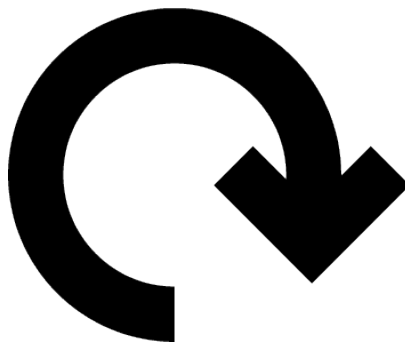


# paskian environments

usman haque  
usman@haque.co.uk

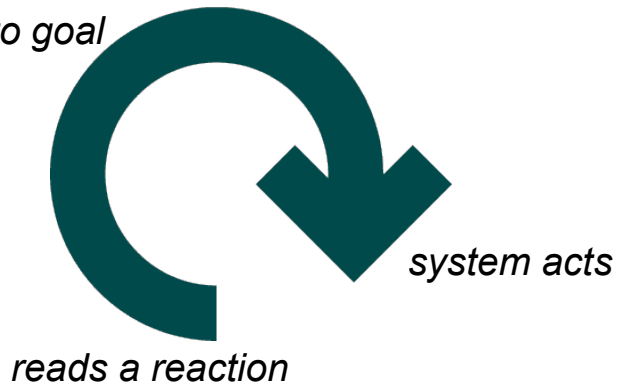
paul pangaro  
