

Intentionality, making decisions, and planning for the future

Intentionality

Intentionality

- BIG DEAL in philosophy
- Being a 'person' requires intentionality: beliefs, desires = 'agency'
- But what does it mean to have a 'desire'?

Intentionality

Desire, purpose and consciousness

- "The bird sings to attract a mate" – *does the bird thus have a desire to reproduce?*
- The bird does NOT have to consciously 'know' that this serves better reproduction NOR that it serves to attract mates!
- From a biology viewpoint, most behavior is goal-oriented; what does this imply about intentionality?

Intentionality

Group-level intentionality?

- Insect colonies are selected in evolution at the group level
- Group behavior is thus goal-oriented
- If 'desires', 'agency' etc. are defined by observable goal-orientedness, then insect colonies have agency

Intentionality

Making decisions

- Biology: loosely used for any not-too-deterministic process that results in behavior
- Philosophy: implies intentionality, possibly consciousness

Intentionality

Episodic memory

- Memory for own 'episodes', past events as personally experienced (rather than just remembering environmental contingencies)
- Is thought to be one of the things that define humans – related to subjective experience, consciousness (*we'll get back to consciousness later*)

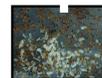
Planning for the future

- may require 'mental time travel', i.e. a sort of episodic memory
- Has not been shown frequently

An ant example



Ants prefer to move to a brand new nest – this means they must 'remember' what was previously available.



- Are the ants 'planning for the future'? (when learning about nests before emigrations)
- Does their behavior imply episodic memory?

Jays planning for breakfast



- Are the jays 'planning for the future'?
- Does their behavior imply episodic memory?
- What is different about the jays compared to the ants?
- What may episodic memory be good for?

What happens in decision-making?

- Information collection
- Deliberation (weighing of the evidence)
- (Consensus-building) / decision proper
- Implementation

Collective decision-making

- Particularly studied in social animals, esp. herd mammals, social insects
- Despotic vs. democratic
- Consensus or no
- Modeling of adaptive group outcome

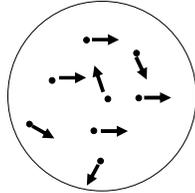
Collective decision-making



- Scouts collect information on alternatives
- Weighted additive rating by scouts
- Recruitment & quorum sensing allows comparison of ratings
- Implementation of emigration at quorum

Decision-making in the brain

- Usher-McClelland model: similar to collective process
- Neuron population for each alternative 'recruits' according to information rating
- At quorum, decision is implemented



Decision-making in individuals

- What is a 'deliberate' decision?
- What is a 'rational' decision?
- When do we expect 'irrational' decisions, and why do they occur?

'Irrationality' in humans: independence of irrelevant alternatives is violated



\$2500 \$20 000 \$80 000

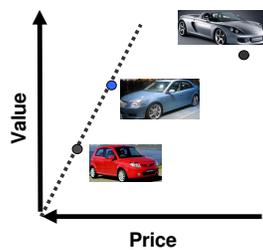
Let's say you prefer this car

Now you prefer this car

'Irrationality' in humans: independence of irrelevant alternatives is violated

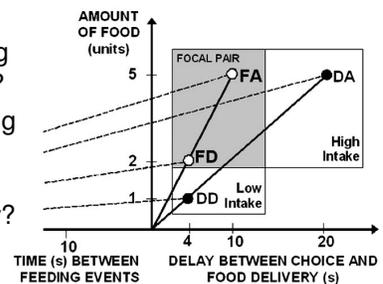
- People's preferences are biased by irrelevant alternatives
- This is why car dealers, realtors etc. insist on showing really expensive cars/houses etc. that you won't buy anyway
- Why is this so?

Influence of irrelevant alternatives



Influence of irrelevant alternatives in starlings

- How are birds valuing the options?
- Does training satiate the birds differentially?



Influence of irrelevant alternatives in starlings

- Result of the Schuck-Paim study: starlings are NOT irrational – but:
 - they match choices to profitability (rather than always using the best option)
 - they deviate more from the optimal option when they are less hungry
- If animal studies are compared with human studies, possible effects of training have to be taken into account