

# Mechanisms and representations don't mix: teleosemantics and constitutive mechanistic explanation

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# Outline

- 1) Intro
- 2) Locality
- 3) Mutual Manipulability
- 4) Conclusion





# 1. Introduction

- Explanations in cognitive neuroscience both representational and mechanistic (Craver and Piccinini 2011, Milkowski 2013)
- Teleosemantics one of the most popular accounts of representational content
- Assuming teleosemantics, representations cannot be mechanism constituents

# 1. Intro - mechanisms



- Explain by decomposition into constituent entities and activities

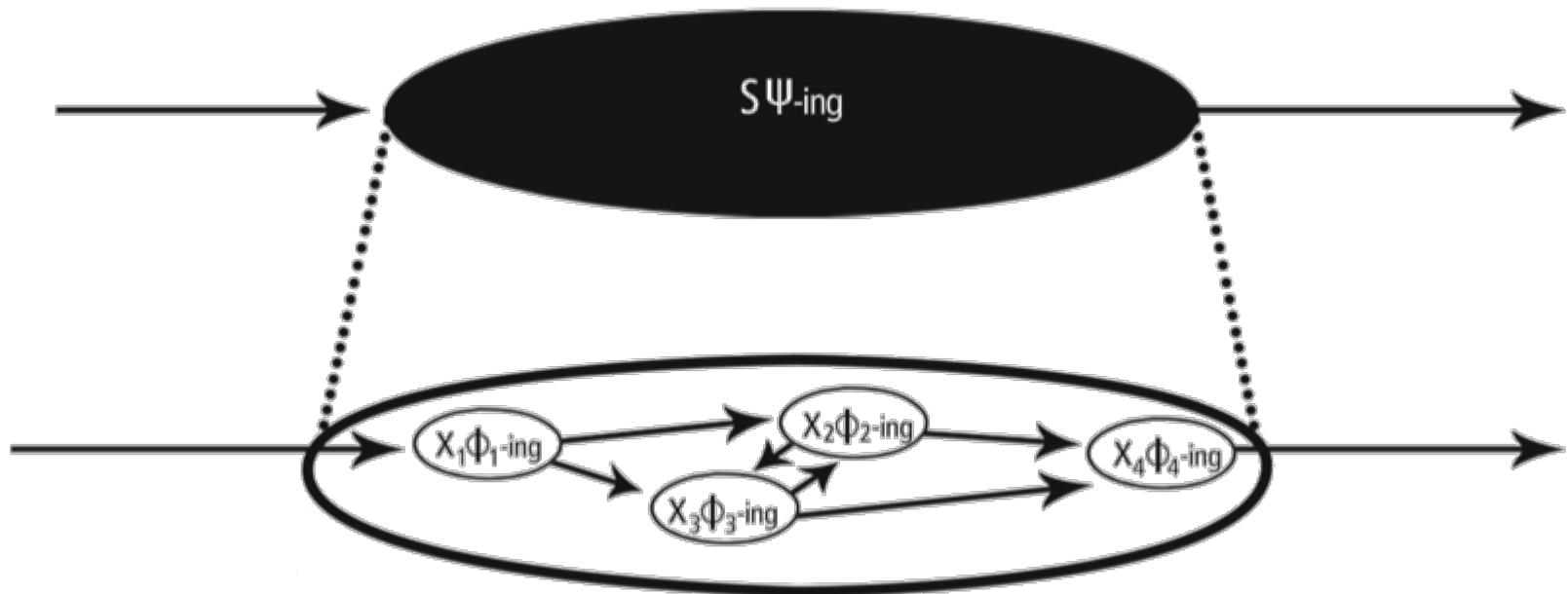
According to the mutual manipulability account,  $X$ 's  $\phi$ -ing is a constituent of  $S$ 's  $\psi$ -ing iff:

- (i)  $X$  is part of  $S$ ;
- (ii) in the conditions relevant to the request for explanation there is some change to  $X$ 's  $\phi$ -ing that changes  $S$ 's  $\psi$ -ing; and
- (iii) in the conditions relevant to the request for explanation there is some change to  $S$ 's  $\psi$ -ing that changes  $X$ 's  $\phi$  -ing (Craver 2007b, 153)

# 1. Intro - mechanisms



Phenomenon

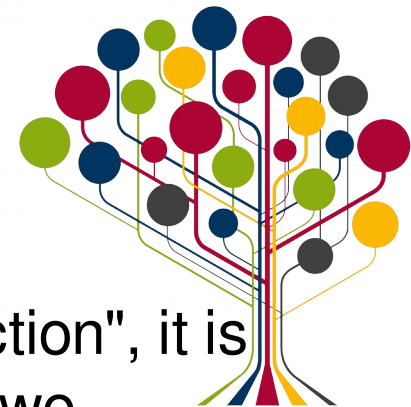


Mechanism

# 1. Intro - teleosemantics



- Contents fixed by function
- Function fixed by selection history
- Sign  $X$  has content  $Y$  if the function of system producing  $X$  is to adapt some consumer to the state of affairs  $Y$ , by producing  $X$ .



