Confirmation 1
Concepts of Confirmation

(pp. 1–4)

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The article

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"Confirmation Theory"
The Encyclopedia of Philosophy, 2nd edition
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(Page references are to the preprint)

Predictions about the future and unrestricted universal generalizations are never logically implied by our observational evidence, which is limited to particular facts in the present and past. Nevertheless, propositions of these and other kinds are often said to be confirmed by observational evidence. (p. 1)

Incremental and absolute confirmation

Definitions

- E incrementally confirms H iff E raises the probability of H (i.e., the probability of H given E is higher than the probability of H not given E).
- E absolutely confirms H iff H is probable given E (i.e., the probability of H given E is above some threshold, assumed to be at least $1/2$).

Examples

- Suppose the probability of H is 0.1 not given E and 0.2 given E. Then E incrementally confirms H but E does not absolutely confirm H.
- Suppose the probability of H is 0.9 not given E and 0.8 given E. Then E does not incrementally confirm H but E does absolutely confirm H (provided 0.8 counts as "probable").

Hempel's conditions

Carl Hempel, "Studies in the Logic of Confirmation" (1945), endorsed various principles about confirmation, including the following:

- *Nicod's condition:* A generalization of the form "All F are G" is confirmed by the evidence that there is an individual that is both F and G.
- *Consistency condition:* The hypotheses confirmed by a piece of evidence are consistent with one another.
- *Consequence condition:* If E confirms H then E confirms every logical consequence of H.

We will see that, in endorsing all these principles, Hempel failed to distinguish incremental from absolute confirmation.

Nicod's condition (again)

A generalization of the form "All F are G" is confirmed by the evidence that there is an individual that is both F and G.

- Obviously false for absolute confirmation: Observation of one F that is G doesn't make it probable that all F are G.
- Plausible for incremental confirmation: One instance can raise the probability that all F are G.

So Hempel apparently had incremental confirmation in mind when he endorsed Nicod's condition.

Consistency condition

The hypotheses confirmed by a piece of evidence are consistent with one another.

- True of absolute confirmation: Two inconsistent propositions can't both have probabilities greater than $1/2$.
- False of incremental confirmation: If a coin is to be tossed twice, HH and HT are both incrementally confirmed by heads on the first toss.

So here Hempel apparently had absolute confirmation in mind.

Consequence condition

If E confirms H then E confirms every logical consequence of H.

- True of absolute confirmation: A logical consequence of H is at least as probable as H.
- False of incremental confirmation: A tautology is a logical consequence of H but can't be incrementally confirmed.

Here again, Hempel apparently had absolute confirmation in mind.

Confirmation in ordinary language

Not absolute

- Absolute confirmation means H is probable given E.
- That can be true even if E is irrelevant to H, or negatively relevant to it.
- In such cases, E doesn't confirm H in the ordinary sense.

Examples

- $H =$ All triangles have three sides; $E =$ It is raining.
  - E is irrelevant to H.
  - H is probable given E.
- $H =$ A fair coin lands heads at least once in 100 tosses; $E =$ It landed tails on the first toss.
  - E is negatively relevant to H.
  - H is probable given E.

Not incremental

- Incremental confirmation means E raises the probability of H.
- That can be true even if H is very improbable given E.
- In such cases, E doesn't confirm H in the ordinary sense.

Example

Let $H =$ A fair coin will land heads 100 times in a row; $E =$ It lands heads on the first toss.

- E incrementally confirms H.
- E does not confirm H in the ordinary sense.

Irrelevant conjunction

If E incrementally confirms H, and X is some irrelevant proposition, then E incrementally confirms $H\&X$. Reason:

- E raises the probability of H.
- E doesn't change the probability of X.
- Therefore, E raises the probability of $H\&X$.

Example

$H =$ A fair die lands six.

$E =$ The die landed an even number.

$X =$ A fair coin lands heads.

The probability of $H\&X$ is $(1/6) \times (1/2) = 1/12$ not given E and $(1/3) \times (1/2) = 1/6$ given E, so E incrementally confirms $H\&X$.

It has been claimed that, in the ordinary sense of "confirms," E doesn't confirm $H\&X$.

Goodman's theory

Nelson Goodman claimed that what "E confirms H" ordinarily means is that E raises the probability of *every component* of H.

Objections:

- It is unclear what counts as a "component" of H.
- On this theory, E could confirm H even if H is very improbable given E.

Example

- $H =$ A fair coin will land heads 100 times in a row.
- $H_i =$ The ith toss lands heads. Suppose the components of H are $H_1, \ldots, H_{100}$.
- $E =$ An unspecified one of these tosses landed heads.

E raises the probability of each component of H (very slightly) but E doesn't confirm H in the ordinary sense.

Conclusion

- It seems that none of the concepts of confirmation proposed by confirmation theorists is the same as the concept used in ordinary language.
- Nevertheless, the concepts of *incremental* and *absolute* confirmation are worth studying, because they are:
  - simple
  - of obvious importance
  - probably components in the ordinary language concept.

P.S.

I now think that perhaps E confirms H in the ordinary sense iff somebody has conjectured that H is true and E incrementally confirms H.

Questions

1. For each of the following, say (a) what it asserts, (b) whether it is true for absolute confirmation, and (c) whether it is true—or at least plausible—for incremental confirmation. Justify your answers to (b) and (c).
    - Nicod's condition.
    - Consistency condition.
    - Consequence condition.
2. Does "confirm" in ordinary language mean either absolute or incremental confirmation? Justify your answer.
3. According to Goodman, what does "*E* confirms *H*" mean in ordinary language? Is he right? Justify your answer to the latter question.