
Mindreading
& Joint Action
6. Goal Ascription
butterfillS@ceu.hu

goal ascription

pure goal ascription

How could *pure* goal ascription work?

sophisticated theory of mind cognition

communication by language

(mis)understanding ostensive communication

understanding distributive goals

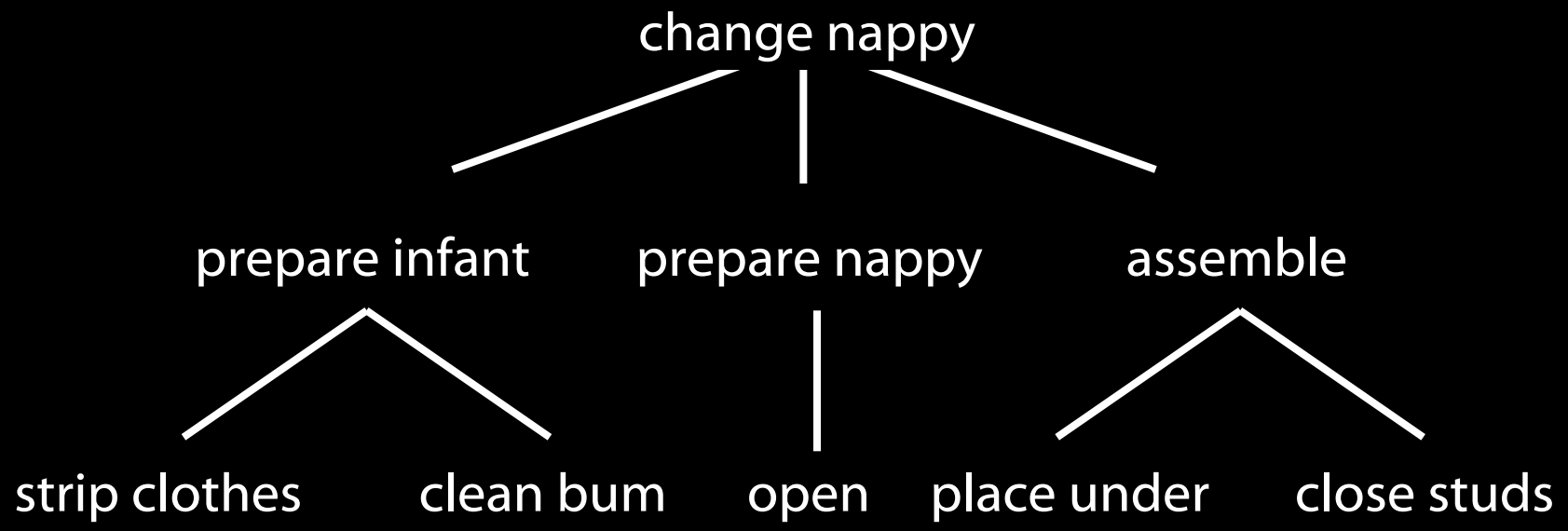
understanding goals

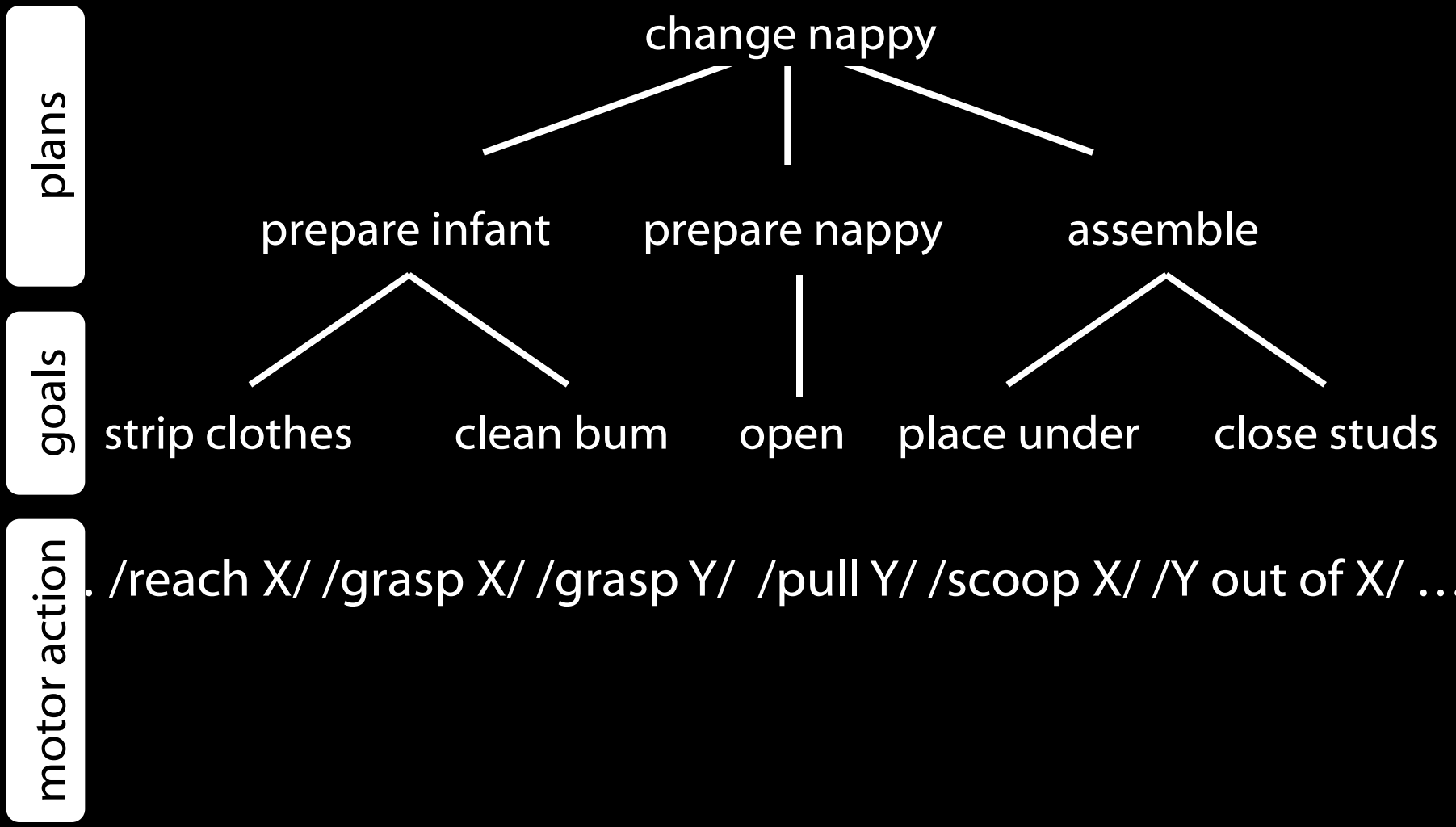
Mindreading is acting in reverse

plans

plans

goals


change nappy
prepare infant
prepare nappy
assemble
strip clothes
clean bum
open
place under
close studs


plans
goals
motor action
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. /reach X/ /grasp X/ /grasp Y/ /pull Y/ /scoop X/ /Y out of X/ …

