



# **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  
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Reciprocal agent-neutral motor representation  
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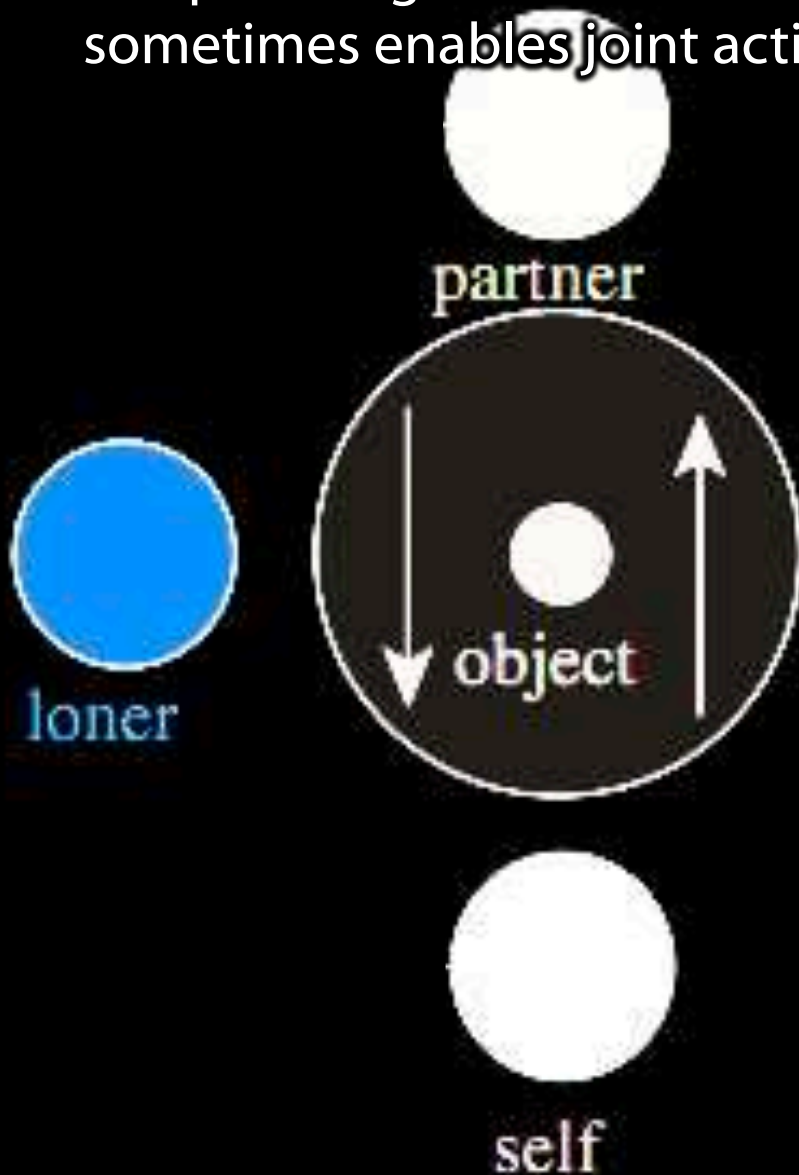
“Simulation of another person’s action, as reflected  
in the activation of motor cortices, gets stronger the  
more the other is perceived as an interaction  
partner.”

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



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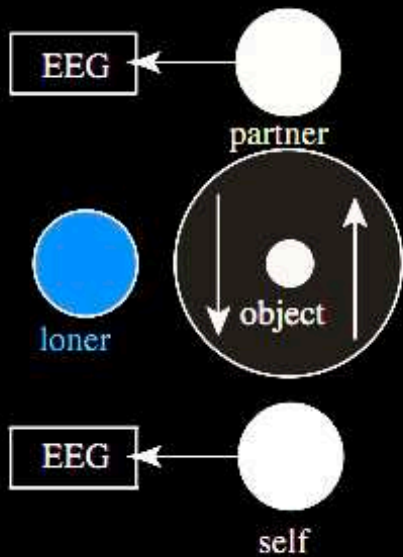
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(a)

