

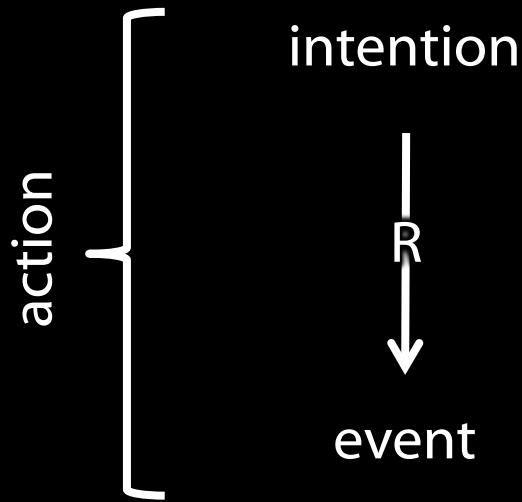
Intention and Motor Representation in Action Explanation

s.butterfill@warwick.ac.uk
corrado.sinigaglia@unimi.it

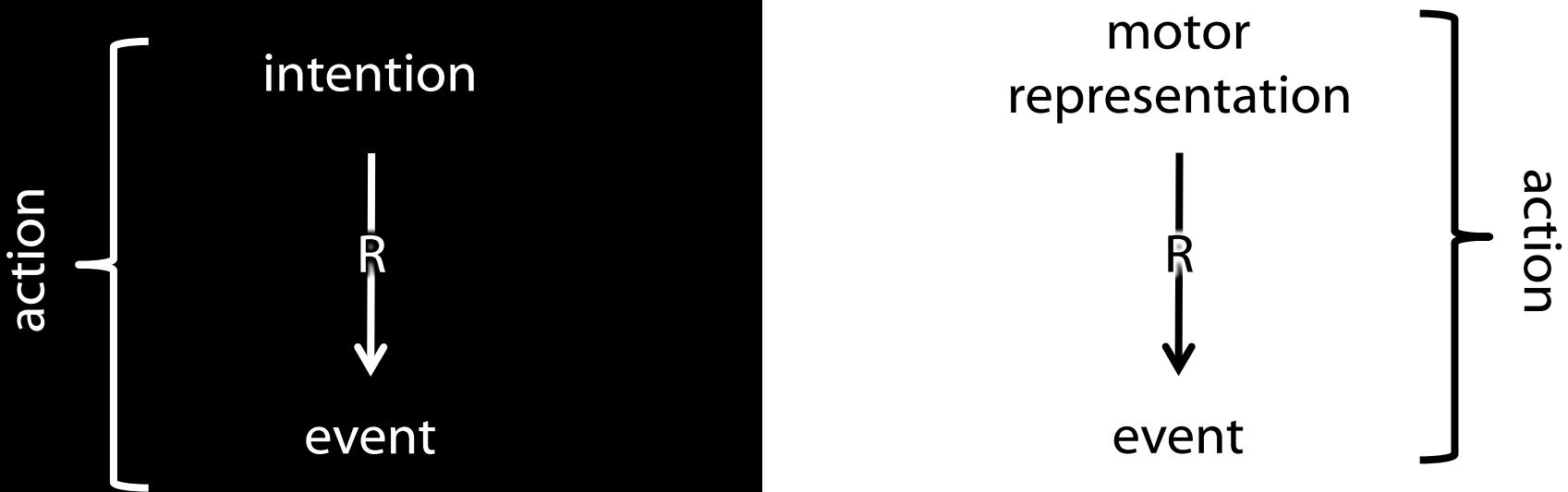


Which events are actions?

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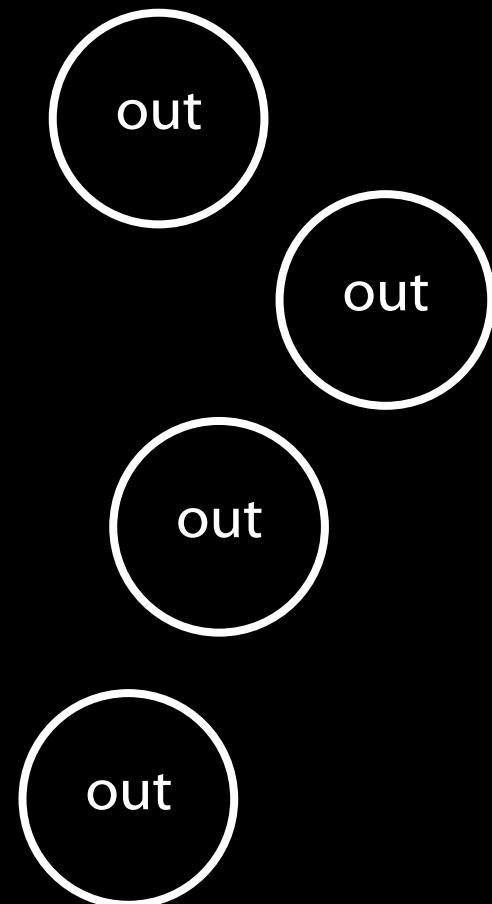
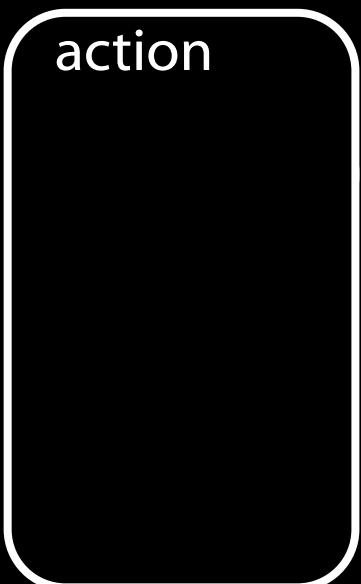


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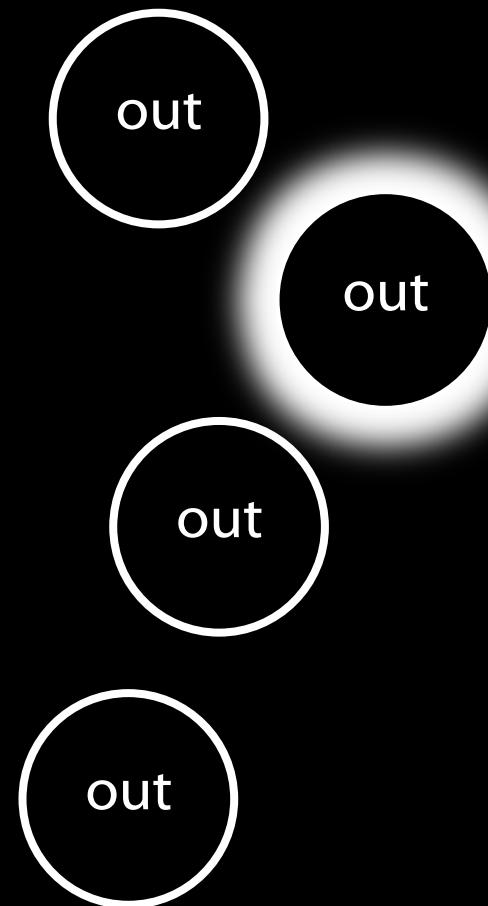
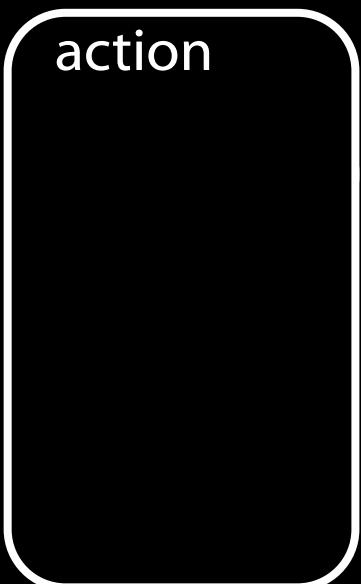


What is the relation between a purposive action and the outcome or outcomes to which it is directed?

