)

'Shared intentionality is the foundation upon which
joint action is built.'

(Carpenter 2009, p. 381)

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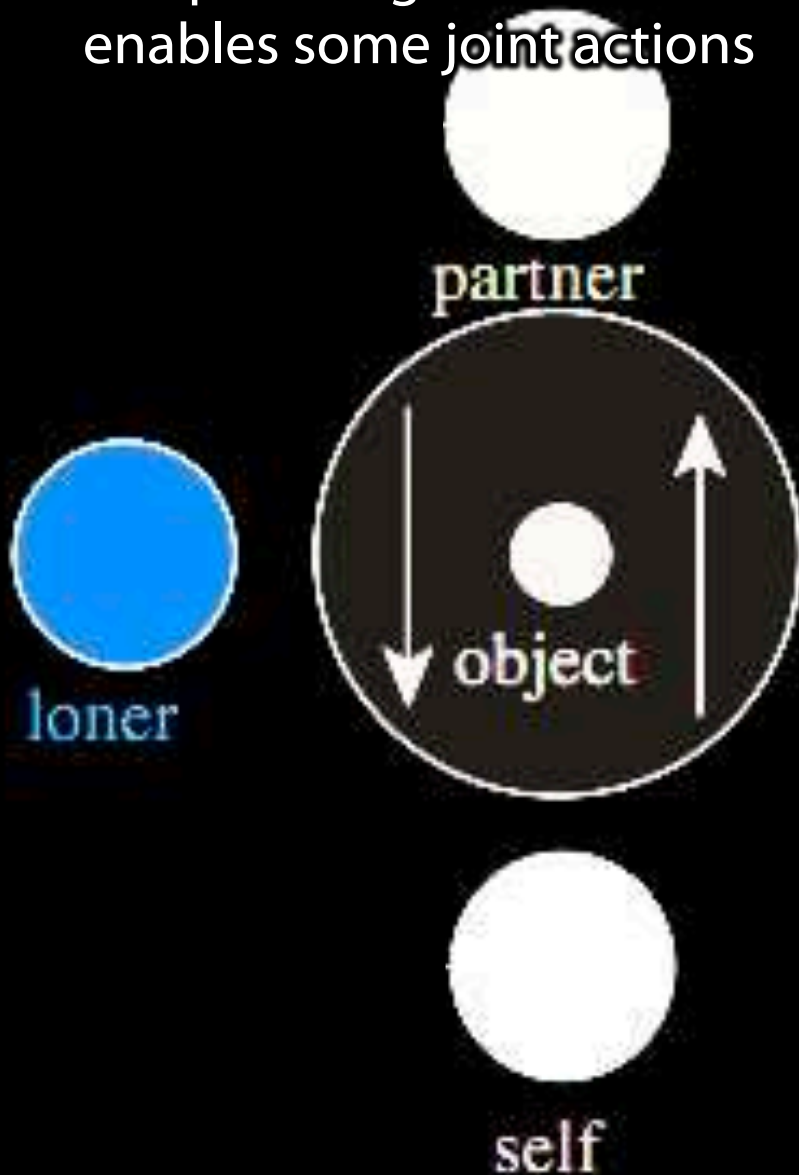
“Simulation of another person’s action, as reflected
in the activation of motor cortices, gets stronger the
more the other is perceived as an interaction
partner.”

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



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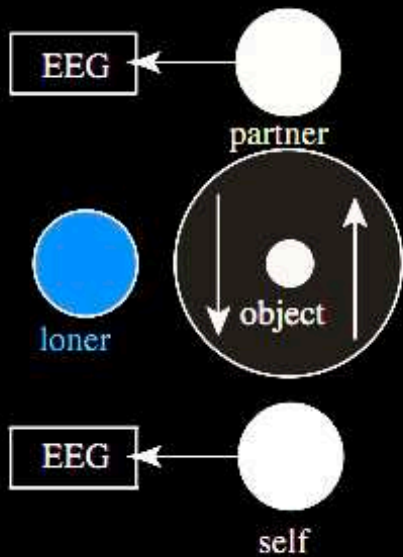
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(a)

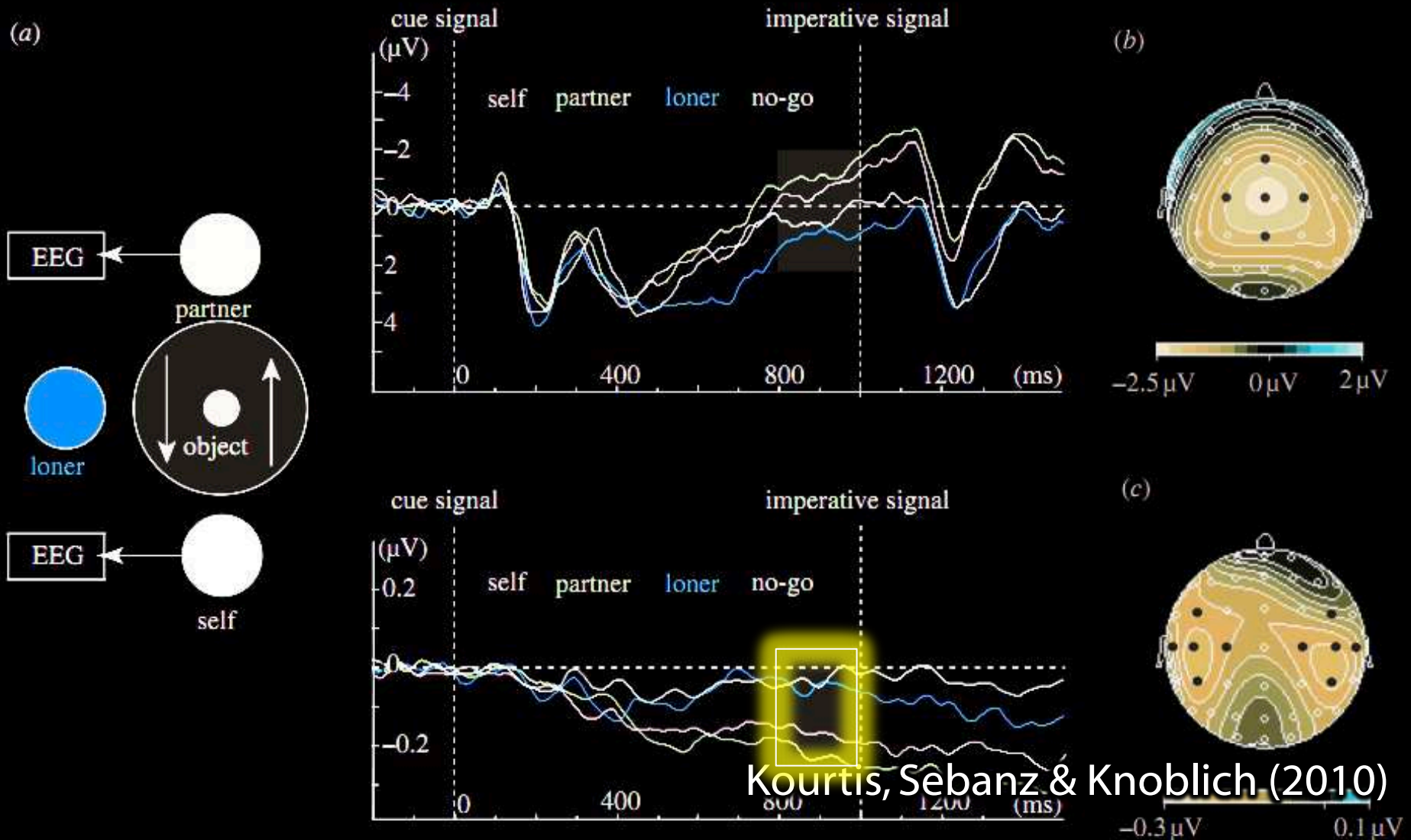


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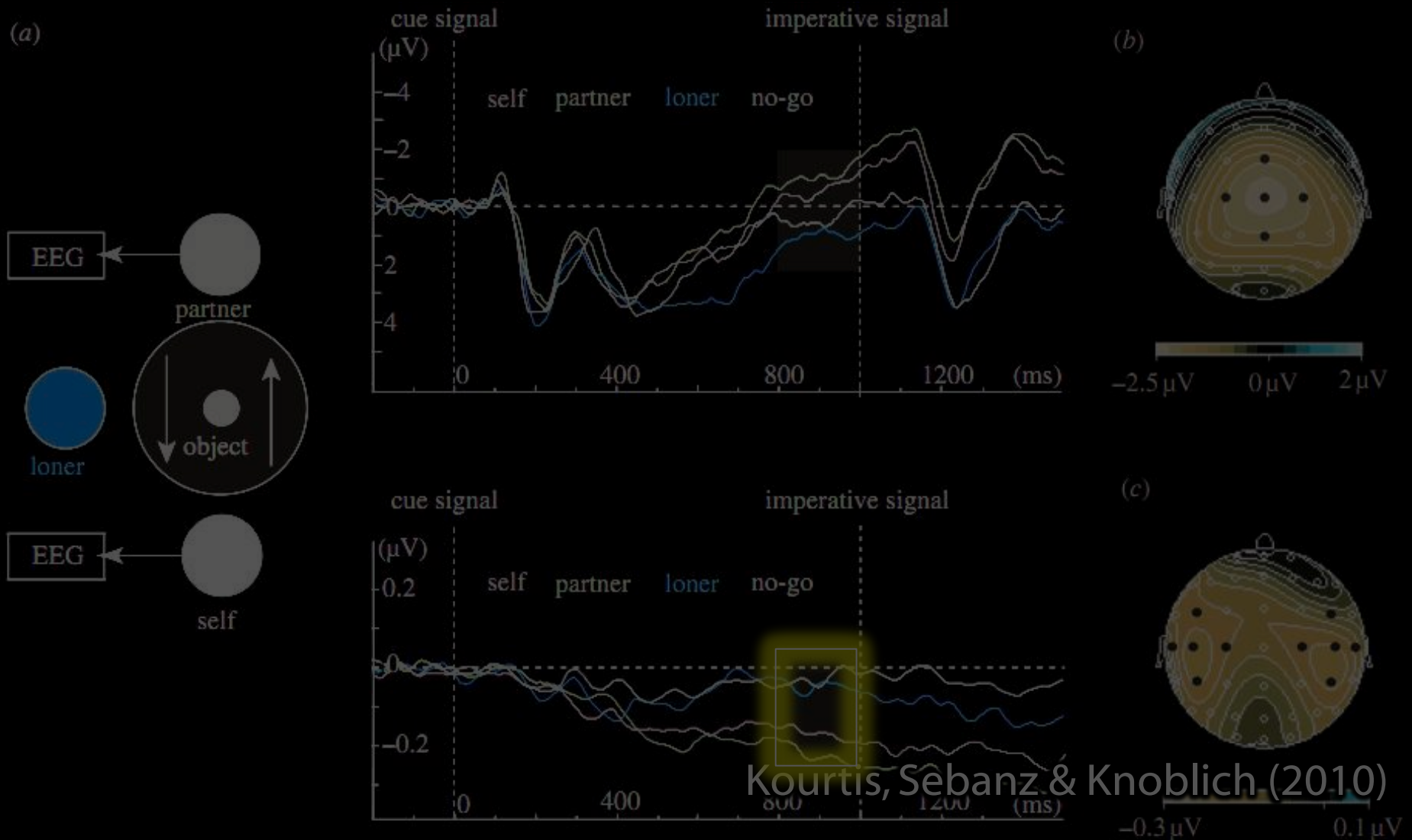
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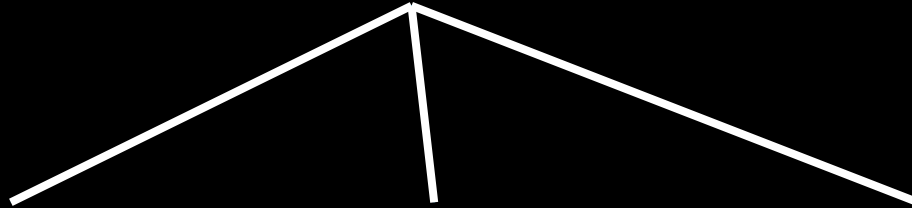