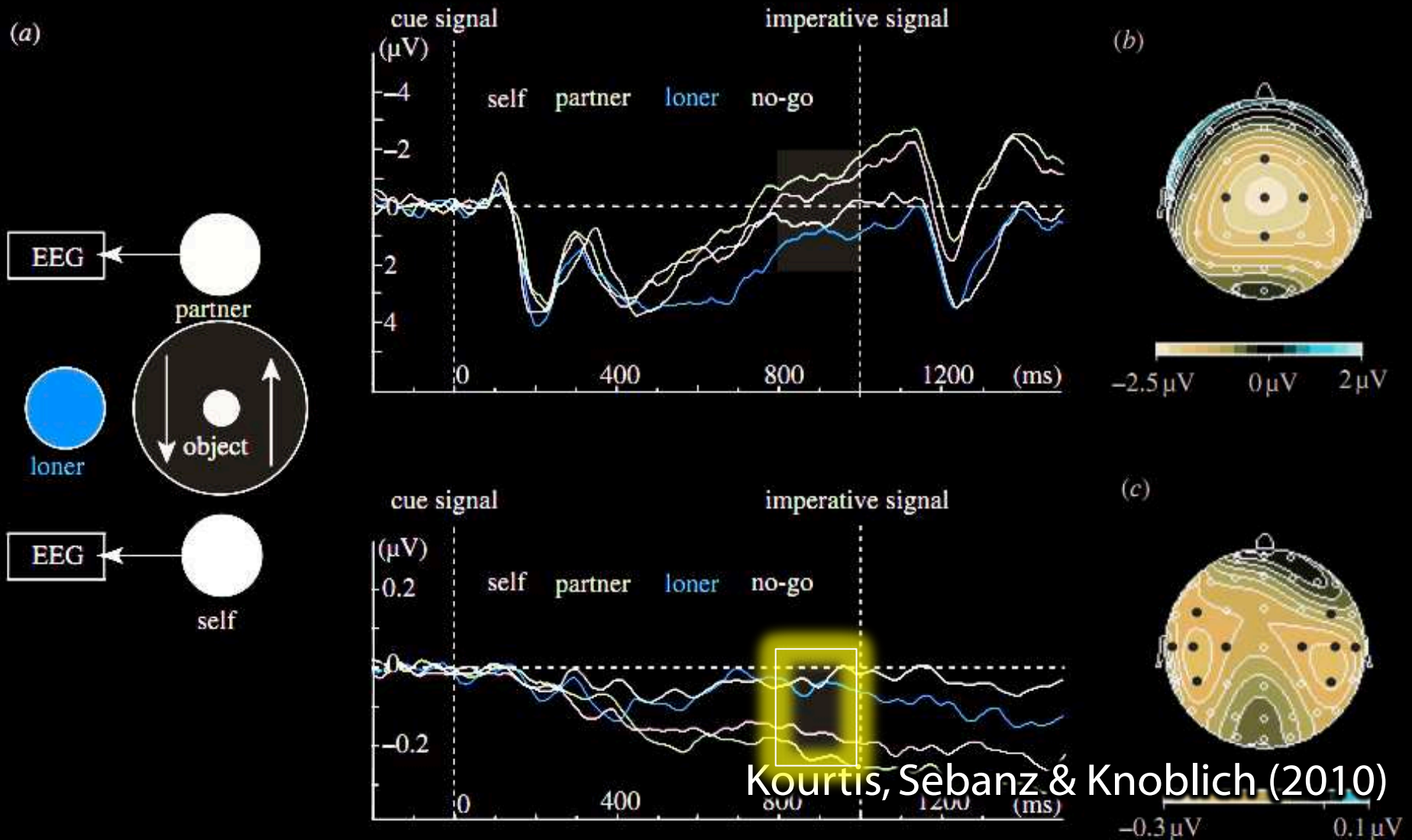


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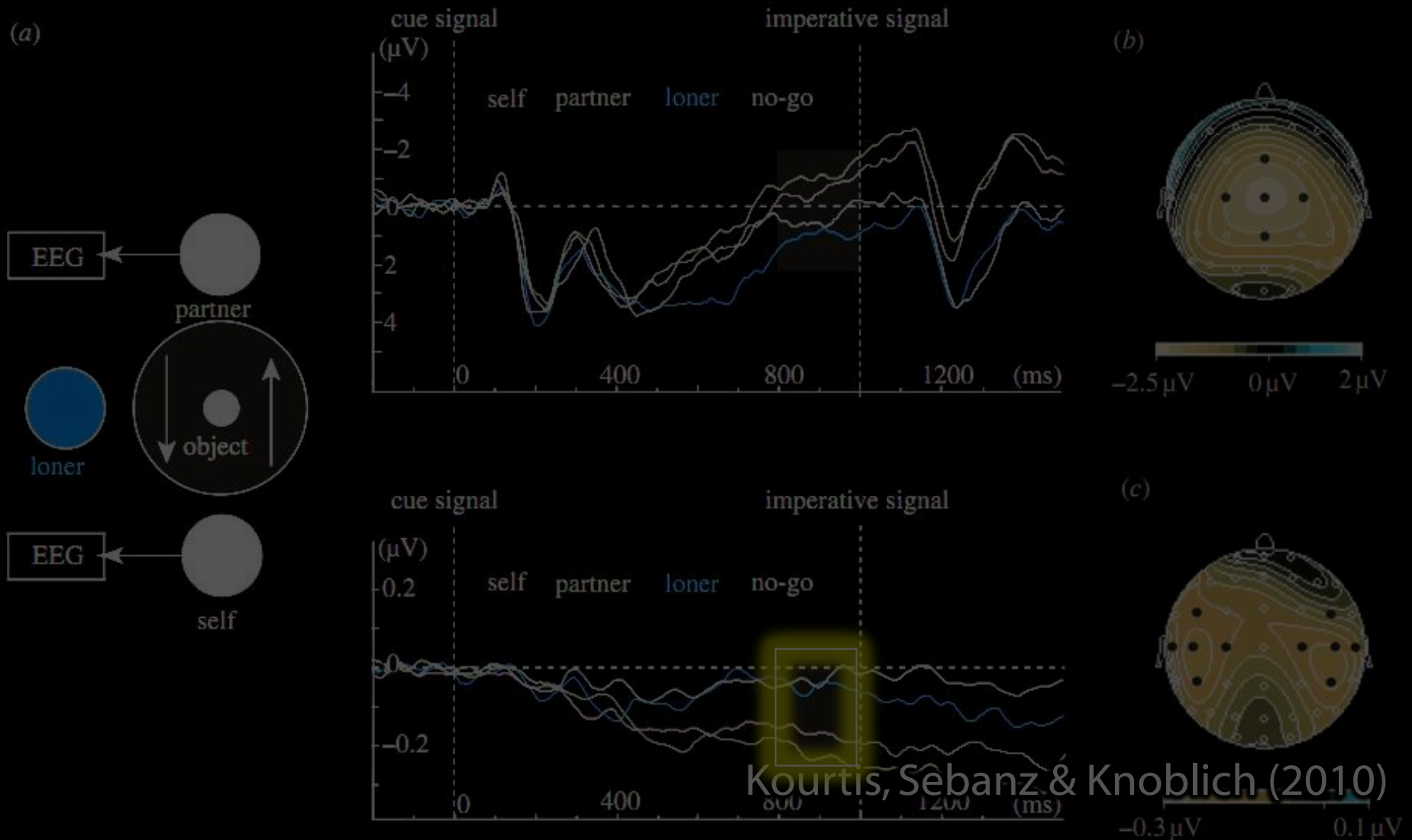
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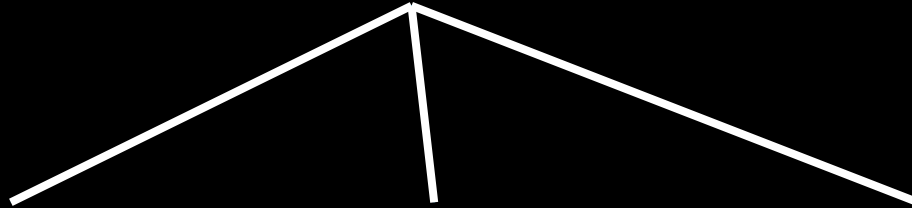
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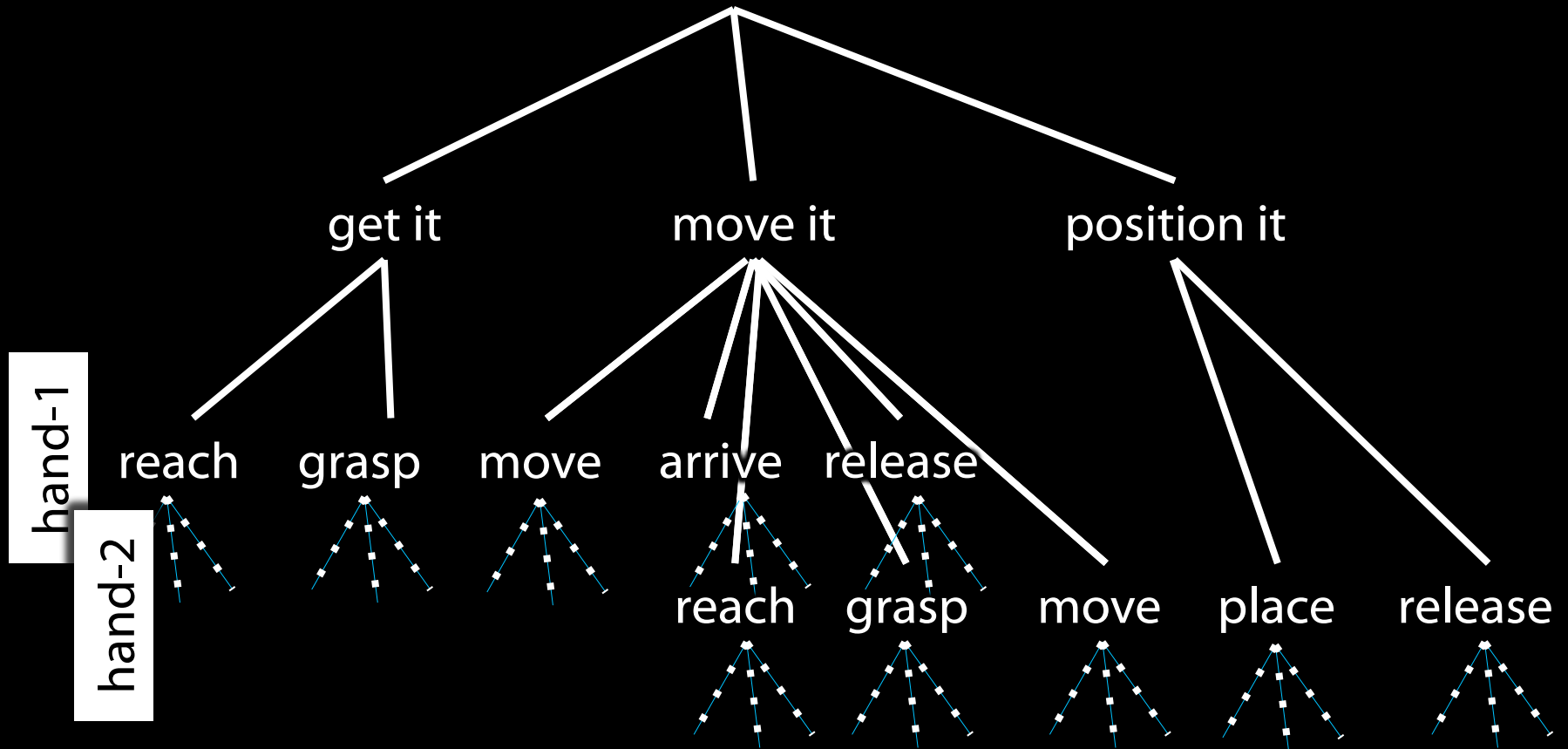


How could reciprocal agent-neutral motor representation ever enable joint action?

