

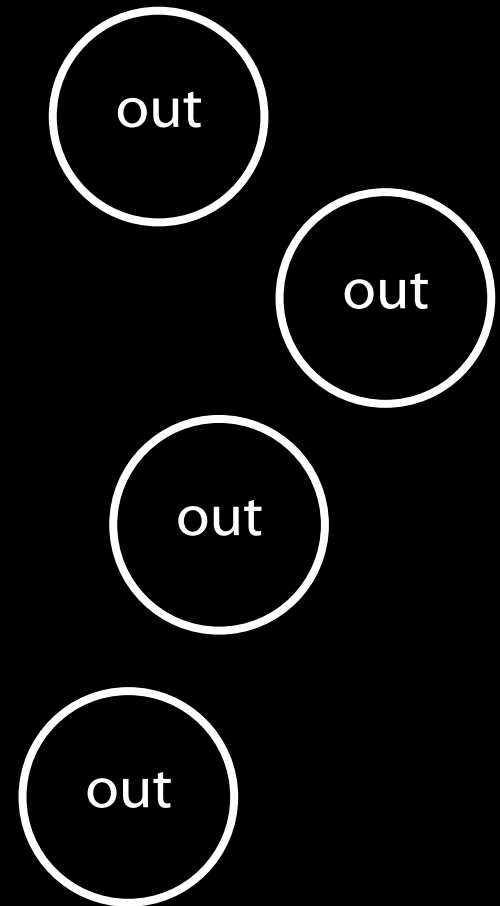
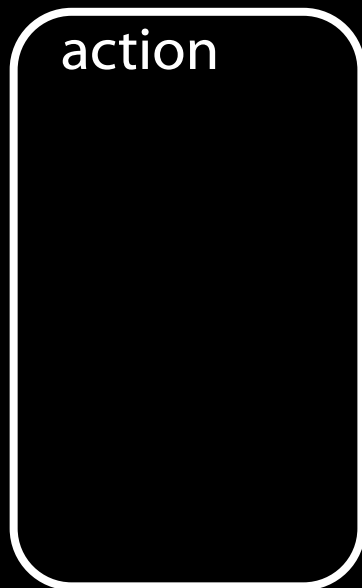
Intention and Motor Representation in Action Explanation

s.butterfill@warwick.ac.uk
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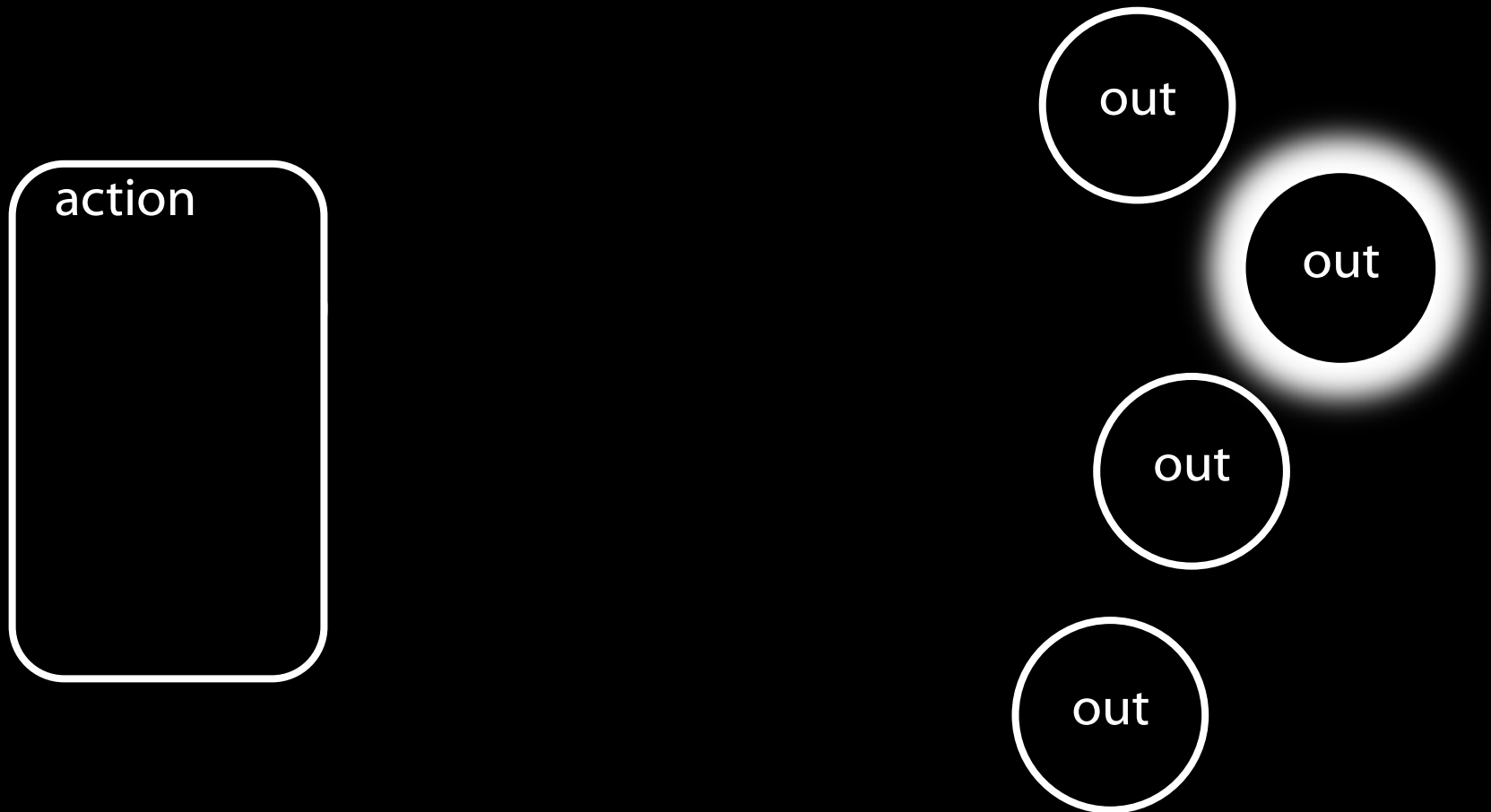


What is the relation between a purposive action and the outcome or outcomes to which it is directed?

