Why Simulate Attachment?

Use empirical observations from a narrow domain of human behaviour to refine a more general model of human information processing.
The domain of attachment

- normative stages
- developmental trajectory
- limited cognitive resources
- evolutionary considerations
- limited types of behaviour
- physiological data*
A framework for representing architectures

The cogaff schema

- Perception
- Central Processing
- Action

- Meta-management (reflective processes) (newest)
- Deliberative reasoning ("what if" mechanisms) (older)
- Reactive mechanisms (oldest)
Specific behaviour and a specific architecture

Using patterns of behaviour observed in the Strange Situation (SS) Experiment, and related home studies, to constrain the H-cogaff architecture.
The H-cogaff architecture
Bowlby’s Behaviours represented in an infant-cogaff architecture

Internal Working Model?
Other architectures

- Shallice and Burgess - SAS and contention scheduling
- Lorenz
- Tinbergen
- Hydrid architectures in AI
The Strange Situation

- 8 stages which include three separations
- Separations increase in level of stress
- Final re-union stage is key
Infant responses in the SS

- Secure (B type) behaviour
- Avoidant (A type) behaviour
- Ambivalent (C type) behaviour
Maternal home behaviour prior to the SS

- sensitivity-insensitivity
- acceptance-rejection
- co-operation-interference
- accessibility-ignoring
- emotional expressiveness
- rigidity(compulsiveness)-flexibility
## Attachment SS Subgroups vs prior maternal home behaviour

<table>
<thead>
<tr>
<th>SS subgroups</th>
<th>B1</th>
<th>B2/B3</th>
<th>C1</th>
<th>C2</th>
<th>A2</th>
<th>A1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>7.36</td>
<td>4.50</td>
<td>2.50</td>
<td>2.25</td>
<td>2.50</td>
<td>2.75</td>
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<tr>
<td>Acceptance</td>
<td>8.00</td>
<td>6.75</td>
<td>5.50</td>
<td>5.25</td>
<td>4.25</td>
<td>3.50</td>
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<tr>
<td>Co-operation</td>
<td>7.66</td>
<td>6.50</td>
<td>4.00</td>
<td>4.50</td>
<td>5.50</td>
<td>2.63</td>
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<tr>
<td>Accessibility</td>
<td>7.39</td>
<td>4.88</td>
<td>4.50</td>
<td>2.50</td>
<td>2.25</td>
<td>4.63</td>
</tr>
<tr>
<td>Lack of emotion*</td>
<td>2.17</td>
<td>3.88</td>
<td>4.25</td>
<td>2.75</td>
<td>6.50</td>
<td>6.00</td>
</tr>
<tr>
<td>Rigidity*</td>
<td>1.89</td>
<td>2.75</td>
<td>2.00</td>
<td>3.50</td>
<td>3.50</td>
<td>4.50</td>
</tr>
</tbody>
</table>
A simple relationship or a partial solution?

- The difference in infant security in the Baltimore and Uganda studies suggests:
  - Are Internal Working Models that are used in moments of attachment anxiety in part formed in episodes centred on non-anxious socialisation and exploration?

- What information might infants gain from frequent episodes of exploration and social interaction that they use in infrequent episodes of attachment anxiety?
  - If my carer won’t socially interact on my terms at all then I am less secure and I must use my own actions to gain security
  - If my carer sometimes socially interacts on my terms then I am less secure and need to concentrate my efforts in eliciting a response
Architectural issues

- whether SS behaviour is deliberative or reactive?
- when and how new subsystems come online between other stages?
- skill acquisition in exploration and sociability
- chunking/parsing leading to perceptual affordances as causal factor in later socialisation
Architectural issues

Development of deliberative affordances or exploration and socialisation driven by deliberation?