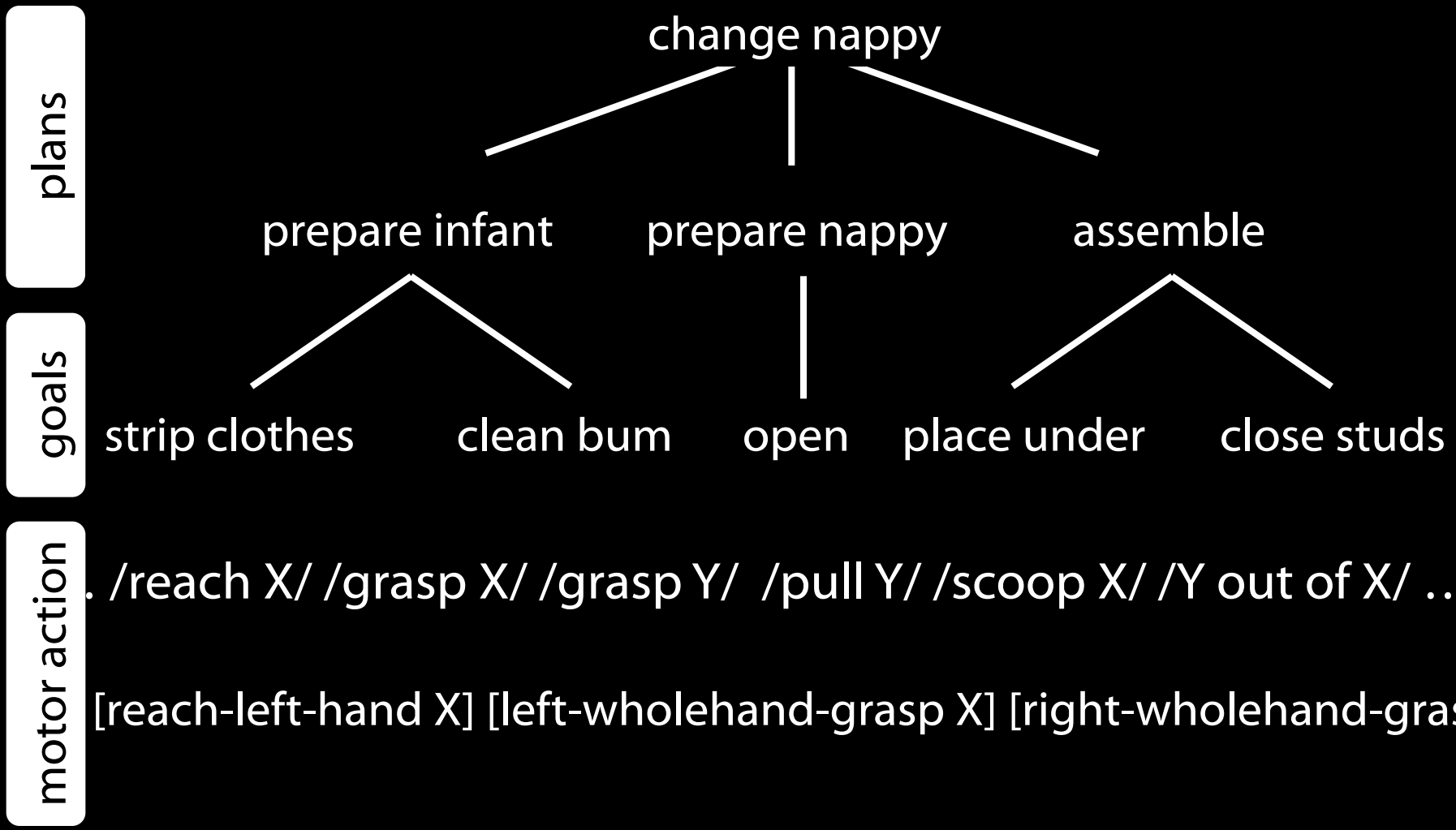
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Image adapted from: Rizzolatti, Giacomo, and Giuseppe Luppino. 2001. The Cortical Motor System. *Neuron* 31, no. 6 (September 27): 889-901. doi:10.1016/S0896-6273(01)00423-8.