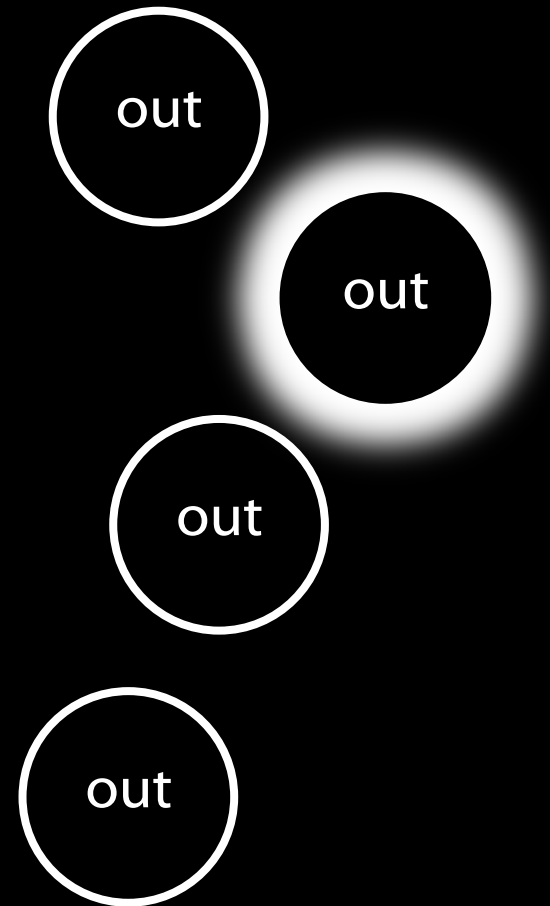
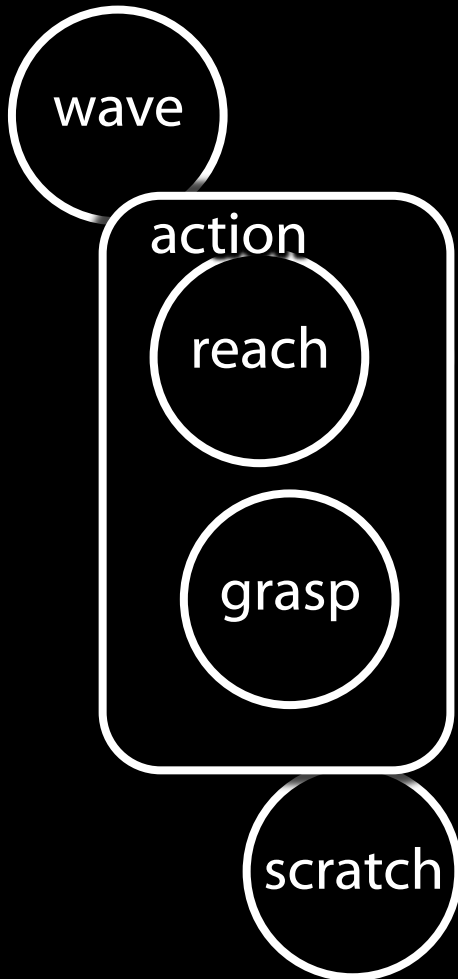
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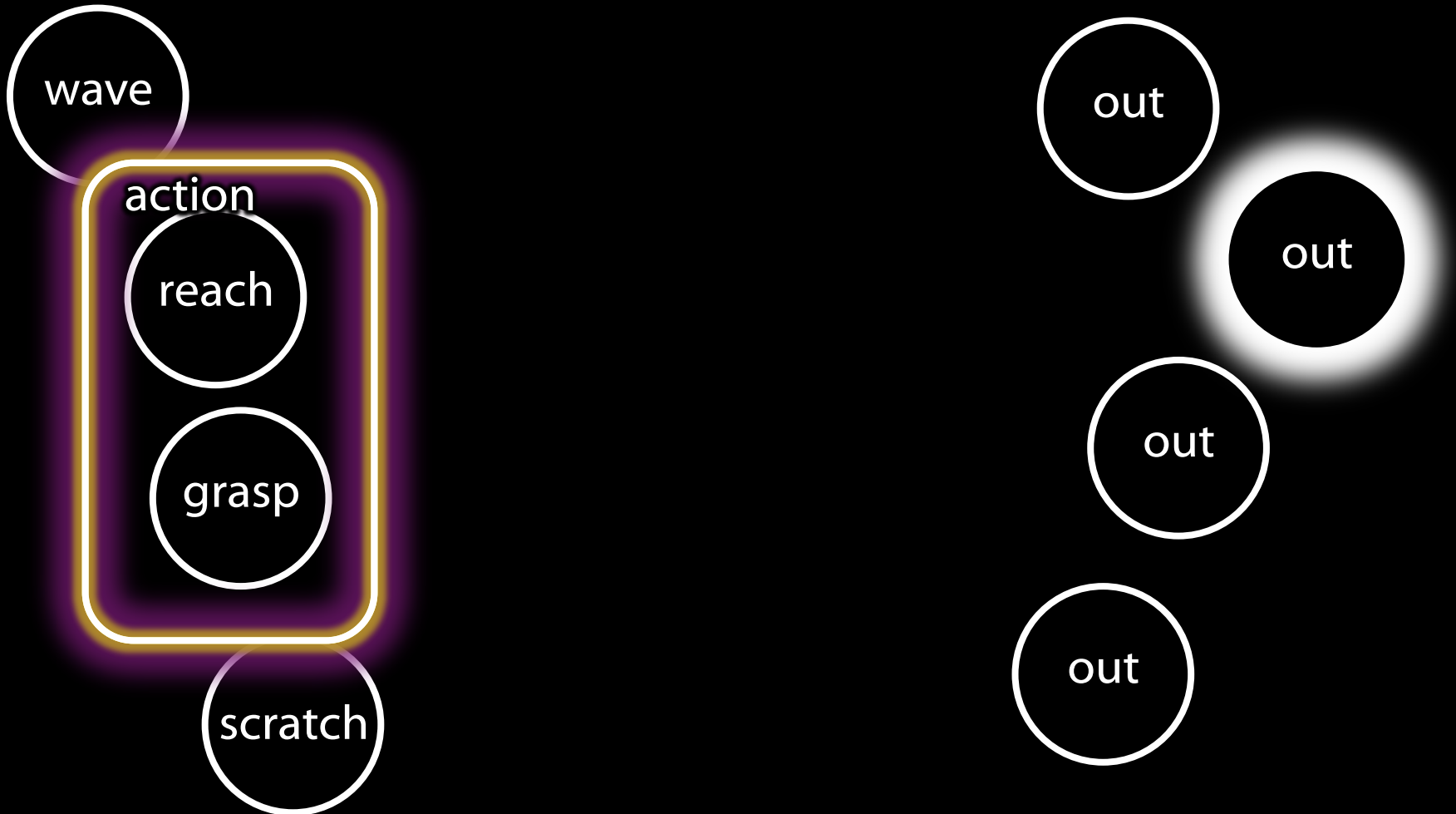
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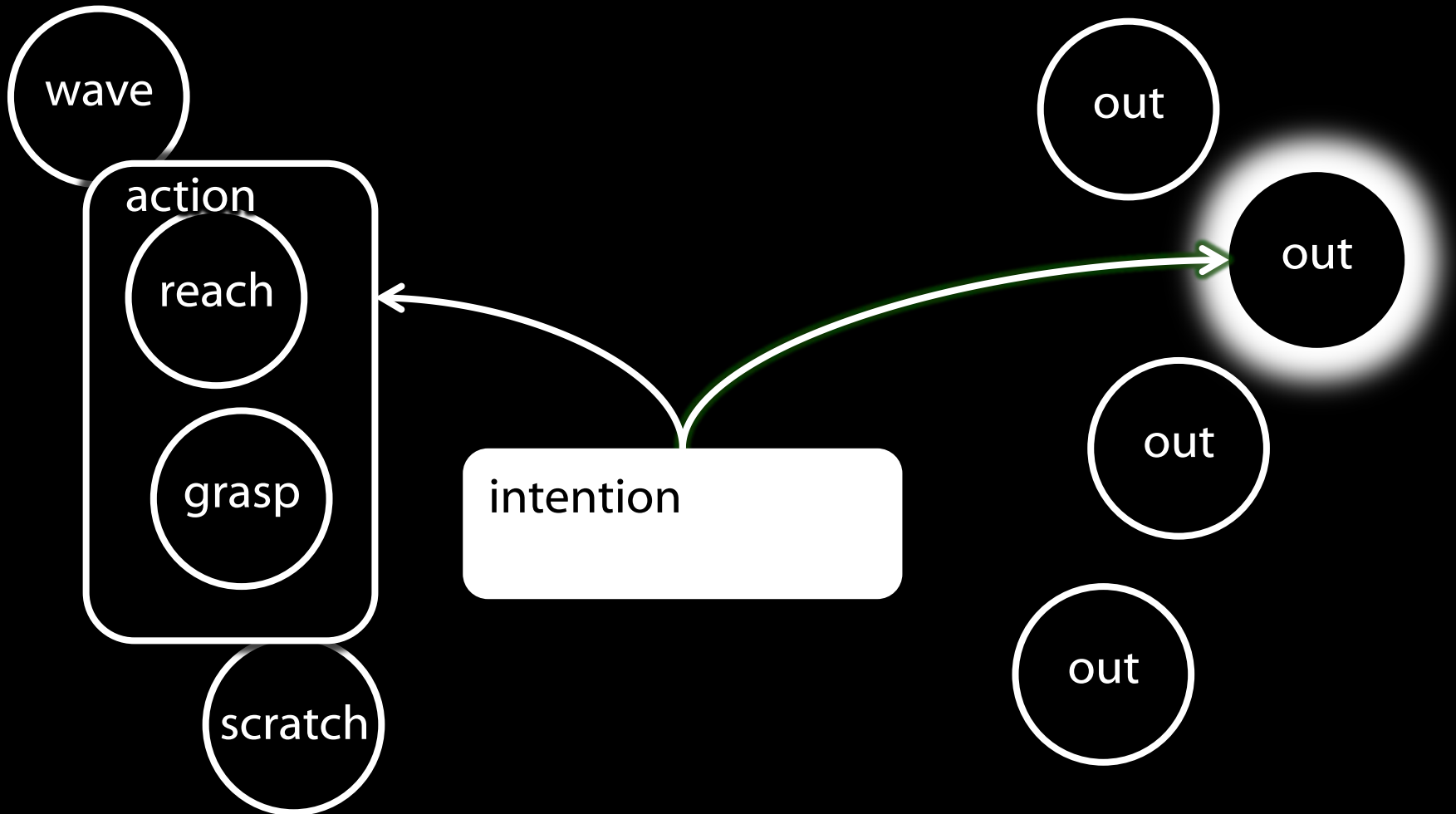
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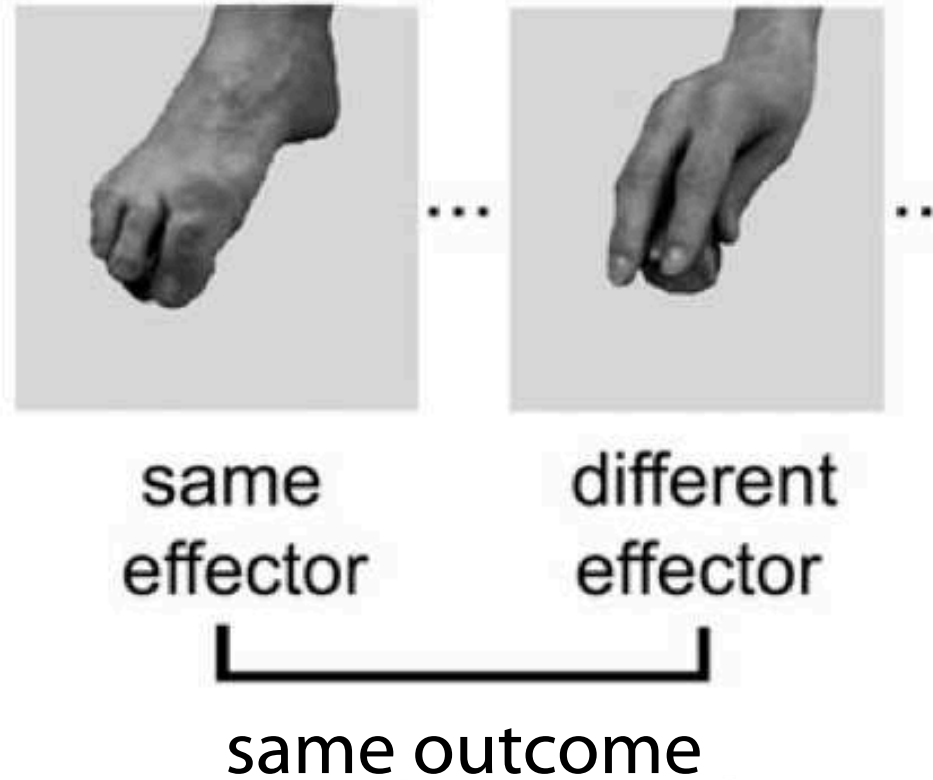