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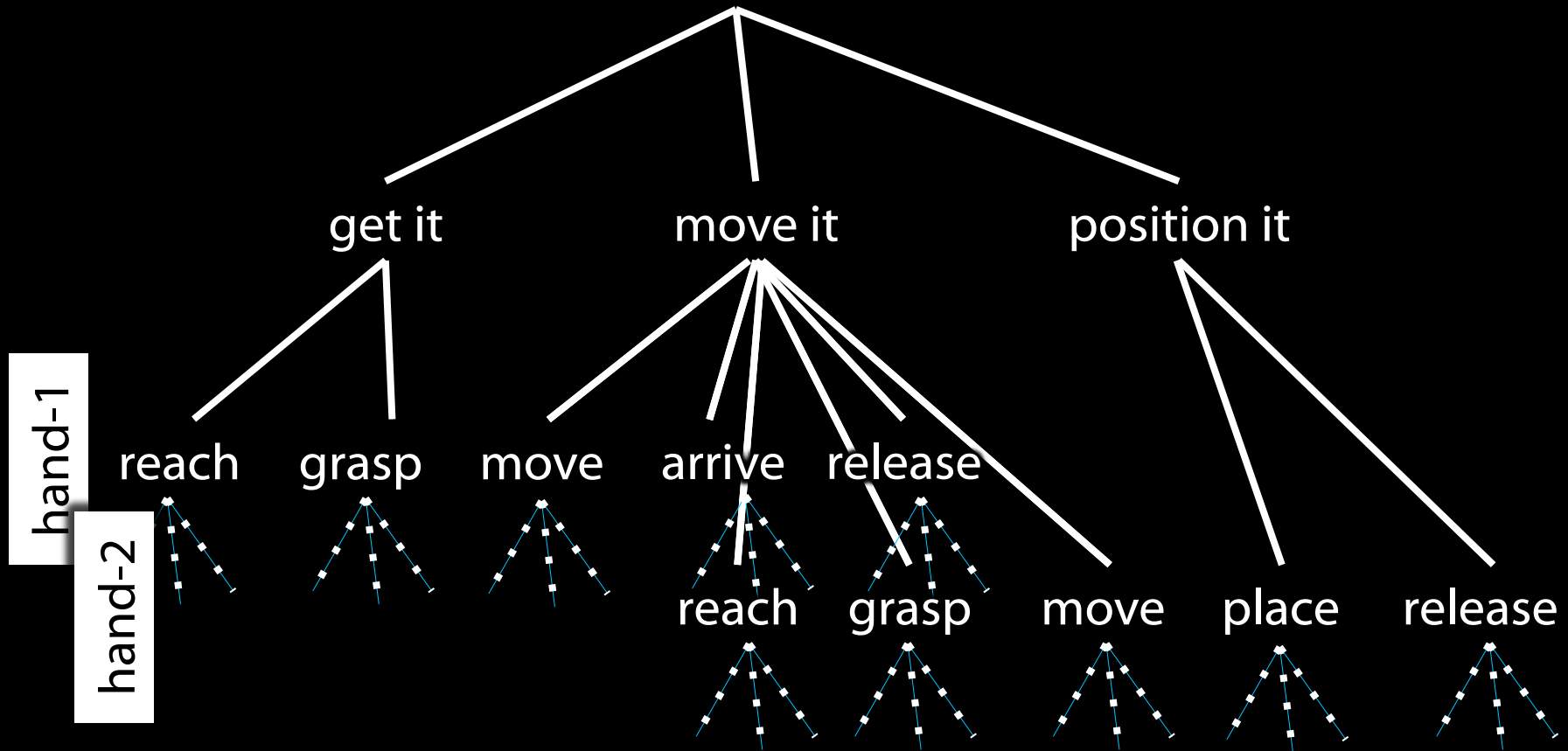


How could reciprocal agent-neutral motor representation ever enable any joint action?

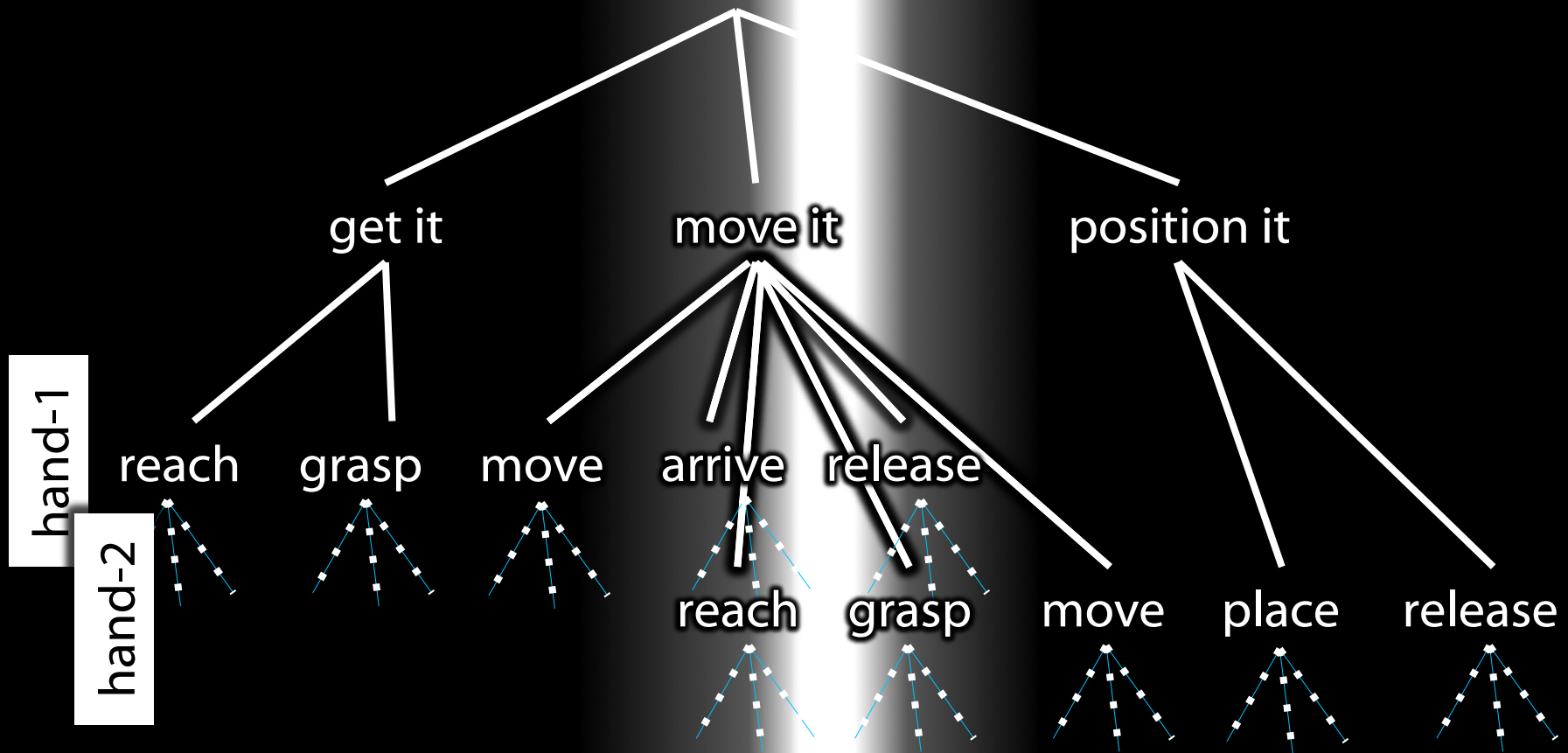
Move it from there to here



Move it from there to here



Move it from there to here



Move it from there to here

joint action:
same goal

get it

move it

position it

reach

grasp

move

arrive

release

reach

grasp

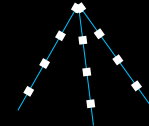
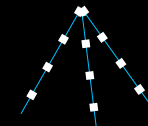
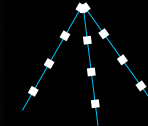
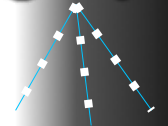
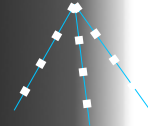
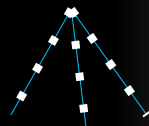
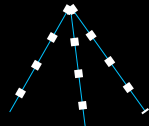
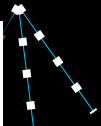
move