plans

goals

motor action

motion

clauses

words

motor action

sound

change nappy

prepare infant

prepare nappy

S

strip clothes

clean bum

open

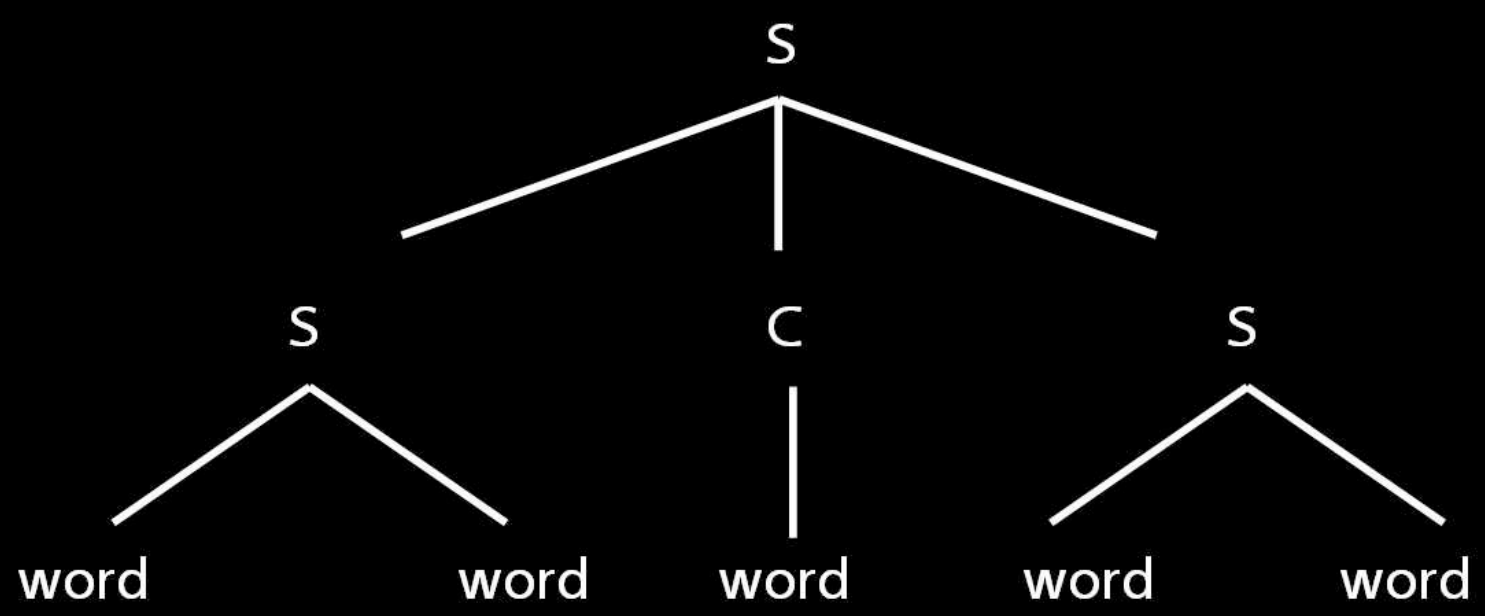
word

word

. /reach X/ /grasp X/ /grasp Y/ /e//n//d//l//i//l//i//k//r//a//i//

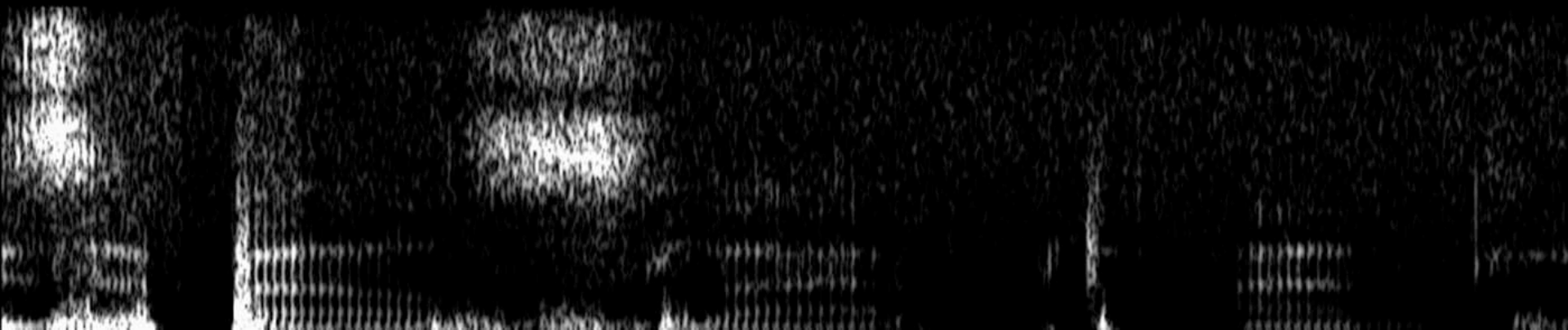
[reach-left-hand X] [left-whole ə n d l ɪ l ɪ k r a ɪ d

Image adapted from: Rizzolatti, Giacomo, and Giuseppe Luppino. 2001. The Cortical Motor System. *Neuron* 31, no. 6 (September 27): 889-901. doi:10.1016/S0896-6273(01)00423-8.



/i//z//e//b//e//l//s//l//e//p//t//e//n//d//l//i//l//i//k//r//a//i//d/

ˈ ɪ z ə b ɛ l š l e p t ə n d l ɪ l ɪ k r a ɪ d



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How could *pure* goal ascription work?

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obstacle

1. action
2. outcome
3. directedness of
   action to outcome

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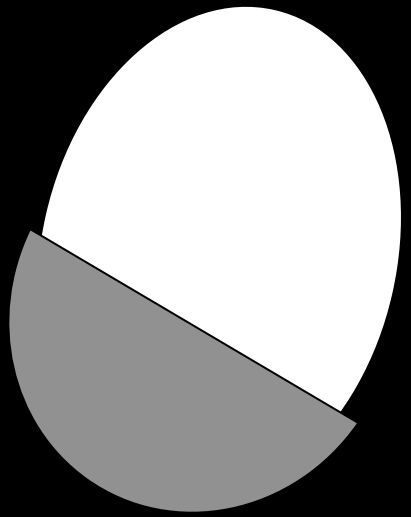
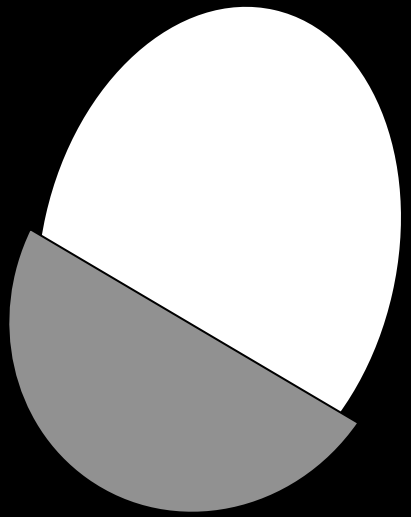


	Ayesha	Beatrice
1. action	move arm	move arm
2. outcome	break egg	break egg
3. directedness of action to outcome	Y	N



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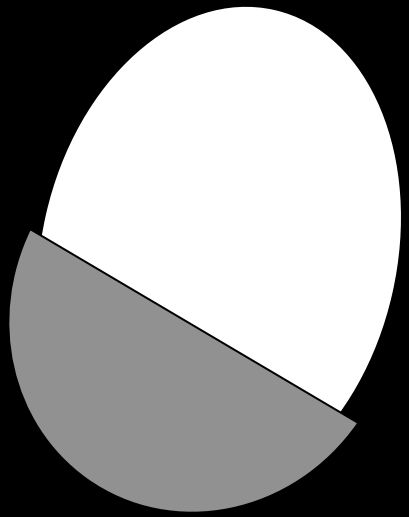

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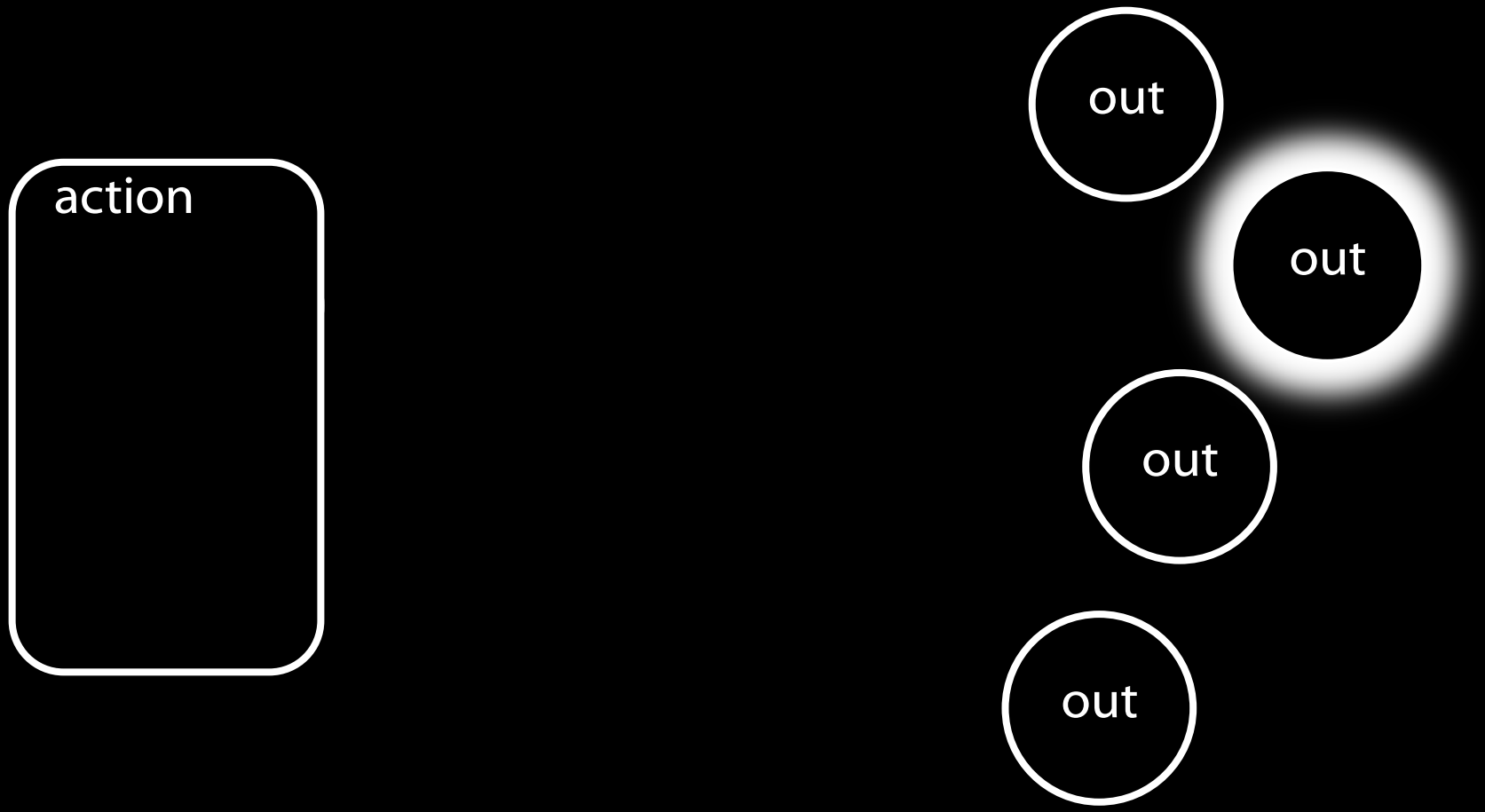
What is the relation between an action and the outcome or outcomes to which it is directed?