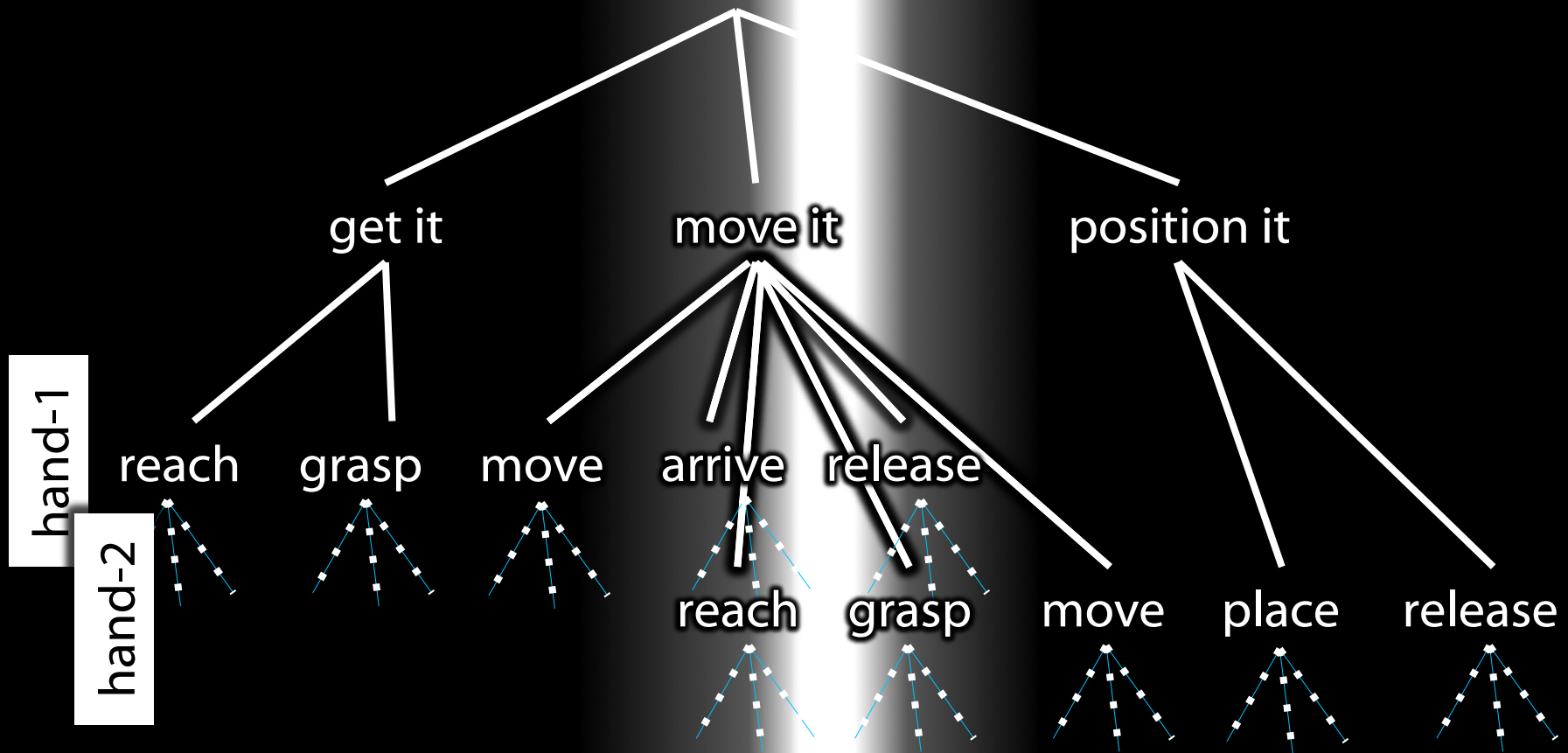
Move it from there to here



# Move it from there to here

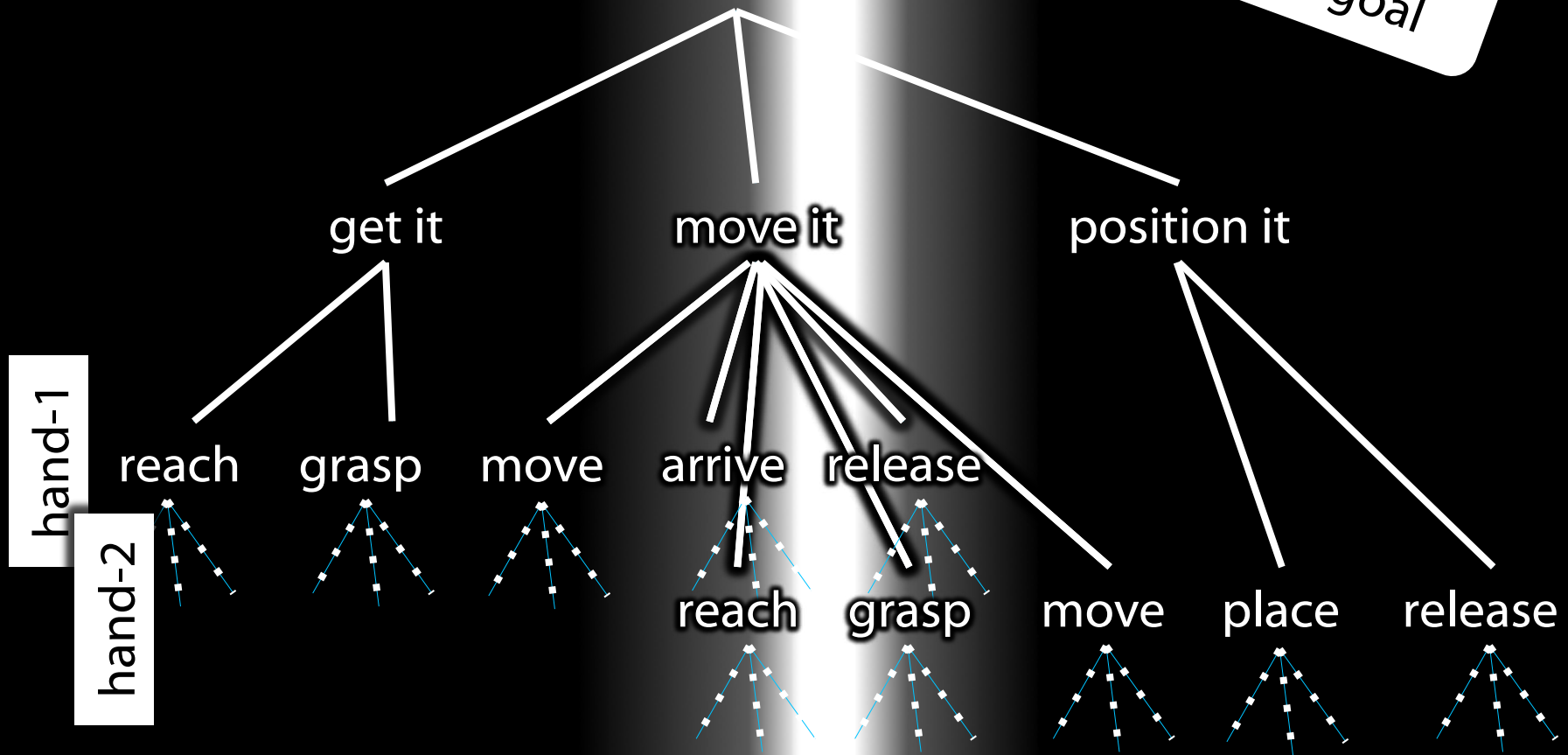


Move it from there to here



Move it from there to here

joint action:  
same goal





Move it from there to here

joint action:  
same goal

get it

move it

position it

same  
planning

hand-1

hand-2

reach

grasp

move

arrive

release

reach

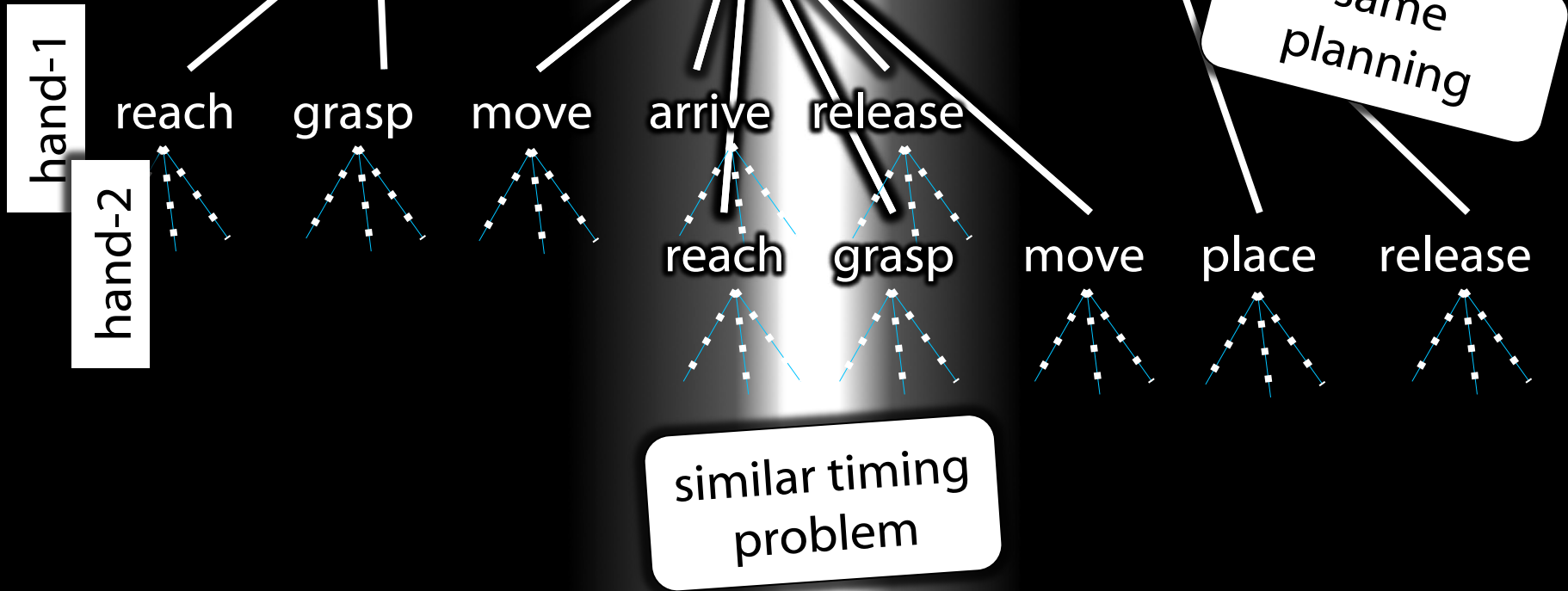
grasp

move

place

release

similar timing  
problem



Move it from there to here

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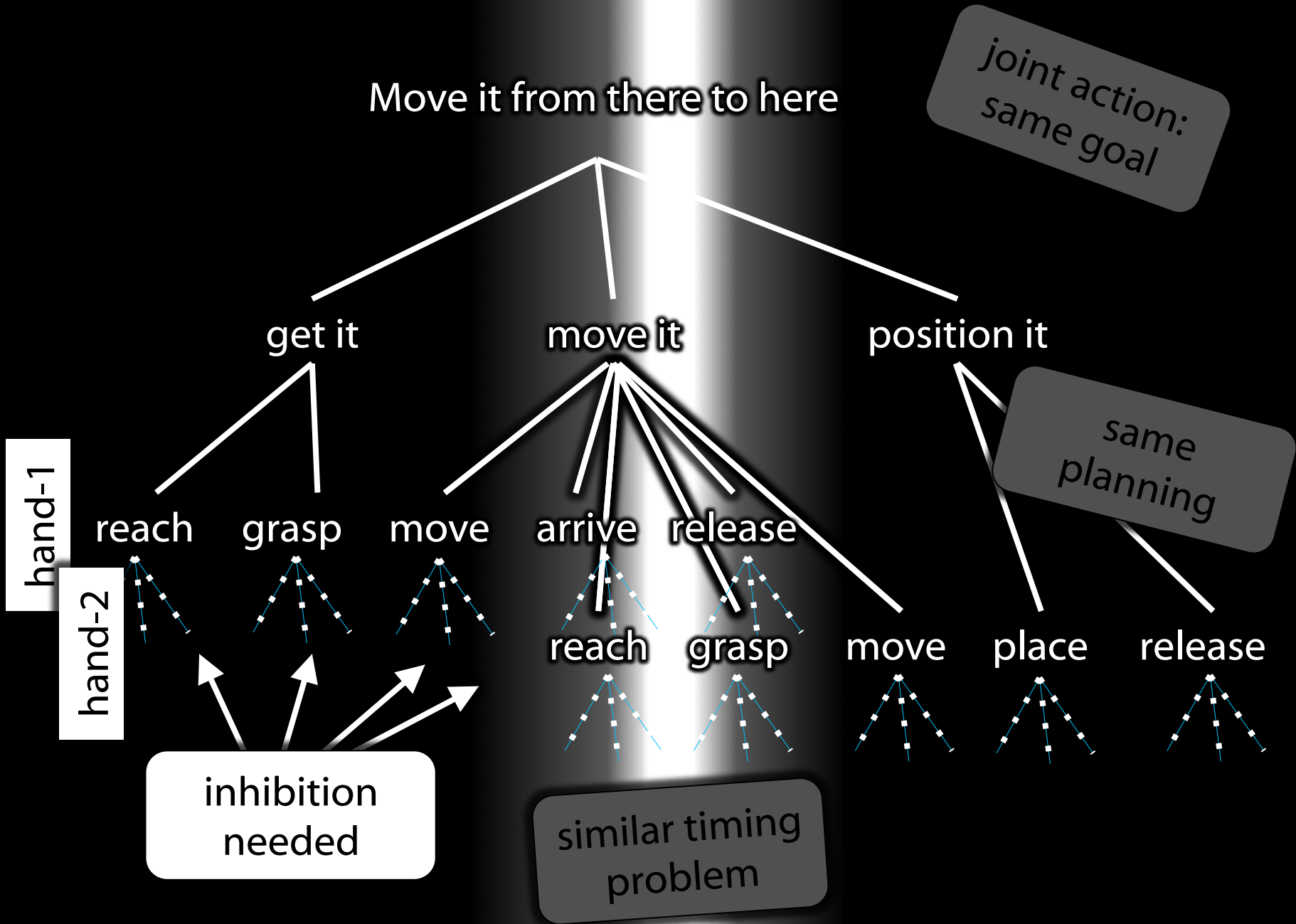
move