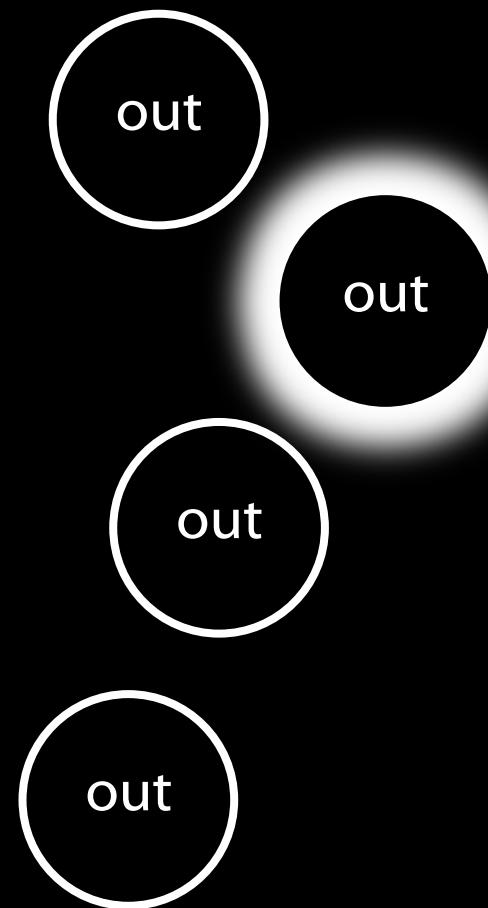
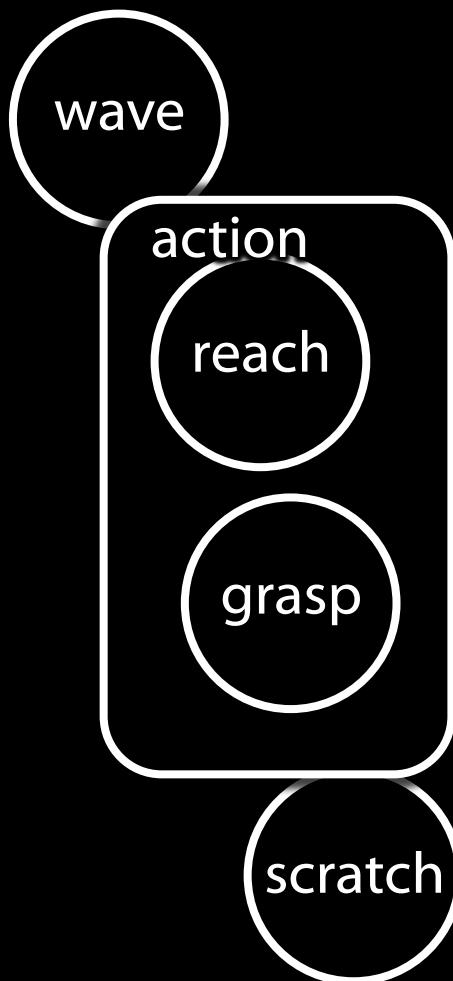
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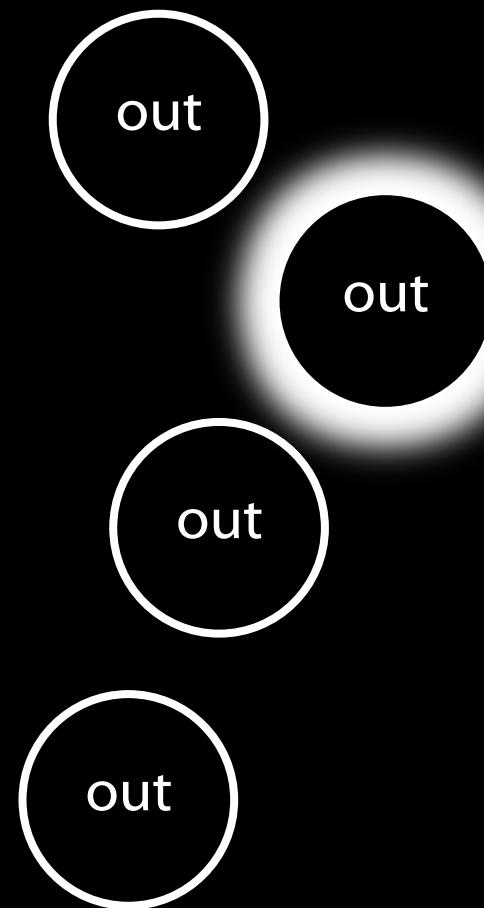
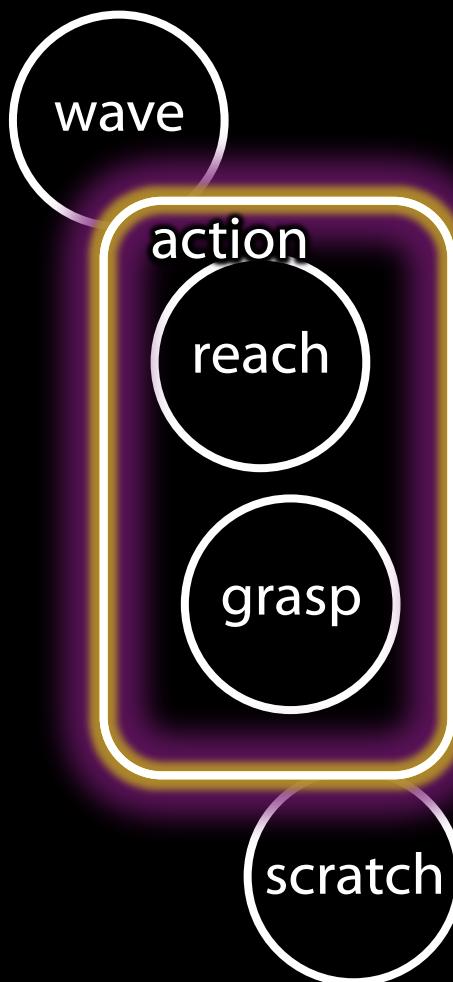
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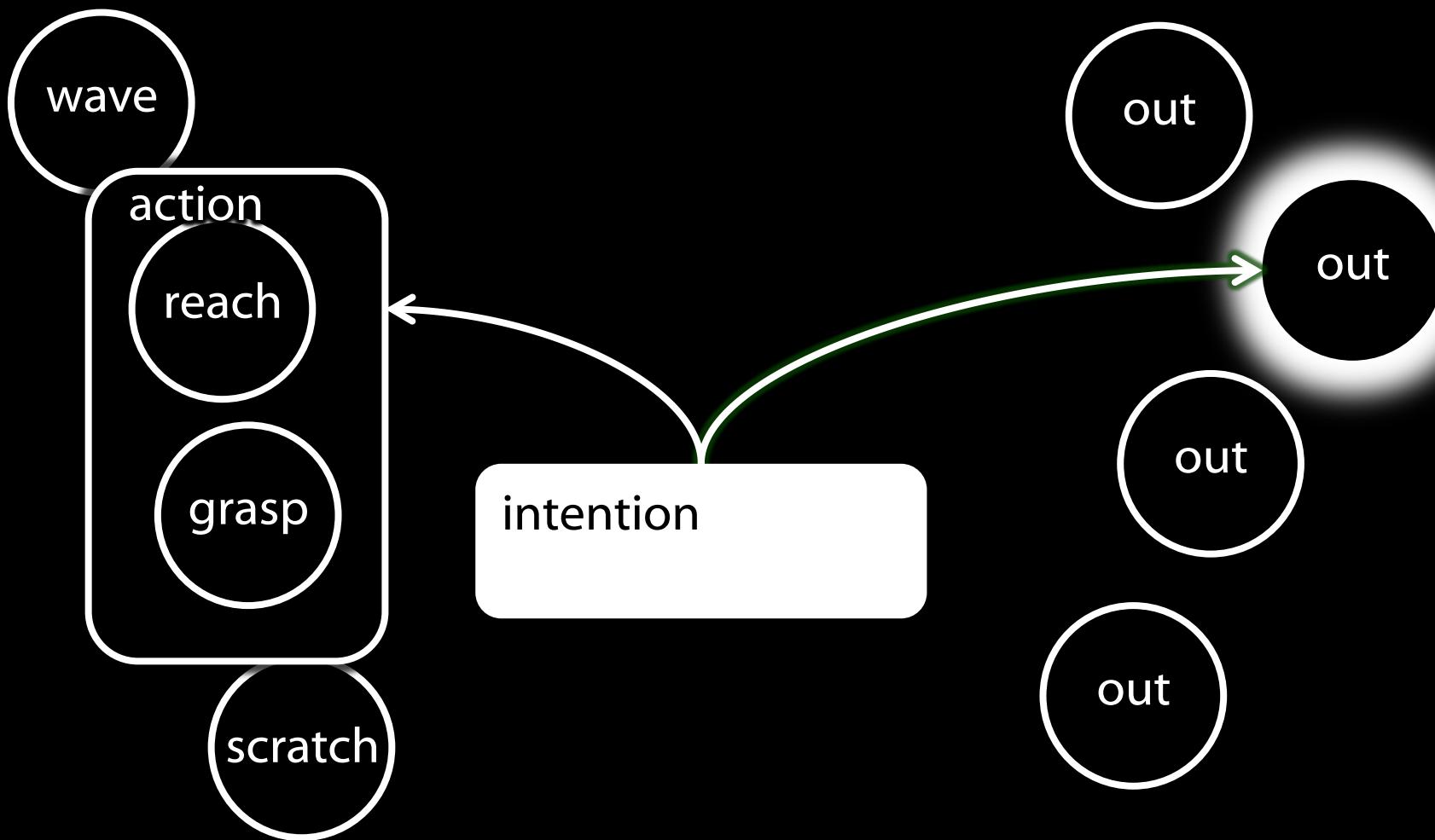
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What is the relation between a purposive action and the outcome or outcomes to which it is directed?