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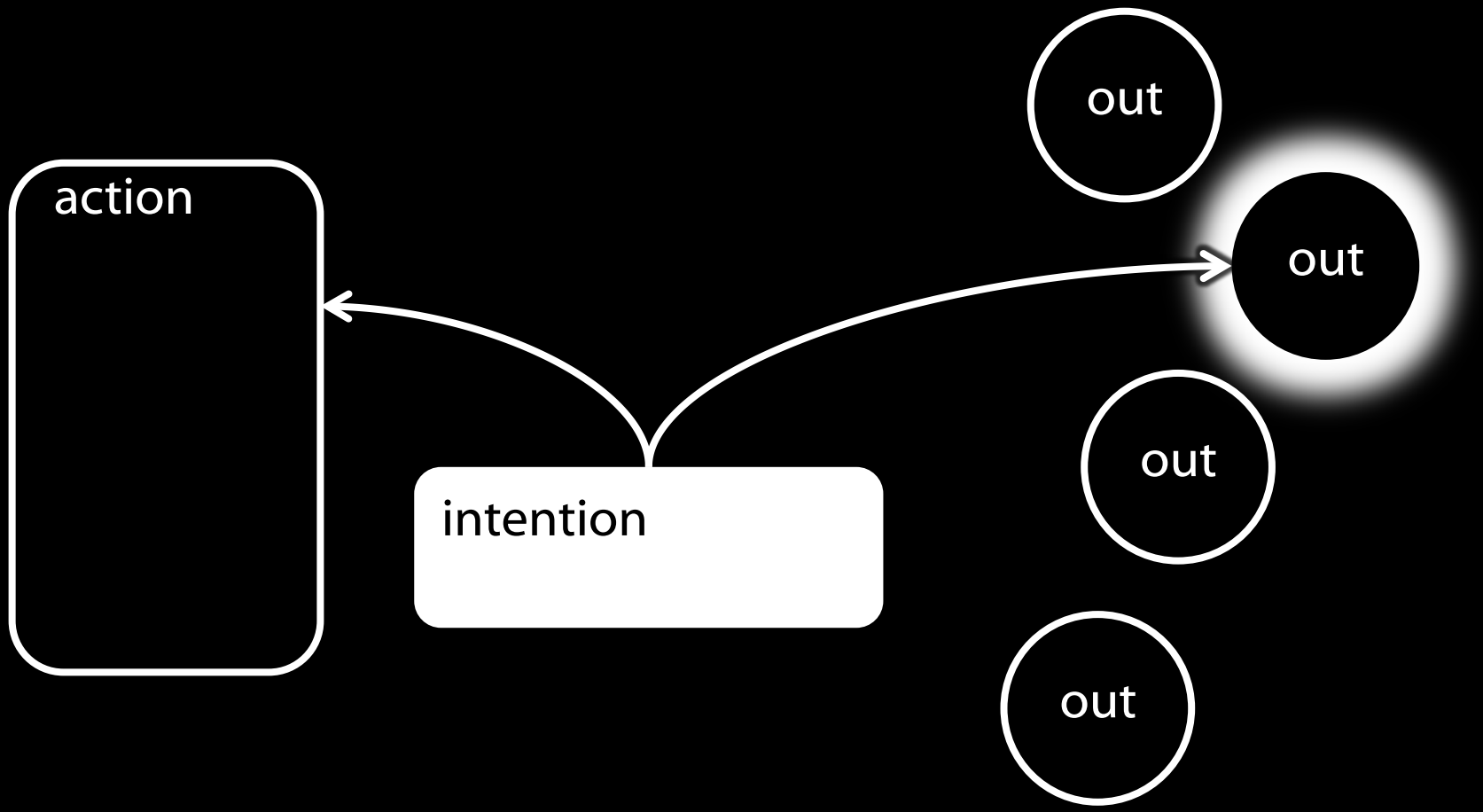

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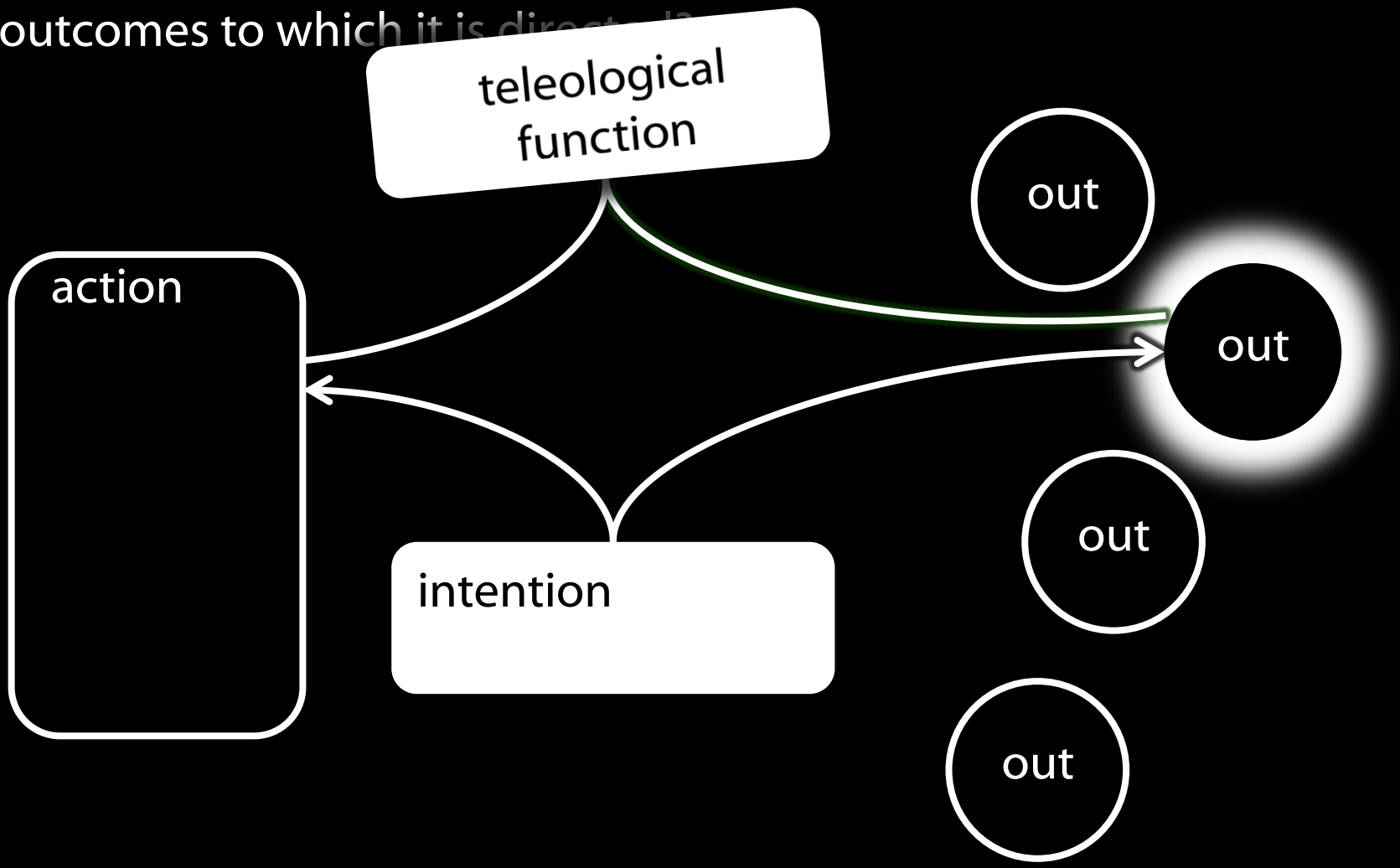

(i) in the past, actions of this type have caused outcomes of this type; (ii) this action happens now in part because (i).