place

release

hand-1

hand-2



Move it from there to here

joint action:
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move

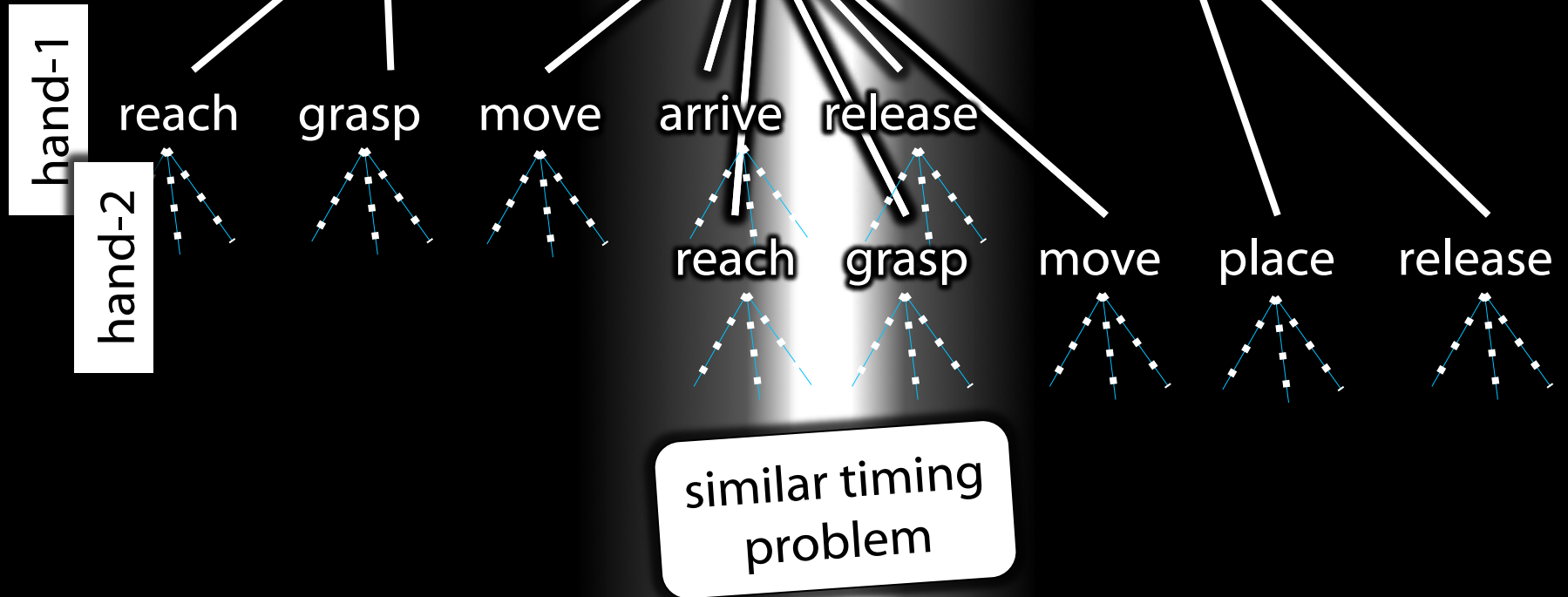
place

release

similar timing
problem

hand-1

hand-2



Move it from there to here

joint action:
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same
planning

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reach

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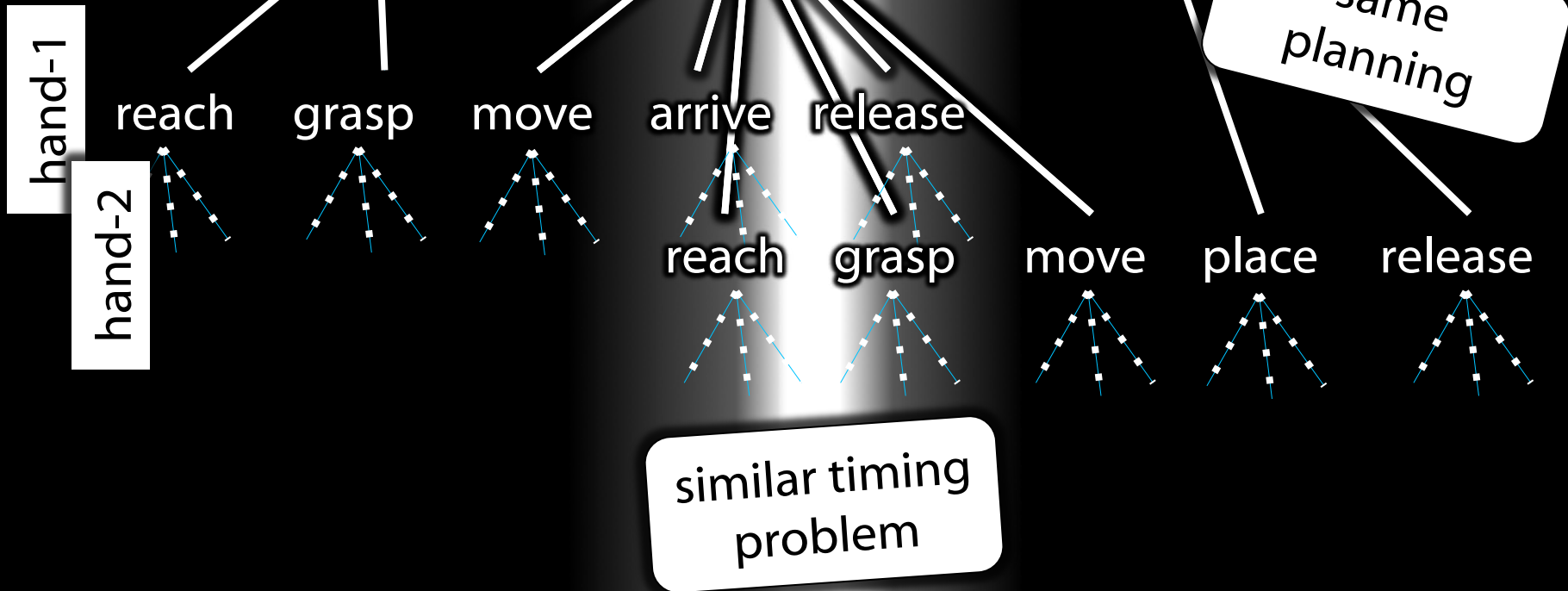
grasp

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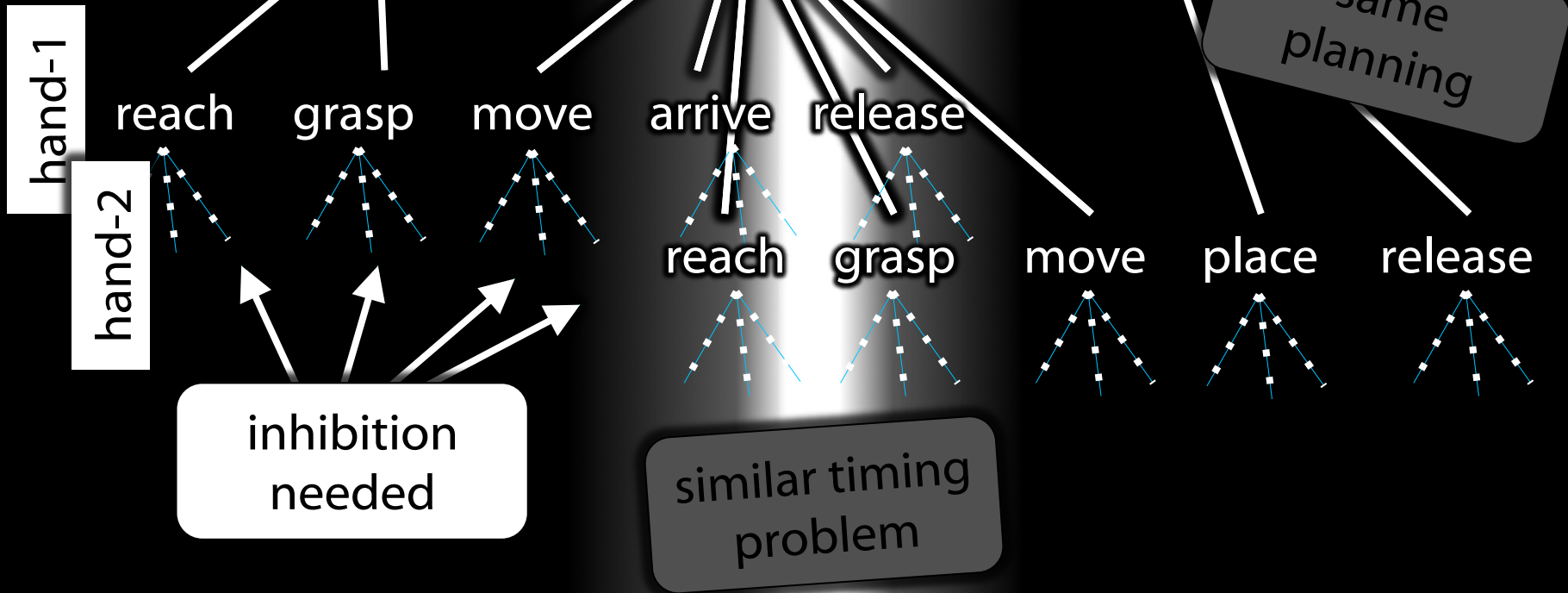
move

place

release

inhibition
needed

similar timing
problem



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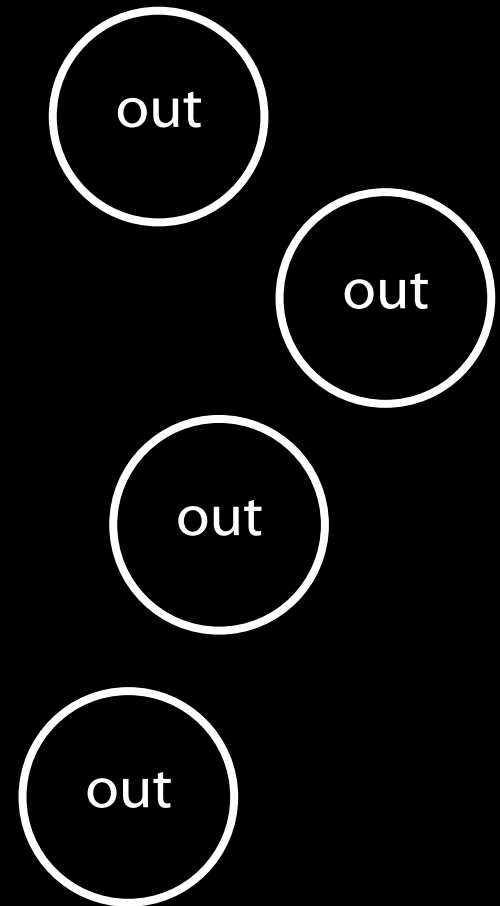
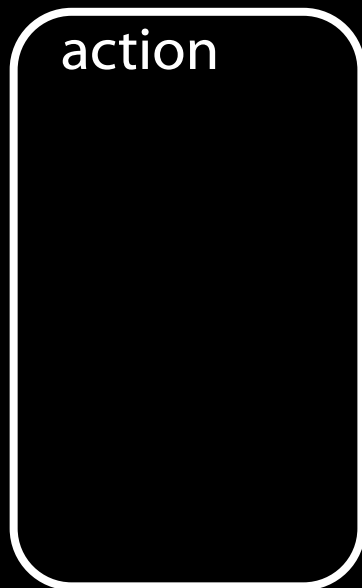
question:

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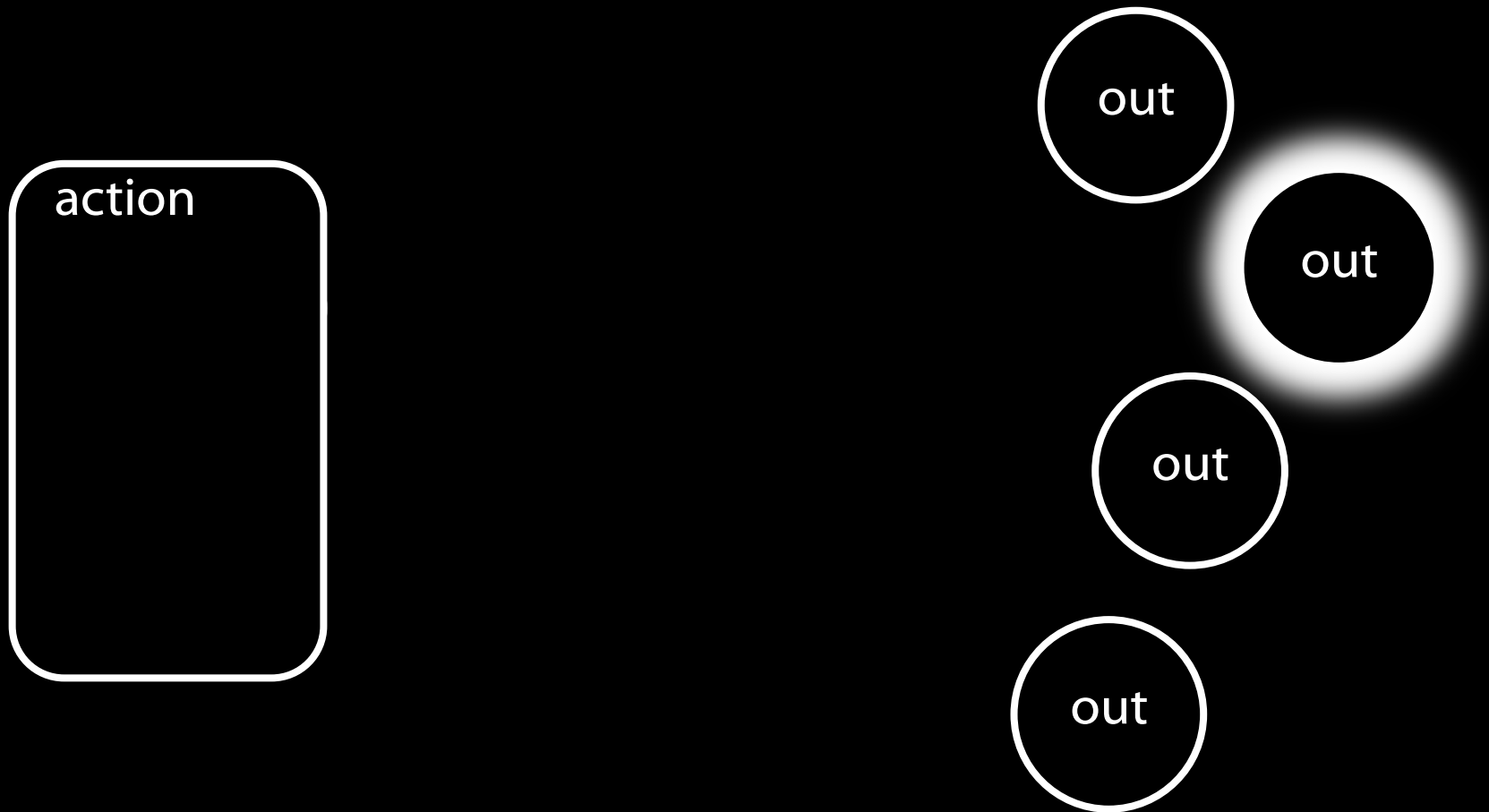
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How could social motor
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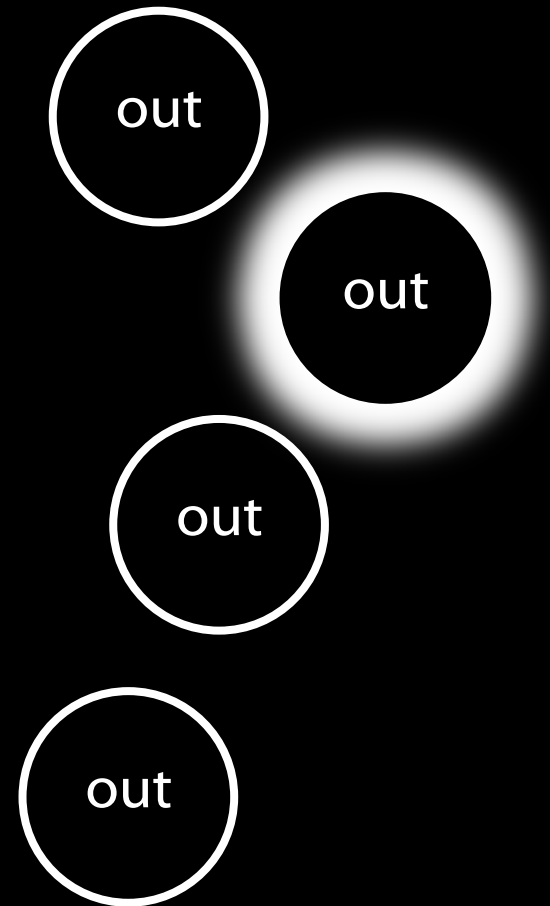
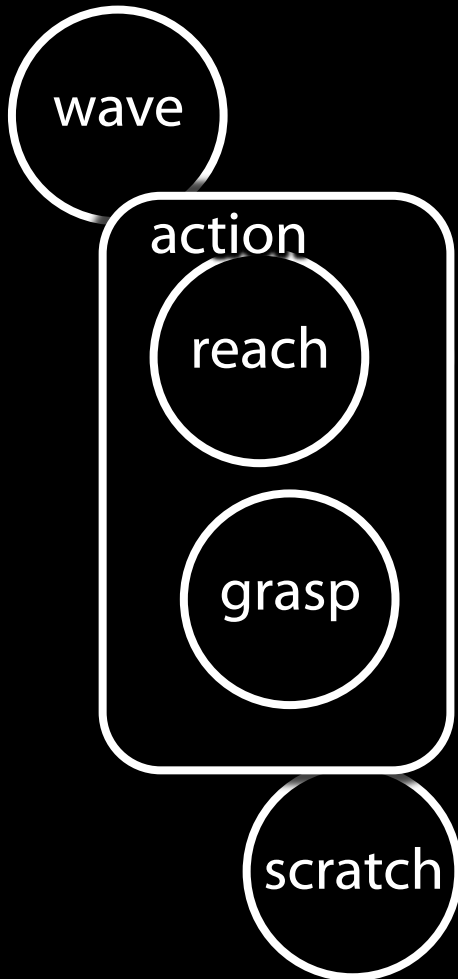
What is the relation between a purposive action and the outcome or outcomes to which it is directed?