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



Some motor representations carry information about outcomes.

Some motor representations carry information about outcomes.



same
effector



...

different
effector

same outcome
Cattaneo et al (2010)

Some motor representations carry information about outcomes.

...

...

same
effector

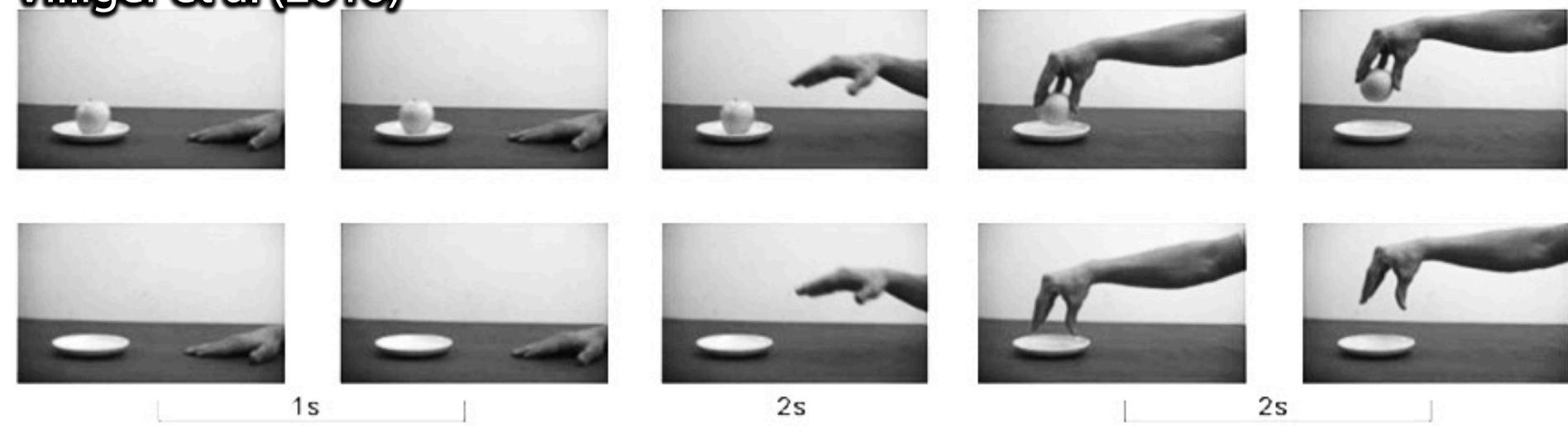
different
effector



same outcome

Cattaneo et al (2010)

Villiger et al.(2010)



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...

same
effector

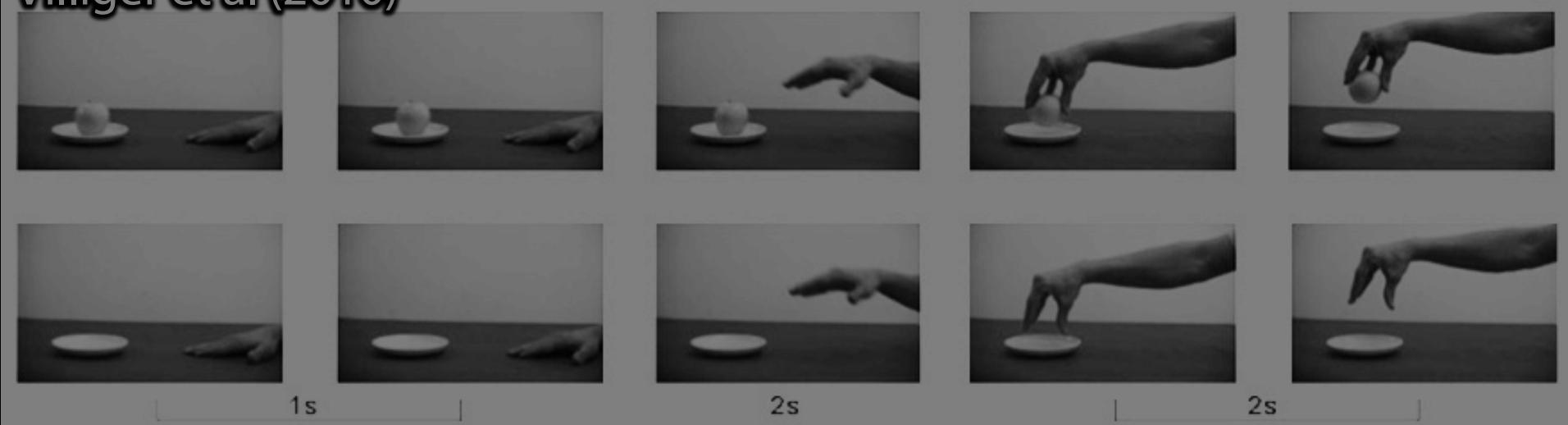
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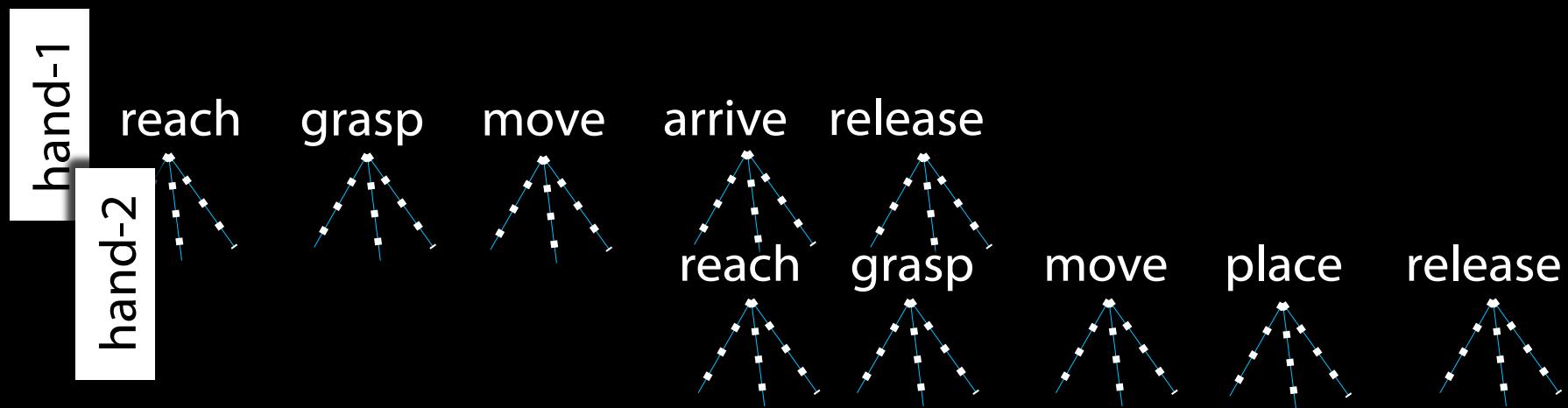


Some motor representations carry information about outcomes.