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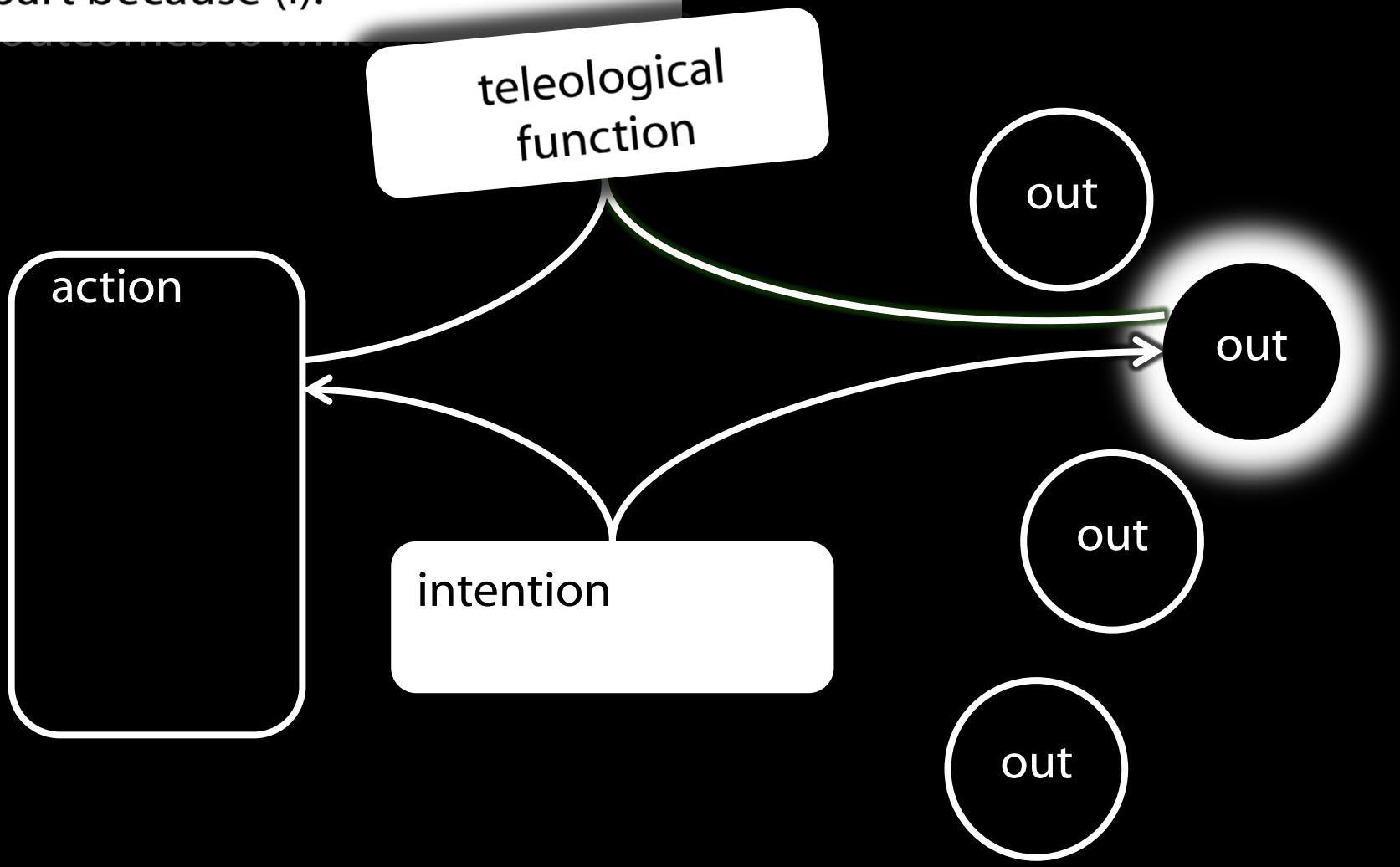

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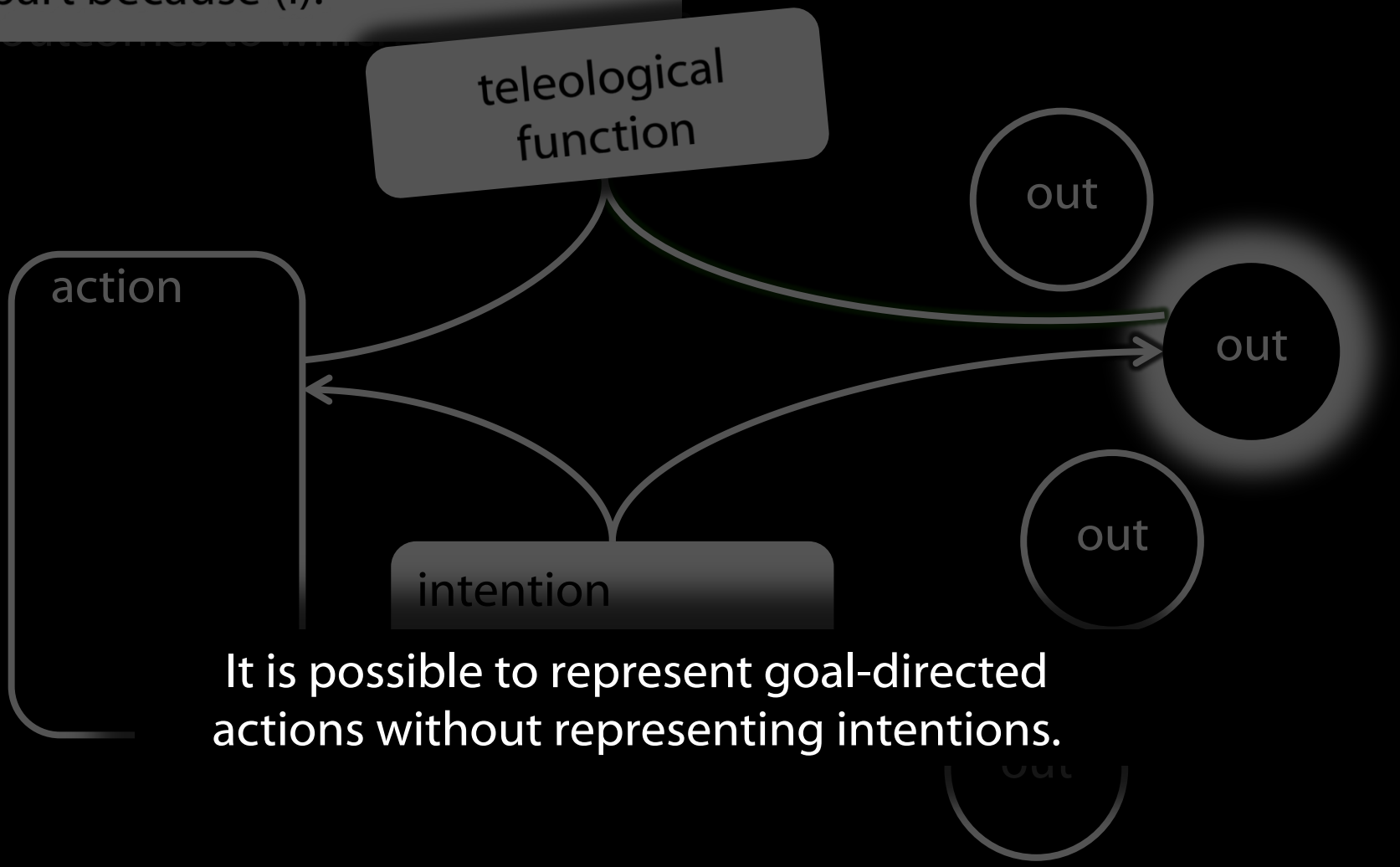