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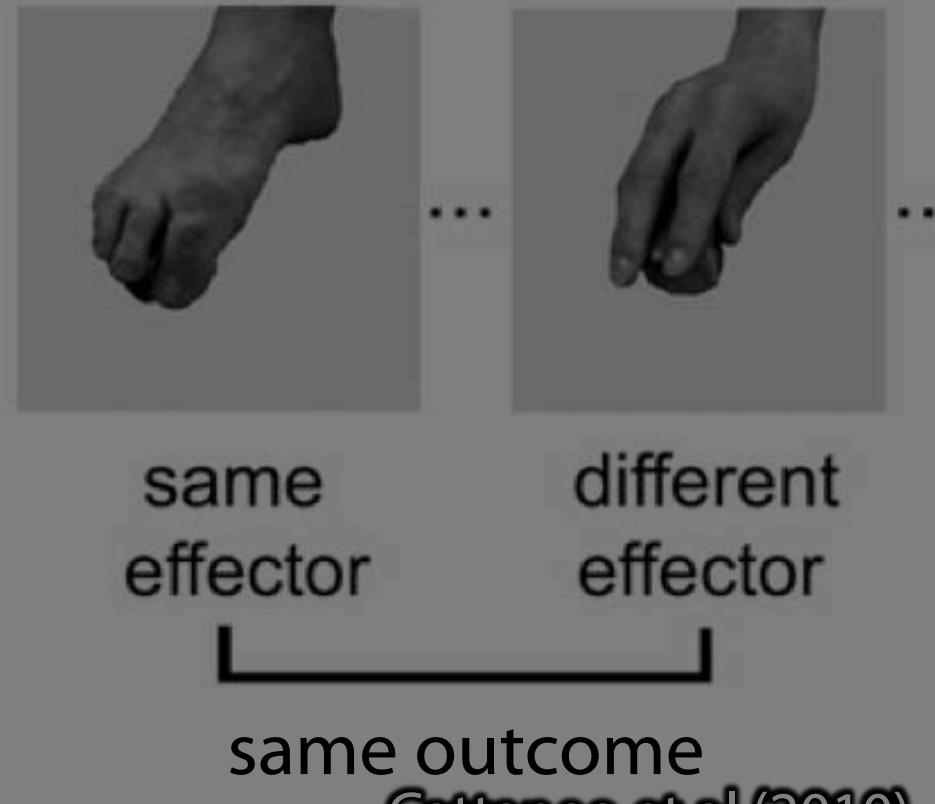
Some motor representations carry
information about outcomes.

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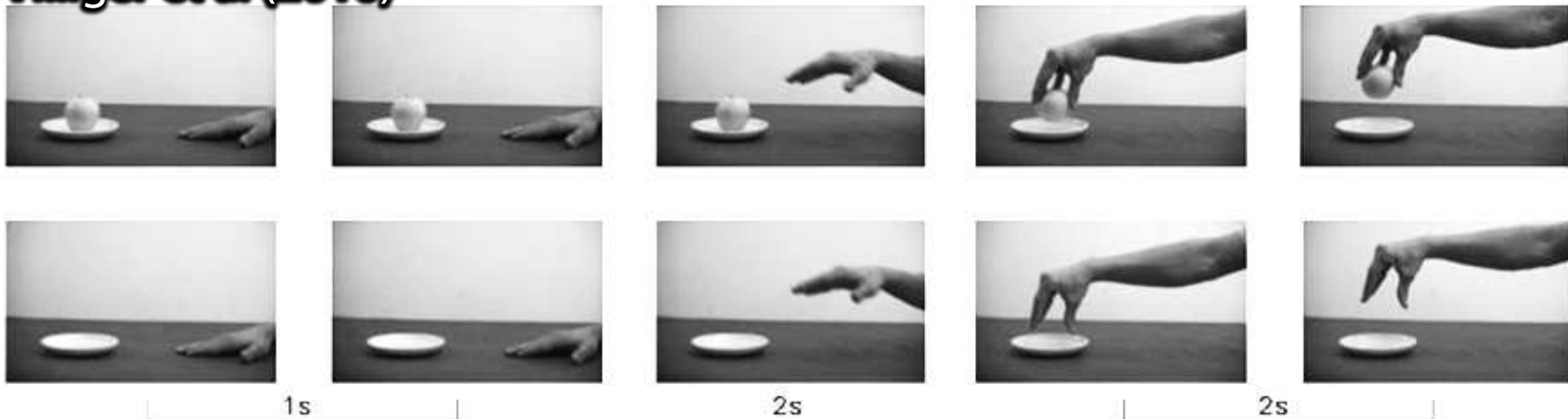
Cattaneo et al (2010)