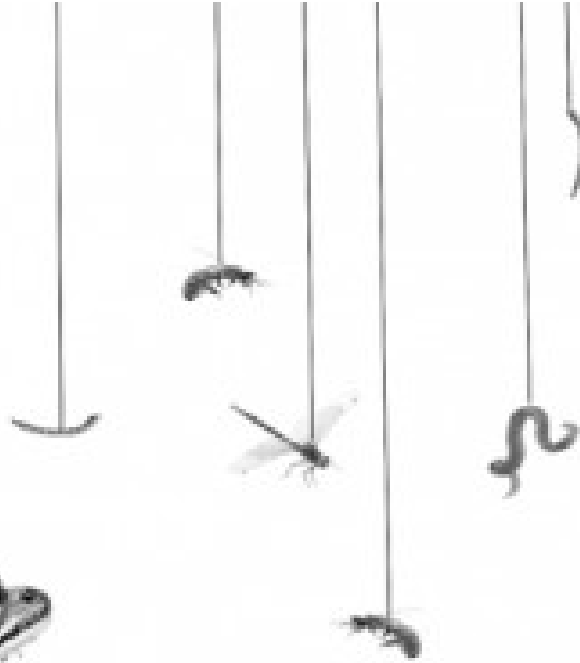
# 1. Intro - teleosemantics

[F]or an item  $A$  to have a function  $F$  as a "proper function", it is necessary (and close to sufficient) that one of these two conditions should hold.

(1)  $A$  originated as a "reproduction" (to give one example, as a copy, or a copy of a copy) of some prior item or items that, *due* in part to possession of the properties reproduced, have actually performed  $F$  in the past, and  $A$  exists because (causally historically because) of this or these performances.

(2)  $A$  originated as the product of some prior device that, given its circumstances, had performance of  $F$  as a proper function and that, under those circumstances, normally causes  $F$  to be performed by *means* of producing an item like  $A$ . (Millikan 1989, 288- 89)

# 1. Intro





## 2. Locality

- Mechanistic explanation local
- Constituent entity must be in spatiotemporal region of phenomenon to be part of the mechanism
- Constituent activities must take place during the occurrence of the phenomenon to be part of the mechanism



## 2. Locality - properties



- Applies to properties analogously as to activities
- Relational properties: only if all relata are also local
- Jack's being widowed = that Jack's spouse has died

## 2. Locality - contents



*Being a representation of  $X$  =  
having the proper function of adapting  
the behaviour of a representation  
consumer to the presence of  $X$  =  
being a reproduction of other entities  
whose adapting the behaviour of a  
representation consumer to frog food  
led to the existence of the  
reproduction.*

### 3. Mutual manipulability (MM)



(CR1) When  $\varphi$  is set to the value  $\varphi_1$  in an ideal intervention, then  $\psi$  takes on the value  $f(\varphi_1)$  (Craver 2007b, 155)

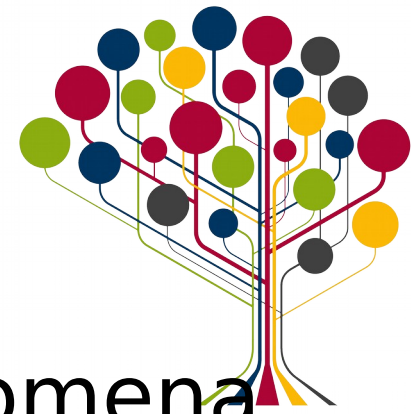
(CR2) When  $\psi$  is set to the value  $\psi_1$  in an ideal intervention, then  $\varphi$  takes on the value  $f(\psi_1)$  (Craver 2007b, 159)

# 3. MM – ideal interventions



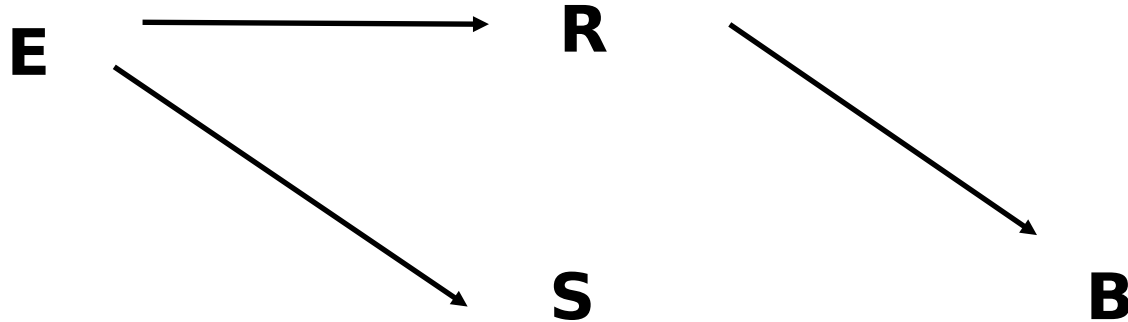
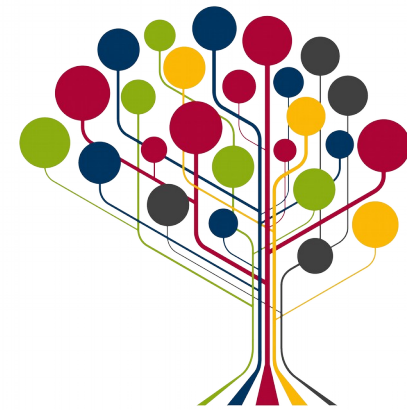
- (I1c) the intervention  $I$  does not change  $\psi$  directly;
- (I2c)  $I$  does not change the value of some other variable  $\phi^*$  that changes the value of  $\psi$  except via the change introduced into  $\phi$ ;
- (I3c) ...  $I$  is not correlated with some other variable  $M$  that is causally independent of  $I$  and also a cause of  $\psi$ ; and
- (I4c) ...  $I$  fixes the value of  $\phi$  in such a way as to screen off the contribution of  $\phi$ 's other causes to the value of  $\phi$ . (Craver 2007b, 154; see also Woodward 2003, 98)