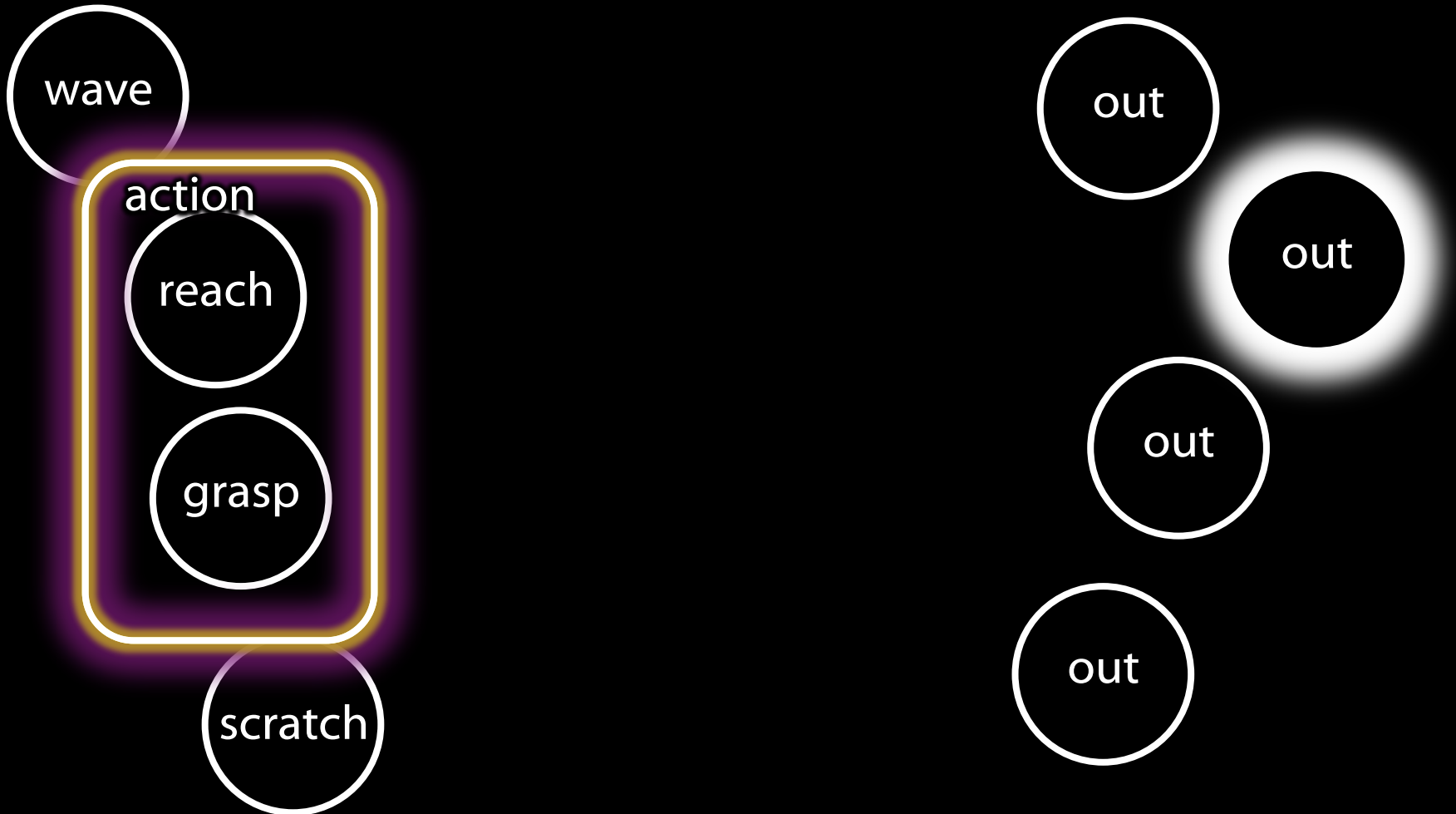
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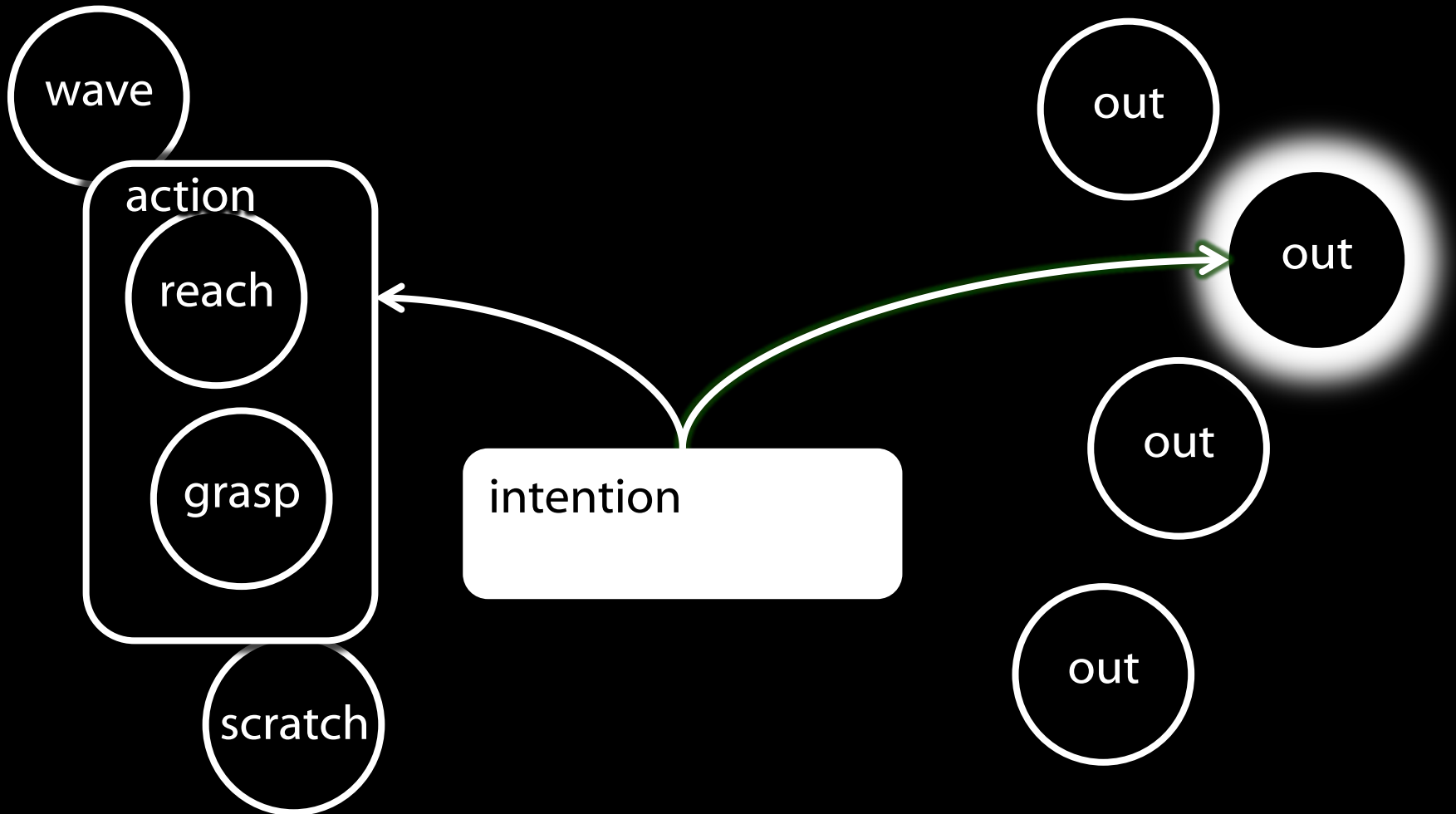
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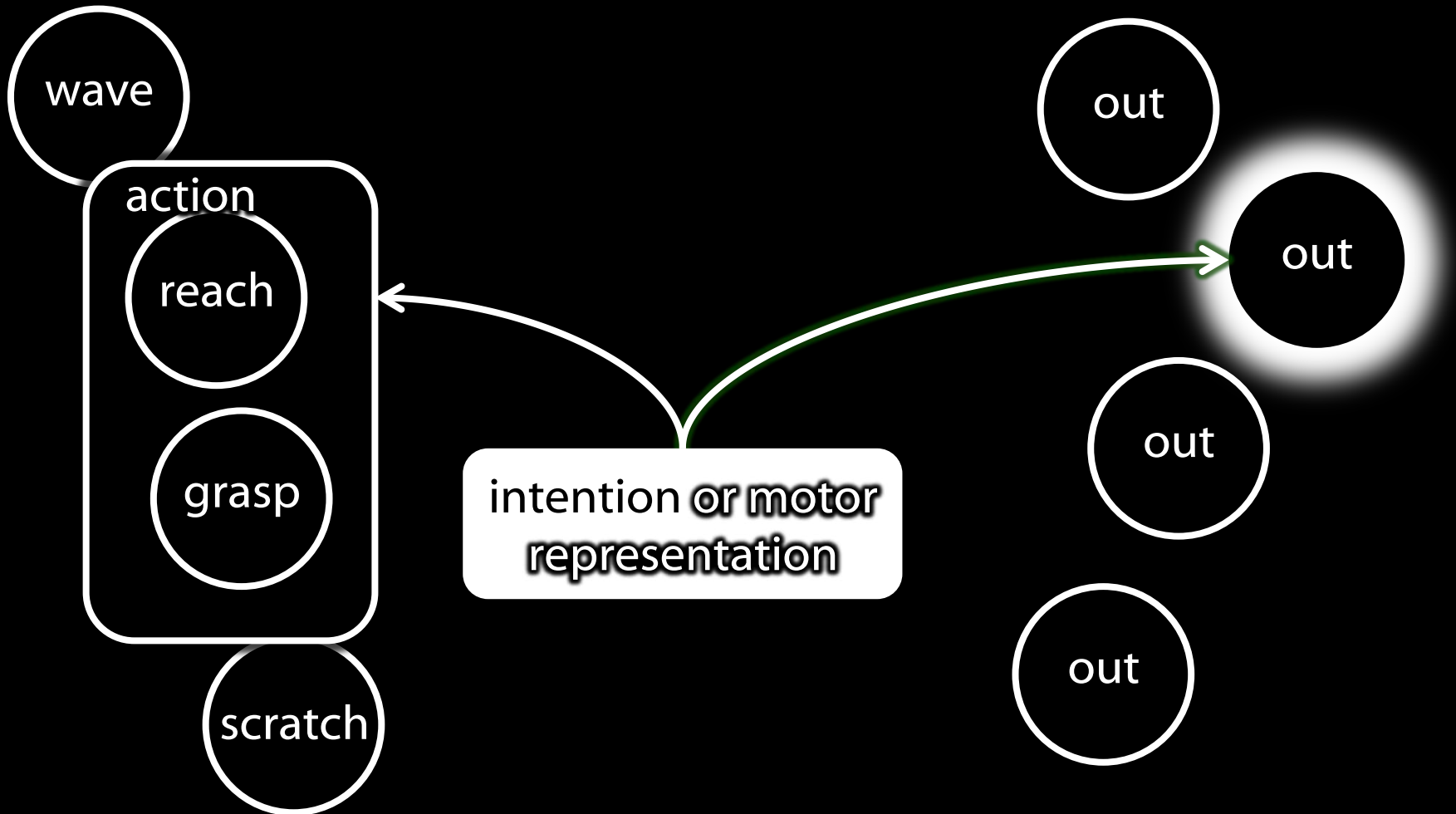
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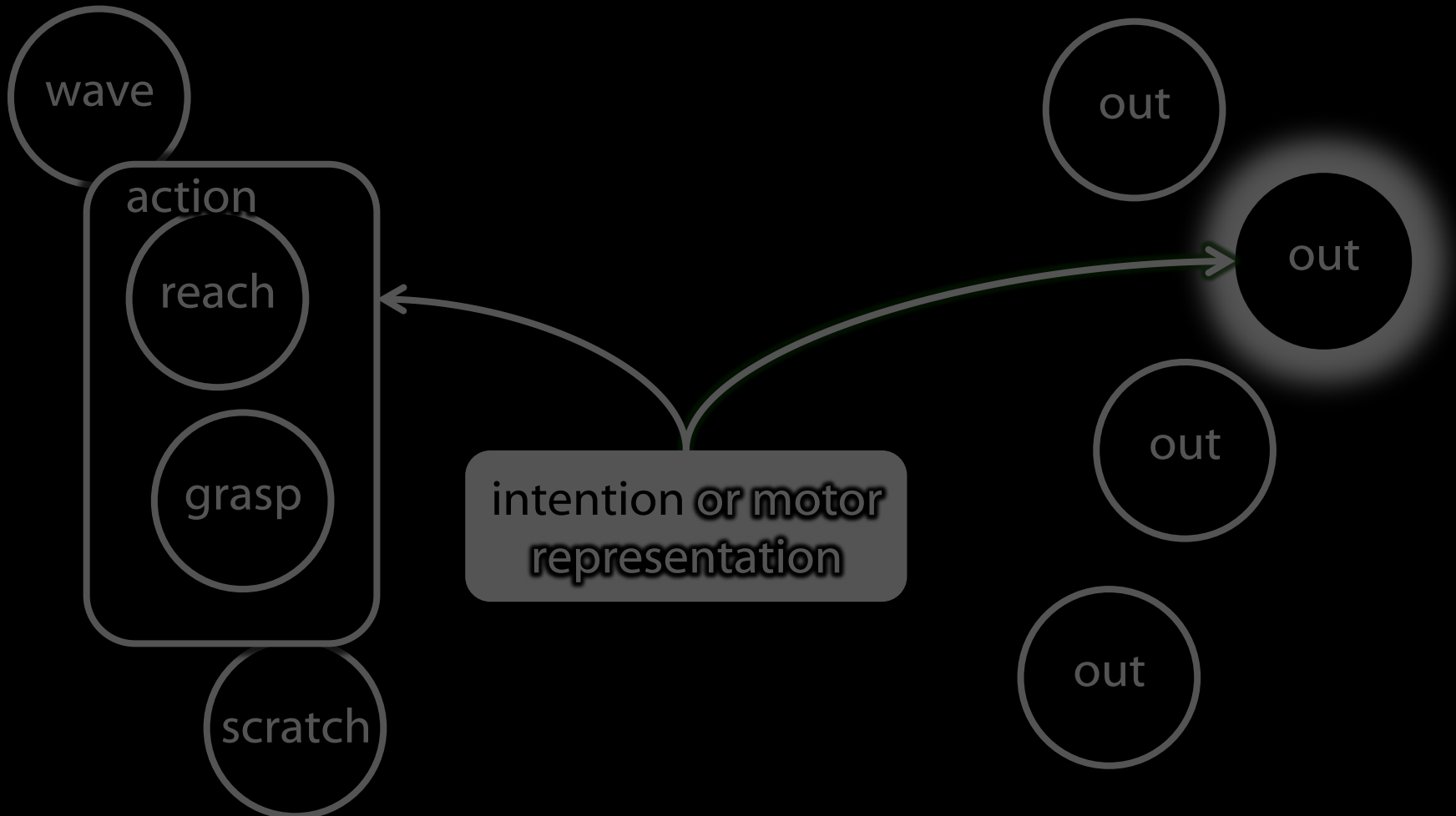
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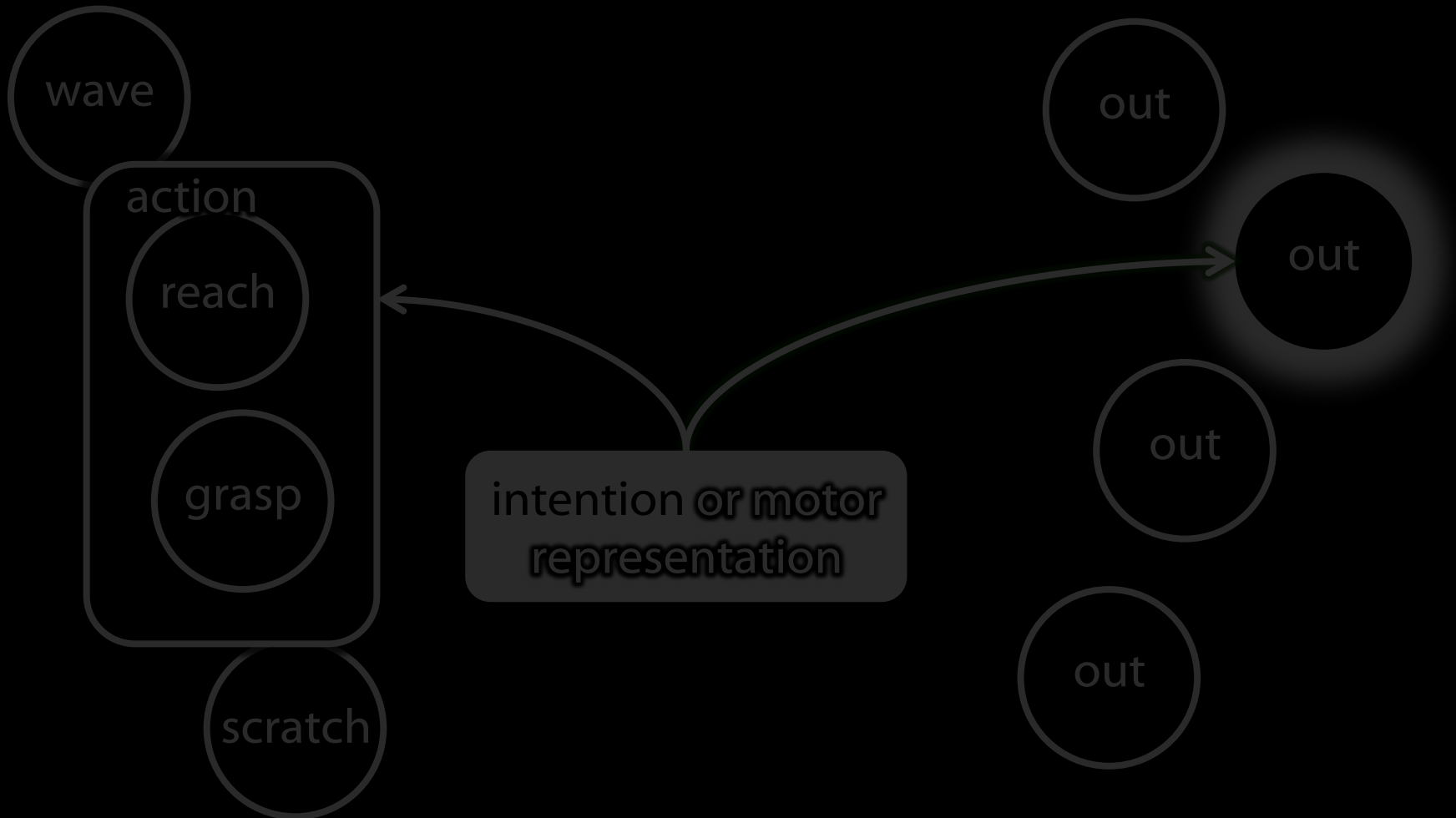
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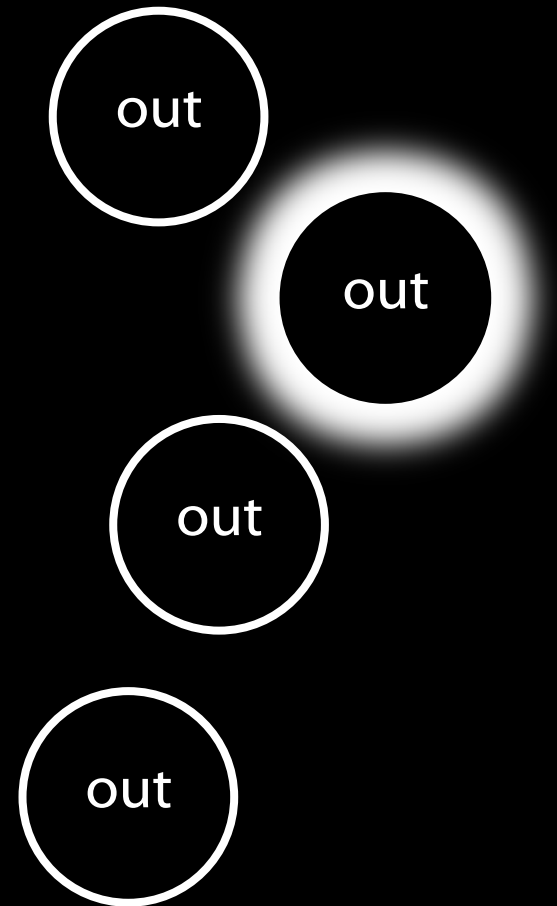
