

On Harman (1965): The inference to the best explanation, *The Philosophical Review*, Vol. 74, No. 1, pp. 88-95.

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The Paper's Thesis

“[O]n my view, either (a) enumerative induction is not always warranted or (b) enumerative induction is always warranted but is an uninteresting special case of the more general inference to the best explanation.” [p. 88]

Harman clearly opts for (b). The thesis (a) or (b) is a strategy to lure the reader into (b) and immunize against critique.

Key Points

Harman defends the following theses:

- 1 Enumerative Induction (EI) is not warranted on its own as an inference scheme.
- 2 Inference to the best explanation (IBE) is a warranted inference scheme.
- 3 IBE can explain EI and is needed for it.
- 4 EI cannot explain or substitute IBE.

There are partial arguments for theses 3 and 4. The argument for 1 is based on examples and an intuitive understanding of 'warranted', and the argument for 2 is more or less missing.

Enumerative Induction (EI)

“Enumerative induction infers from observed regularity to universal regularity or at least to regularity in the next instance.” [p. 88, Fn. 2]

Inference to the Best Explanation (IBE)

“[O]ne infers, from the fact that a certain hypothesis would explain the evidence, to the truth of that hypothesis.” [89]

The hypothesis must be “sufficiently better” than another hypothesis. [89]

Compare with Peirce: “A explains C. C is the case. Hence, there is reason to suspect that A is true.” [CP 5.189, EP 2:231; cit. in Niiniluoto 2018: 10]

Examples

- Detective Example.** Taking into account the evidence, the detective concludes that the butler did it. [89]
- Atom Example.** From the available (indirect) evidence, physicists conclude that atoms, electrons, etc., exist. [89]
- Witness Testimony.** From the testimony of a witness it is inferred that the events took place in such-and-such a way. [89]
- Mental Life of Others.** From the observable behavior of a person, we infer that the person is in a certain mental state, e.g. jerking motion \rightsquigarrow person has pain. [89, 93]
- Board Example.** From the message on a board someone infers that a meeting takes place. [92]
- Knowledge from Authority.** From what an authority says about something, it is inferred that what the authority says is true. [92]

The need for additional lemmas

- Suppose that whenever the evidence is such-and-such, the most probable hypothesis is that the butler did it.
- Using EI in this way would only work if there is no other evidence that would speak against the hypothesis.
- Although Harman admits he has no conclusive proof that EI cannot explain such cases [90], his take is that the burden of proof would be on the purporter of EI.
- Moreover, in the atom example and in the inference to the mental life of others, what is inferred is principally not directly observable.
- Hence, IBE is needed to explain cases of inference to unobservable entities (even if EI is used).

When is EI warranted and when not?

An EI is warranted whenever “[...] the hypothesis that all A 's are B 's is (in the light of all the evidence) a better, simpler, more plausible (and so forth) hypothesis than, say, that someone is biasing the observed sample in order to make us think that all A 's are B 's.” [91]

Additional lemmas must be true that are hidden by the formulation of EI.

The Connection to Knowledge

Knowledge = warranted true belief (\approx justified true belief view)

Board example: You get evidence from a board that there is a talk. The belief is warranted by the board (and knowledge of how boards usually work).

However, the talk has been canceled weeks earlier. You do not have knowledge *even if the talk takes place for other reasons like a new invitation*, i.e., even if the belief is true. You do not have the 'right' justification. Additional lemmas are false. There is an alternative explanation that 'overrules' what the board suggests

Similar examples: Knowledge from authority, mental life of others.

Since knowledge is warranted true belief, and since warranting true belief requires additional lemmas and inference to the best explanation, knowledge requires IBE. This is an instance of epistemological *explanationism*.

No Argument for the Validity of IBE

- Harman seems to assume that IBE is warranted because we make these kind of inferences. (a 'justification as acceptance' view)
- There is no separate argument for the validity, correctness, and truth-conduciveness of IBE inferences.
- In contrast, the debate about deductive vs. inductive inference concerned almost solely their justificatory value.
- N.B.: It is not clear what 'inference' means in Harman's paper. (This is also left unclear in many other papers on IBE.)

Realist vs. Antirealist Versions of IBE

cf. internalism/externalism distinction for individual agents

- IBE1: IBE schematizes inferences to what we believe to be the best explanation at a time.
- IBE2: IBE schematizes inferences to the best explanation.

Unlike deduction and proper statistical inference, IBE1 is not provably truth-conducive. The supposedly best explanations often turn out to be bad explanations later. We do not know what the best explanations are and the heuristics based on theory virtues are highly fallible. On the other hand, only few authors are willing to defend IBE2 because it amounts to fairly vacuous general advice. Which version does Harman defend?

Enumerative Induction is a Strawman

- Enumerative induction is a simple generalization and, the way it is put, incorrect.
- EI: Observe black raven 1, black raven 2, ..., \rightsquigarrow All ravens are black.
- Proper inductive inference requires (i) a random sample or random trials, (ii) a sufficiently precise description of the whole population, (iii) an estimate of the size of the population, and (iv) an estimate of the underlying probability distribution based on analytic assumptions about the underlying causal or nomological model, and (v) corresponding error estimates.
- Moreover, classical hypothesis testing (Neyman-Pearson; Fisher) is falsificationist. A rejection of the null hypothesis is not a confirmation of the alternative hypothesis!

Question

Suppose for $2 \leq i \leq n$ that

$$P(H_1 | E) > P(H_i | E) \quad (1)$$

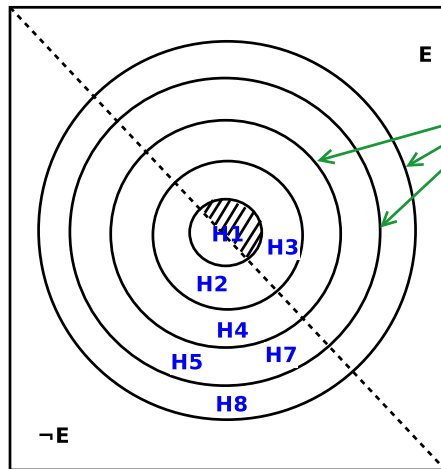
and

$$P(H_1 | E) > P(H_2 \cup \dots \cup H_n | E) \quad (2)$$

The second condition is by R. Fumerton.

Can one of H_i then be the best explanation for observed evidence E ?

Illustration



states of affairs ~ explanations?

plausibility

"better explanation than"

Questions

Why is the ordering not given by some probability measure?
Does it form a probability space?
If not, why not?

Is the ordering on top of those explanations that are (roughly) most likely to be true, or does explanatory value diverge further from probability?