pan@pangaro.com

CYBERNETICS

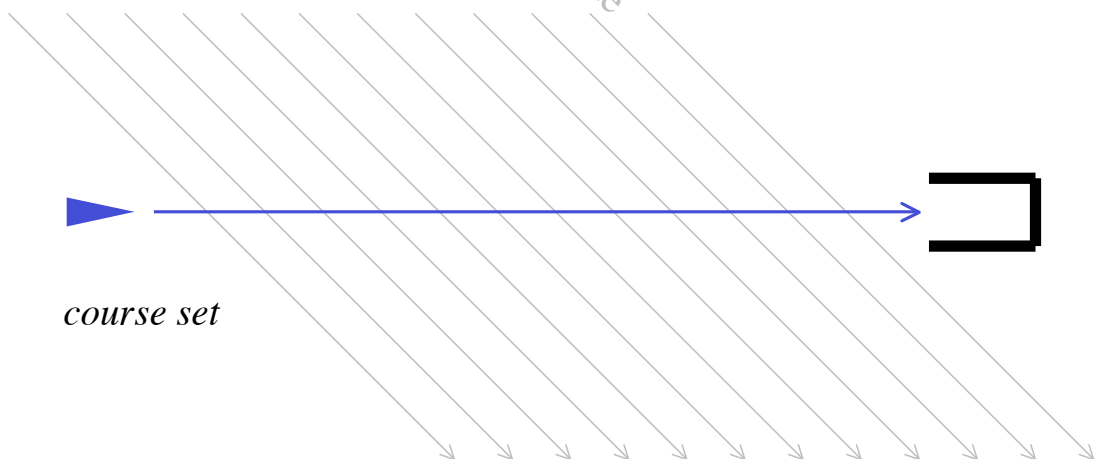


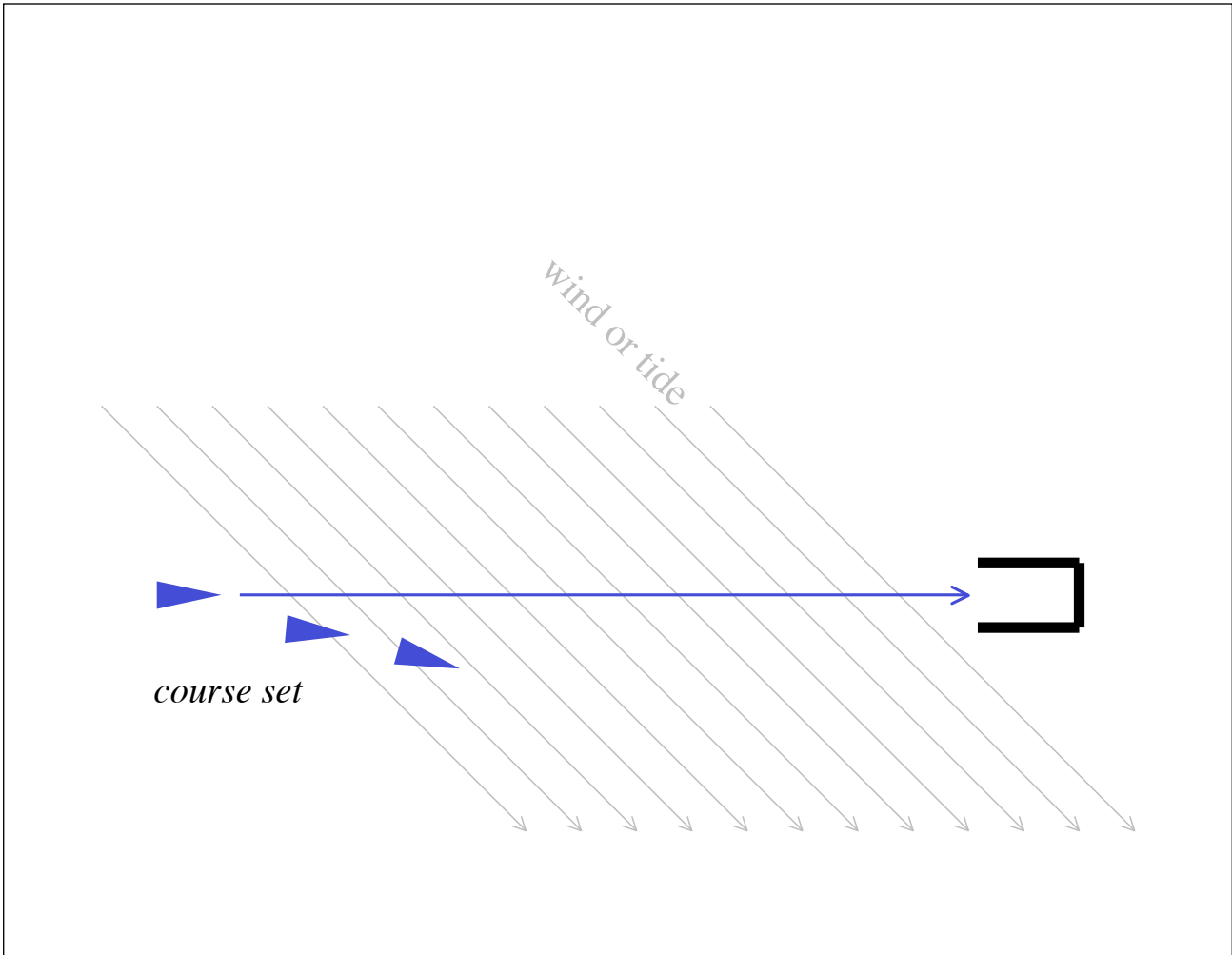
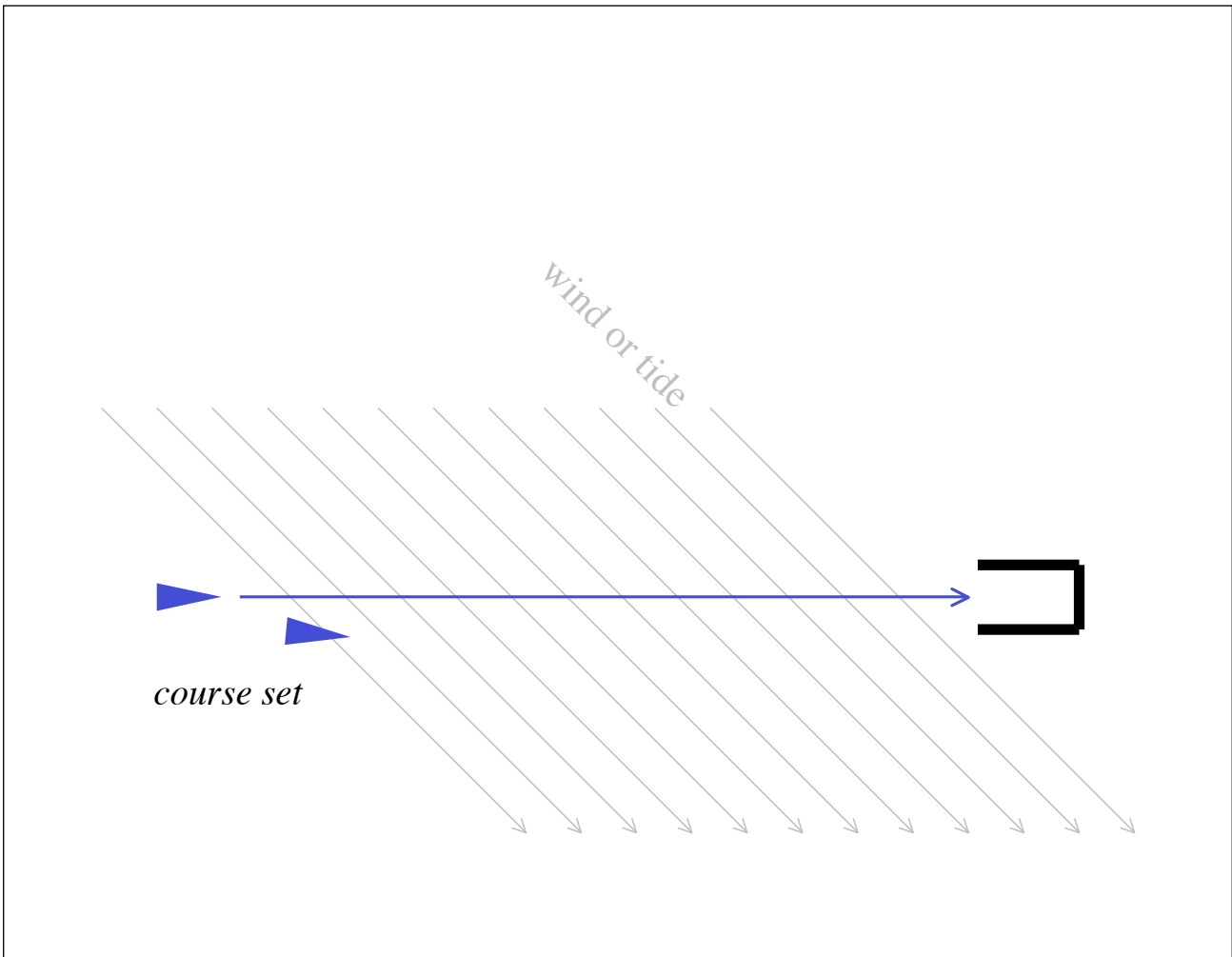
# CYBERNETICS