place

release

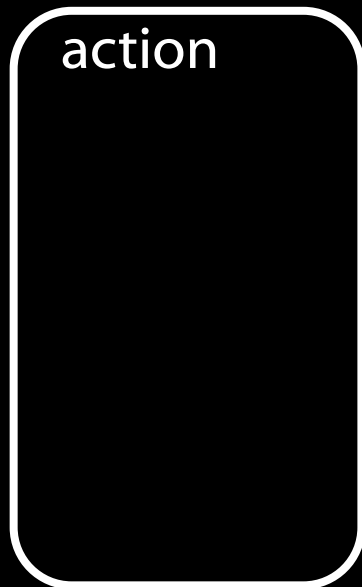
inhibition  
needed

similar timing  
problem

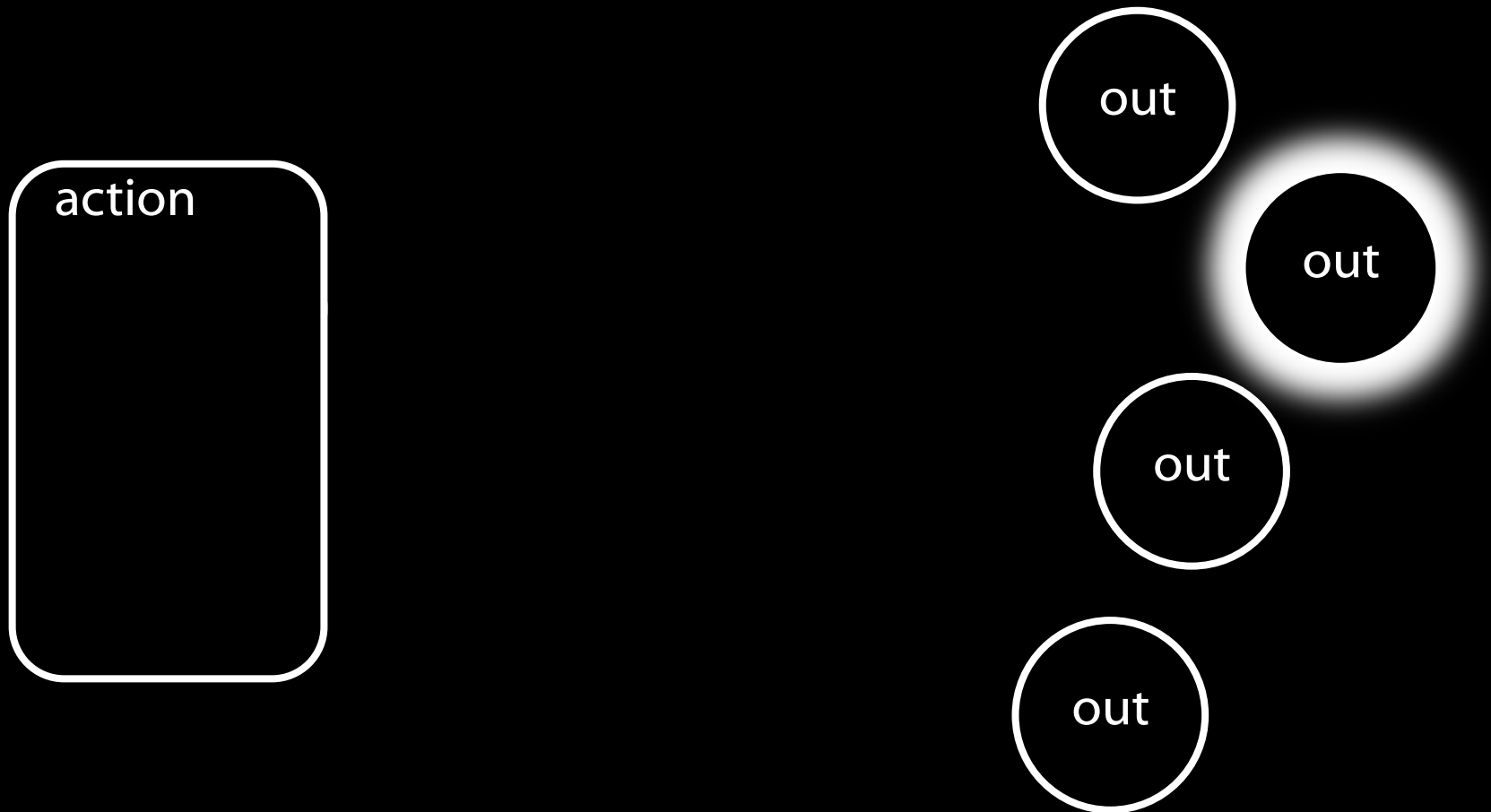




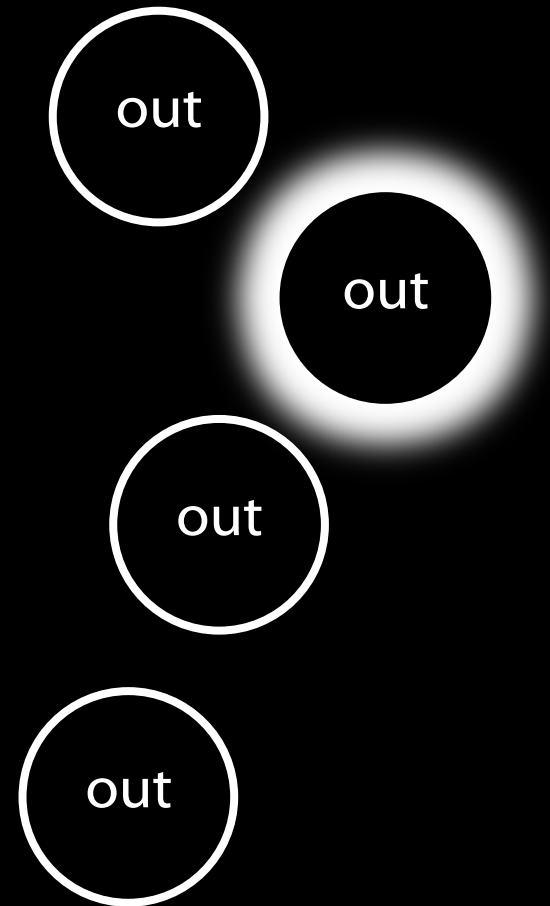
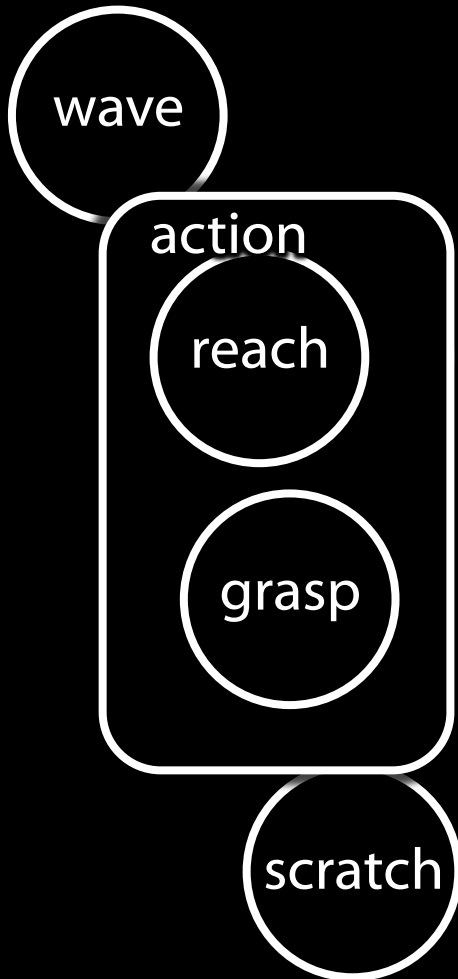
What is the relation between a purposive action and the outcome or outcomes to which it is directed?



