



Humanities' new methods Challenges for confirmation theory

Presentation for
The Making of the Humanities III

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Interactive museum visits

Museums are beginning to collect data on visitor behaviour. The results of mining these data can be used to adapt the museological understanding of the collection.



The Drents Museum

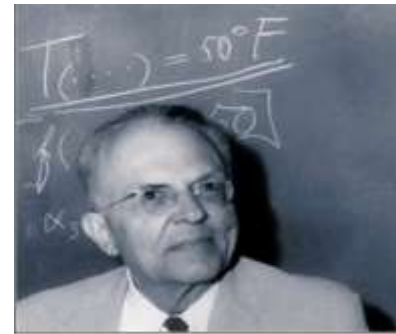
But how exactly should the public influence the management and scholarly understanding of the museum collection?

The forgotten methodology?

In natural and social science, the interface of theory with evidence attracted intense philosophical interest. Confirmation theory helped to define and unify these sciences.



Popper

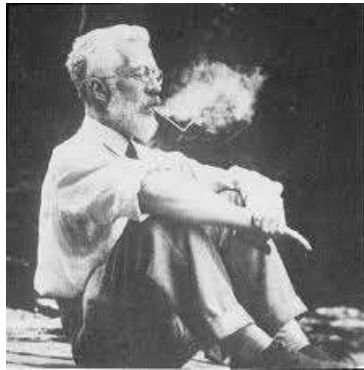


Carnap

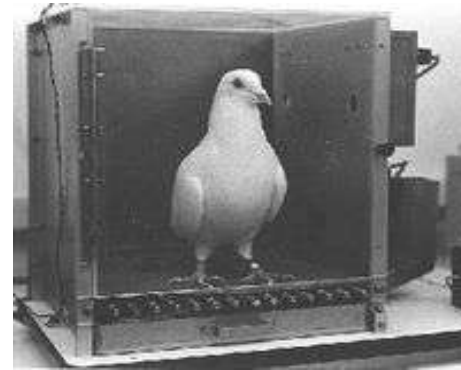
A parallel analysis of the humanities, needed in the museum project, seems to be missing.

New methods in the humanities

Methodological reflection on humanities disciplines is becoming more pressing because these disciplines take over methods from natural and social science.



Statistical methods



Controlled experiment

How should scholarly methods interact with computational, empirical, and mathematical ones?

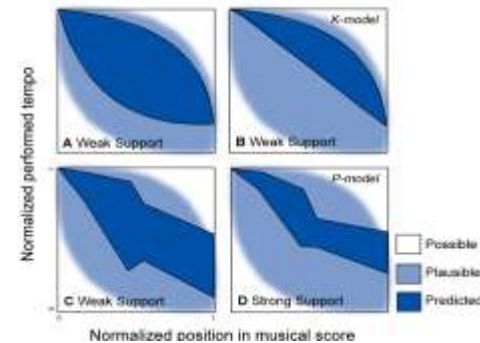


Importing the humanities in science

Very similar methodological problems can be encountered in attempts to bring humanities' scholarship to bear on, e.g., medical science and musicology.



DSM and concepts of illness



Computational models in musicology

How can we make statistical analysis interact with conceptual and historical studies in these disciplines?

Challenges to confirmation theory

This paper presents the beginnings of a confirmation theory that relates humanities' new methods to more traditional ways of theory evaluation.

- ❶ Confirmation theory using probability theory
- ❷ Application to theory evaluation in the humanities
- ❸ Prospects for a confirmation theory of the humanities

At the least, addressing humanities' scholarship in confirmation theory will bring valuable new insights to the latter.



① Confirmation theory

The core idea of almost all of current confirmation theory is that we can capture uncertain opinions in terms of gambles about propositions, and hence in functions over an algebra.



$$Prob(\textit{God exists}) = 0.5$$

Propositions and opinions



Homo abacus

The idea to mathematicize the knowing subject has taken a firm hold on a broad range of disciplines.