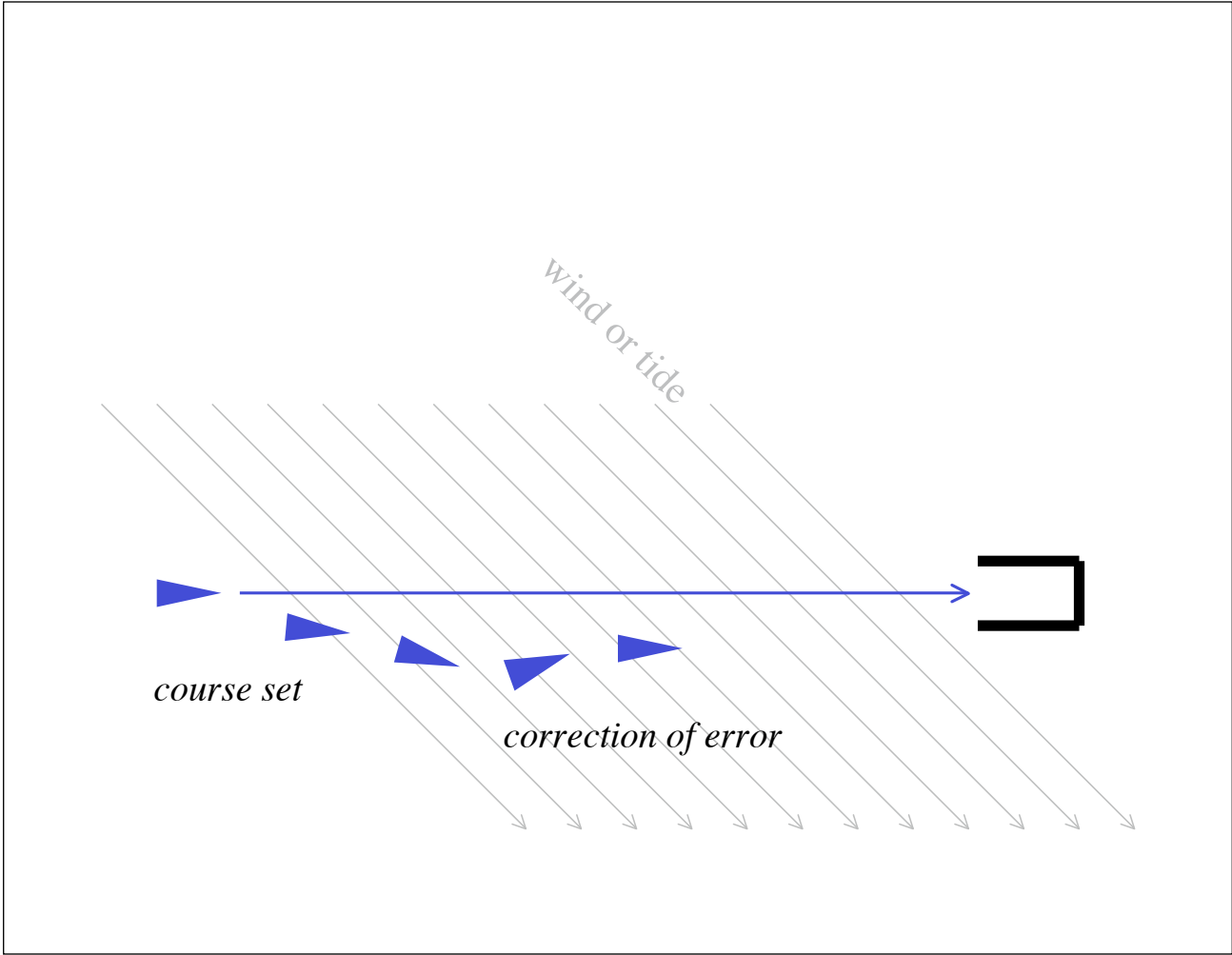
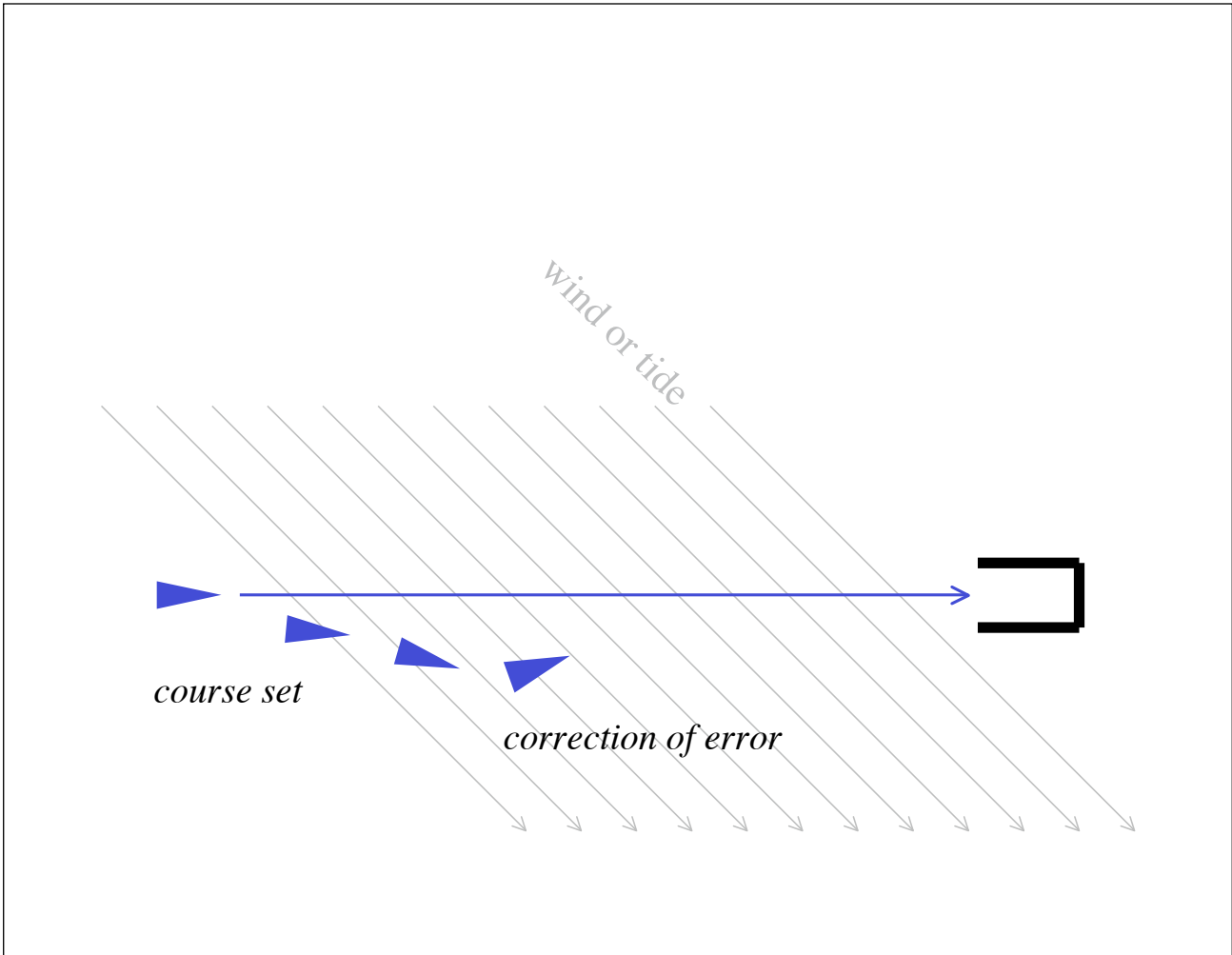
*compares to goal*



