Evidence of Modularity from Primate Errors during Task Learning

Joanna J. Bryson
University of Bath
jjb@bath.ac.uk

The last two decades have seen a great deal of theorising and speculation about the modular nature of human intelligence, as well as a rise in use of modular architectures in artificial intelligence. Nevertheless, whether such models of natural intelligence are well supported is still an issue of debate. In this paper, I propose that the most important criteria for modularity is specialised representations. I present a modular neural model that replicates complex primate learning behaviour of the transitive inference task, and propose an extension to this model which would explain task-learning results in other domains. I also briefly relate this work to both neuroscience and established AI learning architectures.

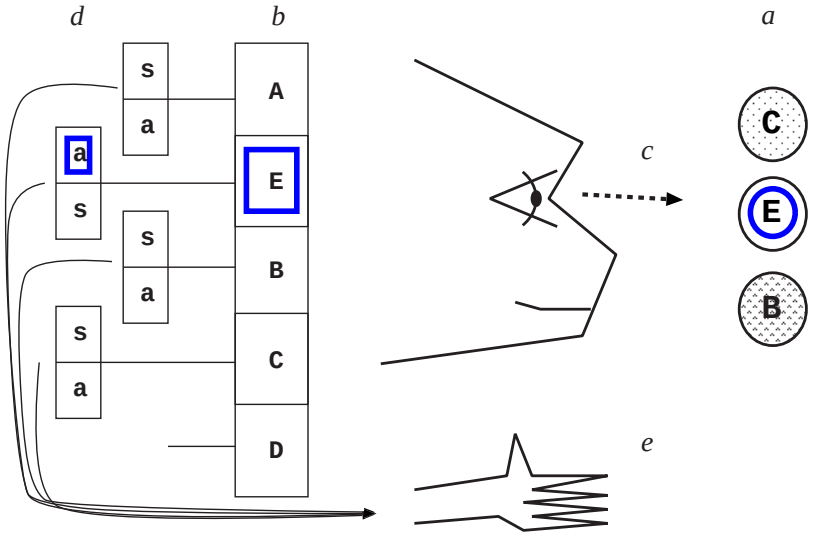

Figure 1: The two-tier model. When the agent observes a set of stimuli (*a*), a weight vector (*b*, the first tier) determines which item present is most salient. This attracts visual attention (*c*) and determines which rule vector (*d*, the second tier) selects the appropriate action (**s**elect or **a**void) which controls the monkeys grasp (*e*). The two vectors that were most recently active (*a* and one of *d*) are then updated as determined by the result and the learning rule.