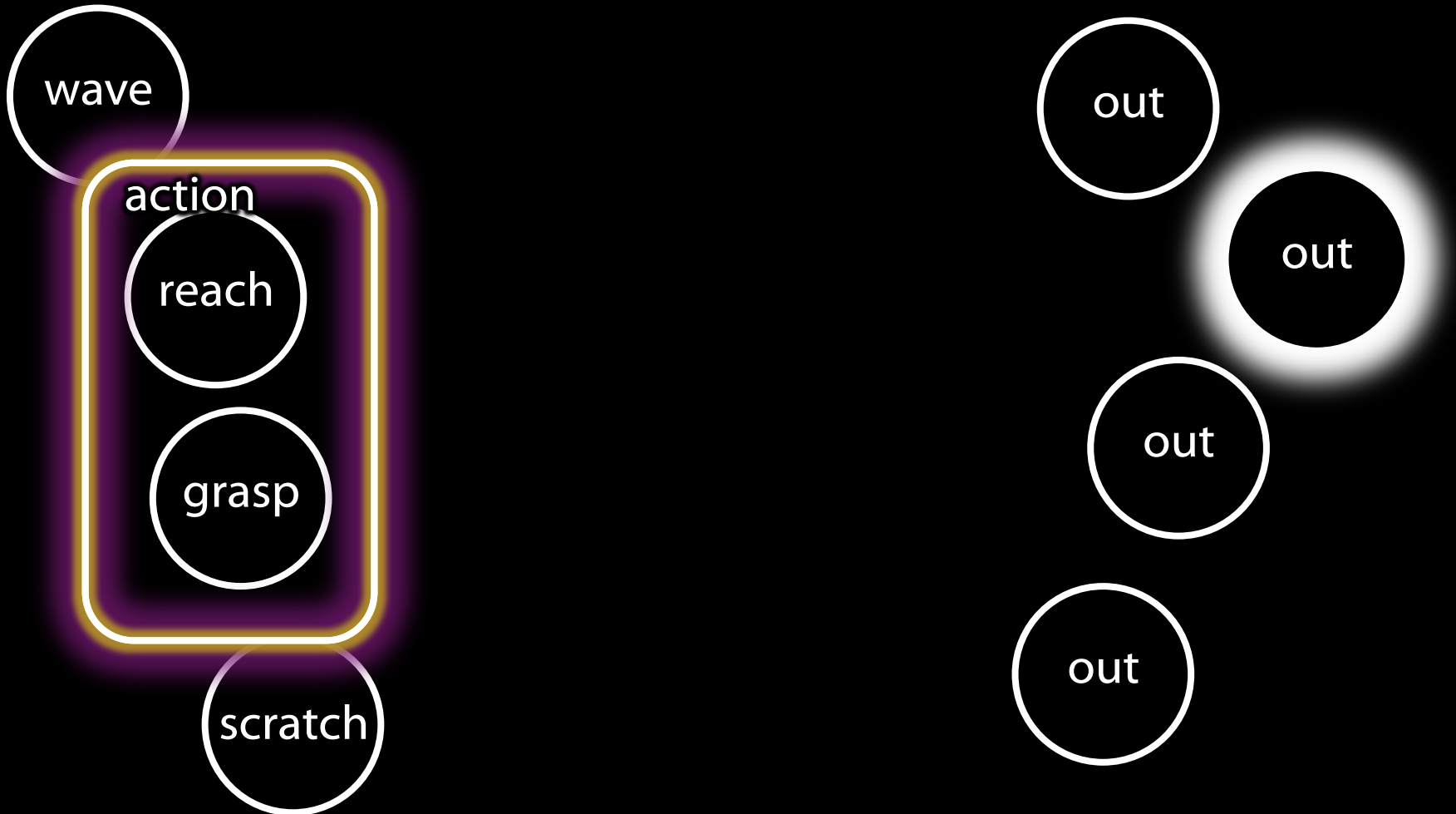
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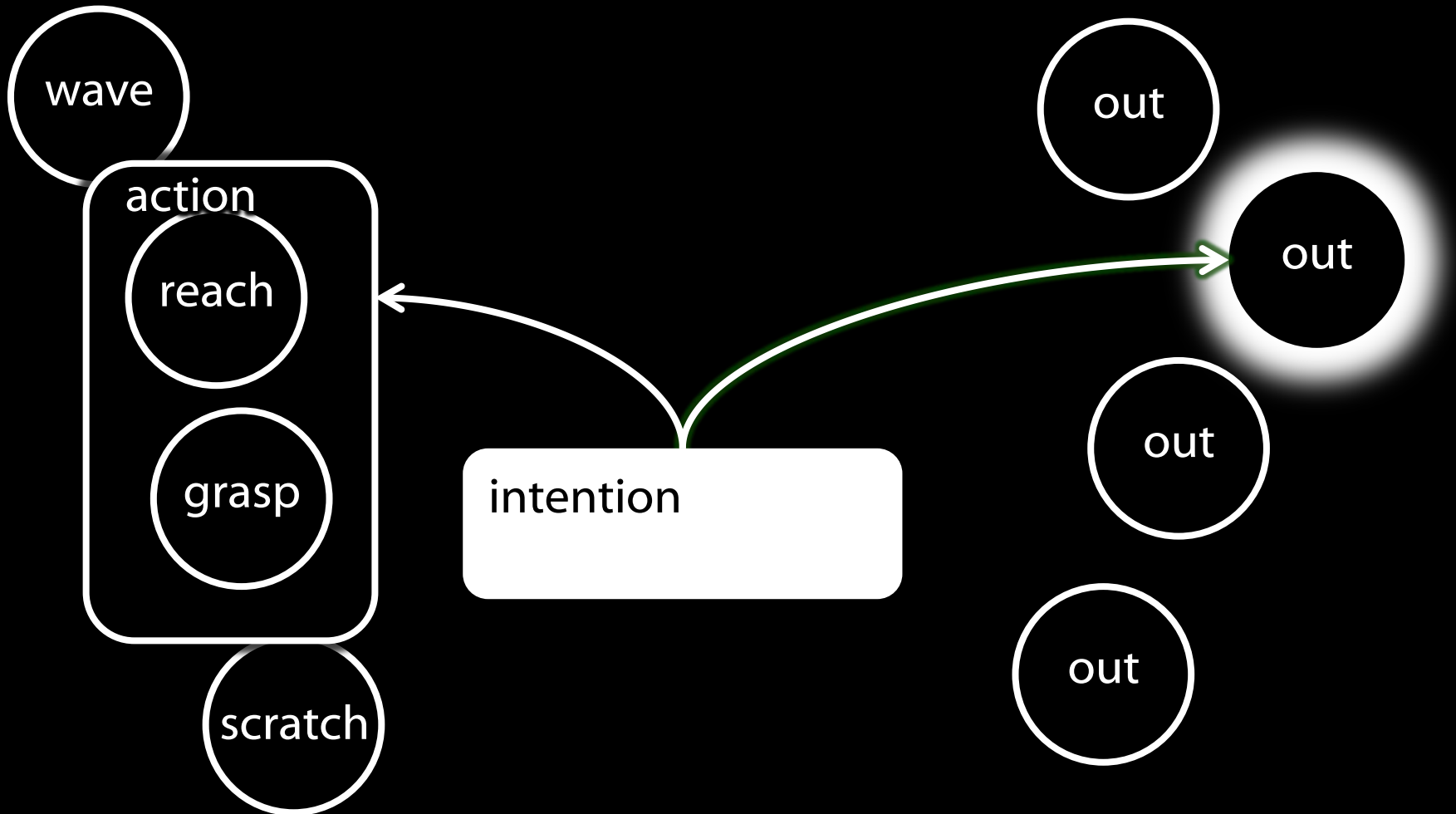
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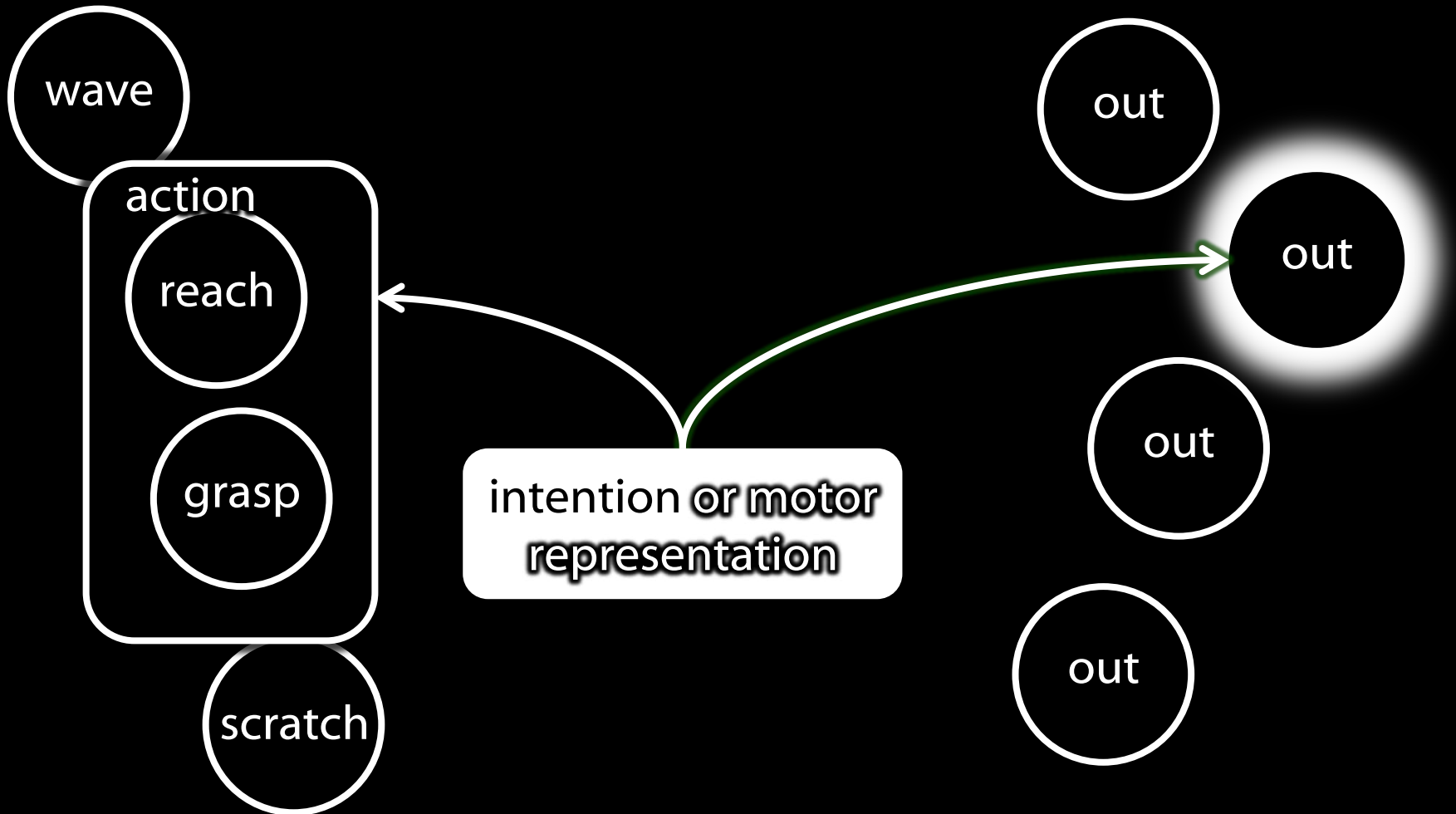
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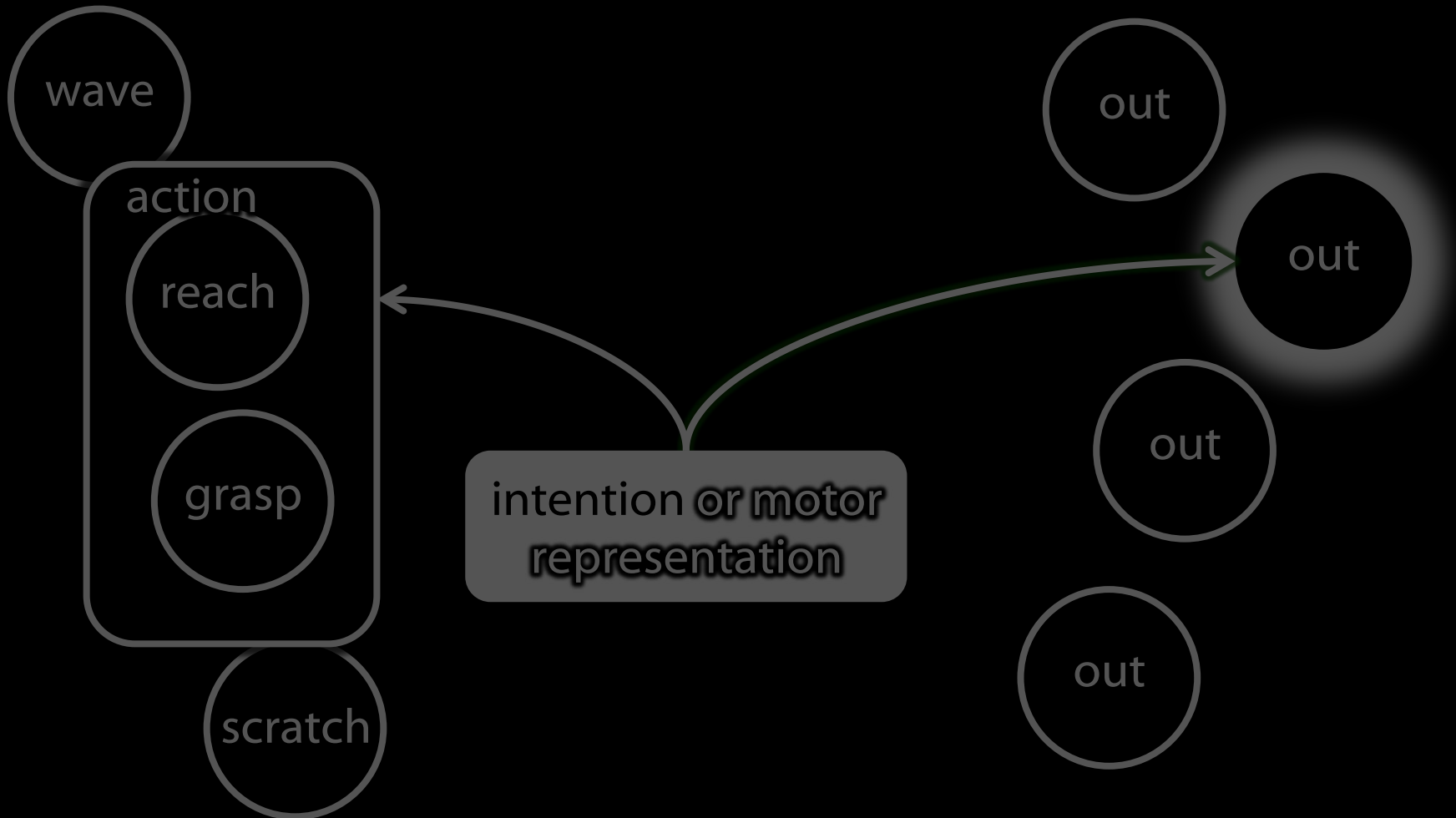
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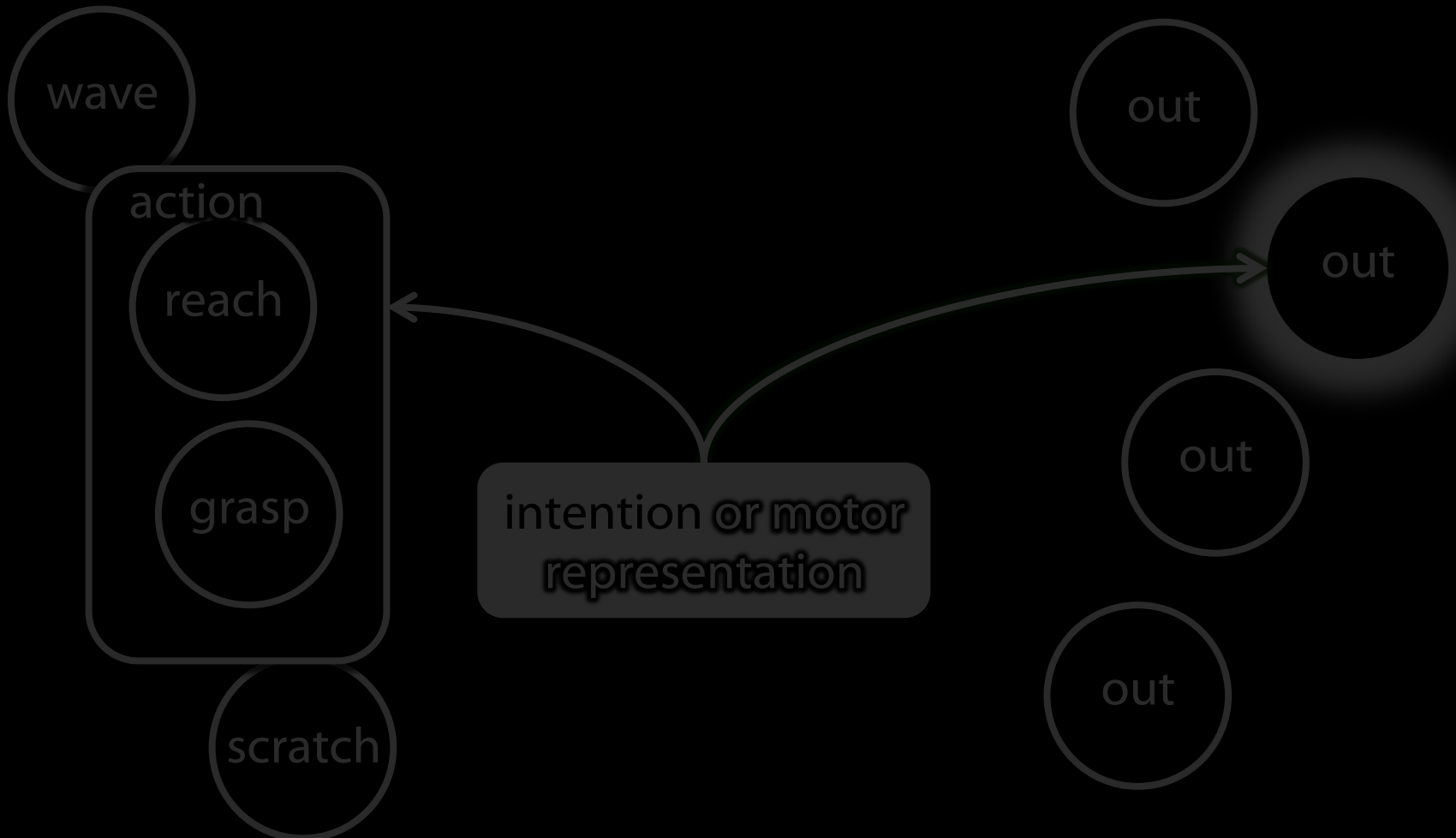
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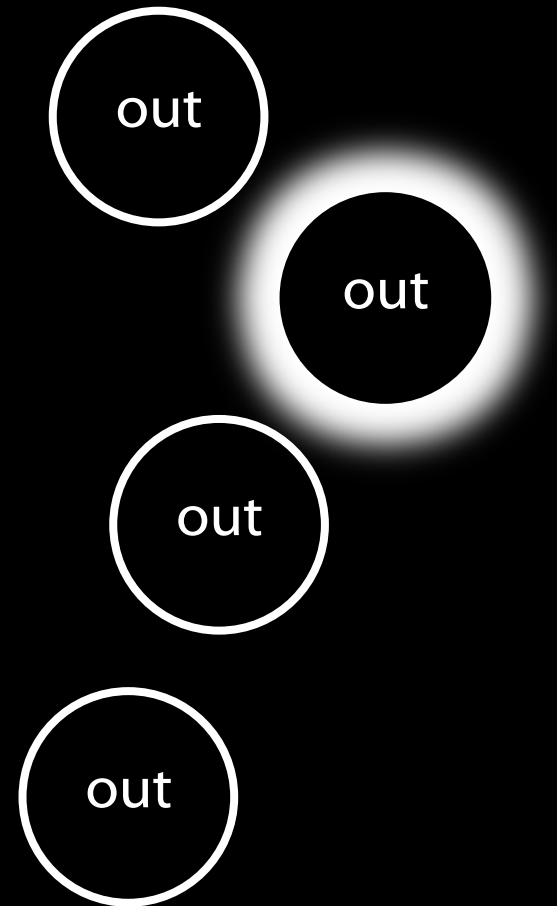
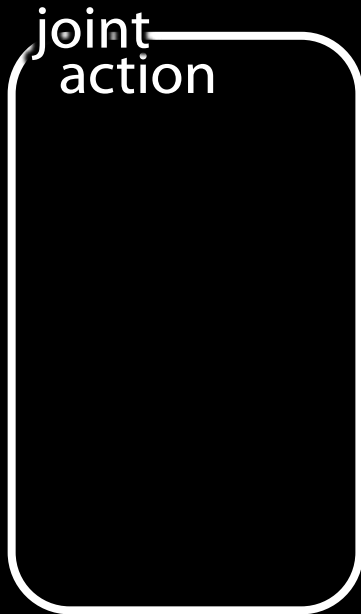


