Reasoning for Humans: Clear Thinking in an Uncertain World

PHIL 171

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Measuring Arguments

How do we *measure* the strength of an argument?

1. X evidentially supports Y
2. X is positively relevant to Y.

$Pr(Y \mid X)$ measures the evidential support of the argument.
But, how do we measure the relevance of X to Y?

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$$d(X, Y) = Pr(Y \mid X) - Pr(Y)$$

The Paradox of the Ravens

The Paradox of the Ravens (1)

(IC) A hypothesis of the form "All As are Bs" is confirmed by any positive instance, i.e., any instance that is both A and B.

- A black raven confirms that all ravens are black.
- A green emerald confirms that all emeralds are green.

$\forall x(A(x) \rightarrow B(x))$ is confirmed by any a such that $A(a) \wedge B(a)$ is true.

The Paradox of the Ravens (2)

(EQ) If H and H' are logically equivalent, then if E confirms H, then E confirms H'.

H: All ravens are black.

H': All non-black things are non-ravens.

The Paradox of the Ravens (2)

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H: All ravens are black.

$\forall x(R(x) \rightarrow B(x))$

H': All non-black things are non-ravens.

$\forall x(\neg B(x) \rightarrow \neg R(x))$

The Paradox of the Ravens (3)

But, then does a silver computer confirm H?

1. (IC) implies that a silver computer confirms that "all non-black things are non-ravens".
2. "all non-black things are non-ravens" is equivalent to "all ravens are black".
3. (EQ) implies that a silver computer confirms that "all ravens are black".

The Paradox of the Ravens (3)

But, then does a silver computer confirm H?

1. (IC) implies that a silver computer confirms that "all non-black things are non-ravens".
2. "all non-black things are non-ravens" is equivalent to "all ravens are black".
3. (EQ) implies that a silver computer confirms that "all ravens are black".

We can run the same argument using a blue jacket, red carpet, white chair, ...

But, surely you can't learn something about the color of ravens by looking around the classroom.

Wason Selection Task and the Paradox of Confirmation

L. Humberstone. *Hempel Meets Wason*. Erkenntnis 41 (1994), 391 - 402.

B. Fitelson and J. Hawthorne. *The Wason Selection Task(s) and the Paradox of Confirmation*. Philosophical Perspectives, Volume 24, Issue 1, pages 207 - 241, 2010.