

Goodman on Confirmation

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Confirmation and Induction

- A central tenet of logical empiricism is that the meaning of a statement is a function of the experiences which would confirm or disconfirm it.
- Inductive confirmation is an indirect kind of confirmation.
 - Statements about individual things of a kind (which presumably are already confirmed) are taken to confirm (partially) statements about all things of that kind.
 - “This is a black raven” confirms “All ravens are black.”
- If the logical empiricist cannot explain how inductive confirmation takes place, then there is no basis for claiming that general statements are meaningful.
- Carnap and Hempel are the most prominent logical empiricists who tried to provide a viable “theory of confirmation.”

Hume’s Problem

- In the middle of the eighteenth century, David Hume raised questions about the status of inductive generalizations.
 - How is it that we actually make them?
 - Is there any rational basis for making them? (“Hume’s problem”).
- Some have held that Hume only tried to answer the first question, with the implication that either:
 - He “completely missed the point of his own problem” (61), or
 - He thought that no answer to the question at all.
- Goodman opines that Hume did understand the second problem and had a solution to it.

Justifying Induction

- Much effort has been wasted in trying to give a solution to Hume's problem.
- The standard approach is to claim that we can justify generalizations (which Goodman regards as predictions) only on the basis of "a resounding universal law of the Uniformity of Nature" (61).
- Then it is asked how this law can itself be justified.
- There are two standard responses:
 - The lazy response, which is to say that it "must be accepted as an indispensable assumption," and
 - Energetic and ingenious responses, which try to justify the Uniformity principle itself.
- But all efforts to justify the Uniformity principle have been unsatisfactory.
- And the assumption of the truth of the principle is more dubious than the generalizations it is supposed to have a hand in justifying.

Justifying Deduction

- We might be able to shed light on the question of how to justify inductive inferences by asking how deductive inferences are justified.
- A deductive inference is said to be justified when it conforms to valid rules of deduction.
- By parity of reasoning, an inductive inference is said to be justified when it conforms to valid rules of induction.
- But then the question can be asked, how are we justified in claiming that a rule of deduction is valid?
- Some traditional answers are that:
 - The rule follows from an axiom that is self-evident,
 - The rule is "grounded in the very nature of the human mind" (63).
- Goodman thinks the answer is that the rule conforms with accepted deductive practice, "the particular deductive inferences we actually make and sanction" (63).

Circular Justification?

- It appears that the justification of deduction is circular.
 - A particular deductive inference is justified by appeal to a valid deductive rule,
 - The validity of a deductive rule is justified by appeal to the way in which particular deductive inferences are made.
- Goodman accepts this circularity, but calls it “virtuous.”
- The justification of both the inference and the rule lies in their “being brought into agreement with each other” (64).
- More specifically, “A rule is amended if it yields an inference that we are unwilling to accept; an inference is rejected if it violates a rule we are unwilling to amend” (64).
- The method of justification here might be called “coherence” or “reflective equilibrium.”
- It applies equally well to the justification of inductive inferences and rules.

Inductive Rules

- Hume turns out to have been right in appealing to the way we make inductive inferences in answer to the question of whether they are justified.
- But much work lies ahead: to justify inductive inferences we need to be able to relate them to a clearly delineated set of inductive rules, analogous to the rules of deductive logic.
- Previous attempts, such as Mill’s methods and probability theory, have not been adequate.
- What is needed is a “confirmation theory,” which would be justified by its agreement with accepted inductive practice.
- Hempel has advanced a general theory of how it is that any statement S_1 confirms to some degree a statement S_2 .

A Clue from Deduction

- There is a valid deductive rule of Universal Instantiation:
 - From “Everything is F,” we may conclude that “a is F.”
- A promising inductive rule would be the converse:
 - “a is F” confirms to some degree “Everything is F.”
- For example, “This piece of copper conducts electricity” confirms “All pieces of copper conduct electricity.”

The Paradox of the Ravens

- There is a standard problem with this simple rule—a problem known as the “paradox of the ravens.”
- A piece of paper in my hand is not black and not a raven, so it is both:
 - Black **or** not a raven, and
 - A raven **or** not black, and
 - Not black **and** not a raven.
- “This piece of paper is black or not a raven” confirms “Everything is black or not a raven.”
- But the latter statement is equivalent by standard deductive rules to:
 - “Everything that is a raven is black.”
- By the same kind of reasoning it is confirmed that:
 - “Everything that is black is a raven.”
 - “Nothing is both black and a raven.”

The Total Evidence Requirement

- Under the initial proposal, the same evidence confirms two statements that are false.
 - “Everything that is black is a raven.”
 - “Nothing is both black and a raven.”
- But nothing in the available evidence (a specific piece of paper is not black and not a raven) indicates the falsehood of these two statements.
- So all three statements are confirmed by the available evidence.
- There is no logical problem here, since the three statements are consistent with one another.
- A conflict arises when other evidence is stated, such as that Bruce is a black raven.
- So it seems that a valid rule for inductive inference must require that its premise include all stated evidence (the “total evidence requirement”).