### 3. MM – top-down



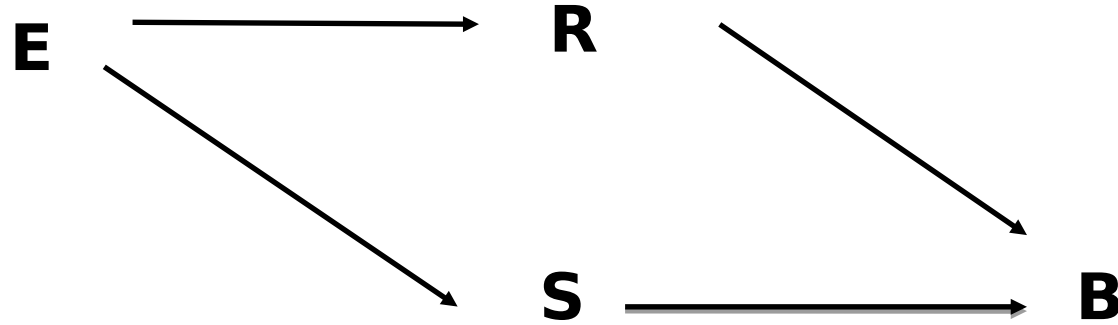
- Intervening on cognitive phenomena cannot change representational contents
- Contents determined by selection history
- Intervention would require backward causation

# 3. MM – bottom-up (1)



- Intervention on R with respect to B is ideal
- But S definitely influences B, so this is the wrong figure

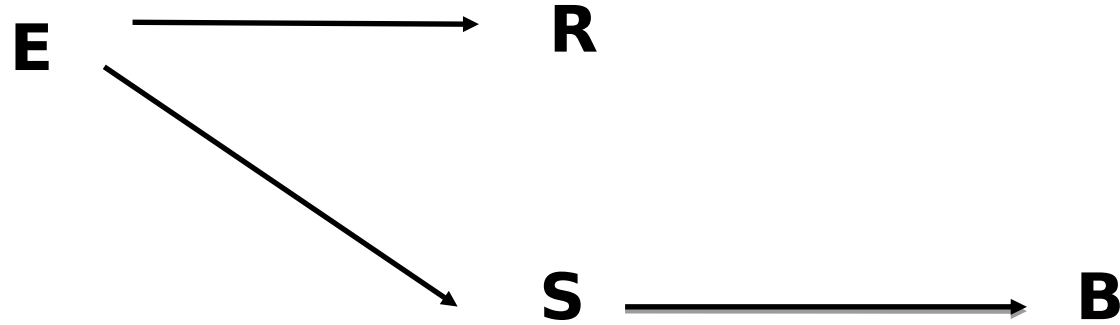
### 3. MM – bottom-up (2)



- Ideal interventions on R with respect to B must hold S constant
- But such interventions will actually not change B



### 3. MM – bottom-up (3)



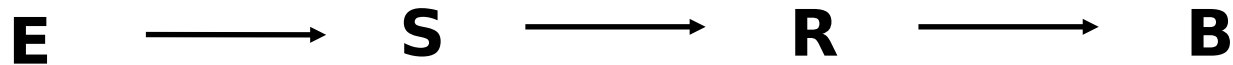
- In this structure R makes no difference to B, and so it is not constituent of B

### 3. MM – bottom-up (4)



- Selection mechanisms act on proximal properties directly, not by mediation from representational contents

### 3. MM – bottom-up (5)



- Interventions on S would change representational contents of vehicles
- Against teleosemantics – compare swamp cases

# 4. Conclusion

- Representational contents can be tested for mechanistic constitution
- Representational contents are not local to cognitive phenomena
- There are no ideal interventions on cognitive phenomena with respect to representational contents
- There are no ideal interventions on representational contents with respect to cognitive phenomena
- Representational contents do not enter into mechanistic explanations of cognition





Thanks for attention.