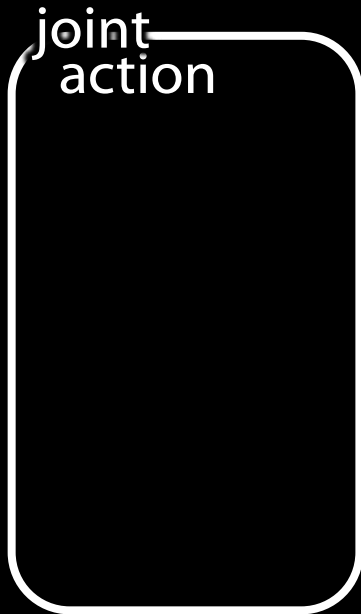
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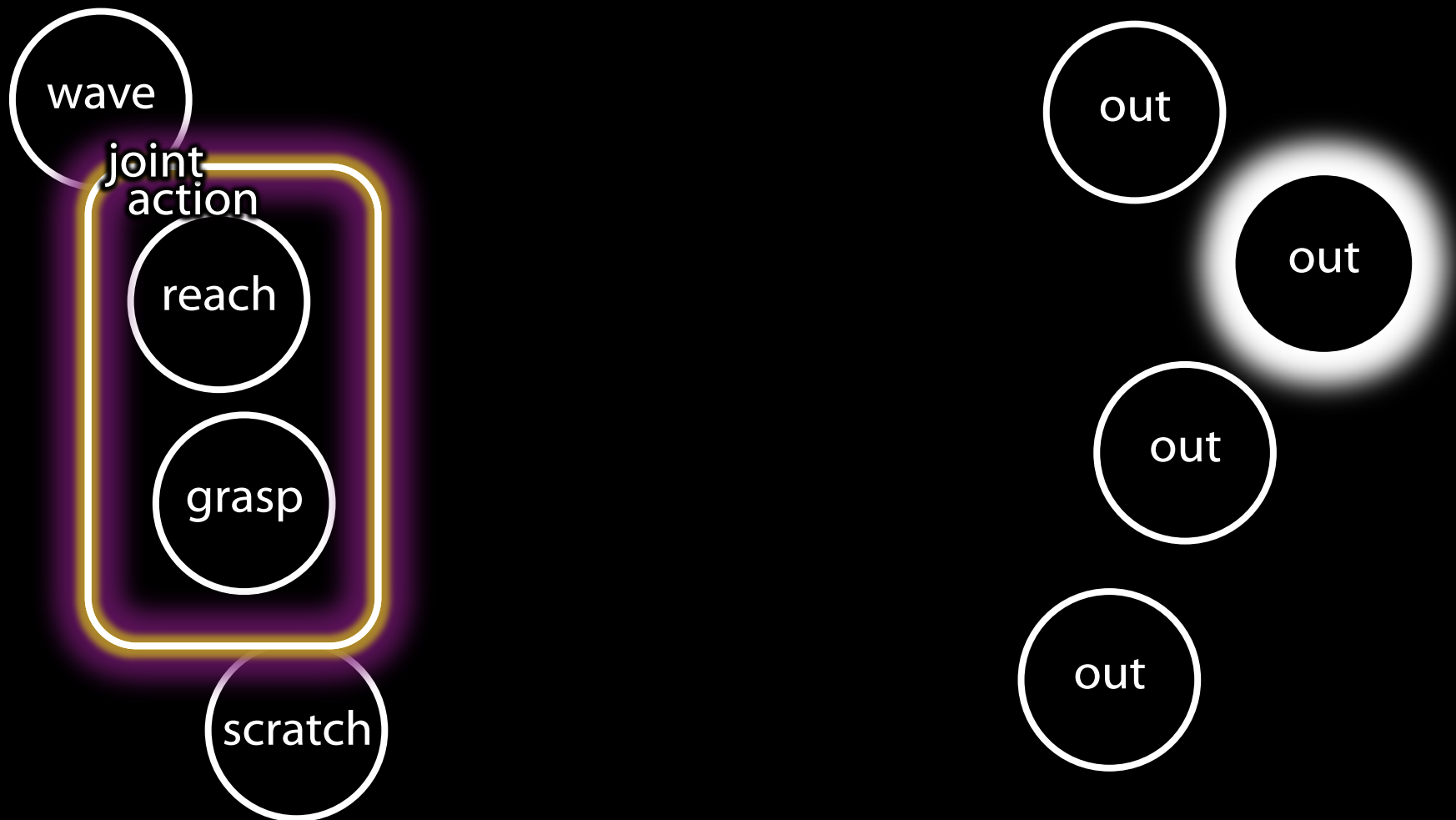
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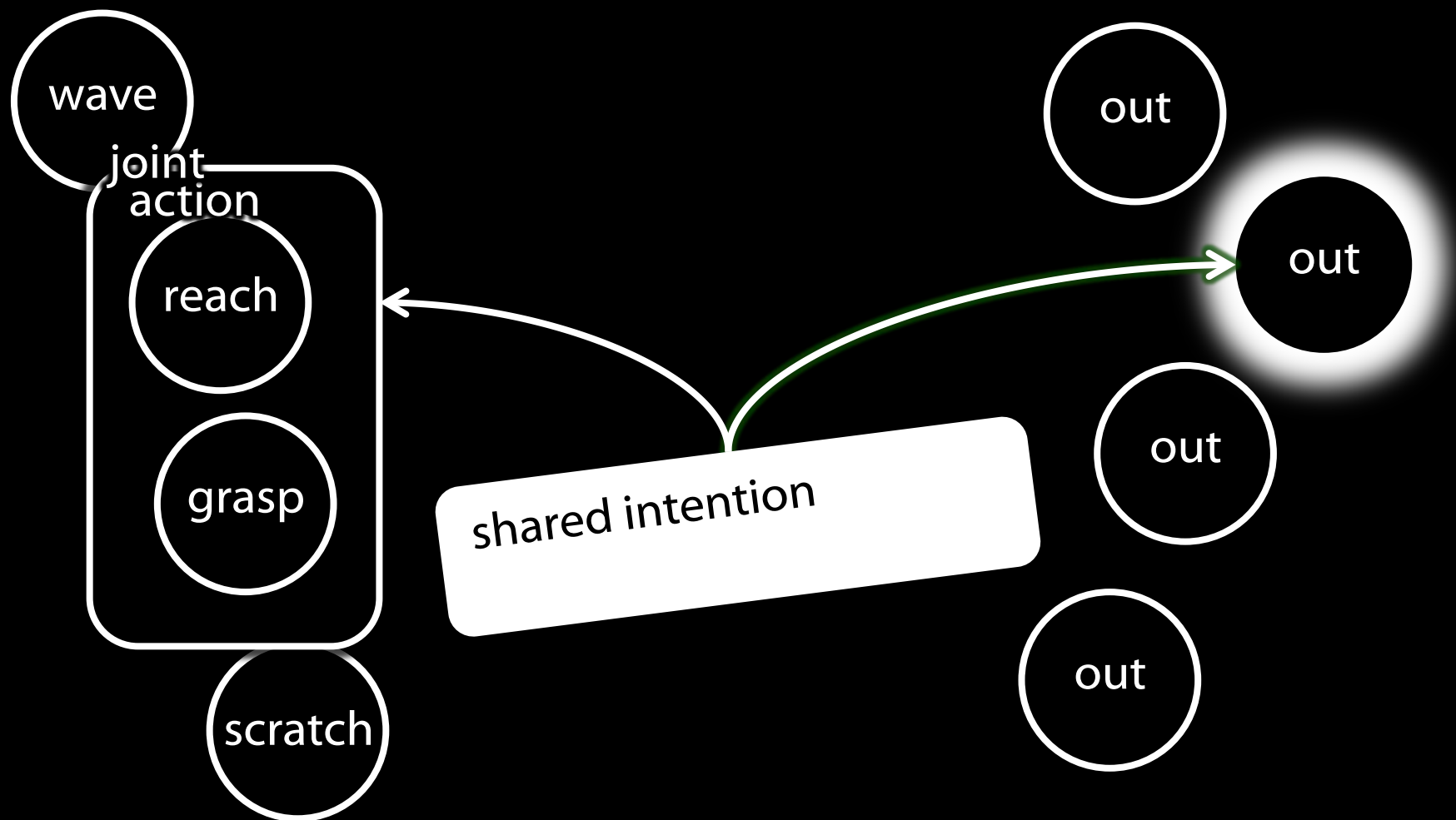
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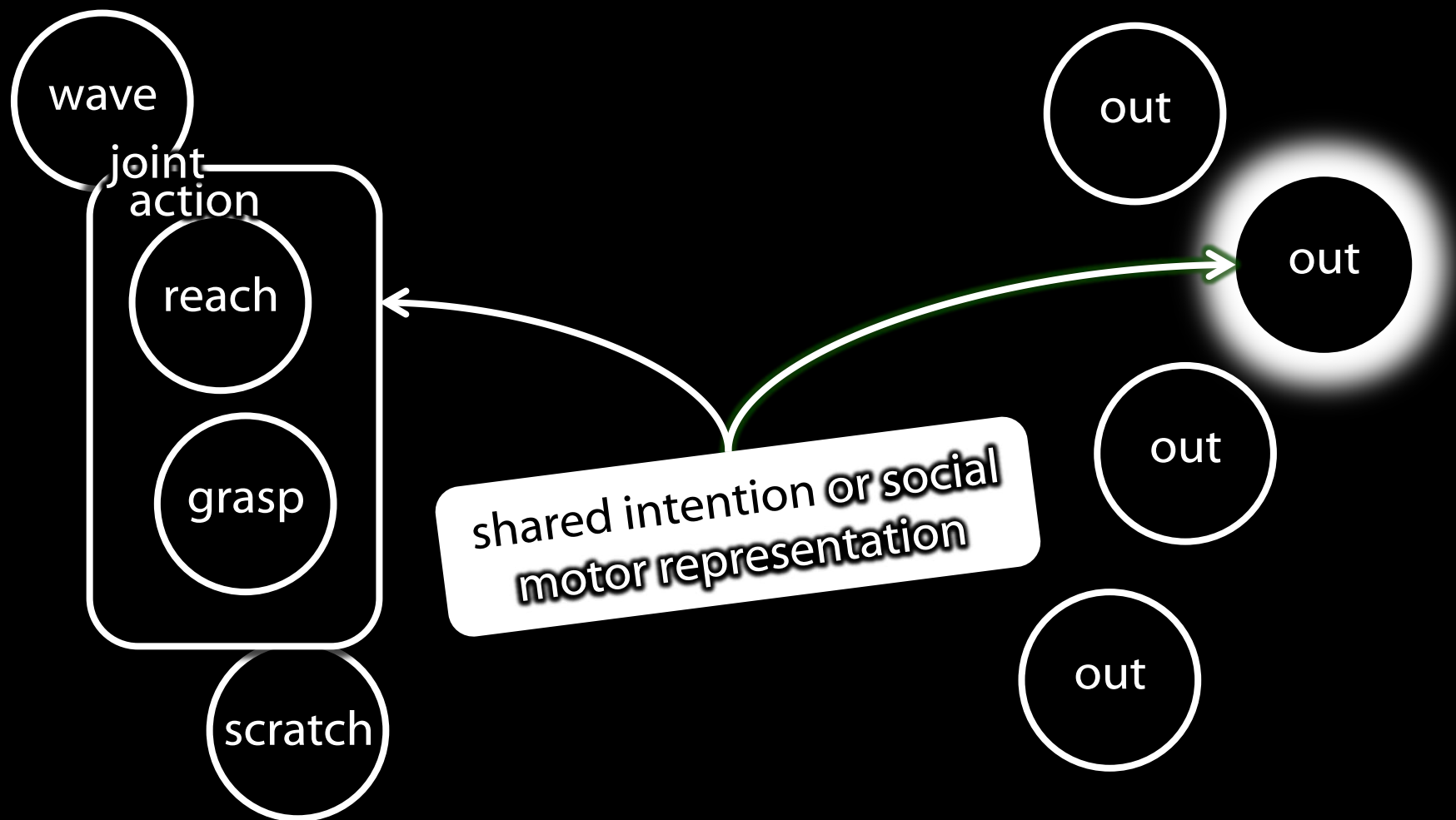
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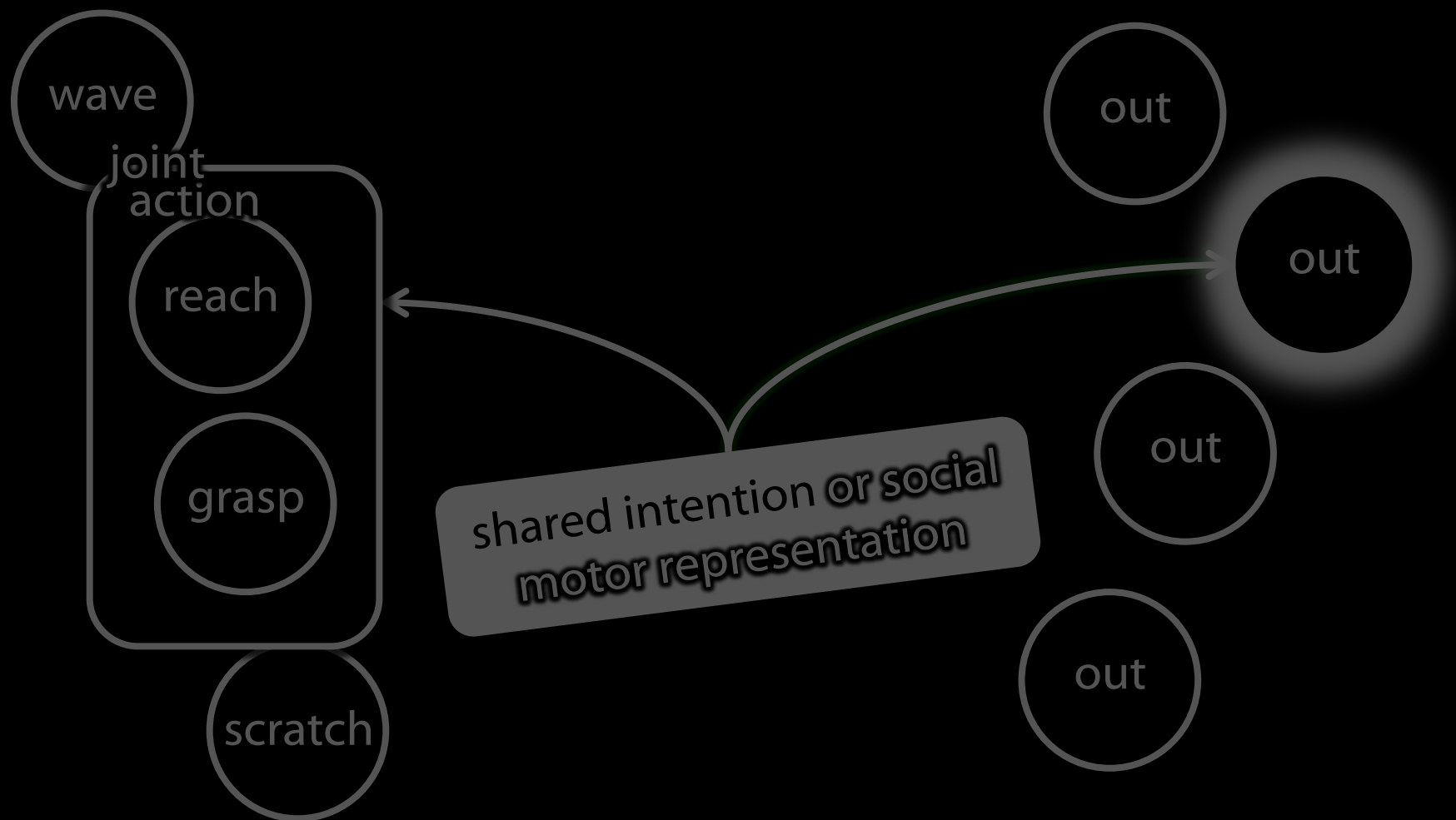
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Sufficient conditions