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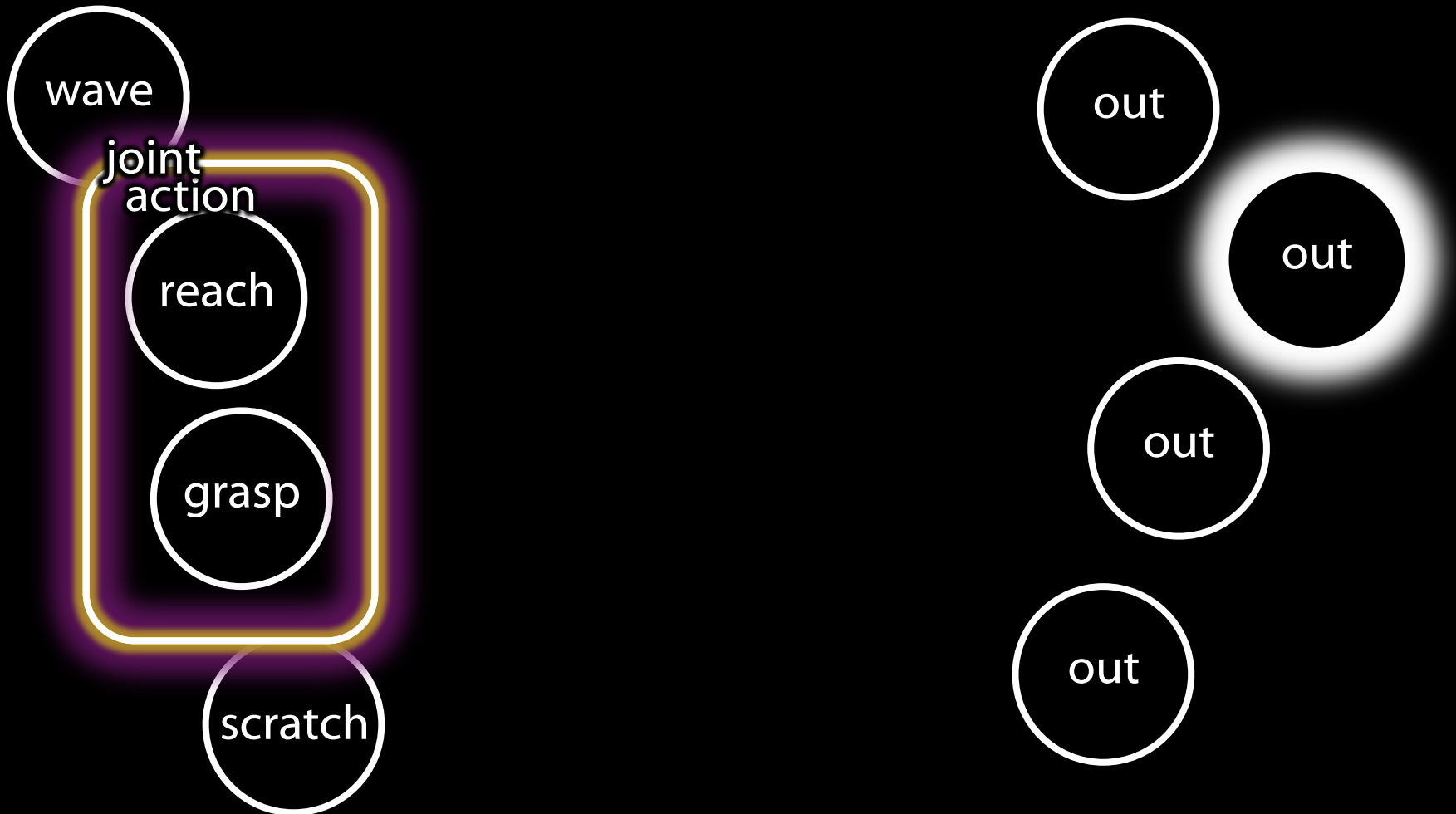




