

Dual processes or dual aspects?

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Dual process accounts of human reasoning usually contrast low level, associative, automatic processes with higher level, symbolic, controlled processes. The probabilistic approach (Oaksford & Chater, 2001, in press) is characterising all human reasoning as being at the lower level. This level is concerned with the inductive strength of an inference, i.e., the probability of the conclusion (C) given the premises (P), $P(C|P)$. However, Rips (2001) has shown a dissociation between assessing an inference for $P(C|P)$ vs. deductive correctness, i.e., whether the premises logically entail the conclusion, $P \rightarrow C$. We argue that $P(C|P)$ and $P \rightarrow C$ reflect the contributions of structure and content respectively and that in real human inference both aspects are required. Computing $P(C|P)$ over complex chains of inference requires structural knowledge which in many AI systems is captured by the logical entailments between propositions, i.e., $P \rightarrow C$. We suggest that such systems are required to generalise accounts of human reasoning to argumentation which is arguably the more general human activity. On this view, while structure and content may have dissociable effects on human reasoning, the norm is for them to work together in evaluating an inference or argument. Thus rather than dual processes, $P(C|P)$ and $P \rightarrow C$ are really just dual aspects of a common underlying process.