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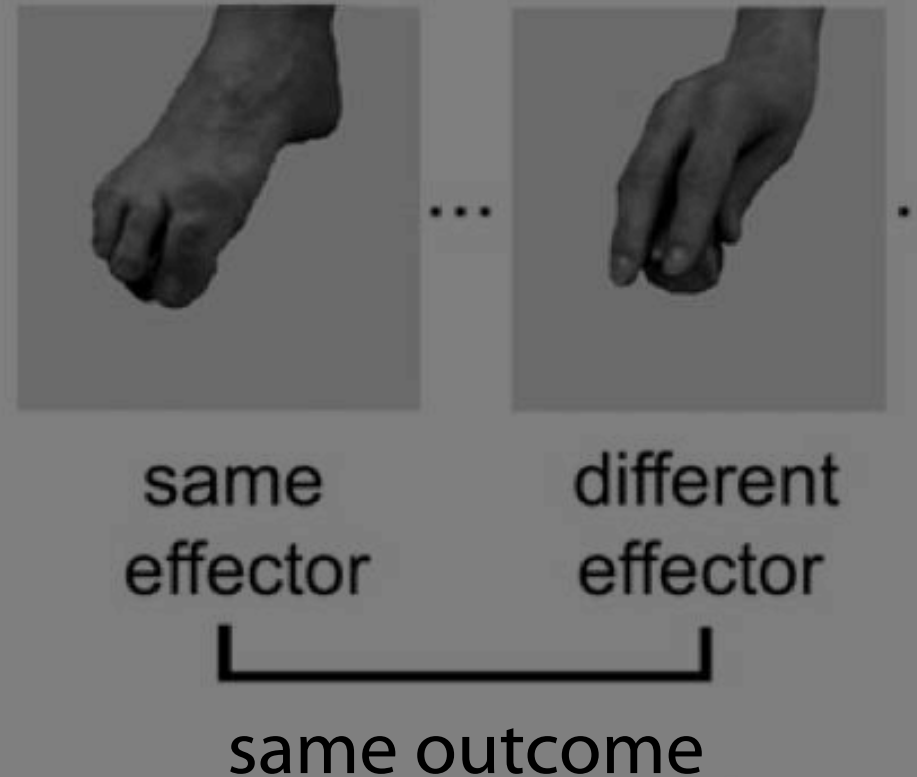


Cattaneo et al (2010)

Villiger et al (2010)

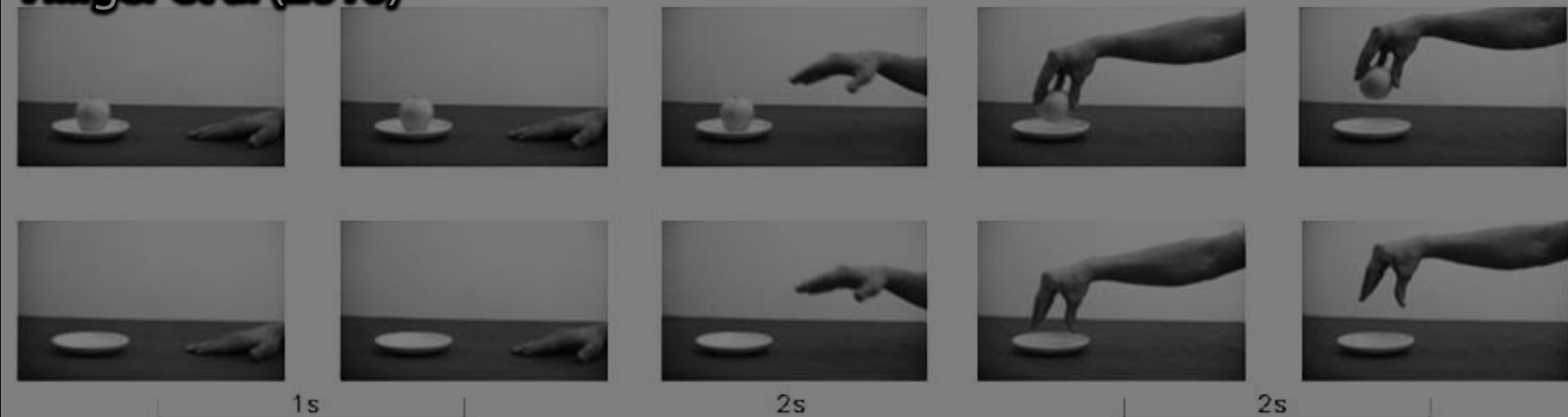


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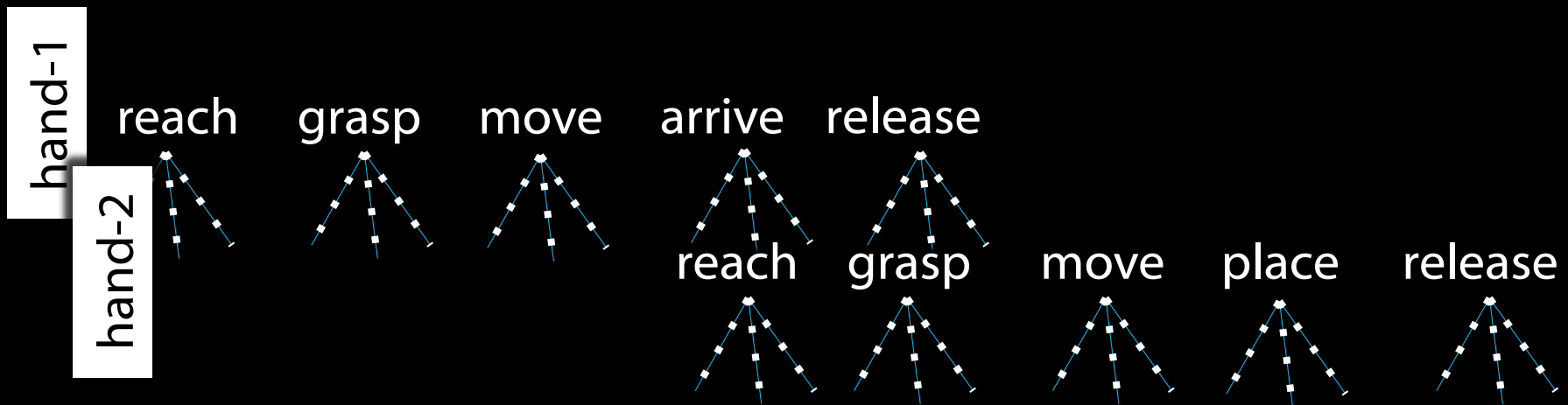