Lawlike vs. Accidental Generalities

- Any attempt to formulate valid inductive rules must face a further problem.
- Not all general statements are confirmed by their instances taken as evidence, for example:
 - “A given man in this room is a third son,”
 - “All men in this room are third sons.”
- The connection in this case, between being in this room and being a third son, is *accidental*.
- Compare a *lawlike* connection.
 - “A given piece of copper conducts electricity,”
 - “All pieces of copper conduct electricity.”
- What distinguishes lawlike from accidental statements?

A Troublesome Case

- It seems as if a statements such as “All emeralds are green” is lawlike.
- In that case, at time t “Emerald a is green,” and “Emerald b is green,” both confirm the general statement, “All emeralds are green.”
- We can introduce a new predicate, “grue,” which holds of things examined before t which are green and of all other things which are blue.
- Then at t these two sentences are also true: “Emerald a is grue,” and “Emerald b is grue.”
- And these two sentences confirm “All emeralds are grue.”
- This procedure is perfectly generalizable, so that we can use it to confirm any statement about other emeralds (as in the “emrose” example) or about anything else.

The New Riddle of Induction

- It might seem that the obvious response to this case is to claim that “All emeralds are grue” is a merely accidental statement, while “All emeralds are green” is lawlike.
- In that case, we can say that the inductive rule does not apply to “All emeralds are grue.”
- The problem is that to declare the offending statement to be off-limits for induction, we must show which feature of it prevents it from being lawlike.

- Unless we can do this, “our definition not merely includes a few unwanted cases, but is so completely ineffectual that it virtually excludes nothing” (75).
- The problem of providing a criterion for lawlike statements is what Goodman calls “the new riddle of induction.”

Lawlikeness and Additional Evidence

- It might be thought that the problem of distinguishing lawlike from accidental statements is like the paradox of the ravens.
- In both cases, we can clear up the difficulty by requiring that the total evidence be taken into account.
- So we might think that some available evidence will determine whether a statement is lawlike or not.
 - “All pieces of iron conduct electricity,” enhances the lawlikeness of
 - “All pieces of zirconium conduct electricity.”
- But this is so only under a hypothesis “*H*” such as “Every class of things of the same material is uniform in conductivity.”
- To be effective, *H* must itself be lawlike to distinguish it from accidental statements that do not enhance lawlikeness, and we are back where we began.

Lawlikeness and Statement Form

- The “most popular” response is to claim that there are features of statements themselves that make them accidental.
 - Reference to a particular place,
 - Reference to a particular time,
 - Reference to a particular object.
- It is claimed that if a statement is completely general, it is lawlike.
- But “All emeralds are grue” is completely general, and it is easy to convert sentences with specific reference into general statements.
- And it does not good to rule out statements that are equivalent to statements with specific reference, since every general statement is equivalent to one of these.
 - “All grass is green,”
 - “All grass in London or elsewhere is green.”

Lawlikeness and Purely Qualitative Predicates

- Carnap's approach is to restrict lawlikeness to statements that are general and as well contain only "purely qualitative" or "non-positional" predicates.
- Such predicates would be detectable as being purely qualitative by some kind of direct inspection.
- For example, one can see that "grue" is not purely qualitative because it involves a reference to a temporal position, time t .
- The problem with this approach is that one could just as well begin with "grue" and a complementary predicate "bleen" and define "blue" and "green" in terms of them and a temporal position.
- "Thus qualitiveness is an entirely relative matter and does not by itself establish any dichotomy of predicates" (80).

Throwing in the Towel

- It might finally be conceded that there is no systematic way to exclude confirmation of sentences in involving "grue" and "bleen," but that this is no consequence.
- Such statements are never used in practice, and the proposed definition of inductive rules works well enough in the cases that are important to us.
- But this approach precludes a theory of induction and more generally a theory of knowledge.
- A good theory must be able to exclude "gross anomalies."
- The "grue" examples are "clinically pure" and "display to best advantage the symptoms of a widespread and destructive malady" (80).

Hume Revisited

- The problem with induction has been shown to lie in a failure to be able systematically to distinguish two broad classes of statements.
- This problem affects Hume's descriptive account of inductive inference.
- Hume claimed that regularities which we have encountered in the past give rise to habits of expectation.
- Valid predictions are those which conform to our habits.
- Even if we countenance the move from the descriptive to the normative, a problem remains.
- Only some regularities give rise to valid predictions, and we need to be able to say which these are.
- Hume has plenty of company among contemporary philosophers who fail to recognize and deal with this problem.

Induction and Projection

- We have a theory of confirmation which works when we are making inferences to lawlike statements.
- Our only problem is determining in what cases it actually works.
- Induction is included in a broader class of inferences that Goodman calls “projections” from one set of cases to another.
- The new riddle of induction can be generalized to all cases of projection, which is why it is so troublesome.
 - We must be able to distinguish between those sets of cases into which projection is legitimate from those cases into which projection should not be made.
- We need a new approach to distinguishing what is projectable from what is not projectable.