**Intentionality**

### Intentionality

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

### 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?

### 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

### Making decisions

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

### 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

**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

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<th>Price</th>
<th>Value</th>
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<tbody>
<tr>
<td>$2500</td>
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</tr>
<tr>
<td>$20 000</td>
<td></td>
</tr>
<tr>
<td>$80 000</td>
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</tbody>
</table>

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

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

Influence of irrelevant alternatives in starlings

![Graph showing the influence of irrelevant alternatives in starlings.](image)
## Decision-making

### 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