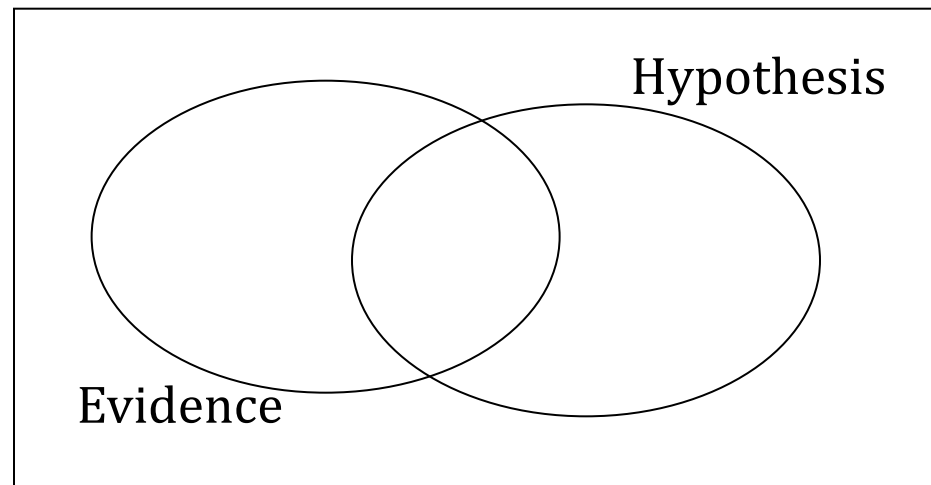
- › Economics: peoples as rational deliberators and participants in a market.
- › Psychology: human behaviour as driven by some form of cognitive computation.
- › Philosophy of science: epistemic notions are spelled out in probabilistic models.

It is not outrageous to try and apply this idea to the humanities.



Evidence and hypothesis

In confirmation theory there is little attention for the process of obtaining evidence or formulating hypotheses. The analysis assumes a fixed language of evidence and hypothesis.



Bayesian confirmation

Under a particular interpretation, probability theory itself determines how to adapt one's opinion about a hypothesis in response to evidence.



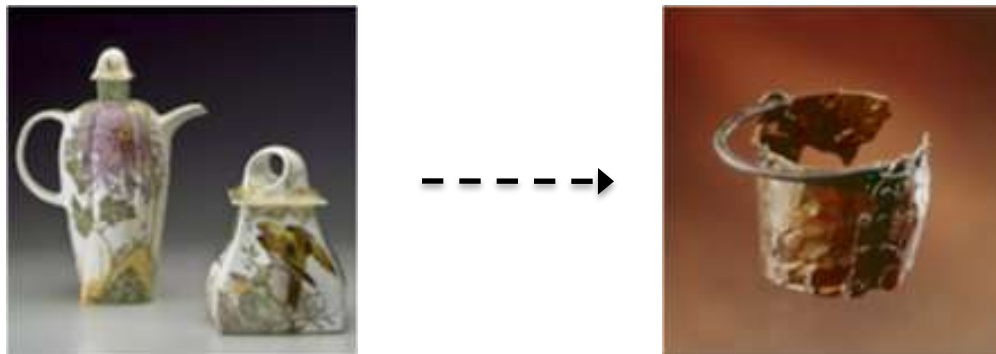
Bayes

$$P(H|E) = P(H) \times P(E|H) / P(E)$$

This is Bayes' formula, linking prior and posterior opinion.

② Applications in the humanities

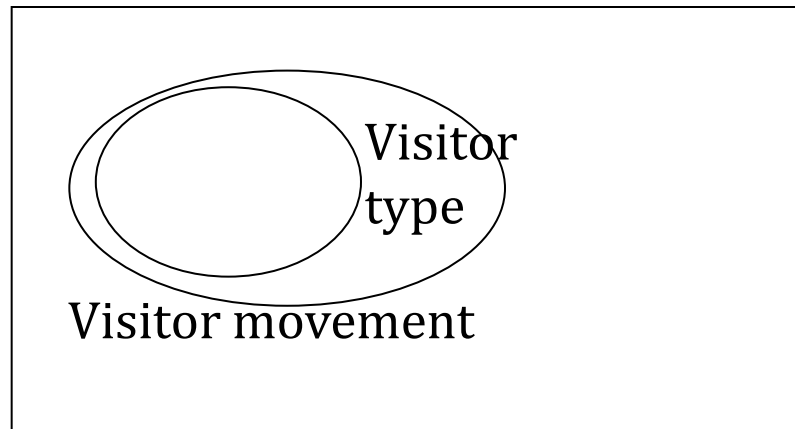
My challenge is to employ the general format of confirmation theory to explicate the interface of theory and evidence in the humanities.



I focus on the task of predicting the behaviour of museum visitors on the basis of their movements and choices.

Correct predictions

Bayes' formula entails that correct predictions provide support for the hypothesis making these predictions.



The evidence that a visitor views a particular selection of items supports the hypothesis of her being of a certain type.