Information about outcomes guides planning.

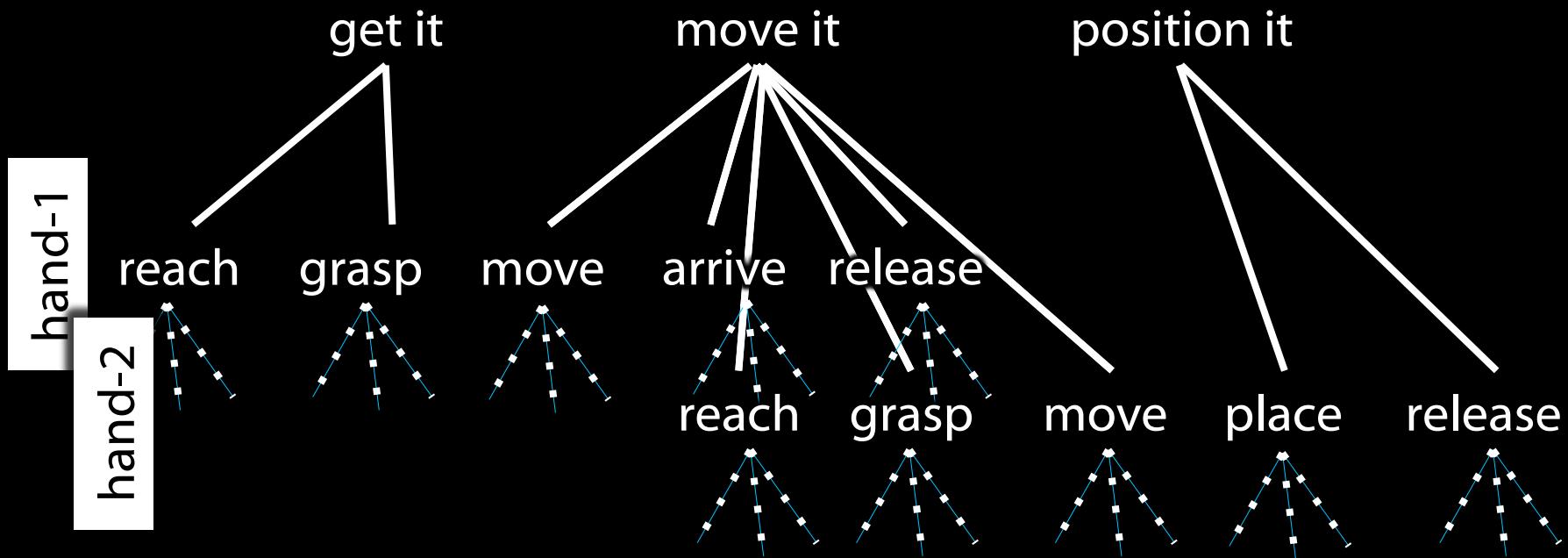
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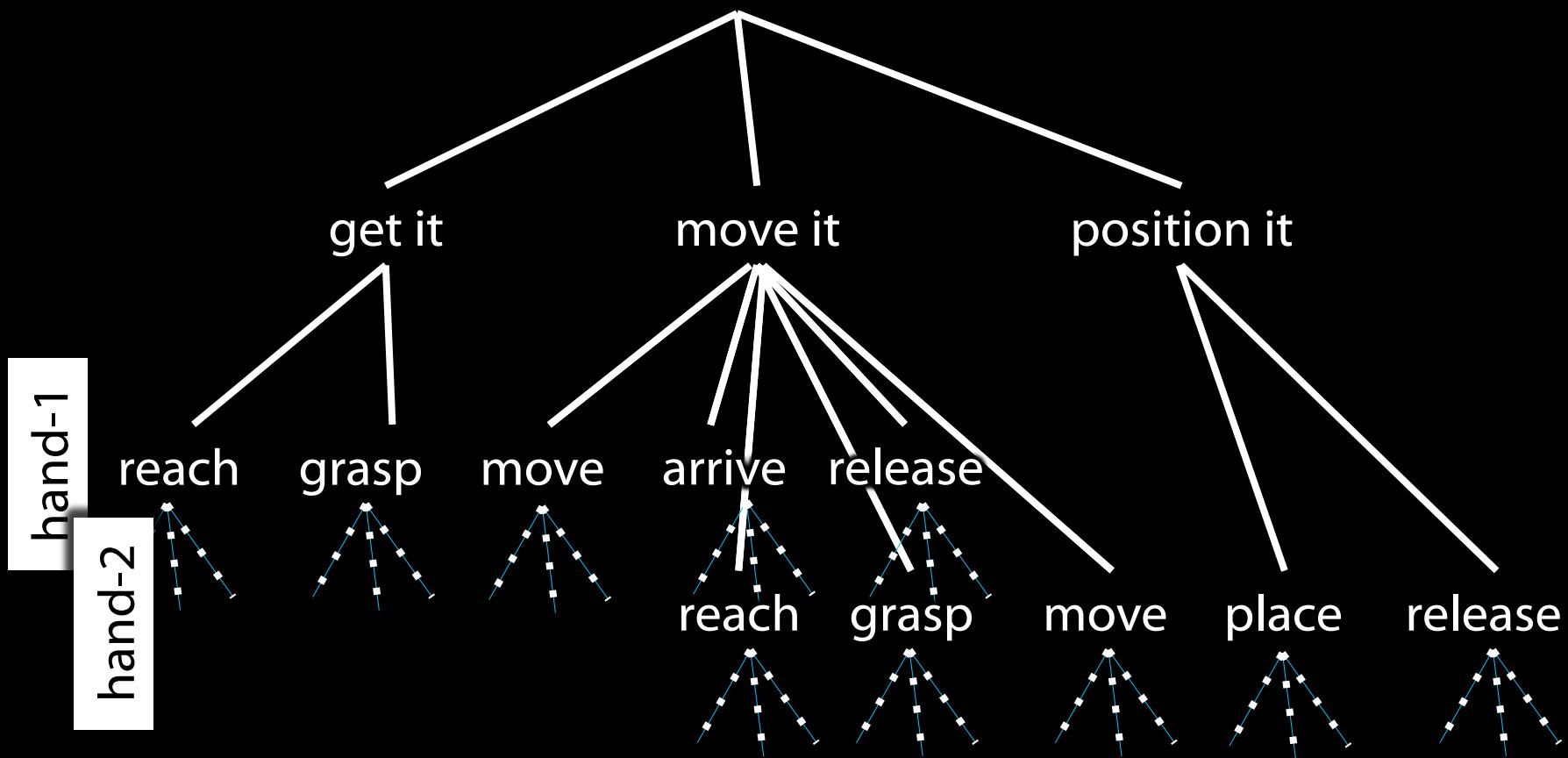
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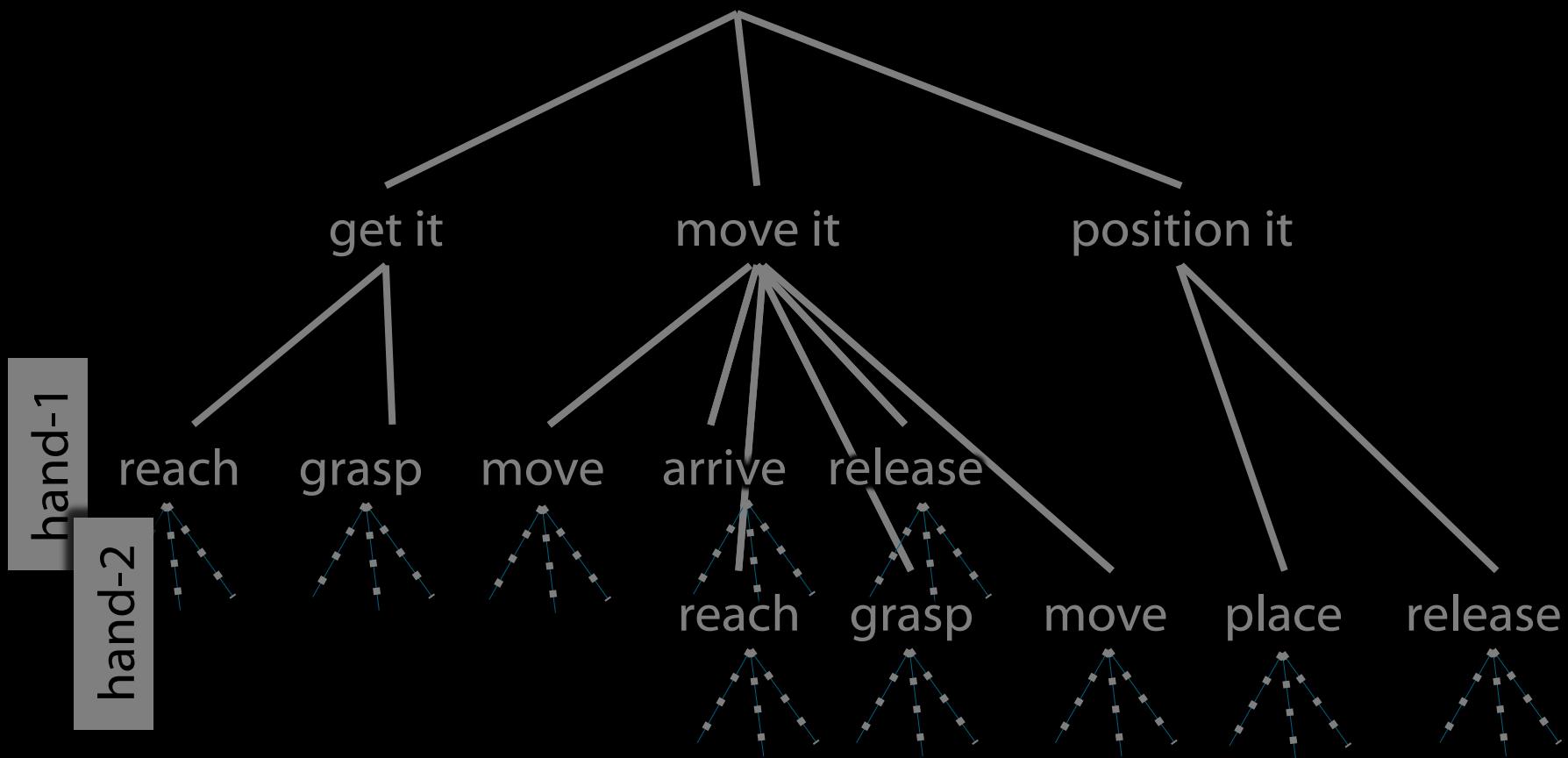
Move it from there to here