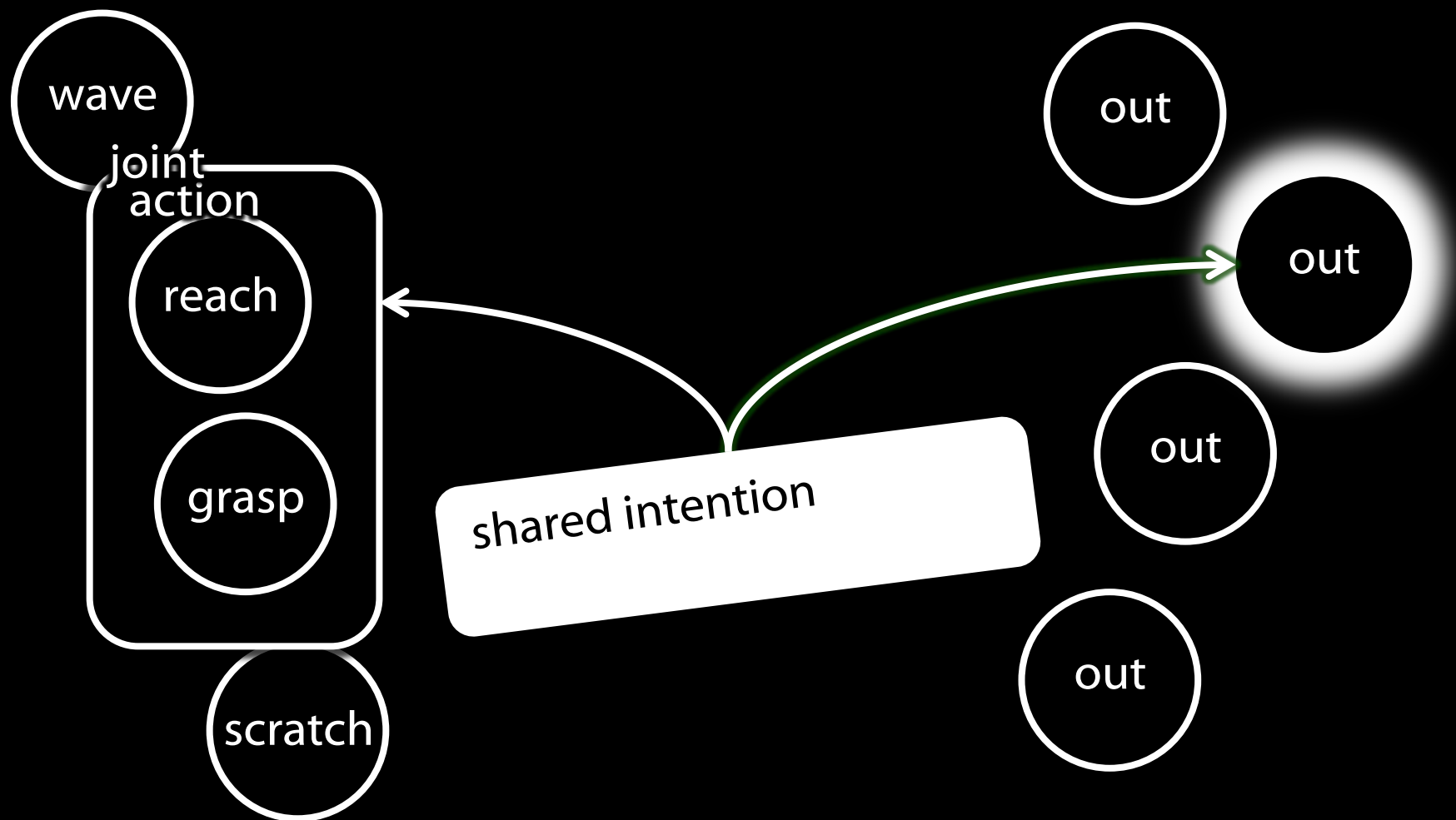
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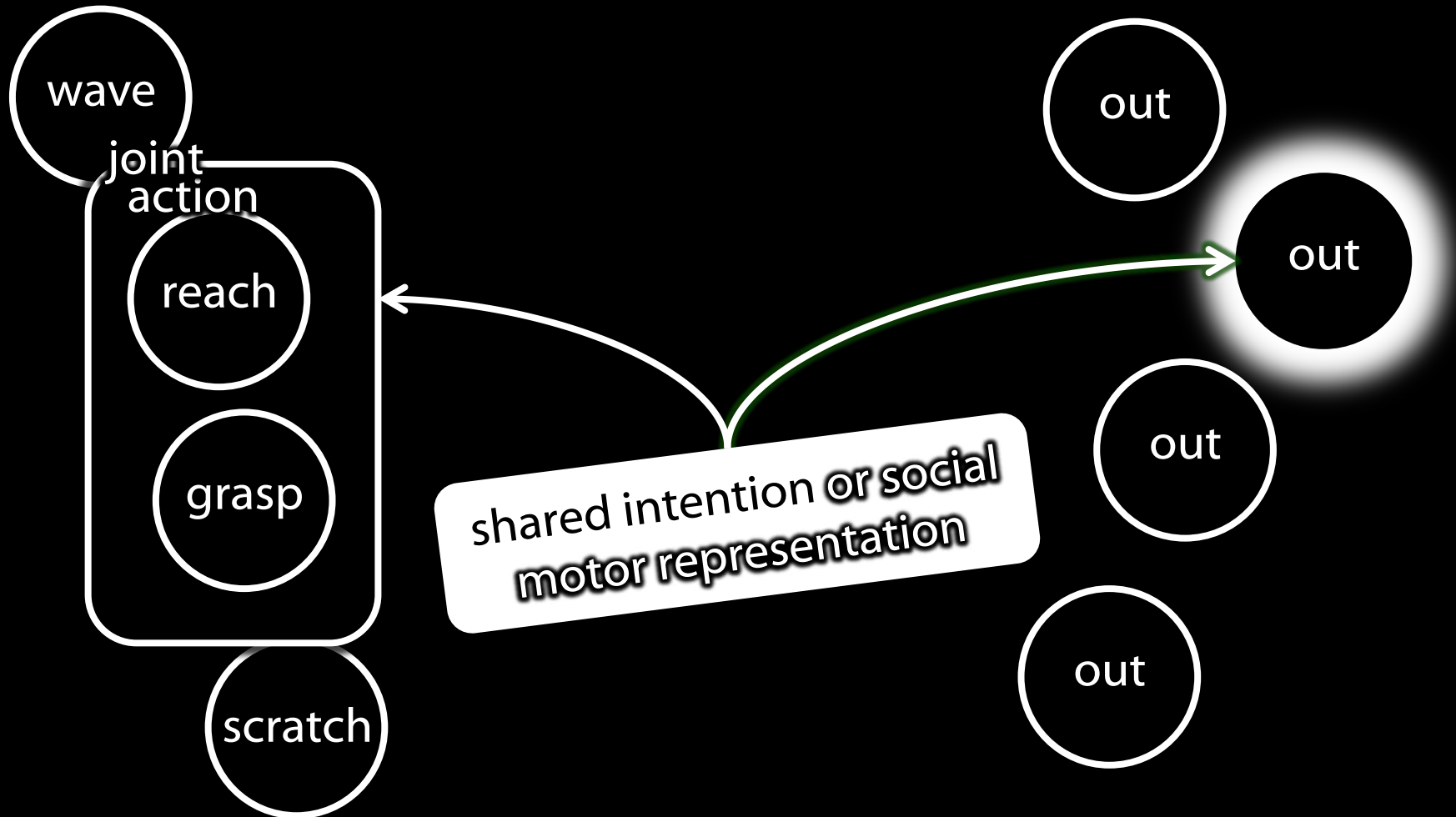
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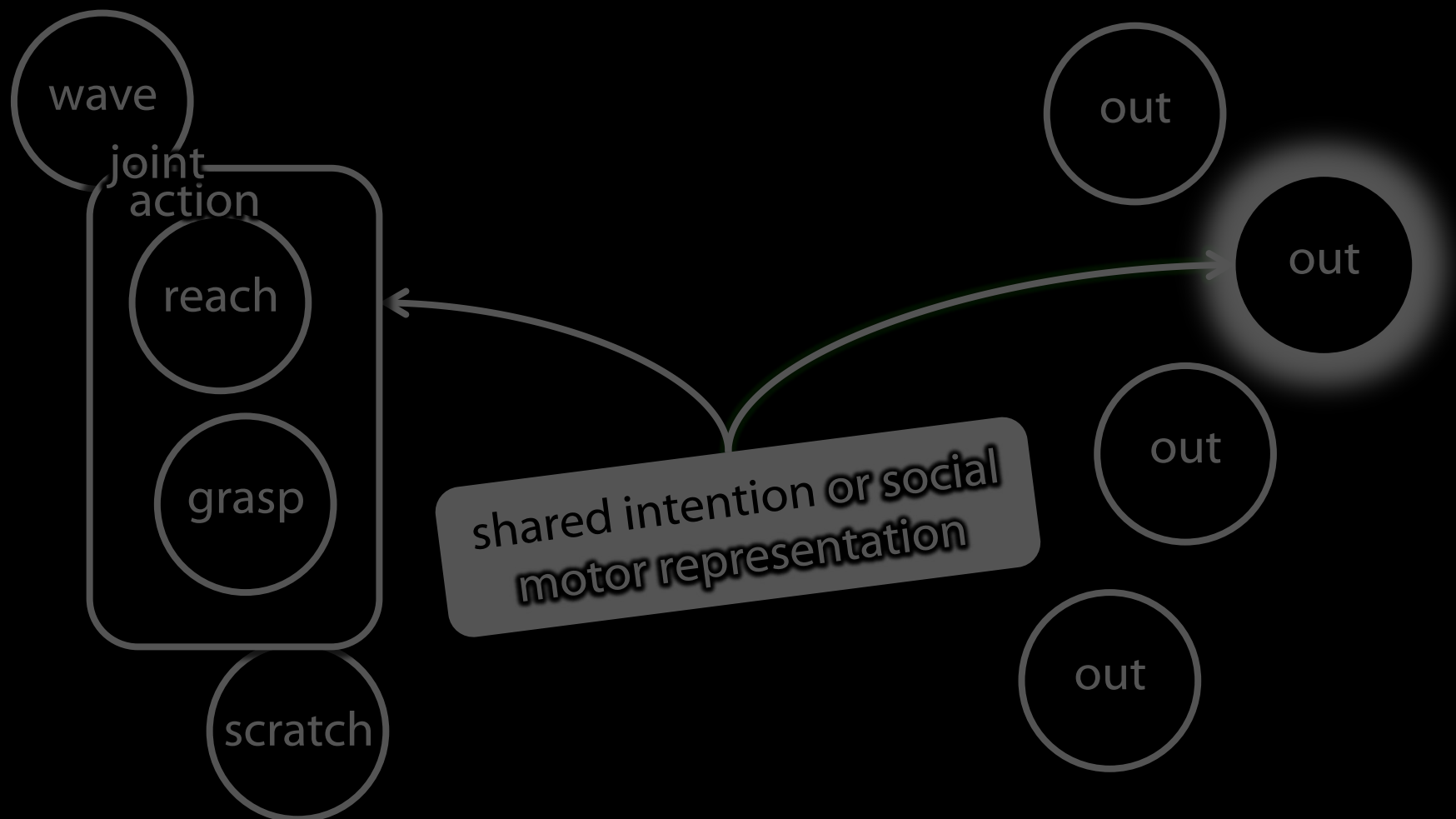
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## Sufficient conditions