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Information about outcomes
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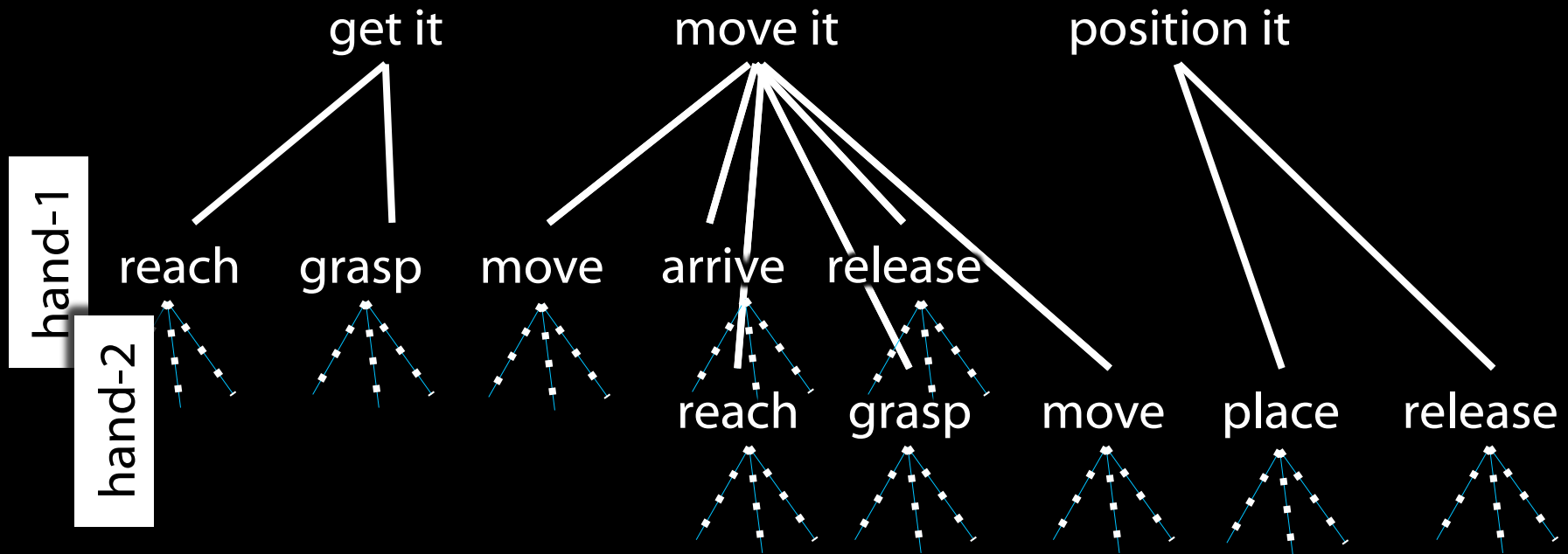
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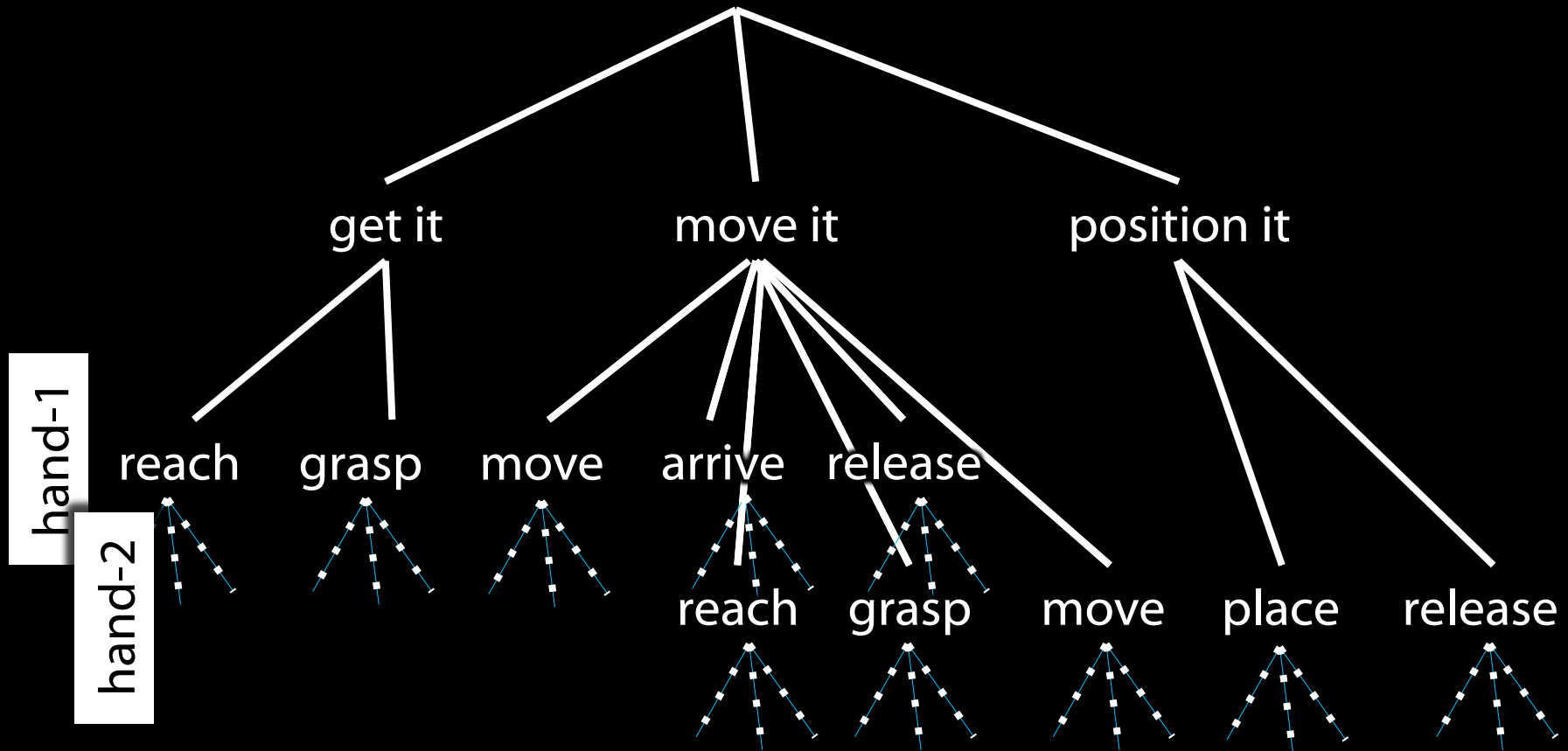
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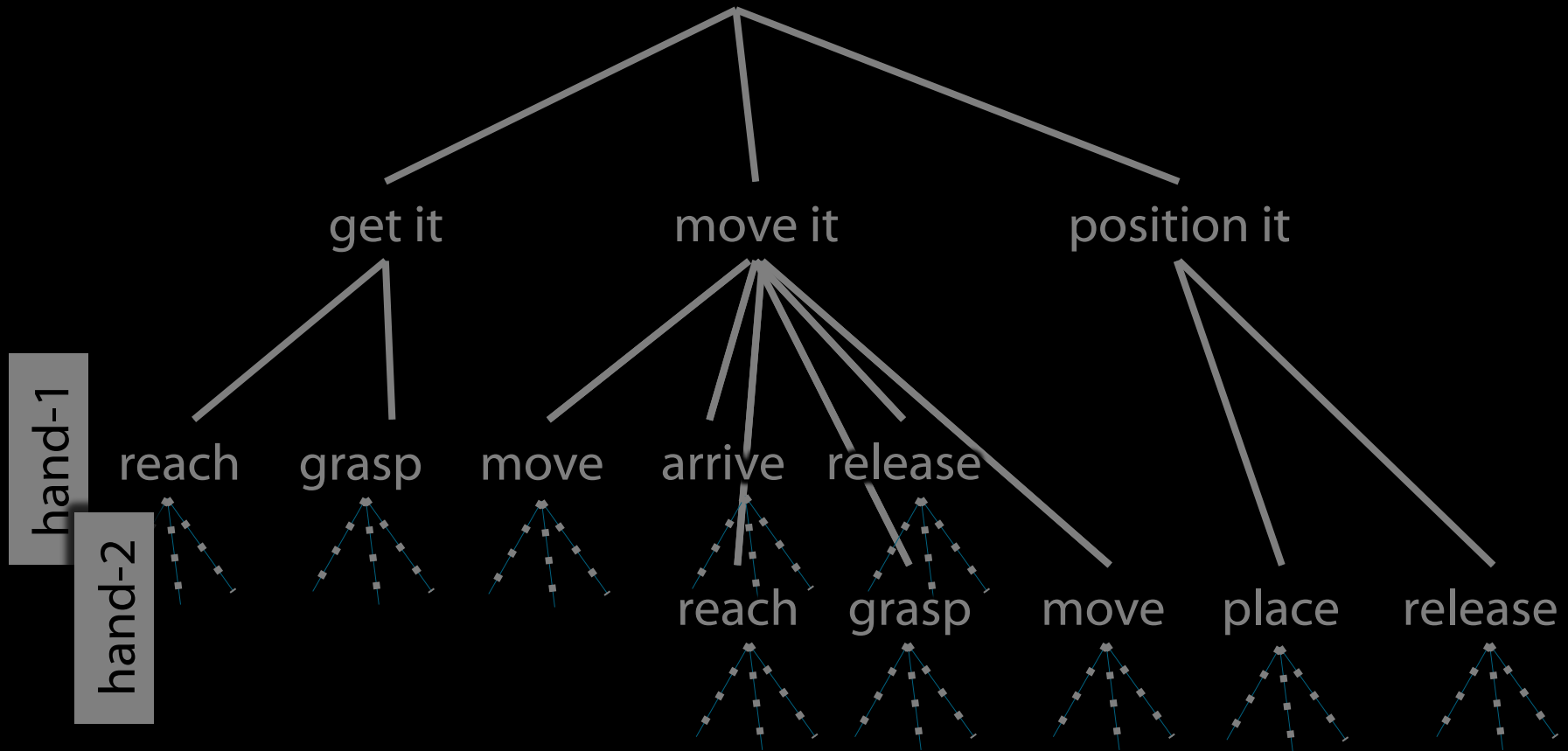
Move it from there to here