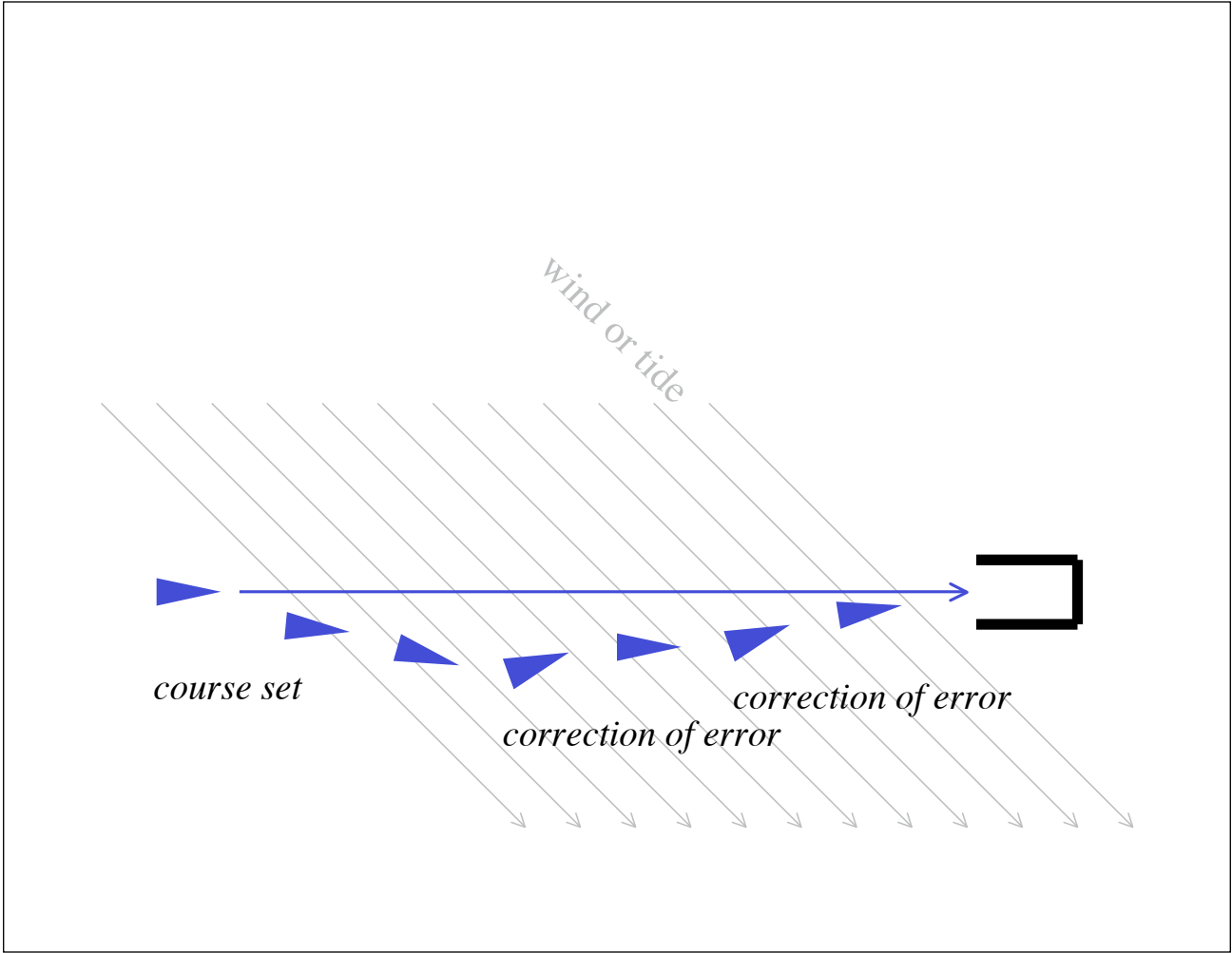
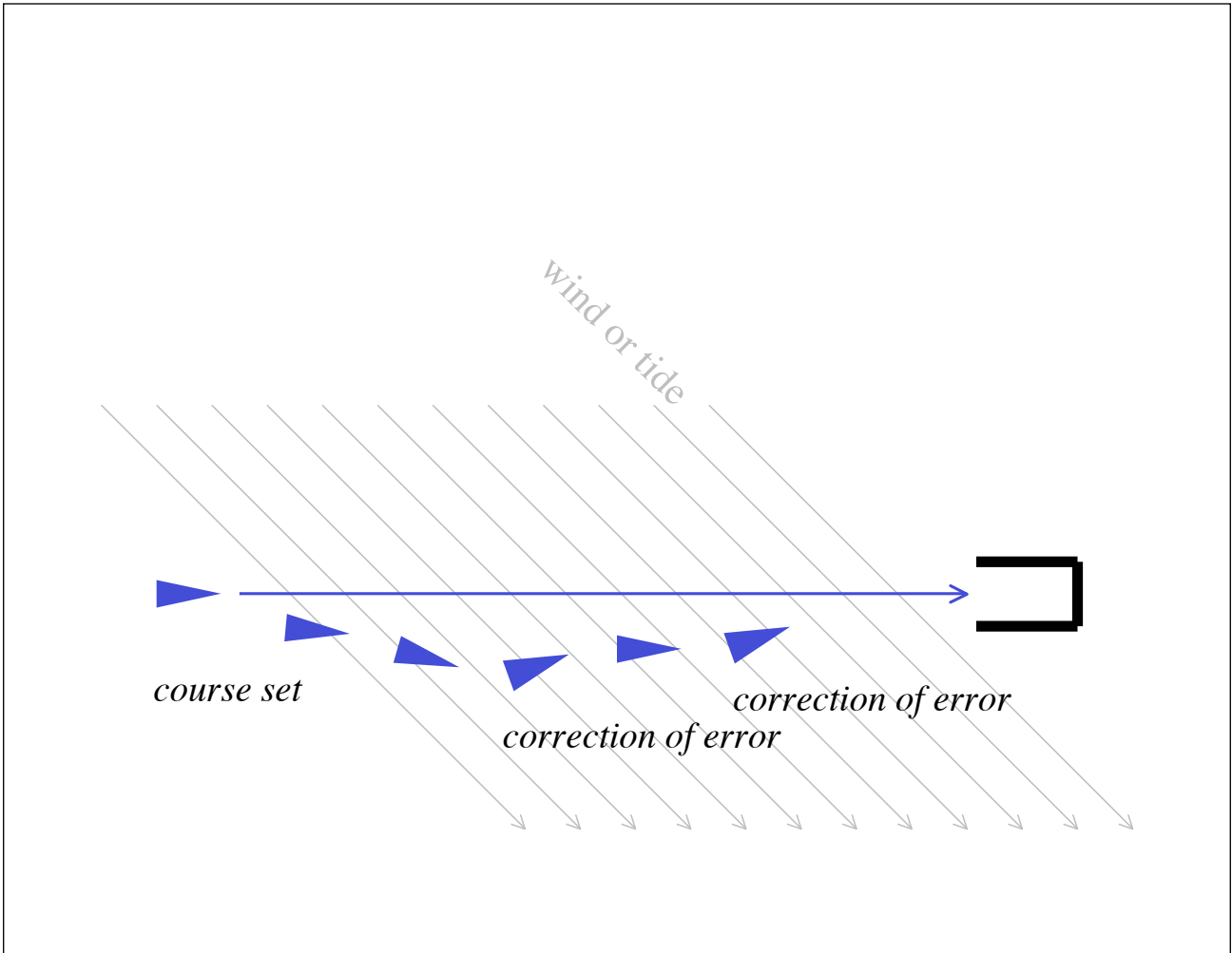
*wind or tide*