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Move it from there to here

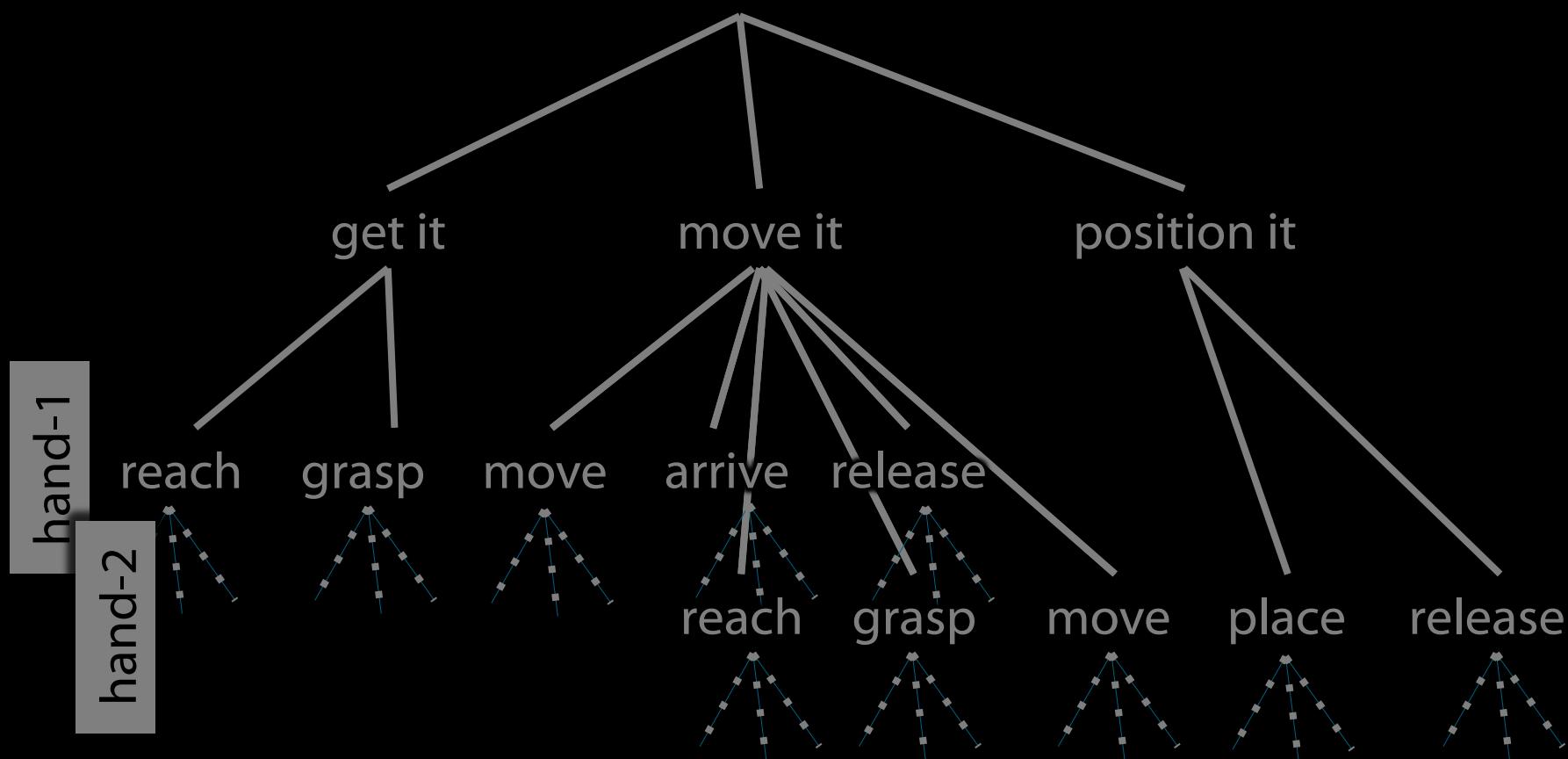


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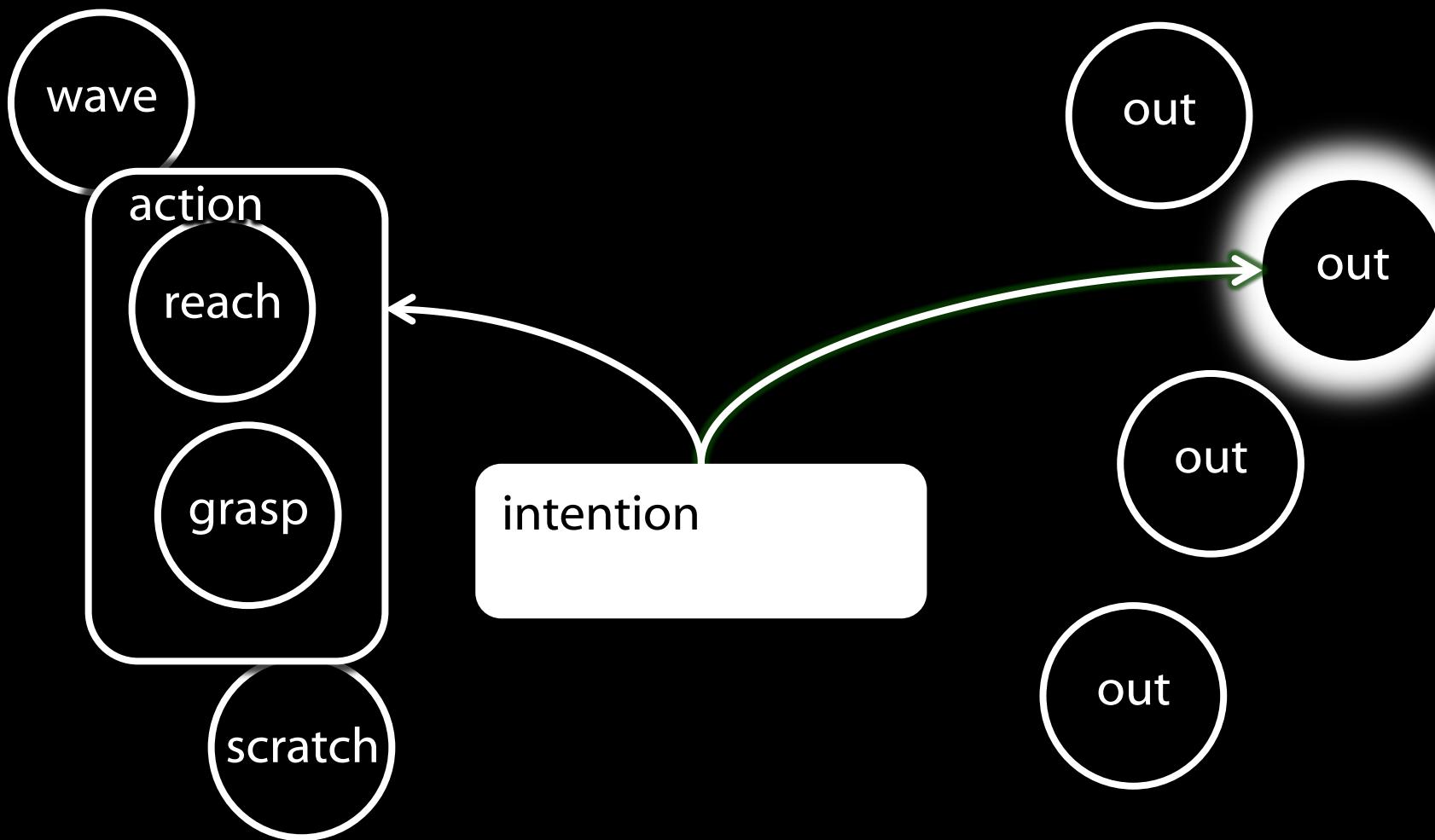
Information about outcomes guides planning.

Some motor representations represent outcomes

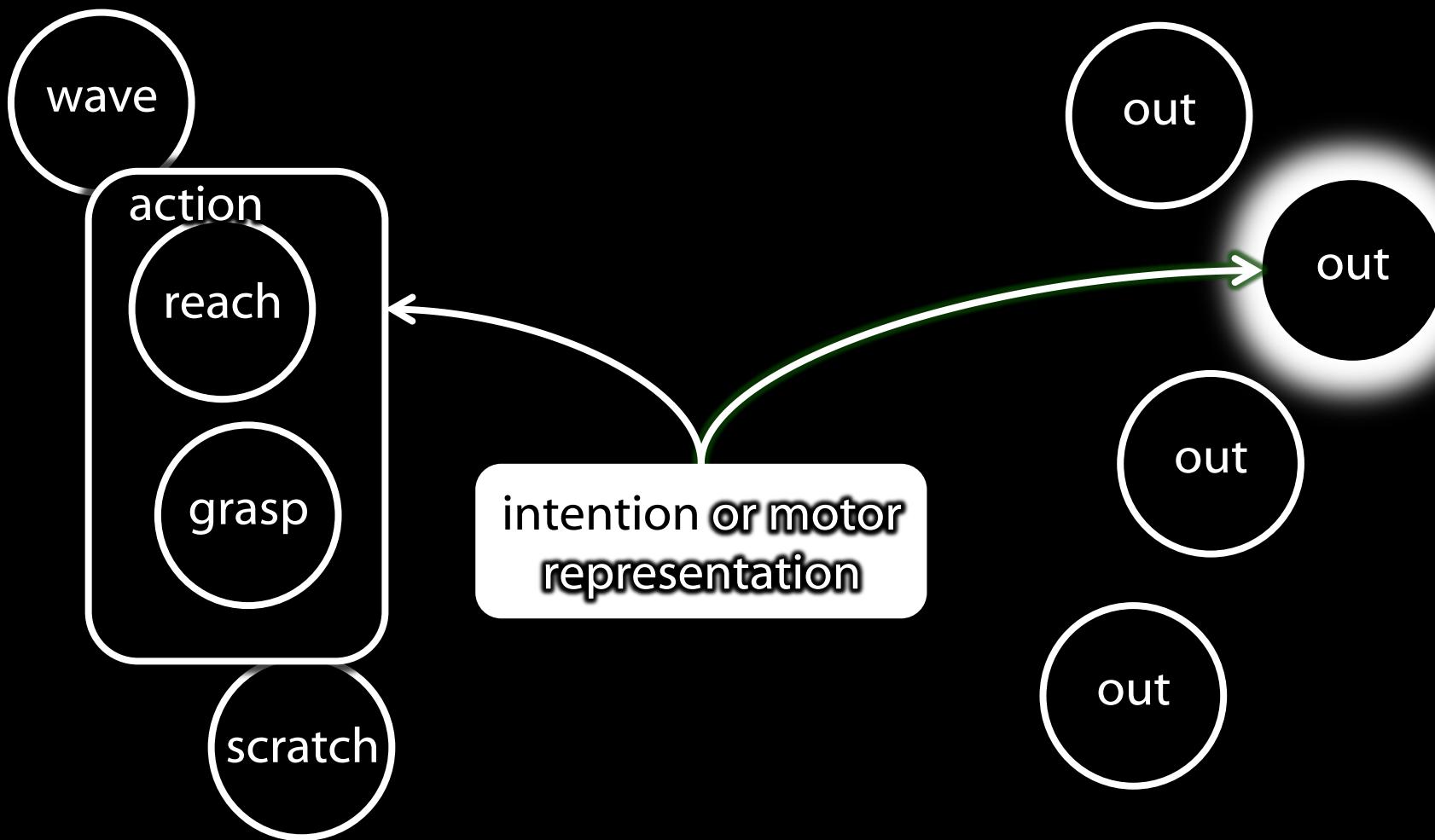
Move it from there to here



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



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



motor representation = intention ?

motor representation = intention ? No !

< different content >



< different content >

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



< different format >



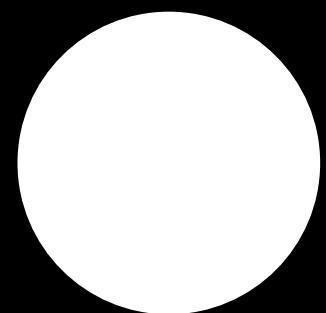
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toward Rue Victor
Cousin. Turn right onto
Rue Saint-Jacques....