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 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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Reciprocal agent-neutral motor representation
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Does reciprocal agent-
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How could social motor
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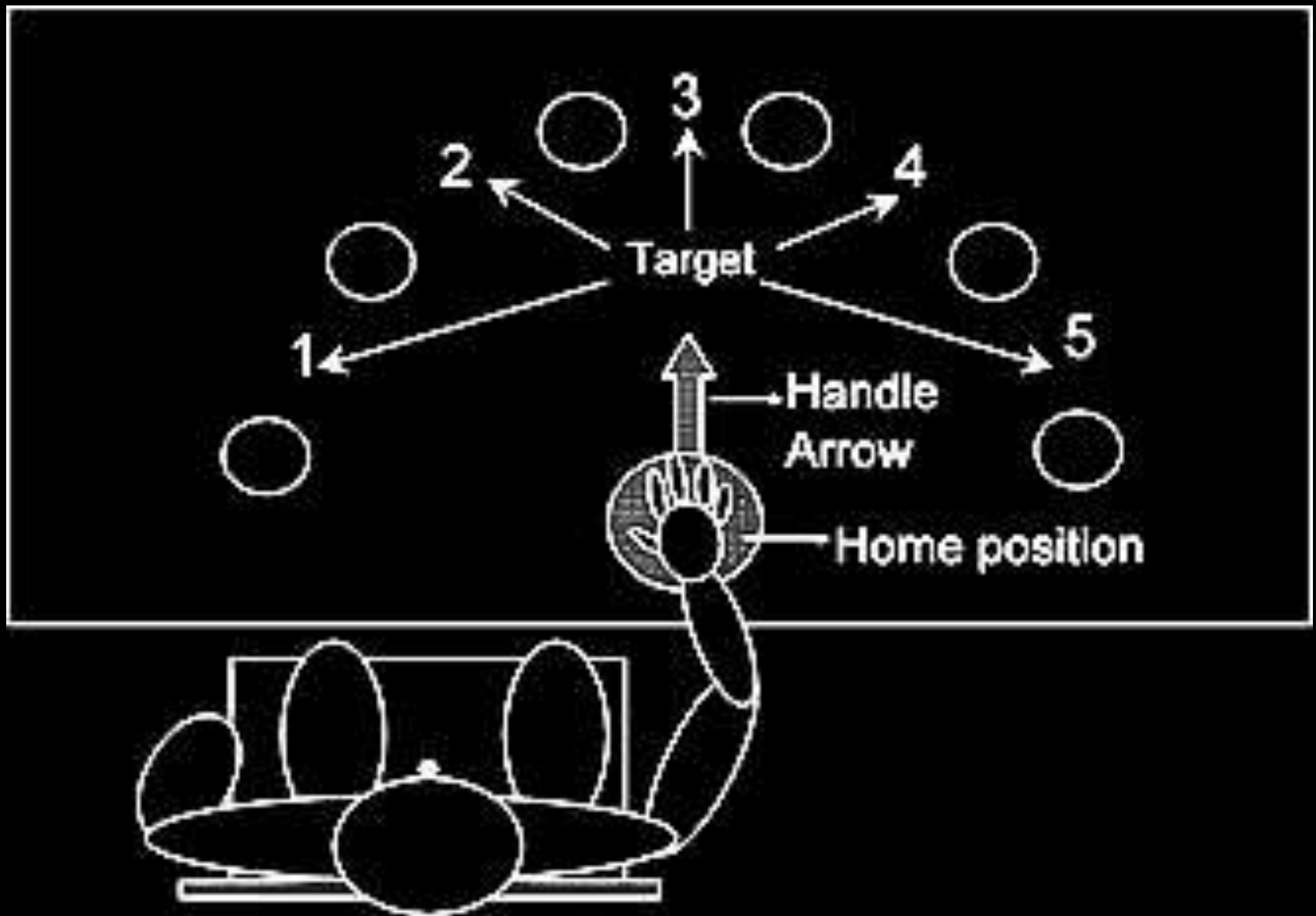
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‘the key property of joint action lies in its internal
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(Alonso 2009, pp.444-5)