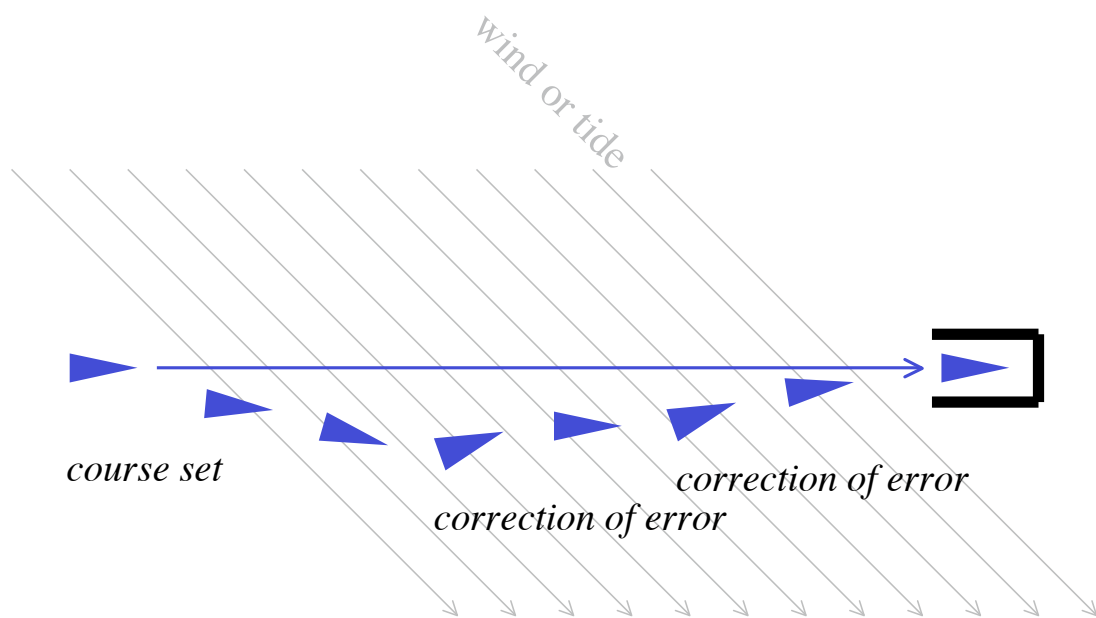










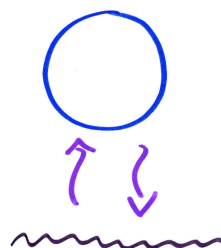


## CYBERNETICS

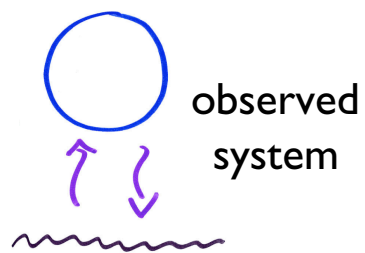


# CYBERNETICS

- system has **goal**
- system aims toward the **goal**
- **environment** affects aim
- information returns to system—'**feedback**'
- system measures **difference** between state and goal  
—detects '**error**'
- system **acts** to correct

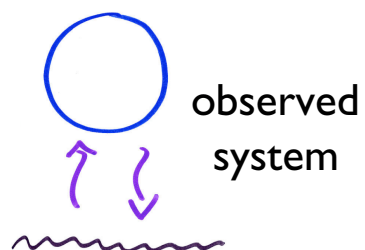


*after Maturana*



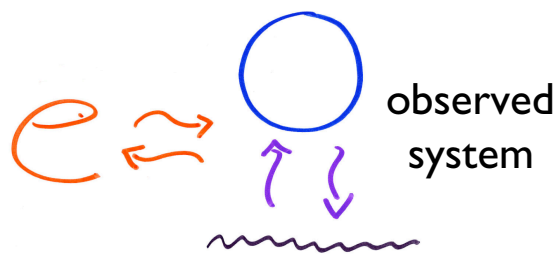
*after Maturana*

### first-order cybernetics

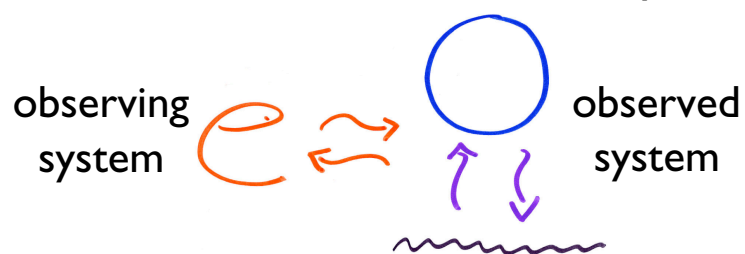


*after Maturana*

first-order cybernetics

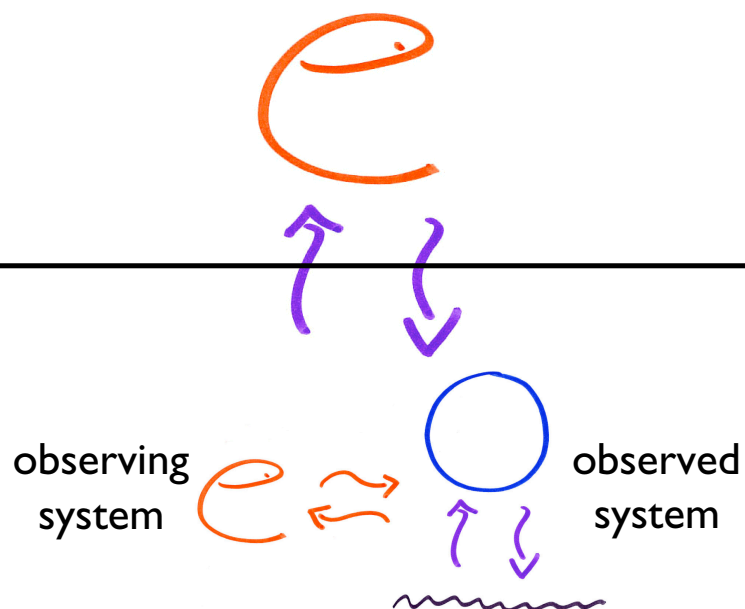
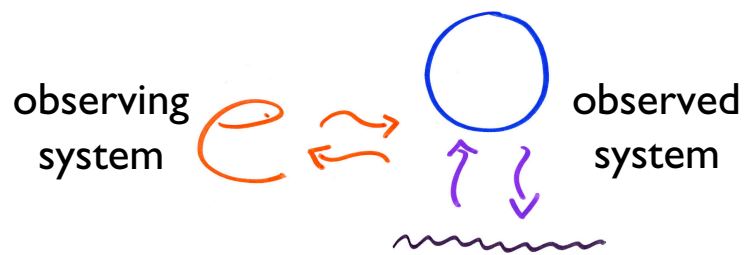