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
seeing



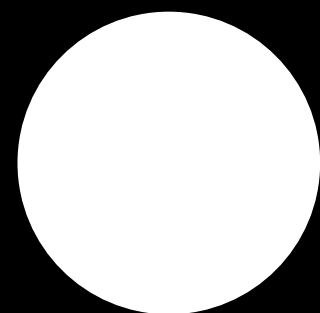
imagine

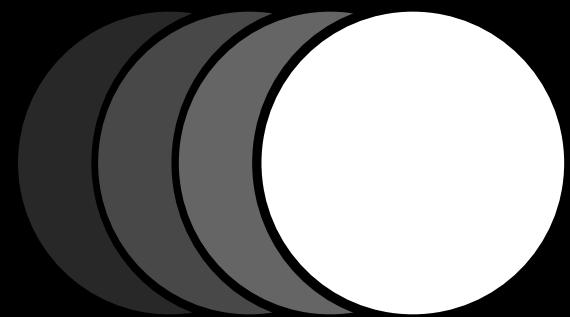
actually

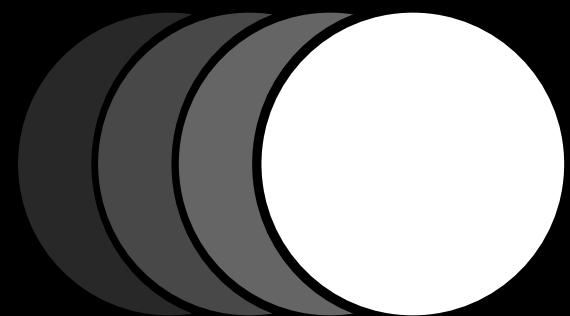
seeing

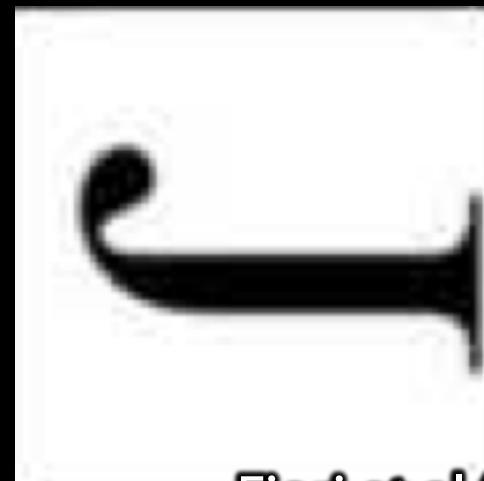
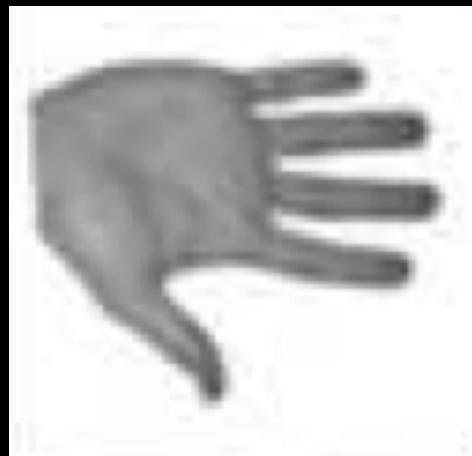
seeing

1

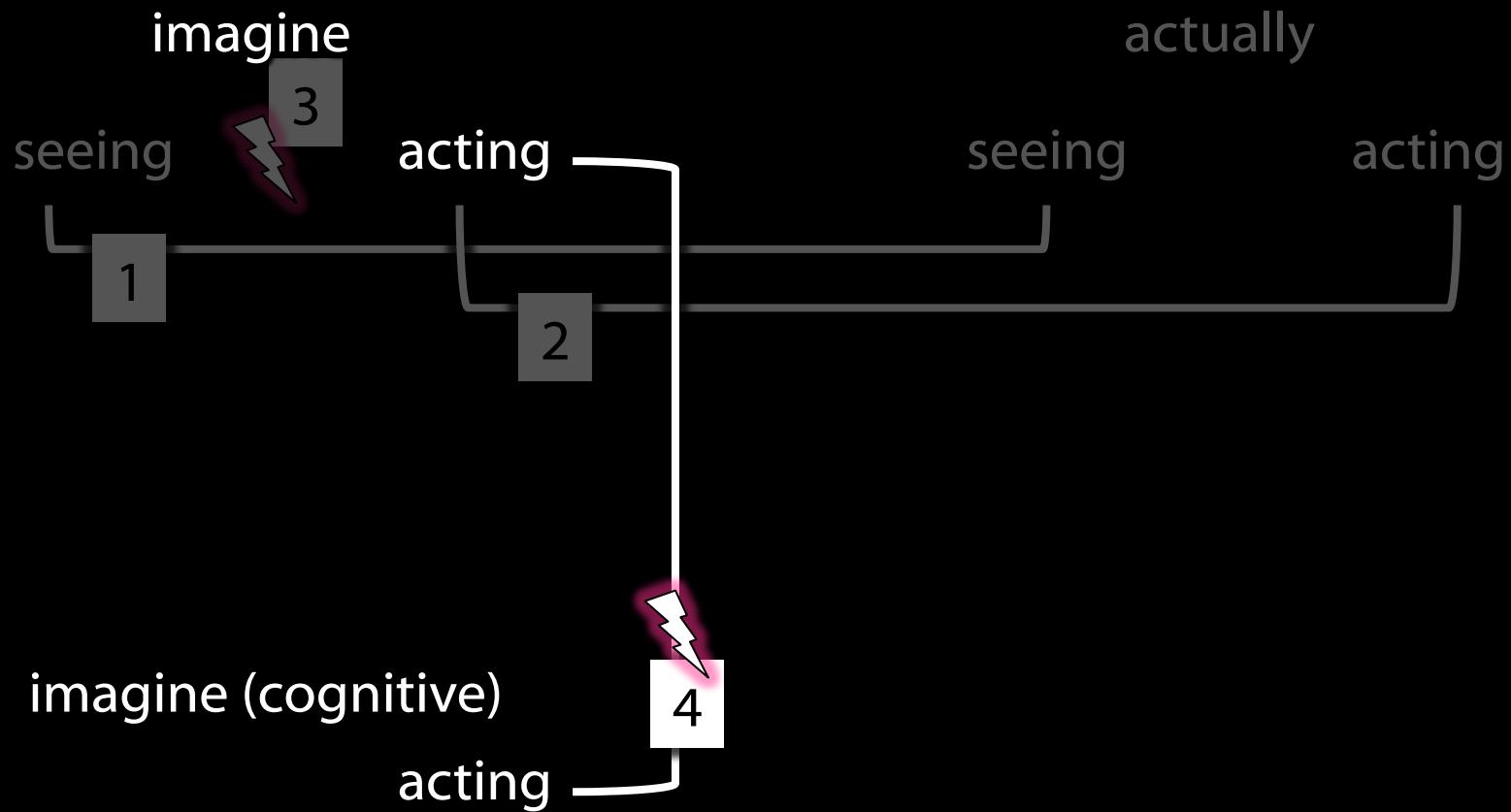








Fiori et al (submitted)



No motor representations are propositional attitudes.

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 Glasgow on Monday is a propositional attitude.

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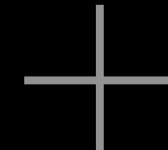
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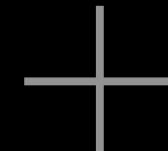
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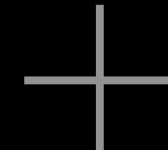
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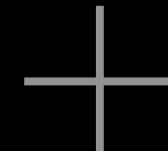
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The Interface Problem

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Some actions involve both
intention and motor
representation

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motor representations:

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

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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.

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

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Some actions involve both intention and motor representation

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

==



?

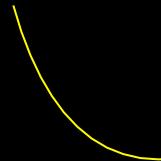
Follow that route

=



?