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Move it from there to here

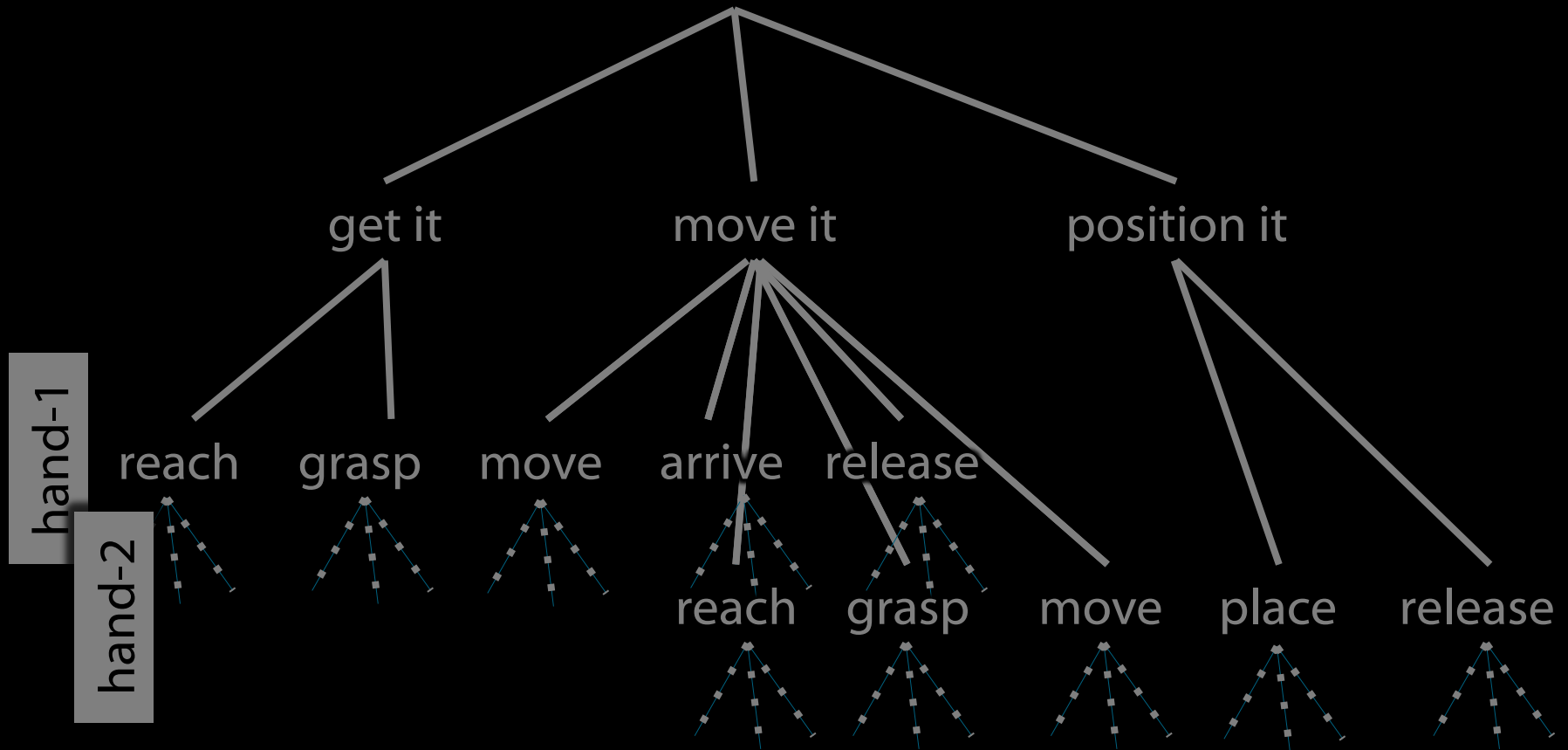


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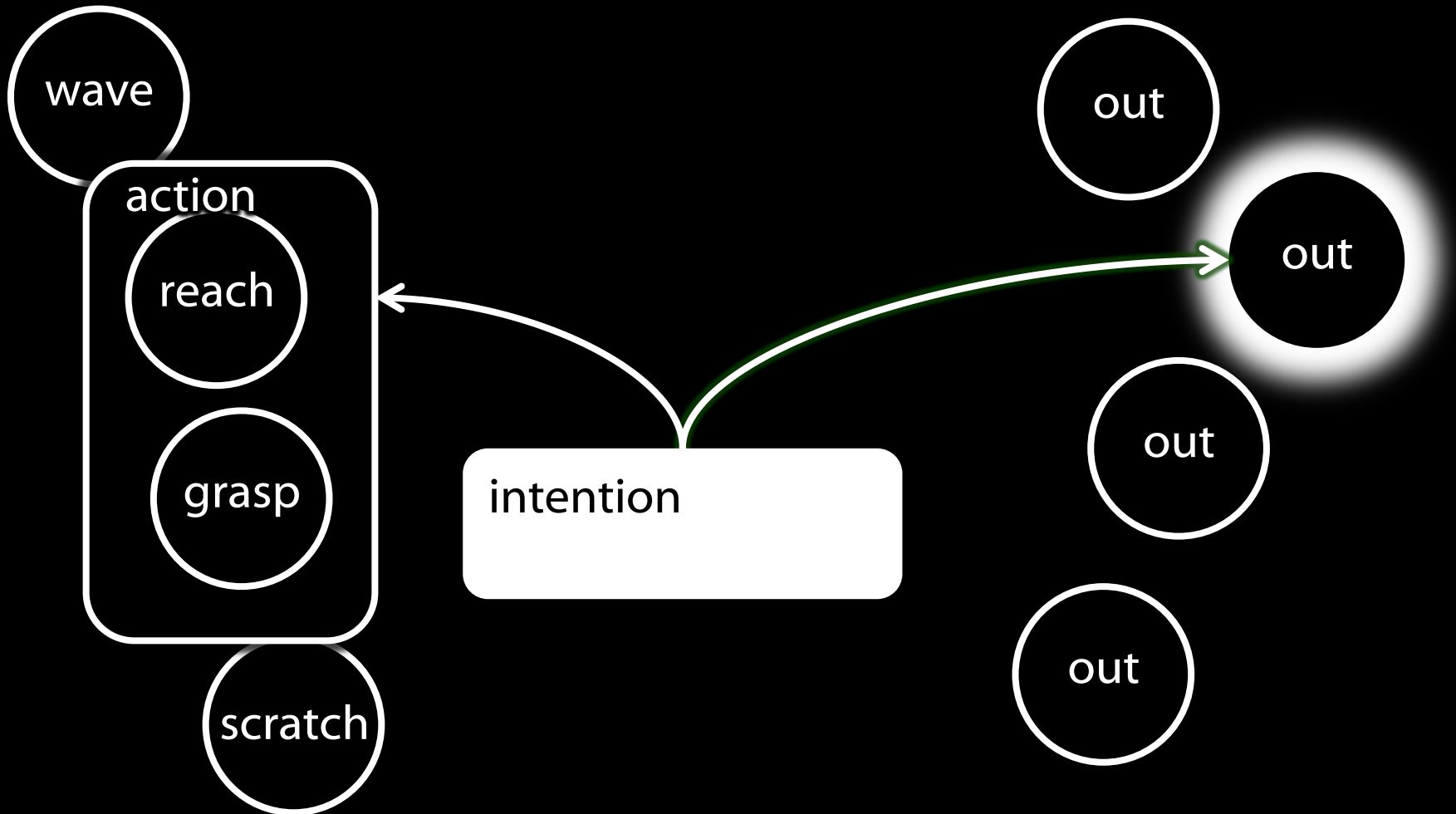
Information about outcomes guides planning.