It is possible to represent goal-directed actions without representing intentions.

How could *pure* goal ascription work?

~~obstacle~~

‘the perceptual origins of theory of mind ... both causality and intention can be traced to perceptual origins’

(Premack 1990: 15)

‘in perceiving one object as having the intention of affecting another, the infant attributes to the object a representation of its intentions’

(Premack 1990: 14)

‘For the infant, objects ... have intention when their movements are self-propelled. Whereas for common sense, intention is an inferred state of mind based on evidence for desire, belief, and planning.’

(Premack 1990: 12)

‘the perceptual origins of theory of mind ... both causality and intention can be traced to perceptual origins’

(Premack 1990: 15)

‘in perceiving one object as having the intention of affecting another, the infant attributes to the object a representation of its intentions’

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“chimpanzees understand … intentions … perception and knowledge … Moreover, they understand how these psychological states work together to produce intentional action”

(Call & Tomasello 2008:191)

How could *pure* goal ascription work?

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$R(a,G) =_{df}$ G is the teleological function of a?

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(Csibra & Gergely 1998: 255)

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Csibra & Gergely (forthcoming ms p. 8)

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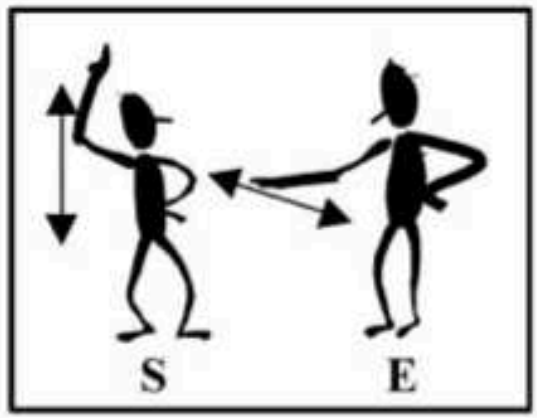
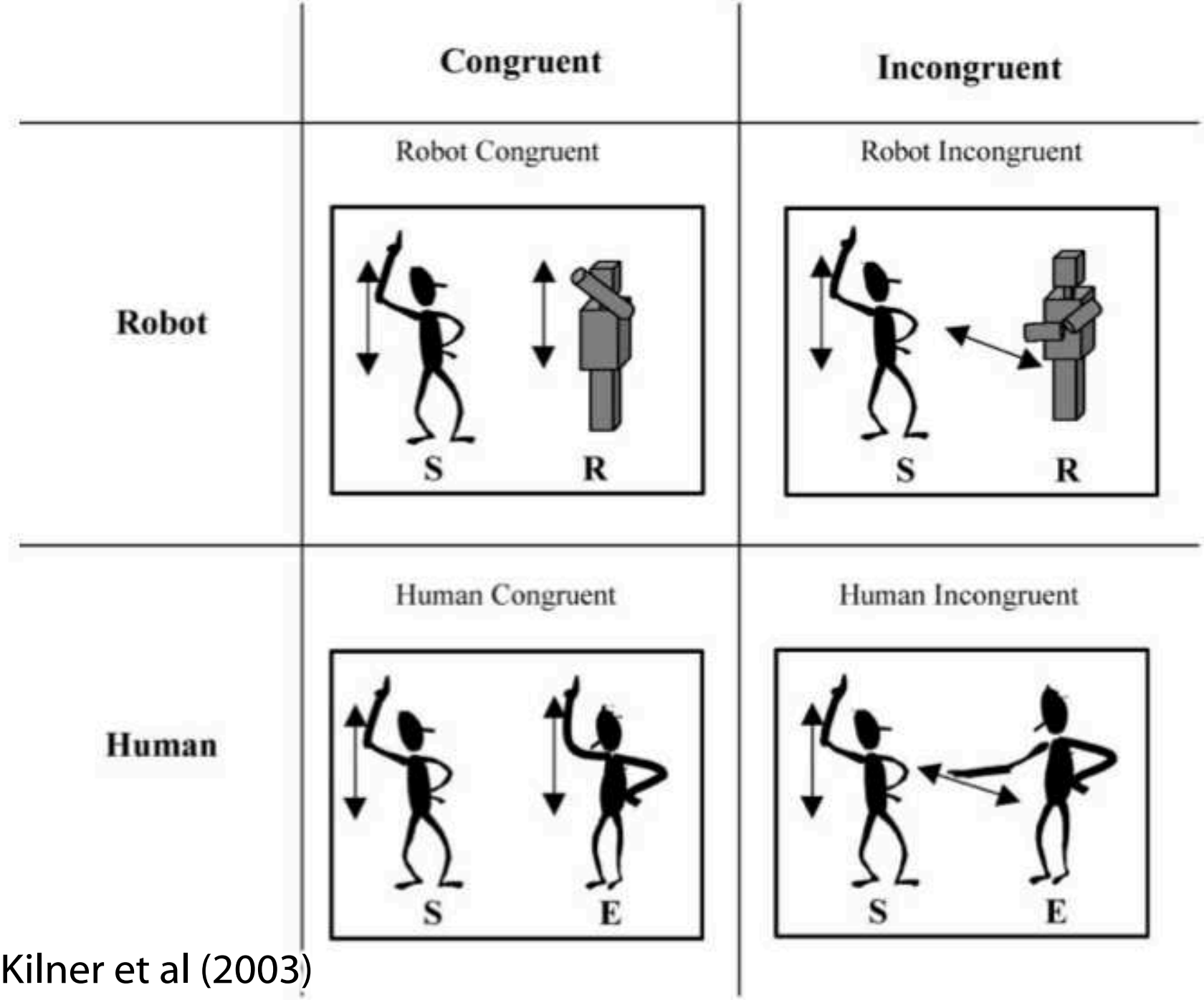
Motor Planning

Motor planning occurs in action observation



source Kilner et al (2003)