Follow that route

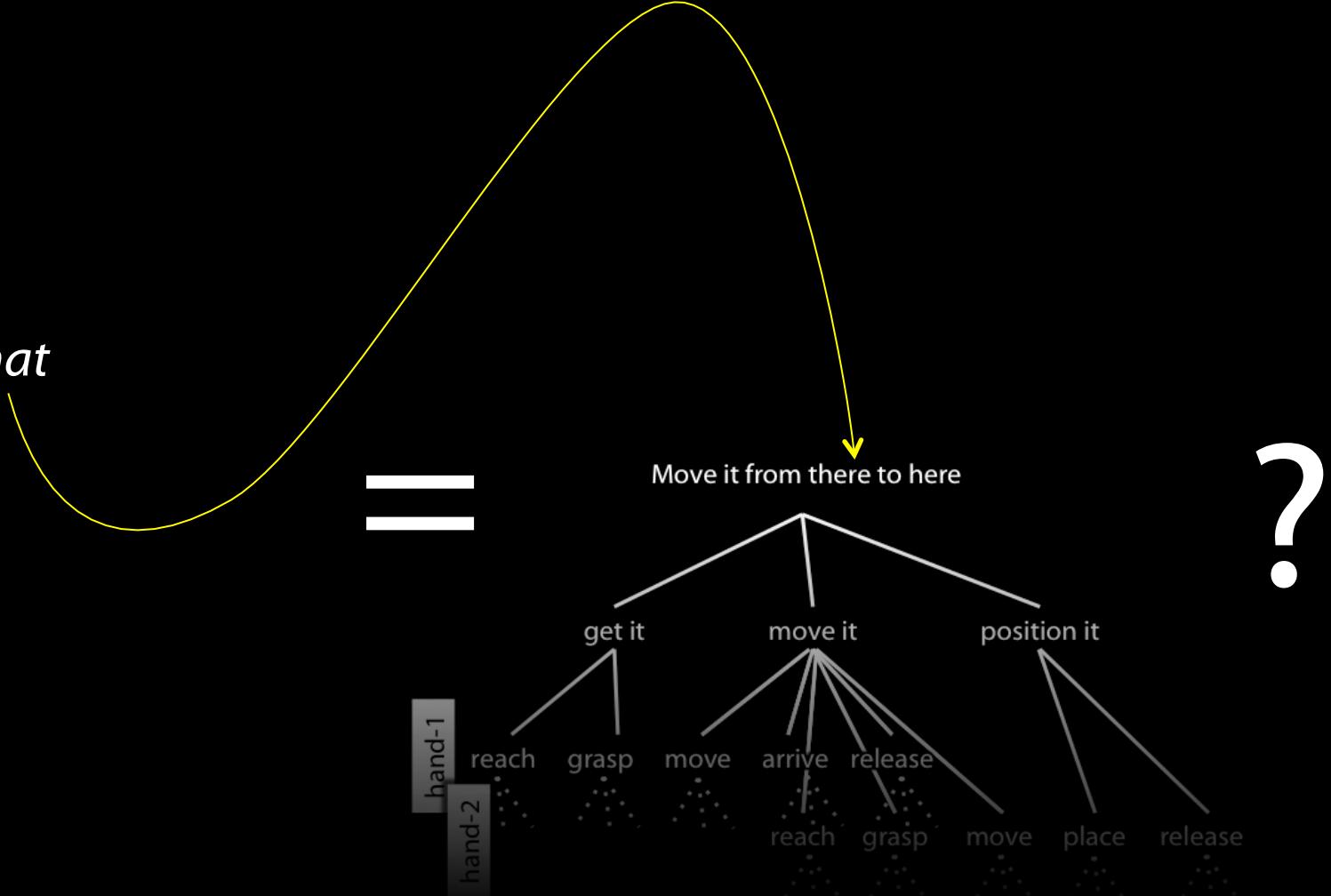


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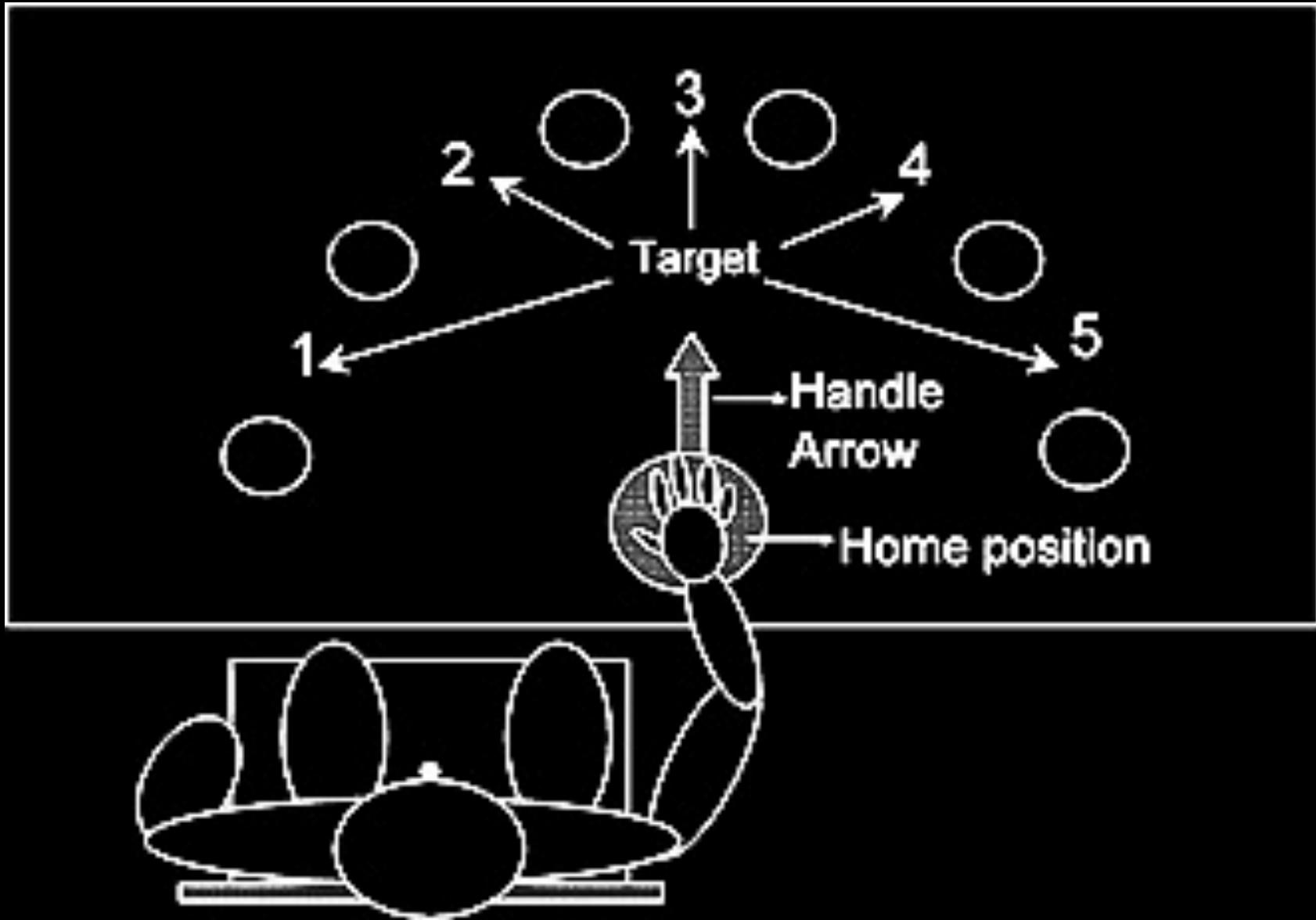


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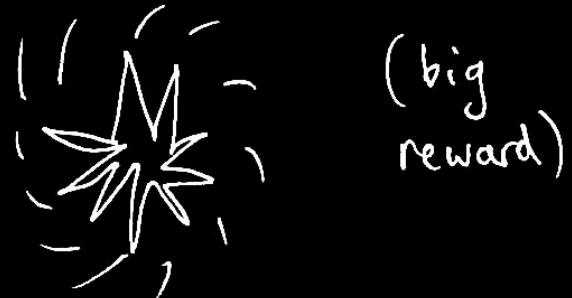
Do that



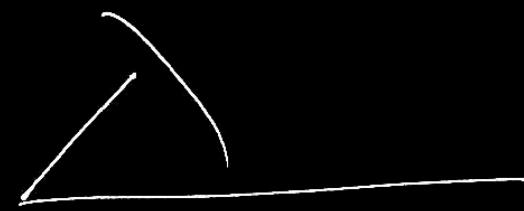
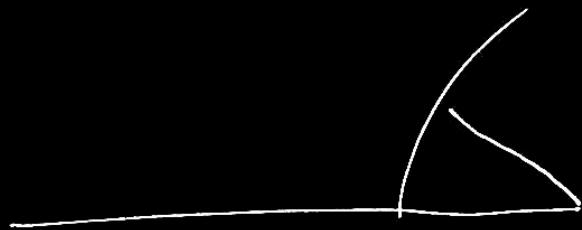




(Zhang and Rosenbaum 2007)



(big
reward)



(small
reward)

↑
ONE
WAY

X

start here

philosophy