Some motor representations represent outcomes

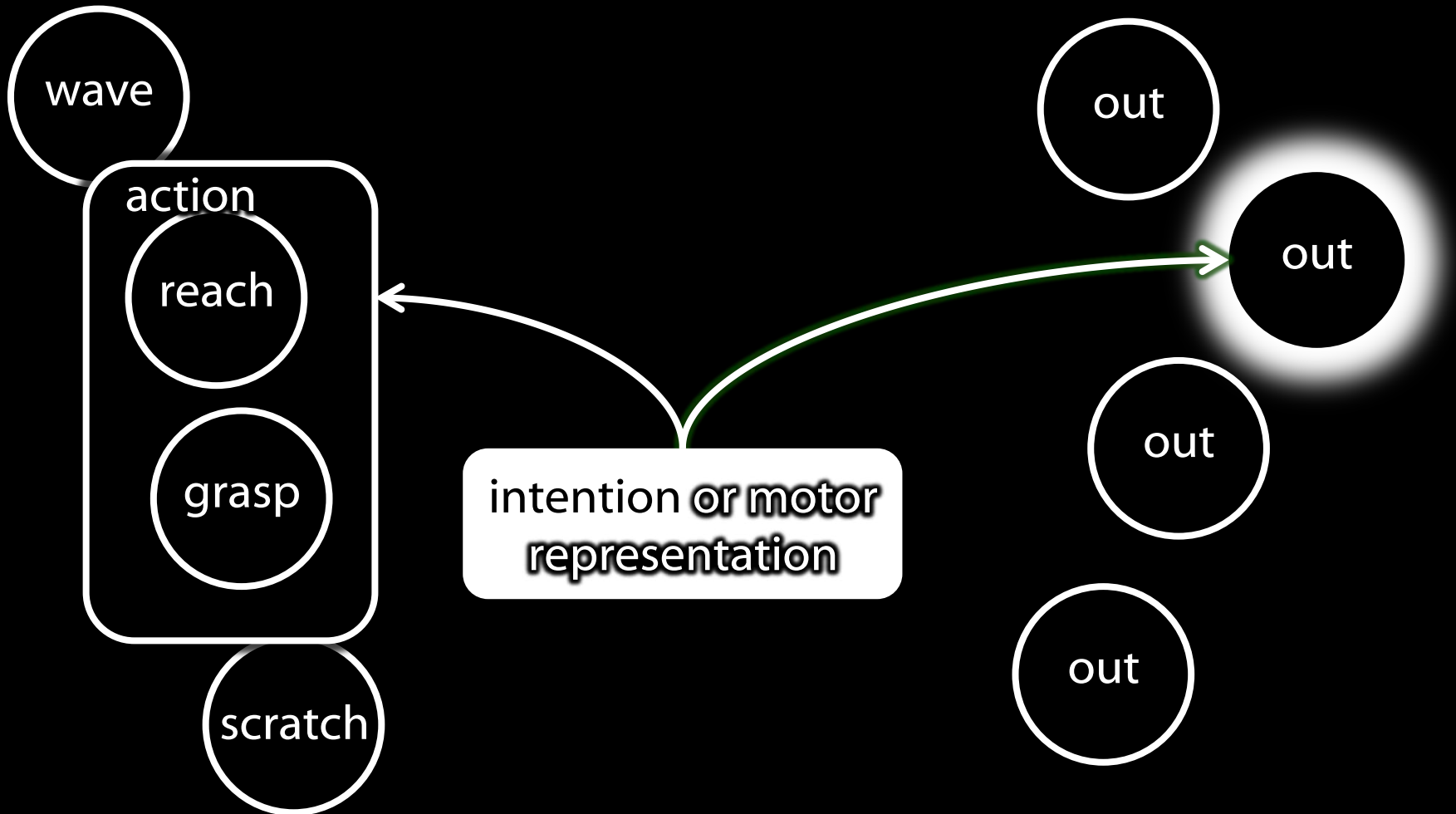
Move it from there to here



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



motor representation = intention ? No !

< 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. ...



< different format >

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



e.g. rapid identification of key landmarks; slow translation into compass directions

Rapid identification of direction of start from end (projection-dependent)

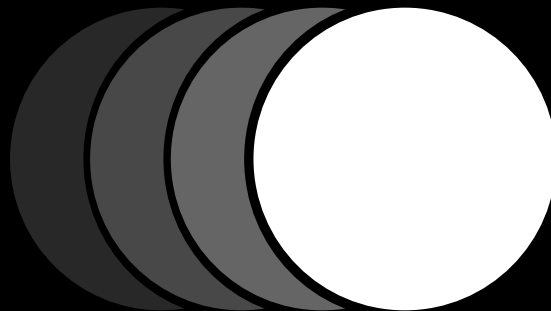
< different performance >

imagine

actually

seeing

seeing



imagine

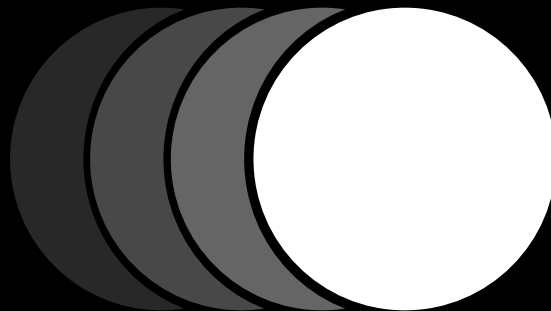
actually

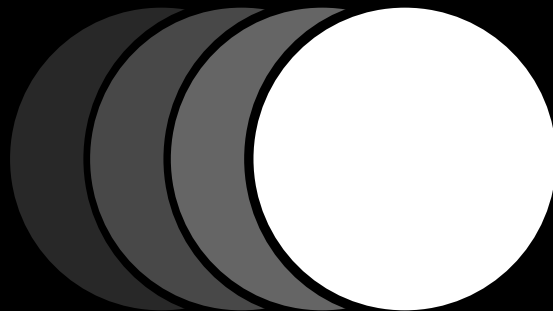
seeing

acting

seeing

acting





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 Lyon on Friday is a propositional attitude.

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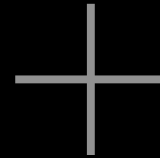
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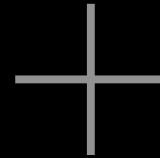
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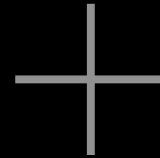
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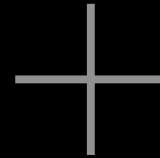
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The Interface Problem

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Some actions involve both
intention and motor
representation

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motor representations:

i. represent outcomes;

ii. ground the
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Follow *that* route

=



?