Theoretical virtues

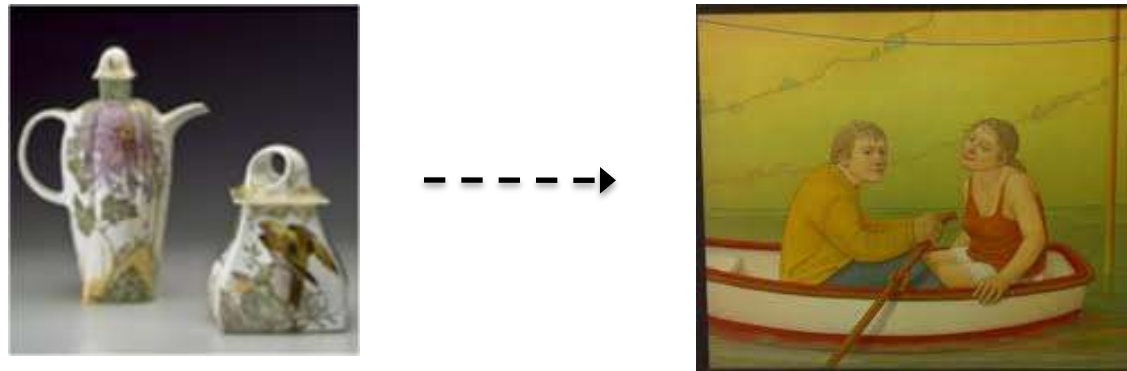
Many theoretical virtues used to evaluate theories in the humanities can be captured in a probabilistic model of this kind.

- > Coherence: judgment on how well do revealed visitor interests hang together.
- > Simplicity: comparison of hypothesis on visitor types on how intricate or complex they are.
- > Surprise: some visitor choices have greater impact on hypotheses than others in virtue of their unexpectedness.



Reconceptualizing the museum

Truly surprising choices by visitors might require us to rethink the possible types of visitors, and the labelling of items in the collection.



Known confirmation theory cannot cope with this kind of opinion change, which involves shifts in the basic language.

Conceptual change

Much of theorizing in the humanities has this character of reconceptualization, in contrast to theorizing in the more slow moving social and natural sciences.

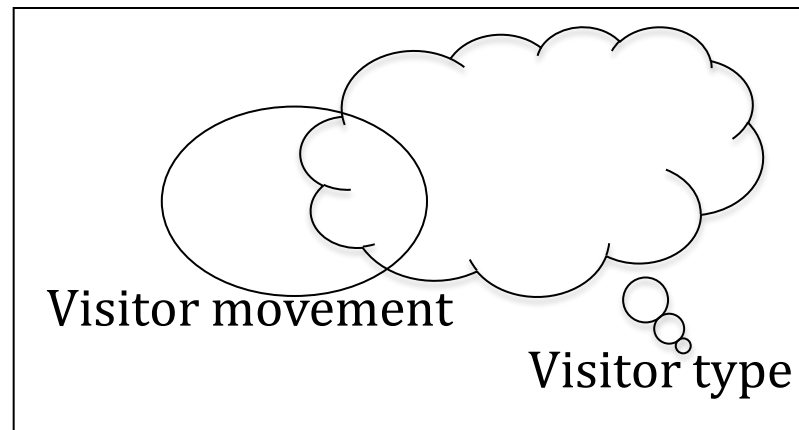


Faraday's laboratory

In confirmation theory the problem of language change has deep roots and major implications.

Comparing conceptualizations?

To accommodate conceptual change, we must reconsider the notions of theory and evidence.



We can borrow an understanding of parameterization and conceptualization from statistical model selection.

③ Prospects for the humanities

While I believe in the general aims of a project like this, I think there are fundamental difficulties to overcome.

- > The conception of theory as an objectifiable artifact may be in tension with humanities' ideological character.
- > It may similarly be at odds with the situated and experiential aspects of evidence in the humanities.
- > And there seems little space for the fact that the humanities are, like other sciences, a group effort.

Perhaps these points apply equally to confirmation theory in the sciences.

Mathematization?

Furthermore, it is not clear why a probabilistic confirmation theory should have the required normative force.

- › The model contains many idealizations on, e.g., the scholar's implicit compliance to probability axioms.
- › Another important idealization is that evidence and hypothesis must, on this account, be captured in distinct and formalizable judgments.
- › And what is it about logic and mathematics that warrants such a central position in the methodology of all these different disciplines anyway?



Nevertheless...

Methods in the humanities can be elucidated by a systematic analysis in confirmation theory.

- › It provides the conceptual apparatus to explain why surprising findings have greater impact on our opinions.
- › By involving the perspective of model selection we can perhaps express the evaluation, empirical or otherwise, of particular conceptualizations of the subject matter.
- › The attempt to accommodate reconceptualizations, as they appear in the humanities, brings exciting new problems to confirmation theory itself.



Thanks for your attention

With questions and remarks, email:

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The slides will be made available on my website:

`http://www.philos.rug.nl/~romeyn`