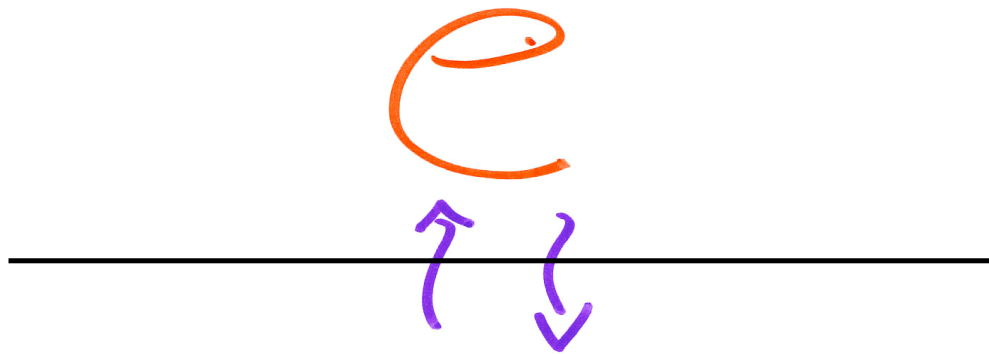
first-order cybernetics



## second-order cybernetics

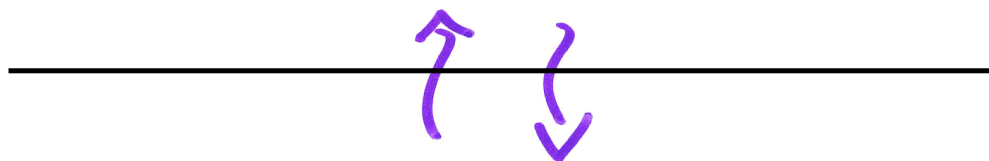
### first-order cybernetics





observing system    observing system

observing system    observing system



observing system    observing system

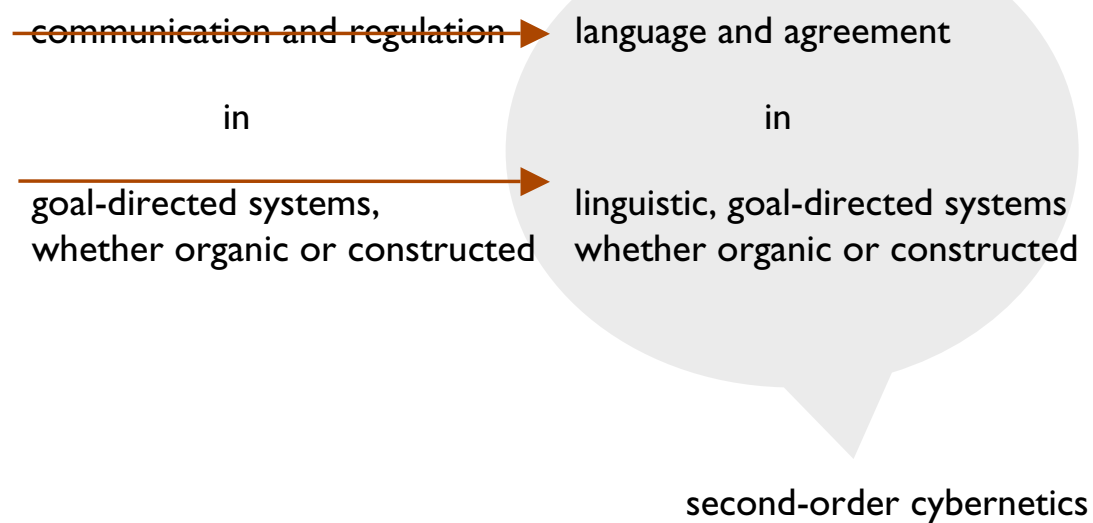
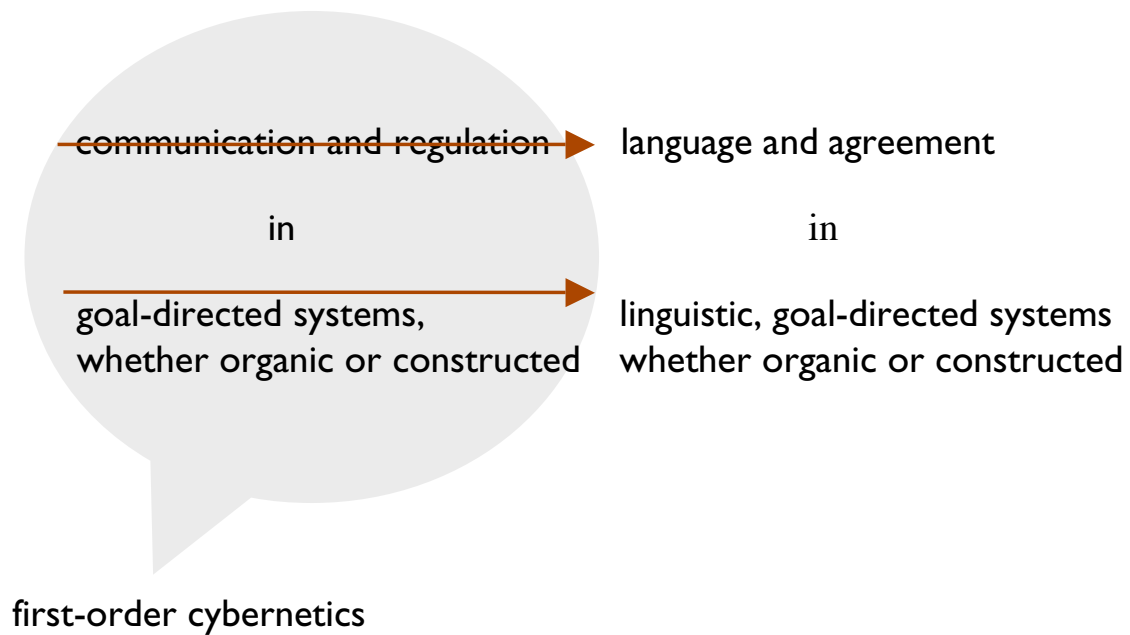
communication and regulation  
in  
goal-directed systems,  
whether organic or constructed