Follow *that* route

=



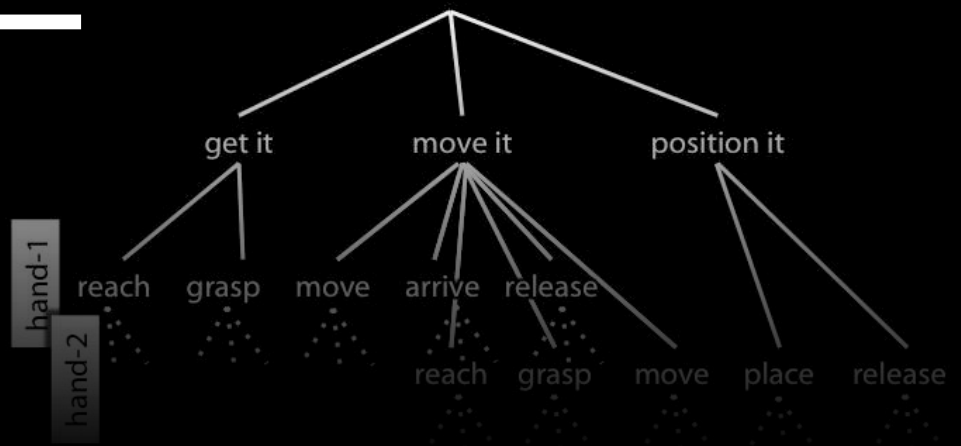
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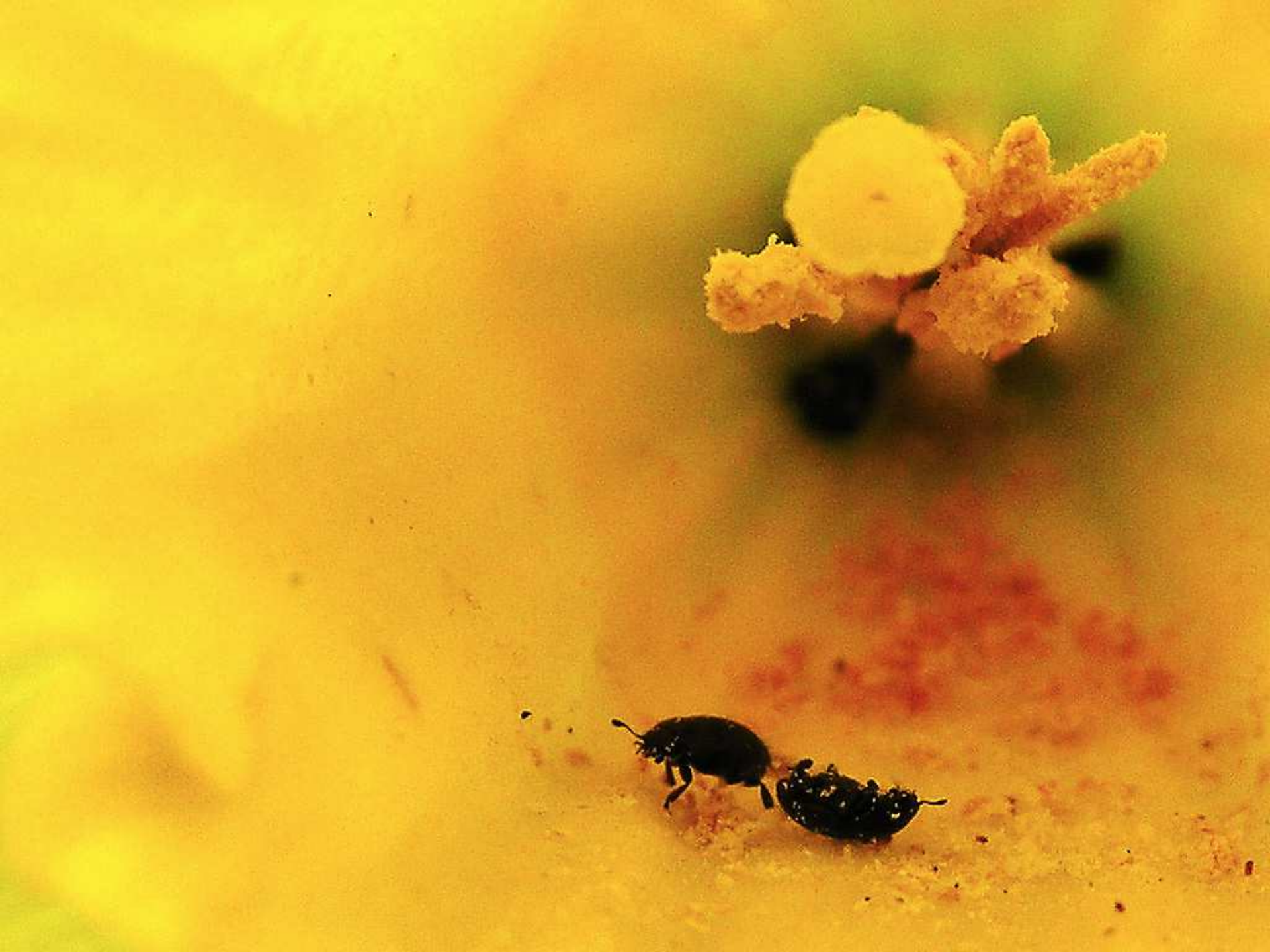
Do that

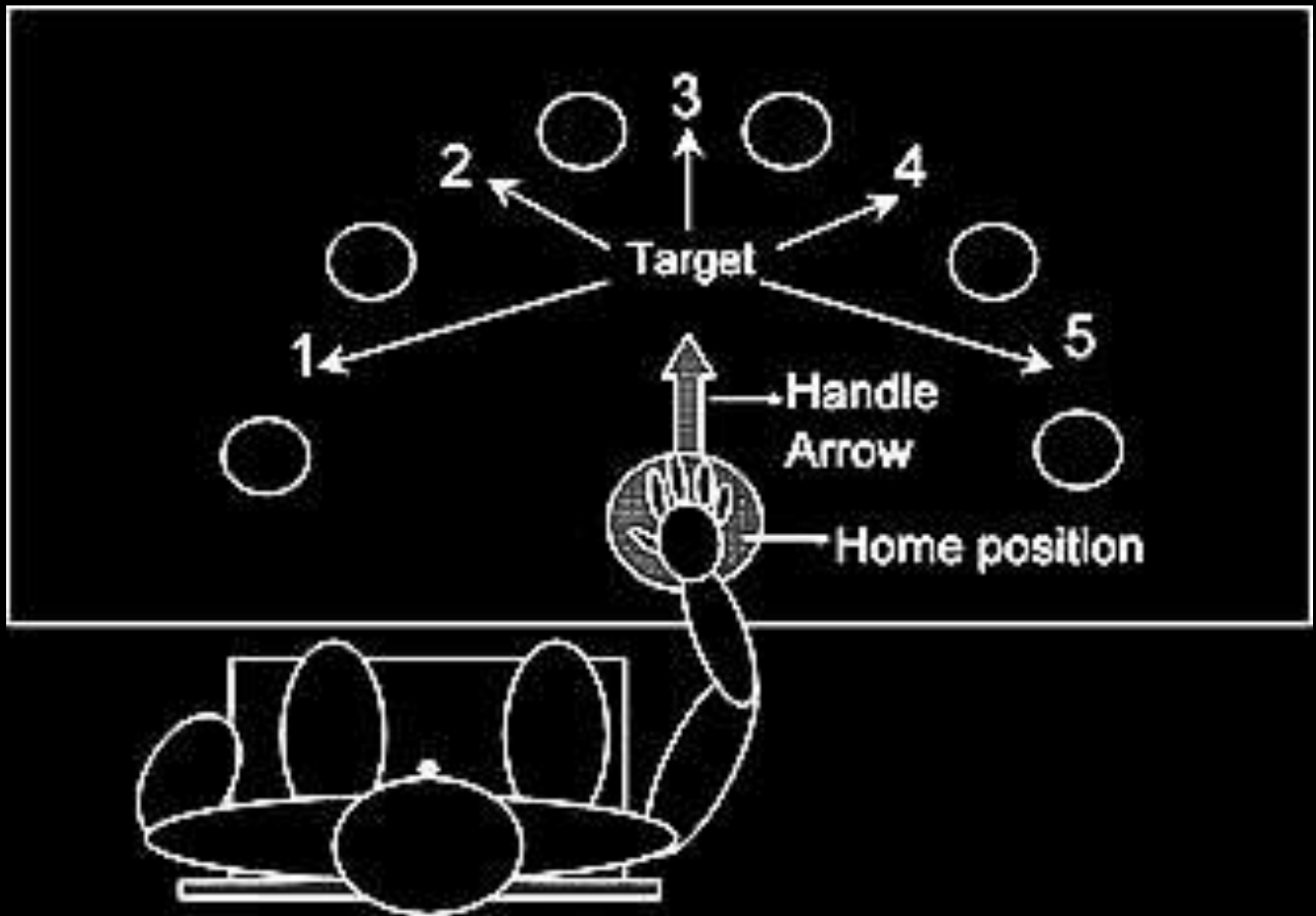
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Move it from there to here

?



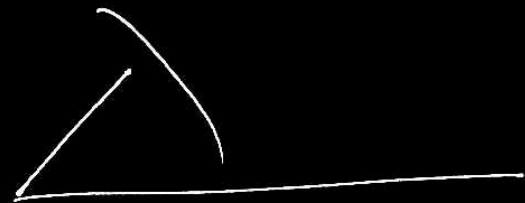
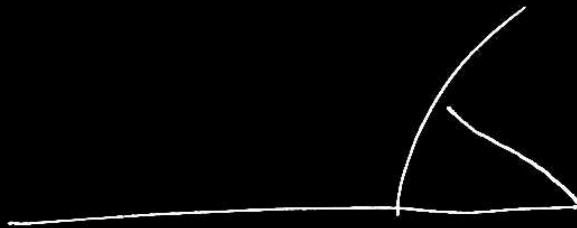




(Zhang and Rosenbaum 2007)



(big
reward)



↑
ONE
WAY



x

start here