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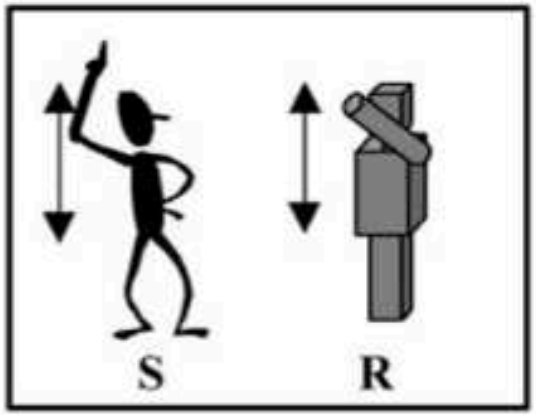
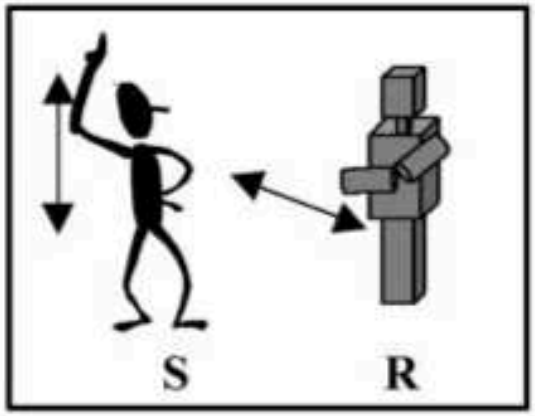
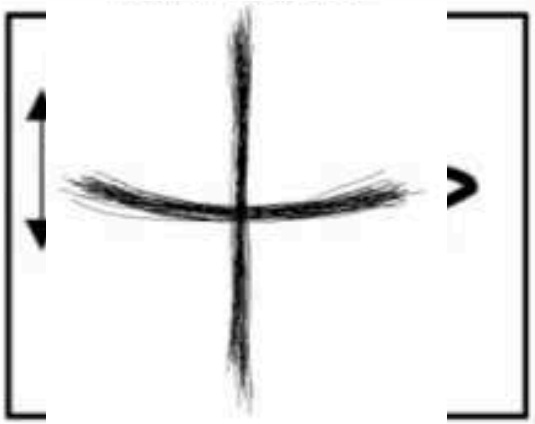
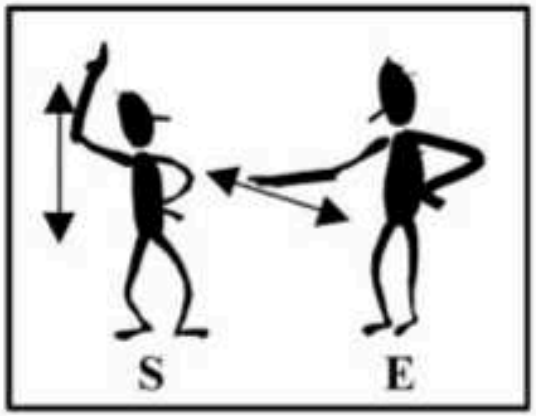
	Congruent	Incongruent
Robot	Robot Congruent 	Robot Incongruent 
Human	Human Congruent 	Human Incongruent 

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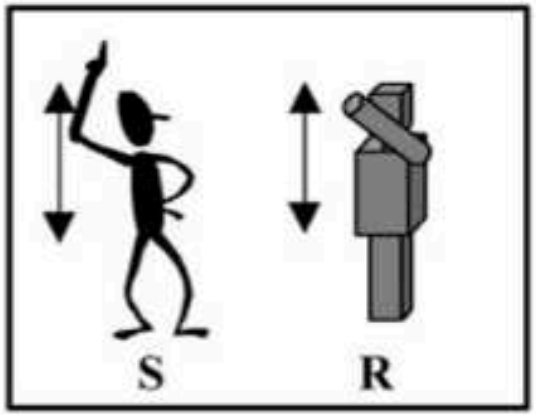
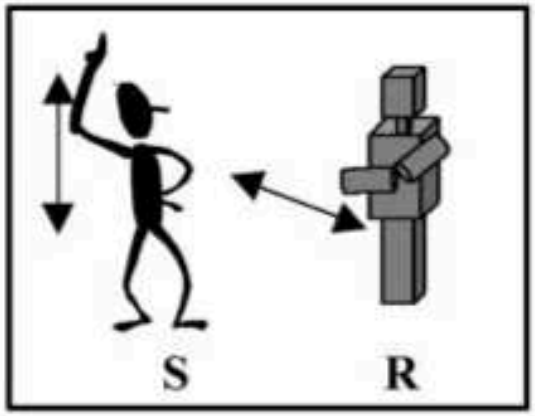
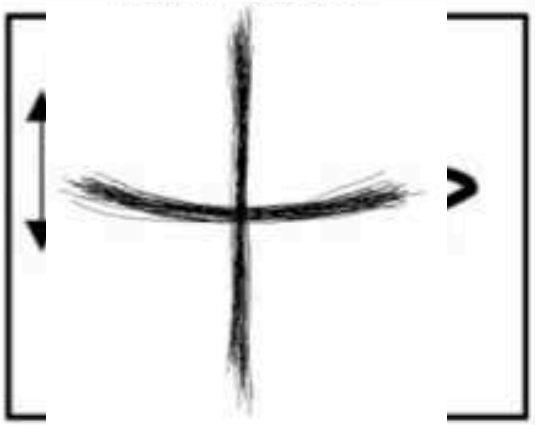
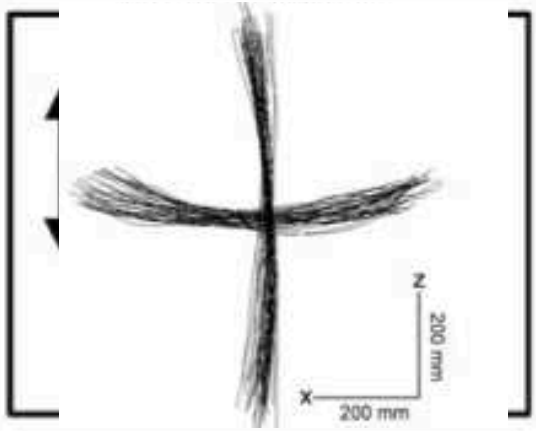
Robot	Robot Congruent 	Robot Incongruent 
Human	Human Congruent 	Human Incongruent 

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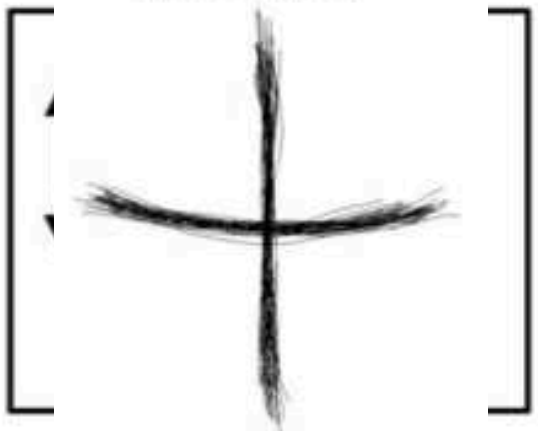
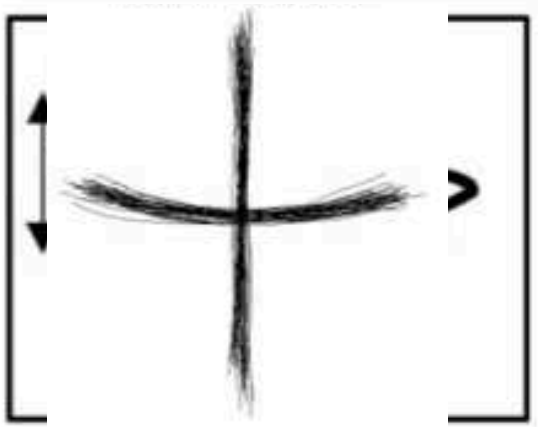
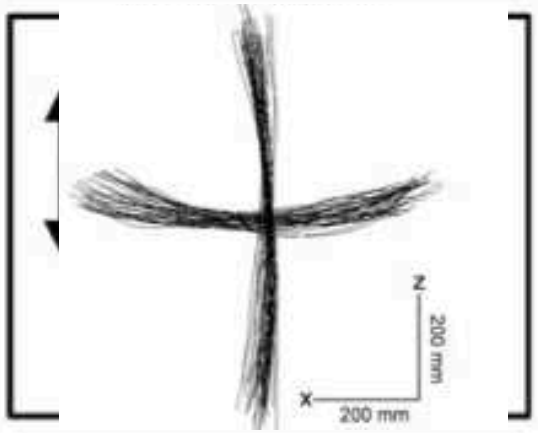
Robot	Robot Congruent 	Robot Incongruent 
Human	Human Congruent 	Human Incongruent 