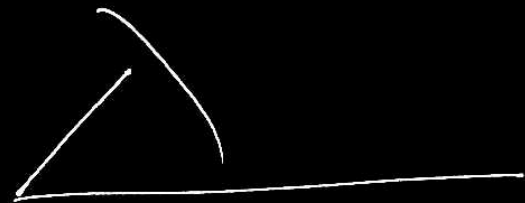
What are intentions for?



(Zhang and Rosenbaum 2007)



(big
reward)



↑
ONE
WAY



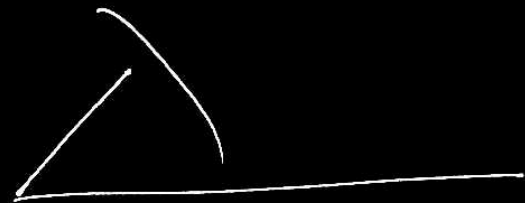
x

start here

shared
What are intentions for?
人



(big
reward)



↑
ONE
WAY



x

start here

moving an object together

(Kourtis et al 2010)

tidying up the toys together

(Behne et al 2005)

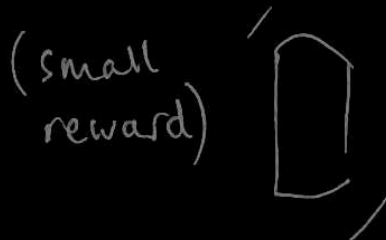
cooperatively pulling
handles in sequence to
make a dog-puppet sing

(Brownell et al 2006)

bouncing a cube on a large
trampoline together

(Tomasello & Carpenter 2007)

pretending to row a boat
together



ONE
WA~

X

start here

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< different content >



< different content >

< different format >

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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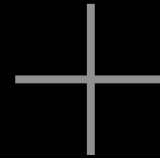
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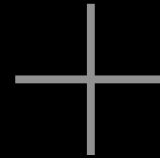
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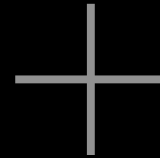
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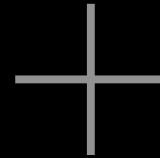
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The Interface Problem

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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
motor representations:

- i. represent outcomes;
- ii. 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.

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

Head southeast on Rue
Cujas toward Rue
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right onto Rue Saint-
Jacques...



?

Follow *that* route

=



?

Follow *that* route

=



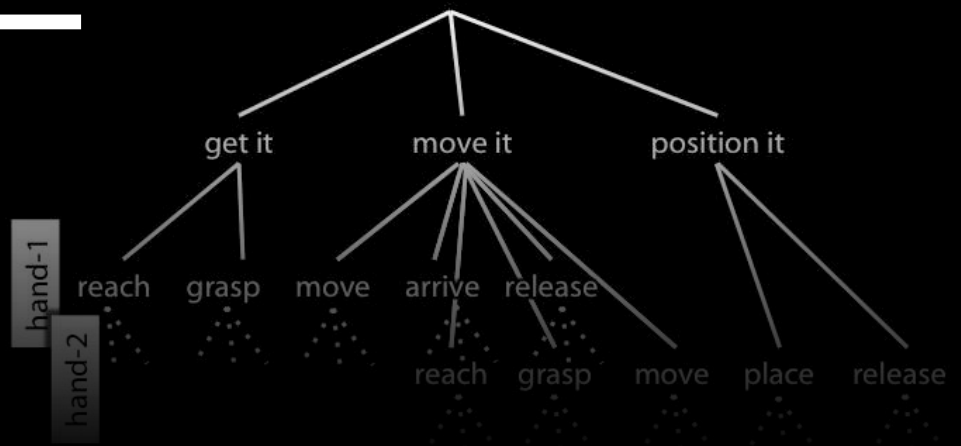
?

Do that

=

Move it from there to here

?



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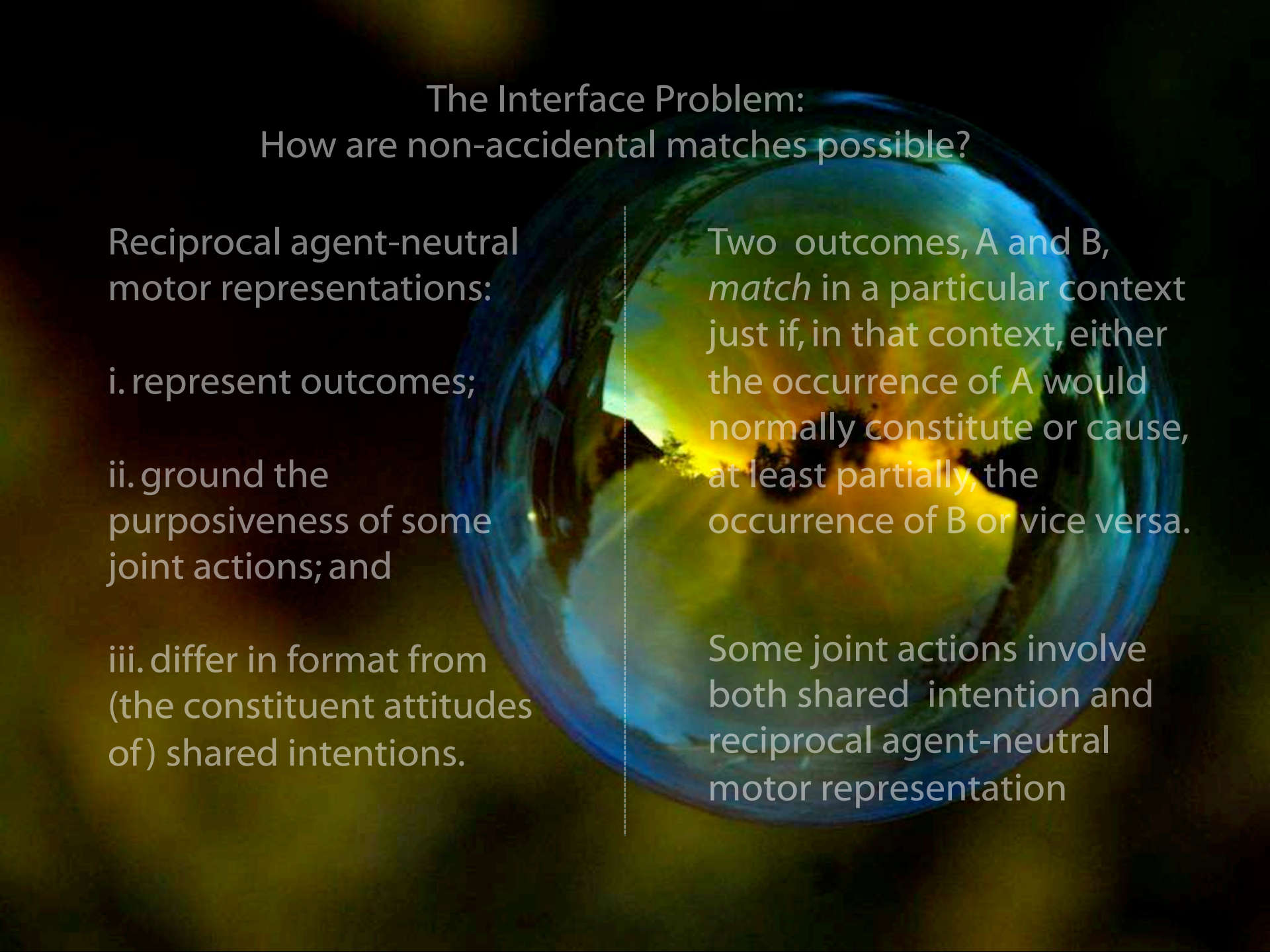
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Two outcomes, A and B,
match in a particular context
just if, in that context, either
the occurrence of A would
normally constitute or cause,
at least partially, the
occurrence of B or vice versa.

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



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

Reciprocal agent-neutral
motor representations:

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

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