

# Pozvánka na přednášky

pořádanou v rámci Semináře z umělých bytostí

**Joanna Bryson**

(University of Bath)

**pátek 30.1.2006  
od 11:00 a  
od 14:00  
v posluchárně S8**

## **Time for AI (11.00)**

Human intelligence requires decades of full-time training before it can be reliably utilised in modern economies. In contrast, AI agents must be made reliable but interesting in relatively short order. Realistic emotion representations are one way to ensure that even relatively simple specifications of agent behaviour will be expressed with variation, and that social and temporal contexts can be tracked and responded to appropriately. In this talk I describe the importance of time for AI, including

- the aging of memory,
- the sequencing of actions, and
- the temporal budget for pursuing goals.

This talk will be delivered from the perspective of Behavior Oriented Design (BOD). I will introduce two new representations we have developed for improving temporal aspects of POSH action selection. The first is intricate. The Dynamic Emotion Representation (DER) integrates emotional responses and keeps track of emotion intensities changing over time. The developer can specify an interacting network of emotional states with appropriate onsets, sustains and decays. The levels of these states can be used as input for action selection, including emotional expression. The second is much simplified version of similar ideas, which we call flexible latching. This is already incorporated in the current distribution of jyposh.

## **Why information can be free: The evolution of altruistic communication and its impact on social learning (14.00)**

The human species currently adapts new ways to exploit its environment incredibly rapidly. This is at least partly because we are able to harness the power of concurrent search. When one individual finds an intelligent solution, that solution becomes shared by many. Why don't more species exploit this strategy for accumulating selective advantage?

In this talk I examine two suggestions on the limits of cultural evolution from a computational perspective. The first is Boyd & Richerson's proposed environmentally-dependent tradeoff between individual learning and social learning. The second is Desalles (and other's) proposal that altruistic communication is difficult to evolve. I show both of these hypotheses to be false.

In the process, I present a model of the evolution of altruistic communication --- giving away knowledge about how to process difficult food. This behaviour is costly in terms of opportunities, but nevertheless adaptive in the situation most vertebrate species occur in, because it increases the carrying capacity of the environment local to the communicators. Thus it should be adaptive for species that tend to live nearer their parents than any other random individual and tend to live long enough to co-exist with their children.

I use the results of this model to examine what tradeoffs really do limit the biological evolution of cultural evolution.

Related publications can be found here:

[http://www.cs.bath.ac.uk/~7Ejbb/web/primates/primate-learning.html#Evolving\\_Human-Like\\_Culture](http://www.cs.bath.ac.uk/~7Ejbb/web/primates/primate-learning.html#Evolving_Human-Like_Culture)

### **Short biography**

Joanna Bryson (<http://www.cs.bath.ac.uk/~jjb/>) holds degrees in behavioural science, psychology and artificial intelligence from Chicago (BA), Edinburgh (MSc and MPhil), and MIT (PhD). Since 2002 she has been a lecturer (assistant professor) at the University of Bath where she founded Artificial Models of Natural Intelligence (<http://www.cs.bath.ac.uk/ai/AmonI.html>). She has over fifty reviewed research publications in AI, Biology, Cognitive Science and Philosophy. She is currently on sabbatical from Bath, serving as the Hans Przibram Fellow at the Konrad Lorenz Institute for Evolution & Cognition research in Altenberg, Austria. She also holds visiting research fellow at the University of Nottingham's Methods & Data Institute, and serves as an expert consultant on Cognitive Systems for the European Commission.