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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We have a shared intention  
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“1.(a) I intend that we J and  
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Reciprocal agent-neutral motor representation  
sometimes enables joint action

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?

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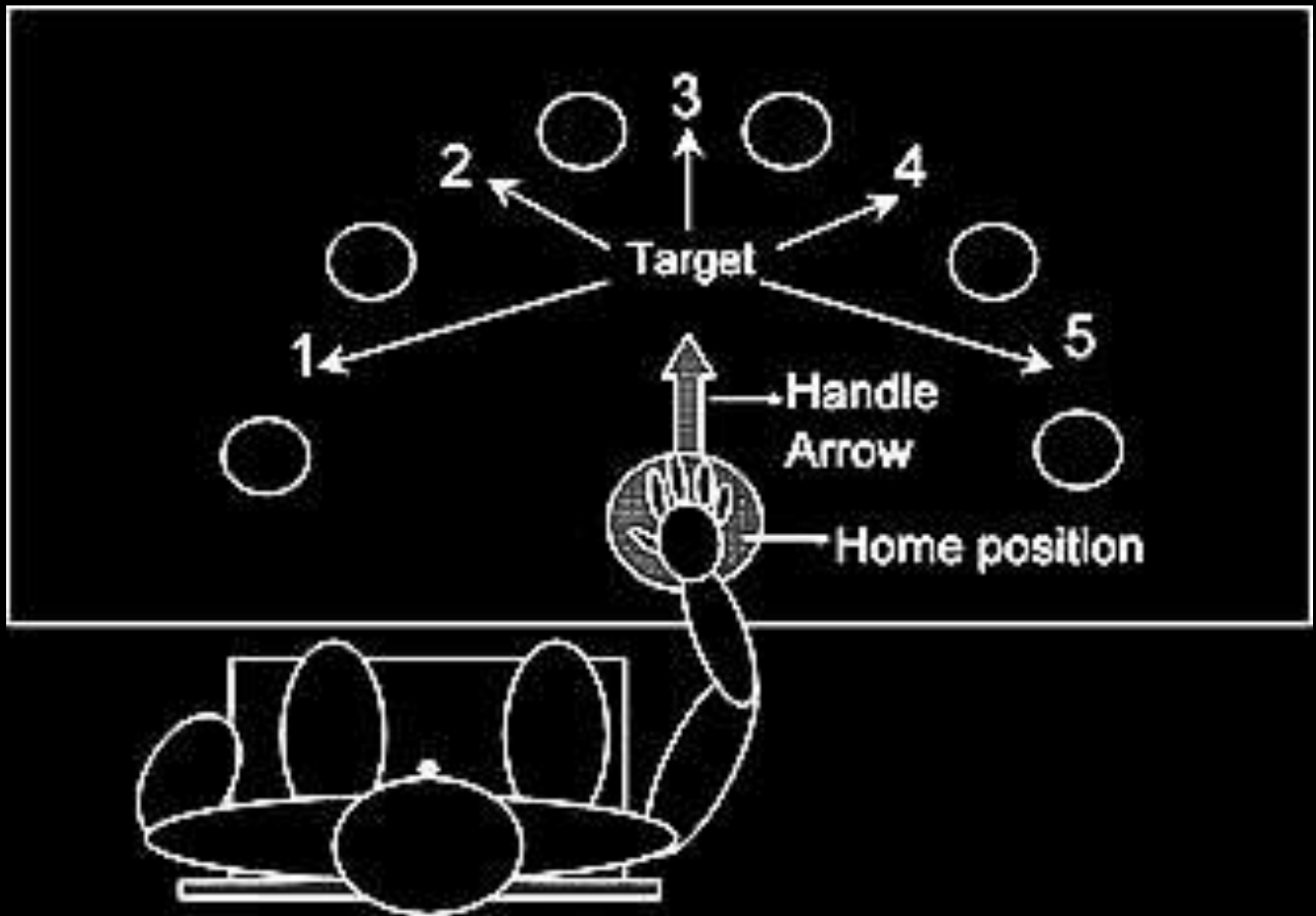
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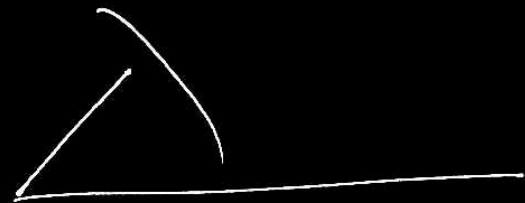
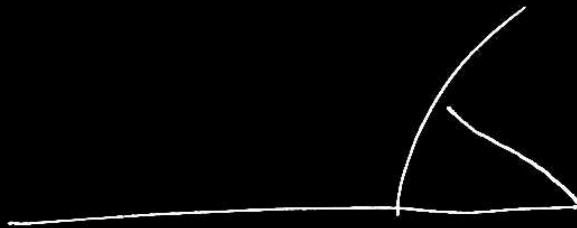
What are intentions for?



(Zhang and Rosenbaum 2007)



(big  
reward)



↑  
ONE  
WAY



x

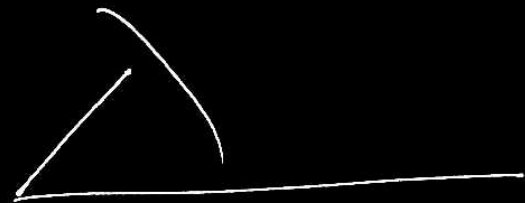
start here

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



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WA-

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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  
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Jacques...



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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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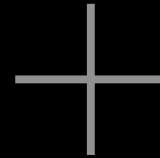


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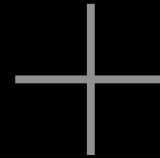
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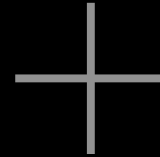
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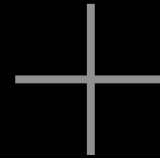
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# The Interface Problem

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Some joint actions involve  
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Reciprocal agent-neutral  
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i. represent outcomes;

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purposiveness of some  
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## The Interface Problem

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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  
normally constitute or cause,  
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occurrence of B or vice versa.

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\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Follow *that* route

=



?

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=



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