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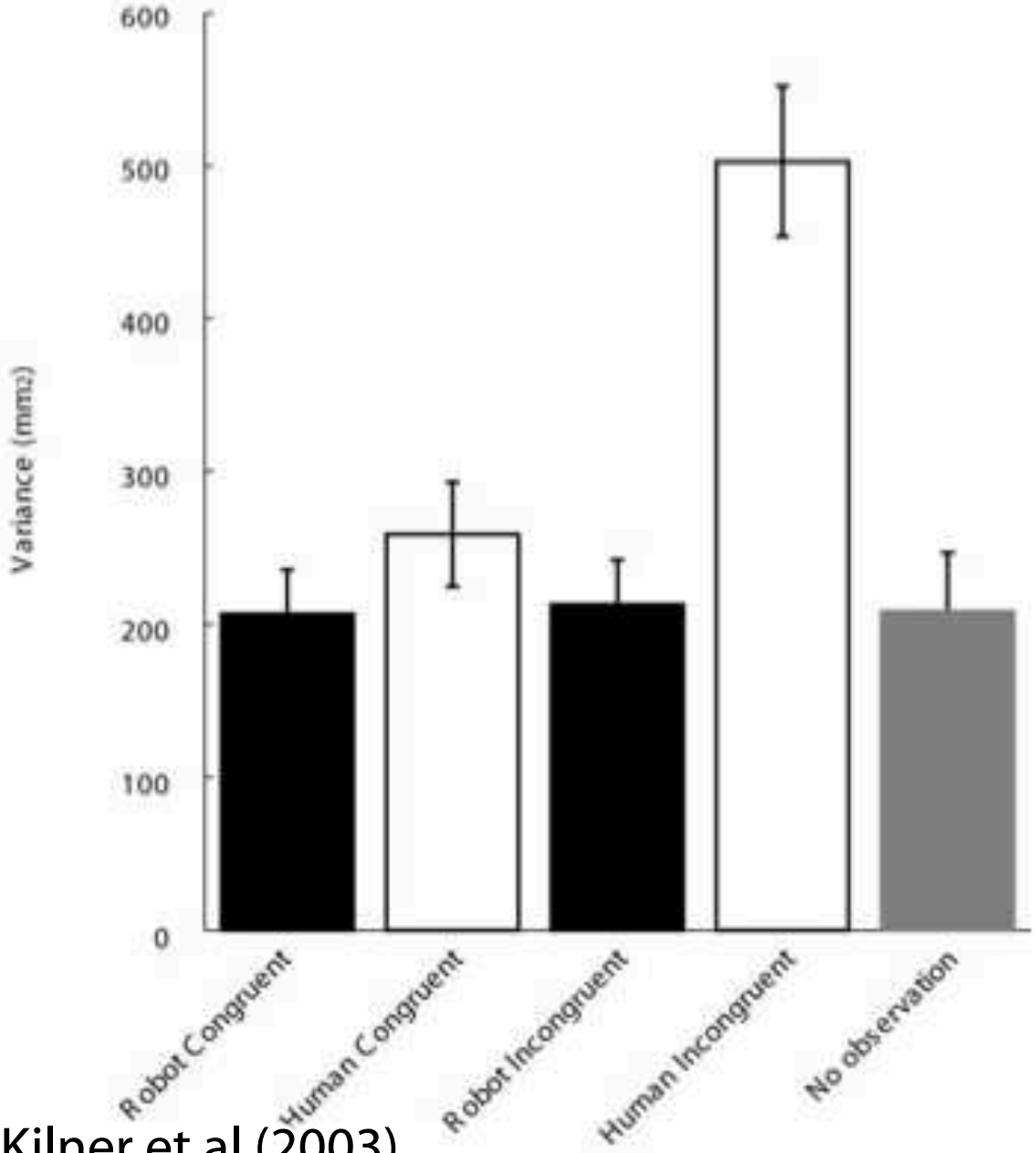

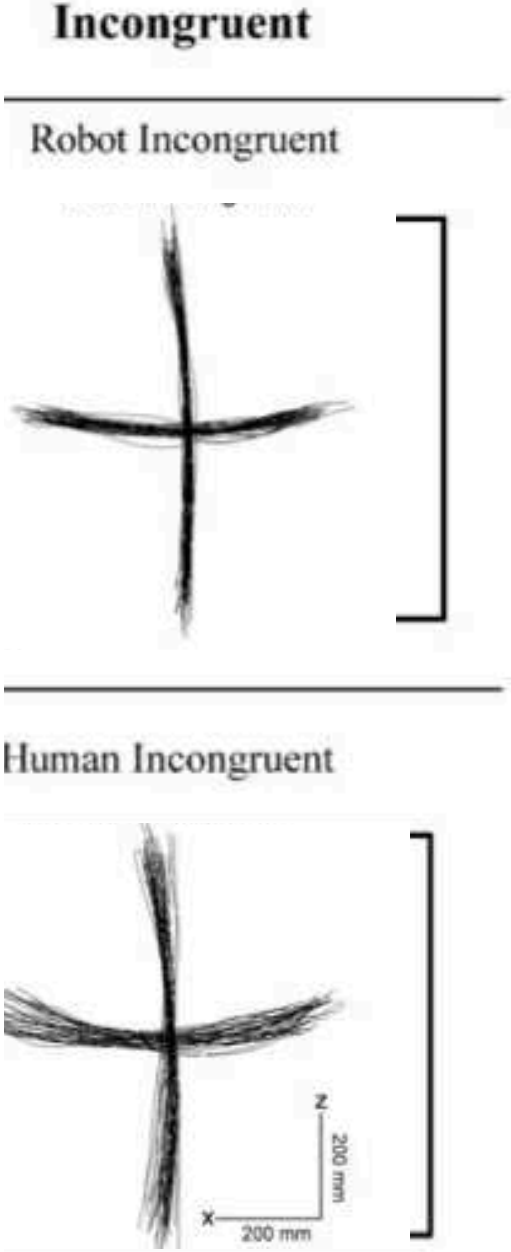

source Kilner et al (2003)


source Costantini,Ambrosini,Cardellicchio & Sinigaglia (2012)

Motor planning can facilitate goal judgments

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Training effects (Casile & Giese 2006)

TMS to motor cortex slows goal judgments (Urgesi et al 2007)

Hemiplegia with inaccuracy in corresponding goal judgments (Serino et al 2009)

Limb vs buccofacial apraxia (Pazzaglia)

Planning as Goal Ascription

(1) reliably: R(a,G) when and only when a is directed to G

(2) R(a,G) is readily detectable

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$R(a,G) =_{df}$ a is the most justifiable/efficient action towards G available within the constraints of reality and G is desirable

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