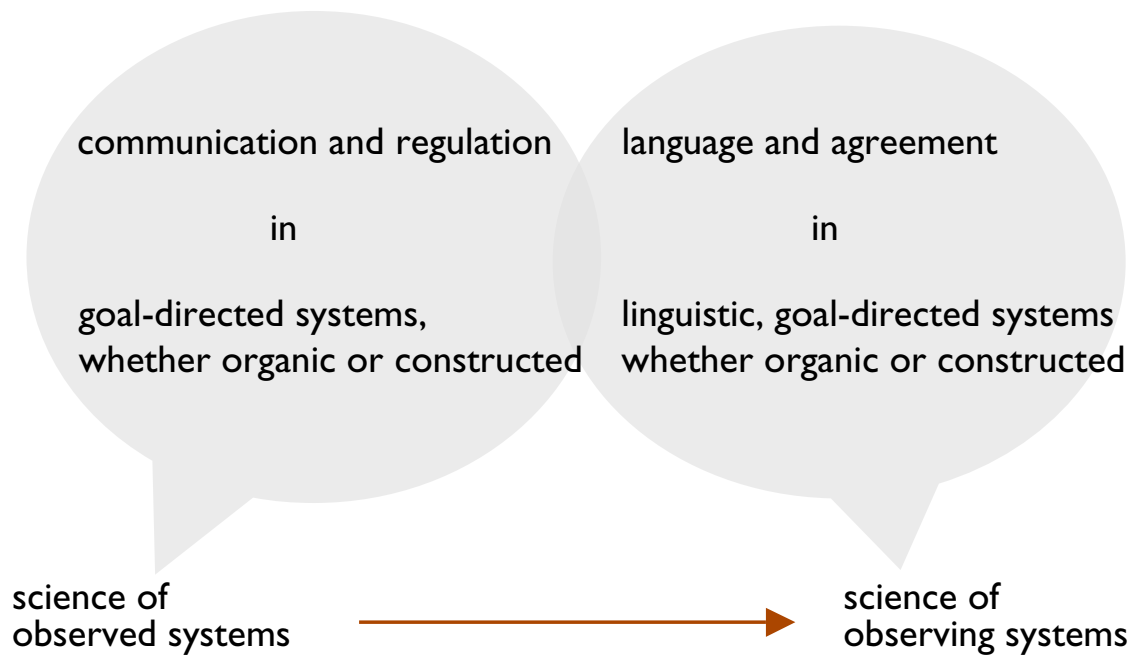
first-order cybernetics

*evolved*  
~~communication and regulation~~ →  
in  
*evolved*  
→ goal-directed systems,  
whether organic or constructed

first-order cybernetics

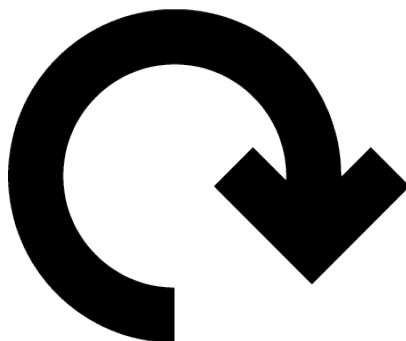


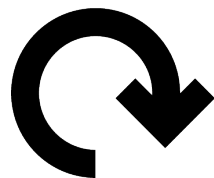
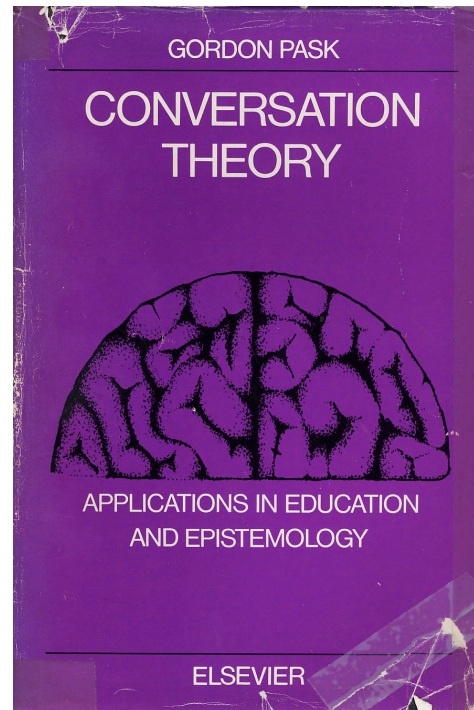
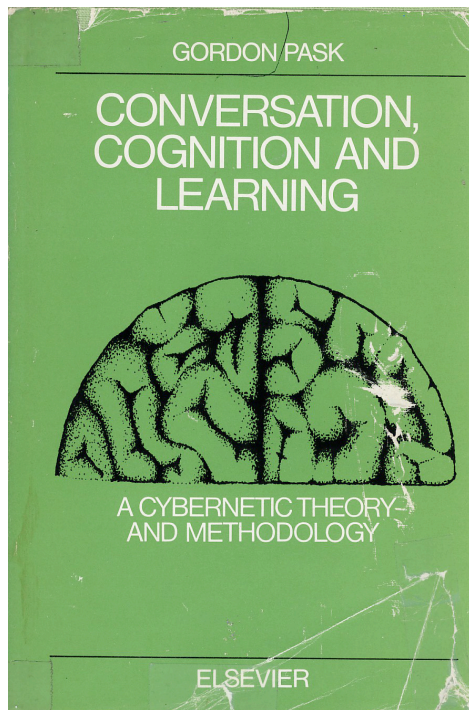




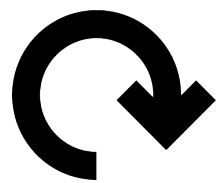
‘Cybernetics introduces for the first time —  
and not only by saying it, but methodologically —  
the notion of circularity, circular causal systems.’

