

INFERENCE TO THE BEST EXPLANATION, REFLECTIVE EQUILIBRIUM, AND SUBJECTIVE PROBABILITY

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- 1 Identify the relations in which Inference to the Best Explanation and Reflective Equilibrium might stand to subjective probability and weaker notions of subjective plausibility.
- 2 Defend the Convergence Thesis as one such relation in contrast to other stances.

Inference to the Best Explanation

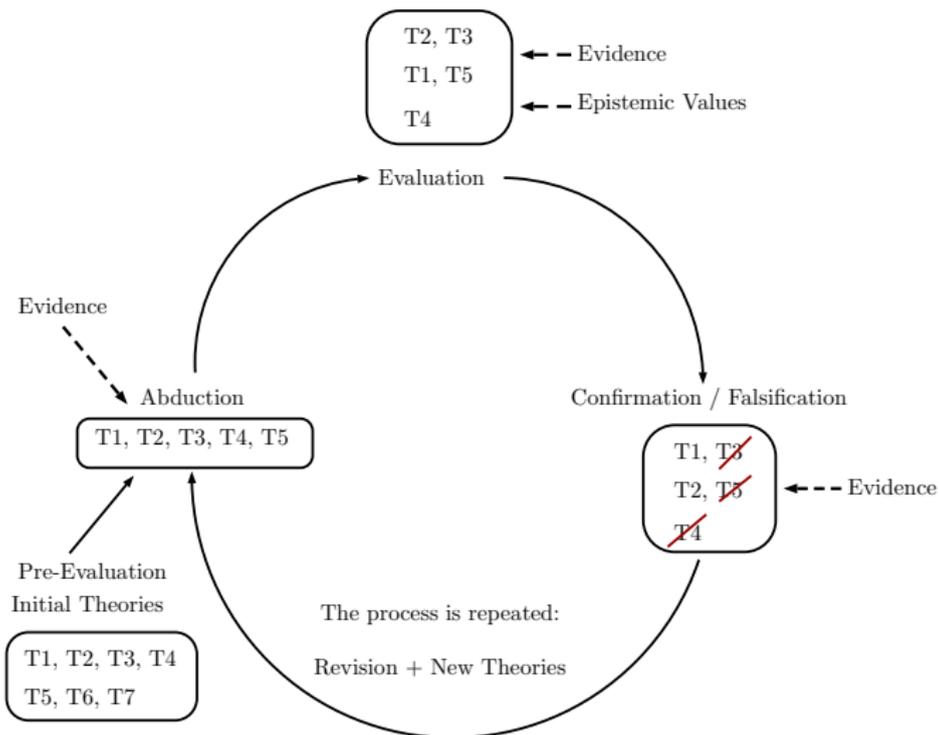
Inference to the Best Explanation

An inference to the best explanation model minimally consists of the following:

- i. Abduction: The generation of candidate hypotheses and theories.
- ii. Epistemic Value: One or more epistemic values that order theories.
- iii. Theory Evaluation: An aggregation operation that takes orderings of theories and yields an overall ordering.

Lit. Harman (1965), Lipton (2004), Niiniluoto (2018), Minnamaier (2004), Mohammadian (2021)

Illustration of Inference to the Best Explanation



Elgin on Reflective Equilibrium

Going back to Rawls (1971) in ethics, Reflective Equilibrium is defended in depth by Elgin, among others. She writes:

We proceed dialectically. We mold specific judgments to accepted generalizations, and generalizations to specific judgments. We weigh considerations of value against antecedent judgments of fact. We synchronize ends and means, reconcile principle and practice. A process of delicate adjustments occurs, its goal being a system in reflective equilibrium. (Elgin 1996, p. 106)

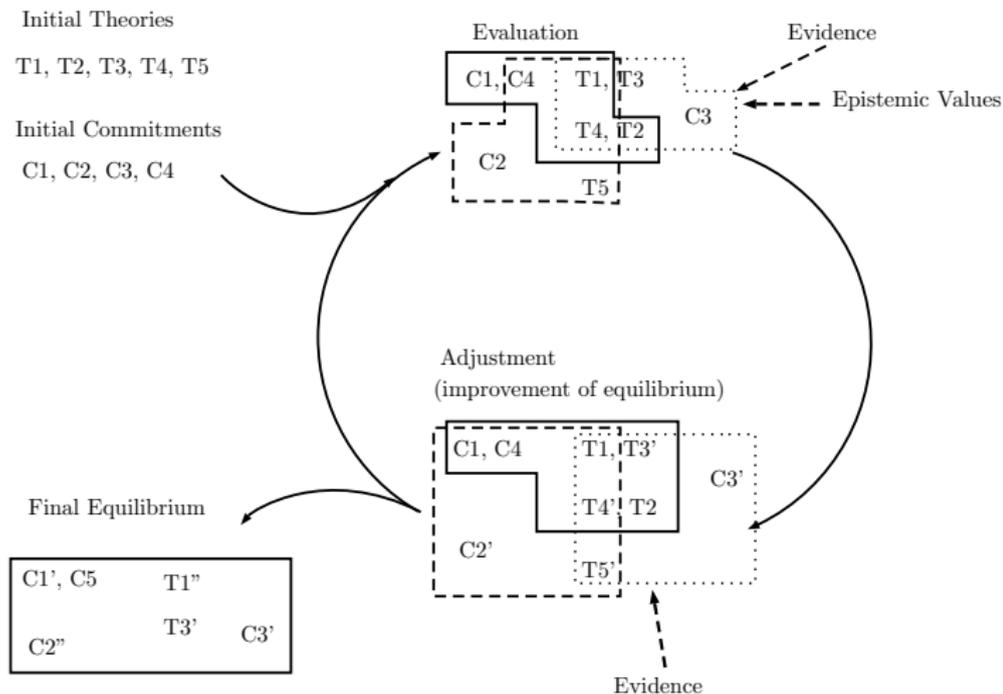
Reflective Equilibrium

A reflective equilibrium model minimally comprises the following elements:

- i. Initial State:
 - 1 An initial set of commitments.
 - 2 An initial theory about a topic or a way to generate theories of interest.
- ii. Epistemic Values: A set of epistemic values, some of which may apply to commitments, others to theories, and some to both.
- iii. Updating Method: A method of updating a theory and commitments in finitely many steps while seeking to maximize overall epistemic value according to some evaluation method.
- iv. Final State/Stop Condition: A specification of final equilibrium states that make the process stop.

Lit. Rawls (1971), Elgin (1996, 2006), Baumberger & Brun (2021), Beisbart, Betz & Brun (2021)

Illustration of Reflective Equilibrium



Subjective Probability and Plausibility

- In this paper, there are two aspects of subjective probability:
 - How likely a theory is true according to the epistemic state of an agent, given the available evidence.
 - How well empirical evidence confirms the theory and how well its predictions match empirical observations.
- Subjective plausibility is used as an umbrella term for weaker notions (Dempster-Shafer theory, possibility theory, qualitative ordering relations, etc.).

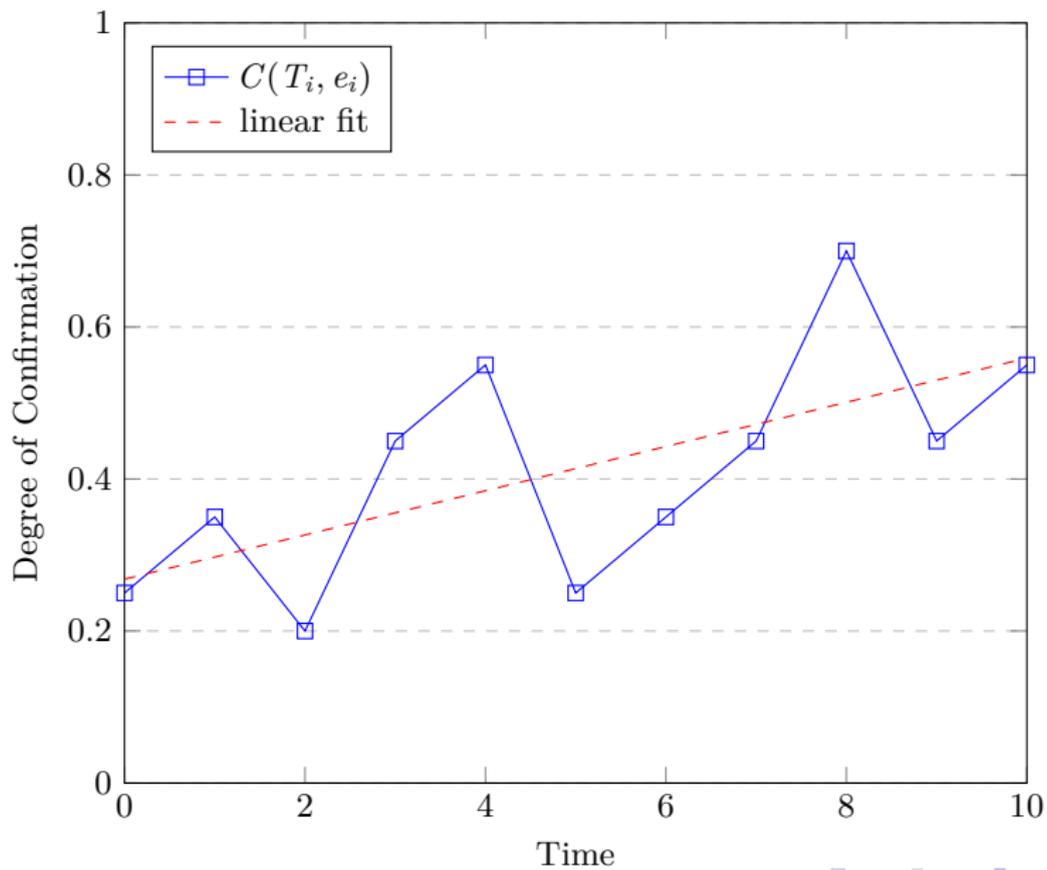
Note: There are more specific uses of *subjective plausibility* in the literature.

Possible Relations 1

- Irrelevance:** Traditional epistemic values are epistemically irrelevant, only subjective plausibility and probability count for theory evaluation.
- Superiority:** Subjective plausibility and probability are irrelevant, ultimately only traditional epistemic values count for theory evaluation.
- Added Value:** Traditional epistemic values may only serve as tie-breakers for subjective plausibility and probability.

Possible Relations 2

- Parity/Conflict:** Traditional epistemic values compete with subjective plausibility and probability and may remain in conflict with them. Sometimes one, sometimes the other sort of values is decisive.
- Convergence:** Traditional epistemic values can over time yield evaluations of theories differing from those of subjective plausibility and probability, yet theories that count as overall epistemically best at a time must in finitely many steps revise to theories that are most likely true given the available evidence.
- Aggregation:** Subjective plausibility is an aggregate of traditional epistemic values. Subjective probability is a specifically restricted version of this aggregate, which can be motivated with Dutch book arguments and comparison to objective probability.



References

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