Pessimistic Inductions: Four Varieties

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Outline

- Intro to the Pessimistic Induction (PI)
- Four Varieties of PI
    1. Putnam's *Pessimistic Meta-induction*
    2. The PI as *Reductio Ad Absurdum*
    3. *Realism* and the PI
    4. Stanford's *New PI*
- A Synthesis?
- Gems
- Discussion
- References

Goals of the Paper

- **Wray's aim:** "to advance our understanding of:
  1. what the various PIs can teach us about science
  2. the threat posed by PIs to scientific realism." (Wray 2015, 61)

The Pessimistic Induction

- **generic form:** "A PI is an inductive argument that draws a conclusion from the rejection of many successful scientific theories." (Wray 2015, 61)

- **potential conclusions:**
  - the prospects of currently accepted theories
  - the prospects of future theories
  - something about theorists
  - something about the nature of scientific success

- **enumerative induction:** some *A* are *B*, therefore all *A* are *B*
  - where *A* = empirically successful scientific theory
  - where *B* = non-referring and/or false

The Pessimistic Induction

- the Pessimistic Induction "as a two-step worry:
  1. **First**, there is an assertion to the effect that the history of science contains an impressive *graveyard of theories* that were previously believed [to be true], but subsequently judged to be false.
  2. **Second**, there is an *induction* on the basis of this assertion, whose conclusion is that *current theories* are likely future occupants of the same graveyard." (Chakravartty 2008, 152)

Variety 1: Putnam's Pessimistic Meta-induction

- **statement:** "*just as no term used in science of more than fifty* (or whatever) *years ago referred, so it will turn out that no term used now* (except maybe observation terms...) *refers.*" (Putnam 1978, 25)

- **primary concern:** reference

- **dilemma:** large inductive base vs. indiscriminate/unnatural grouping

Variety 2: The PI as *Reductio Ad Absurdum*

- **P1:** Assume that 'currently successful theories are approximately true'.
- **P2:** 'If currently successful theories are truth-like, then past theories cannot have been.'
- **P3:** 'These... false theories [of the past] were, nonetheless, empirically successful.'
- **C:** Therefore, 'empirical success is not connected with truth-likeness and truth-likeness cannot explain success'.
- Therefore, 'the realist's potential warrant for [the claim that currently successful theories are approximately true] is defeated'. (Psillos 1999, 102)

- **primary concern:** truth

Variety 2.1: Laudan (1981)

- **two claims:**
  1. a theory having genuinely referring theoretical terms is neither necessary nor sufficient for the theory being empirically successful
  2. a theory being true (or approximately true) is neither necessary nor sufficient for the theory being empirically successful

- **primary concern:** the link between truth and/or reference and empirical success

Variety 3: Realism and the PI

- **goal:** use a PI in order to clarify some fact about science

- **generic form:**
  - **step 1:** suggest some commonly held view about the success of science
  - **step 2:** appeal to history demonstrates that the common view is mistaken
  - **step 3:** argue that the success of science must be something different

Variety 3.1: Poincaré

- **step 1:** it is commonly held that science aims to tell us about what things are
- **step 2:** “the ephemeral nature of scientific theories takes by surprise the man of the world. Their brief period of prosperity ended, he sees them abandoned one after another, he sees ruins piled upon ruins; he predicts that the theories in fashion today will in a short time succumb in their turn, and he concludes that they are absolutely in vain. This is what he calls the *bankruptcy of science*.” (Poincaré 2001, 122)
- **step 3:** “there is in [the discarded theories] something which usually survives. If one of them has taught us a true relation, this relation is definitively acquired, and it will be found again under a new disguise in the other theories which will successively come to reign in place of the old.” (Poincaré 2001, 349)

Variety 3.2: Rescher

- **step 1:** it is commonly held that scientific progress is convergent
- **step 2:** “historical experience shows that there is every reason to expect that our ideas about nature are subject to radical changes as we “explore” parametric space more extensively” (Rescher 1987, 15)
- **step 3:** nevertheless, “as scientists explore new regions of parametric space, our knowledge of the world is increasing... scientific progress is characterized by the proliferation of scientific specialties” (Wray 2015, 67)

Variety 4: Stanford's New PI

- **statement:** "the problem of unconceived alternatives and the new induction suggest that... present theorists are no better able to exhaust the space of serious, well-confirmed possible theoretical explanations of the phenomena than past theorists have turned out to be." (Stanford 2006, 44)

- **primary concern:** theorists

- **genuine inductive argument:** "On the basis of this evidence, Stanford suggests that we have good inductive grounds to believe that today's best theories are likely to be replaced sometime in the future by hitherto unconceived alternative theories." (Wray 2015, 68)

A Synthesis?

- **historical evidence:** “We would benefit from a systematic collection of evidence in order to determine whether or not a strong inductive argument is supported.” (Wray 2015, 69)

- **synthesis:** “The principal purpose of this article has been to clarify an otherwise murky debate about the significance of the PI. By distinguishing between various appeals to the PI, and various formulations of it, I hope that future discussions about the various PIs can be more fruitful.” (Wray 2015, 70)

Gems

interpretation of Laudan

realist judo move

naming of parts

Discussion

- Does Wray succeed in his two goals?
- Now that we've named the parts, what can we do with the taxonomy?
- What type of historical evidence do PIers need for a good induction?
- Wray's reading of Laudan is that a theory being true is neither necessary nor sufficient for the theory being empirically successful. Why isn't it sufficient?
- Premise 2 of Psillos' *reductio* states that if currently successful theories are truth-like, then past theories cannot have been. Do you agree?

References

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