— *Heinz von Foerster*

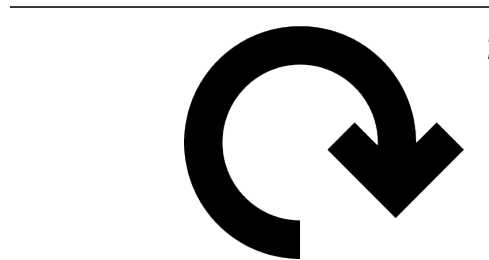




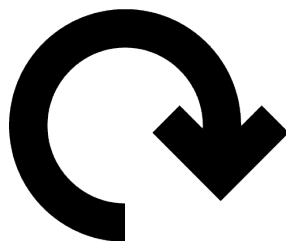
*one level sets goals...*



*one level sets goals...*

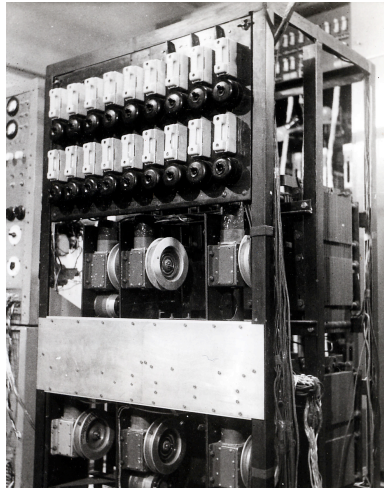


*for another level*

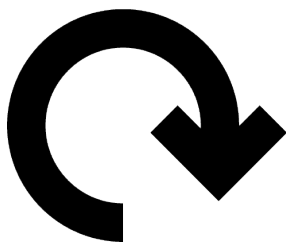


*respond to sound  
with light show*

gordon pask—circular interactions—musicolour  
*c. 1955*

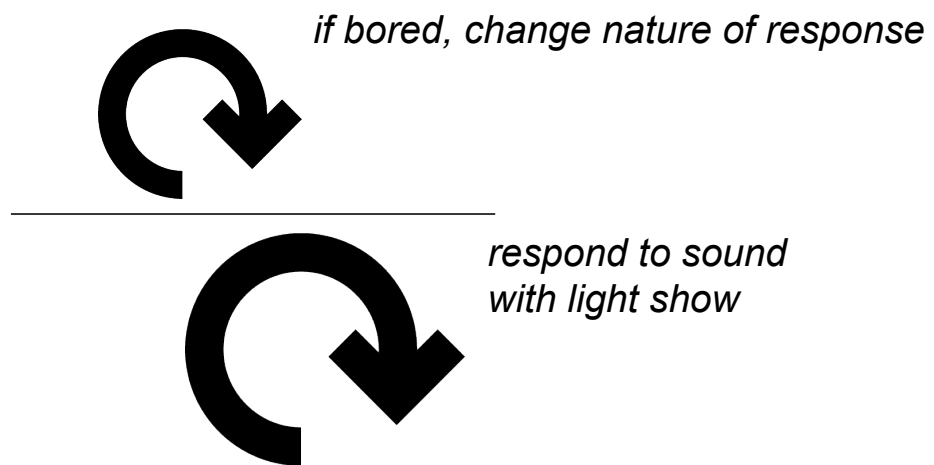


gordon pask—circular interactions—musicolour

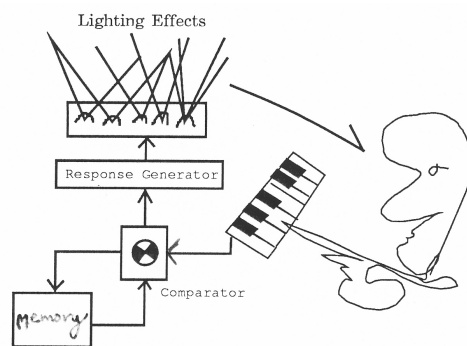


*respond to sound  
with light show*

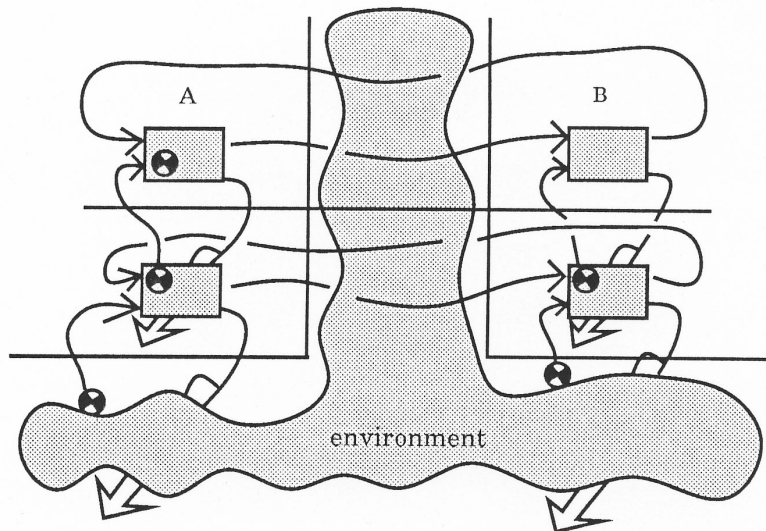
gordon pask—circular interactions—musicolour



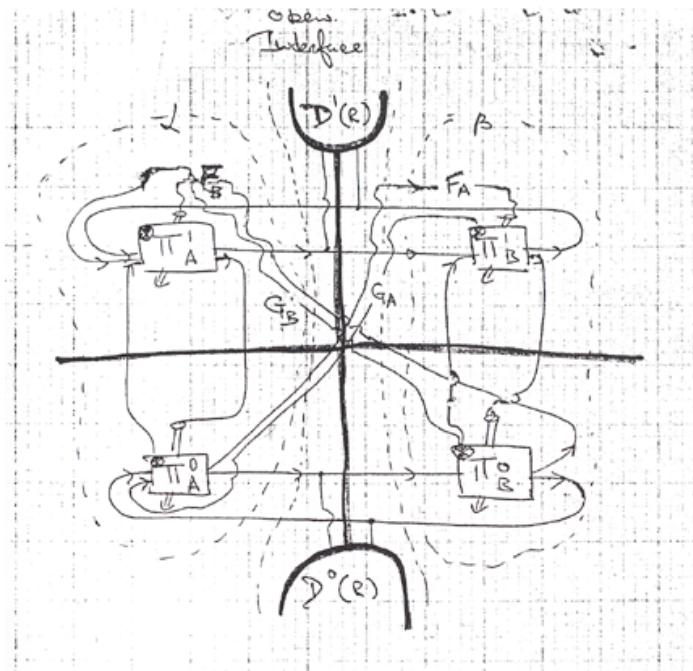
gordon pask—circular interactions—musicolour



gordon pask—circular interactions—modeling



dance—contention—shared outcomes



subjectivity—synchronization—coherence

